

New Product

CN-0342

S Series

# Dual Seal Waterproof Toggle



## IP68 Rated

2022-03-24 Rev  
2019-04-01  
2018-10-31

**NKK**  
SWITCHES  
*Innovation Driving Quality*



# General Specifications

## Electrical Capacity (Resistive Load)

**Power Level:** Shown in following tables

## Other Ratings

|                               |   |
|-------------------------------|---|
| <b>Contact Resistance:</b>    | 10 milliohms maximum  |
| <b>Insulation Resistance:</b> | 1,000 megohms minimum @ 500V DC   |
| <b>Dielectric Strength:</b>   | 2,000V AC minimum for 1 minute minimum  |
| <b>Mechanical Life:</b>       | 50,000 operations minimum for S1AWB, S2AWB, S3AWB, S6AWB, S7AWB, S21AWB<br>30,000 operations minimum for S5AWB, S8AWB, S25AWB, S28AWB |
| <b>Electrical Life:</b>       | 25,000 operations minimum   |
| <b>Angle of Throw:</b>        | Shown in following tables   |

## Environmental Data

|                                     |   |
|-------------------------------------|---|
| <b>Operating Temperature Range:</b> | -30°C through +70°C (-22°F through +158°F)  |
| <b>Sealing:</b>                     | Waterproofing, achieved with boot at base of lever plus o-rings inside and outside of bushing, meets IP68 of IEC60529 Standards (dust tight and protection against effects of temporary immersion). See further explanation on last page. |

## Processing

**Soldering:** Manual Soldering: 390°C for 4 seconds, 2 cycles

# Distinctive Characteristics

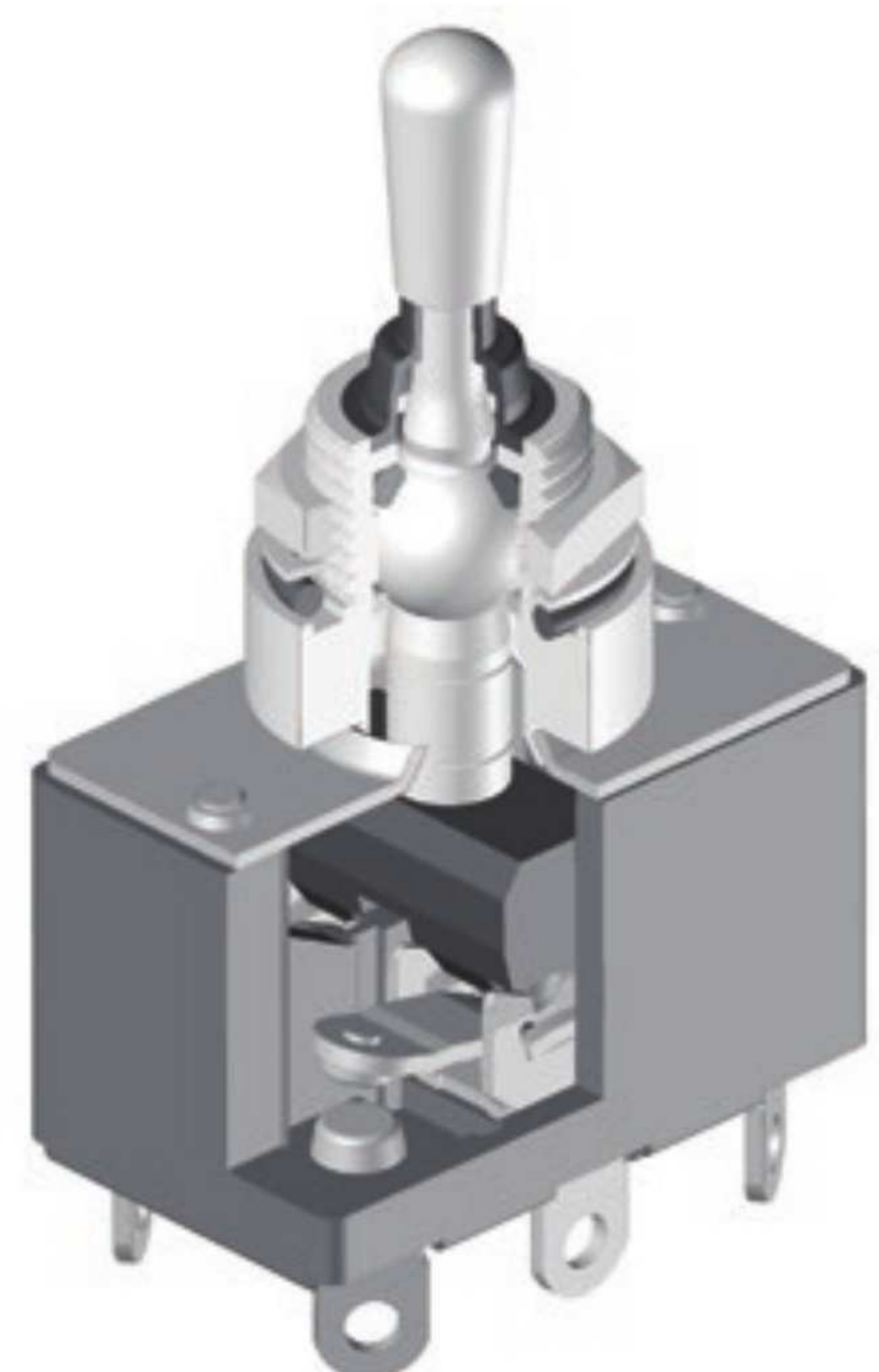
Dual protection with internal o-ring and external rubber washer, sealing the switch to achieve IP68 of IEC 60529 Standards (dust tight and water protected against immersion for as long as 30 minutes, in 1.5 meters of water).

Additional panel seal security against wet environments provided by waterproof boot at base of toggle.

Fluid actuation delivered in smooth, sturdy tactile feel.

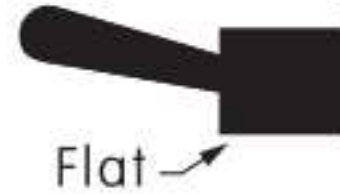


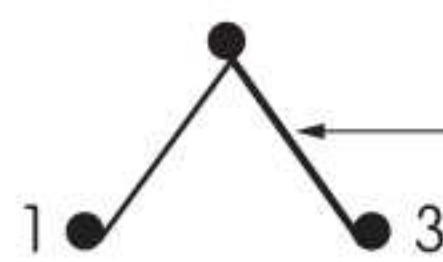
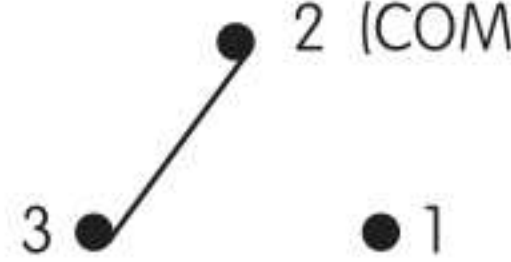
Sleek design incorporates functionality with polished, chrome-plated actuator paired with waterproof boot.

