# 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/s²) 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.

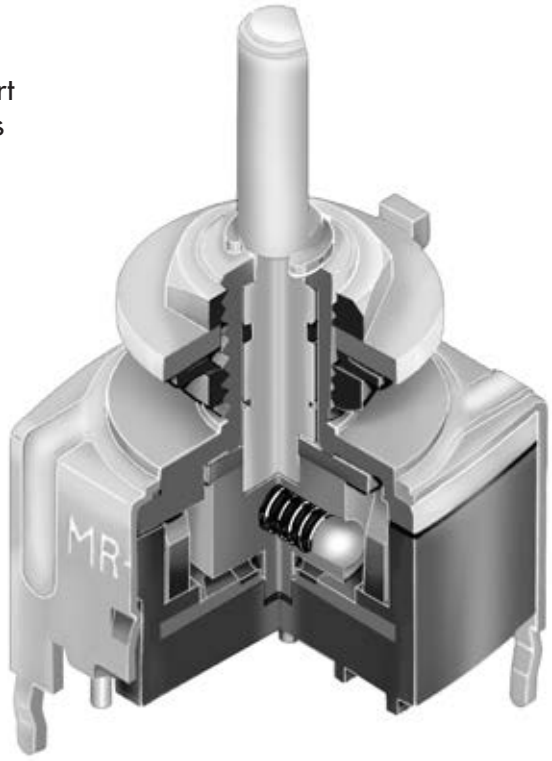
## Standards & Certifications

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.

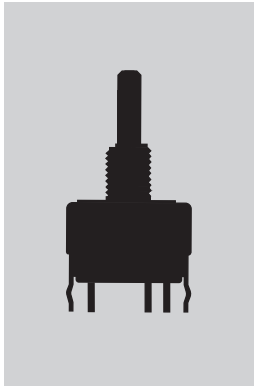
Panel seal, achieved with use of optional exterior o-ring, conforms to IP67 of IEC60529 Standards.

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 SP3T |
| 2 | DPDT 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**

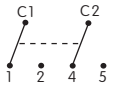
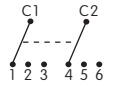
| | | | | |
|---|---|---|---|---|
| 2 | ON | NONE | ON | 90° |
| 4 | ON | ON | ON | 45° |

**DESCRIPTION FOR TYPICAL ORDERING EXAMPLE**

**MRB12B-A**



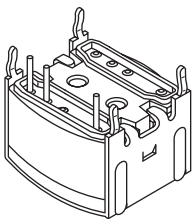

## POLES & CIRCUITS

| 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

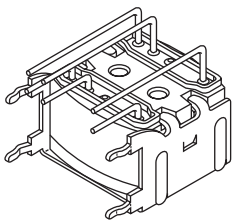
**B** **Straight PC Terminals with Bracket**

SPDT



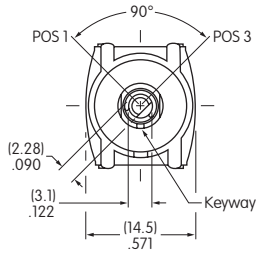
**H** **Right Angle PC Terminals with Bracket**

