

C&K M Series Half-inch Rotary Switches

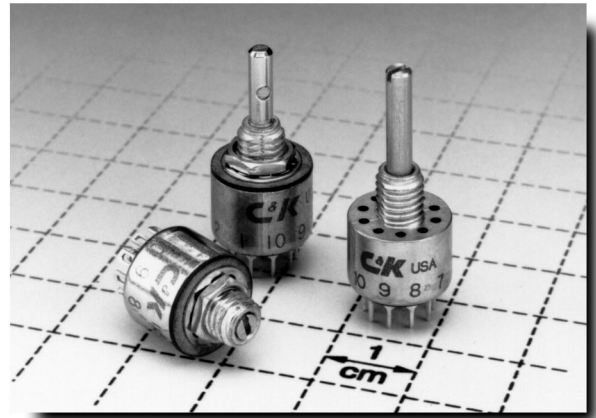


Features/Benefits

- Multi-pole and multi-positions
- Panel and PCB mounting
- Stainless steel actuator
- Shorting and non-shorting contacts

Typical Applications

- Test equipment
- Industrial equipment
- Medical equipment



Rotary

Build-A-Switch

Our easy Build-A-Switch concept allows you to mix and match options to create the switch you need. Below is a complete listing of options shown in catalog. To order, simply select desired option from each category and place in the appropriate box. Switches with standard options are shown on pages I-12 and I-13. Available options are shown and described on pages I-13 thru I-16. For additional options not shown in catalog, consult Customer Service Center.

Typical Example: M A 0 0 — L 1 — N — Z — Q — D

Switch Function

- | | |
|-------------------------------------|------------------------------|
| MA00 (STD.) SP, 10 pos., 36° | MD04 DP, 4 pos., 30° |
| MA02 SP, 2 pos., 36° | MD05 DP, 5 pos., 30° |
| MA03 SP, 3 pos., 36° | MD06 DP, 6 pos., 30° |
| MA04 SP, 4 pos., 36° | ME00 SP, 10 pos., 36° |
| MA05 SP, 5 pos., 36° | ME02 SP, 2 pos., 36° |
| MA06 SP, 6 pos., 36° | ME03 SP, 3 pos., 36° |
| MA07 SP, 7 pos., 36° | ME04 SP, 4 pos., 36° |
| MA08 SP, 8 pos., 36° | ME05 SP, 5 pos., 36° |
| MA09 SP, 9 pos., 36° | ME10 SP, 10 pos., 36° |
| MA10 SP, 10 pos., 36° | MF00 DP, 5 pos., 36° |
| MB00 DP, 5 pos., 36° | MF02 DP, 2 pos., 36° |
| MB02 DP, 2 pos., 36° | MF03 DP, 3 pos., 36° |
| MB03 DP, 3 pos., 36° | MF04 DP, 4 pos., 36° |
| MB04 DP, 4 pos., 36° | MF05 DP, 5 pos., 36° |
| MB05 DP, 5 pos., 36° | MG00 SP, 12 pos., 30° |
| MC00 SP, 12 pos., 30° | MG02 SP, 2 pos., 30° |
| MC02 SP, 2 pos., 30° | MG05 SP, 5 pos., 30° |
| MC03 SP, 3 pos., 30° | MG06 SP, 6 pos., 30° |
| MC04 SP, 4 pos., 30° | MG12 SP, 12 pos., 30° |
| MC05 SP, 5 pos., 30° | MH00 DP, 6 pos., 30° |
| MC06 SP, 6 pos., 30° | MH03 DP, 3 pos., 30° |
| MC07 SP, 7 pos., 30° | MH04 DP, 4 pos., 30° |
| MC11 SP, 11 pos., 30° | MH06 DP, 6 pos., 30° |
| MC12 SP, 12 pos., 30° | |
| MD00 DP, 6 pos., 30° | |
| MD03 DP, 3 pos., 30° | |

Actuator & Bushing

- L1** (STD.) .650" long, flatted
- L2** Screwdriver slot, flush
- L3** .650" long, round
- S1** .650" long, flatted
- S2** Screwdriver slot, flush
- S3** .650" long, round
- S4** .785" long, flatted
- S5** .970" long, flatted
- S6** .785" long, slot
- S7** .970" long, slot
- S8** .785" long, round
- S9** .970" long, round
- SA** 1.750" long, round
- SB** 1.500" long, round

Short/Non-short

- N** (STD.) Non-shorting contacts
- S** Shorting contacts

Terminations

- Z** (STD.) Solder lug
- C** PC Thru-hole

Contact Material

- Q** (STD.) Silver
- G** Gold

Seal

- D** (STD.) No seal
- F** Splashproof shaft & panel seal

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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 I-15 for additional ratings.

