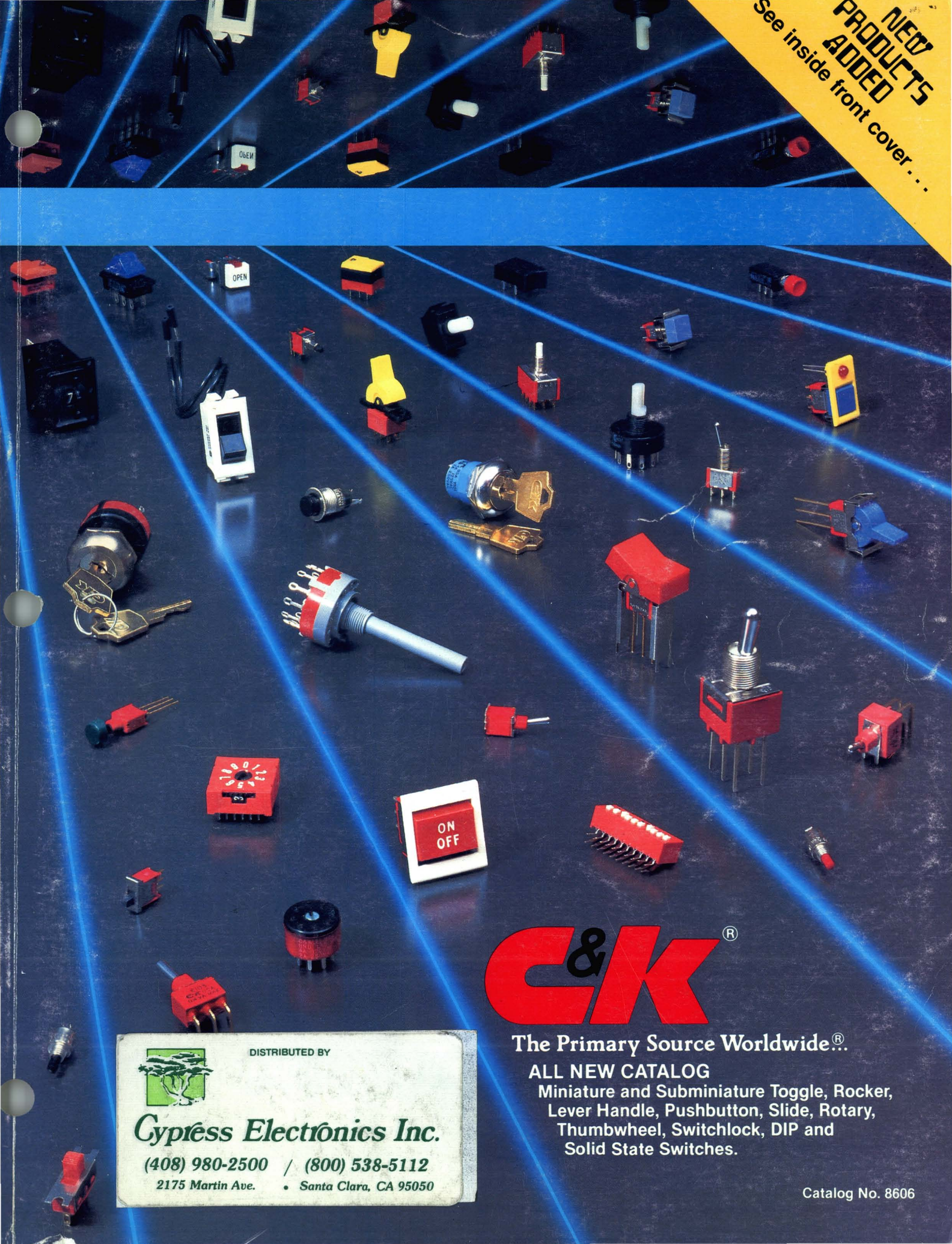


**NEW
PRODUCTS
ADDED**
See inside front cover...



C&K[®]

The Primary Source Worldwide[®].

ALL NEW CATALOG

Miniature and Subminiature Toggle, Rocker,
Lever Handle, Pushbutton, Slide, Rotary,
Thumbwheel, Switchlock, DIP and
Solid State Switches.

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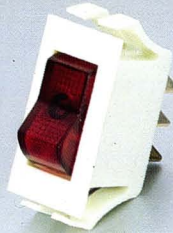
Catalog No. 8606

WHAT'S NEW INSIDE . . .

Look what's new at C&K! See the catalog sections noted for complete information on these and other new models and options.



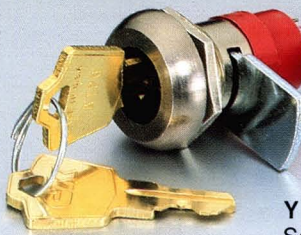
3 SERIES
Section R



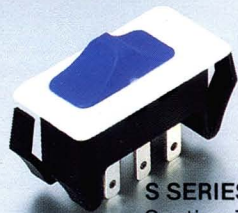
C SERIES
Section Z



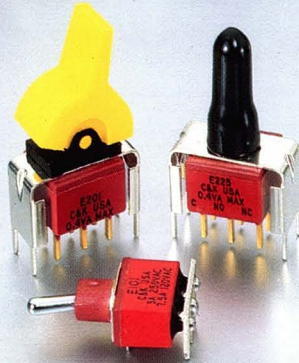
V SERIES
Section Z



Y SERIES
Section Z



S SERIES
Section Z



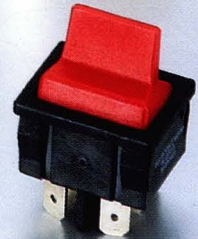
E, E010, E020 SERIES
Section B



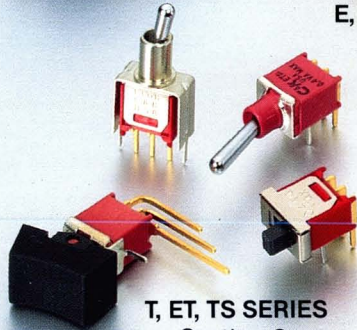
7000 SERIES
Section A



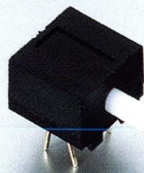
H SERIES
Section Z



D SERIES
Section Z



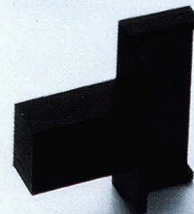
T, ET, TS SERIES
Section G



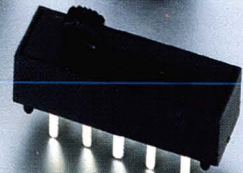
KM SERIES
Section Z



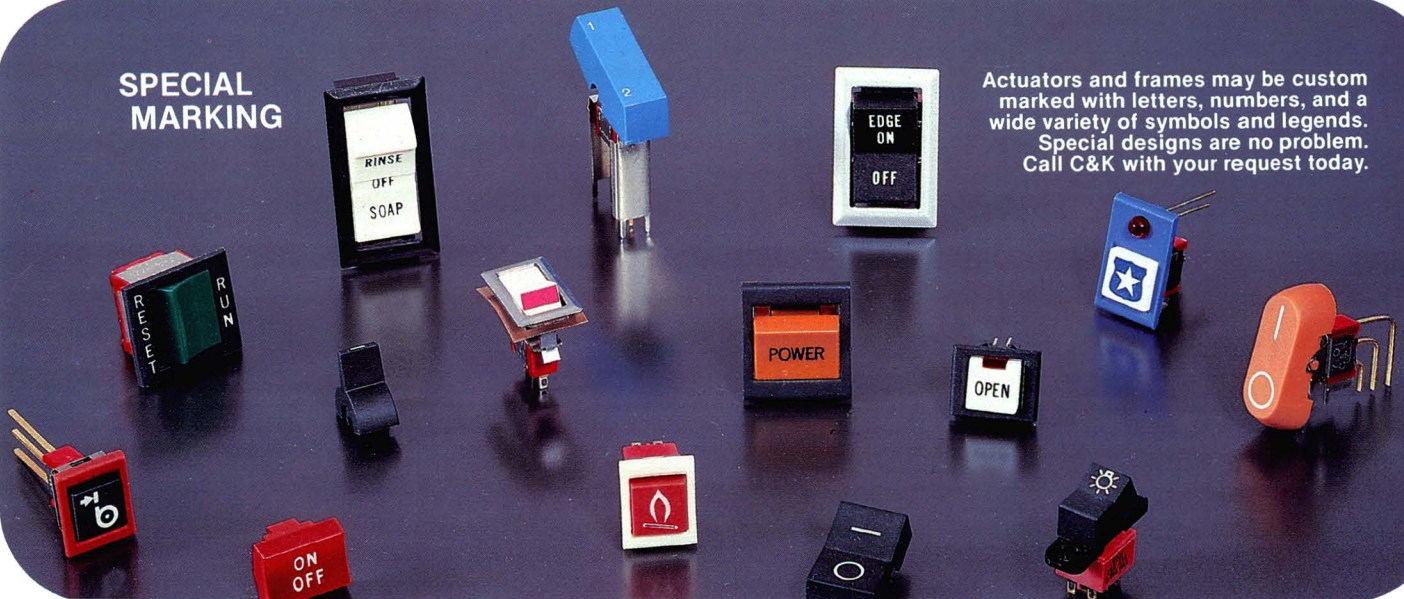
BD SERIES
Section P



L SERIES
Section Z



SPECIAL MARKING



Actuators and frames may be custom marked with letters, numbers, and a wide variety of symbols and legends. Special designs are no problem. Call C&K with your request today.

INTRODUCTION

Welcome! This is C&K's FULL LINE PRODUCT CATALOG, ALL NEW, COVER-TO-COVER! It contains many improvements, new products and new features that make it easier to use than ever before. Whether your needs are for toggle, rocker, lever handle, slide, rotary, DIP, thumbwheel, pushbutton, switchlock or illuminated switches, you will find that C&K is THE PRIMARY SOURCE WORLDWIDE for miniature and subminiature switches with our traditional high quality, performance, low-cost and delivery.

HOW TO USE THIS CATALOG

First-time-user or familiar face, a few words to help with orientation: *Three* INDEXES are provided to help you locate your exact needs quickly. They begin on the next page.

- 1) MAIN INDEX, arranged by catalog section (Pages IV and V).
- 2) INDEX BY SWITCH SERIES, alphabetical, by switch series, A Series, BD Series, 7000 Series, etc. (Page VI).
- 3) INDEX BY SWITCH TYPE, groups all similar types of switches alphabetically, toggles, rockers, pushbuttons, etc. (Page VII).

Hundreds of thousands of switch models and types are represented in this catalog through our Build-A-Switch approach. Except for Section Z, no complete switch model numbers are provided. Instead, you are given many available options from which to choose: models, actuators, bushings, mounting styles, terminations, contact materials, etc. Simply create the switch model desired by selecting options from the choices provided.

Ordering formats and complete information for building order numbers are provided in each section. Complete HOW TO ORDER information is also provided in each section. In the last section, Section Z, you may select standard models provided or create your own model from options provided.

Each catalog section is numbered independently, and begins with a full page photograph of representative switches. All available options are shown in each switch section, with available hardware at the end of each section.

Specifications and materials subject to change without notice.

AGENCY LISTINGS

Most C&K switches are available with UL and CSA listing, when ordered with G (gold over silver) or Q (silver) contact material. Note that B (gold) contact material is not listed because UL and other agencies consider listing only those components suitable for power applications. B contact material is used in low power and 'dry circuit' applications only, i.e., where no arcing occurs during switching (0.4 VA max. @ 20 V AC or DC max.).

Some switches are UL listed automatically when ordered with the appropriate contact material (examples: E-Series, 8500-Series, C-Series). Other switches are UL listed only when the UL Model Number is specified, otherwise no listings appear on the switches (examples: 5000-Series: L11 Model is UL listed, 5101 Model carries no listing). Most UL listed models are also available with CSA listing. See appropriate switch sections for specific contact material and rating information and ordering instructions.

C-Series Power Rocker Switches—Some models UL, CSA, VDE, SEV, JETL, SEMKO and Australia listed. See pages Z-56 thru Z-60. 9000-Series Power Switches- All models UL, CSA, VDE, SEV and SEMKO listed. See pages H-2 thru H-12.

At C&K, we are continuously upgrading our agency certifications, and new models and options are being added. If the listing you require does not appear, consult factory with your needs. Some of the applicable agency file nos. are listed below. Consult factory for further information.

UL FILE NO.:	E42363	SEV FILE NO.:	81.1162.01
CSA FILE NOS.:	LR29210 Newton, MA. LR49546 Clayton, N.C. LR47724 England LR47725 Hong Kong	JETL FILE NO.:	41-13749
		SEMKO FILE NO.:	43-63118/1-6
VDE FILE NO.:	8869-4401	Aust. Elec. Board Reg. No.:	CS81215V

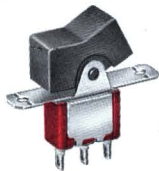
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 INTRODUCTION, HOW TO USE THIS CATALOG & AGENCY LISTINGSIII
 INDEX BY SWITCH SERIESVI
 INDEX BY SWITCH TYPEVII
 SWITCH SOLDERING AND CLEANING INFORMATION & WIRING FOR 3-WAY SWITCHESVIII

7000 SERIES
(also U SERIES) SECTION A
 TOGGLE, ROCKER & LEVER HANDLE SWITCHES



Toggle SwitchesA-2 thru A-13



Rocker & Lever Handle Switches.....A-14 thru A-32

E/E010/E020 SERIES SECTION B
 SEALED TOGGLE, ANTI-STATIC ROCKER, LEVER HANDLE & PUSHBUTTON SWITCHES



E Series Sealed Toggle Switches B-2 thru B-6



E Series Sealed Anti-Static Rocker & Lever Handle Switches B-7 thru B-12



E010 Series Sealed Momentary Pushbutton Switches B-13 thru B-17



E020 Series Sealed Snap-Acting Momentary Pushbutton Switches B-18 thru B-22

W SERIES SECTION C
 .025 WIRE-WRAP TOGGLE SWITCHES



8020 SERIES
(also U SERIES) SECTION D
 SNAP-ACTING MOMENTARY PUSHBUTTON SWITCHES



8060 SERIES SECTION E
 ALTERNATE ACTION & MOMENTARY PUSHBUTTON SWITCHES



1000 SERIES SECTION F
 MINIATURE SLIDE SWITCHES



ET/EP/T/TP/TS SERIES SECTION G
 TINY SWITCHES



ET Series Sealed Tiny Toggle SwitchesG-2 thru G-4



ET Series Sealed Tiny Rocker Switches.....G-5 thru G-8



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T Series Tiny Rocker SwitchesG-18 thru G-21



TP Series Tiny Pushbutton Switches.....G-22 thru G-28



TS Series Tiny Slide Switches.....G-29 thru G-30

INDEX

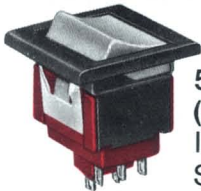
9000 SERIES SECTION H
POWER TOGGLE, ROCKER & LEVER
HANDLE SWITCHES



Power Toggle
 Switches H-2 thru H-7



Power Rocker & Lever Handle
 Switches. H-8 thru H-12



5000 SERIES SECTION J
(also L SERIES)
ILLUMINATED ROCKER
SWITCHES



8500 SERIES SECTION K
SUBMINIATURE PUSHBUTTON
SWITCHES



8600 SERIES SECTION L
MICROMINIATURE PUSHBUTTON
SWITCHES



M SERIES SECTION M
HALF-INCH ROTARY SWITCHES



SS SERIES SECTION N
SOLID STATE PUSHBUTTON
SWITCHES



KS SERIES SECTION O
PUSHBUTTON KEY SWITCHES



BD SERIES SECTION P
DIP SWITCHES

3/3M SERIES SECTION R
THUMBWHEEL SWITCHES



Thumbwheel Switches . . . R-2 thru R-12



Minithumbwheel
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 Y Series 6 Tumbler Double-Bitted
 Switchlocks Z-12 thru Z-13
 Y Series 7 Tumbler Tubular
 Switchlocks Z-14 thru Z-15
 A Series Switchlocks Z-16 thru Z-20
 A Series Rotary Switches Z-21 thru Z-25
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 Switchlocks Z-26 thru Z-29
 H Series Power ROTA-SLIDE
 Rotary Switches Z-30 thru Z-31
 R Series ROTA-SLIDE Rotary
 Switches Z-32 thru Z-35
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 L Series Miniature Slide Switches . . . Z-50 thru Z-55
 C Series Power Rocker Switches Z-56 thru Z-60
 D Series Miniature Power
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 J Series Rocker Switches Z-64 thru Z-65
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	Rotary Switches	Z-21 thru Z-25	T	Tiny Toggle Switches . . .	G-13 thru G-17
BD	DIP Switches	P-2 thru P-4		Tiny Rocker Switches . . .	G-18 thru G-21
C	Power Rocker Switches . . .	Z-56 thru Z-60	TP	Tiny Pushbutton Switches	G-22 thru G-28
D	Miniature Power Rocker Switches	Z-61 thru Z-63	TS	Tiny Slide Switches	G-29 thru G-30
E	Sealed Toggle Switches . . .	B-2 thru B-6	U	Toggle Switches	A-2 thru A-13
	Sealed Anti-Static Rocker & Lever Handle Switches	B-7 thru B-12		Rocker & Lever Handle Switches	A-14 thru A-32
E010	Sealed Momentary Pushbutton Switches	B-13 thru B-17		Snap-Acting Momentary Pushbutton Switches	D-2 thru D-14
E020	Sealed Snap-Acting Momentary Pushbutton Switches . . .	B-18 thru B-22	V	Power & Line Voltage Select Slide Switches . . .	Z-40 thru Z-43
EP	Sealed Tiny Pushbutton Switches	G-9 thru G-12	W	.025 Wire-Wrap Toggle Switches	C-2 thru C-4
ET	Sealed Tiny Toggle Switches	G-2 thru G-4	Y	4 and 5 Tumbler Switchlocks	Z-5 thru Z-11
	Sealed Tiny Rocker Switches	G-5 thru G-8		6 Tumbler Double-Bitted Switchlocks	Z-12 thru Z-13
F	Miniature ROTA-SLIDE® Rotary Switches	Z-36 thru Z-39		7 Tumbler Tubular Switchlocks	Z-14 thru Z-15
H	Power ROTA-SLIDE® Rotary Switches	Z-30 thru Z-31	1000	Miniature Slide Switch	F-2 thru F-8
J	Rocker Switches	Z-64 thru Z-65	3	Thumbwheel Switches . . .	R-2 thru R-12
K	Pushbutton Switches . . .	Z-66 thru Z-67	3M	Minithumbwheel Switches	R-13 thru R-14
KM	Pushbutton Switches . . .	Z-71 thru Z-73	5000	Illuminated Rocker Switches	J-2 thru J-4
KS	Pushbutton Key Switches	O-2 thru O-4	7000	Toggle Switches	A-2 thru A-13
L	Illuminated Rocker Switches	J-2 thru J-4		Rocker & Lever Handle Switches	A-14 thru A-32
	Miniature Slide Switches	Z-50 thru Z-55	8020	Snap-Acting Momentary Pushbutton Switches	D-2 thru D-14
M	Half-Inch Rotary Switches	M-2 thru M-6	8060	Alternate Action & Momentary Pushbutton Switches	E-2 thru E-10
	Half-Inch Rotary Switchlocks	Z-26 thru Z-29	8500	Subminiature Pushbutton Switches	K-2 thru K-4
MP	Mechanical Pushbutton Switches	Z-68 thru Z-70	8600	Microminiature Pushbutton Switches	L-2 thru L-4
R	ROTA-SLIDE® Rotary Switches	Z-32 thru Z-35	9000	Power Toggle Switches . . .	H-2 thru H-7
S	Slide Switches	Z-44 thru Z-49		Power Rocker & Lever Handle Switches	H-8 thru H-12

INDEX BY SWITCH TYPE

SWITCH TYPE	SERIES	SECTION PAGES	SWITCH TYPE	SERIES	SECTION PAGES	
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	Y	Z-5 thru Z-15		A	Z-21 thru Z-25	
DIP Switches	BD	P-2 thru P-4		H	Z-30 thru Z-31	
				R	Z-32 thru Z-35	
Illuminated Switches	5000 and L	J-2 thru J-4		F	Z-36 thru Z-39	
Lever Handle Switches	7000 and U	A-14 thru A-32	Sealed Switches	E	B-2 thru B-12	
	E	B-7 thru B-12		E010	B-13 thru B-17	
	9000	H-8 thru H-12		E020	B-18 thru B-22	
		ET		G-2 thru G-8		
				EP	G-9 thru G-12	
Power Switches	9000	H-2 thru H-12	Slide Switches	1000	F-2 thru F-8	
	H	Z-30 thru Z-31		TS	G-29 thru G-30	
	V	Z-40 thru Z-43		V	Z-40 thru Z-43	
	S	Z-44 thru Z-49		S	Z-44 thru Z-49	
	C	Z-56 thru Z-60		L	Z-50 thru Z-55	
	D	Z-61 thru Z-63				
Pushbutton Switches	E010	B-13 thru B-17	Solid State Switches	SS	N-2 thru N-4	
	E020	B-18 thru B-22		Switchlocks	Y	Z-5 thru Z-15
	8020 and U	D-2 thru D-14			A	Z-16 thru Z-20
	8060	E-2 thru E-10	M		Z-26 thru Z-29	
	EP	G-9 thru G-12	Thumbwheel Switches	3	R-2 thru R-12	
	TP	G-22 thru G-28		3M	R-13 thru R-14	
	8500	K-2 thru K-4				
	8600	L-2 thru L-4	Tiny Switches	ET	G-2 thru G-8	
	SS	N-2 thru N-4		EP	G-9 thru G-12	
	KS	O-2 thru O-4		T	G-13 thru G-21	
	K	Z-66 thru Z-67		TP	G-22 thru G-28	
	MP	Z-68 thru Z-70		TS	G-29 thru G-30	
	KM	Z-71 thru Z-73				
Rocker Switches	7000 and U	A-14 thru A-32	Toggle Switches	7000 and U	A-2 thru A-13	
	E	B-7 thru B-12		E	B-2 thru B-6	
	ET	G-5 thru G-8		W	C-2 thru C-4	
	T	G-18 thru G-21		ET	G-2 thru G-4	
	9000	H-8 thru H-12		T	G-13 thru G-17	
	5000 and L	J-2 thru J-4		9000	H-2 thru H-7	
	C	Z-56 thru Z-60				
	D	Z-61 thru Z-63				
J	Z-64 thru Z-65					

SWITCH SOLDERING AND CLEANING INFORMATION

Most manufacturing and field problems experienced by users of miniature switches are caused by contamination of switches during assembly, i.e., *during soldering and cleaning processes*. Occasionally, this contamination is not recognized as a process problem, but is assumed to be a product deficiency. Some percentage of switches may become intermittent after assembly into the equipment, particularly in low power applications. These intermittencies may become apparent during final factory tests of the equipment, or they may develop later during field use. In almost all cases, process contamination can be prevented when care is exercised during soldering and cleaning operations.

Most manually actuated switches are *not* totally sealed components. The equipment manufacturer must exercise care to prevent switch contamination during manual or wave soldering assembly processes, unless the switches are specifically designed to withstand such processes (e.g.: C&K's E SERIES Sealed Toggle, Anti-Static Rocker & Lever Handle Switches, ET SERIES Sealed Tiny Toggle & Rocker Switches, EP SERIES Sealed Tiny Pushbutton Switches, E010 and E020 SERIES Sealed Pushbutton Switches and BD SERIES DIP Switches).

Contamination of miniature switches can occur in both hand soldering and in wave soldering processes. In general, *hand soldering and cleaning processes* are perfectly acceptable if properly trained personnel use small diameter solder (.030"-.040"), use low wattage soldering irons (25 - 40 watts max.) and are careful not to immerse or spray the non-sealed areas of the switches with cleaning solvent during the flux removal process.

Wave soldering provides better control of pre-heat and maximum soldering temperatures when compared with manual operations. Unfortunately, oil is often added to the solder (oil is another source of contamination), and the final cleaning operations often require immersion or rigorous spraying with a solvent in automatic process equipment. This is not recommended unless the switches are designed to withstand such processes.

The usual causes of switch intermittencies are solder flux and/or wave solder oil. Sealed or molded-in terminals reduce, but do not eliminate the risk of process contamination. Since most miniature switches are not totally sealed components, even if the soldering is done carefully, flux or oil contaminants can be carried into the switch and not removed during the cleaning operation. When the solvent evaporates, non-conductive contaminants may be left on, or near, contact interfaces.

C&K has introduced a full line of switches that are designed to resist contamination due to wave soldering and cleaning methods and that require *no* special handling or processing:

The **BD Series DIP Switches** employ a flush-thru open-base design, proven effective in allowing high-agitation cleaning methods to thoroughly clean contact interfaces. See CATALOG SECTION P.

E Series Sealed Toggle, Anti-Static Rocker and Lever Handle Switches feature totally sealed splashproof construction, with toggle and terminal seals and welded-body construction. Rocker and Lever Handle models additionally have *anti-static* capabilities. See CATALOG SECTION B.

E010 and E020 Series Sealed Pushbutton Switches are sealed to withstand wave soldering and cleaning processes with either internal o-ring plunger seal (E010 Series) or disposable splashproof boot (E020 Series). See CATALOG SECTION B.

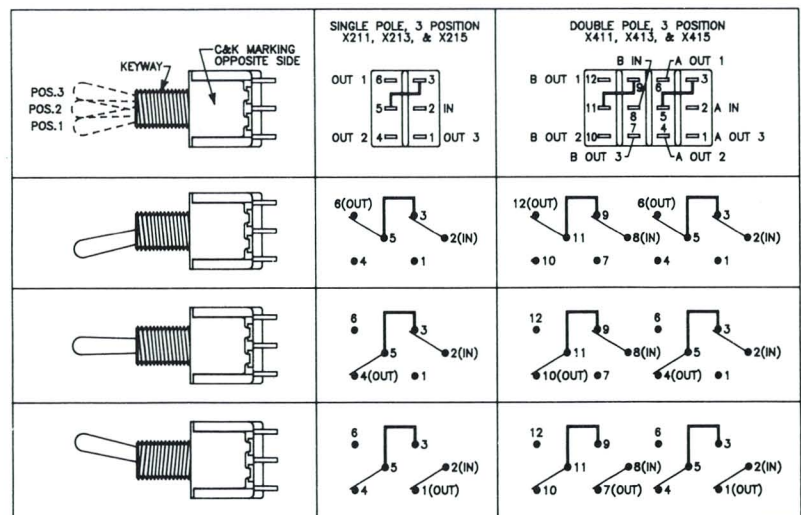
ET Series Sealed Tiny Toggle & Rocker Switches and **EP Series Sealed Tiny Pushbutton Switches** have the same sealed construction features as the larger E Series Sealed Switches, but in a DIP - pattern compatible miniature package. See CATALOG SECTION G.

WIRING FOR 3-WAY SWITCHES

3-Position toggle and rocker switches with ON-ON-ON switching functions may be wired for '3-way' function. See wiring diagrams and schematics. Note that external jumpers are added by customer. The following switch models may be wired in this way to achieve SP3T or DP3T functions:

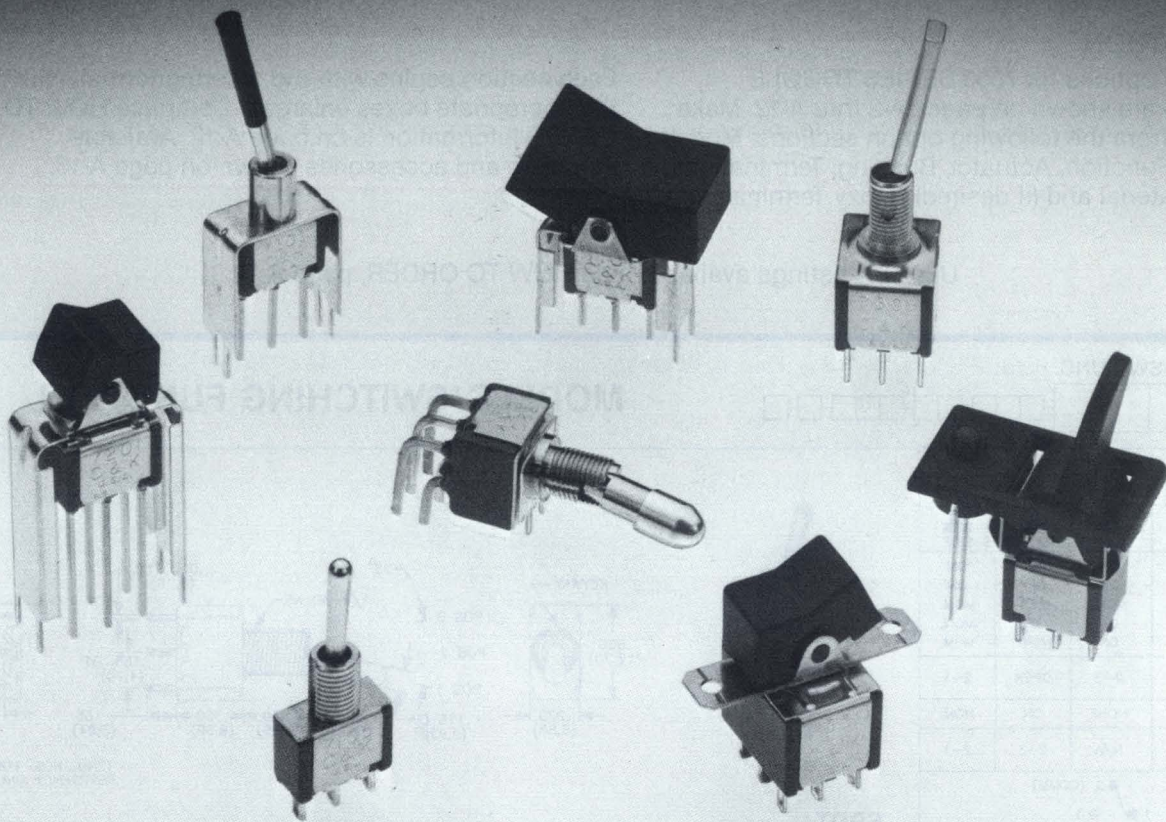
7000 Series	7211, 7213, 7215, 7411, 7413, 7415, U211, U213, U215, U411, U413, U415	} CATALOG SECTION A
E Series	E211, E215	
Tiny Series	T211	} CATALOG SECTION B
5000 Series	5211, 5213, 5215	} CATALOG SECTION G } CATALOG SECTION J

3-WAY WIRING DIAGRAMS / SCHEMATICS



Note: External jumper added by customer.

