

# 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.

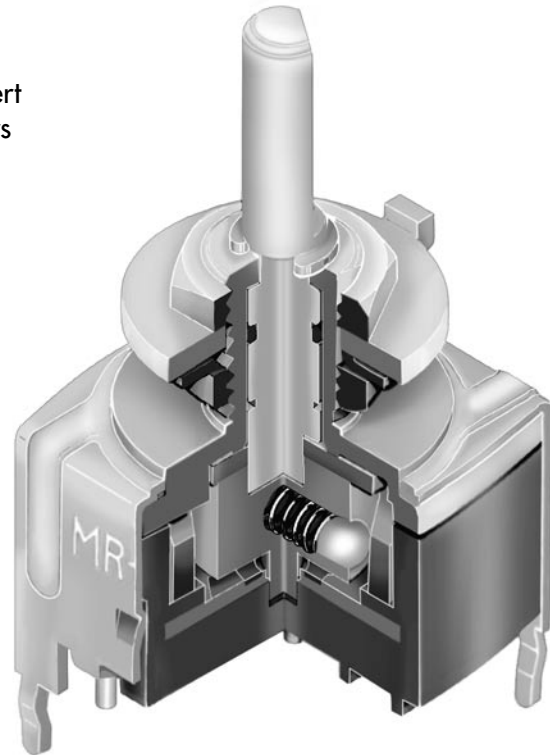
Metal bushing and frame/bracket provide durability.

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

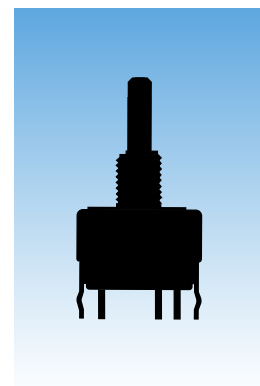
High contact reliability achieved by the self-cleaning contact mechanism.

.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



# 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)

## 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

**UL Recognition or CSA Certification:** 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.

### 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**

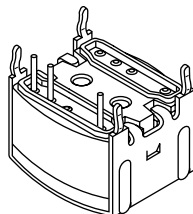
**MRB12B-A**

### POLES & CIRCUITS

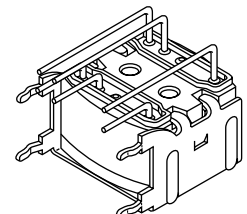
| Pole | Model | Actuator Positions |            |            | Connected Terminals |            |            | Throw & Schematics                                |
|------|-------|--------------------|------------|------------|---------------------|------------|------------|---|
|      |       | Position 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  |
|      | MRB14 | ON                 | ON         | ON         | C1-1                | C1-2       | C1-3       | SP3T  |
| DP   | MRB22 | ON                 | NONE       | ON         | C1-1 C2-4           | OPEN       | C1-2 C2-5  | DPDT  |
|      | MRB24 | ON                 | ON         | ON         | C1-1 C2-4           | C1-2 C2-5  | C1-3 C2-6  | DP3T  |