Superb quality and construction design prohibit entry of foreign particles that may otherwise compromise lever operation.

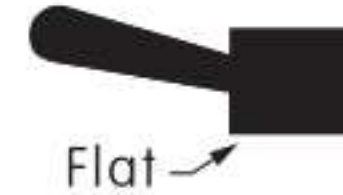


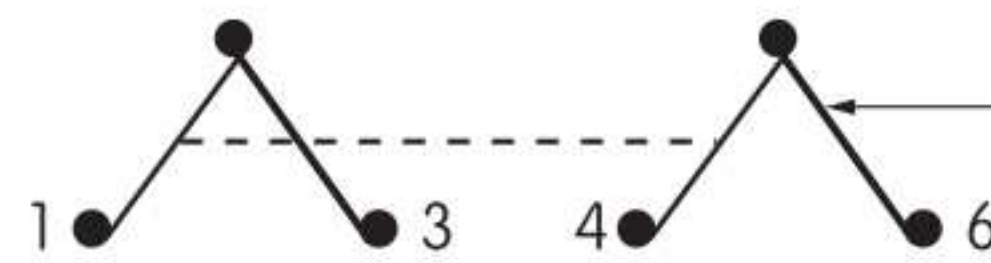
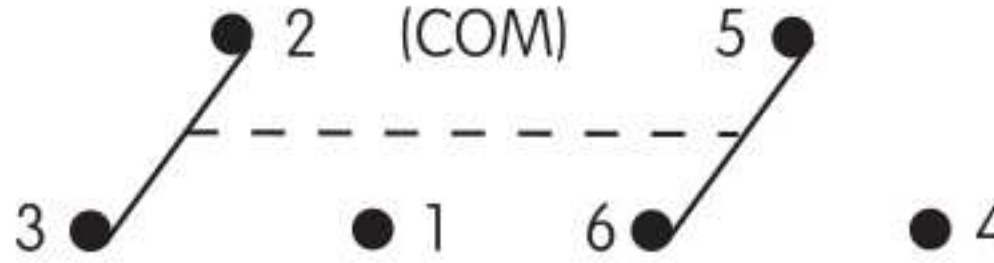




SINGLE POLE WITH SOLDER LUG

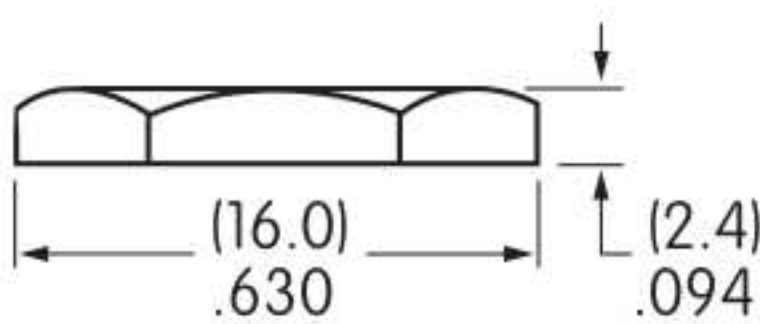
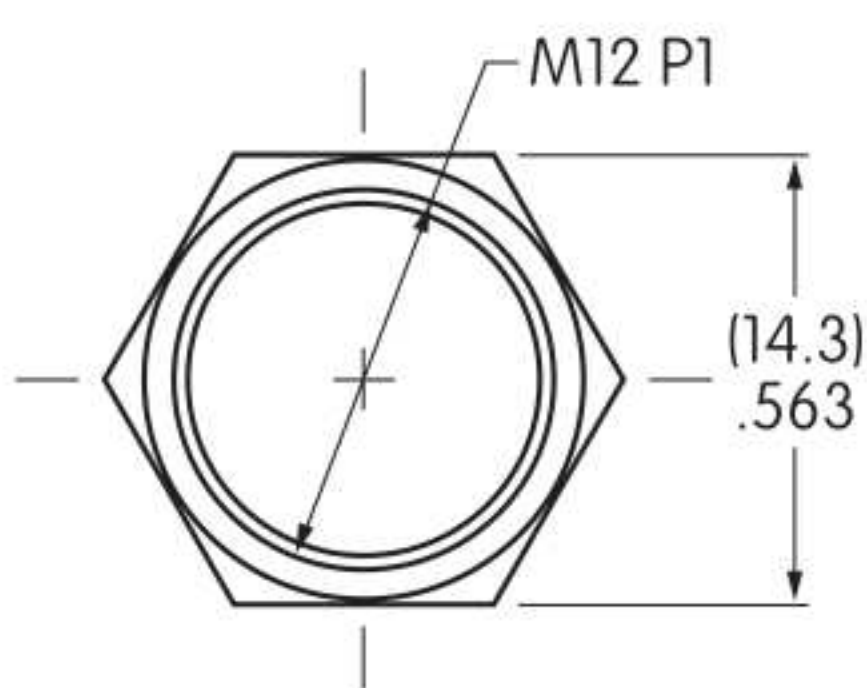
| Model  | Pole & Throw | Toggle Position/Connected Terminals<br>NONE = No Position ( ) = Momentary         |     |  |      |   | Electrical Capacity |            |            | $\alpha$ =<br>Angle<br>of Throw                   |           |
|--|--------------|---|-----|--|------|---|---------------------|------------|------------|---|-----------|
|  |              | Up  |     | Center   | Down |   | Resistive           |            |            |   |           |
|  |              |  |     |  |      |  |                     | AC<br>125V | AC<br>250V |   | DC<br>30V |
| S1AWB  | SPST         | ON  | 1-3 | NONE   |      | OFF   | —                   | 15A        | 6A         | 20A   | 24° ± 4°  |
| S2AWB  | SPDT         | ON  | 2-3 | NONE   |      | ON  | 2-1                 | 15A        | 6A         | 20A   | 24° ± 4°  |
| S3AWB  | SPDT         | ON  | 2-3 | OFF  |      | ON  | 2-1                 | 15A        | 6A         | 20A   | 24° ± 4°  |
| S5AWB  | SPDT         | ON  | 2-3 | NONE   |      | (ON)  | 2-1                 | 15A        | 6A         | 20A   | 20° ± 4°  |
| S8AWB  | SPDT         | (ON)  | 2-3 | OFF  |      | (ON)  | 2-1                 | 15A        | 6A         | 20A   | 24°       |
| Throw & Schematics:<br><div><div>SPST<br/></div><div>INTERNAL CONNECTION</div><div>SPDT<br/></div></div> |              |   |     |  |      |   |                     |            |            | Note: Terminal numbers are actually on the switch |           |