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

CONTACT RESISTANCE: Below 20 milliohms typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE: 10¹⁰ ohms min.

DIELECTRIC STRENGTH: 600 V RMS min. @ sea level.

OPERATING TEMPERATURE: -30°C to 85°C.

STOP STRENGTH: 7.5 pound-inches min.

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 general specifications 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: Diallyl phthalate (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.

Shorting: Q contact material: Zinc alloy, silver plated. See page I-15 for additional contact materials.

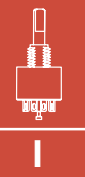
STATIONARY CONTACT & ALL TERMINALS: Q contact material: Copper alloy, silver plated. All terminals insert molded. All terminals present regardless of number of switch positions. See page I-15 for additional contact materials.

CONTACT SPRING: Music wire, phosphate coated.

STOP PIN: Stainless steel.


STOP RING: Brass.

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

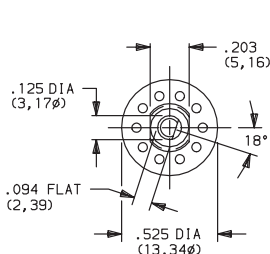


Rotary

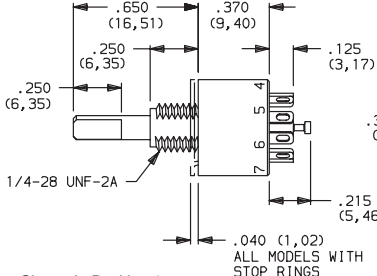
SWITCHES WITH STANDARD OPTIONS



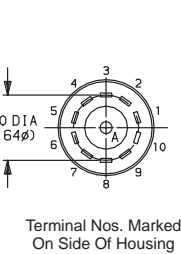
MA00L1NZQD
SP



.125 D1A (3, 17φ)
.094 FLAT (2, 39)
.525 D1A (13, 34φ)
18°




.650 (16, 51)
.370 (9, 40)
.250 (6, 35)
1/4-28 UNF-2A
.125 (3, 17)
.215 (5, 46)
.040 (1, 02) ALL MODELS WITH STOP RINGS



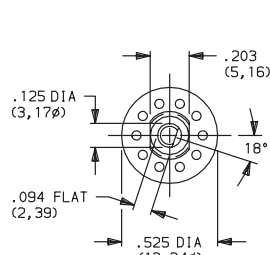
.340 D1A (8, 64φ)
Terminal Nos. Marked On Side Of Housing

PART NUMBER	FUNCTION	INDEXING
MA00L1NZQD	SP	36°

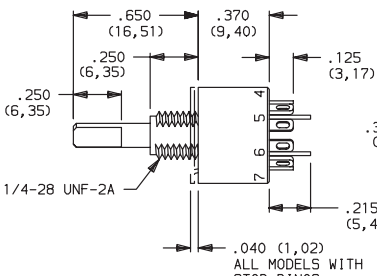
NOTE: For panel mounting information, see page I-15.



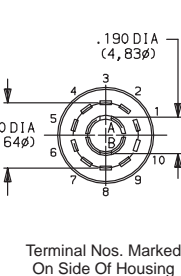
MB00L1NZQD
DP



.125 D1A (3, 17φ)
.094 FLAT (2, 39)
.525 D1A (13, 34φ)
18°




.650 (16, 51)
.370 (9, 40)
.250 (6, 35)
1/4-28 UNF-2A
.125 (3, 17)
.215 (5, 46)
.040 (1, 02) ALL MODELS WITH STOP RINGS



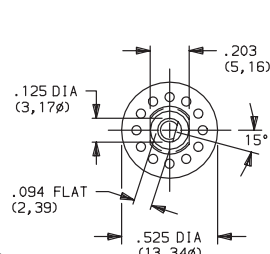
.190 D1A (4, 83φ)
.340 D1A (8, 64φ)
Terminal Nos. Marked On Side Of Housing

PART NUMBER	FUNCTION	INDEXING
MB00L1NZQD	DP	36°

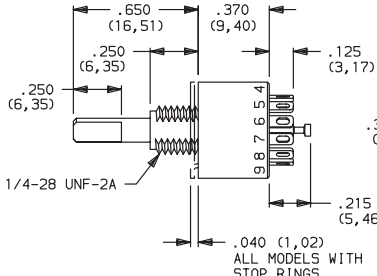
NOTE: For panel mounting information, see page I-15.



