

Distinctive Characteristics

Low profile body of MRF model accommodates space limitations required for PCB mounting. Behind panel body depths ranging from .323" to .669" (8.2mm to 17.0mm) for MRA and MRK bushing mount models.

Positive detent mechanism for distinct feel and audible feedback.

Metal bushing and housing construction increases durability.

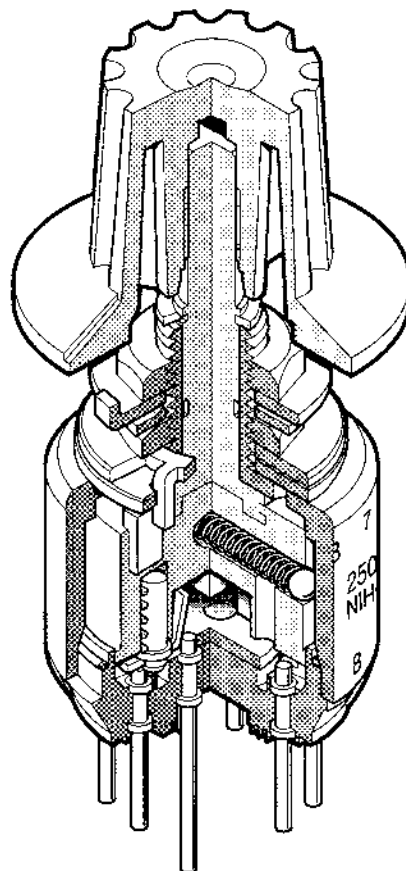
Adjustable stopper plate allows 2–12 position settings.

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

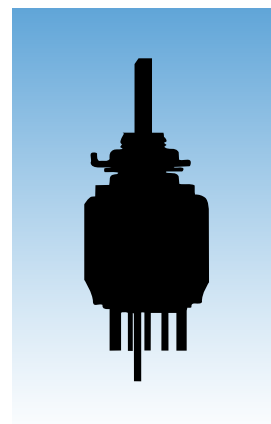
Break-before-make contact timing with sliding contacts in MRA and rotary contactor disk in MRF and MRK models.

Interior housing seal and molded-in PC terminals, plus shaft rubber o-ring on MRF and MRK and polyamide cover on MRF model, allow cleaning after automated soldering.

Exterior rubber washer and double flatted bushing on MRA and MRK give protection in splashproof applications.



Actual Size



General Specifications

Electrical Capacity (Resistive Load)

For MRA: 250mA @ 125V AC or 48V DC
For MRF or MRK: 0.4VA maximum @ 28V AC/DC maximum
 (Applicable Range 0.1mA ~ 0.1A @ 20mV ~ 28V)
 Note: Find additional explanation of operating range in Supplement section.

Other Ratings

Contact Resistance: 10 milliohms maximum for MRA; 50 milliohms maximum for MRF & MRK
Insulation Resistance: 100 megohms minimum @ 500V DC
Dielectric Strength: 1,000V AC minimum for 1 minute minimum for MRA
 500V AC minimum for 1 minute minimum for MRF & MRK
Mechanical Life: 30,000 operations minimum
Electrical Life: 10,000 operations minimum
Range of Operating Torque: 0.02 ~ 0.07Nm for MRA; 0.005 ~ 0.02Nm for MRF & MRK
Contact Timing: Nonshorting (break-before-make)
 MRA – self-cleaning, sliding contact; MRF & MRK – self-cleaning, rotary contactor disk
Indexing: 30°

Materials & Finishes

Shaft: Brass with nickel plating
Stopper Plate: Steel with zinc plating for MRA & MRK; polyamide cover with stopper for MRF
Bushing/Housing: Zinc alloy with zinc plating
Movable Contacts: Copper with silver plating for MRA; phosphor bronze with gold plating for MRF & MRK
End Contacts & Terminals: Brass with silver plating for MRA; phosphor bronze with gold plating for MRF & MRK
Common Contacts & Terminals: Brass with silver plating for MRA; phosphor bronze with gold plating for MRF & MRK
Base: Diallyl phthalate for MRA; fiberglass reinforced polyamide for MRF & MRK

