

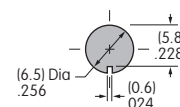
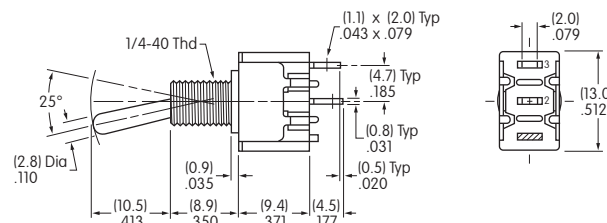
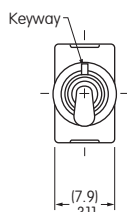
## Miniature Toggle with Splashproof Boot

### MN11SS1W01-AT428H

Bushing Mount • Single Pole • Solder Lug

Dimensions in mm/inch

#### PANEL CUTOUT



Panel Thickness with Standard Hardware & Boot Installed:  
0.118" (3.0mm) Maximum

#### BASE SWITCH

Part Number  
**MN11SS1W01**

#### AT428H Splashproof Boot



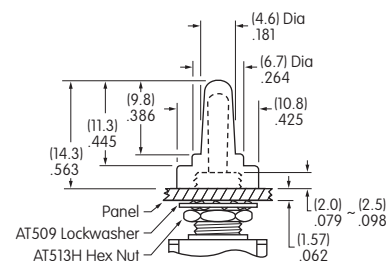
Color: Black  
Material: Silicone rubber

Sealing: IP65 rated at front panel

#### SPLASHPROOF BOOT

##### Installation Instructions

1. Insert switch bushing from back of panel into the cutout hole and adjust height of bushing above the panel to a minimum of 0.079" (2.0mm) and a maximum of 0.098" (2.5mm).
2. Screw the boot onto the bushing. Tighten the hexagon nut on the back of panel to complete.

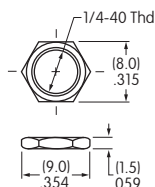


#### STANDARD HARDWARE FOR SWITCH & BOOT

##### AT513H Hexagon Nut

1 included with each switch

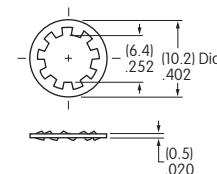
Material:  
Brass with Nickel plating



##### AT509 Lockwasher

1 included with each switch

Material:  
Steel with Zinc/Chromate



#### POLES & CIRCUITS

Toggle Position NONE = No Position ( ) = Momentary				Connected Terminals			Throw & Schematics
Pole	Model	Down 	Center 	Up 	Down 	Center 	Up 
SP	MN11	ON	NONE	OFF	2-3	OPEN	OPEN

Notes: Terminal numbers are not actually on the switch. MN11 does not have terminal 1.

#### CONTACT MATERIALS & RATINGS

Silver over Silver

Power Level

6A @ 125V AC & 3A @ 250V AC &  
4A @ 30V DC

# Base Switch Specifications

## Electrical Capacity (Resistive Load)

**Power Level:** 6A @ 125V AC, 3A @ 250V AC, 4A @ 30V DC  
Recommended minimum voltage/current: 0.1A @ 2V AC/DC


## Other Ratings

**Contact Resistance:** 10 milliohms maximum  
**Insulation Resistance:** 1,000 megohms minimum @ 500V DC  
**Dielectric Strength:** 1,000V AC minimum between contacts for 1 minute minimum;  
1,500V AC minimum between contacts and case for 1 minute minimum  
**Mechanical Life:** 50,000 operations minimum  
**Electrical Life:** 25,000 operations minimum  
**Angle of Throw:** 25°

## Materials & Finishes

**Toggle:** Brass with chrome plating  
**Frame:** Stainless steel  
**Bushing:** Brass with nickel plating  
**Case:** Diallyl phthalate resin  
**Movable Contactor:** Phosphor bronze with silver plating or silver/silver alloy with no plating  
**Movable Contacts:** Silver alloy  
**Stationary Contacts:** Silver alloy with silver plating  
**Terminals:** Copper or brass with silver plating

## Environmental Data

**Operating Temperature Range:** -30°C through +85°C (-22°F through +185°F)  
**Humidity:** 90 ~ 95% humidity for 240 hours @ 40°C (104°F)  
**Vibration:** 10 ~ 55Hz with peak-to-peak amplitude of 1.5mm traversing the frequency range & returning in 1 minute; 3 right angled directions for 2 hours  
**Shock:** 500m/s<sup>2</sup> acceleration (tested in 6 right angled directions, with 5 shocks in each direction)  
**Sealing:** With Splashproof Boot AT428H assembled on switch, meets IP65 of IEC 60529 Standards  
**RoHS Compliant:** 

## Installation

**Mounting Torque:** 0.7Nm (6 lb•in) single nut

## Processing

**Soldering:** Manual Soldering: 350°C for 3 seconds, 1 cycle  
**Cleaning:** These devices are not process sealed. Hand clean locally using alcohol based solution.



