

# General Specifications

## Electrical Capacity (Resistive Load)

**Logic Level:** 0.4VA maximum @ 28V AC/DC maximum  
(Applicable Range 0.1mA ~ 0.1A @ 20mV ~ 28V)  
Note: See Supplement Index to find explanation of operating range.

## Other Ratings

**Contact Resistance:** 80 milliohms maximum  
**Insulation Resistance:** 100 megohms minimum @ 500V DC  
**Dielectric Strength:** 500V AC minimum for 1 minute minimum  
**Mechanical Life:** 30,000 operations minimum  
**Electrical Life:** 10,000 operations minimum  
**Operating Torque:** 0.04Nm average  
**Contact Timing:** Nonshorting (break-before-make)  
**Indexing:** 45° for On-On-On & 90° for On-None-On

## Materials & Finishes

**Shaft:** Brass with nickel plating  
**Bushing:** Zinc alloy with nickel plating  
**Frame/Bracket:** Steel with tin plating  
**Movable Contacts:** Beryllium copper spring with gold plating  
**Stationary Contacts:** Copper with gold plating  
**Terminals:** Brass with tin plating  
**Base:** Polyamide

## Environmental Data

**Operating Temperature Range:** -10°C through +70°C (+14°F through +158°F)  
**Humidity:** 90 ~ 95% humidity for 96 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:** 50G (490m/s<sup>2</sup>) acceleration (tested in 3 right angled directions, with 5 shocks in each direction)  
**Sealing:** Use of optional o-ring AT535 with MRB meets IP67 of IEC60529 specifications

## Installation

**Mounting Torque:** .686Nm (6.08 lb•in)  
**Cap Installation Force:** 19.6 ~ 29.4N (4.41 ~ 6.61 lbf)

## PCB Processing

**Soldering:** Wave Soldering Recommended: See Profile B in Supplement section  
Manual Soldering: See Profile B in Supplement section  
**Cleaning:** Automated cleaning. See Cleaning specifications in Supplement section.

## Standards & Certifications

The MRB Series rotaries have not been tested for UL recognition or CSA certification. These switches are designed for use in a low-voltage, low-current, logic-level circuit. When used as intended in a logic-level circuit, the results do not produce hazardous energy.

# Distinctive Characteristics

Double flatted bushing prevents rotation in panel and increases stability.

Totally sealed construction, achieved with combination of an interior o-ring, a seal between the frame and base, plus insert molded terminals, prevents contact contamination and allows automated soldering and cleaning.

Positive detent mechanism for distinct feel and audible feedback.

Break-before-make contact timing with sliding contact mechanism.

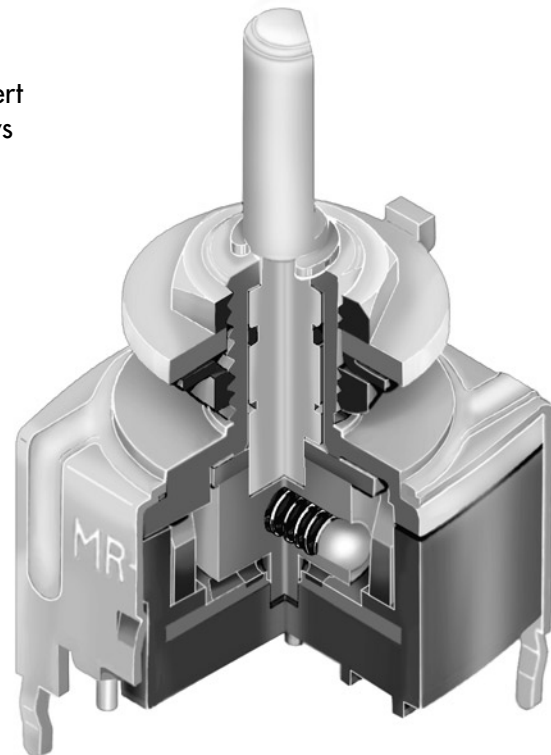
Metal bushing and frame/bracket provide durability.

Panel seal, achieved with use of optional exterior o-ring, conforms to IP67 of IEC60529 Standards.

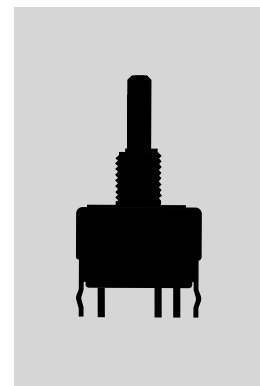
High contact reliability achieved by the self-cleaning contact mechanism.

.100" x .100" (2.54mm x 2.54mm) terminal spacing conforms to standard PC board grid spacing for straight and right angle mounting.

Insert molded terminals lock out flux and other contaminants.