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 3 shocks in each direction)

Installation

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

Processing

Soldering Time & Temperature: Wave Soldering for MRA: See Profile A in Supplement section;
 Wave Soldering for MRF & MRK: 5 seconds maximum @ 270°C maximum.
 Manual Soldering for MRA: 4 seconds maximum @ 410°C maximum;
 Manual Soldering for MRF & MRK: 3 seconds maximum @ 350°C maximum.
Cleaning: Automated cleaning recommended. Stopper plate, as well as washers for MRA & MRK, must be in place to maintain automated cleaning. See Cleaning specifications in Supplement section.

Standards & Certifications

UL Recognition or CSA Certification: MRA, MRF, & MRK models 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

MR

A

206

A



ACTUATORS & TERMINALS

A	Shaft Actuated with PC Terminals
F	Low Profile Screwdriver Actuated with PC Terminals
K	Low Profile Shaft Actuated with PC Terminals

POLES & CIRCUITS

112	SP with 2-12 Positions
206	DP with 2-6 Positions
403	4P with 2-3 Positions

KNOBS

A	Plain Black
B	Small Color Tipped
C	Large Color Tipped

COLORS

For Plain Knob

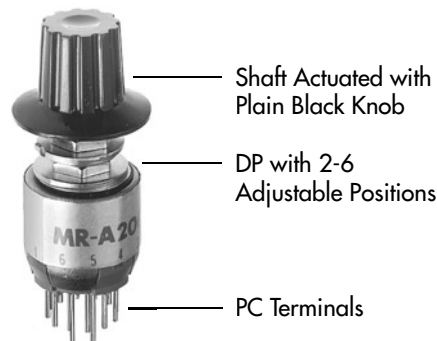
No Code	Black
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For Color Tipped

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

DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

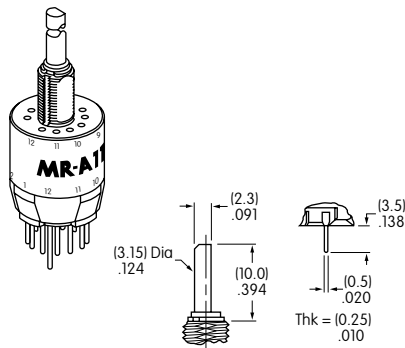
MRA206-A



ACTUATORS & TERMINALS

A

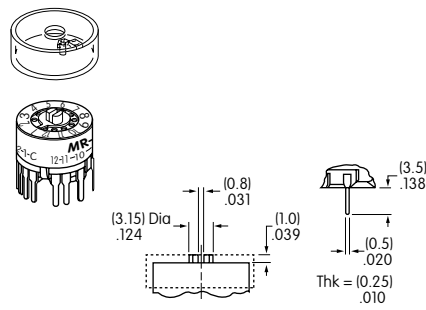
Shaft Actuated with PC Terminals



Shaft Terminal

F

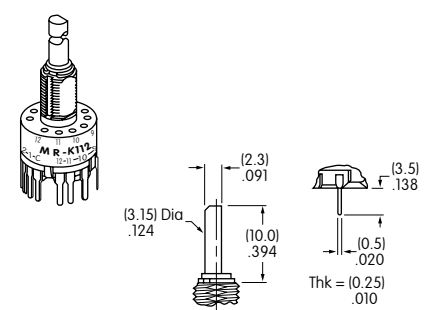
Low Profile Screwdriver Actuated with PC Terminals