### TERMINALS

**B** Straight PC Terminals with Bracket

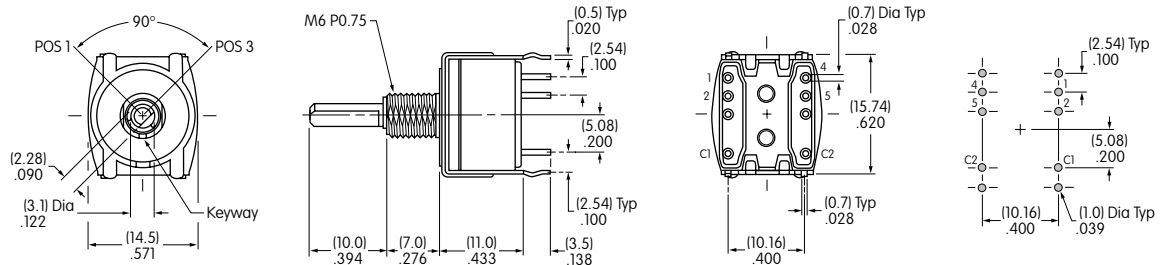


**H** Right Angle PC Terminals with Bracket



### TYPICAL SWITCH DIMENSIONS

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

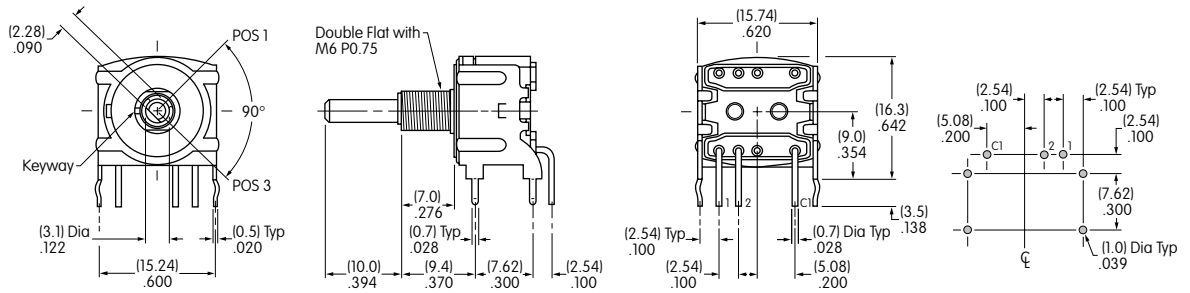


MRB12B

Actuator shown in Position 1

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

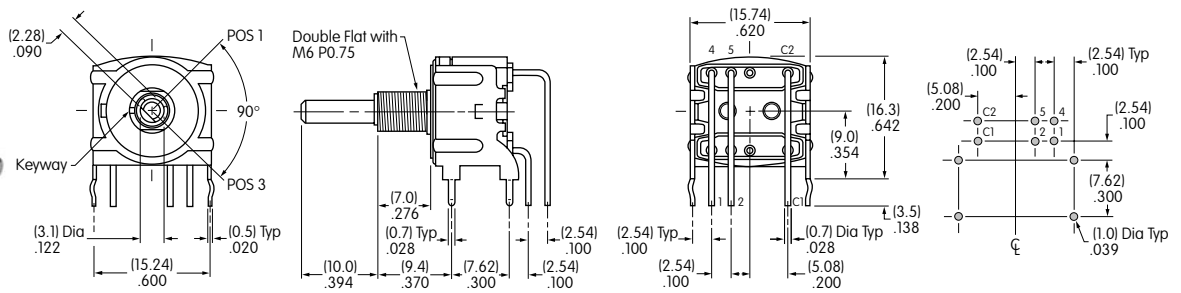
#### 90° Indexing • SPDT • Right Angle PC



MRB12H

Actuator shown in Position 1

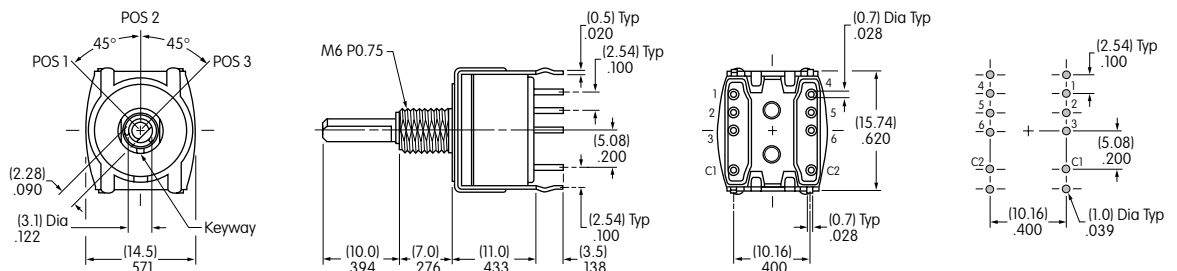
#### 90° Indexing • DPDT • Right Angle PC