Actual Size



TYPICAL SWITCH ORDERING EXAMPLE

MRB

1

2

B

A

Poles

|   |              |
|---|--------------|
| 1 | SPDT<br>SP3T |
| 2 | DPDT<br>DP3T |

Terminals

|   |                          |
|---|--------------------------|
| B | Straight with Bracket    |
| H | Right Angle with Bracket |

Knobs

|   |                    |
|---|--------------------|
| A | Plain Black        |
| B | Small Color Tipped |
| C | Large Color Tipped |

Colors

For Plain Knob

|         |       |
|---------|-------|
| No Code | Black |
|---------|-------|

For Color Tipped

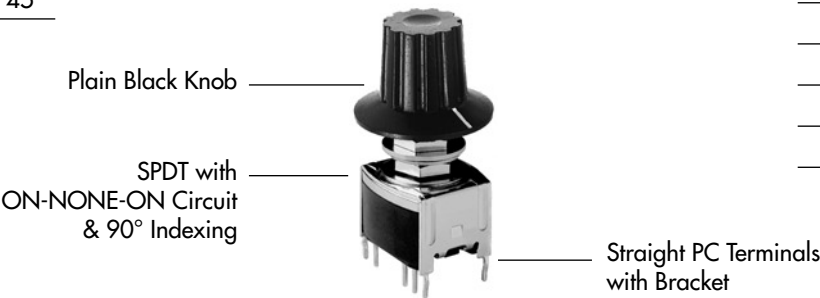
|   |        |
|---|--------|
| A | Black  |
| B | White  |
| C | Red    |
| E | Yellow |
| F | Green  |
| G | Blue   |
| H | Gray   |

Circuits & Indexing

|   |    |      |    |     |
|---|----|------|----|-----|
| 2 | ON | NONE | ON | 90° |
| 4 | ON | ON   | ON | 45° |

DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

MRB12B-A



POLES & CIRCUITS

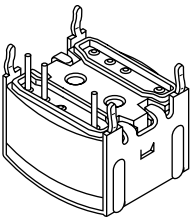
| Pole | Model | Actuator Positions |            |            | Connected Terminals |            |            | Throw & Schematics                                |
|------|-------|--------------------|------------|------------|---------------------|------------|------------|---------------------------------------------------|
|      |       | Position 1         | Position 2 | Position 3 | Position 1          | Position 2 | Position 3 | Note: Terminal numbers are not actually on switch |
| SP   | MRB12 | ON                 | NONE       | ON         | C1-1                | OPEN       | C1-2       | SPDT<br>                                          |
|      | MRB14 | ON                 | ON         | ON         | C1-1                | C1-2       | C1-3       | SP3T<br>                                          |
| DP   | MRB22 | ON                 | NONE       | ON         | C1-1 C2-4           | OPEN       | C1-2 C2-5  | DPDT<br>                                          |
|      | MRB24 | ON                 | ON         | ON         | C1-1 C2-4           | C1-2 C2-5  | C1-3 C2-6  | DP3T<br>                                          |