DOUBLE POLE WITH SOLDER LUG

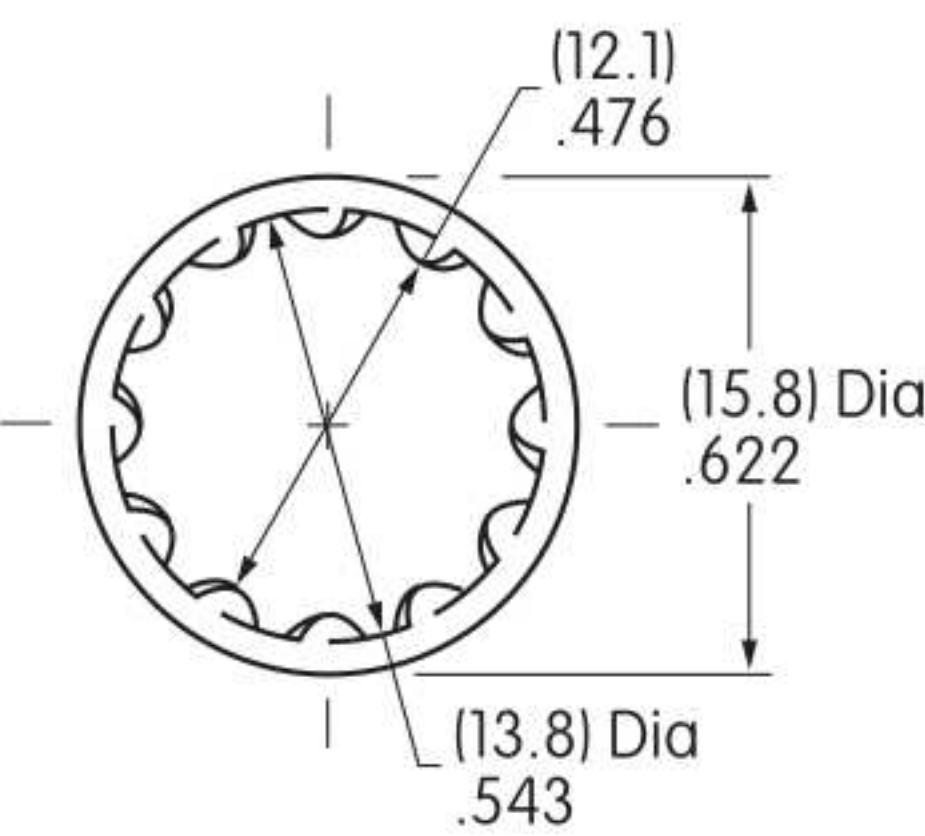
| Model  | Pole & Throw | Toggle Position/Connected Terminals<br>NONE = No Position ( ) = Momentary                 |     |     |   |   |     |            | Electrical Capacity |   |     | $\alpha$ =<br>Angle<br>of Throw |
|--|--------------|---|-----|-----|---|---|-----|------------|---------------------|---|-----|---------------------------------|
|  |              | Up<br> |     |     | Center<br> | Down<br> |     |            | Resistive           |   |     |                                 |
|  |              |   |     |     |   |   |     | AC<br>125V | AC<br>250V          | DC<br>30V   |     |                                 |
| S21AWB   | DPST         | ON  | 1-3 | 4-6 | NONE  | OFF   | —   | —          | 15A                 | 15A   | 15A | $24^{\circ} \pm 4^{\circ}$      |
| S6AWB  | DPDT         | ON  | 2-3 | 5-6 | NONE  | ON  | 2-1 | 5-4        | 15A                 | 10A   | 20A | $24^{\circ} \pm 4^{\circ}$      |
| S7AWB  | DPDT         | ON  | 2-3 | 5-6 | OFF   | ON  | 2-1 | 5-4        | 15A                 | 10A   | 20A | $24^{\circ} \pm 4^{\circ}$      |
| S25AWB   | DPDT         | ON  | 2-3 | 5-6 | NONE  | (ON)  | 2-1 | 5-4        | 15A                 | 6A  | 20A | $20^{\circ} \pm 4^{\circ}$      |
| S28AWB   | DPDT         | (ON)  | 2-3 | 5-6 | OFF   | (ON)  | 2-1 | 5-4        | 15A                 | 6A  | 20A | $24^{\circ} \pm 4^{\circ}$      |
| Throw & Schematics:<br><div><div>DPST<br/></div><div>INTERNAL CONNECTION</div><div>DPDT<br/></div></div> |              |   |     |     |   |   |     |            |                     | Note: Terminal numbers are actually on the switch |     |                                 |

STANDARD HARDWARE

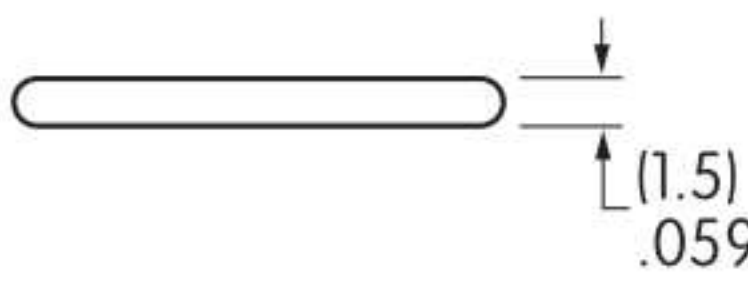
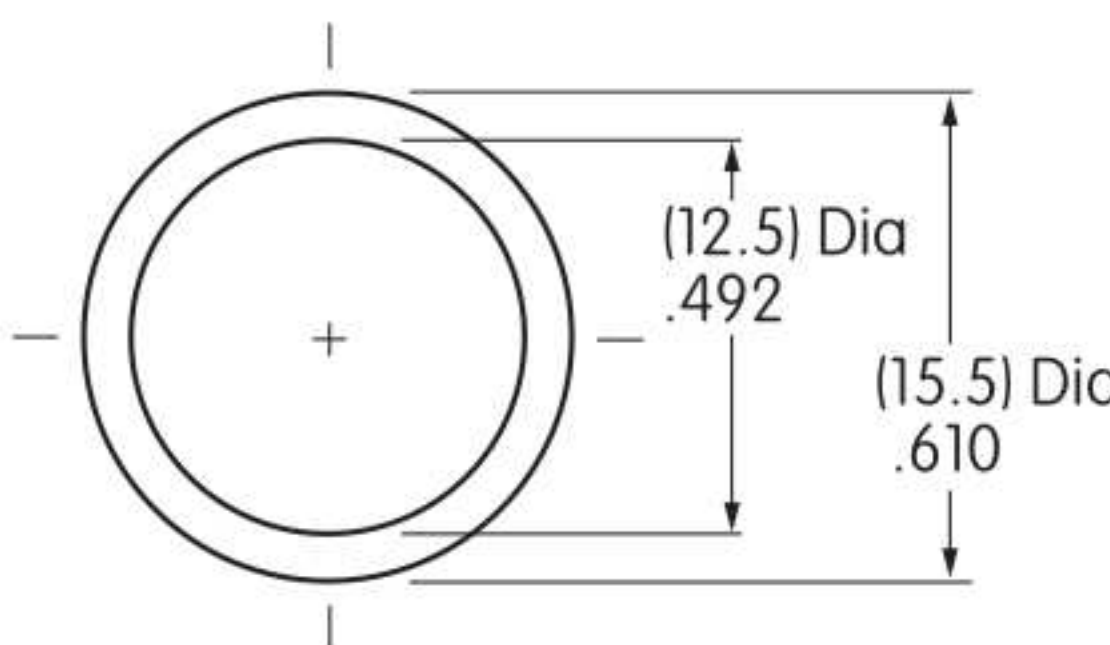
AT503M Hex Face Nut  
Brass with Chrome Plating