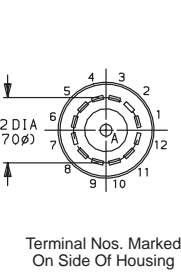
MC00L1NZQD
SP



.125 D1A (3, 17φ)
.094 FLAT (2, 39)
.525 D1A (13, 34φ)
15°



.650 (16, 51)
.370 (9, 40)
.250 (6, 35)
1/4-28 UNF-2A
.125 (3, 17)
.215 (5, 46)
.040 (1, 02) ALL MODELS WITH STOP RINGS



.382 D1A (9, 70φ)
Terminal Nos. Marked On Side Of Housing

PART NUMBER	FUNCTION	INDEXING
MC00L1NZQD	SP	30°

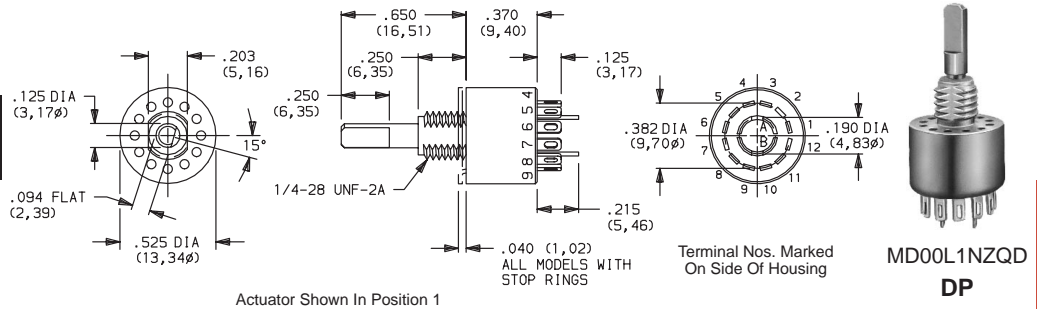
NOTE: For panel mounting information, see page I-15.

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SWITCHES WITH STANDARD OPTIONS

PART NUMBER	FUNCTION	INDEXING
MD00L1NZQD	DP	30°

NOTE: For panel mounting information, see page I-15.



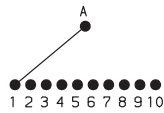
Actuator Shown In Position 1

MD00L1NZQD
DP

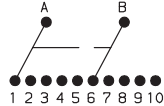
SWITCH FUNCTION

36° INDEXING			
NO. POLES	MODEL NO. WITH STOP PINS	MODEL NO. WITH STOP RINGS	SWITCH FUNCTION
SP	MA00	ME00	10 Positions No Stops
	MA02	ME02	2 Positions
	MA03	ME03	3 Positions
	MA04	ME04	4 Positions
	MA05	ME05	5 Positions
	MA06	—	6 Positions
	MA07	—	7 Positions
	MA08	—	8 Positions
	MA09	—	9 Positions
	MA10	ME10	10 Positions
DP	MB00	MF00	5 Positions No Stops
	MB02	MF02	2 Positions
	MB03	MF03	3 Positions
	MB04	MF04	4 Positions
	MB05	MF05	5 Positions

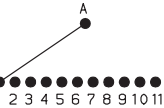
SP MODELS 36° INDEXING SCHEMATIC



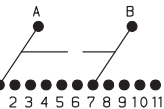
DP MODELS 36° INDEXING SCHEMATIC



SP MODELS 30° INDEXING SCHEMATIC



DP MODELS 30° INDEXING SCHEMATIC



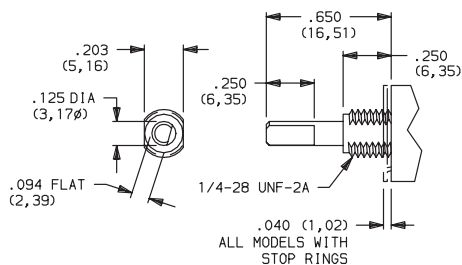
30° INDEXING				
NO. POLES	MODEL NO. WITH STOP PINS	MODEL NO. WITH STOP RINGS	SWITCH FUNCTION	
SP	MC00	MG00	12 Positions No Stops	
	MC02	MG02	2 Positions	
	MC03	—	3 Positions	
	MC04	—	4 Positions	
	MC05	MG05	5 Positions	
	MC06	MG06	6 Positions	
	MC07	—	7 Positions	
	MC11	—	11 Positions	
	MC12	MG12	12 Positions	
	DP	MD00	MH00	6 Positions No Stops
		MD03	MH03	3 Positions
		MD04	MH04	4 Positions
MD05		—	5 Positions	
MD06		MH06	6 Positions	