TERMINALS

B

Straight PC Terminals with Bracket

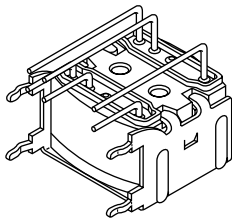
SPDT



H

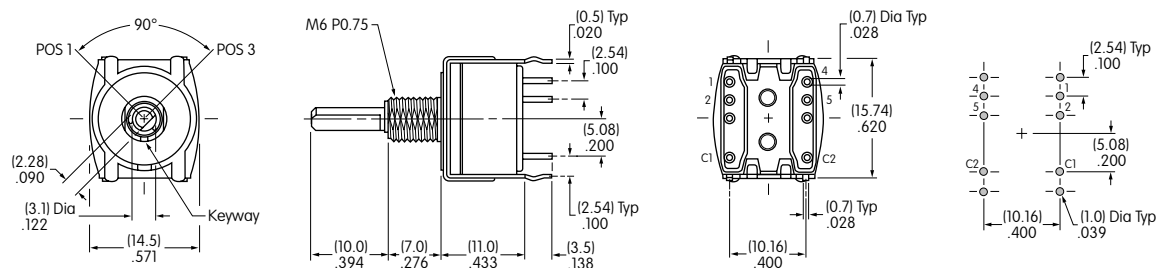
Right Angle PC Terminals with Bracket

DPDT



## TYPICAL SWITCH DIMENSIONS

### 90° Indexing • SPDT & DPDT • Straight PC

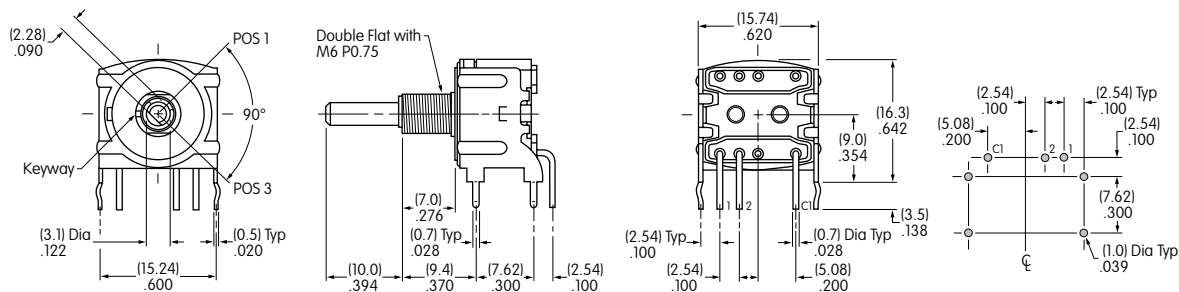


Actuator shown in Position 1

Single pole model does not have terminals 4, 5 & C2

**MRB12B**

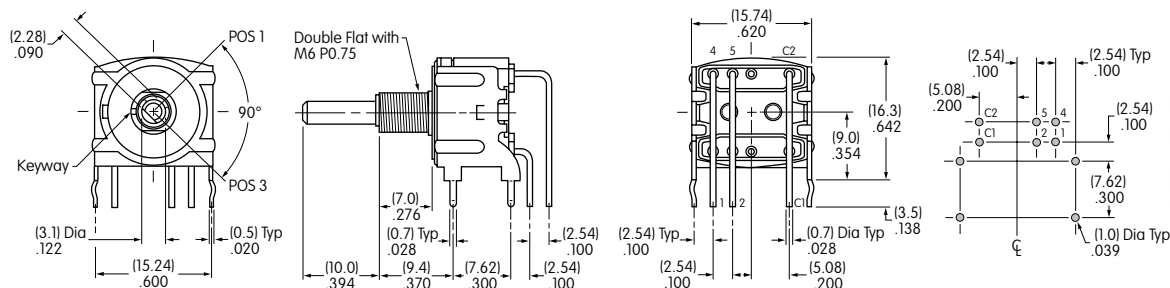
### 90° Indexing • SPDT • Right Angle PC



Actuator shown in Position 1

**MRB12H**

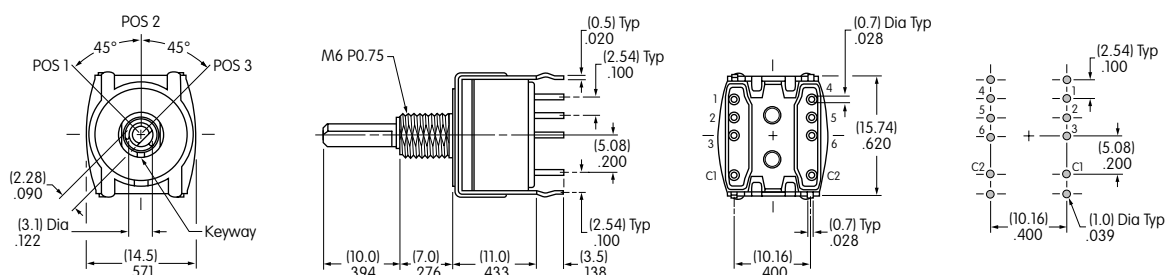
### 90° Indexing • DPDT • Right Angle PC