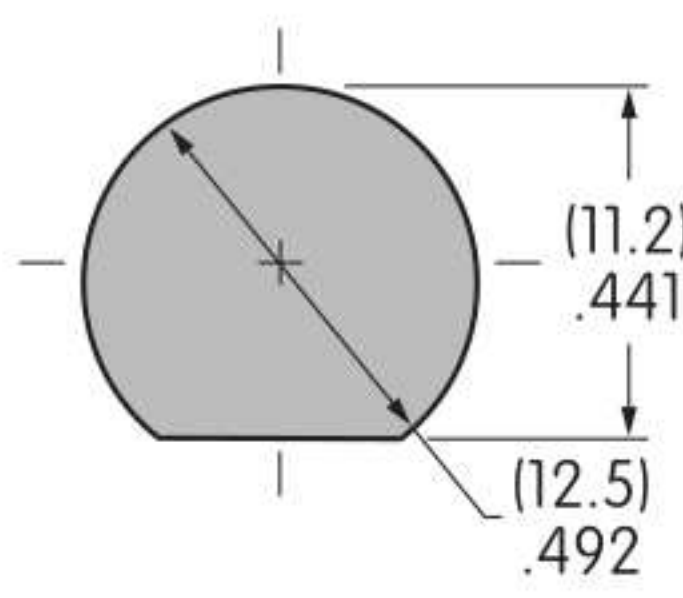
Lockwasher  
Phosphor Bronze/Chromate



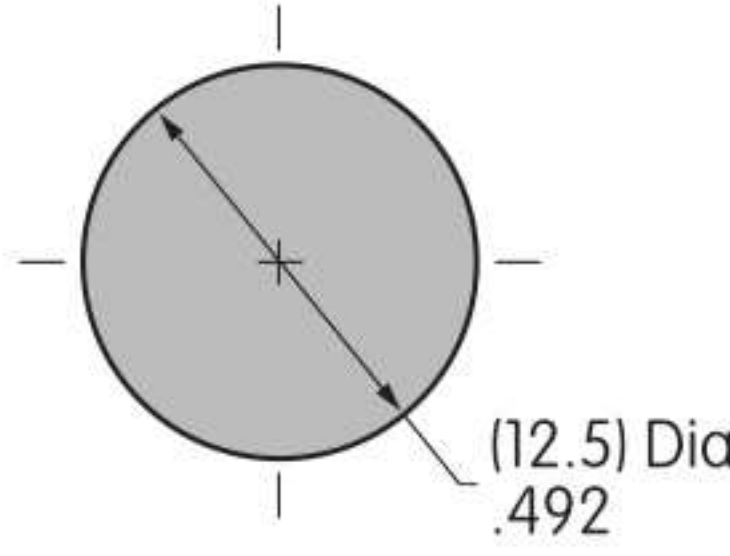
AT537 O-ring  
Nitrile Butadiene Rubber



PANEL CUTOUT



Anti-rotation



No  
Anti-rotation

Maximum Effective Panel Thickness  
.157" (4.0mm)