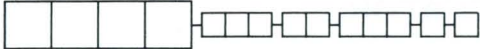
7000 SERIES TOGGLE, ROCKER & LEVER HANDLE SWITCHES



SECTION A INDEX

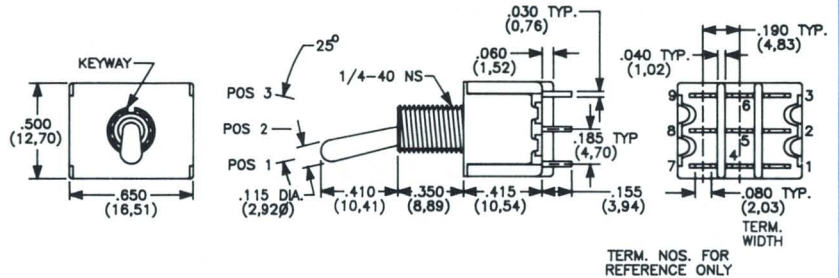
Toggle Switches	A-2 thru A-13
Rocker & Lever Handle Switches	A-14 thru A-32

MODEL/SW. FUNC



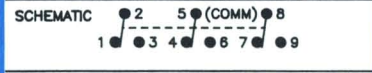
MODELS/SWITCHING FUNCTION (cont'd)

MODEL NO.	UL MODEL NO.	SWITCHING FUNCTION		
		POS 1 C&K MARKING THIS SIDE	POS 2	POS 3
7301	U31	ON	NONE	ON
7303	U33	ON	OFF	ON
7305	U35	MOM.	OFF	MOM.
7307	U37	ON	OFF	MOM.
7308	U38	ON	NONE	MOM.
CONNECTED TERMINALS		2-3,5-6, 8-9	OPEN	2-1,5-4, 8-7
7309	U39	NONE	ON	MOM.
CONNECTED TERMINALS		N/A	2-3,5-6, 8-9	2-1,5-4, 8-7



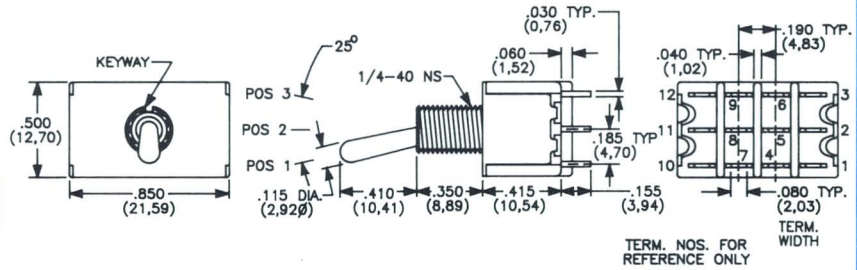
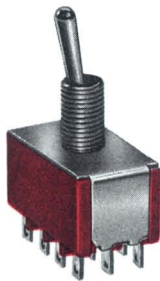
3PDT

MODEL SHOWN: 7301-S-Y-Z-Q



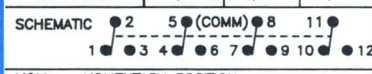
MOM. = MOMENTARY POSITION

7401	U41	ON	NONE	ON
7403	U43	ON	OFF	ON
7405	U45	MOM.	OFF	MOM.
7407	NOT UL	ON	OFF	MOM.
7408	U48	ON	NONE	MOM.
CONNECTED TERMINALS		2-3,5-6, 8-9,11-12	OPEN	2-1,5-4, 8-7,11-10
7409	U49	NONE	ON	MOM.
CONNECTED TERMINALS		N/A	2-3,5-6, 8-9,11-12	2-1,5-4, 8-7,11-10
7411*	U411	ON	ON	ON
7413*	U413	ON	ON	MOM.
7415*	U415	MOM.	ON	MOM.
CONNECTED TERMINALS		2-3,5-6, 8-9,11-12	2-3,5-4, 8-9,11-10	2-1,5-4, 8-7,11-10



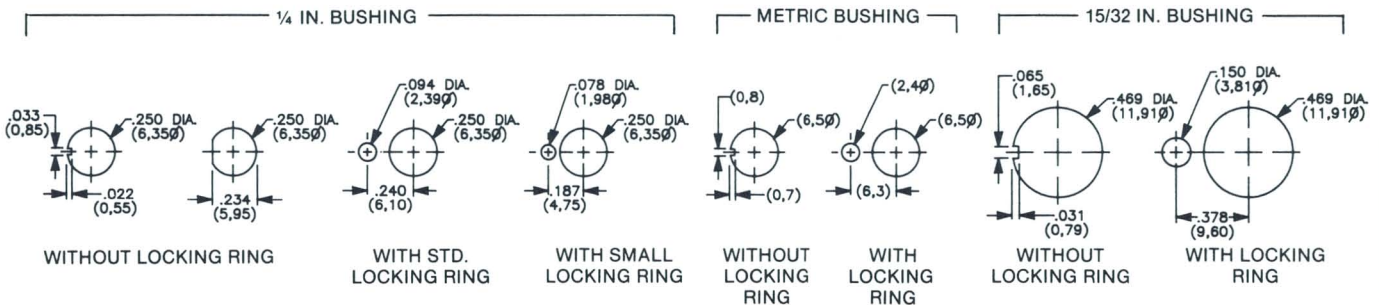
4PDT

MODEL SHOWN: 7401-S-Y-Z-Q

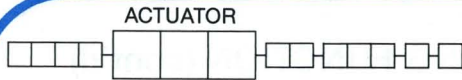


MOM. = MOMENTARY POSITION

PANEL MOUNTING

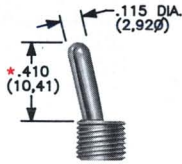


* WIRING FOR 3-WAY SWITCH, SEE PAGE VIII.



ACTUATORS

S SP WITH ANTIROTATION



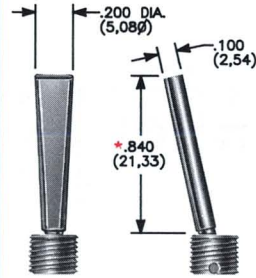
S actuator std. when ordered with Z, C, Z3 or W-W5 terminations.

M MP WITH ANTIROTATION

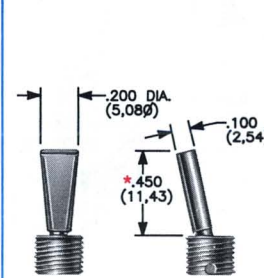


M actuator std. when ordered with A, A2, A4, AV2, R, R2 or V30-V90 terminations.

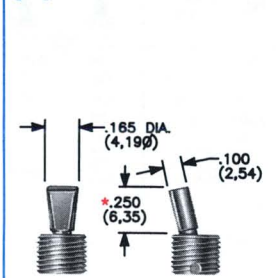
P1 WITH ANTIROTATION



P3 WITH ANTIROTATION

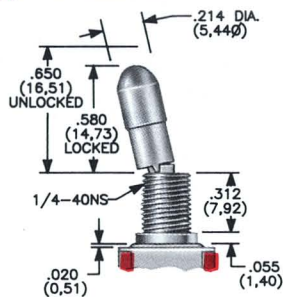


P4 WITH ANTIROTATION



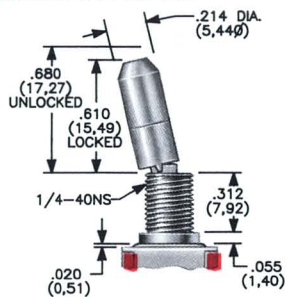
Antirotation feature standard on P1, P3, P4 actuators. Hardware: P/N 7099 dress nut supplied standard with threaded bushings.

K LOCKING LEVER

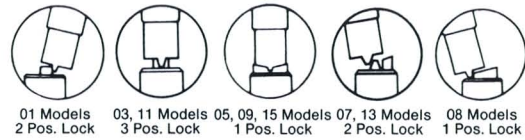


Bushing option code not required.

K1 LOCKING LEVER



K & K1 options

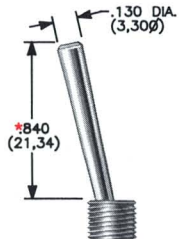


To prevent accidental actuation, toggles must be lifted before being actuated. When released, toggles again lock in place. Add cap color in word form after order number. If no color is specified, natural aluminum will be supplied. Keyway on right side.

CAP COLORS	
	Natural AL. (Std.)
	Black Anodized AL.
	Red Anodized AL.
	Blue Anodized AL.

Note: Overtightening mounting nut may cause actuator to bind.

L LP WITH ANTIROTATION



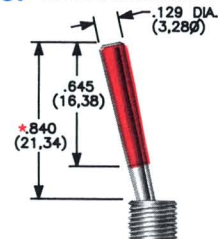
L1 L1P WITH ANTIROTATION



L2 L2P WITH ANTIROTATION



L3 PLASTIC L3P WITH ANTIROTATION



Bushing option code not required with these actuators: K, K1, T, T1, T2P; CW bushing may be specified with T, T1 actuators.

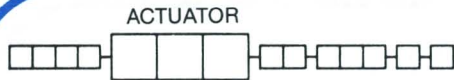
Antirotation: provides anti-'push-in' feature on actuator, reducing risk of internal switch damage from impact forces on the actuator.

All actuators (except K, K1, L3, L40- L43) are available with satin chrome or black finish. Write 'SATIN CHROME ACTUATOR' or 'BLACK ACTUATOR' in word form after order number. If nothing is specified, chrome plated actuators will be supplied.

*Add .070 (1,78) for D, D9 bushings, subtract .020 (0,51) for H3 bushing.

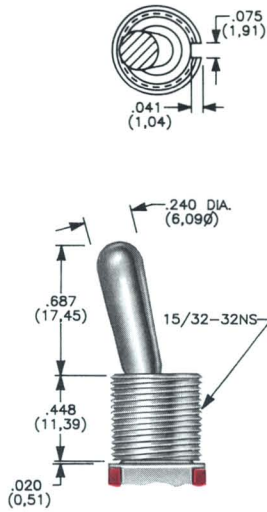
1	White
2	Black(Std.)
3	Red
4	Orange
5	Yellow
6	Green
7	Blue
8	Brown
9	Gray

Add actuator color in word form after order number. If no color is specified, black will be supplied. Finish: gloss.

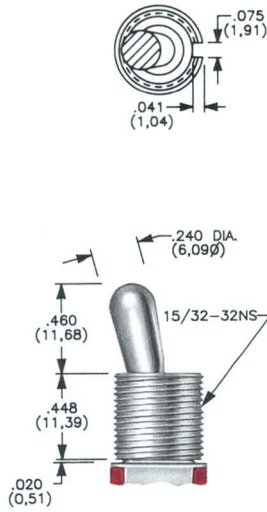


ACTUATORS (cont'd.)

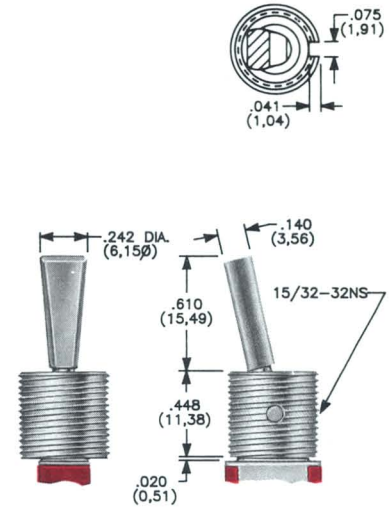
T TP WITH ANTIROTATION **NEW**



T1 T1P WITH ANTIROTATION **NEW**



T2P WITH ANTIROTATION



Bushing option code not required unless CW splashproof bushing option desired.

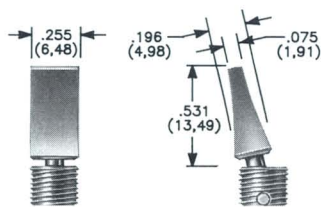
Bushing option code not required.

CW splashproof bushing not available with TP, T1P, T2P actuators.

L40

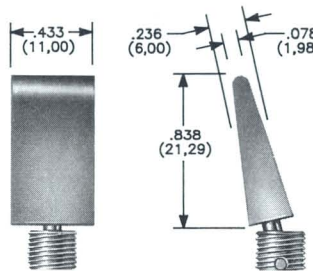


L41 LEVER HANDLE



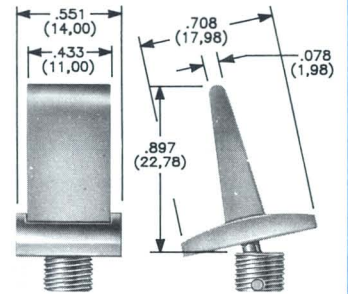
LEVER HANDLE P/N: 4810

L42 LEVER HANDLE



LEVER HANDLE P/N: 4811

L43 LEVER HANDLE



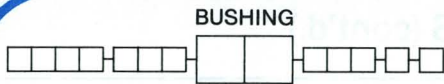
LEVER HANDLE P/N: 4812

Y bushing std. Also avail. with Y9, D, D9, H, H3 and CW bushings.

Add lever handle color in word form after order number. See color chart. If no color is specified, black will be supplied. Lever handles can be ordered separately, specify part no. and color. For interchangeability, order L40 actuator option and order lever handles separately. Finish: matte.

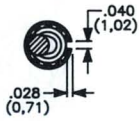
Antirotation feature standard on L40-L43 actuators.

1	White
2	Black(Std.)
3	Red
4	Orange
5	Yellow
6	Green
7	Blue
8	Brown
9	Gray



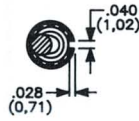
BUSHINGS

Y Y9 UNTHREADED



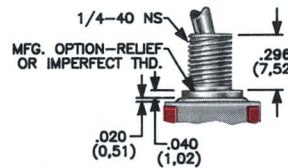
Y bushing std. with Z, C, Z3 or W-W5 terminations.

D D9 UNTHREADED



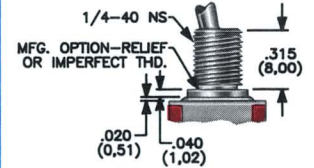
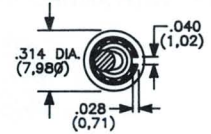
Add .070 (1,78) to all actuator lengths for D, D9 bushings.
D9 bushing std. with A, A2, A4, R, R2, AV2 or V30 - V90 terminations.

H HIGH TORQUE



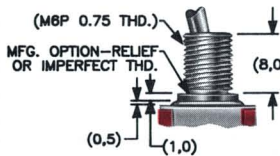
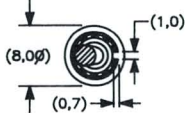
Will withstand 12 in.-lbs. of torque with no distortion.

H3 HIGH TORQUE



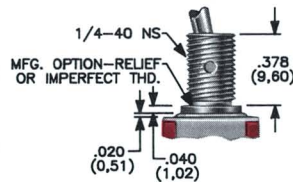
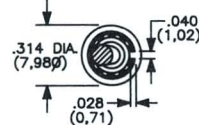
Subtract .020 (0,51) from all actuator lengths for H3 bushing. Will withstand 12 in.-lbs. of torque with no distortion.

H4 METRIC HIGH TORQUE*



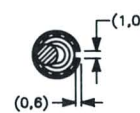
Will withstand 12 in.-lbs. of torque with no distortion.

Y1 HIGH TORQUE

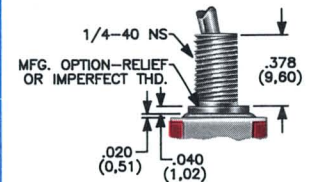


Available with antirotation actuator options only. Will withstand 12 in.-lbs. of torque with no distortion.

Y3 METRIC

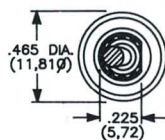


Y4 HIGH TORQUE*

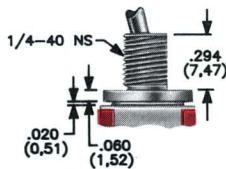
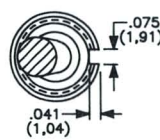


Will withstand 12 in.-lbs. of torque with no distortion.

CW SPLASHPROOF

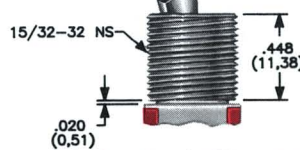


Actuator and bushing seals give splashproof models a tight panel seal.



CW bushing for all actuators except T, T1.

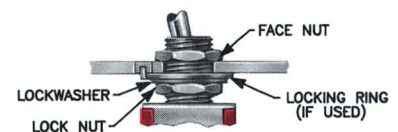
Bushing sealing washer supplied std.



CW bushing for T, T1 actuators. Bushing sealing washer available from: Multi-Flex Seals, Inc., Hackensack, New Jersey

Part No. MFS-60064

PANEL MOUNTING



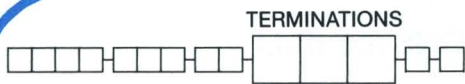
TYPICAL ASSEMBLY WITH LOCKING RING.

To avoid damaging front of panel, always tighten assembly with back-of-panel lock nut. Note: it is recommended that lock nut always be used with non-flanged bushings.

K - K1 ACTUATORS: Overtightening mounting nut may cause actuator to bind.

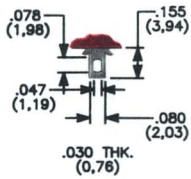
All bushings are available with black oxide finish. Write 'BLACK BUSHING' in word form after order number. If nothing is specified, nickel plated bushings will be supplied.

* H4, Y4 bushings not available with A, A2, A4, AV2, R, R2 or V30-V90 terminations.



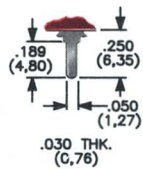
TERMINATIONS

Z (Std.)



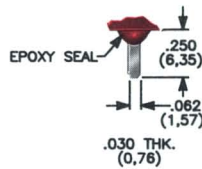
'Q' Contact Material Std.

C



'Q' Contact Material Std.

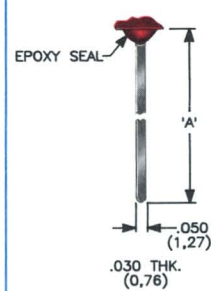
Z3 QUICK CONNECT



Mating quick connector available; order part no.5301.

'Q' Contact Material Std.

W-W5 WIRE-WRAP

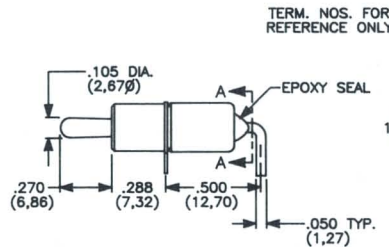
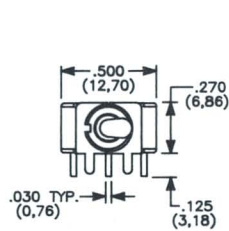


OPTION CODE	DIM. 'A'
W	.750 (19,05)
W1	.964 (24,48)
W3	.425 (10,80)
W4	1.062 (26,97)
W5	1.305 (33,15)

Wire-Wrap is a registered trademark of the Gardner-Denver Company.

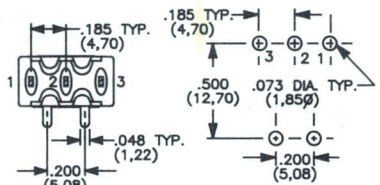
'B' Contact Material Std.

A



SECTION A-A

PC. MOUNTING



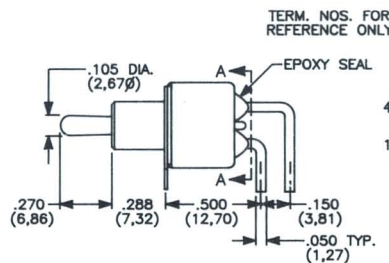
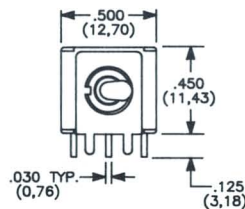
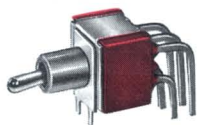
SPDT

Actuator shown in POS.1.

'B' Contact Material Std.

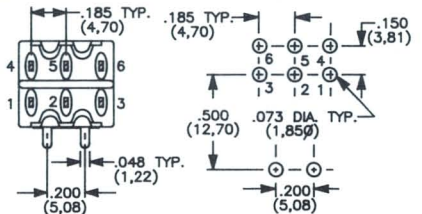
Term. bend radii mfg. option.

A



SECTION A-A

PC. MOUNTING



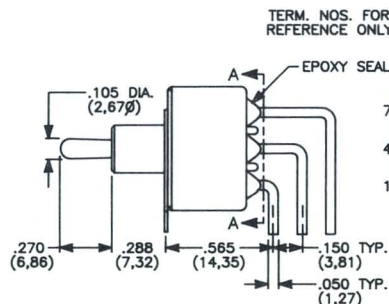
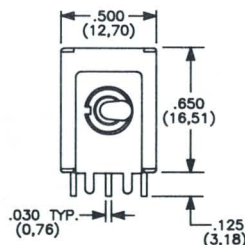
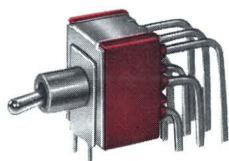
DPDT

Actuator shown in POS.1.

'B' Contact Material Std.

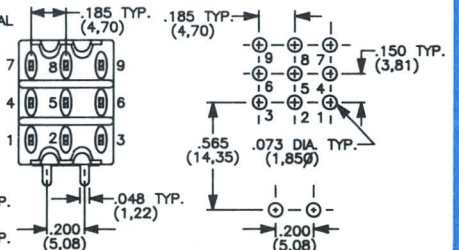
Term. bend radii mfg. option.

A



SECTION A-A

PC. MOUNTING

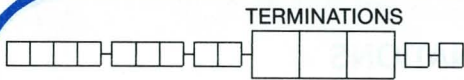


3PDT

Actuator shown in POS.1.

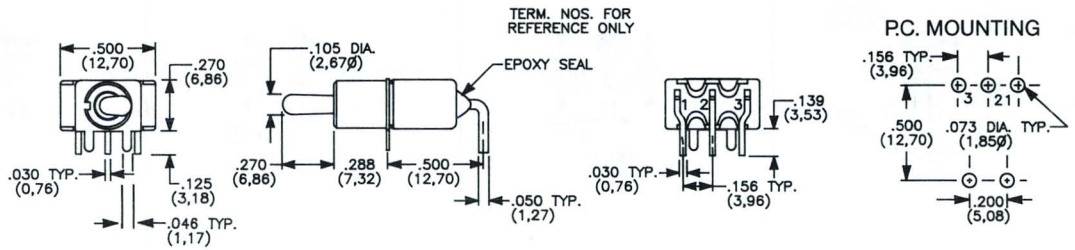
'B' Contact Material Std.

Term. bend radii mfg. option.



TERMINATIONS (cont'd.)

A2



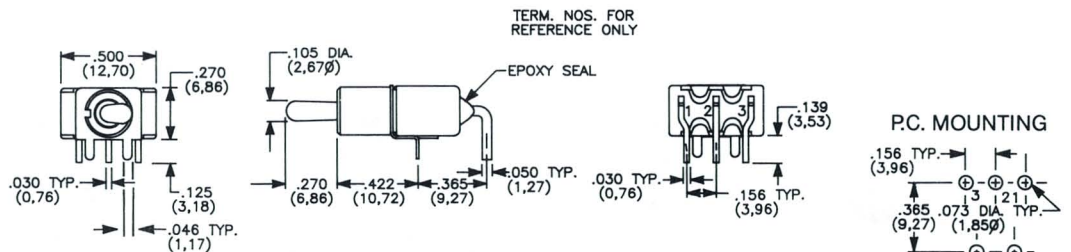
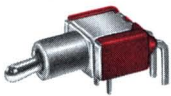
SPDT

Actuator shown in POS.1.

'B' Contact Material Std.

Term. bend radii mfg. option.

A4



The A4 and R2 termination options are functionally identical and fit the same P.C. mounting pattern. The switches are shifted relative to the mounting holes, however. Unlike the R2, the A4 option is available with G or Q contact material and can be UL and CSA listed. Note that the P.C. pattern must clear switch support legs.

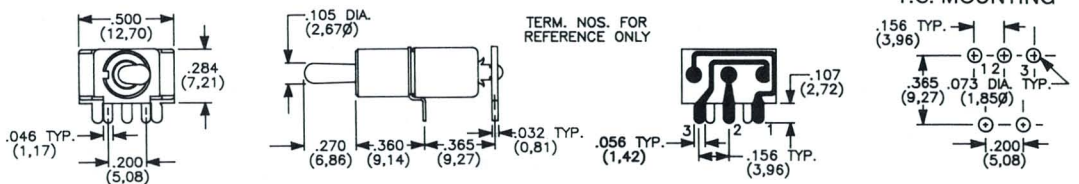
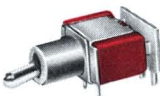
SPDT

Actuator shown in POS.1.

'B' Contact Material Std.

Term. bend radii mfg. option.

R



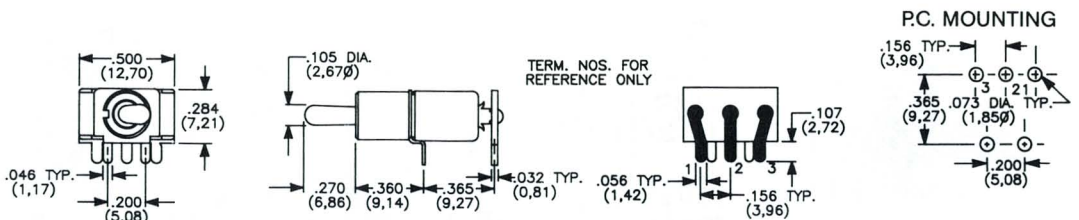
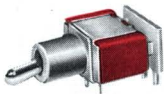
SPDT

Actuator shown in POS.1.

'B' Contact Material Only Available.

Contacts make on same side actuator thrown.

R2

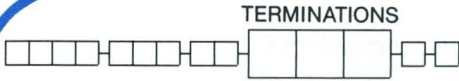


SPDT

Actuator shown in POS.1.

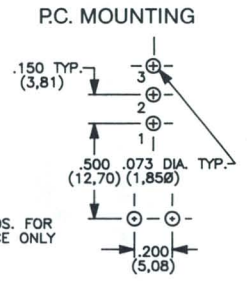
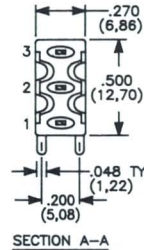
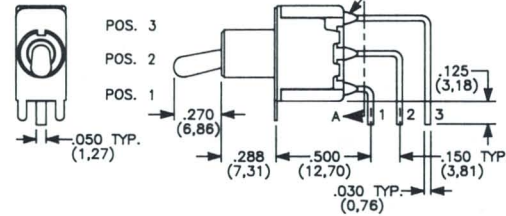
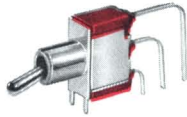
'B' Contact Material Only Available.

Contacts make on opposite side actuator thrown.



TERMINATIONS (cont'd.)

AV2

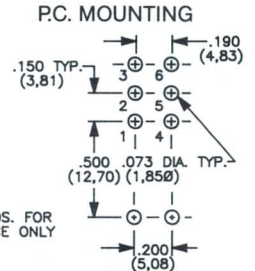
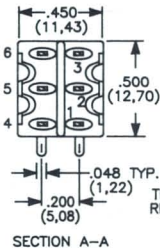
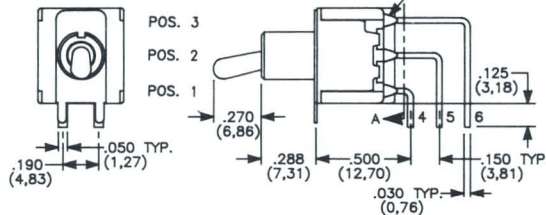
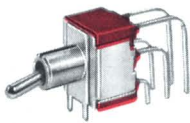


SPDT

'B' Contact Material Std.

Term. bend radii mfg. option.

AV2

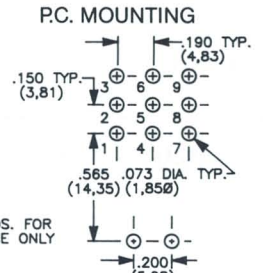
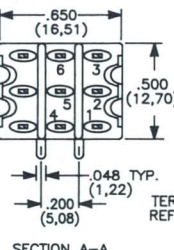
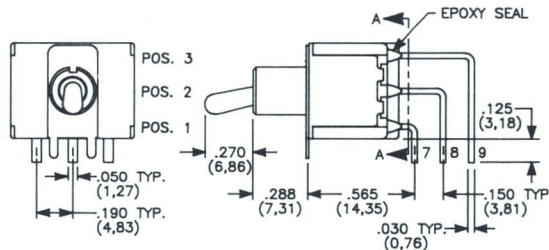
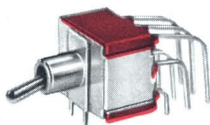


DPDT

'B' Contact Material Std.

Term. bend radii mfg. option.

AV2

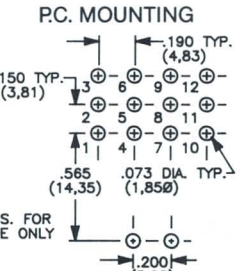
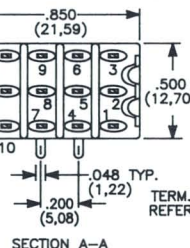
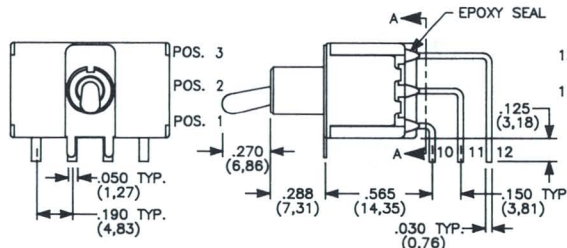
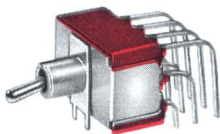


3PDT

'B' Contact Material Std.

Term. bend radii mfg. option.

AV2



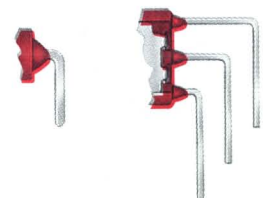
4PDT

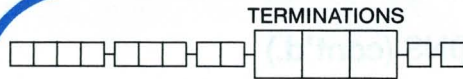
'B' Contact Material Std.

Term. bend radii mfg. option.

EXTENDED TERMINAL OPTION

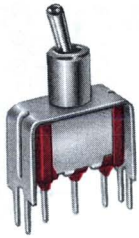
Switches with A or AV2 terminations may be ordered with extended terminals, as shown. This provides easier installation into P.C. boards. To order, specify 'Extended Terminals' in word form after order number.



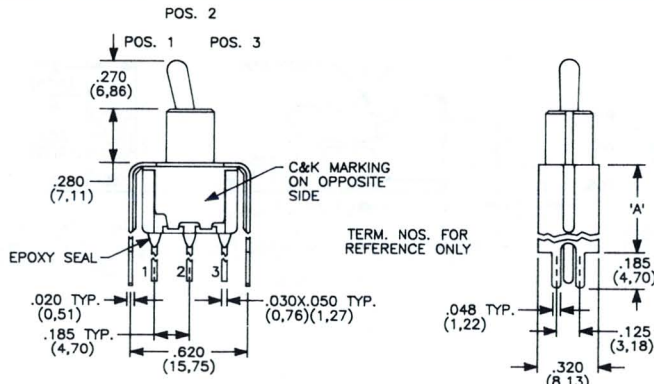


TERMINATIONS (cont'd.)

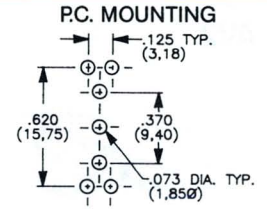
V30-V40-V90



SPDT



'B' Contact Material Std.

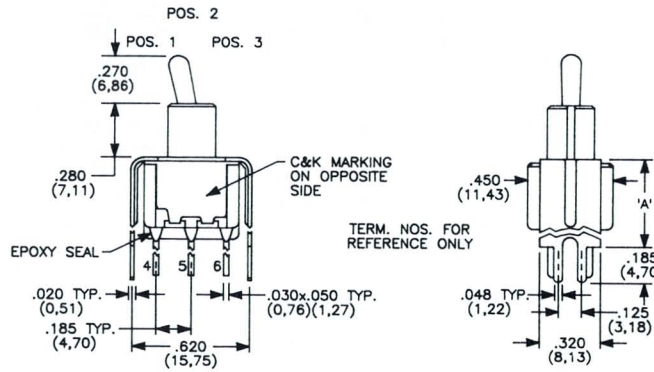


OPTION CODE	DIM. 'A'
V30	.460 (11,68)
V40	.630 (16,00)
V90	1.150 (29,21)

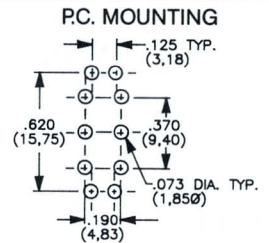
V30-V40-V90



DPDT

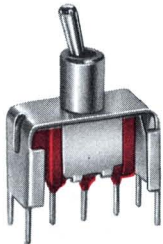


'B' Contact Material Std.