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

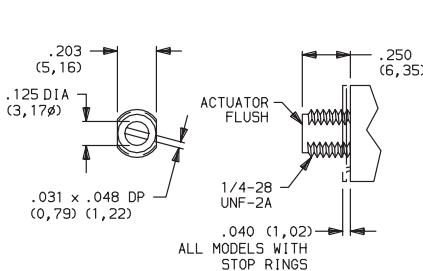
NOTE: Number of positions or stops preset at factory (NOTE: MX00 models have full 360 rotation with no stops. Stop pins or stop rings supplied for user-selectable stops, see above). All terminals present regardless of number of switch positions. Hardware is available separately, see section L.

ACTUATOR (ZINC ALLOY)

L1 (STD.) .650" LONG, FLATTED

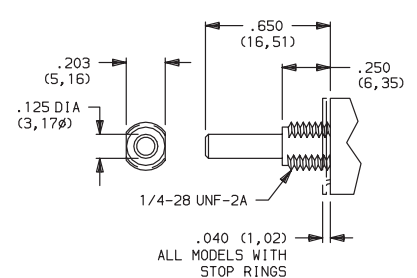


L2 SCREWDRIVER SLOT, FLUSH



All actuators shown in position 1

L3 .650" LONG, ROUND

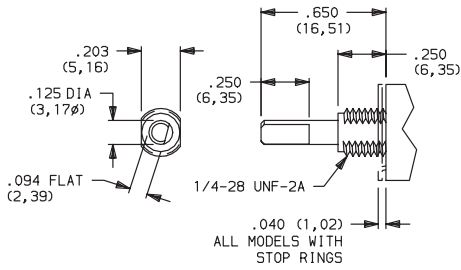


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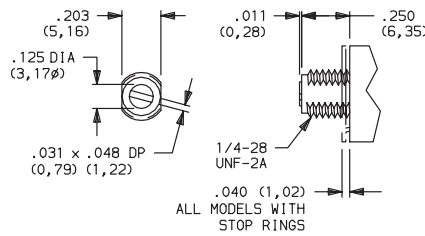
ACTUATOR (STAINLESS STEEL)