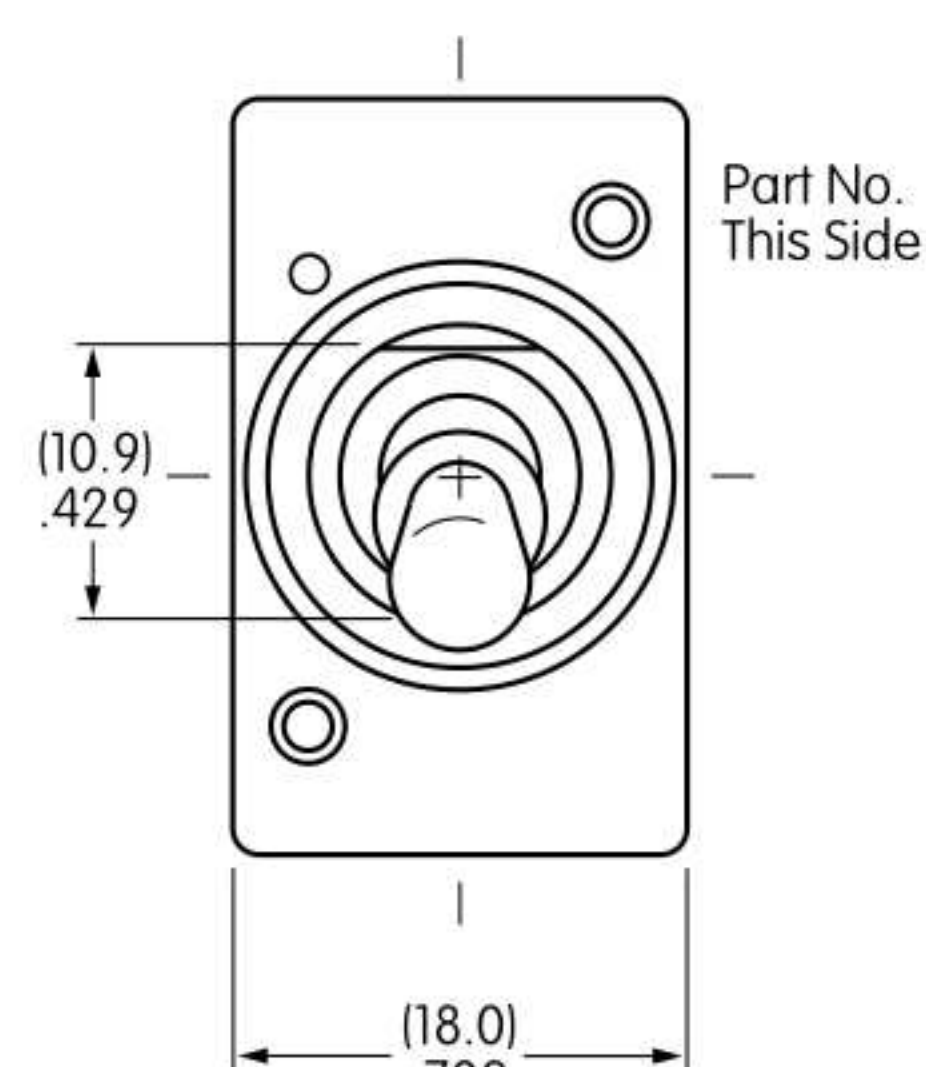


## TYPICAL SWITCH DIMENSIONS

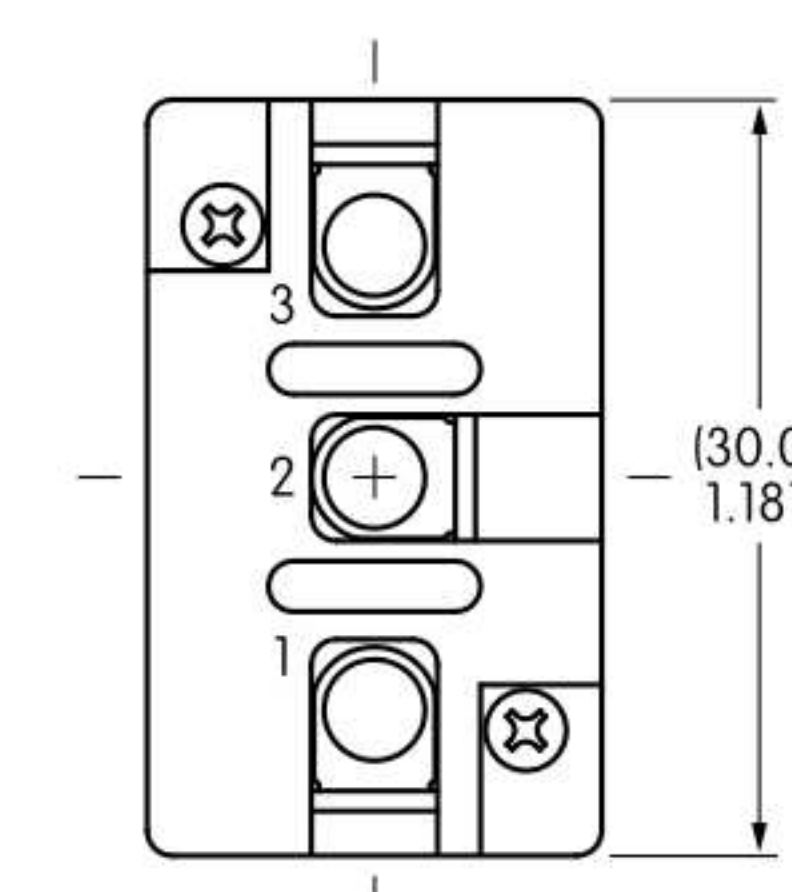
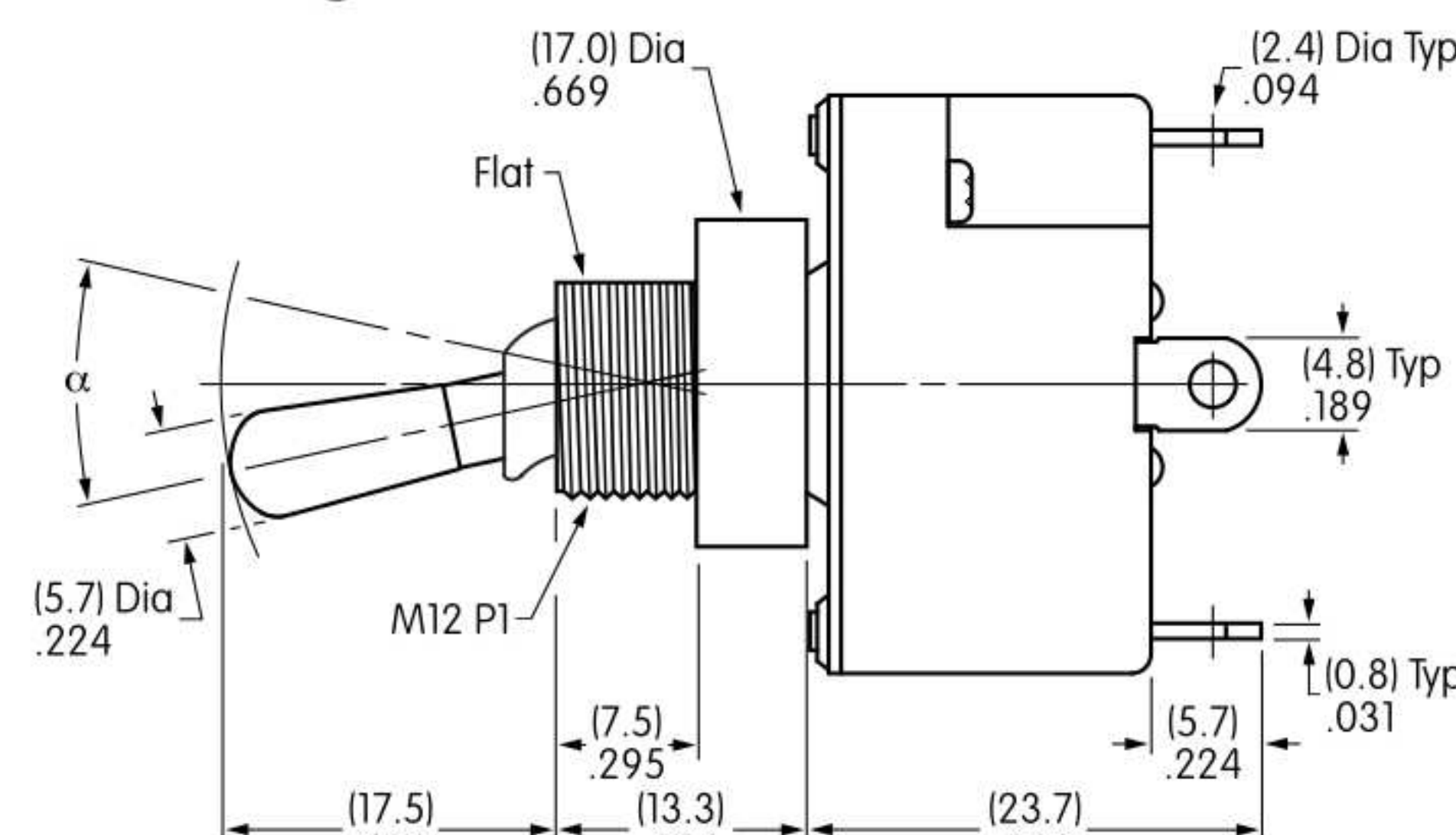
### Solder Lug