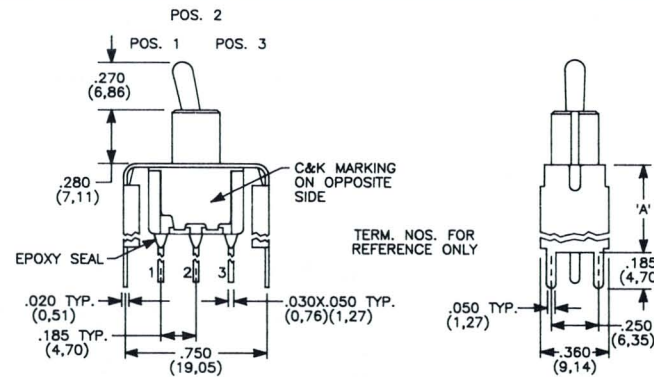


OPTION CODE	DIM. 'A'
V30	.460 (11,68)
V40	.630 (16,00)
V90	1.150 (29,21)

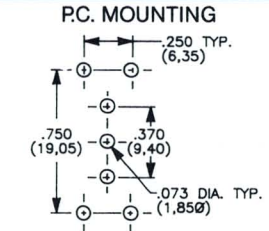
V60-V70-V80



SPDT

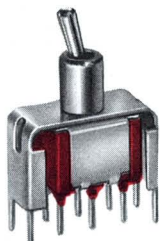


'B' Contact Material Std.

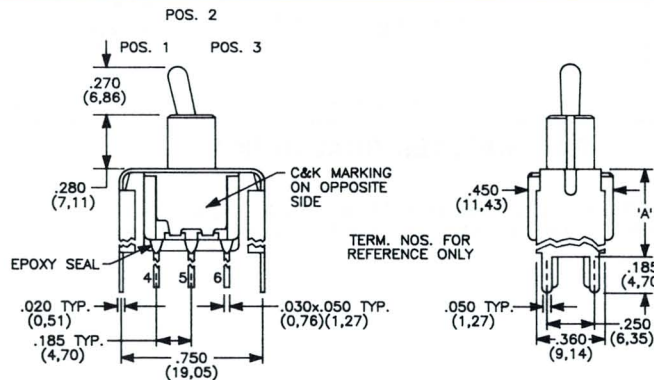


OPTION CODE	DIM. 'A'
V60	.460 (11,68)
V70	.630 (16,00)
V80	.953 (24,21)

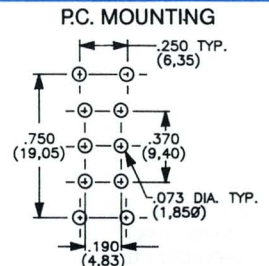
V60-V70-V80



DPDT



'B' Contact Material Std.



OPTION CODE	DIM. 'A'
V60	.460 (11,68)
V70	.630 (16,00)
V80	.953 (24,21)

CONT. MAT'L



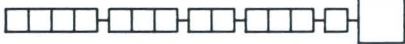
CONTACT MATERIALS

- B** CONTACTS & TERMINALS: Brass, with gold plate over nickel plate.
RATING: 0.4 VA max. @ 20 V AC or DC max. (Std. with all termination options exc. Z, C, Z3)
- Q** END CONTACTS: Coin silver, silver plated.
CENTER CONTACT & ALL TERMINALS: Brass, silver plated.
RATING: 5 AMPS @ 120 V AC or 28 V DC; 2 AMPS @ 250 V AC. (Std. with termination options Z, C, Z3)
- G** END CONTACTS: Coin silver, with gold plate over nickel plate.
CENTER CONTACT & ALL TERMINALS: Brass, with gold plate over nickel plate.
RATING: 0.4 VA max. @ 20 V AC or DC max. or 5 AMPS @ 120 V AC or 28 V DC; 2 AMPS @ 250 V AC.

Note: 'G' contact material is equivalent to both 'B' and 'Q' contact materials and can be used where either dry circuit * or power conditions are encountered. However, when the dry circuit rating is exceeded, the gold plating is removed from the contact interface and the switch cannot then be used in dry circuits. This option should be specified where UL or CSA listing is required on a switch used in a dry circuit application.

*Dry circuit = conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

SEAL



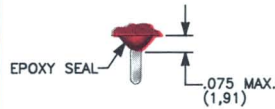
SEALING

(None)

No seal

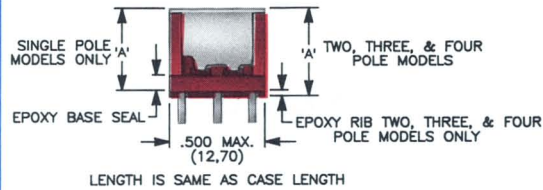
Std. with Z, C terminations, not avail. with all other terminations.

E



Std. with Z3, W-W5, A, A2, A4, AV2, V30-V90 terminations.

I



POLES	DIM. 'A'
SP	.410 (10,41)
DP	.440 (11,18)
3P	.505 (12,83)
4P	.505 (12,83)

Available only with Z, C, Z3 or W-W5 terminations.

HOW TO ORDER

Complete the order number below by selecting the desired model no., actuator, bushing (where required), termination, contact material and (if desired) terminal sealing options from the preceding sections. Place the option codes in the appropriate boxes of the ordering format. Some boxes may be unfilled. Where applicable, write actuator color in word form after order number.

(Example: 7208—L42—Y—Z—Q— with white actuator).

If no color is specified, black will be supplied.

S actuator, **Y** bushing, **Z** terminations, **Q** contact material and no seal are supplied if no options are specified. **E** epoxy terminal seal standard with **Z3**, **W-W5**, **A**, **AV2**, **V30-V90**, **A2** and **A4** terminations.

UL listed with all options when ordered with model nos. **U11** thru **U415** and **G** or **Q** contact material. CSA listing available on all UL listed switches, specify 'with CSA listing' in word form after order number. **Z** termination option CSA listed only when ordered with **I** epoxy base seal.

ADDITIONAL ORDERING INFORMATION:

ACTUATORS: Satin chrome or black finish available on all actuators except **K**, **K1**, **L3**, **L40-L43**. Write 'SATIN CHROME ACTUATOR' or 'BLACK ACTUATOR' in word form after order number. If nothing is specified, chrome plated actuators will be supplied.

K, K1 ACTUATORS: Write actuator cap color in word form after order number. If nothing is specified, natural aluminum caps will be supplied. Bushing option code not required.

T, T1 ACTUATORS: Bushing option code not required unless **CW** splashproof bushing option is desired.

TP, T1P, T2P ACTUATORS: Bushing option code not required.

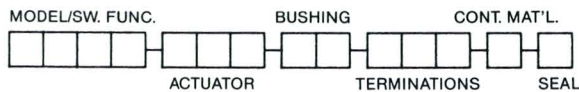
BUSHINGS: Black oxide finish available. Write 'BLACK BUSHING' in word form after order number. If nothing is specified, nickel plated bushings will be supplied.

HARDWARE: Two mounting nuts, locking ring and lockwasher are supplied standard, where applicable (except **P1**, **P3**, **P4** actuators: one P/N 7099 dress nut, one hex nut, locking ring and lockwasher supplied standard). Optional mounting nut styles and locking rings available. Write part descriptions and part nos. in word form after order number. If nothing is specified, standard hardware will be supplied. Hardware is also available separately, see **HARDWARE** section, page A-13.

UNAVAILABLE OPTION COMBINATIONS

<u>Model or Option</u>	<u>Options Not Available</u>
U11 thru U415	B*
S, M, L, L1, L2, L3	Y1
L40, L41, L42, L43	Y1, Y4
A, A2, A4, AV2, R, R2, V30-V90	H4, Y4
I	A, A2, A4, R, R2, AV2, V30-V90
R, R2	Q, G
TP, T1P, T2P	CW

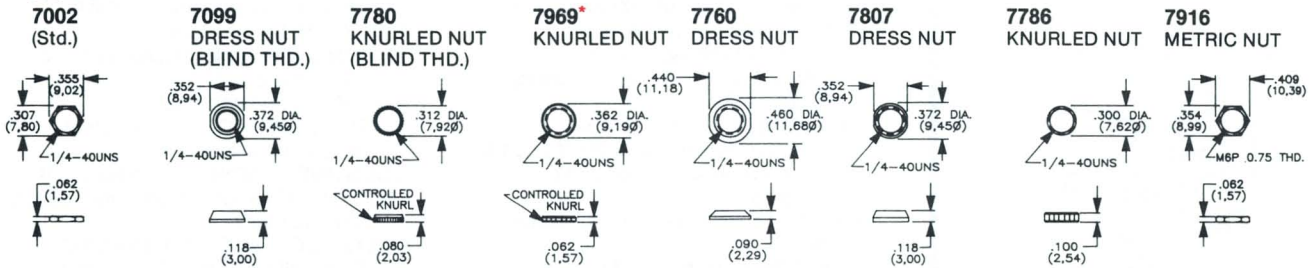
*UL listed switches must be ordered with G or Q contact material because UL considers for listing only those components suitable for power applications.



AVAILABLE HARDWARE

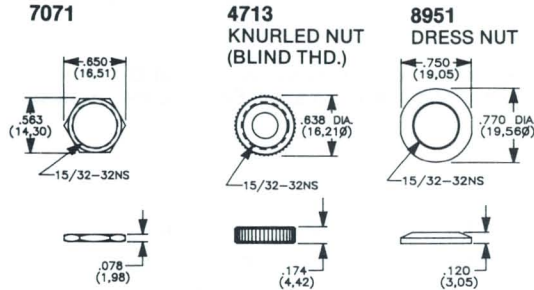
The following hardware is available separately. To order, write part nos., descriptions and colors where applicable.

NUTS

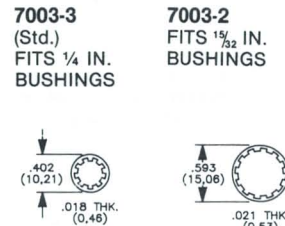


* Controlled knurl pattern fits 'Gulmite' #12 socket.

NUTS



LOCKWASHERS

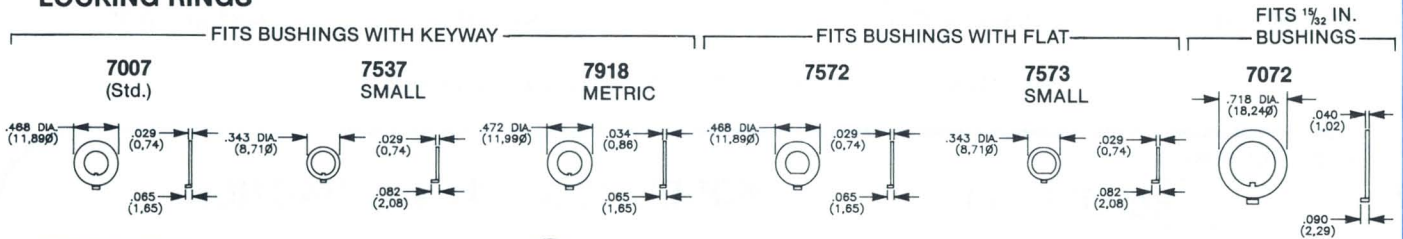


MATERIALS

NUTS, LOCKING RINGS - Brass, nickel plated.
LOCKWASHERS - Steel, bright nickel plated.

Black finish hardware is available, and is supplied when black bushings are specified. To order, write 'BLACK HARDWARE' in word form with descriptions and part nos.

LOCKING RINGS



WRENCHES

Switches are normally mounted to panel using two mounting nuts: one front of panel, one back of panel. To avoid damaging front of panel, always tighten back of panel nut. When ordering, specify 4 digit part no.



P/N 4815 or P/N 8942

WRENCH P/N	FITS NUTS P/N
7785	7002, 7099, 7807, 7916
8942	7969
4815	7780

TOGGLE CAPS



Plastic caps, available in 9 colors, fit either S or L actuator options. When ordering, specify cap part no. and color in word form.

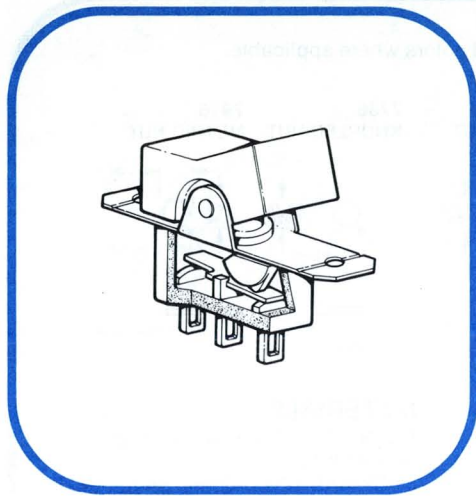
CAP COLORS			
1	White	6	Green
2	Black(Std.)	7	Blue
3	Red	8	Brown
4	Orange	9	Gray
5	Yellow		

LEVER HANDLES FOR L40 ACTUATOR OPTION

Lever handles available in 3 styles and 9 colors, fit L40 actuator option. For illustrations and dimensions, see page A-5. Lever handles snap-fit and may be installed or replaced by user. When ordering, specify part no. and color in word form. Finish: matte.

LEVER HANDLE P/N	MAKES ACTUATOR OPTION
4810	L41
4811	L42
4812	L43

LEVER HANDLE COLORS			
1	White	6	Green
2	Black(Std.)	7	Blue
3	Red	8	Brown
4	Orange	9	Gray
5	Yellow		



SPECIFICATIONS

CONTACT RATING: 5 AMPS @ 120 V AC or 28 V DC; 2 AMPS @ 250 V AC.
ELECTRICAL LIFE: 100,000 make-and-break cycles at full load on all models ending in -01 (ON-NONE-ON). All other models, 40,000 cycles.
CONTACT RESISTANCE: Below 10 milliohms typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.
INSULATION RESISTANCE: 10⁹ ohms min.
DIELECTRIC STRENGTH: 1,000 V RMS min. @ sea level.
OPERATING TEMPERATURE: -30°C to 85°C.

MATERIALS

CASE: SP & DP- diallyl phthalate (DAP) or melamine phenolic.
 3P & 4P- diallyl phthalate (DAP).
ACTUATOR: Nylon, black, std.
BUSHING: Brass, nickel plated or zinc, nickel plated.
HOUSING: Stainless steel.
SWITCH SUPPORT: Brass or steel, electrotin plated.
MOUNTING BRACKET: Stainless steel.
END CONTACTS: Coin silver, silver plated (Q cont. mat'l.).
CENTER CONTACT & ALL TERMINALS: Brass, silver plated (Q cont. mat'l.).
HARDWARE: Nut- Stainless steel.
 Screw- Stainless steel.
 Lockwasher- Stainless steel.
 Standoff- Aluminum or nylon.

NOTE

Specifications and Materials listed above are general specifications for switches with standard options. See option sections for additional information. Specifications available for specific models, consult factory.

INTRODUCTION

Available options for 7000 SERIES ROCKER AND LEVER HANDLE SWITCHES are shown on pages A-14 thru A-30. Make selections from the following option sections: Model/Switching Function, Actuator/Mounting Style, Terminations, Contact

Material and (if desired) Epoxy Terminal Seal. Each section begins with the ordering format, with the appropriate boxes enlarged. Complete HOW TO ORDER information is on page A-30. Available hardware and accessories shown on pages A-31 and A-32.

UL, CSA listings available. See HOW TO ORDER, page A-30.

MODEL/SW. FUNC.

				J					
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MODELS/SWITCHING FUNCTION

MODEL NO.	UL MODEL NO.	SWITCHING FUNCTION		
		POS 1	POS 2	POS 3
		C&K MARKING THIS SIDE		
7101	U11	ON	NONE	ON
7103	U13	ON	OFF	ON
7105	U15	MOM.	OFF	MOM.
7107	U17	ON	OFF	MOM.
7108	U18	ON	NONE	MOM.
CONNECTED TERMINALS		2-3	OPEN	2-1
7109	U19	NONE	ON	MOM.
CONNECTED TERMINALS		N/A	2-3	2-1
SCHEMATIC				
MOM. = MOMENTARY POSITION				
7201	U21	ON	NONE	ON
7203	U23	ON	OFF	ON
7205	U25	MOM.	OFF	MOM.
7207	U27	ON	OFF	MOM.
7208	U28	ON	NONE	MOM.
CONNECTED TERMINALS		2-3,5-6	OPEN	2-1,5-4
7209	U29	NONE	ON	MOM.
CONNECTED TERMINALS		N/A	2-3,5-6	2-1,5-4
SCHEMATIC				
MOM. = MOMENTARY POSITION				

SPDT

MODEL SHOWN: 7101-J1-Z-Q

TERM. NOS. FOR REFERENCE ONLY

DPDT

MODEL SHOWN: 7201-J1-Z-Q

TERM. NOS. FOR REFERENCE ONLY

C&K COMPONENTS, INC. 15 Riverdale Ave. Newton, MA 02158-1082

Tel: (617) 964-6400, Telex: 92-2544, TWX: 710-335-1163

A-14

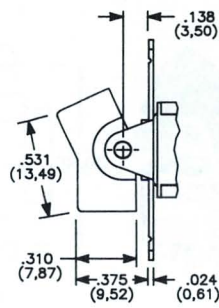
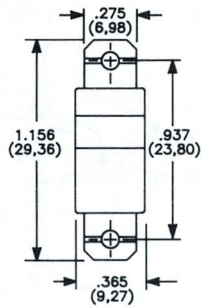
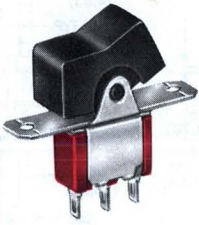
ACT./MTG. STYLE



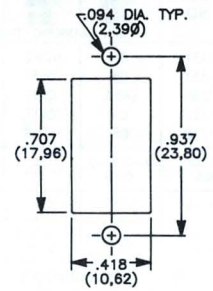
ACTUATOR OPTIONS FOR PANEL MOUNTING

Available with Z, C, Z3 or W-W5 terminations.
Available actuator colors, see page A-15.

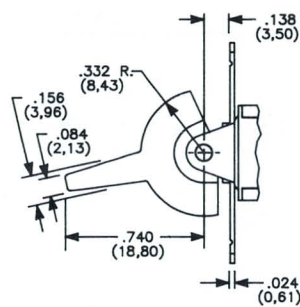
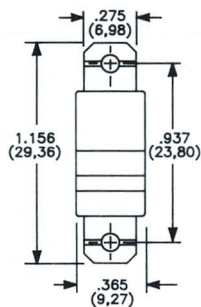
J1



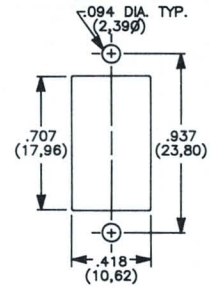
PANEL MOUNTING



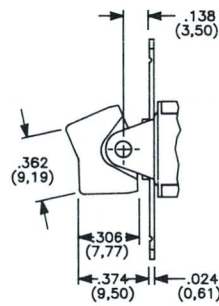
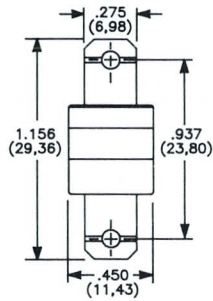
J2



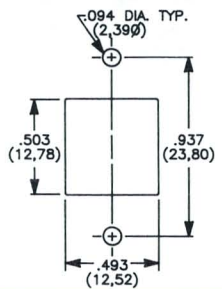
PANEL MOUNTING



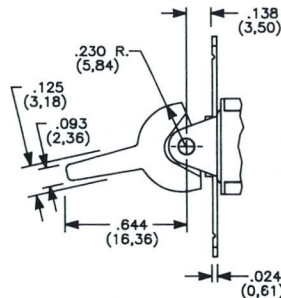
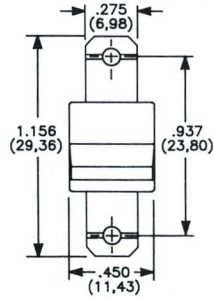
J54



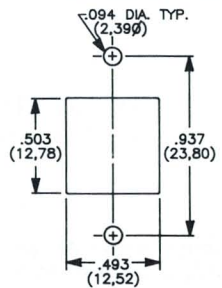
PANEL MOUNTING



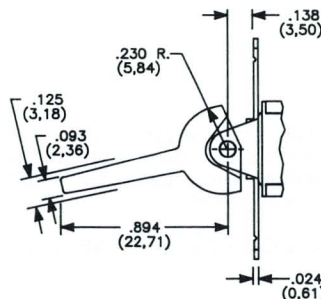
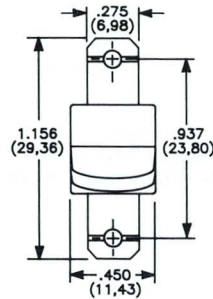
J64



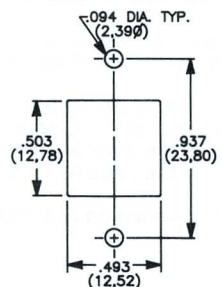
PANEL MOUNTING



J94



PANEL MOUNTING



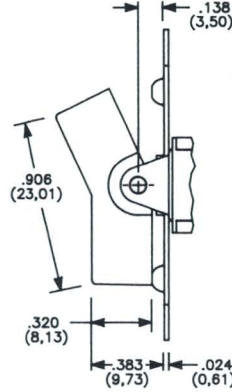
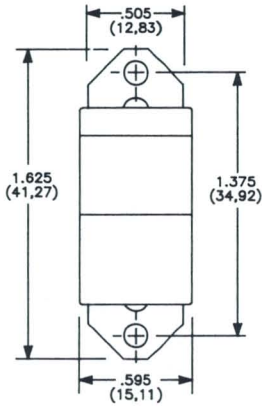
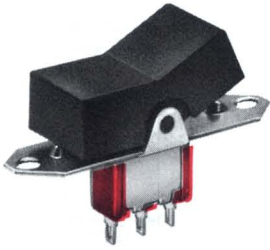
ACT./MTG. STYLE



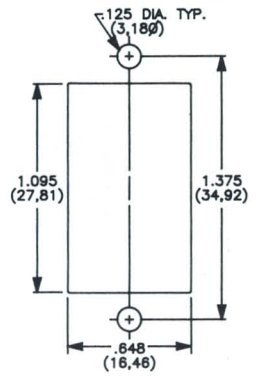
ACTUATOR OPTIONS FOR PANEL MOUNTING (cont'd.)

Available with Z, C, Z3 or W-W5 terminations.
Available actuator colors, see page A-15.

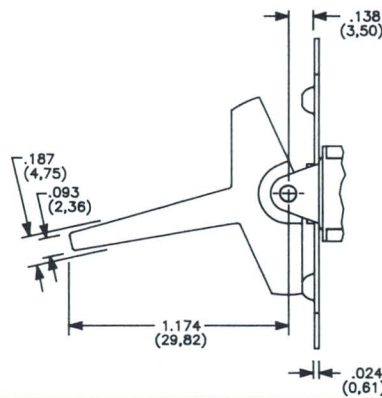
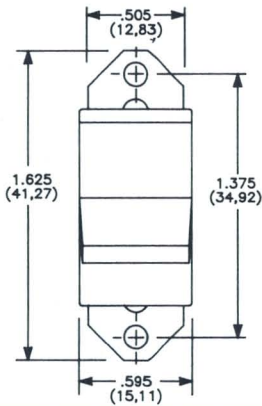
J3



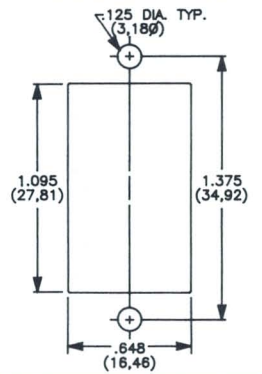
PANEL MOUNTING



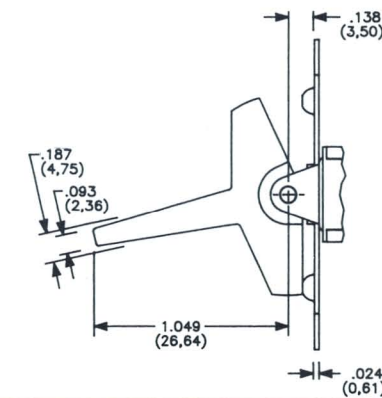
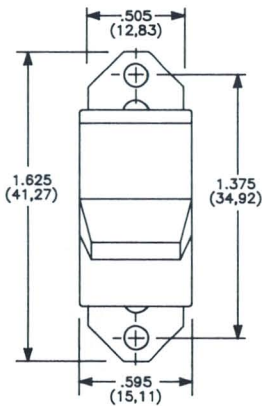
J4



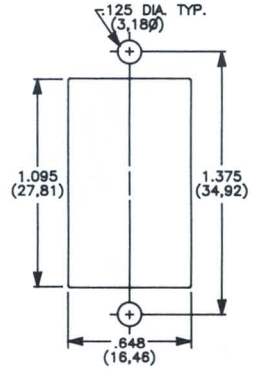
PANEL MOUNTING



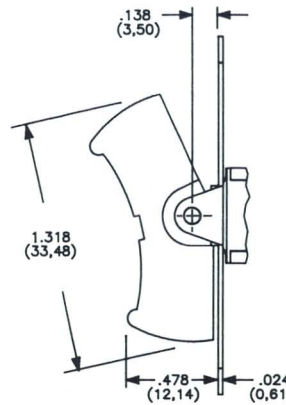
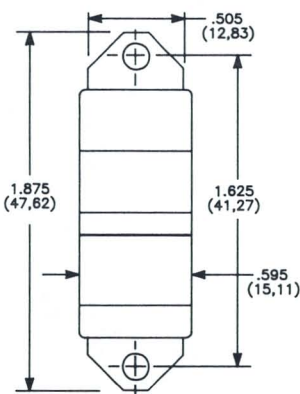
J5



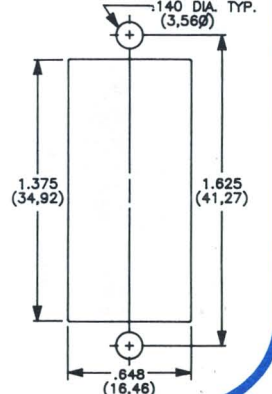
PANEL MOUNTING



J10



PANEL MOUNTING



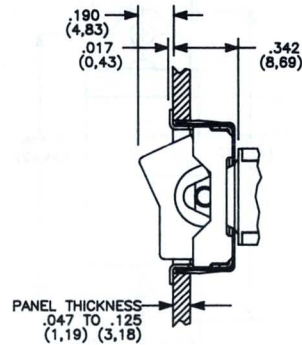
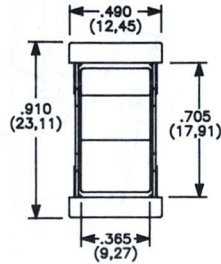
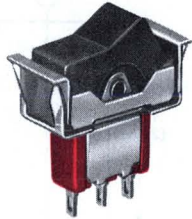
ACT./MTG. STYLE



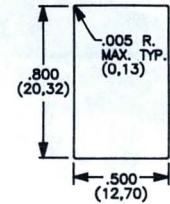
ACTUATOR OPTIONS FOR SNAP-IN FRONT MOUNTING

Available with Z, C, Z3 or W-W5 terminations. SPDT and DPDT models only.
Available actuator and frame colors, see page A-15.

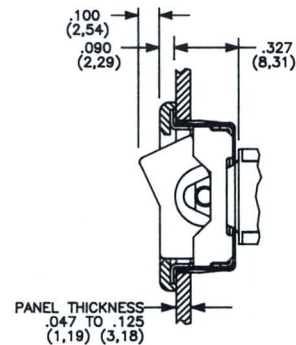
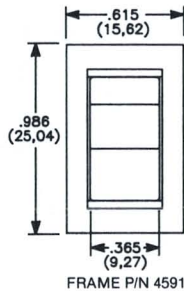
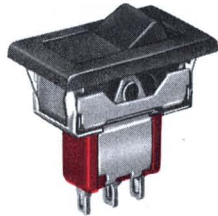
J15



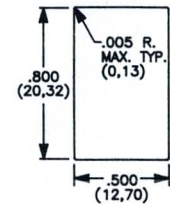
PANEL MOUNTING



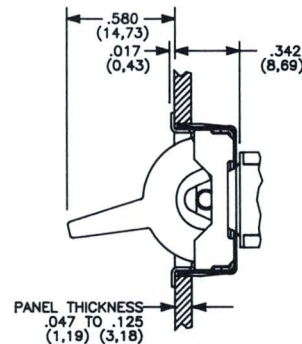
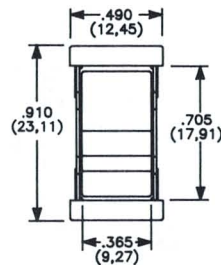
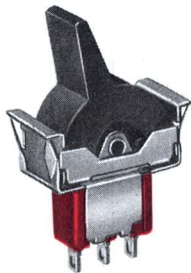
J16



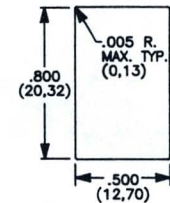
PANEL MOUNTING



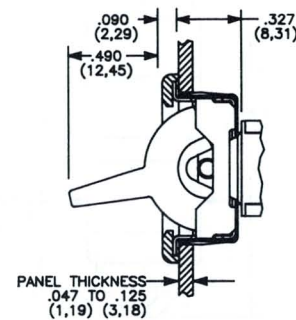
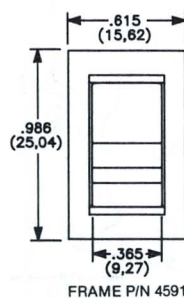
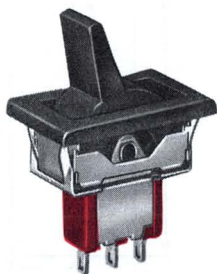
J25



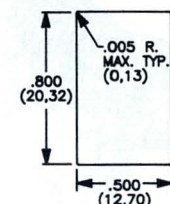
PANEL MOUNTING



J26



PANEL MOUNTING



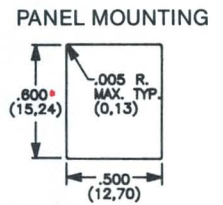
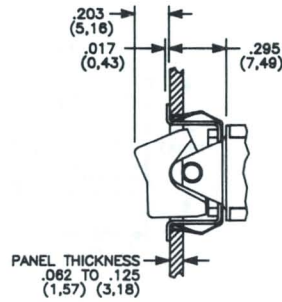
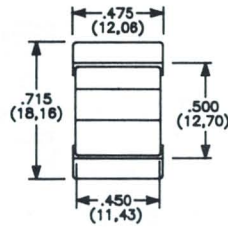
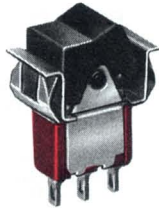
ACT./MTG. STYLE



ACTUATOR OPTIONS FOR SNAP-IN FRONT MOUNTING (cont'd.)

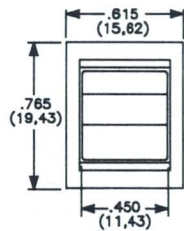
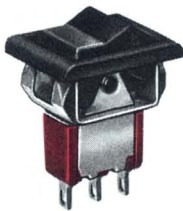
Available with Z, C, Z3 or W-W5 terminations. SPDT and DPDT models only.
Available actuator and frame colors, see page A-15.

J50

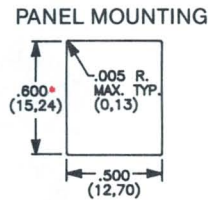
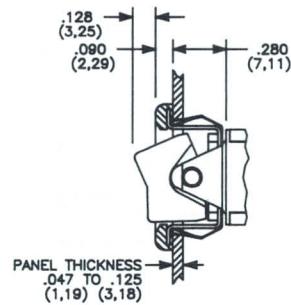


*For .125 (3,18) THK. panel, increase this DIM. to .620/.625 (15,75/15,88).

