M Series Half-inch Rotary Switches



Features/Benefits

- Multi-pole and multi-positions
- Panel and PCB mounting
- Stainless steel actuator
- Non-shorting contacts
- RoHS Compliant

Typical Applications

- Test equipment
- Industrial equipment
- Medical equipment



Specifications

CONTACT RATING: Q contact material: Carry-6 AMPS continuous. Switch-250 mA max. @ 125 V AC or 28 DC. Non-shorting contacts standard. See page L-16 for additional ratings.

ELECTRICAL LIFE: 10,000 make-and-break cycles at 150 mA, 125 V AC or 28 DC.

CONTACT RESISTANCE: Below 20 m Ω typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts. INSULATION RESISTANCE: $10^{10}~\Omega$ min.

DIELECTRIC STRENGTH: 600 Vrms min. @ sea level.

OPERATING & STORAGE TEMPERATURE: -30°C to 85°C.

OPERATING TORQUE: 4-7 ounces-inches typ. initial.

SOLDERABILITY: Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).

NOTE: Specifications and materials listed above are for switches with standard options For information on specific and custom switches, consult Customer Service Center.

Materials

HOUSING AND BUSHING: Zinc alloy, bright zinc plated, with clear chromate finish.

ACTUATOR: Zinc alloy, nickel plated or stainless steel.

BASE: Diallylphthalate (DAP) or melamine phenolic, with insert molded terminals.

ROTOR: Glass filled polyester (UL 94V-0).

MOVABLE CONTACTS:

Non-shorting: Q contact material: Copper alloy, silver plated. See page L-16 for additional contact materials.

STATIONARY CONTACT & ALL TERMINALS: Q contact material: Copper alloy, silver plated. All terminals insert molded. All terminals present regardless of number of switch positions. See page L-16 for additional contact materials.

CONTACT SPRING: Music wire, phosphate coated.

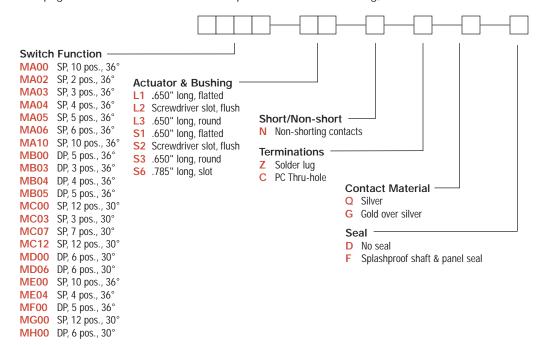
STOP PIN: Stainless steel.

STOP RING: Brass.

HARDWARE: Nut: Brass, nickel plated; Lockwasher: Steel, nickel plated.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages L-14 thru L-18. For additional options not shown in catalog, consult Customer Service Center.

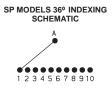


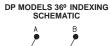


M Series Half-inch Rotary Switches

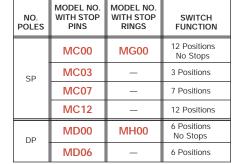
SWITCH FUNCTION ----

36° INDEXING					
NO. POLES	MODEL NO. WITH STOP PINS	MODEL NO. WITH STOP RINGS	SWITCH FUNCTION		
SP	MA00	ME00	10 Positions No Stops		
	MA02	_	2 Positions		
	MA03	_	3 Positions		
	MA04	ME04	4 Positions		
	MA05	_	5 Positions		
	MA06	_	6 Positions		
	MA10	_	10 Positions		
DP	MB00	MF00	5 Positions No Stops		
	MB03		3 Positions		
	MB04	_	4 Positions		
	MB05	_	5 Positions		



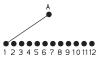




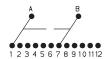


30° INDEXING

SP MODELS 30° INDEXING

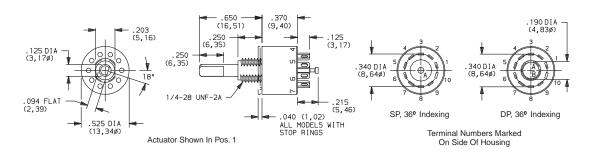


DP MODELS 30° INDEXING SCHEMATIC

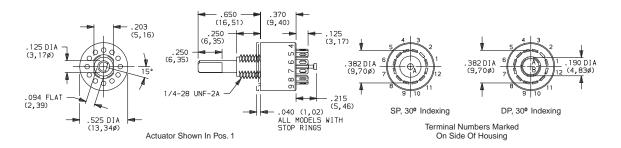


All models with all options when ordered with S1-SB stainless steel actuator options.