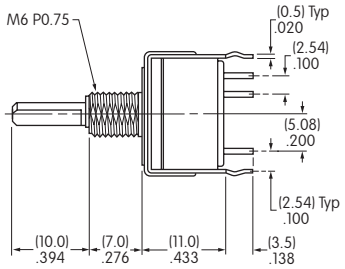
DPDT

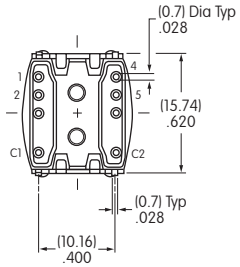


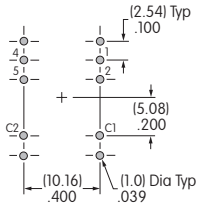
## TYPICAL SWITCH DIMENSIONS

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



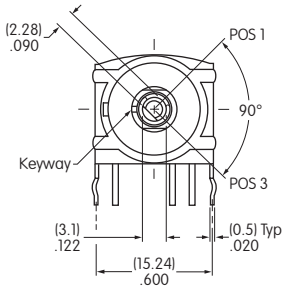


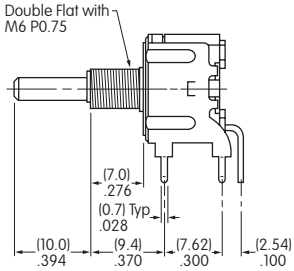

Actuator shown in Position 1

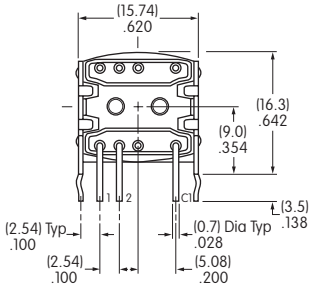
Single pole model does not have terminals 4, 5 & C2