J51

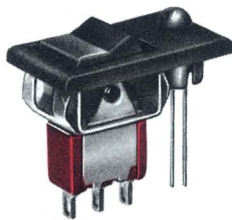


FRAME P/N 7890

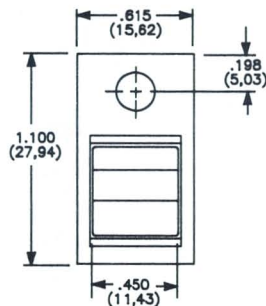


*For .125 (3,18) THK. panel, increase this DIM. to .620/.625 (15,75/15,88).

J52

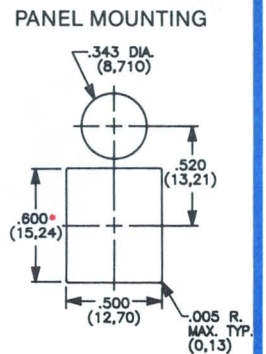
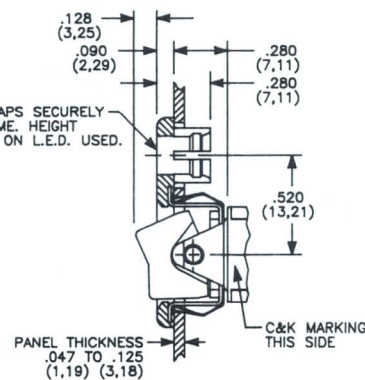


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FRAME P/N 8058

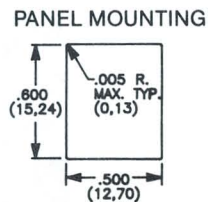
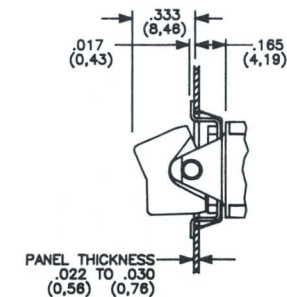
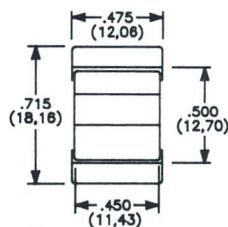
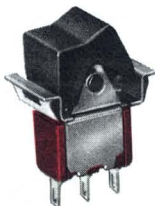
L.E.D. SNAPS SECURELY INTO FRAME. HEIGHT DEPENDS ON L.E.D. USED.



L.E.D. NOT INCLUDED. FOR L.E.D. INFORMATION, SEE PAGE A-25.

*For .125 (3,18) THK. panel, increase this DIM. to .620/.625 (15,75/15,88).

J53



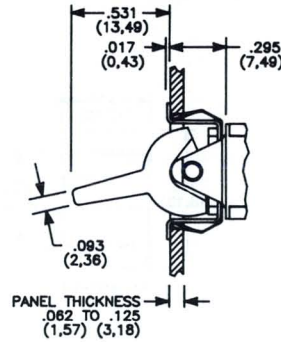
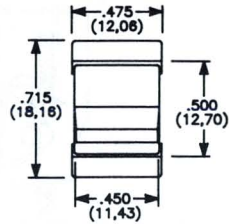
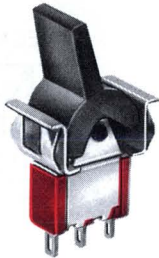
ACT./MTG. STYLE



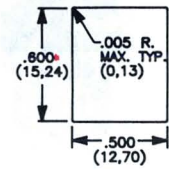
ACTUATOR OPTIONS FOR SNAP-IN FRONT MOUNTING (cont'd.)

Available with Z, C, Z3 or W-W5 terminations. SPDT and DPDT models only.
Available actuator and frame colors, see page A-15.

J60

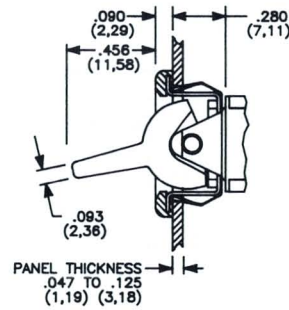
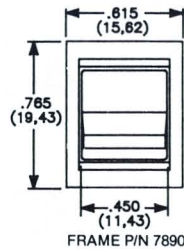


PANEL MOUNTING

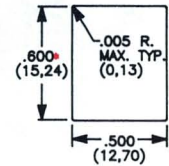


* For .125 (3,18) THK. panel, increase this DIM. to .620/.625 (15,75/15,88).

J61

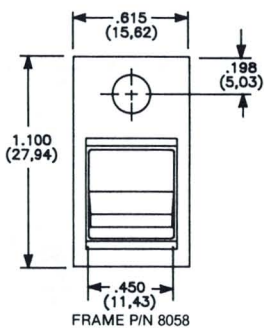
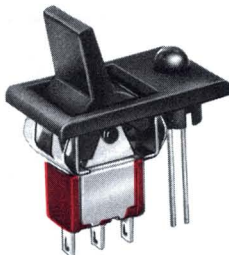


PANEL MOUNTING

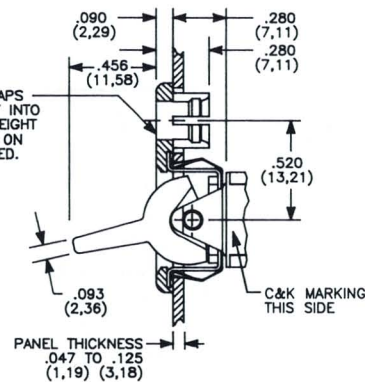


* For .125 (3,18) THK. panel, increase this DIM. to .620/.625 (15,75/15,88).

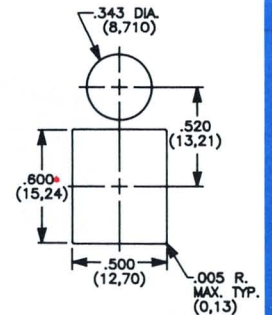
J62



L.E.D. SNAPS SECURELY INTO FRAME. HEIGHT DEPENDS ON L.E.D. USED.



PANEL MOUNTING

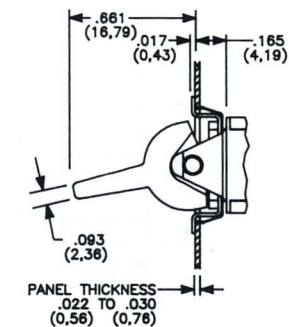
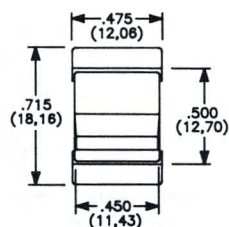
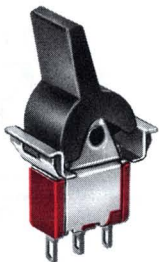


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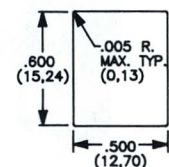
L.E.D. NOT INCLUDED. FOR L.E.D. INFORMATION, SEE PAGE A-25.

* For .125 (3,18) THK. panel, increase this DIM. to .620/.625 (15,75/15,88).

J63



PANEL MOUNTING



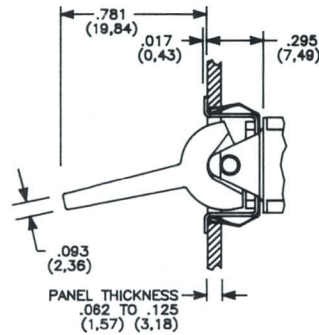
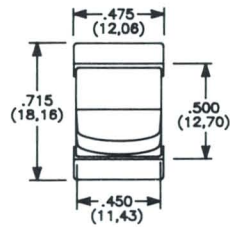
ACT./MTG. STYLE



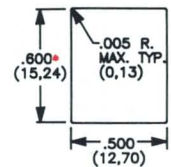
ACTUATOR OPTIONS FOR SNAP-IN FRONT MOUNTING (cont'd.)

Available with Z, C, Z3 or W-W5 terminations. SPDT and DPDT models only.
Available actuator and frame colors, see page A-15.

J90

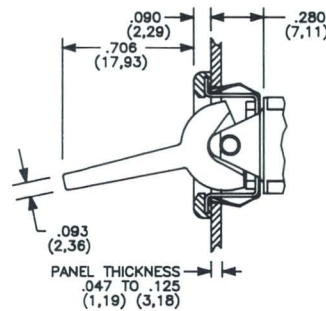
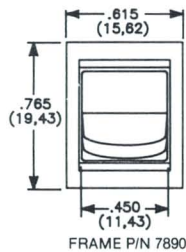


PANEL MOUNTING

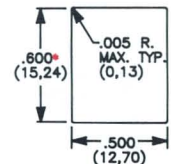


* For .125 (3,18) THK. panel, increase this DIM. to .620/.625 (15,75/15,88).

J91

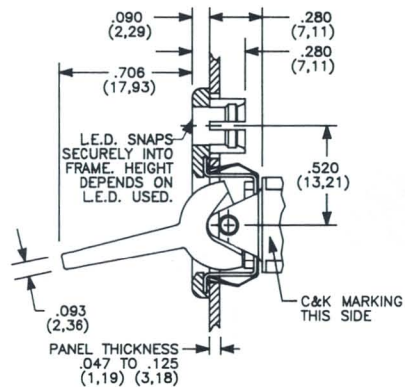
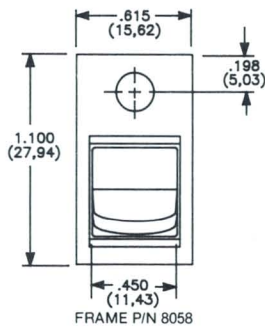


PANEL MOUNTING

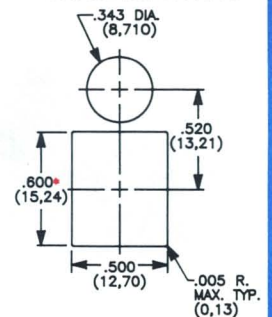


* For .125 (3,18) THK. panel, increase this DIM. to .620/.625 (15,75/15,88).

J92



PANEL MOUNTING

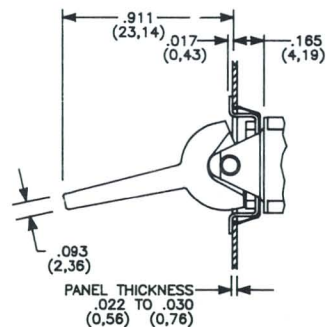
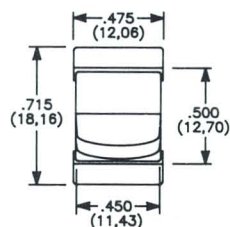
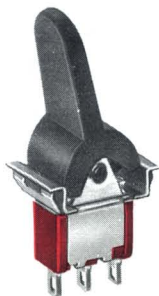


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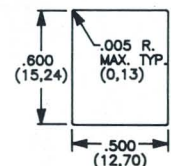
L.E.D. NOT INCLUDED. FOR L.E.D. INFORMATION, SEE PAGE A-25.

* For .125 (3,18) THK. panel, increase this DIM. to .620/.625 (15,75/15,88).

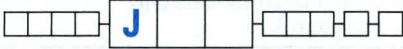
J93



PANEL MOUNTING



ACT./MTG. STYLE

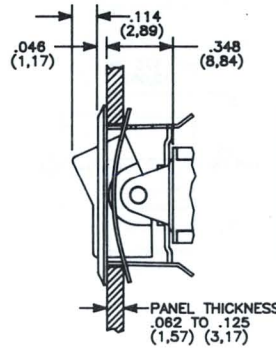
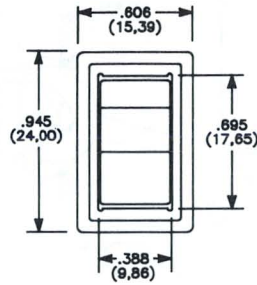


ACTUATOR OPTIONS FOR REAR MOUNTING

Available with Z, C, Z3 or W-W5 terminations.

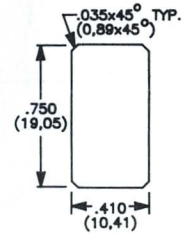
Available actuator colors, see page A-15. Select frame colors below.

J11

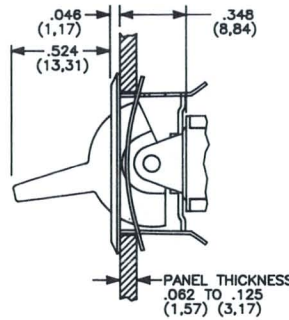
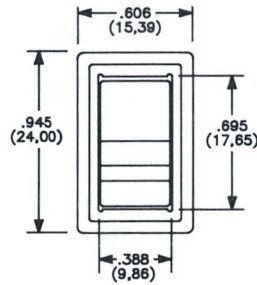


FRAME COLORS	
P/N	FINISH
7645-1	BRIGHT CHROME
7645-2	BLACK (Std.)
7645-3	SATIN CHROME
7645-4	WHITE ENAMEL

PANEL MOUNTING

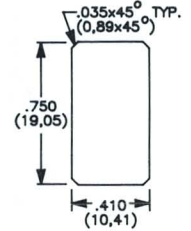


J21

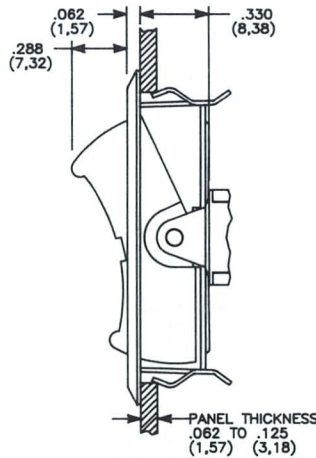
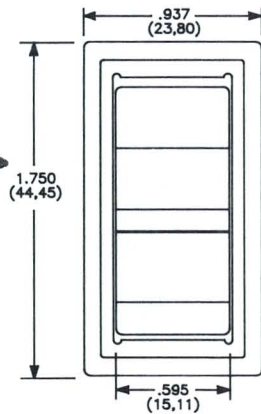
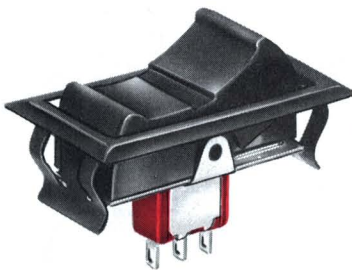


FRAME COLORS	
P/N	FINISH
7645-1	BRIGHT CHROME
7645-2	BLACK (Std.)
7645-3	SATIN CHROME
7645-4	WHITE ENAMEL

PANEL MOUNTING

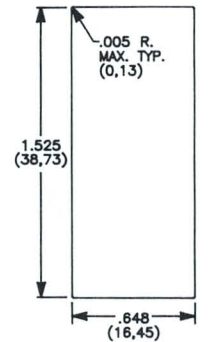


J19

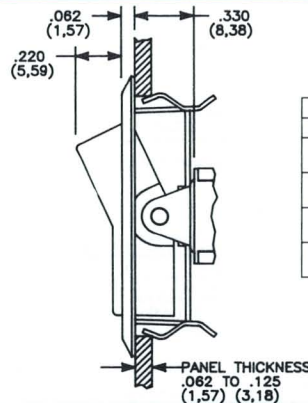
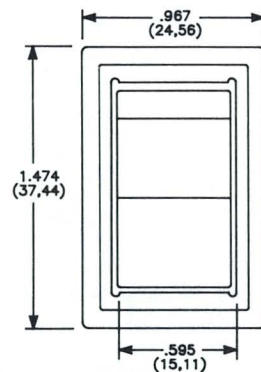


FRAME COLORS	
P/N	FINISH
7810-1	BRIGHT CHROME
7810-2	BLACK (Std.)
7810-3	SATIN CHROME
7810-4	WHITE ENAMEL

PANEL MOUNTING

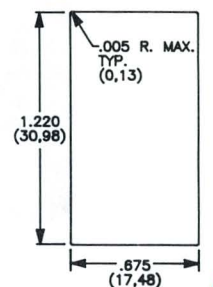


J37



FRAME COLORS	
P/N	FINISH
4454-1	BRIGHT CHROME
4454-2	BLACK (Std.)
4454-3	SATIN CHROME
4454-4	WHITE ENAMEL

PANEL MOUNTING



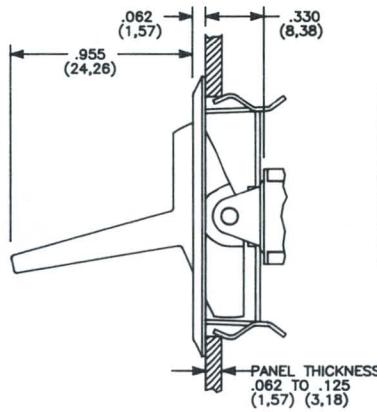
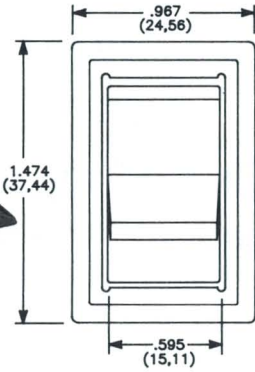
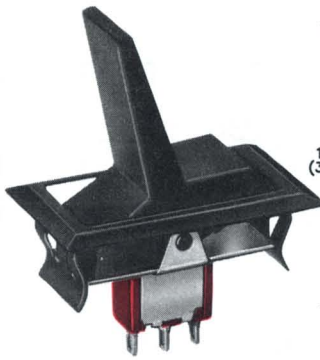
ACT./MTG. STYLE



ACTUATOR OPTIONS FOR REAR MOUNTING (cont'd.)

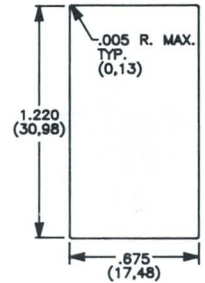
Available with Z, C, Z3 or W-W5 terminations.
Available actuator colors, see page A-15. Select frame colors below.

J47

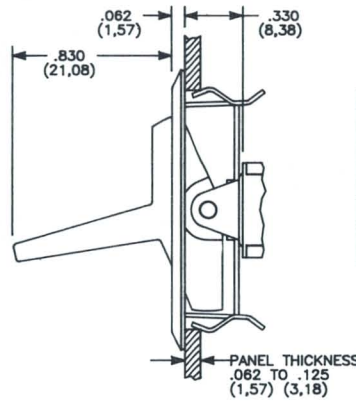
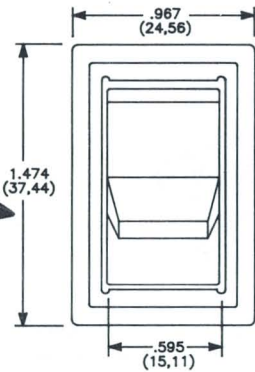


FRAME COLORS	
P/N	FINISH
4454-1	BRIGHT CHROME
4454-2	BLACK (Std.)
4454-3	SATIN CHROME
4454-4	WHITE ENAMEL

PANEL MOUNTING

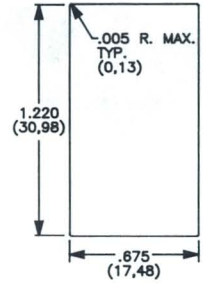


J57



FRAME COLORS	
P/N	FINISH
4454-1	BRIGHT CHROME
4454-2	BLACK (Std.)
4454-3	SATIN CHROME
4454-4	WHITE ENAMEL

PANEL MOUNTING



ACT./MTG. STYLE



ACTUATOR OPTIONS FOR P.C. MOUNTING

(shown on next page)

Available actuator options for P.C. mounted switches are shown on next page. Select actuator color from chart on page A-15. Chart below shows available actuator / termination combinations. Note that some permissible combinations may lack clearance between actuator and P.C. board, and care must be exercised to accommodate this condition.

AVAILABLE ACTUATOR / TERMINATION COMBINATIONS	
ACTUATOR OPTIONS	P.C. TERMINATIONS AVAILABLE
J1, J2	A, AV2, V3, V4, V5*, V6-V9
J3, J4, J5	AV2*, V3, V4, V5*, V6-V9
J50, J60, J90	A*, AV2, V3-V9

*Actuator may lack clearance with P.C. board.

ACT./MTG. STYLE

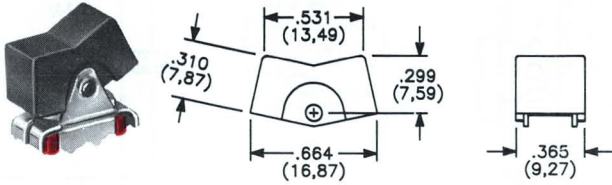


ACTUATOR OPTIONS FOR P.C. MOUNTING

See page A-23 for available actuator/termination combinations.

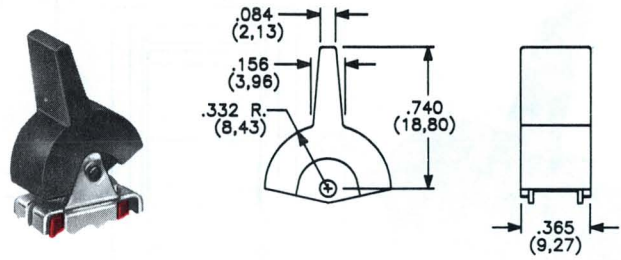
Available actuator colors, see page A-15.

J1



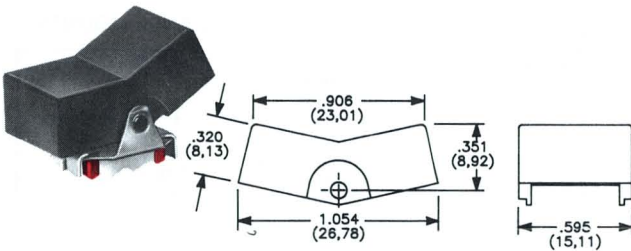
ACTUATOR P/N 7602

J2



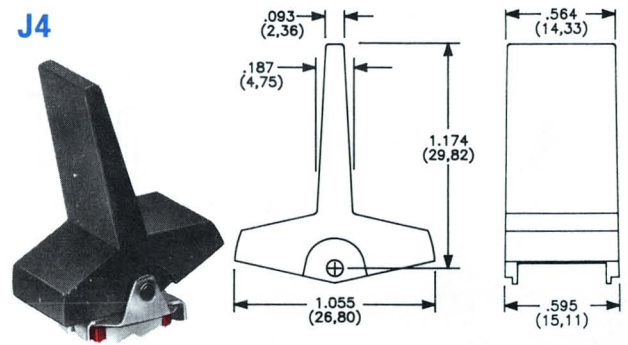
ACTUATOR P/N 7605

J3



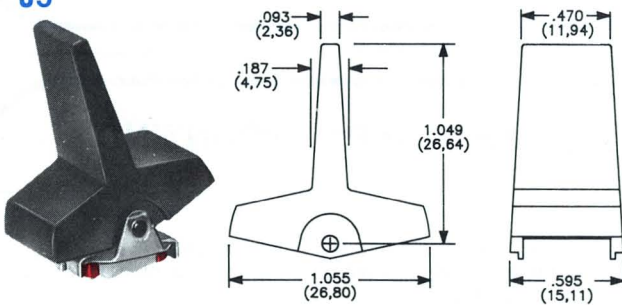
ACTUATOR P/N 7666

J4



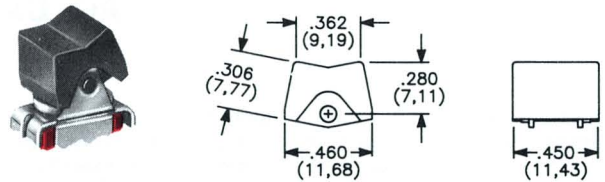
ACTUATOR P/N 7733

J5



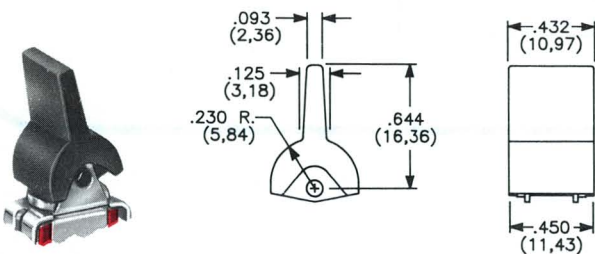
ACTUATOR P/N 7912

J50



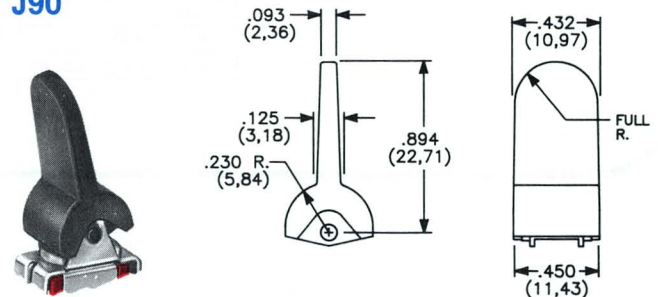
ACTUATOR P/N 7870

J60



ACTUATOR P/N 7868

J90



ACTUATOR P/N 7904

L.E.D. INFORMATION FOR J52- J62- J92 ACTUATOR OPTIONS

(See pages A-19 thru A-21 for option illustrations)

L.E.D.'s are not supplied with J52, J62, J92 actuator options. Below are recommended dimensions, sources and typical ratings:

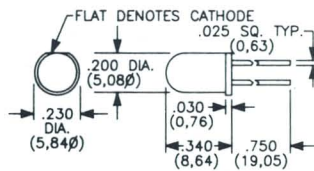
SUGGESTED L.E.D. LAMP MODELS AND SUPPLIERS

GEN. INSTRUMENT	XCITON	SIEMENS CORP.
MV5054-Red	XC556-Red	LD41-Red
MV5253-Green	XC556G-Green	LD57-Green
MV5353-Yellow	XC556Y-Yellow	LD55-Yellow

TYPICAL L.E.D. RATINGS

Forward Voltage	Current	Power	Max. Reverse Voltage
2.3V	50mA	100mW	5V

RECOMMENDED L.E.D. DIMENSIONS



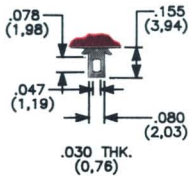
TERMINATIONS



TERMINATIONS

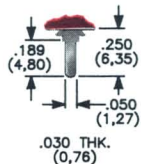
Note: Switches with Z, C, Z3 or W-W5 terminations have panel mounting bracket, shown pages A-14 & A-15.

Z (Std.)



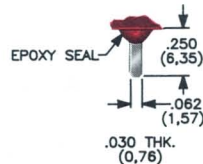
'Q' Contact Material Std.

C



'Q' Contact Material Std.

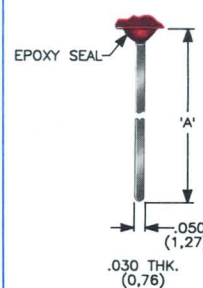
Z3 QUICK CONNECT



Mating quick connector available; order part no. 5301.

'Q' Contact Material Std.

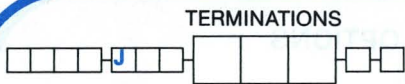
W-W5 WIRE-WRAP



OPTION CODE	DIM. 'A'
W	.750 (19.05)
W1	.964 (24.48)
W3	.425 (10.80)
W4	1.062 (26.97)
W5	1.305 (33.15)

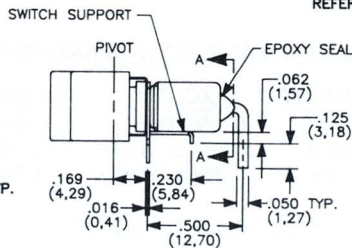
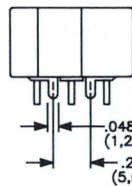
Wire-Wrap is a registered trademark of the Gardner-Denver Company.

'B' Contact Material Std.

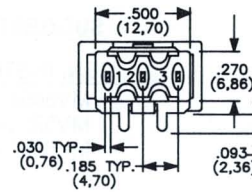


TERMINATIONS (cont'd.)

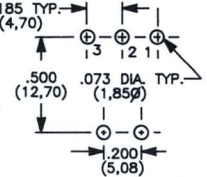
A



TERM. NOS. FOR REFERENCE ONLY



PC MOUNTING



SECTION A-A

SPDT

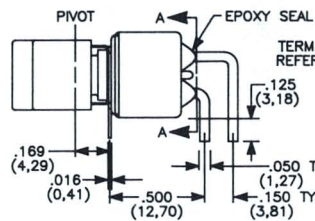
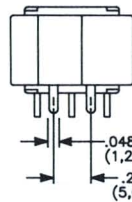
Note: PC. pattern must clear switch support legs. For available actuator options, see chart, page A-23.

Actuator shown in POS.1.

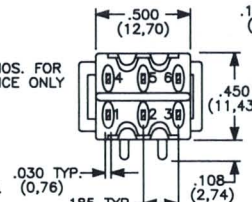
'B' Contact Material Std.

Term. bend radii mfg. option.

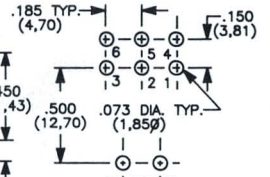
A



TERM. NOS. FOR REFERENCE ONLY



PC MOUNTING



SECTION A-A

DPDT

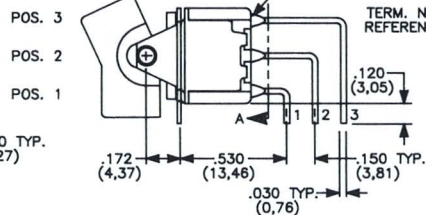
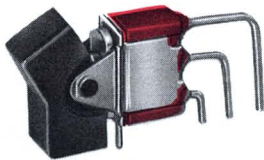
For available actuator options, see chart, page A-23

Actuator shown in POS.1.

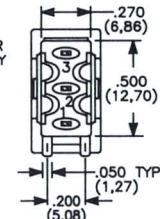
'B' Contact Material Std.

Term. bend radii mfg. option.

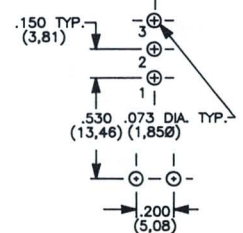
V5



TERM. NOS. FOR REFERENCE ONLY



PC MOUNTING



SECTION A-A

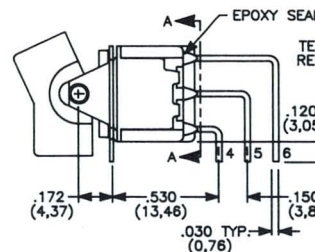
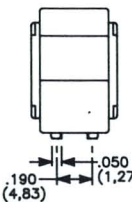
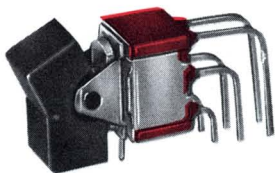
SPDT

For available actuator options, see chart, page A-23

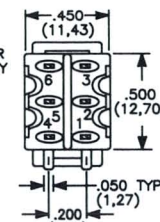
'B' Contact Material Std.

Term. bend radii mfg. option.

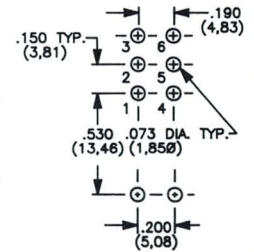
V5



TERM. NOS. FOR REFERENCE ONLY



PC MOUNTING



SECTION A-A

DPDT

For available actuator options, see chart, page A-23

'B' Contact Material Std.

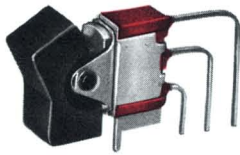
Term. bend radii mfg. option.