**S2AWB**



### Single Pole

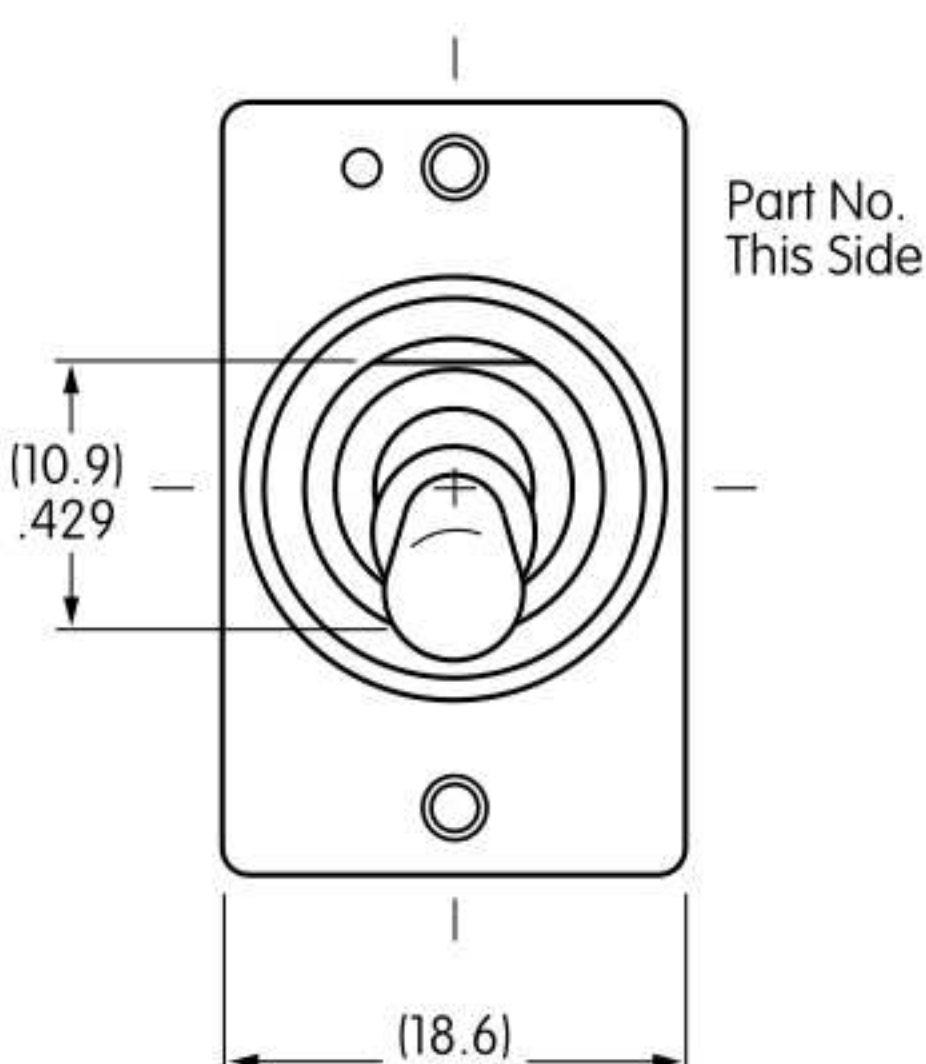


S1AWB does not have terminal 2

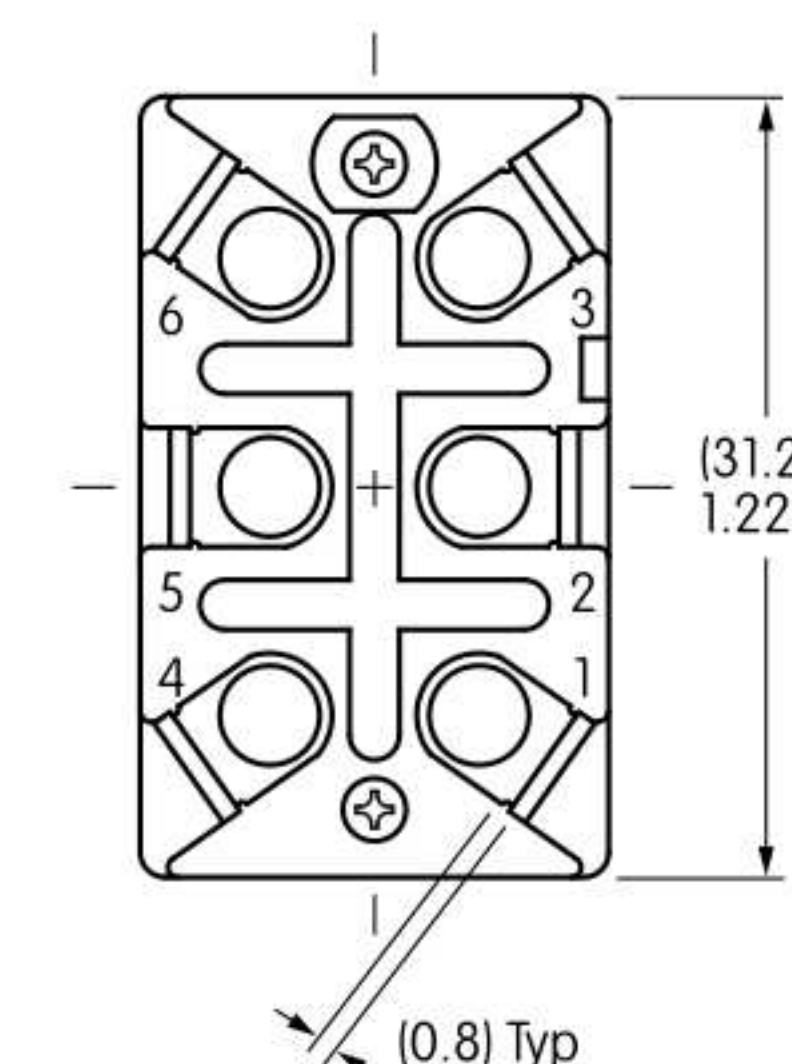
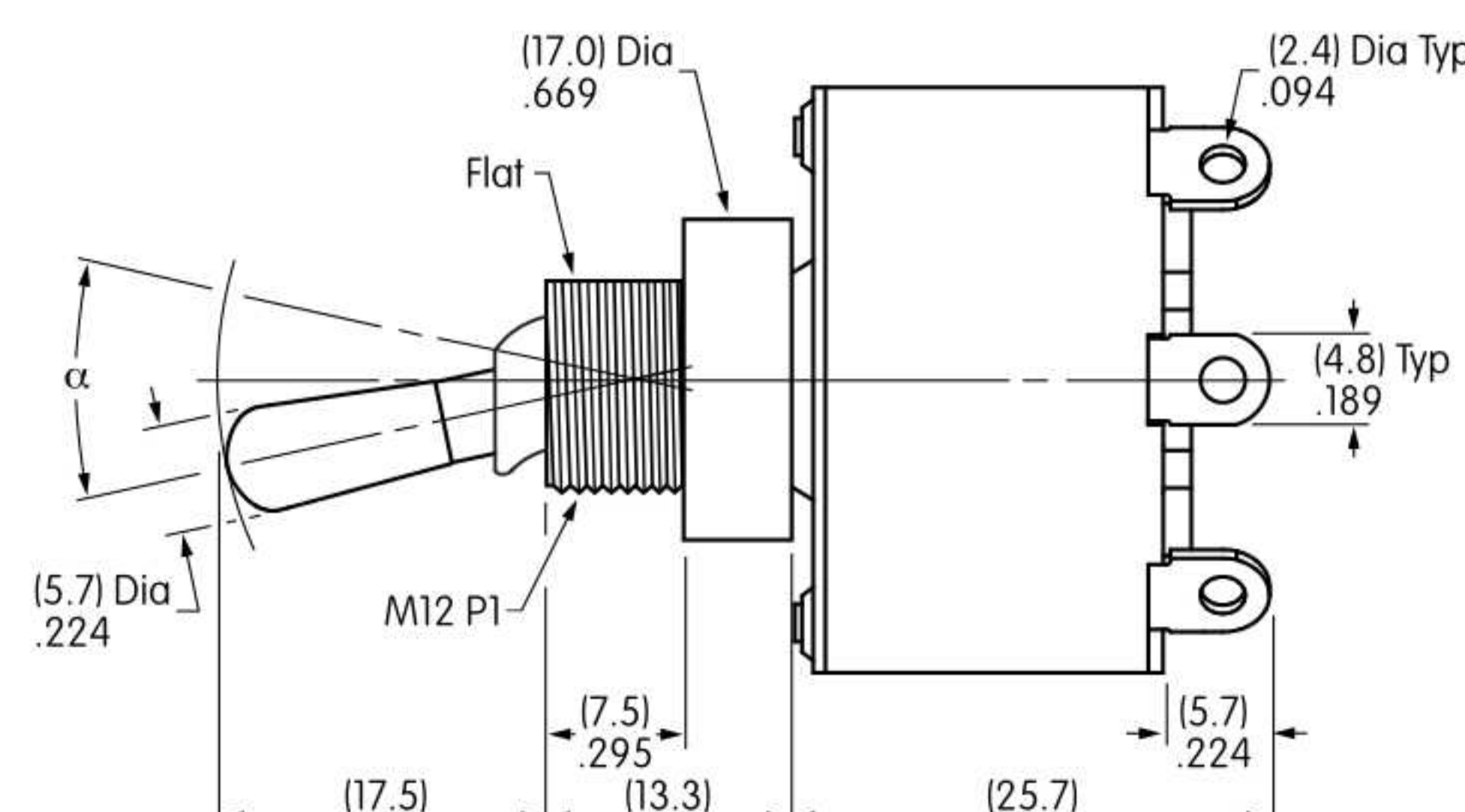
### Solder Lug



**S6AWB**



### Double Pole



S21AWB does not have terminals 2 & 5

## APPLICATION CONSIDERATIONS

The Dual Seal Waterproof S Toggle is designed as a panel seal switch, and not to be used under water.