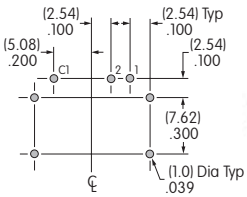
MRB12B

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



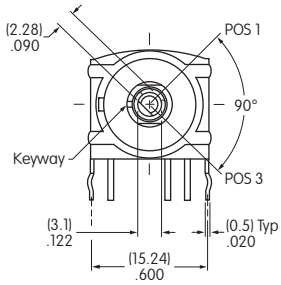



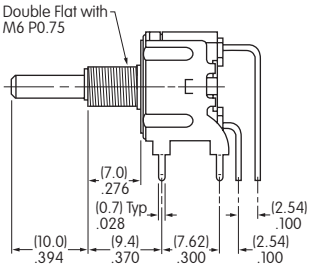


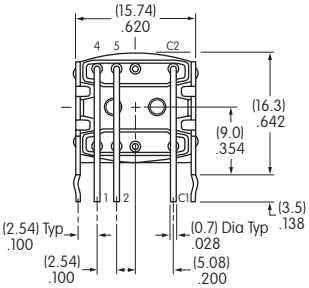

Actuator shown in Position 1

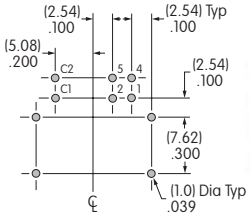
MRB12H

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



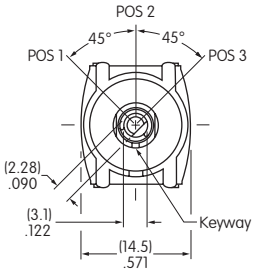



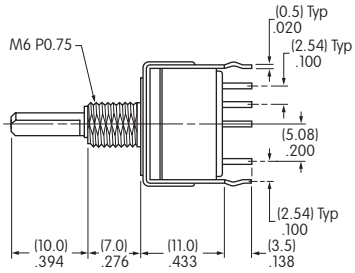


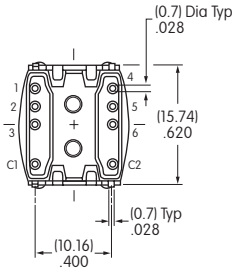

Actuator shown in Position 1

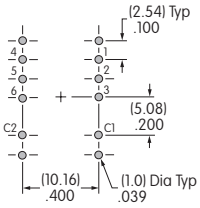
MRB22H

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





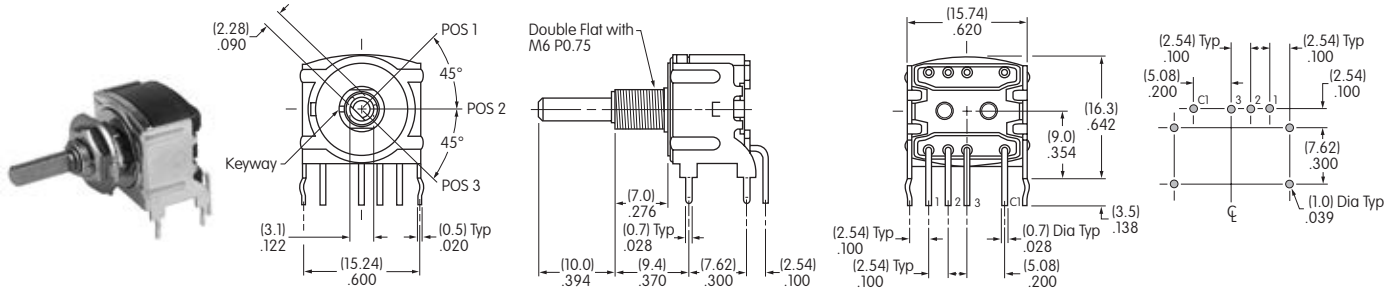

Actuator shown in Position 1

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

MRB14B

## TYPICAL SWITCH DIMENSIONS

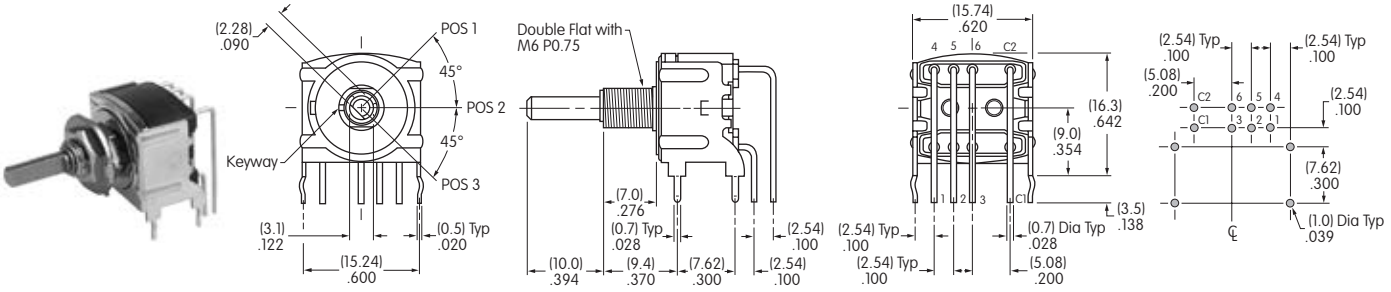
### 45° Indexing • SP3T • Right Angle PC




MRB14H

Actuator shown in Position 1

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




MRB24H

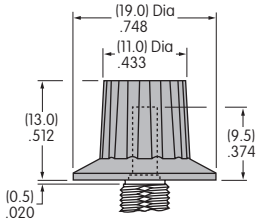
Actuator shown in Position 1

## KNOBS

**A** **AT433 Plain Black**

Material: Polyacetal

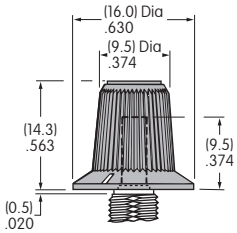
Color: Black




**B** **AT4103 Small Color Tipped**

Polyester Base: Black

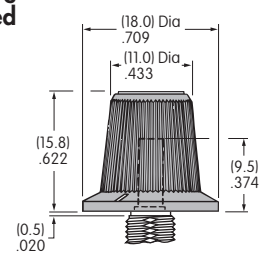
Polyamide Tip Colors: A, B, C, E, F, G, H




**C** **AT4104 Large Color Tipped**

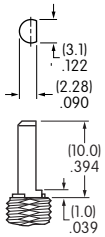
Polyester Base: Black

Polyamide Tip Colors: A, B, C, E, F, G, H



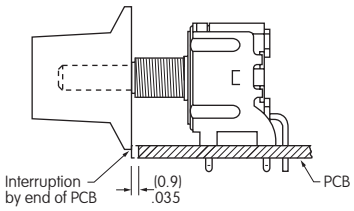

**Color Codes:** A Black · B White · C Red · E Yellow · F Green · G Blue · H Gray

**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.

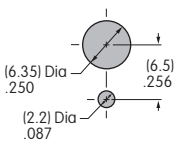



**Standard Hardware Supplied**
AT513M Hex Nut
AT545 Locking Ring
AT509 Lockwasher
**Optional Hardware**
AT535 O-ring for Panel Seal

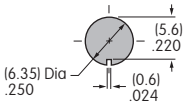
See Supplement for details

## 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)