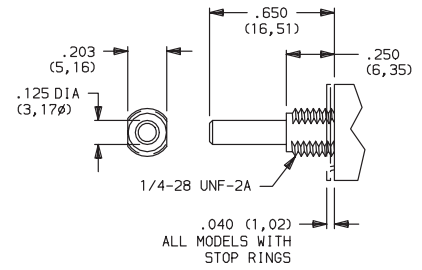
S1 .650" LONG, FLATTED



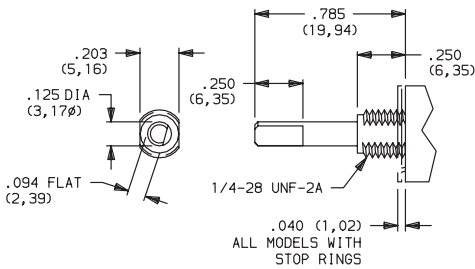
S2 SCREWDRIVER SLOT, FLUSH



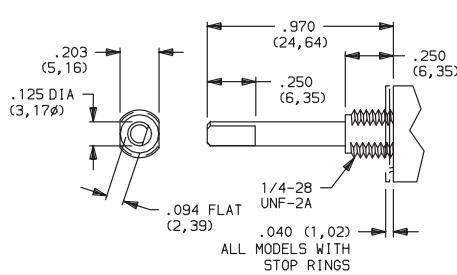
S3 .650" LONG, ROUND



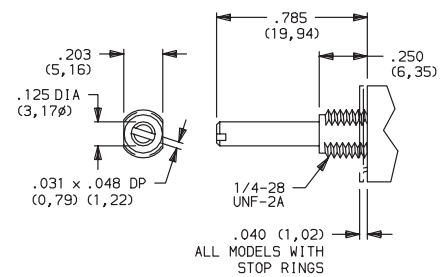
S4 .785" LONG, FLATTED



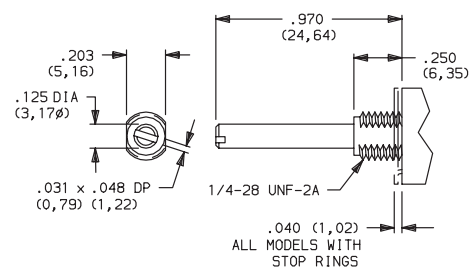
S5 .970" LONG, FLATTED



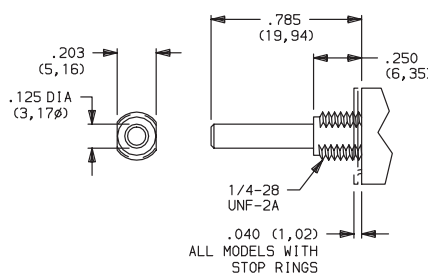
S6 .785" LONG, SLOT



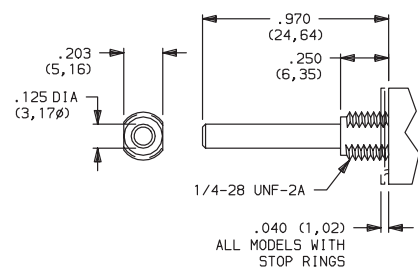
S7 .970" LONG, SLOT



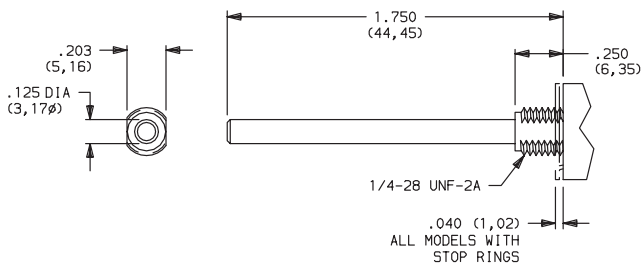
S8 .785" LONG, ROUND



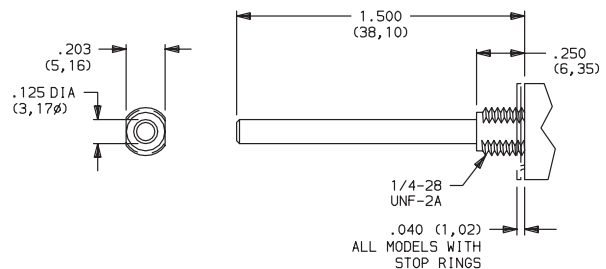
S9 .970" LONG, ROUND



SA 1.750" LONG, ROUND



SB 1.500" LONG, ROUND



All actuators shown in position 1

All models UL/CSA when ordered with S1-SB stainless steel actuators.

C&K M Series Half-inch Rotary Switches

SHORTING/NON-SHORTING CONTACTS



N (STD.) NON-SHORTING CONTACTS

Break-before-make

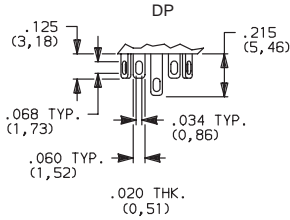
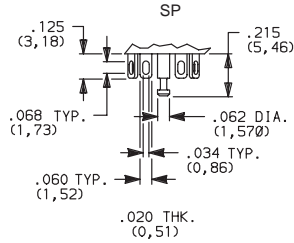
S SHORTING CONTACTS

Make-before-break

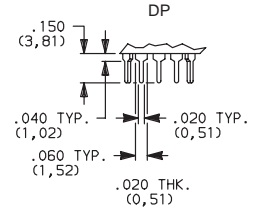
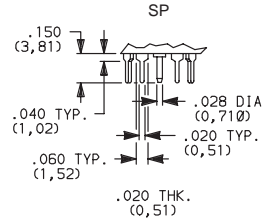
TERMINATIONS



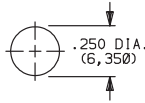
Z (STD.) SOLDER LUG



C PC THRU-HOLE

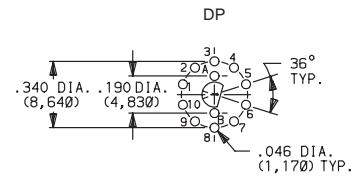
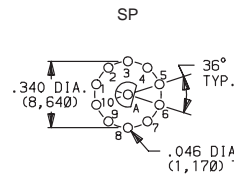


PANEL MOUNTING

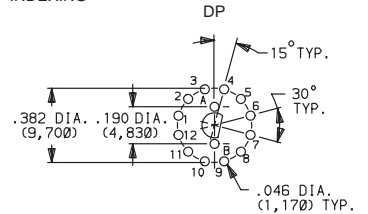
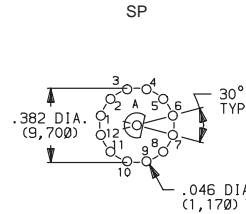


Hardware: All models, one mounting nut and lockwasher supplied standard. MA00 thru MD00 models: two stop pins and adhesive mylar washer supplied. ME00 thru MH00 models: two stop rings supplied. Hardware is available separately, see section I.