**MN11SS1W01-AT428H**  
Miniature Toggle with  
AT428H Splashproof Boot

**IP65 Rated with Boot**  
Dust tight and protected  
against water jets  
from any direction

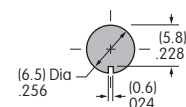
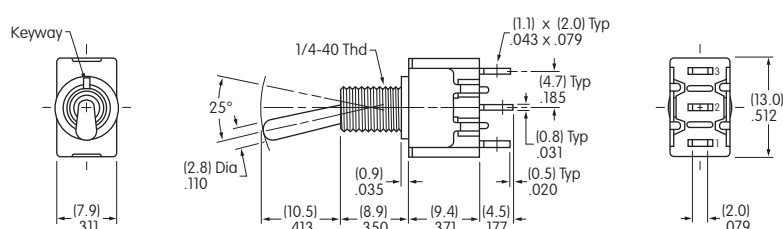
## Miniature Toggle with Splashproof Boot

### MN12SS1W01-AT428H

Bushing Mount • Single Pole • Solder Lug

Dimensions in mm/inch

#### PANEL CUTOUT



Panel Thickness with Standard Hardware & Boot Installed:  
0.118" (3.0mm) Maximum

#### BASE SWITCH

Part Number  
MN12SS1W01

#### AT428H Splashproof Boot



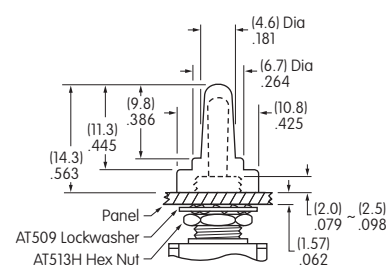
Color: Black  
Material: Silicone rubber

Sealing: IP65 rated at  
front panel

#### SPLASHPROOF BOOT

##### Installation Instructions

1. Insert switch bushing from back of panel into the cutout hole and adjust height of bushing above the panel to a minimum of 0.079" (2.0mm) and a maximum of 0.098" (2.5mm).
2. Screw the boot onto the bushing. Tighten the hexagon nut on the back of panel to complete.

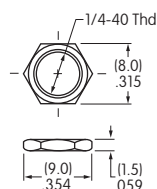


#### STANDARD HARDWARE FOR SWITCH & BOOT

##### AT513H Hexagon Nut

1 included with each switch

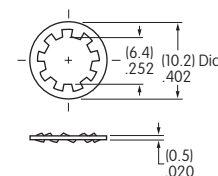
Material:  
Brass with Nickel plating



##### AT509 Lockwasher

1 included with each switch

Material:  
Steel with Zinc/Chromate



#### POLES & CIRCUITS

Toggle Position NONE = No Position ( ) = Momentary				Connected Terminals			Throw & Schematics
Pole	Model	Down	Center	Up	Down	Center	Up
		Keyway			Keyway		
SP	MN12	ON	NONE	ON	2-3	OPEN	2-1
							Note: Terminal numbers are not actually on the switch.
							SPDT

#### CONTACT MATERIALS & RATINGS

Silver over Silver

Power Level

6A @ 125V AC & 3A @ 250V AC &  
4A @ 30V DC

# Base Switch Specifications

## Electrical Capacity (Resistive Load)

**Power Level:** 6A @ 125V AC, 3A @ 250V AC, 4A @ 30V DC  
Recommended minimum voltage/current: 0.1A @ 2V AC/DC


## Other Ratings

**Contact Resistance:** 10 milliohms maximum  
**Insulation Resistance:** 1,000 megohms minimum @ 500V DC  
**Dielectric Strength:** 1,000V AC minimum between contacts for 1 minute minimum;  
1,500V AC minimum between contacts and case for 1 minute minimum  
**Mechanical Life:** 50,000 operations minimum  
**Electrical Life:** 25,000 operations minimum  
**Angle of Throw:** 25°