MRB22H

Actuator shown in Position 1

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



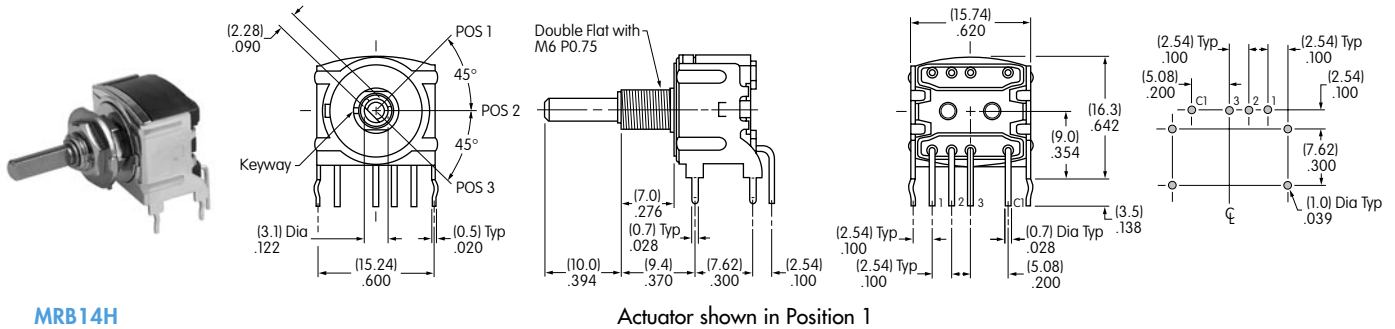
MRB14B

Actuator shown in Position 1

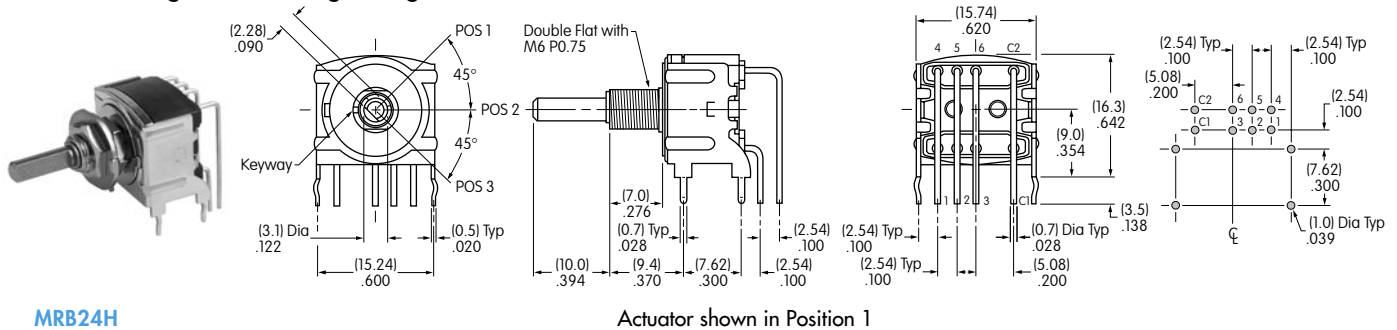
Single pole model does not have terminals 4, 5, 6 & C2

### TYPICAL SWITCH DIMENSIONS

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

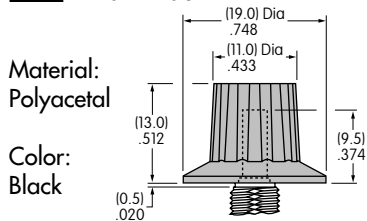


#### 45° Indexing • DP3T • Right Angle PC

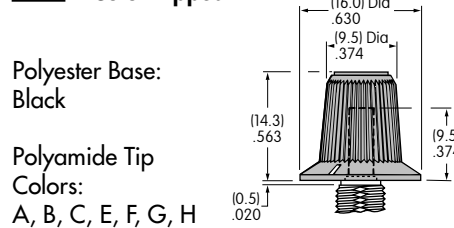


### KNOBS

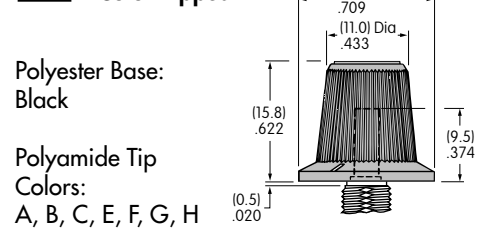
#### A AT433 Plain Black



#### B AT4103 Small Color Tipped

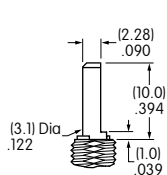


#### C AT4104 Large Color Tipped



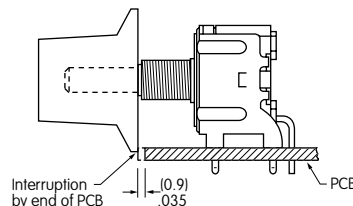
Color Codes: **A** Black   **B** White   **C** Red   **E** Yellow   **F** Green   **G** Blue   **H** Gray

#### 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  
AT507M Locking Ring  
AT509 Lockwasher

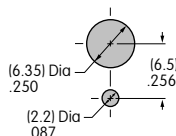
#### Optional Hardware

AT535 O-ring for Panel Seal

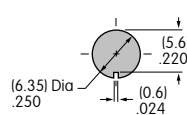
See Supplement for details

### PANEL CUTOUTS & MAXIMUM EFFECTIVE PANEL THICKNESS

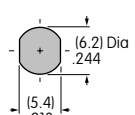
With Standard Hardware  
.087" (2.2mm)



Without Locking Ring  
.118" (3.0mm)



Sealed Panel with 2 Hex Nuts & 1 Rubber O-ring  
.165" (4.2mm)





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- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
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- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
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- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

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- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

**Телефон:** 8 (812) 309 58 32 (многоканальный)

**Факс:** 8 (812) 320-02-42

**Электронная почта:** [org@eplast1.ru](mailto:org@eplast1.ru)

**Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.