PC MOUNTING 36° INDEXING



PC MOUNTING 30° INDEXING



NOTE: Q contact material standard. Terminal numbers marked on side of housing. All terminals insert molded. All terminals present regardless of number of switch positions.

Actuators and schematics shown in position 1.

CONTACT MATERIAL



OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATINGS	
Q (STD.)	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.

CONTACT MATERIAL/APPLICATION RECOMMENDATIONS—SEE CHART, PAGE L-31.

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

² STATIONARY CONTACTS & ALL TERMINALS: Copper 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.

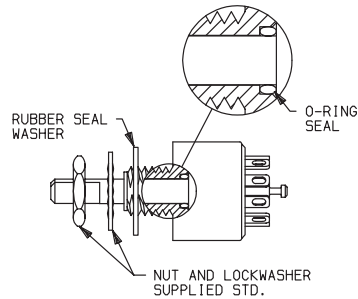
All models when ordered with S1-SB stainless steel actuator options.

C&K M Series Half-inch Rotary Switches

SEAL 

D (STD.) NO EPOXY SEAL

F SPLASHPROOF SHAFT AND PANEL SEAL



Setting Stops With Stop Pins

MA00, MB00, MC00 & MD00 Models Only:

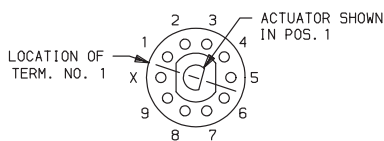
The number of switch positions or stops are adjustable by means of stop pins provided with each switch. Switches are normally shipped with stop pins and hardware in bulk, not installed. Without stop pins, switches have full 360° rotation and no stops. Note that all two pole models begin to repeat when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

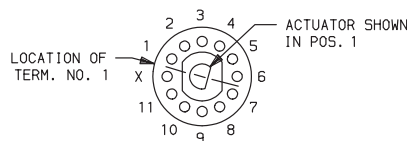
Hardware:

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



36° Indexing Models
Top View

Fig. 1



30° Indexing Models
Top View

Fig. 2

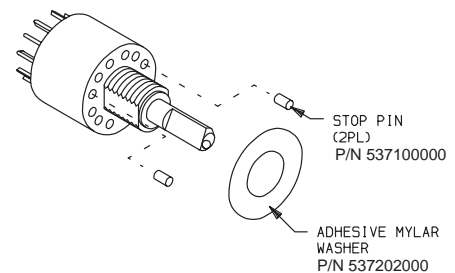


Fig. 3

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.

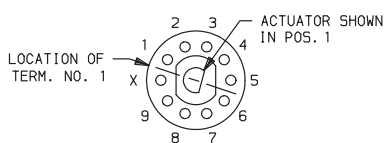
To set stops refer to figures 4 & 5. Orient switch so that terminal no. 1 is as shown. Turn actuator to pos. 1 using flats on bushing and terminal no. 1 as reference. See figure 6 and install inner stop ring with short tab in hole designated 'X'. Install outer stop ring with long tab in hole number corresponding 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.

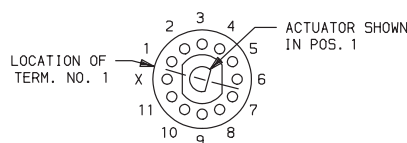
Hardware:

Two stop rings, mounting nut and lockwasher supplied standard.



36° Indexing Models
Top View

Fig. 4



30° Indexing Models
Top View

Fig. 5

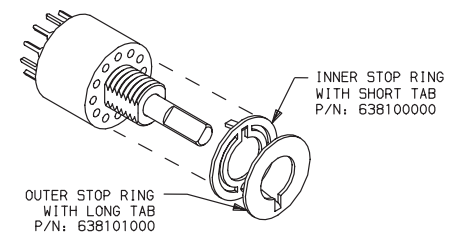


Fig. 6