TERMINATIONS

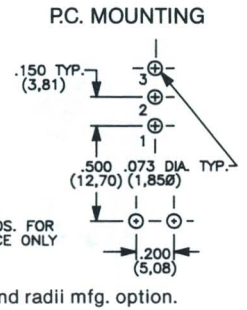
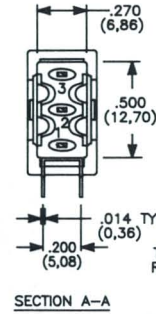
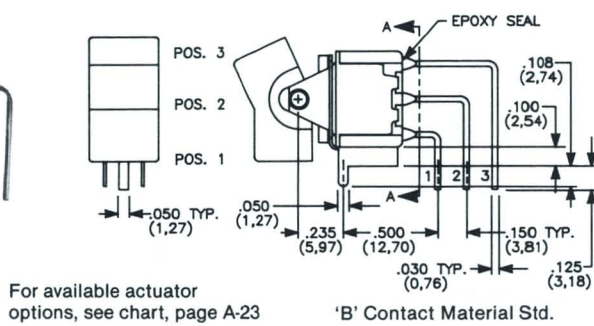


TERMINATIONS (cont'd.)

AV2



SPDT



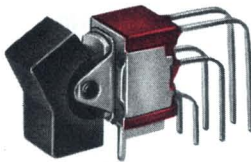
For available actuator options, see chart, page A-23

'B' Contact Material Std.

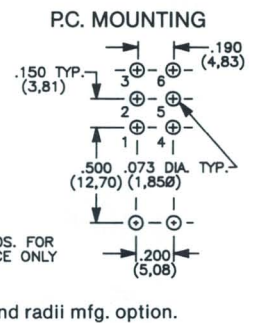
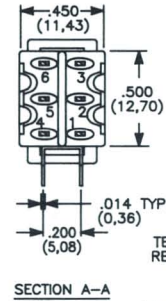
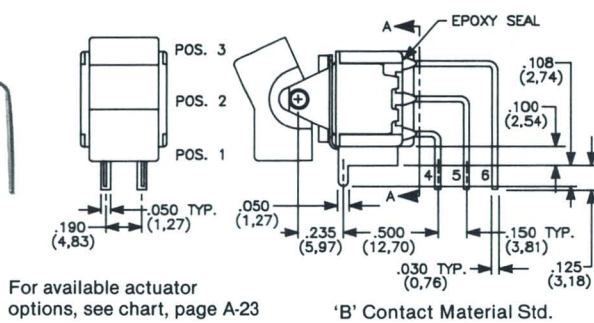
SECTION A-A

Term. bend radii mfg. option.

AV2



DPDT



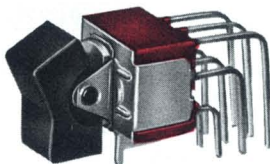
For available actuator options, see chart, page A-23

'B' Contact Material Std.

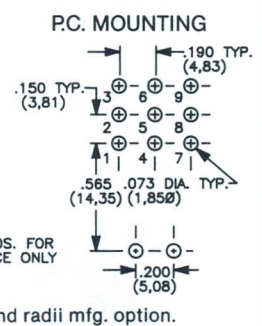
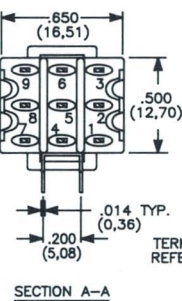
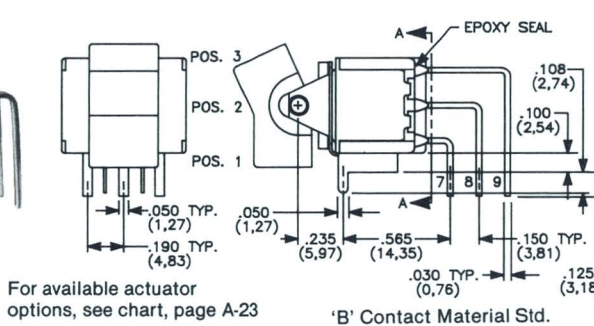
SECTION A-A

Term. bend radii mfg. option.

AV2



3PDT



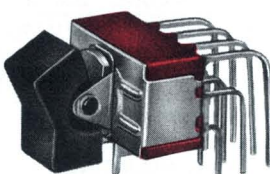
For available actuator options, see chart, page A-23

'B' Contact Material Std.

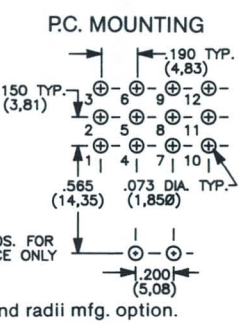
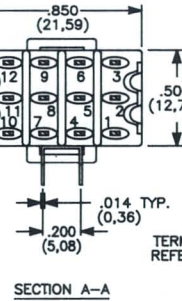
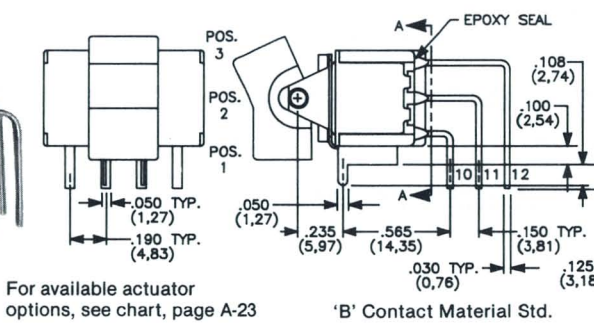
SECTION A-A

Term. bend radii mfg. option.

AV2



4PDT



For available actuator options, see chart, page A-23

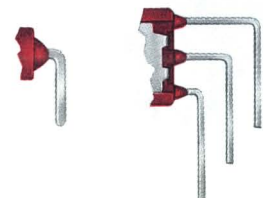
'B' Contact Material Std.

SECTION A-A

Term. bend radii mfg. option.

EXTENDED TERMINAL OPTION

Switches with A or AV2 terminations may be ordered with extended terminals, as shown. This provides easier installation into P.C. boards. To order, specify 'Extended Terminals' in word form after order number.



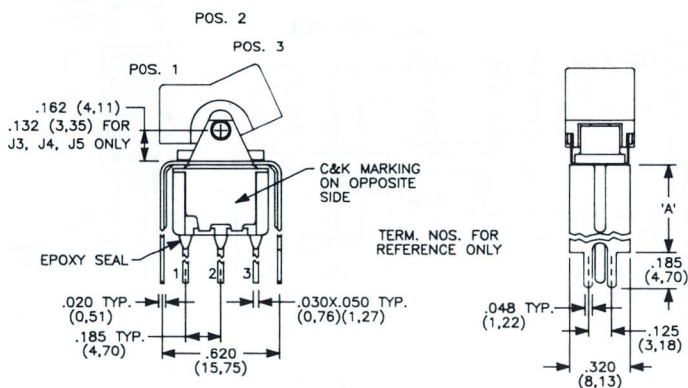


TERMINATIONS (cont'd.)

V3-V4-V9

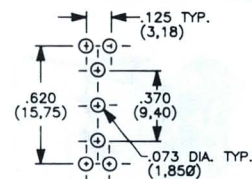


SPDT



'B' Contact Material Std.

P.C. MOUNTING

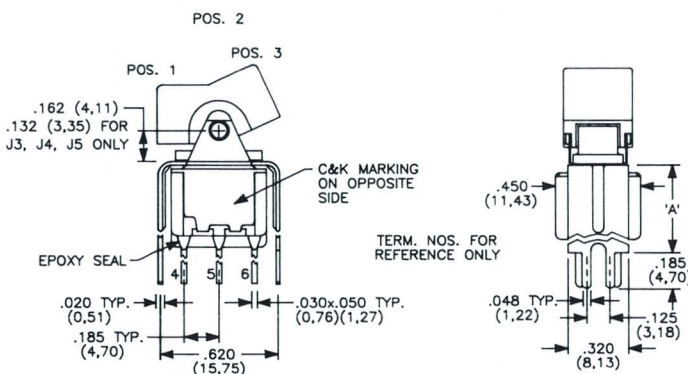


OPTION CODE	DIM. 'A'
V3	.460 (11,68)
V4	.630 (16,00)
V9	1.150 (29,21)

V3-V4-V9

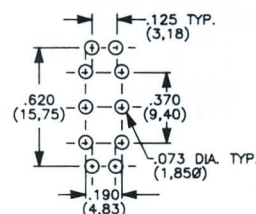


DPDT



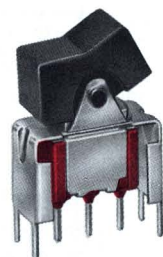
'B' Contact Material Std.

P.C. MOUNTING

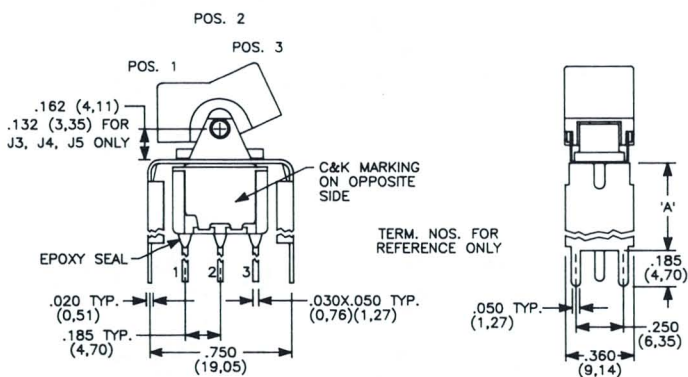


OPTION CODE	DIM. 'A'
V3	.460 (11,68)
V4	.630 (16,00)
V9	1.150 (29,21)

V6-V7-V8

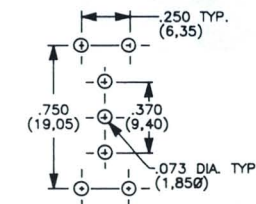


SPDT



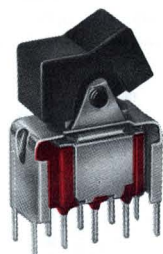
'B' Contact Material Std.

P.C. MOUNTING

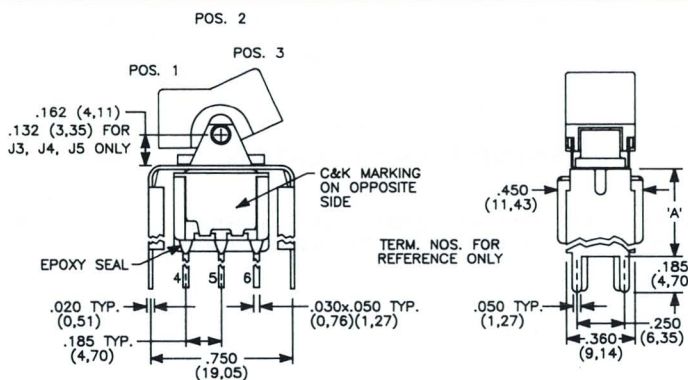


OPTION CODE	DIM. 'A'
V6	.460 (11,68)
V7	.630 (16,00)
V8	.953 (24,21)

V6-V7-V8

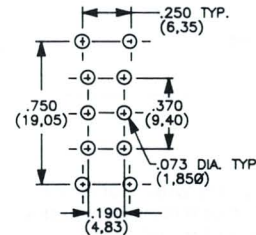


DPDT



'B' Contact Material Std.

P.C. MOUNTING



OPTION CODE	DIM. 'A'
V6	.460 (11,68)
V7	.630 (16,00)
V8	.953 (24,21)

CONT. MAT'L



CONTACT MATERIALS

- B** CONTACTS & TERMINALS: Brass, with gold plate over nickel plate.
RATING: 0.4 VA max. @ 20 V AC or DC max. (Std. with all termination options exc. Z, C, Z3)
- Q** END CONTACTS: Coin silver, silver plated.
CENTER CONTACT & ALL TERMINALS: Brass, silver plated.
RATING: 5 AMPS @ 120 V AC or 28 V DC; 2 AMPS @ 250 V AC. (Std. with termination options Z, C, Z3)
- G** END CONTACTS: Coin silver, with gold plate over nickel plate.
CENTER CONTACT & ALL TERMINALS: Brass, with gold plate over nickel plate.
RATING: 0.4 VA max. @ 20 V AC or DC max. or 5 AMPS @ 120 V AC or 28 V DC; 2 AMPS @ 250 V AC.

Note: 'G' contact material is equivalent to both 'B' and 'Q' contact materials and can be used where either dry circuit* or power conditions are encountered. However, when the dry circuit rating is exceeded, the gold plating is removed from the contact interface and the switch cannot then be used in dry circuits. This option should be specified where UL or CSA listing is required on a switch used in a dry circuit application.

*Dry circuit = conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

SEAL



SEALING

(None)

No seal

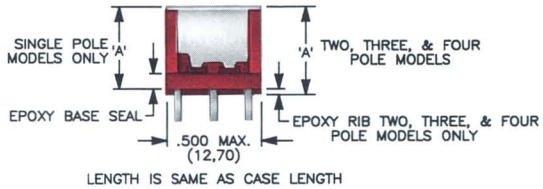
Std. with Z, C terminations, not avail. with all other terminations.

E



Std. with Z3, W-W5, A, AV2, V3-V9 terminations.

I



POLES	DIM. 'A'
SP	.410 (10,41)
DP	.440 (11,18)
3P	.505 (12,83)
4P	.505 (12,83)

Available only with Z, C, Z3 or W-W5 terminations.

HOW TO ORDER

Complete the order number below by selecting the desired model no., actuator/mounting style, termination, contact material and (if desired) terminal sealing options from the preceding sections. Place the option codes in the appropriate boxes of the ordering format. Some boxes may be unfilled. Write actuator color and, where applicable, frame color in word form after order number. (Example: **7****2****1****1**-**J****2****6**-**Z****□****□**-**B**-**□** with white actuator and blue frame).

If no color is specified, black will be supplied.

Note: all terminations are not available with all mounting styles, see ACTUATOR/MOUNTING STYLE option section.

L.E.D.'s not furnished with **J52**, **J62** or **J92** actuator options.

Z terminations, **Q** contact material and no seal are supplied if no options are specified. **E** epoxy terminal seal standard with **Z3**, **W-W5**, **A**, **AV2** and **V3-V9** terminations.

UL listed with all options when ordered with model nos. **U11** thru **U415** and **G** or **Q** contact material. CSA listing available on all UL listed switches, specify 'with CSA listing' in word form after order number. **Z** termination option CSA listed only when ordered with **I** epoxy base seal.

Note: Custom actuator markings and legends available, see inside front cover and consult factory.

HARDWARE: Two mounting screws, two nuts, two standoffs for 1/8 in. thk. panel and two lockwashers are supplied standard on panel mounted switches. Hardware for optional panel thicknesses available. See chart on page A-31 to determine correct standoff length and part no. Write part description and part no. in word form after order number. If nothing is specified, standard hardware will be supplied. Hardware is also available separately, see **HARDWARE** section, pages A-31 and A-32.

UNAVAILABLE OPTION COMBINATIONS

<u>Model or Option</u>	<u>Options Not Available</u>
U11 thru U415	B*
J3, J4, J5, J10	A, V5
I	A, AV2, V3-V9

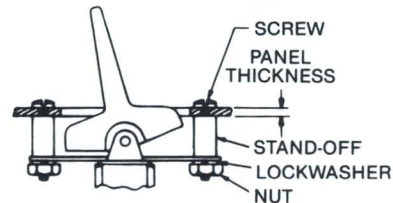
*UL listed switches must be ordered with G or Q contact material because UL considers for listing only those components suitable for power applications.



AVAILABLE HARDWARE

Hardware shown below and on next page is available separately. To order, write part nos., descriptions and colors in word form. Mounting hardware for panel mounted switches consists of two screws, two nuts, two standoffs and two lockwashers per switch. See chart.

MOUNTING HARDWARE			
HARDWARE P/N	PANEL THK.	STANDOFF LENGTH	ACTUATOR OPTION
7611-01	1/16 in. (1,59)	.295 (7,49)	J1, J2, J54, J64, J94
7611-02	3/32 in. (2,38)	.264 (6,71)	
7611-03 (Std.)	1/8 in. (3,18)	.233 (5,92)	
7706-01	1/16 in. (1,59)	.295 (7,49)	J3
7706-02	3/32 in. (2,38)	.264 (6,71)	
7706-03 (Std.)	1/8 in. (3,18)	.233 (5,92)	
7750-01	1/16 in. (1,59)	.375 (9,53)	J4, J5
7750-02	3/32 in. (2,38)	.344 (8,74)	
7750-03 (Std.)	1/8 in. (3,18)	.312 (7,92)	
7707-01	1/16 in. (1,59)	.295 (7,49)	J10
7707-02	3/32 in. (2,38)	.264 (6,71)	
7707-03 (Std.)	1/8 in. (3,18)	.233 (5,92)	



MATERIALS: SCREWS, NUTS, LOCKWASHERS- Stainless Steel.
STANDOFFS- Aluminum or nylon.

FRAMES

Frames for the following actuator options are available separately. Chart shows available colors for nylon frames. For illustrations and dimensions of parts not shown, see pages noted. Nylon frame finish: matte.

FRAME P/N	FITS ACTUATOR OPTION	SEE PAGE NO.	MATERIAL
4591	J16, J26	A-18	Nylon
7890	J51, J61, J91	A-19, A-20, A-21	Nylon
8058	J52, J62, J92	A-19, A-20, A-21	Nylon
7645-*	J11, J21	A-22	Spring Steel
7810-*	J19	A-22	Spring Steel
4454-*	J37, J47, J57	A-22, A-23	Spring Steel

*For complete part nos. and available colors, see FRAME COLOR CHARTS pages A-22, A-23.

FRAME COLORS (NYLON FRAMES)	
1	White
2	Black(Std.)
3	Red
4	Orange
5	Yellow
6	Green
7	Blue
8	Brown
9	Gray

(cont'd. on next page)

SNAP-IN FRAMES

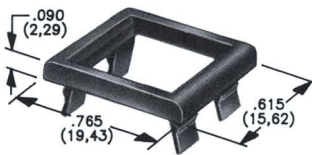
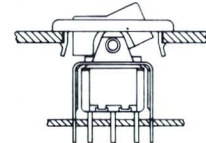
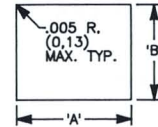
Frames below snap into panel opening and are independent from switch mounting. They are recommended for P.C. mounted switches with A, AV2 or V3 - V9 terminations. Accurate positioning of the P.C. mounted switch relative to the panel opening is necessary to provide proper clearance between the actuator and the frame. See charts for correct part no., panel thickness and available colors. Frame finish: matte; material, nylon.



FOR J1, J2 ACTUATORS

FRAME PART NO.	PANEL THICKNESS	DIM. 'A'	DIM. 'B'
4529	.047 (1,19)	.797-.803 (20,24-20,40)	.495-.505 (12,57-12,83)
4527	.062 (1,57)		
4528	.090 (2,29)		
4526	.125 (3,18)		

MOUNTING INFORMATION



FOR J50, J60, J90 ACTUATORS

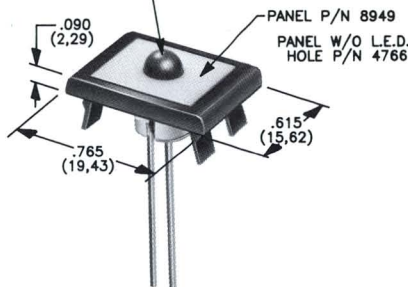
FRAME PART NO.	PANEL THICKNESS	DIM. 'A'	DIM. 'B'
4325	.047 (1,19)	.595-.605 (15,11-15,37)	.495-.500 (12,57-12,70)
4326	.062 (1,57)		
4327	.090 (2,29)	.620-.625	.495-.500
4328	.125 (3,18)	(15,75-15,88)	(12,57-12,70)

FRAME COLORS			
1	White	6	Green
2	Black(Std.)	7	Blue
3	Red	8	Brown
4	Orange	9	Gray
5	Yellow		

INSERTS FOR SNAP-IN FRAMES

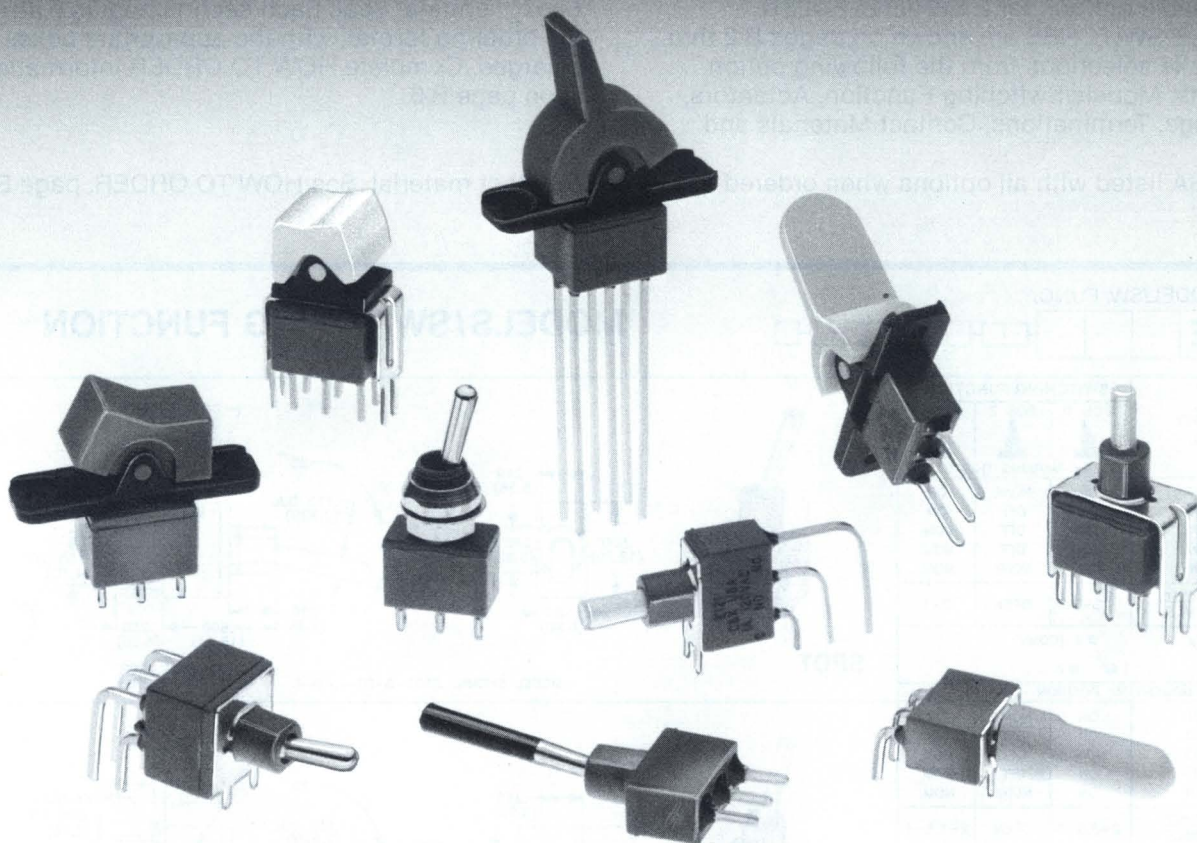
Above frames (P/N 4325 thru 4328) are also available with insert which accepts L.E.D.'s for indicator light assembly. Order insert separately from frame, specify P/N 8949 and desired color in word form. Blank panel, without hole for L.E.D. also available, P/N 4766. For L.E.D. specifications and recommended dimensions, see page A-25.

L.E.D. (.200 DIA. (5,08)) SNAPS SECURELY INTO INSERT (P/N 8949). HEIGHT DEPENDS ON L.E.D. USED.



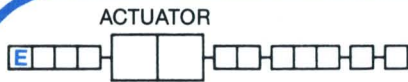
INSERT COLORS			
1	White	6	Green
2	Black(Std.)	7	Blue
3	Red	8	Brown
4	Orange	9	Gray
5	Yellow		

E/E010/E020 SERIES SEALED SWITCHES



SECTION B INDEX

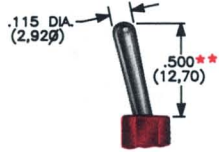
E Series Sealed Toggle Switches	B-2 thru B-6
E Series Sealed Anti-Static Rocker & Lever Handle Switches	B-7 thru B-12
E010 Series Sealed Momentary Pushbutton Switches	B-13 thru B-17
E020 Series Sealed Snap-Acting Momentary Pushbutton Switches	B-18 thru B-22



ACTUATORS

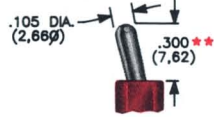
** Subtract .100 (2,54) from all actuator lengths for Y bushing.

S



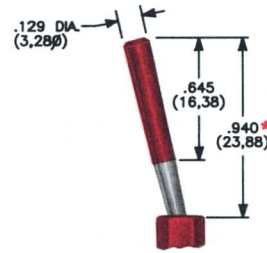
Std. with Z, C, Z3 or W - W5 terminations.

M



Std. with A, AV2, R, R2 or V30-V80 terminations.

L3 PLASTIC



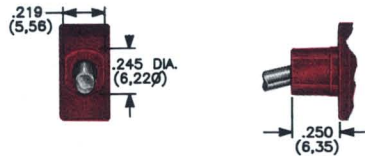
Add actuator color in word form after order number. If no color is specified, black will be supplied. Finish: gloss.

1	White
2	Black(Std.)
3	Red
4	Orange
5	Yellow
6	Green
7	Blue
8	Brown
9	Gray



BUSHINGS

D1 (Std.)



Internal o-ring actuator seal std.

Y

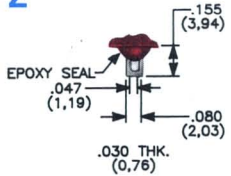


SPDT model shown. Also available on DPDT models. Not available with A, AV2, R, R2 or V30-V80 terminations. Internal o-ring actuator seal std. Hardware: One dress nut (P/N 7807), one hex nut and lockwasher supplied standard.



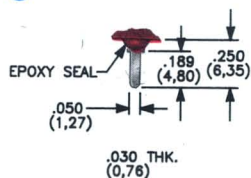
TERMINATIONS

Z



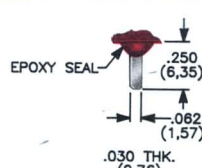
'B' Contact Material Std.

C



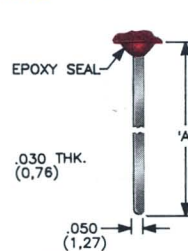
'B' Contact Material Std.

Z3 QUICK CONNECT



Mating quick connector available; order part no. 5301. 'B' Contact Material Std.

W-W5 WIRE WRAP



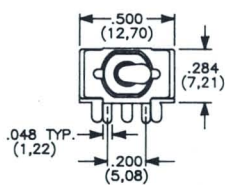
Wire-Wrap is a registered trademark of the Gardner-Denver Company. 'B' Contact Material Std.

OPTION CODE	DIM. 'A'
W	.750 (19,05)
W1	.964 (24,48)
W3	.425 (10,80)
W4	1.062 (26,97)
W5	1.305 (33,15)

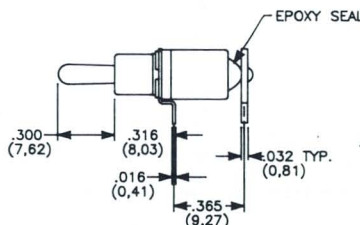
R NEW



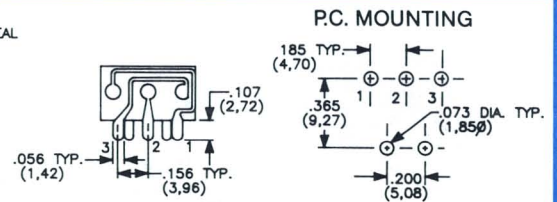
SPDT



Actuator shown in POS.1.

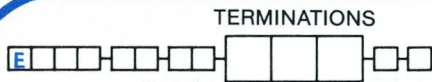


'B' Contact Material Only Available.



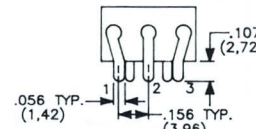
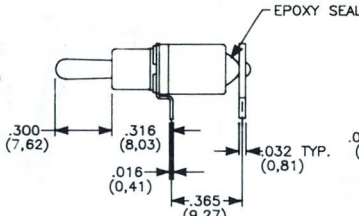
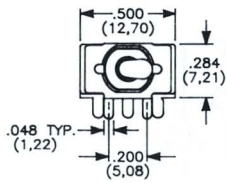
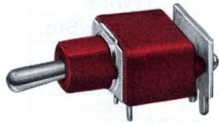
TERM. NOS. FOR REFERENCE ONLY

Contacts make on same side actuator thrown.

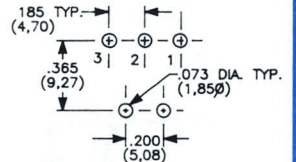


TERMINATIONS (cont'd.)

R2 **NEW**



P.C. MOUNTING



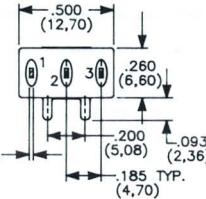
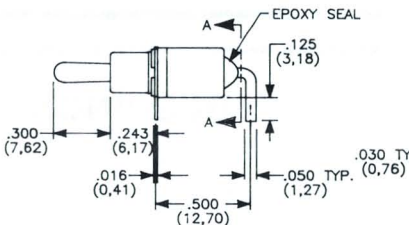
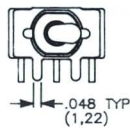
TERM. NOS. FOR REFERENCE ONLY

SPDT

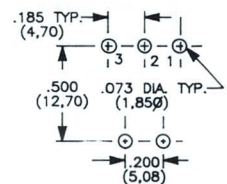
Actuator shown in POS.1. 'B' Contact Material Only Available.

Contacts make on opposite side actuator thrown.

A



P.C. MOUNTING



TERM. NOS. FOR REFERENCE ONLY

SPDT

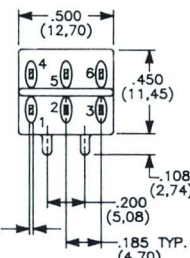
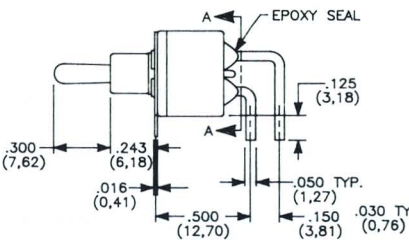
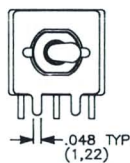
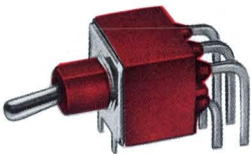
Actuator shown in POS.1.

'B' Contact Material Std.

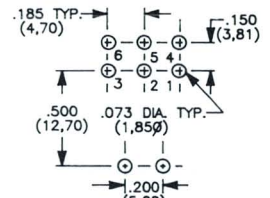
SECTION A-A

Term. bend radii mfg. option.

A



P.C. MOUNTING



TERM. NOS. FOR REFERENCE ONLY

DPDT

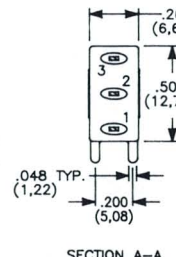
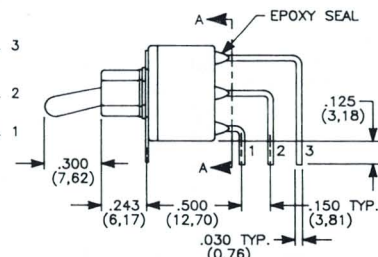
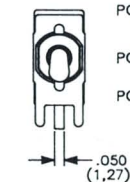
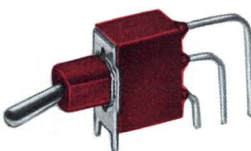
Actuator shown in POS.1.

'B' Contact Material Std.

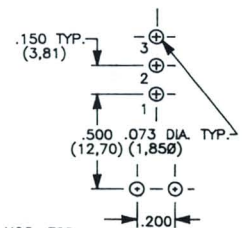
SECTION A-A

Term. bend radii mfg. option.