NOTE: Number of positions or stops preset at factory (NOTE: MX00 models have full 360 rotation with no stops. Stop pins or stop rings supplied for user-selectable stops, see above). All terminals present regardless of number of switch positions. Hardware is available separately, see section "Technical Data and Additional Hardware".



Part number shown: MA00L1NZQD



Part number shown: MC00L1NZQD

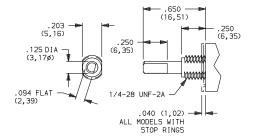


Specifications and dimensions subject to change

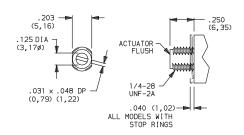


ACTUATOR (ZINC ALLOY)

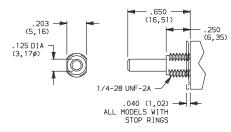
L1 .650" LONG, FLATTED



L2 SCREWDRIVER SLOT, FLUSH



L3 .650" LONG, ROUND

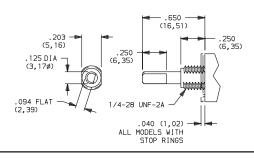


All actuators shown in pos. 1

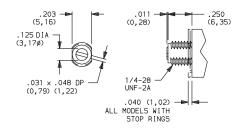
ACTUATOR (STAINLESS STEEL)



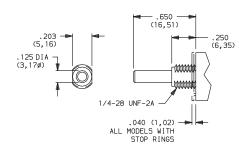
\$1 .650" LONG, FLATTED



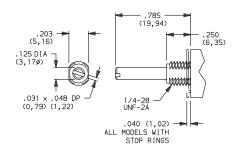
S2 SCREWDRIVER SLOT, FLUSH



\$3 .650" LONG, ROUND



S6 .785" LONG, SLOT



All actuators shown in pos. 1

All models UL/CSA when ordered with stainless steel actuators.





M Series Half-inch Rotary Switches

SHORTING/NON-SHORTING CONTACTS

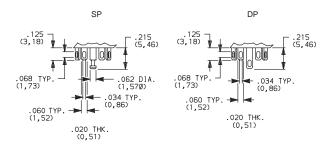
N

NON-SHORTING CONTACTS

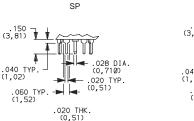
Break-before-make

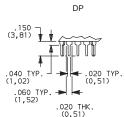
TERMINATIONS ----

Z SOLDER LUG

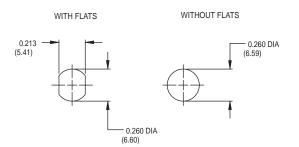


C PC THRU-HOLE

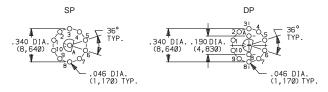




PANEL MOUNTING

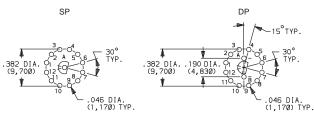


PC MOUNTING 36° INDEXING



Hardware: All models, one mounting nut and lockwasher supplied standard. MA00 thru MD00 models: two stop pins and adhesive mylar washer supplied. ME00 thru MH00 models: two stop rings supplied. Hardware is available separately, see section "Technical Data and Additional Hardware"





Actuators and schematics shown in pos. 1.

$\label{eq:NOTE:Q} \textbf{Q} \ \text{contact material standard. Terminal numbers marked on side of housing.} \\ \textbf{All terminals insert molded. All terminals present regardless of number of switch positions.} \\$

CONTACT MATERIAL

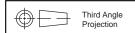
OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATING	
Q	SILVER 1, 2	SILVER 2	POWER	CARRY: 6 AMPS CONTINUOUS. SWITCH: 250 mA @ 125 V AC or 28 V DC.
G	GOLD OVER SILVER 3, 4	GOLD ⁴	LOW LEVEL/DRY CIRCUIT OR POWER	0.4 VA MAX. @ 20 V AC or DC MAX. or, CARRY: 6 AMPS CONTINUOUS. SWITCH: 250 mA @ 125 V AC or 28 V DC.

^{*} Note: See Technical Data section of this catalog for RoHS compliant and compatible definition and specifications

 $^2\ \text{STATIONARY}$ CONTACTS & ALL TERMINALS: Copper alloy, silver plated.

NOTE: Any models supplied with Q, G contact material are RoHS compliant.