### Material Properties

The material for the waterproof boot is silicone rubber. While silicone rubber has excellent heat, cold and weather resistant properties, it has less durability and oil resistance.

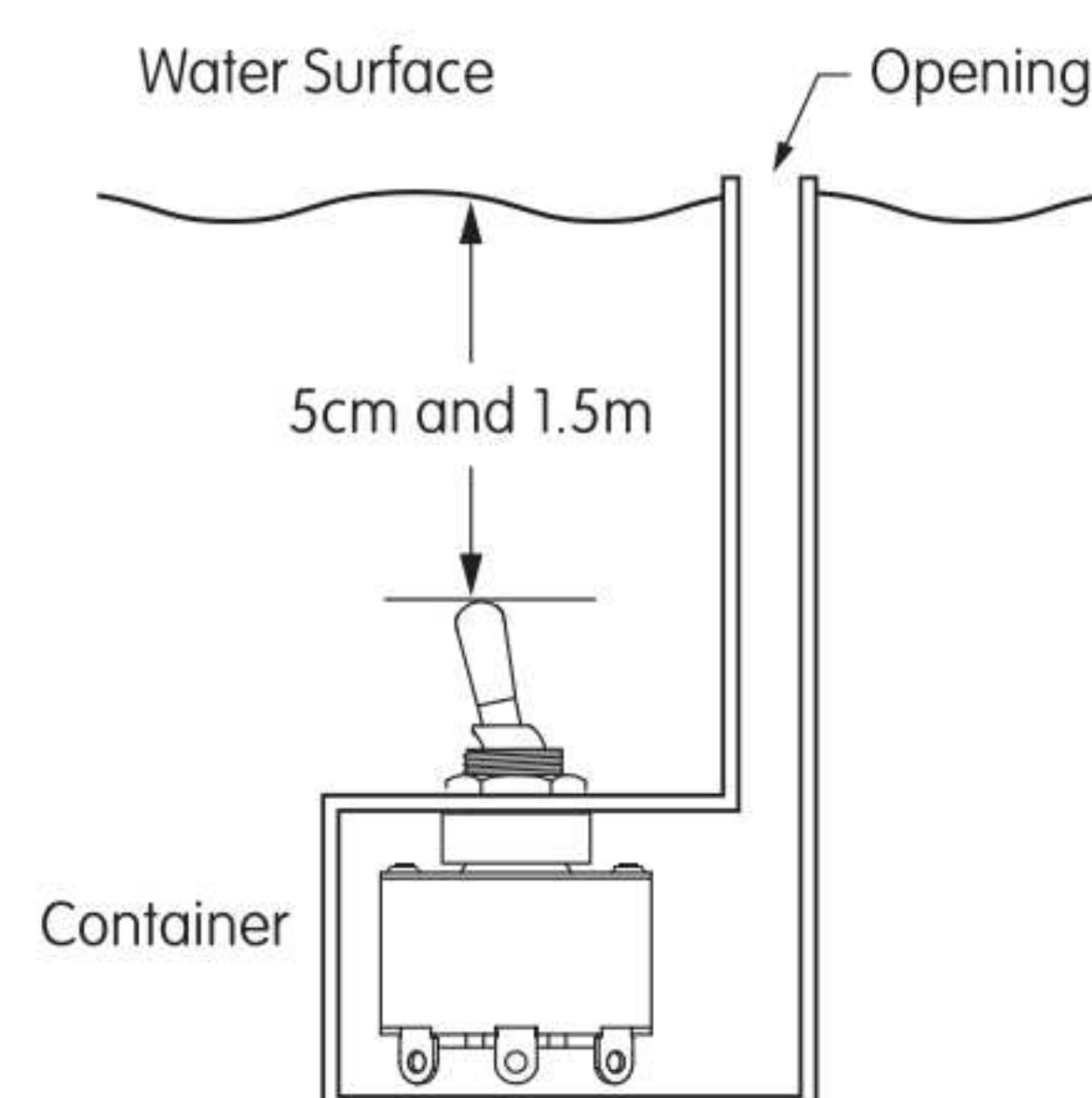
The o-ring below the panel is made of nitrile butadiene rubber, which excels in durability and oil and chemical resistance. Its performance is less durable with lower weather and ozone resistant characteristics.