## Materials & Finishes

**Toggle:** Brass with chrome plating  
**Frame:** Stainless steel  
**Bushing:** Brass with nickel plating  
**Case:** Diallyl phthalate resin  
**Movable Contactor:** Phosphor bronze with silver plating or silver/silver alloy with no plating  
**Movable Contacts:** Silver alloy  
**Stationary Contacts:** Silver alloy with silver plating  
**Terminals:** Copper or brass with silver plating

## Environmental Data

**Operating Temperature Range:** -30°C through +85°C (-22°F through +185°F)  
**Humidity:** 90 ~ 95% humidity for 240 hours @ 40°C (104°F)  
**Vibration:** 10 ~ 55Hz with peak-to-peak amplitude of 1.5mm traversing the frequency range & returning in 1 minute; 3 right angled directions for 2 hours  
**Shock:** 500m/s<sup>2</sup> acceleration (tested in 6 right angled directions, with 5 shocks in each direction)  
**Sealing:** With Splashproof Boot AT428H assembled on switch, meets IP65 of IEC 60529 Standards  
**RoHS Compliant:** 

## Installation

**Mounting Torque:** 0.7Nm (6 lb•in) single nut

## Processing

**Soldering:** Manual Soldering: 350°C for 3 seconds, 1 cycle  
**Cleaning:** These devices are not process sealed. Hand clean locally using alcohol based solution.



**MN12SS1W01-AT428H**  
Miniature Toggle with  
AT428H Splashproof Boot

**IP65 Rated with Boot**  
Dust tight and protected  
against water jets  
from any direction

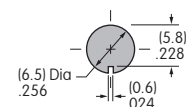
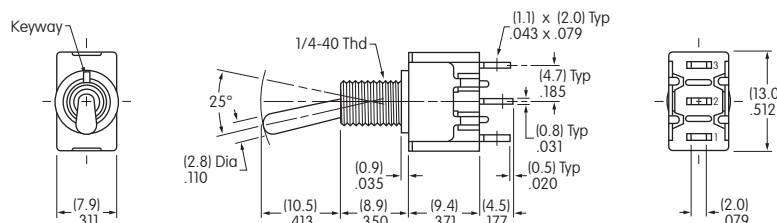
## Miniature Toggle with Splashproof Boot

### MN13SS1W01-AT428H

Bushing Mount • Single Pole • Solder Lug

Dimensions in mm/inch

#### PANEL CUTOUT



Panel Thickness with Standard Hardware & Boot Installed:  
0.118" (3.0mm) Maximum

#### BASE SWITCH

Part Number  
MN13SS1W01

#### AT428H Splashproof Boot



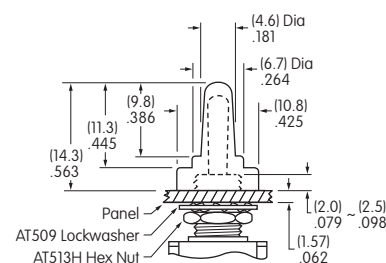
Color: Black  
Material: Silicone rubber

Sealing: IP65 rated at  
front panel

#### SPLASHPROOF BOOT

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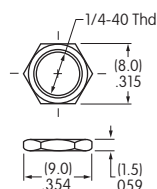


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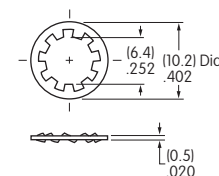
Material:  
Brass with Nickel plating



##### AT509 Lockwasher

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Material:  
Steel with Zinc/Chromate



#### POLES & CIRCUITS

Toggle Position NONE = No Position ( ) = Momentary				Connected Terminals			Throw & Schematics
Pole	Model	Down	Center	Up	Down	Center	Up
		Keyway			Keyway		
SP	MN13	ON	OFF	ON	2-3	OPEN	2-1
							Note: Terminal numbers are not actually on the switch.
							SPDT

#### CONTACT MATERIALS & RATINGS

Silver over Silver

Power Level

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4A @ 30V DC

# Base Switch Specifications

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**Shock:** 500m/s<sup>2</sup> acceleration (tested in 6 right angled directions, with 5 shocks in each direction)  
**Sealing:** With Splashproof Boot AT428H assembled on switch, meets IP65 of IEC 60529 Standards  
**RoHS Compliant:** 

## Installation

**Mounting Torque:** 0.7Nm (6 lb•in) single nut

## Processing

**Soldering:** Manual Soldering: 350°C for 3 seconds, 1 cycle  
Note: Lever must be in OFF (center) position while soldering.  
**Cleaning:** These devices are not process sealed. Hand clean locally using alcohol based solution.



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Miniature Toggle with  
AT428H Splashproof Boot

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Dust tight and protected  
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