All models $_{\odot} \mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mbox{\ensuremath{\,^{\circ}}}\mb$



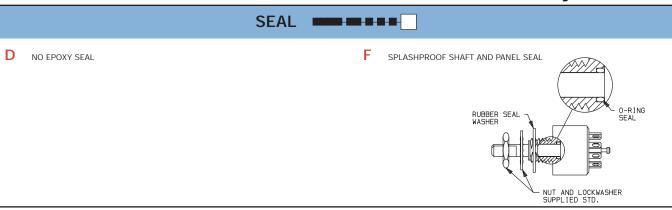


¹ MOVABLE CONTACTS: Non-shorting: Copper alloy, silver plated. Shorting: Zinc alloy, silver plated.

³ MOVABLE CONTACTS: Non-shorting: Copper alloy, with gold plate over nickel plate, over silver plate. Shorting: Zinc alloy, with gold plate

 $^{^4}$ STATIONARY CONTACTS & ALL TERMINALS: Copper alloy, with gold plate over nickel plate over silver plate.

M Series Half-inch Rotary Switches



Setting Stops With Stop Pins

MA00, MB00, MC00 & MD00 Models Only:

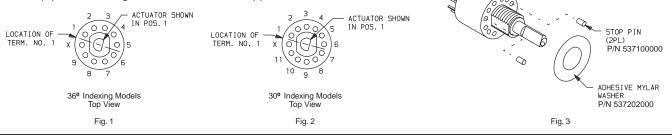
The number of switch positions or stops are adjustable by means of stop pins provided with each switch. Switches are normally shipped with stop pins and hardware in bulk, not installed. Without stop pins, switches have full 360° rotation and no stops. Note that all two pole models begin to repeat when actuated 180° or more.

To set stops, refer to figures 1 & 2. Orient switch so that terminal no. 1 is as shown. Turn actuator to position 1, using flats on bushing and terminal no. 1 as reference. Install CCW stop pin in hole designated 'X'. Install second stop pin in hole number corresponding to the number of positions desired. Note that two pole models will begin to repeat when actuated 180° or more. To retain stop pins, use adhesive mylar washer included; see figure 3.

All models except MX00 models have number of switch positions or stops pre-set at factory and are not adjustable.

Hardware:

Two stop pins, mounting nut, and lockwasher supplied standard.



Setting Stops With Stop Rings

ME00, MF00, MG00 & MH00 Models Only:

The number of switch positions or stops are adjustable by means of stop rings provided with each switch. These models are normally shipped with stop rings and hardware in bulk, not installed. Without stop rings, switches have full 360° rotation and no stops. Note that all two pole models begin to repeat when actuated 180° or more.

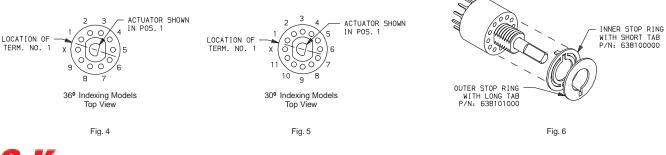
To set stops refer to figures 4 & 5. Orient switch so that terminal no. 1 is as shown. Turn actuator to pos. 1 using flats on bushing and terminal no. 1 as reference. See figure 6 and install inner stop ring with short tab in hole designated 'X'. <u>Install outer stop ring with long tab</u> in hole number corresponding to the number of positions desired. Note that all two pole models begin to repeat when actuated 180° or more. Use mounting nut and lockwasher to retain stop rings.

All MEXX, MFXX, MGXX & MHXX Models (Except MX00 models):

Number of switch positions or stops are preset at factory, but are user adjustable.

Hardware:

Two stop rings, mounting nut and lockwasher supplied standard.





Mouser Electronics

Authorized Distributor

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C&K Components:

```
        MC05L1NCQD
        MA05L1NZQD
        MA00L3NZQD
        MG00L1NCQD
        MA00L1NCQD
        MF00L1NZQD
        MB00S2NZGF

        MC00L1NCQD
        MA04S1NZQF
        MA05S1NZGF
        MA05L2NCQD
        MB03L1NZQF
        MB05S1NZQD
        MB03S3NZQF

        MB03L1NZQD
        MA04S6NCGD
        ME00L1NCQD
        MB00L1NZQD
        MD00L1NZQD
        MH00L1NZQD
        MA00L1NZQD

        ME00L1NZQD
        MB00L1NCQD
        MA00L1NCGF
        MA00L1NCQF
        MA00L1NZQD
        MA00L2NCQD
        MA00L3NCQD

        MA00L3NCQD
        MA00L3NZQD
        MA00S1NCQD
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        MA04S1NZQD
        MA04S
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