Evaluate the products in regard to your application and intended environment with these properties in mind.

### Waterproof Test Conditions

Waterproofing is measured by submersing the switch 5 centimeters from the water surface (see illustration), and opening and closing 50 times at a frequency of 50 – 60 times per minute. The switch is then submersed 1.5 meters from the surface and left in this position for 30 minutes.

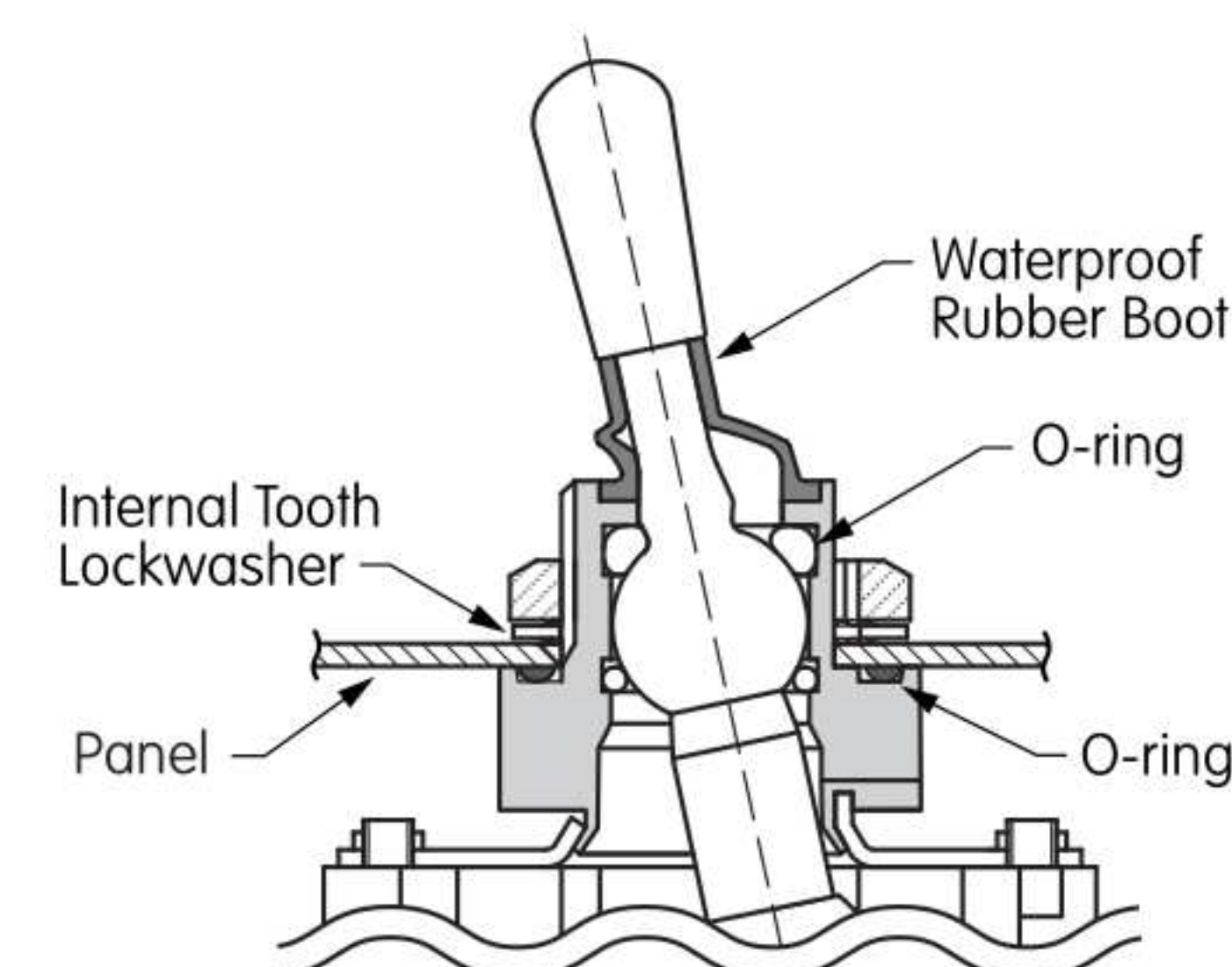
Repeat opening and closing



same as previous test. The resulting insulation resistance and voltage capacity are both within the rated values, and water has not entered inside the switch or installation panel.

### Panel Installation

For panel installation, the internal tooth lockwasher is installed above the panel. The external o-ring mounts below the panel.



### Applications

- Construction Equipment
- Hospitality and Restaurant
- Transportation
- Medical Equipment
- Machine Tooling
- Marine Equipment \*

\* Salt spray tested as per Mil-STD-810G section 509.5.

**Effective Date** October 2018

**NKK**  
SWITCHES

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