AV2



P.C. MOUNTING



TERM. NOS. FOR REFERENCE ONLY

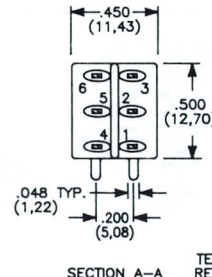
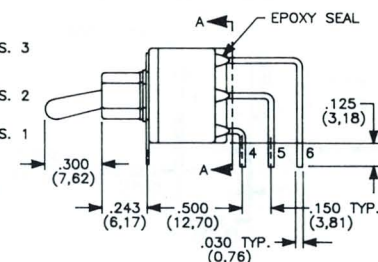
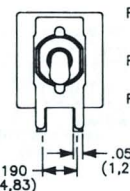
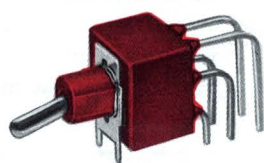
SPDT

'B' Contact Material Std.

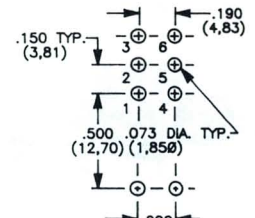
SECTION A-A

Term. bend radii mfg. option.

AV2



P.C. MOUNTING



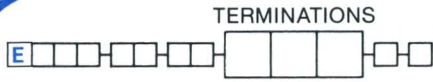
TERM. NOS. FOR REFERENCE ONLY

DPDT

'B' Contact Material Std.

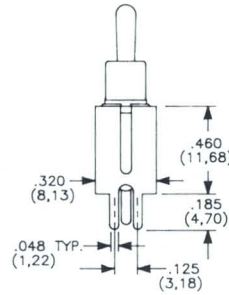
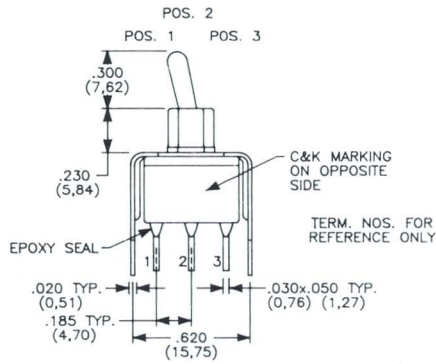
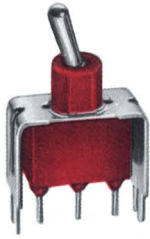
SECTION A-A

Term. bend radii mfg. option.

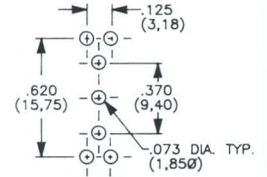


TERMINATIONS (cont'd.)

V30



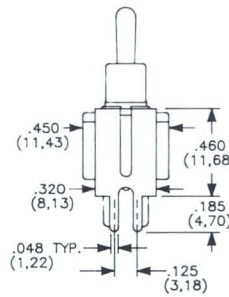
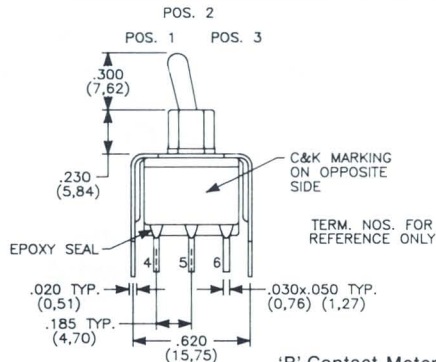
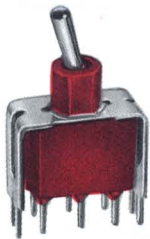
P.C. MOUNTING



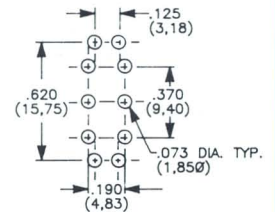
SPDT

'B' Contact Material Std.

V30



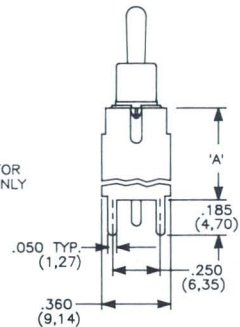
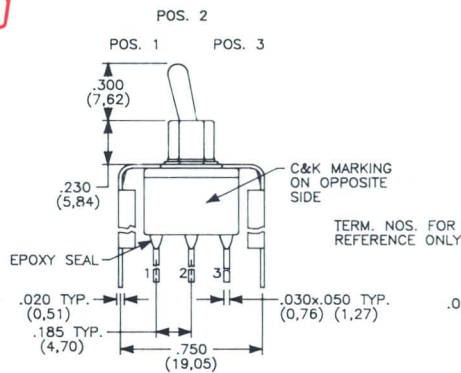
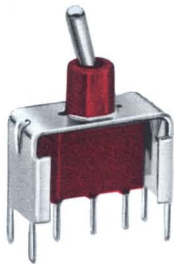
P.C. MOUNTING



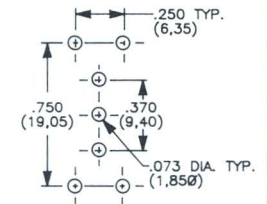
DPDT

'B' Contact Material Std.

V60-V70-V80 **NEW**



P.C. MOUNTING

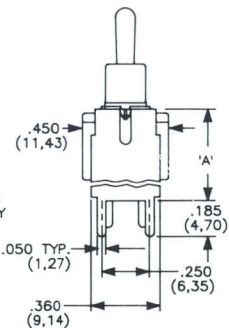
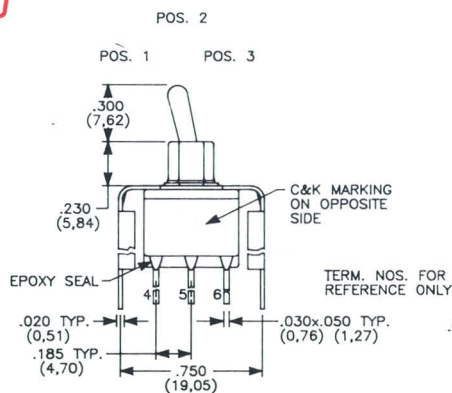
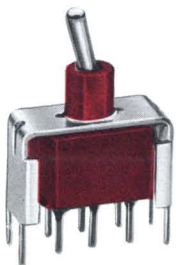


OPTION CODE	DIM. 'A'
V60	.460 (11,68)
V70	.630 (16,00)
V80	.953 (24,21)

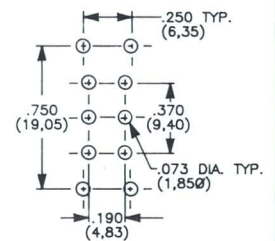
SPDT

'B' Contact Material Std.

V60-V70-V80 **NEW**



P.C. MOUNTING

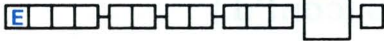


OPTION CODE	DIM. 'A'
V60	.460 (11,68)
V70	.630 (16,00)
V80	.953 (24,21)

DPDT

'B' Contact Material Std.

CONT. MAT'L.



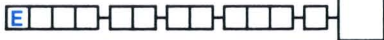
CONTACT MATERIALS

- B** CONTACTS & TERMINALS: Brass, with gold plate over nickel plate.
RATING: 0.4 VA max. @ 20 V AC or DC max. (Std. with all termination options)
- Q** END CONTACTS: Coin silver, silver plated.
CENTER CONTACT & ALL TERMINALS: Brass, silver plated.
RATING: 7.5 AMPS @ 125 V AC; 3 AMPS @ 250 V AC (UL/CSA).
- G** END CONTACTS: Coin silver, with gold plate over nickel plate.
CENTER CONTACT & ALL TERMINALS: Brass, with gold plate over nickel plate.
RATING: 0.4 VA max. @ 20 V AC or DC max. or 7.5 AMPS @ 125 V AC; 3 AMPS @ 250 V AC (UL/CSA).

Note: 'G' contact material is equivalent to both 'B' and 'Q' contact materials and can be used where either dry circuit** or power conditions are encountered. However, when the dry circuit rating is exceeded, the gold plating is removed from the contact interface and the switch cannot then be used in dry circuits. This option should be specified where UL or CSA listing is required on a switch used in a dry circuit application.

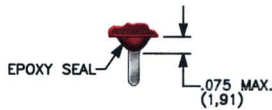
**Dry circuit = conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

SEAL

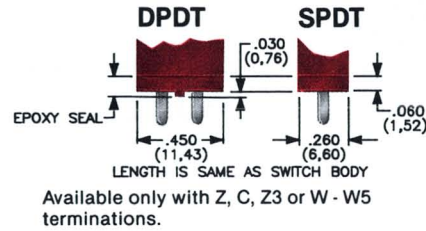


SEALING

E (Std.)



I



HOW TO ORDER

Complete the order number below by selecting the desired model no., actuator, bushing, termination, contact material and terminal sealing options from the preceding sections. Place the option codes in the appropriate boxes of the ordering format. Some boxes may be unfilled. Where applicable, write actuator color in word form after order number.

(Example: **E**2**0**3**L**3**Y****Z****G****E** with red actuator).

If no color is specified, black will be supplied.

D1 bushing, **B** contact material and **E** epoxy terminal seal are supplied if no options are specified. **S** actuator standard with **Z, C, Z3** or **W-W5** terminations, **M** actuator standard with all other terminations. Internal actuator o-ring seal supplied standard. UL/CSA listed with all options when ordered with **G** or **Q** contact material.

UNAVAILABLE OPTION COMBINATIONS

Model or Option

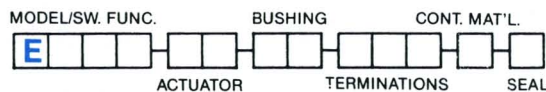
R, R2

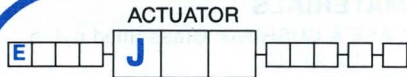
I

Options Not Available

Q, G

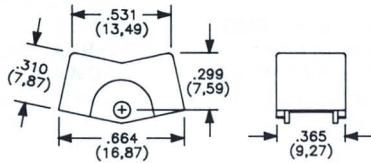
R, R2, A, AV2, V30- V80





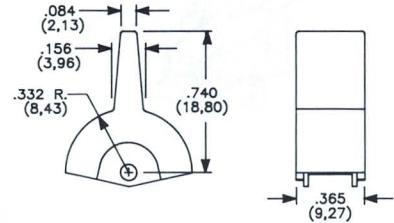
ACTUATORS

J1 (Std.)



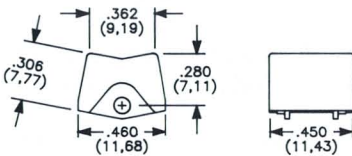
ACTUATOR P/N 7602

J2



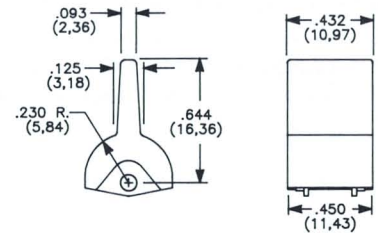
ACTUATOR P/N 7605

J50



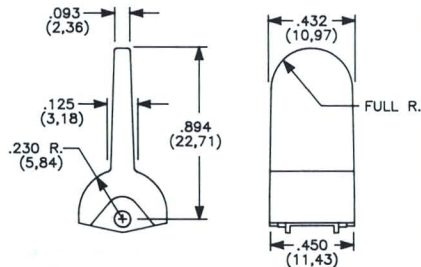
ACTUATOR P/N 7870

J60



ACTUATOR P/N 7868

J90



ACTUATOR P/N 7904

1	White
2	Black(Std.)
3	Red
4	Orange
5	Yellow
6	Green
7	Blue
8	Brown
9	Gray

Write actuator color in word after order number.
Ex.: E101-J90-AV2-B-E with blue actuator. If no color is specified, black will be supplied. Finish: matte.

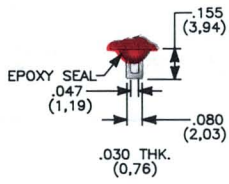
TERMINATIONS



TERMINATIONS

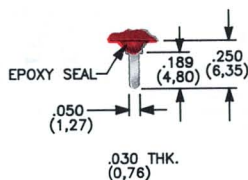
Note: Switches with Z, C, Z3 or W-W5 terminations have panel mounting bracket, shown page B-7.

Z



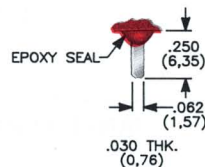
'B' Contact Material Std.

C



'B' Contact Material Std.

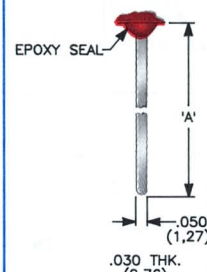
Z3 QUICK CONNECT



Mating quick connector available; order part no. 5301.

'B' Contact Material Std.

W-W5 WIRE-WRAP

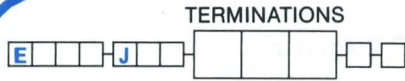


OPTION CODE	DIM. 'A'
W	.750 (19,05)
W1	.964 (24,48)
W3	.425 (10,80)
W4	1.062 (26,97)
W5	1.305 (33,15)

Wire-Wrap is a registered trademark of the Gardner-Denver Company.

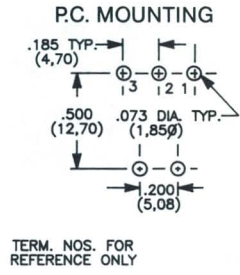
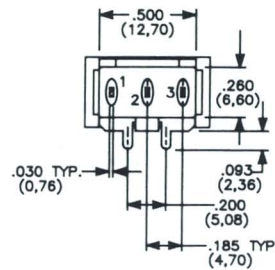
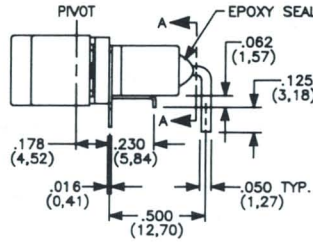
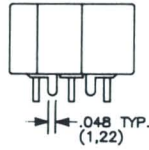
'B' Contact Material Std.

*Sealed to withstand wave soldering and cleaning processes.



TERMINATIONS (cont'd.)

A



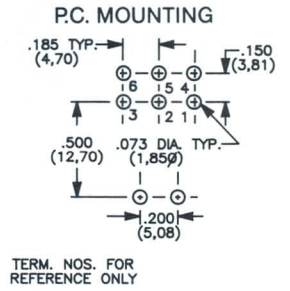
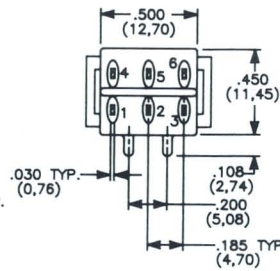
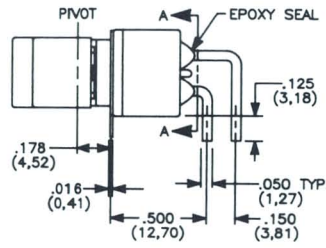
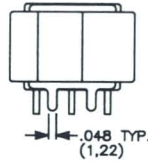
SPDT

Actuator shown in POS.1.

'B' Contact Material Std.

Term. bend radii mfg. option.

A



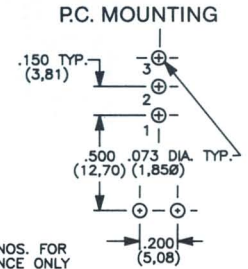
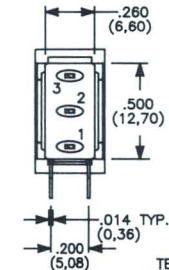
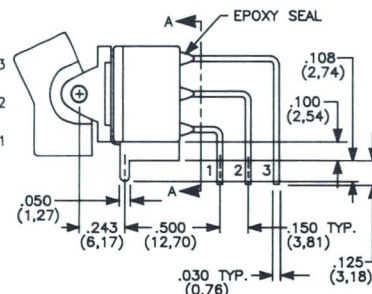
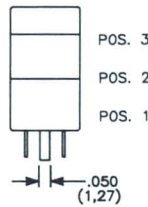
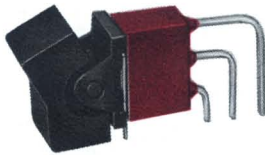
DPDT

Actuator shown in POS.1.

'B' Contact Material Std.

Term. bend radii mfg. option.

AV2

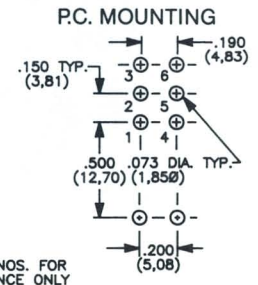
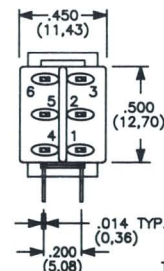
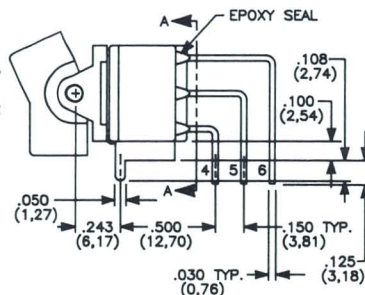
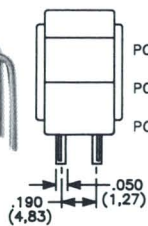
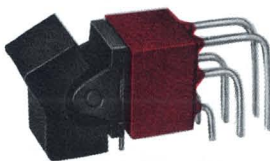


SPDT

'B' Contact Material Std.

Term. bend radii mfg. option.

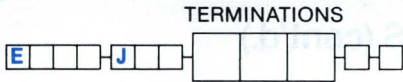
AV2



DPDT

'B' Contact Material Std.

Term. bend radii mfg. option.

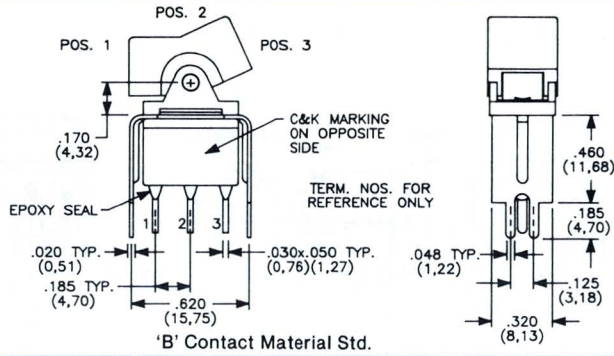


TERMINATIONS (cont'd.)

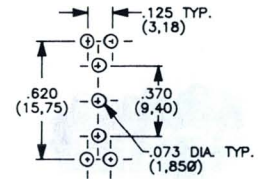
V3



SPDT



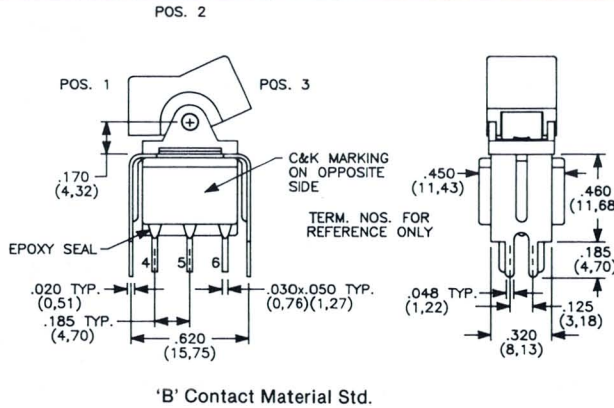
P.C. MOUNTING



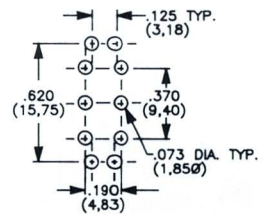
V3



DPDT



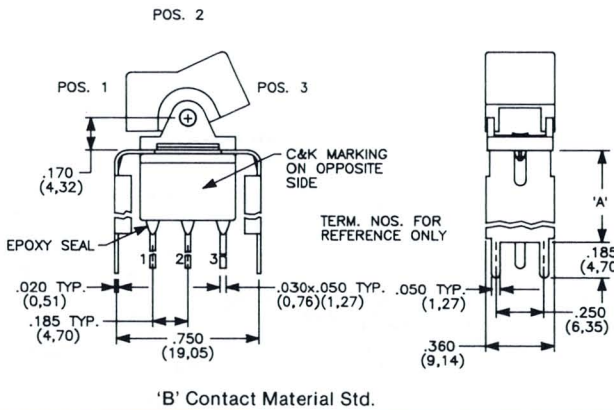
P.C. MOUNTING



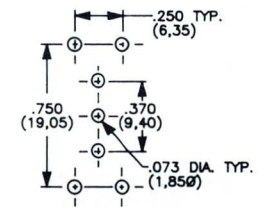
V6-V7-V8 **NEW**



SPDT



P.C. MOUNTING

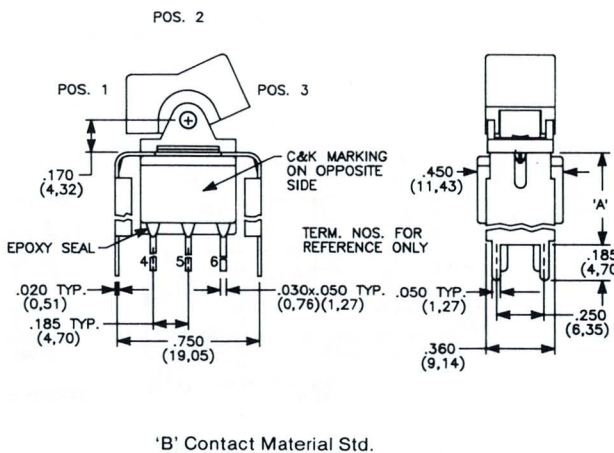


OPTION CODE	DIM. 'A'
V6	.460 (11,68)
V7	.630 (16,00)
V8	.953 (24,21)

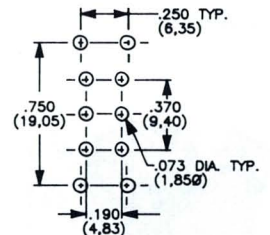
V6-V7-V8 **NEW**



DPDT



P.C. MOUNTING



OPTION CODE	DIM. 'A'
V6	.460 (11,68)
V7	.630 (16,00)
V8	.953 (24,21)

CONT. MAT'L.



CONTACT MATERIALS

- B** CONTACTS & TERMINALS: Brass, with gold plate over nickel plate.
RATING: 0.4 VA max. @ 20 V AC or DC max. (Std. with all termination options)
- Q** END CONTACTS: Coin silver, silver plated.
CENTER CONTACT & ALL TERMINALS: Brass, silver plated.
RATING: 7.5 AMPS @ 125 V AC; 3 AMPS @ 250 V AC (UL/CSA).
- G** END CONTACTS: Coin silver, with gold plate over nickel plate.
CENTER CONTACT & ALL TERMINALS: Brass, with gold plate over nickel plate.
RATING: 0.4 VA max. @ 20 V AC or DC max. or 7.5 AMPS @ 125 V AC; 3 AMPS @ 250 V AC (UL/CSA).

Note: 'G' contact material is equivalent to both 'B' and 'Q' contact materials and can be used where either dry circuit* or power conditions are encountered. However, when the dry circuit rating is exceeded, the gold plating is removed from the contact interface and the switch cannot then be used in dry circuits. This option should be specified where UL or CSA listing is required on a switch used in a dry circuit application.

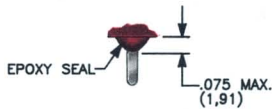
*Dry circuit = conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

SEAL

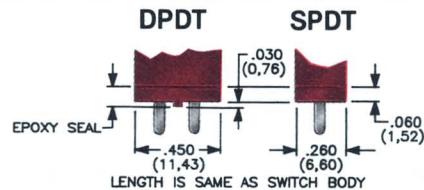


SEALING

E (Std.)



I



Available only with Z, C, Z3 or W-W5 terminations.

HOW TO ORDER

Complete the order number below by selecting the desired model no., actuator, termination, contact material and terminal sealing options from the preceding sections. Place the option codes in the appropriate boxes of the ordering format. Some boxes may be unfilled. Write actuator color in word form after order number. (Example: **E105-J2-W3-G-E** with blue actuator). If no color is specified, black will be supplied.

J1 actuator (black), **B** contact material and **E** epoxy terminal seal are supplied if no options are specified. Internal actuator o-ring seal supplied standard.

UL/CSA listed with all options when ordered with **G** or **Q** contact material.

Note: Custom actuator markings and legends available, see inside front cover and consult factory.

HARDWARE: Two mounting screws, two nuts, two standoffs for 1/8 in. thk. panel and two lockwashers are supplied standard on panel mounted switches. Hardware for optional panel thicknesses available. See chart, page B-12 to determine correct standoff length and part no. Write part description and part no. in word form after order number. If nothing is specified, standard hardware will be supplied. Hardware is also available separately, see **HARDWARE** section, page B-12.

UNAVAILABLE OPTION COMBINATIONS

Model or Option

Options Not Available

I

A, AV2, V3-V8



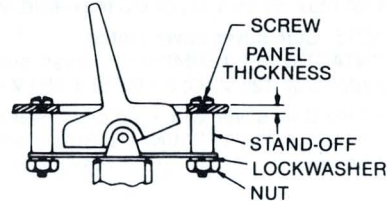


AVAILABLE HARDWARE

The following hardware is available separately. To order, write part nos., descriptions and colors where applicable. Mounting hardware consists of two screws, two nuts, two standoffs and two lockwashers per switch. See chart.

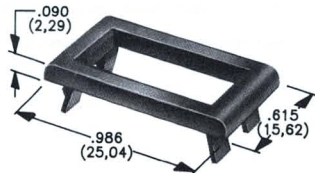
MOUNTING HARDWARE		
HARDWARE P/N	PANEL THK.	STANDOFF LENGTH
7611-01	1/16 in. (1,59)	.295 (7,49)
7611-02	3/32 in. (2,38)	.264 (6,71)
7611-03 (Std.)	1/8 in. (3,18)	.233 (5,92)

MATERIALS: SCREWS, NUTS, LOCKWASHERS- Stainless steel.
STANDOFFS- Aluminum or nylon.



SNAP-IN FRAMES

These frames snap into panel opening and are independent from switch mounting. They are recommended for P.C. mounted switches with A, AV2 or V3 terminations. Accurate positioning of the P.C. mounted switch relative to the panel opening is necessary to provide proper clearance between the actuator and the frame. See charts for correct part no., panel thickness and available colors. Frame finish: matte; material, nylon.



FOR J1, J2 ACTUATORS

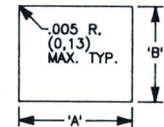


FOR J50, J60, J90 ACTUATORS

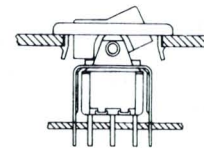
FRAME PART NO.	PANEL THICKNESS	DIM. 'A'	DIM. 'B'
4529	.047 (1,19)	.797-.803 (20,24-20,40)	.495-.505 (12,57-12,83)
4527	.062 (1,57)		
4528	.090 (2,29)		
4526	.125 (3,18)		

FRAME PART NO.	PANEL THICKNESS	DIM. 'A'	DIM. 'B'
4325	.047 (1,19)	.595-.605	.495-.500
4326	.062 (1,57)	(15,11-15,37)	(12,57-12,70)
4327	.090 (2,29)	.620-.625	.495-.500
4328	.125 (3,18)	(15,75-15,88)	(12,57-12,70)

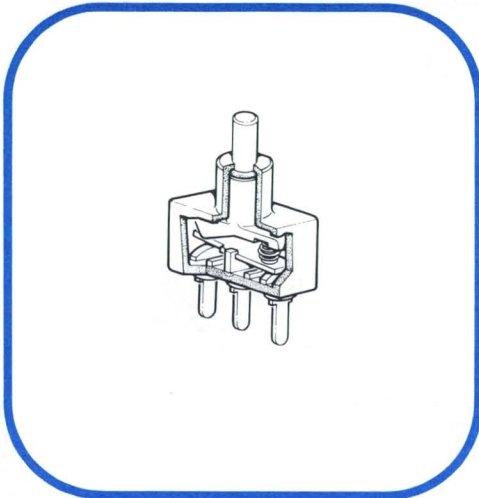
MOUNTING INFORMATION



FRAME COLORS			
1	White	6	Green
2	Black(Std.)	7	Blue
3	Red	8	Brown
4	Orange	9	Gray
5	Yellow		



*Sealed to withstand wave soldering and cleaning processes.



SPECIFICATIONS

CONTACT RATING: 4 AMPS @ 125 V AC or 28 V DC.
 ELECTRICAL LIFE: 40,000 actuations at full load.
 CONTACT RESISTANCE: Below 20 milliohms typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.
 INSULATION RESISTANCE: 10⁹ ohms min.
 DIELECTRIC STRENGTH: 1,000 V RMS min. @ sea level.
 OPERATING TEMPERATURE: -30°C to 75°C.
 CAP INSTALLATION FORCE: 10 lbs. max. permissible.

NOTE

Specifications and Materials listed above are general specifications for switches with standard options. See option sections for additional information. Specifications available for specific models, consult factory.

MATERIALS

CASE & BUSHING: Glass filled nylon (UL 94V-0).
 PLUNGER: Glass filled nylon or glass filled polyester, with internal o-ring seal.
 SWITCH SUPPORT: Brass or steel, electrotin plated.
 END CONTACTS: Coin silver, silver plated (Q cont. mat'l.).
 CENTER CONTACT & ALL TERMINALS: Brass, silver plated (Q cont. mat'l.).
 TERMINAL SEAL: Epoxy.

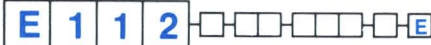
INTRODUCTION

Available options for E010 SERIES SEALED MOMENTARY PUSHBUTTON SWITCHES are shown on pages B-13 thru B-16. Make selections from the following option sections: Model/Switching Function, Plungers, Bushing, Terminations, Contact Materials and Epoxy

Terminal Seal. Each section begins with the ordering format, with the appropriate boxes enlarged. Complete HOW TO ORDER information is on page B-16. Available caps and accessories shown on page B-17.

UL / CSA listed with all options when ordered with G or Q contact material. See HOW TO ORDER, page B-16.

MODEL/SW. FUNC.

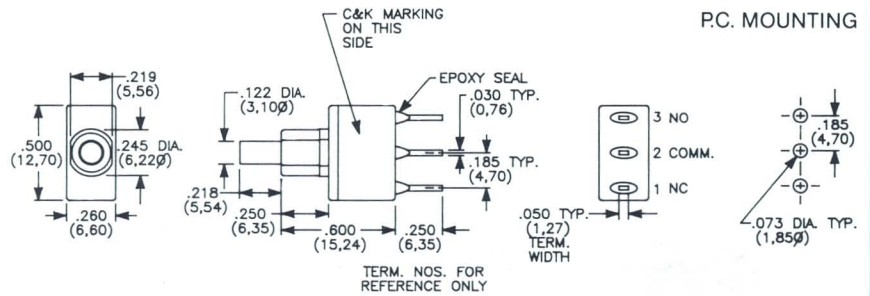


MODEL / SWITCHING FUNCTION

	POS 1	POS 2
E112	ON	MOM.
CONNECTED TERMINALS	2-1	2-3
SCHEMATIC		
COMM.: 2 NC: 1 NO: 3		



SPDT



MODEL SHOWN: E112-S-D1-C-B-E

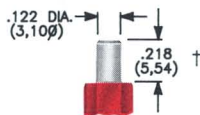
PLUNGER



PLUNGERS

Available caps, see HARDWARE, page B-17.

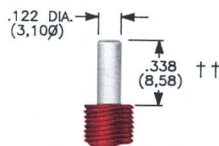
S



Std. with D1 bushing; shown with D1 bushing.
 † Subtract .100 (2,54) from plunger length when ordered with Y bushing.

L LONG

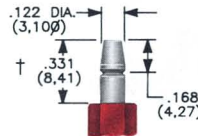
NEW



Std. with Y bushing; shown with Y bushing.
 †† Add .100 (2,54) to plunger length when ordered with D1 bushing.

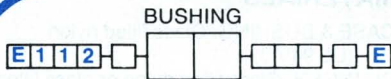
M SNAP FITTING

NEW



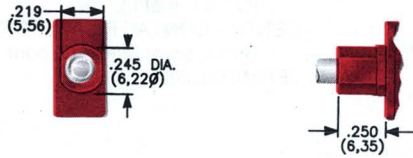
Shown with D1 bushing.
 † Subtract .100 (2,54) from plunger length when ordered with Y bushing.