Actuator shown in Position 1

**MRB22H**

### 45° Indexing • SP3T & DP3T • Straight PC



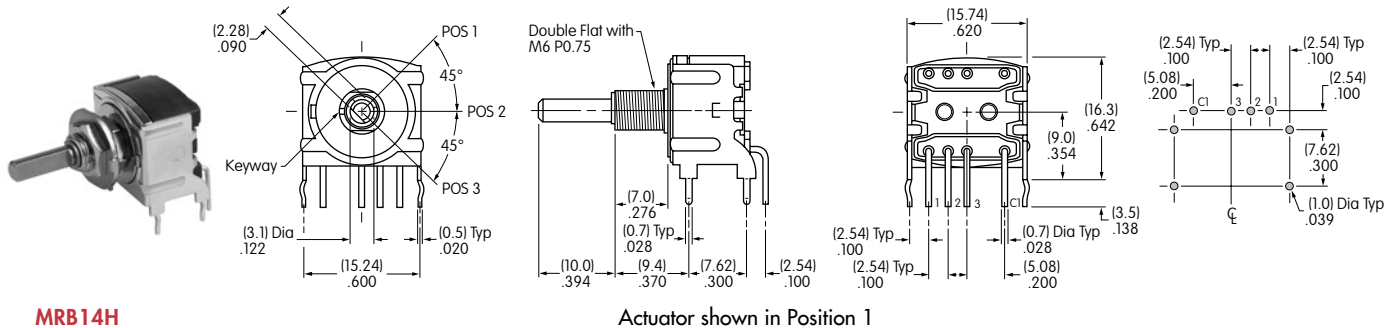
Actuator shown in Position 1

Single pole model does not have terminals 4, 5, 6 & C2

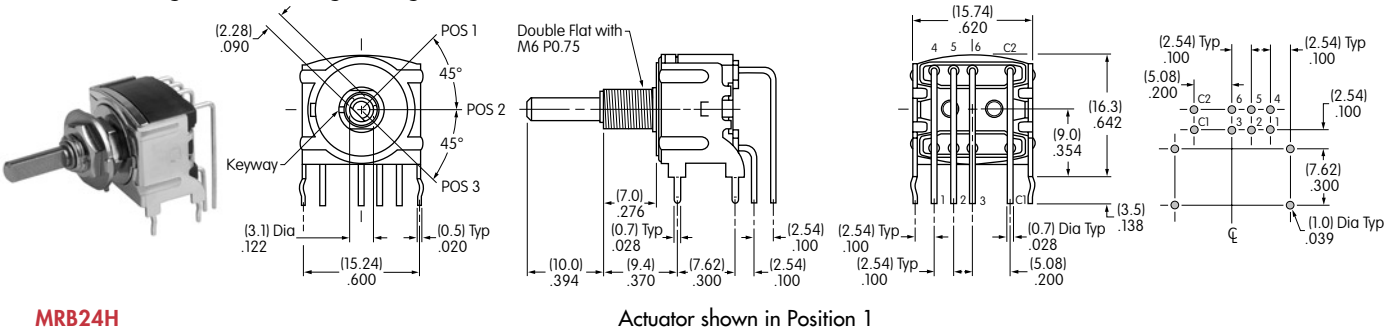
**MRB14B**

### TYPICAL SWITCH DIMENSIONS

#### 45° Indexing • SP3T • Right Angle PC

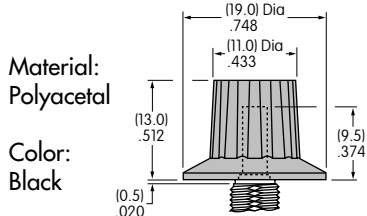


#### 45° Indexing • DP3T • Right Angle PC

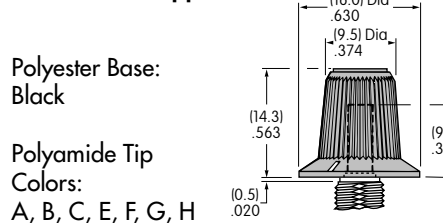


### KNOBS

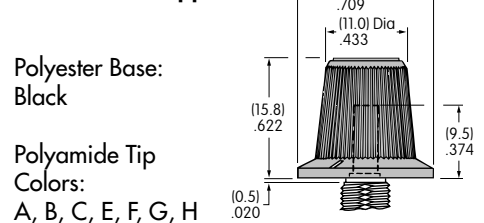
#### A AT433 Plain Black



#### B AT4103 Small Color Tipped

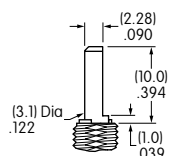


#### C AT4104 Large Color Tipped



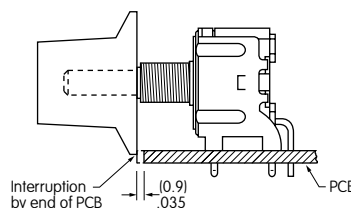
Color Codes: **A** Black **B** White **C** Red **E** Yellow **F** Green **G** Blue **H** Gray

#### Shaft Detail



#### Mounting Precaution for Cap Clearance on Right Angle Models

When mounting a right angle switch, a cap clearance of .035" (0.9mm) is recommended.



#### Standard Hardware Supplied

AT513M Hex Nut  
AT545 Locking Ring  
AT509 Lockwasher

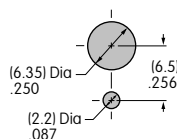
#### Optional Hardware

AT535 O-ring for Panel Seal

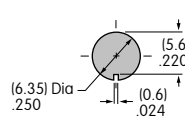
See Supplement for details

### PANEL CUTOUTS & MAXIMUM EFFECTIVE PANEL THICKNESS

With Standard Hardware  
.087" (2.2mm)



Without Locking Ring  
.118" (3.0mm)



Sealed Panel with 1 Hex Nut & 1 Rubber O-ring  
.165" (4.2mm)