Slotted for Screwdriver Terminal

K

Low Profile Shaft Actuated with PC Terminals



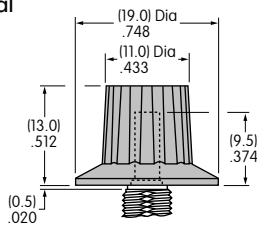
Shaft Terminal

KNOBS

A AT433 Plain Black

Material:
Polyacetal

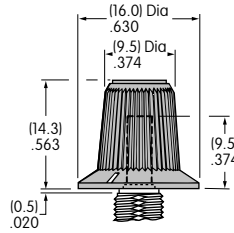
Color:
Black
only



B AT4103 Small Color Tipped

Base Material:
Polyester
Base Color:
Black

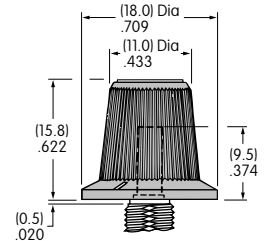
Polyamide Tip
Colors:
A, B, C, E, F, G, H



C AT4104 Large Color Tipped

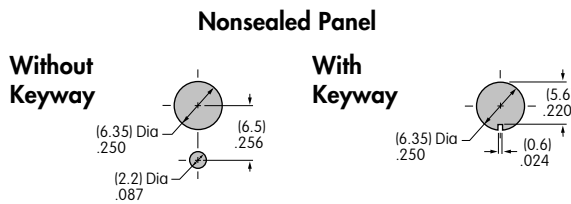
Base Material:
Polyester
Base Color:
Black

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

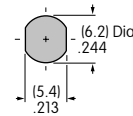


Color Codes: **A** Black **B** White **C** Red **E** Yellow **F** Green **G** Blue **H** Gray

PANEL CUTOUTS & MAXIMUM EFFECTIVE PANEL THICKNESS



Sealed Panel



With Standard Hardware on Nonsealed Panel:
MRA .067" (1.7mm) MRK .087" (2.2mm)

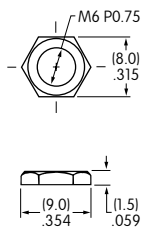
Without Locking Ring on Nonsealed Panel:
MRA .098" (2.5mm) MRK .118" (3.0mm)

With Standard Hardware on Sealed Panel:
MRK .106" (2.7mm)

STANDARD MOUNTING HARDWARE

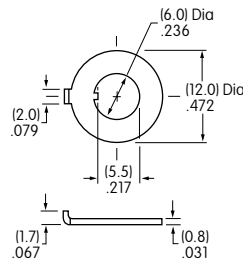
AT513M Metric Hexagon Nut

Material:
Brass, nickel plated
1 for MRA; 1 for MRK



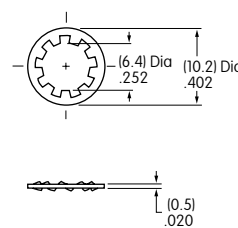
AT507M Metric Locking Ring

Material:
Steel, chromate over zinc plating
1 for MRA; 1 for MRK



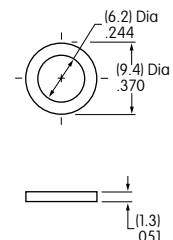
AT509 Lockwasher

Material:
Steel, chromate over zinc plating
1 for MRA; 1 for MRK



AT535 Rubber Ring

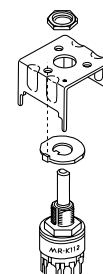
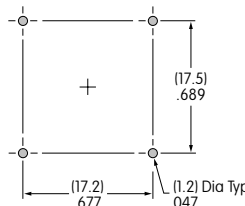
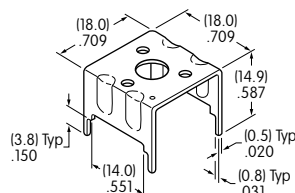
Material:
Nitrile butadiene rubber
1 for MRK



OPTIONAL SUPPORT BRACKET

AT543 Support Bracket for MRK

Material:
Steel with tin plating



A support bracket is needed when the MRK is mounted only to a PC board and does not have the bushing through a panel.