* Sealed to withstand wave soldering and cleaning processes.



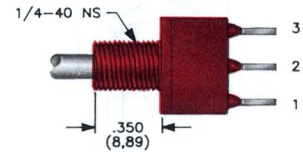
BUSHINGS

D1 (Std.)



S plunger std. with D1 bushing.
Internal O-ring actuator seal std.

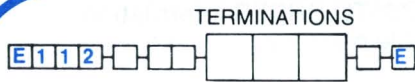
Y **NEW**



L plunger std. with Y bushing.
Not available with A, AV2, R, R2 or V30-V80 terminations.

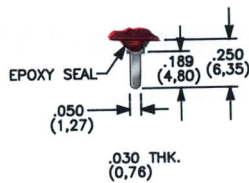
Internal o-ring actuator seal std.

Hardware: One dress nut (P/N 7807), one hex nut and lockwasher supplied standard.



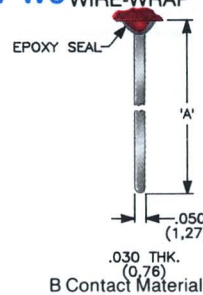
TERMINATIONS

C



Q Contact Material Std.

W-W5 WIRE-WRAP



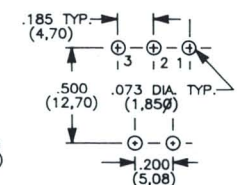
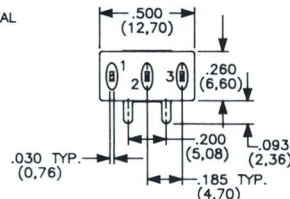
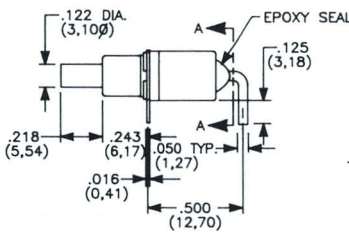
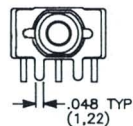
B Contact Material Std.

OPTION CODE	DIM. 'A'
W	.750(19,05)
W1	.964(24,48)
W3	.425(10,80)
W4	1.062(26,97)
W5	1.305(33,15)

Wire-Wrap is a registered trademark of the Gardner-Denver Company.

A

P.C. MOUNTING



SPDT

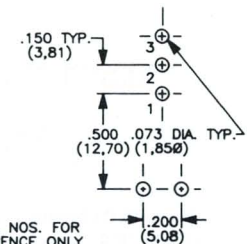
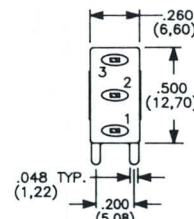
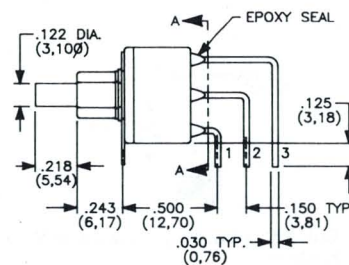
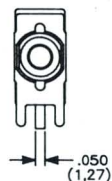
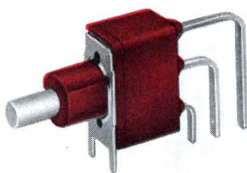
B Contact Material Std.

Term. bend radii mfg. option.

TERM. NOS. FOR REFERENCE ONLY

AV2

P.C. MOUNTING

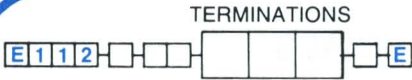


SPDT

B Contact Material Std.

Term. bend radii mfg. option.

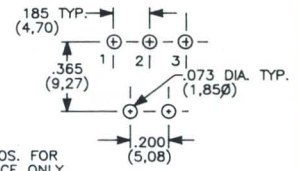
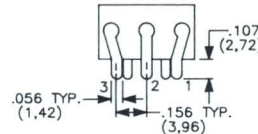
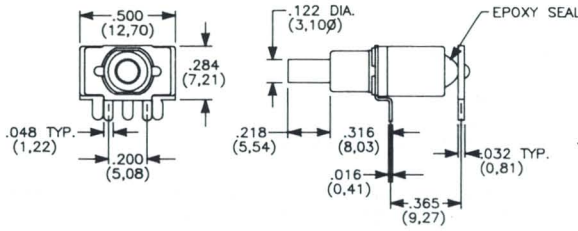
TERM. NOS. FOR REFERENCE ONLY



TERMINATIONS (cont'd.)

R NEW

P.C. MOUNTING



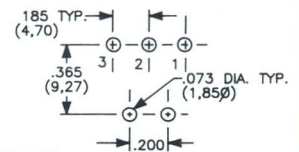
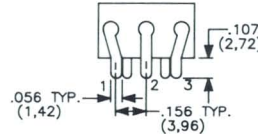
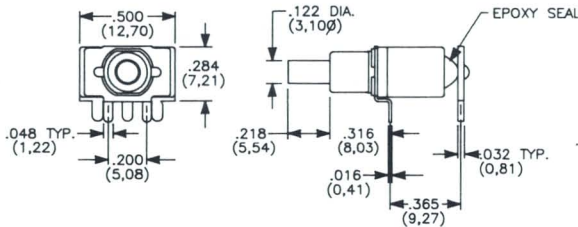
TERM. NOS. FOR REFERENCE ONLY

SPDT

B Contact Material Only Available.

R2 NEW

P.C. MOUNTING



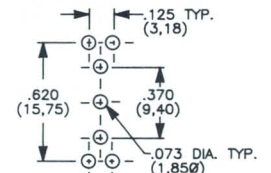
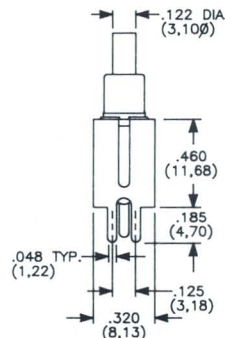
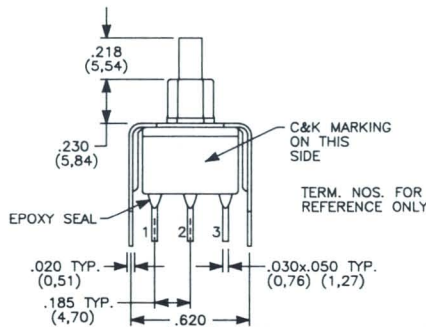
TERM. NOS. FOR REFERENCE ONLY

SPDT

B Contact Material Only Available.

V30

P.C. MOUNTING

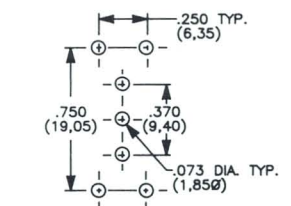
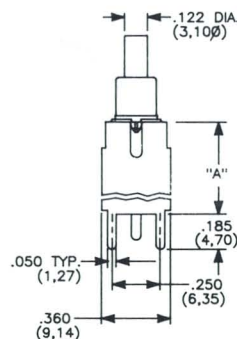
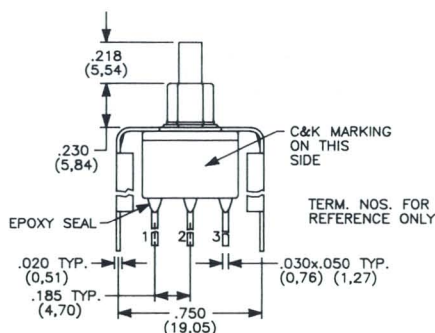
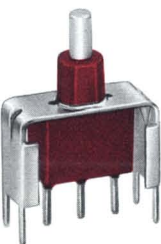


B Contact Material Std.

SPDT

V60-V70-V80 NEW

P.C. MOUNTING



OPTION CODE	DIM. 'A'
V60	.460 (11,68)
V70	.630 (16,00)
V80	.953 (24,21)

B Contact Material Std.

SPDT

*Sealed to withstand wave soldering and cleaning processes.

CONT. MAT'L.



CONTACT MATERIALS

- B** CONTACTS & TERMINALS: Brass, with gold plate over nickel plate.
RATING: 0.4 VA max. @ 20 V AC or DC max. (Std. with all termination options except C)
- Q** END CONTACTS: Coin silver, silver plated.
CENTER CONTACT & ALL TERMINALS: Brass, silver plated.
RATING: 4 AMPS @ 125 V AC or 28 V DC. (Std. with C terminations)
- G** END CONTACTS: Coin silver, with gold plate over nickel plate.
CENTER CONTACT & ALL TERMINALS: Brass, with gold plate over nickel plate.
RATING: 0.4 VA max. @ 20 V AC or DC max. or 4 AMPS @ 125 V AC or 28 V DC.

Note: G contact material can be used where either dry circuit** or power conditions are encountered. However, when the dry circuit rating is exceeded, the gold plating is removed from the contact interface and the switch cannot then be used in dry circuits.

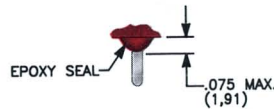
** Dry circuit = conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

SEAL



SEALING

E (Std.)



HOW TO ORDER

Complete the order number below by selecting the desired model no., plunger, bushing, termination, contact material, and sealing options from the preceding sections. Place the option codes in the appropriate boxes of the ordering format. Some boxes may be unfilled.

(Example: E112 S D1 A G E).

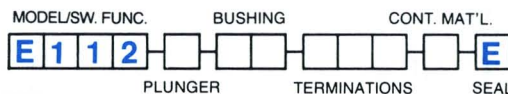
S plunger, D1 bushing, E epoxy terminal seal and plunger internal o-ring seal supplied standard.

UL/CSA listed with all options when ordered with G or Q contact material.

Available caps and accessories shown on page B-17.

UNAVAILABLE OPTION COMBINATIONS

Model or Option	Options Not Available
R, R2	Q, G

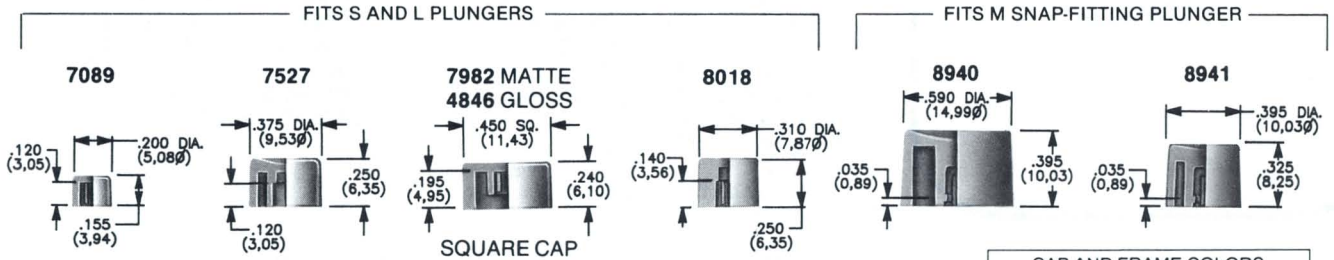


AVAILABLE HARDWARE

The following hardware is available separately. To order, write part nos., descriptions, and colors where applicable.

CAPS

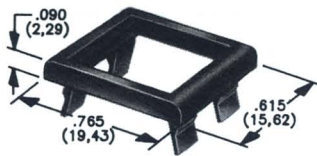
All caps: finish, gloss, except where noted; material, nylon. See color chart below.



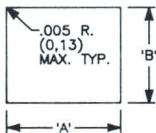
CAP AND FRAME COLORS		
1	White	6 Green
2	Black(Std.)	7 Blue
3	Red	8 Brown
4	Orange	9 Gray
5	Yellow	

SNAP-IN FRAMES

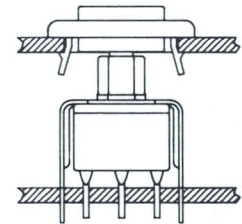
Frames snap into panel opening and are independent from switch mounting. They are recommended for all P.C. mounted switches with square caps. Accurate positioning of the P.C. mounted switch relative to the panel opening is necessary to provide proper clearance between cap and frame. See charts for correct part no., panel thickness, and available colors. Frame finish: matte; material, nylon.



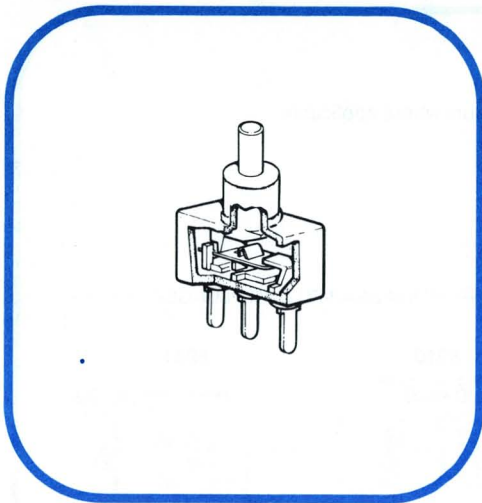
MOUNTING INFORMATION



FRAME PART NO.	PANEL THICKNESS	DIM. 'A'	DIM. 'B'
4325	.047 (1,19)	595-.605	.495-.500
4326	.062 (1,57)	(15,11-15,37)	(12,57-12,70)
4327	.090 (2,29)	620-.625	.495-.500
4328	.125 (3,18)	(15,75-15,88)	12,57-12,70)



*Sealed to withstand wave soldering and cleaning processes.



SPECIFICATIONS

CONTACT RATING:
 Models ending in - 1: 1 AMP @ 120 V AC or 28 V DC or 0.4 VA max. @ 20 V AC or DC max.
 Models ending in - 5: 0.4 VA max. @ 20 V AC or DC max.
NOTE: Break before make contacts. Multiple contacts do not make and break simultaneously.
ELECTRICAL LIFE: 60,000 actuations at full load.
CONTACT RESISTANCE: Below 50 milliohms typ. initial @ 2-4 V DC, 100 mA.
INSULATION RESISTANCE: 10⁹ ohms min.
DIELECTRIC STRENGTH: 1,000 V RMS min. @ sea level.
OPERATING TEMPERATURE: -30°C to 75°C.
CAP INSTALLATION FORCE: 10 lbs. max. permissible.

MATERIALS

CASE & BUSHING: Glass filled nylon (UL 94V-0)
PLUNGER: Glass filled nylon or glass filled polyester.
SWITCH SUPPORT: Brass or steel, electroin plated.
N.O. & N.C. CONTACTS:
 Models ending in - 1: Coin silver, with gold plate over nickel plate (G cont. mat'l.).
 Models ending in - 5: Brass, with gold plate over nickel plate (B cont. mat'l.).
COMMON CONTACT & ALL TERMINALS: Brass, with gold plate over nickel plate.
TERMINAL SEAL: Epoxy.
DISPOSABLE BOOT: Vinyl.

NOTE

Specifications and Materials listed above are general specifications for switches with standard options. See option sections for additional information. Specifications available for specific models, consult factory.

INTRODUCTION

Available options for E020 SERIES SEALED SNAP-ACTING MOMENTARY PUSHBUTTON SWITCHES are shown on pages B-18 thru B-22. Make selections from the following option sections: Models/Switching Function, Plungers, Bushings, Terminations, Contact

Materials and Epoxy Terminal Seal. Each section begins with the ordering format, with the appropriate boxes enlarged. Complete HOW TO ORDER information is on page B-22. Available caps and accessories shown on page B-22.

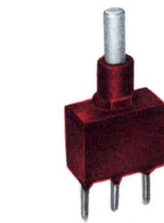
E121, E221 models UL/CSA listed with all options when ordered with mandatory G contact material. See HOW TO ORDER, page B-22.

MODEL/SW. FUNC.

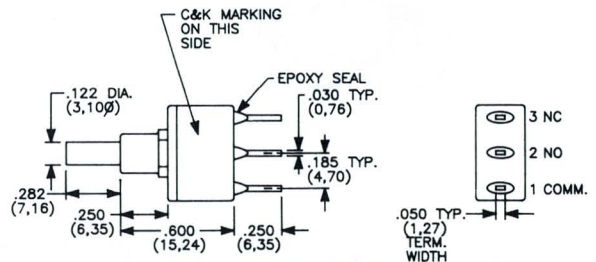
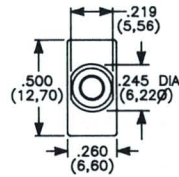


MODELS/SWITCHING FUNCTION

MODEL NO.	SWITCHING FUNC.	
	POS 1	POS 2
E121 E125	ON ON	MOM. MOM.
CONNECTED TERMINALS	1-3	1-2
SCHEMATIC 		
COMM.: 1 NC: 3 NO: 2		
MOM. = MOMENTARY POSITION		
E221 E225	ON ON	MOM. MOM.
CONNECTED TERMINALS	1-3,4-6	1-2,4-5
SCHEMATIC 		
COMM.: 1,4 NC: 3,6 NO: 2,5		
MOM. = MOMENTARY POSITION		



SPDT

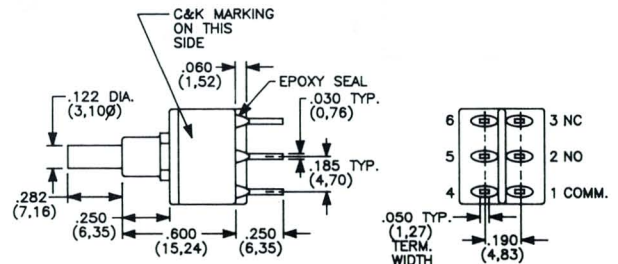
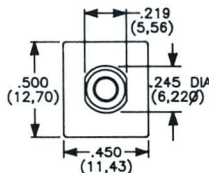


MODEL SHOWN: E121-S-D1-C-G-E

TERM. NOS. FOR REFERENCE ONLY



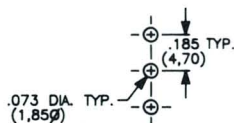
DPDT



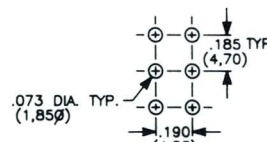
MODEL SHOWN: E221-S-D1-C-G-E

TERM. NOS. FOR REFERENCE ONLY

P.C. MOUNTING



SPDT



DPDT

*Sealed to withstand wave soldering and cleaning processes.

PLUNGER

S (Std.)

M SNAP FITTING

For available caps, see page B-22.

BUSHING

D1 (Std.)

Disposable splashproof vinyl boot over actuator and bushing supplied std., see page B-22.

TERMINATIONS

C

W-W4 WIRE-WRAP

OPTION CODE	DIM. 'A'
W	.750(19,05)
W1	.964(24,48)
W3	.425(10,80)
W4	1.062(26,97)

Wire-Wrap is a registered trademark of the Gardner-Denver Company.

A

SPDT

P.C. MOUNTING

SECTION A-A

COMM. NO NC

TERM. NOS. FOR REFERENCE ONLY

Term. bend radii mfg. option.

A

DPDT

P.C. MOUNTING

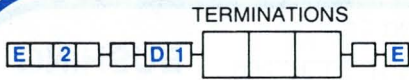
SECTION A-A

COMM. NO NC

TERM. NOS. FOR REFERENCE ONLY

Term. bend radii mfg. option.

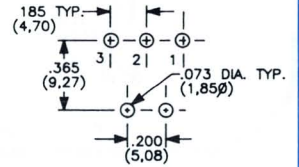
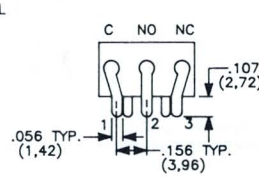
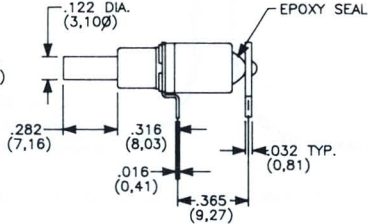
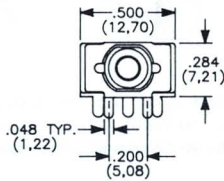
* Sealed to withstand wave soldering and cleaning processes.



TERMINATIONS (cont'd.)

R **NEW**

P.C. MOUNTING

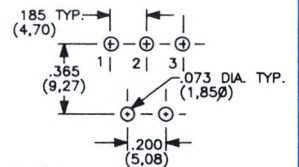
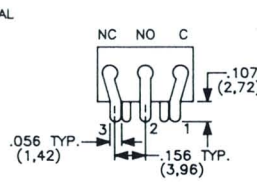
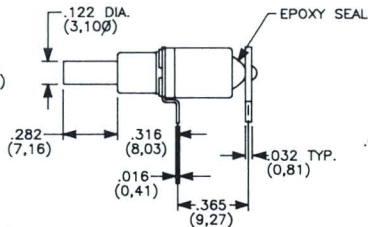
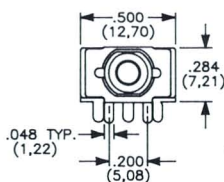


TERM. NOS. FOR REFERENCE ONLY

SPDT

R2 **NEW**

P.C. MOUNTING

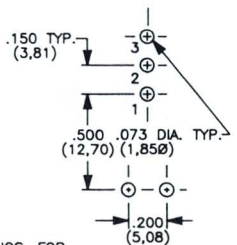
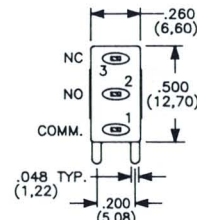
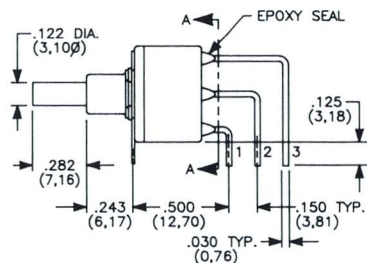
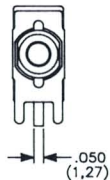
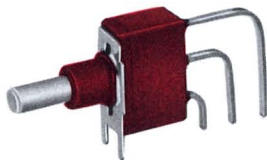


TERM. NOS. FOR REFERENCE ONLY

SPDT

AV2

P.C. MOUNTING



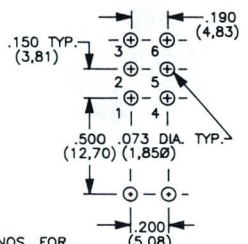
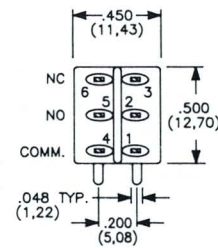
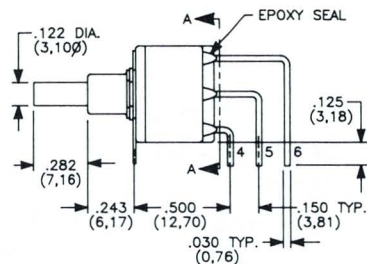
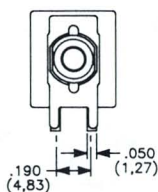
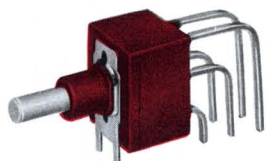
TERM. NOS. FOR REFERENCE ONLY

SPDT

Term. bend radii mfg. option.

AV2

P.C. MOUNTING



TERM. NOS. FOR REFERENCE ONLY

DPDT

Term. bend radii mfg. option.

*Sealed to withstand wave soldering and cleaning processes.

CONT. MAT'L.



CONTACT MATERIALS

- B** Models ending in - 5 only:
 N.O. & N.C. CONTACTS: Brass, with gold plate over nickel plate.
 COMMON CONTACT & ALL TERMINALS: Brass, with gold plate over nickel plate.
 RATING: 0.4 VA max. @ 20 V AC or DC max.
 (Must be ordered with all models ending in - 5)
- G** Models ending in - 1 only:
 N.O. & N.C. CONTACTS: Coin silver, with gold plate over nickel plate.
 COMMON CONTACT & ALL TERMINALS: Brass, with gold plate over nickel plate.
 RATING: 1 AMP @ 120 V AC or 28 V DC or 0.4 VA max. @ 20 V AC or DC max.
 (Must be ordered with all models ending in - 1)

NOTE: G contact material can be used where either dry circuit** or power conditions are encountered. However, when the dry circuit rating is exceeded, the gold plating is removed from the contact interface and the switch cannot then be used in dry circuits.

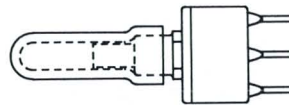
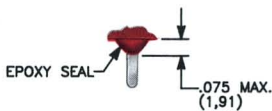
** Dry circuit = conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

SEAL



SEALING

E (Std.)



Disposable splashproof boot supplied std.

HOW TO ORDER

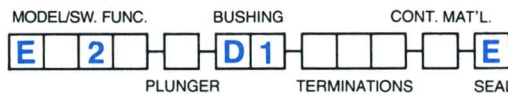
Complete the order number below by selecting the desired model no., plunger, bushing, termination, contact material, and sealing options from the preceding sections. Place the option codes in the appropriate boxes of the ordering format. Some boxes may be unfilled.

(Example: E 2 2 1 S D 1 A [] [] G E)

Note that **B** contact material must be ordered with all models ending in - 5, (Example: E 1 2 5 S D 1 C [] [] B E). **G** contact material must be ordered with all models ending in - 1, (Example: E 1 2 1 S D 1 A [] [] G E).

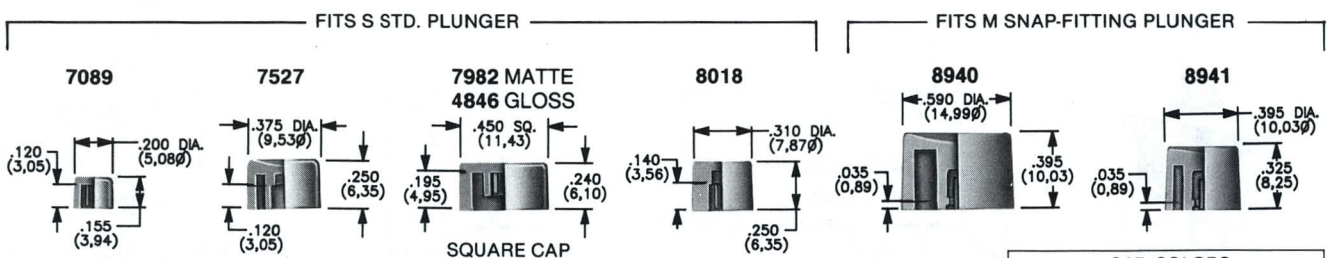
S plunger supplied if no option is specified. **D1** bushing, **E** epoxy terminal seal and disposable splashproof boot supplied standard.

E121, E221 models UL/CSA listed with all options when ordered with mandatory **G** contact material.



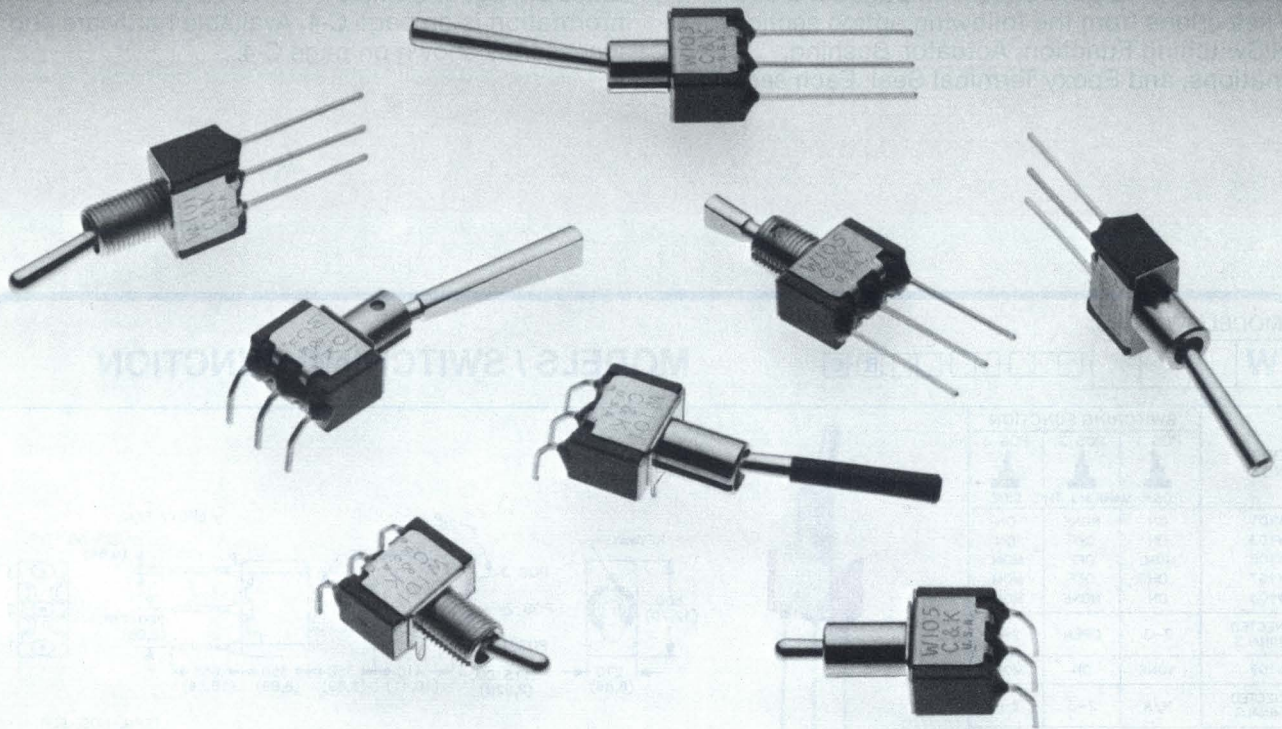
CAPS

The following caps are available separately. To order, write part nos., descriptions, and colors. All caps: finish, gloss, except where noted; material, nylon. See color chart below.

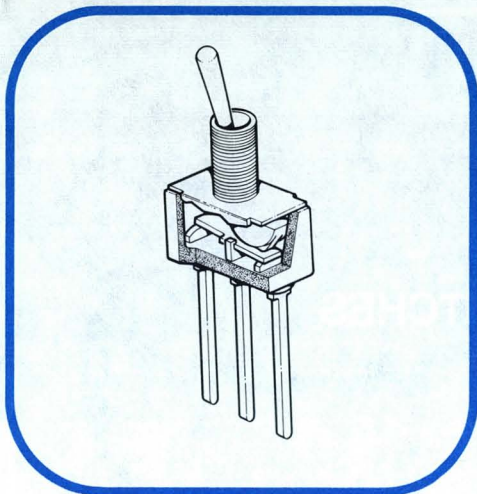


CAP COLORS			
1	White	6	Green
2	Black(Std.)	7	Blue
3	Red	8	Brown
4	Orange	9	Gray
5	Yellow		

W SERIES .025 WIRE-WRAP TOGGLE SWITCHES



SECTION C



SPECIFICATIONS

CONTACT RATING: 0.4 VA max. @ 20 V AC or DC max.
 ELECTRICAL LIFE: 100,000 make-and-break cycles at full load on all models ending in -01 (ON-NONE-ON). All other models, 40,000 cycles.
 CONTACT RESISTANCE: Below 10 milliohms typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.
 INSULATION RESISTANCE: 10^9 ohms min.
 DIELECTRIC STRENGTH: 1,000 V RMS min. @ sea level.
 OPERATING TEMPERATURE: -30°C to 85°C.

MATERIALS

CASE: Glass filled nylon (UL 94V-0).
 ACTUATOR: Brass, chrome plated.
 BUSHING: Brass, nickel plated.
 HOUSING: Stainless steel.
 SWITCH SUPPORT: Brass or steel, electrotin plated.
 CONTACTS & TERMINALS: Brass, with gold plate over nickel plate (B cont. mat'l.).
 HARDWARE: Nut- Brass, nickel plated.
 Locking ring- Brass, bright nickel plated.
 Lockwasher- Steel, bright nickel plated.

NOTE

Specifications and Materials listed above are general specifications for switches with standard options. See option sections for additional information. Specifications available for specific models, consult factory.

INTRODUCTION

Available options for W SERIES .025 WIRE-WRAP TOGGLE SWITCHES are shown on pages C-2 thru C-4. Make selections from the following option sections: Model/Switching Function, Actuator, Bushing, Terminations, and Epoxy Terminal Seal. Each section

begins with the ordering format, with the appropriate boxes enlarged. Complete HOW TO ORDER information is on page C-4. Available hardware and accessories shown on page C-4.

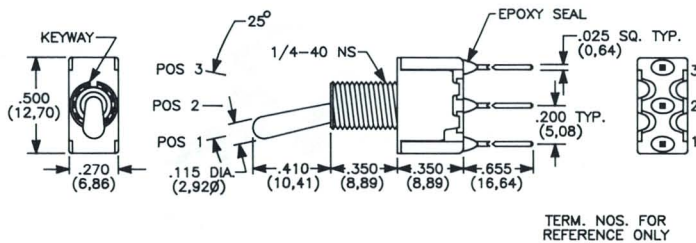
MODEL/SW. FUNC.



MODELS / SWITCHING FUNCTION

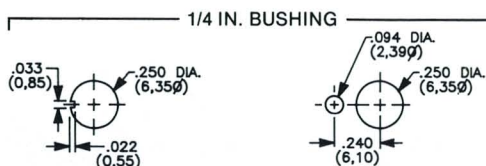
MODEL NO.	SWITCHING FUNCTION		
	POS 1	POS 2	POS 3
	C&K	MARKING	THIS SIDE
W101	ON	NONE	ON
W103	ON	OFF	ON
W105	MOM.	OFF	MOM.
W107	ON	OFF	MOM.
W108	ON	NONE	MOM.
CONNECTED TERMINALS	2-3	OPEN	2-1
W109	NONE	ON	MOM.
CONNECTED TERMINALS	N/A	2-3	2-1
SCHEMATIC			
MOM. = MOMENTARY POSITION			

SPDT



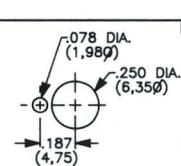
MODEL SHOWN: W101-S-Y-W6-B-E

PANEL MOUNTING

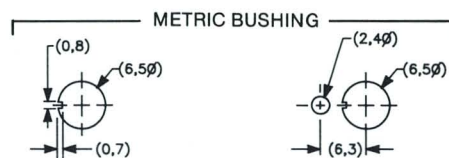


WITHOUT LOCKING RING

WITH STD. LOCKING RING



WITH SMALL LOCKING RING



WITHOUT LOCKING RING

WITH LOCKING RING

ACTUATOR

S SP WITH ANTIROTATION

S actuator std. when ordered with W6 or W7 terminations.

M MP WITH ANTIROTATION

M actuator std. when ordered with A terminations.

P1 WITH ANTIROTATION

P3 WITH ANTIROTATION

P4 WITH ANTIROTATION

Antirotation feature standard on P1, P3, P4 actuators. Hardware: P/N 7099 dress nut supplied standard with threaded bushings.

L LP WITH ANTIROTATION

L1 L1P WITH ANTIROTATION

L2 L2P WITH ANTIROTATION

L3 L3P PLASTIC WITH ANTIROTATION

Antirotation: Provides anti-'push-in' feature on actuator, reducing risk of internal switch damage from impact forces on the actuator.

* Add .070 (1,78) for D, D9 bushings.

1	White
2	Black(Std.)
3	Red
4	Orange
5	Yellow
6	Green
7	Blue
8	Brown
9	Gray

Add actuator color in word form after order number. If no color is specified, black will be supplied. Finish: gloss.

BUSHING

Y Y9 UNTHREADED

Y bushing std. with W6 or W7 terminations.

D D9 UNTHREADED

D9 bushing std. with A terminations.

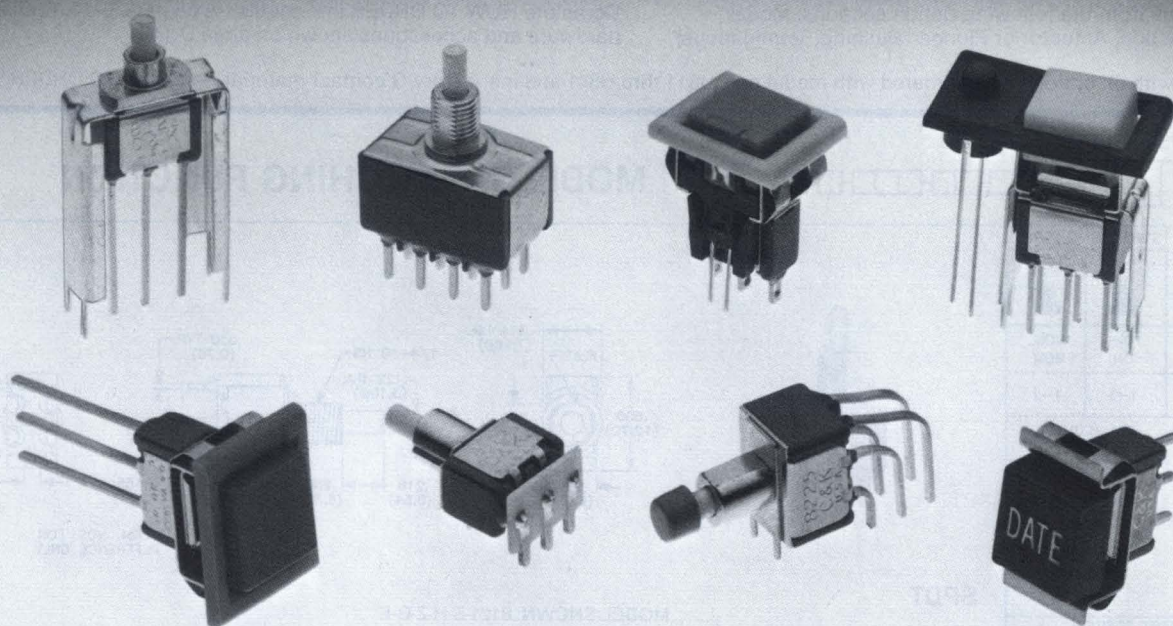
Add .070 (1,78) to all actuator lengths for D, D9 bushings.

Y3 METRIC

Not available with A terminations.

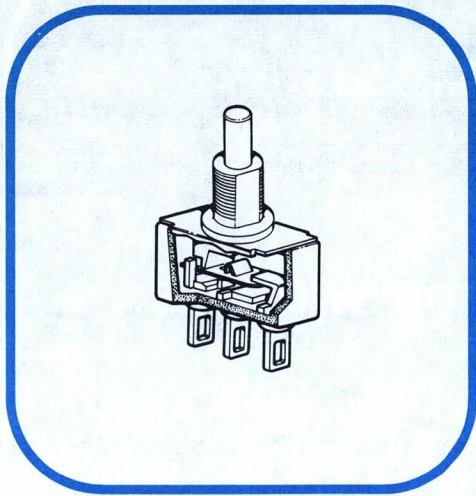
8020 SERIES

SNAP-ACTING MOMENTARY PUSHBUTTON SWITCHES



SECTION D

C&K 8020 Series Snap-Acting Momentary Pushbutton Switches



SPECIFICATIONS

CONTACT RATING:
 Models ending in -1: 1 AMP @ 120 V AC or 28 V DC or 0.4 VA max. @ 20 V AC or DC max.
 Models ending in -5: 0.4 VA max. @ 20 V AC or DC max.

NOTE: Break before make contacts. Multi-pole contacts do not make and break simultaneously.

ELECTRICAL LIFE: 60,000 actuations at full load.

CONTACT RESISTANCE: Below 50 milliohms typ. initial @ 2-4 V DC, 100 mA.

INSULATION RESISTANCE: 10⁹ ohms min.

DIELECTRIC STRENGTH: 1,000 V RMS min. @ sea level.

OPERATING TEMPERATURE: All exc. UL models: -30°C to 75°C.

All UL models: -30°C to 65°C.

CAP INSTALLATION FORCE: 10 lbs. max. permissible.

MATERIALS

CASE: SP & DP- diallyl phthalate (DAP) or melamine phenolic.

3P & 4P- diallyl phthalate (DAP).
PLUNGER: Glass filled nylon or glass filled polyester.

BUSHING: Brass, nickel plated.

HOUSING: Stainless steel.

SWITCH SUPPORT: Brass or steel, electrotin plated.

N.O. & N.C. CONTACTS:

Models ending in -5: Brass, with gold plate over nickel plate (B cont. mat'l.).

Models ending in -1: Coin silver, with gold plate over nickel plate (G cont. mat'l.).

COMMON CONTACT & ALL TERMINALS: Brass, with gold plate over nickel plate.

TERMINAL SEAL: Epoxy.

HARDWARE: Nut- Brass, nickel plated.

Locking ring- Brass, bright nickel plated.

Lockwasher- Steel, bright nickel plated.

NOTE

Specifications and Materials listed above are general specifications for switches with standard options. See option sections for additional information. Specifications available for specific models, consult factory.

INTRODUCTION

Available options for 8020 SERIES SNAP-ACTING MOMENTARY PUSHBUTTON SWITCHES are shown on pages D-2 thru D-12. Make selections from the following option sections: Model/ Switching Function, Actuator or Plunger, Bushing, Terminations,

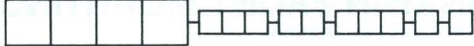
Contact Material and Epoxy Terminal Seal. Each section begins with the ordering format, with the appropriate boxes enlarged. Complete HOW TO ORDER information is on page D-13. Available hardware and accessories shown on page D-14.

UL/CSA listed with all options when ordered with model nos. U811 thru U841 and mandatory G contact material. See HOW TO ORDER, page D-13.

MODEL/SW. FUNC.			
MODEL NO.	UL MODEL NO.	SWITCHING FUNC.	
		POS 1	POS 2
8121	UB11	ON	MOM.
8125	NOT UL	ON	MOM.
CONNECTED TERMINALS		1-3	1-2
SCHEMATIC			
COMM.: 1 NC: 3 NO: 2			
SPDT			
MODEL SHOWN: 8121-S-H-Z-G-E			
MODEL NO.	UL MODEL NO.	SWITCHING FUNC.	
		POS 1	POS 2
8221	UB21	ON	MOM.
8225	NOT UL	ON	MOM.
CONNECTED TERMINALS		1-3,4-6	1-2,4-5
SCHEMATIC			
COMM.: 1,4 NC: 3,6 NO: 2,5			
DPDT			
MODEL SHOWN: 8221-S-H-Z-G-E			

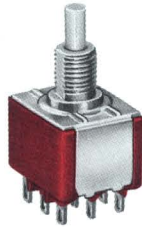
C&K 8020 Series Snap-Acting Momentary Pushbutton Switches

MODEL/SW. FUNC.

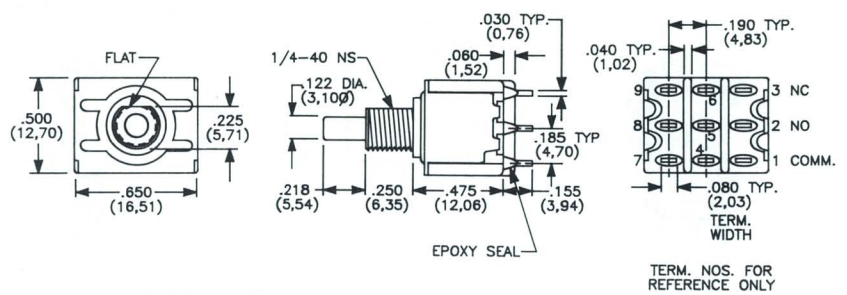


MODELS/SWITCHING FUNCTION (cont'd.)

MODEL NO.	UL MODEL NO.	SWITCHING FUNC.	
		POS 1	POS 2
8321	UB31	ON	MOM.
8325	NOT UL	ON	MOM.
CONNECTED TERMINALS		1-3,4-6,7-9	1-2,4-5,7-8
SCHEMATIC			
COMM.: 1,4,7 NC: 3,6,9 NO: 2,5,8			

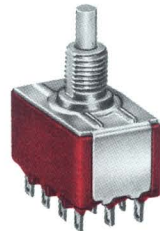


3 PDT

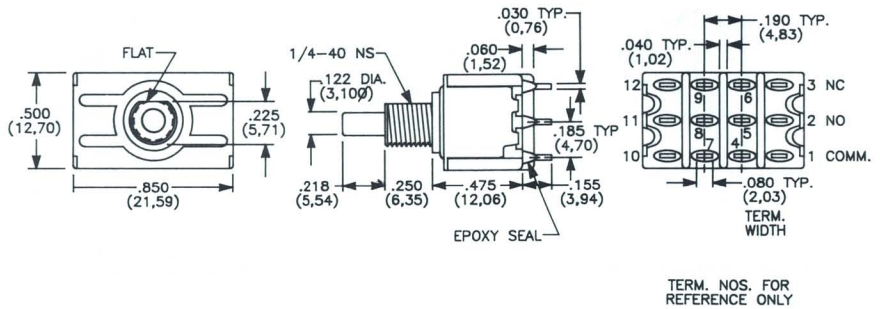


MODEL SHOWN: 8321-S-H-Z-G-E

MOM. = MOMENTARY POSITION			
8421	UB41	ON	MOM.
8425	NOT UL	ON	MOM.
CONNECTED TERMINALS		1-3,4-6,7-9,10-12	1-2,4-5,7-8,10-11
SCHEMATIC			
COMM.: 1,4,7,10 NC: 3,6,9,12 NO: 2,5,8,11			
MOM. = MOMENTARY POSITION			

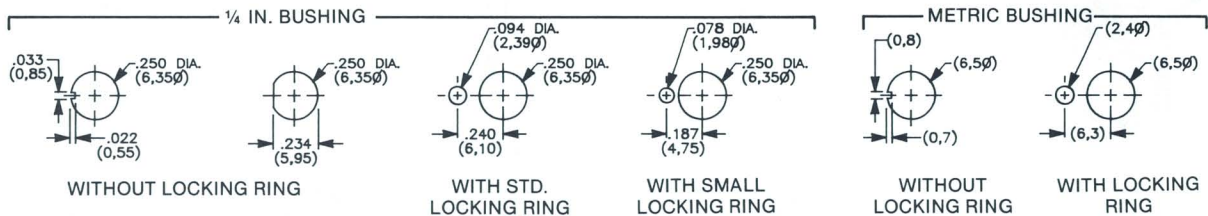


4 PDT



MODEL SHOWN: 8421-S-H-Z-G-E

PANEL MOUNTING



INTRODUCTION TO ACTUATOR AND PLUNGER OPTIONS

8020 Series ACTUATOR and PLUNGER OPTIONS are shown on pages D-4 thru D-6. Select *either* Actuator *or* Plunger option for desired configuration. Note available terminations with each option. Plunger lengths vary with bushing option selected, see page D-6. Where applicable, select cap and frame colors from chart at right. When ordering, write desired color(s) in word form after order number. If no color is specified, black will be supplied. See HOW TO ORDER, page D-13.

Caps available in seven styles for switches with bushing options, see HARDWARE, page D-14. L.E.D.'s not furnished with J82 and J84 actuator options. L.E.D.'s are built-in and not replaceable on J85 and J95 actuator options. See page D-5 for L.E.D. information and available colors.

CAP AND FRAME COLORS	
1	White
2	Black(Std.)
3	Red
4	Orange
5	Yellow
6	Green
7	Blue
8	Brown
9	Gray

MATERIALS FOR ACTUATOR OPTIONS J80 thru J95

MOUNTING SPRING: Steel, nickel plated or stainless steel.
 MOUNTING BRACKET: Stainless steel.
 CAP & FRAME: Nylon.
 L.E.D. SUPPORT: Nylon.

C&K 8020 Series Snap-Acting Momentary Pushbutton Switches

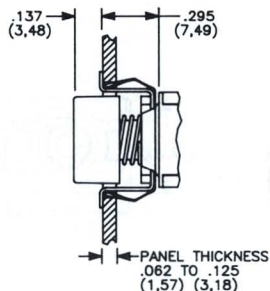
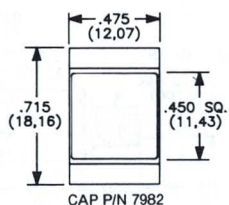
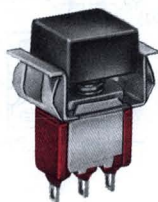
ACTUATOR OR PLUNGER



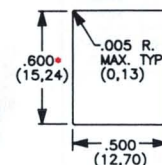
ACTUATOR OPTIONS FOR SNAP-IN FRONT MOUNTING

Available with Z, C, Z3 or W-W4 terminations.
SPDT and DPDT models only.

J80



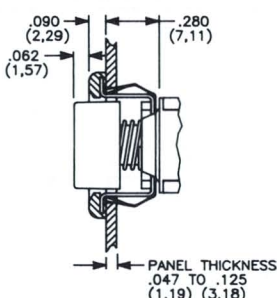
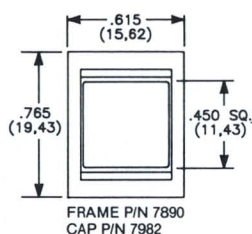
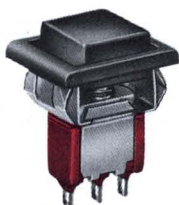
PANEL MOUNTING



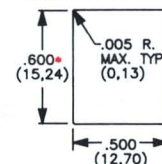
Cap finish: matte; available colors, see page D-3.

*For .125 (3,18) THK. panel, increase this DIM. to .620/.625 (15,75/15,88).

J81 WITH FRAME AND RAISED CAP



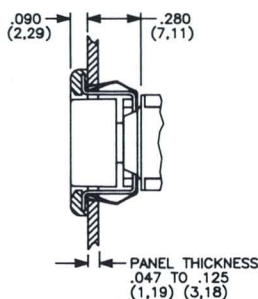
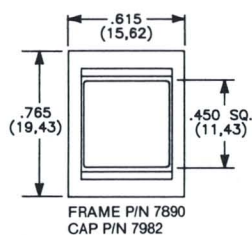
PANEL MOUNTING



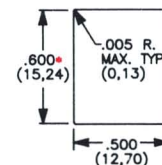
Cap and frame finish: matte; available colors, see page D-3.

*For .125 (3,18) THK. panel, increase this DIM. to .620/.625 (15,75/15,88).

J83 WITH FRAME AND FLUSH CAP



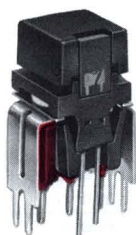
PANEL MOUNTING



Cap and frame finish: matte; available colors, see page D-3.

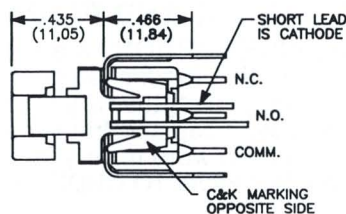
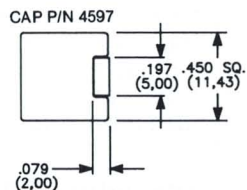
*For .125 (3,18) THK. panel, increase this DIM. to .620/.625 (15,75/15,88).

J95 WITH BUILT-IN L.E.D.

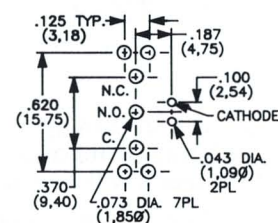


ACTUATOR OPTION FOR P.C. MOUNTING

Available with V3 termination option only.



P.C. MOUNTING



Cap finish: matte; available colors, see page D-3.

L.E.D. INFORMATION

COLOR	TYP. INTENSITY	TYP. FORWARD VOLTAGE	TYP. FORWARD CURRENT
Green	2.5 mcd	2.1V	20mA
Red	8.0 mcd	2.1V	20mA
Yellow	3.0 mcd	2.1V	20mA

Max. Forward Voltage 2.5V*
Max. Continuous Forward Current 50mA*
Power Dissipation 100mW*
*Max. Ratings at 25°C Ambient Temp.
Process information: Soldering to L.E.D. leads must be completed within 5 seconds at 500°F (260°C) maximum

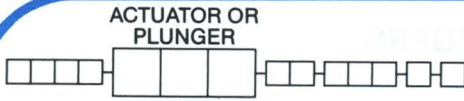
L.E.D. COLORS

COLOR NO.	COLOR
3	Red (Std.)
5	Yellow
6	Green

SPDT MODELS ONLY

CAUTION: Circuit elements must limit forward current of L.E.D. to 50mA max. continuous.

C&K 8020 Series Snap-Acting Momentary Pushbutton Switches



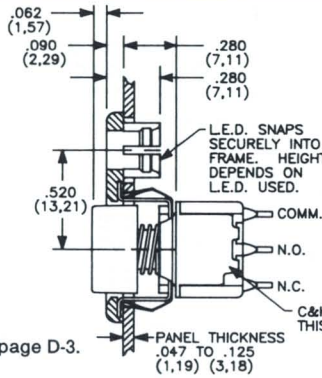
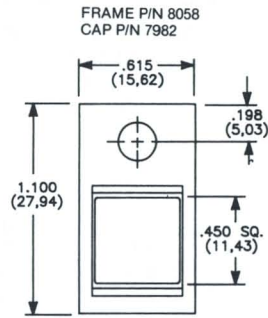
ACTUATOR OPTIONS FOR SNAP-IN FRONT MOUNTING (cont'd.)

Available with Z, C, Z3 or W-W4 terminations. SPDT and DPDT models only.

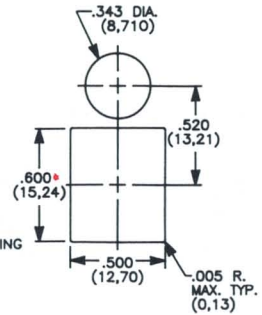
J82 WITH FRAME FOR L.E.D. AND RAISED CAP



U.S. PAT. NO. 4,004,120 Cap and frame finish: matte; available colors, see page D-3.

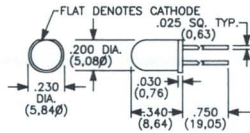


PANEL MOUNTING



*For .125 (3,18) THK. panel, increase this DIM. to .620/.625 (15,75/15,88).

RECOMMENDED L.E.D. DIMENSIONS



L.E.D. INFORMATION (L.E.D. NOT SUPPLIED)

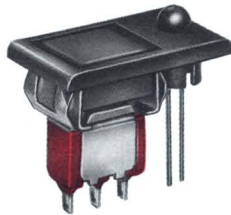
SUGGESTED L.E.D. LAMP MODELS AND SUPPLIERS

GEN. INSTRUMENT	XCITON	SIEMENS CORP.
MV5054-Red	XC556-Red	LD41-Red
MV5253-Green	XC556G-Green	LD57-Green
MV5353-Yellow	XC556Y-Yellow	LD55-Yellow

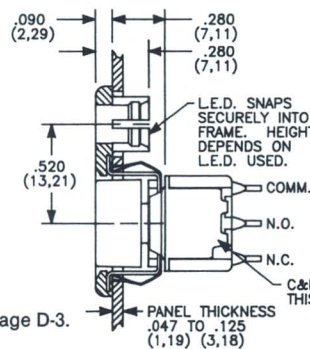
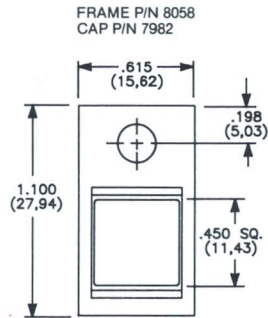
TYPICAL L.E.D. RATINGS

Forward Voltage	Current	Power	Max. Reverse Voltage
2.3V	50mA	100mW	5V

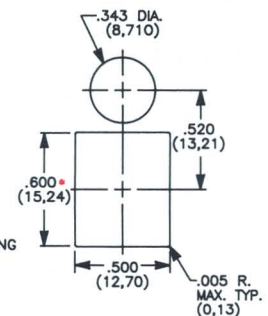
J84 WITH FRAME FOR L.E.D. AND FLUSH CAP



U.S. PAT. NO. 4,004,120 Cap and frame finish: matte; available colors, see page D-3.

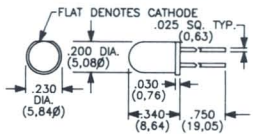


PANEL MOUNTING



*For .125 (3,18) THK. panel, increase this DIM. to .620/.625 (15,75/15,88).

RECOMMENDED L.E.D. DIMENSIONS



L.E.D. INFORMATION (L.E.D. NOT SUPPLIED)

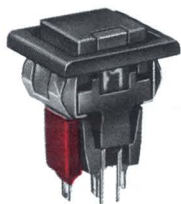
SUGGESTED L.E.D. LAMP MODELS AND SUPPLIERS

GEN. INSTRUMENT	XCITON	SIEMENS CORP.
MV5054-Red	XC556-Red	LD41-Red
MV5253-Green	XC556G-Green	LD57-Green
MV5353-Yellow	XC556Y-Yellow	LD55-Yellow

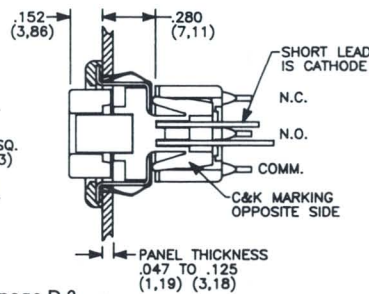
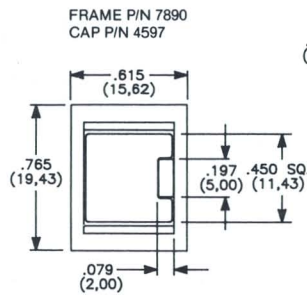
TYPICAL L.E.D. RATINGS

Forward Voltage	Current	Power	Max. Reverse Voltage
2.3V	50mA	100mW	5V

J85 WITH BUILT-IN L.E.D. FRAME AND RAISED CAP



Cap and frame finish: matte; available colors, see page D-3.



PANEL MOUNTING



*For .125 (3,18) THK. panel, increase this DIM. to .620/.625 (15,75/15,88).

L.E.D. INFORMATION

COLOR	TYP. INTENSITY	TYP. FORWARD VOLTAGE	TYP. FORWARD CURRENT
Green	2.5 mcd	2.1V	20mA
Red	8.0 mcd	2.1V	20mA
Yellow	3.0 mcd	2.1V	20mA

Max. Forward Voltage 2.5V*
 Max. Continuous Forward Current 50mA*
 Power Dissipation 100mW*
 *Max. Ratings at 25°C Ambient Temp.
 Process information: Soldering to L.E.D. leads must be completed within 5 seconds at 500°F (260°C) maximum

L.E.D. COLORS

COLOR NO.	COLOR
3	Red (Std.)
5	Yellow
6	Green

SPDT MODELS ONLY

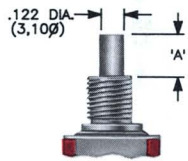
CAUTION: Circuit elements must limit forward current of L.E.D. to 50mA max. continuous

ACTUATOR OR PLUNGER

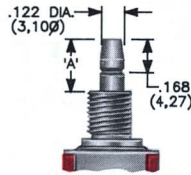


PLUNGERS

S (Std.)
L



M SNAP-FITTING



PLUNGER OPTIONS

Select desired plunger options from chart below. Plunger lengths vary with bushing option selected. S plunger supplied std. Note that some opt. plunger lengths are not suitable for use with caps. Additional plunger lengths are available on SPDT and DPDT models, consult factory. When selecting plunger option, bushing selection must also be made.

PLUNGER OPTION CODE	PLUNGER HEIGHTS—'A' DIM.					
	BUSHING OPTIONS					
	D,D9	H,H9	Y,Y9	Y3	Y4	D2,D8
S (std.)	.248* (6,30)	.218* (5,54)	.203* (5,16)	(5,54)*	.185* (4,70)	.228** (5,79)
L	N.A.	N.A.	.178* (4,52)	N.A.	.090* (2,29)	N.A.
M	.297* (7,54)	.267* (6,78)	.252* (6,40)	(6,78)*	.234* (5,94)	.277** (7,04)

* Subtract .020 (0,51) from plunger length when ordered with V30-V90 terminations. Subtract .016 (0,41) when ordered with A, A2, A4, A6, R, R2, or AV2 terminations.

** Add .004 (0,10) to plunger length when ordered with A, A2, A4, A6, R, R2, or AV2 terminations. Not all plunger lengths are sufficient for use with caps. Check cap dims. pg. D-14.

For avail. caps, see page D-14.

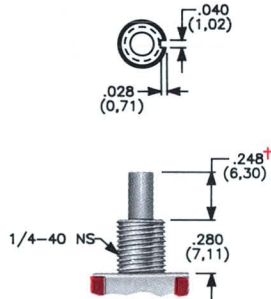
BUSHING



BUSHINGS

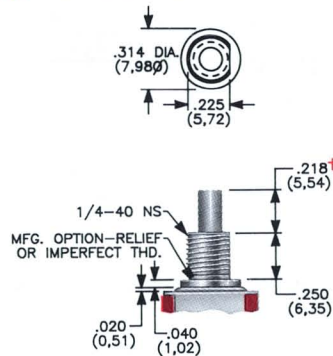
When selecting bushing option, plunger selection must also be made. Plunger lengths vary with bushing option selected. All bushings shown with std. S plunger.

D
D9 UNTHREADED



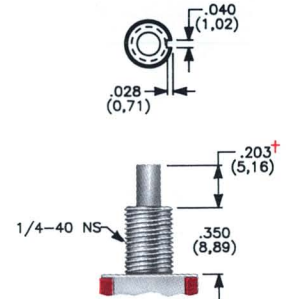
D9 bushing std. with A, A2, A4, A6, R, R2, AV2, or V30-V90 terminations.

H
H9 UNTHREADED



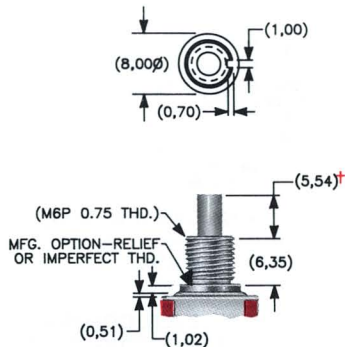
H bushing std. with Z, C, Z3, or W-W4 terminations.

Y
Y9 UNTHREADED



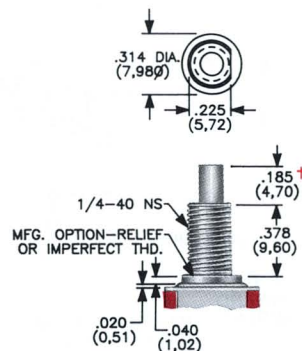
† Subtract .020 (0,51) from plunger lengths when ordered with V30-V90 terminations. Subtract .016 (0,41) when ordered with A, A2, A4, A6, R, R2, or AV2 terminations.

Y3 METRIC

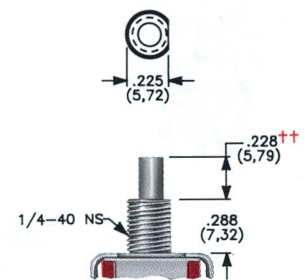


† Subtract .020 (0,51) from plunger lengths when ordered with V30-V90 terminations. Subtract .016 (0,41) when ordered with A, A2, A4, A6, R, R2, or AV2 terminations.

Y4

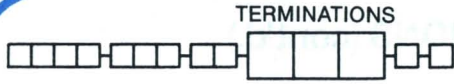


D2
D8 UNTHREADED



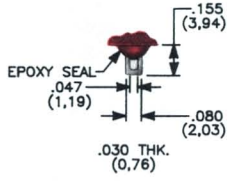
Not available with Z, C, Z3, or W-W4 terminations.

†† Add .004 (0,10) to plunger lengths when ordered with A, A2, A4, A6, R, R2 or AV2 terminations.

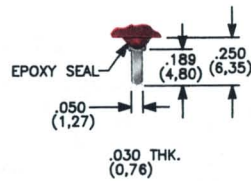


TERMINATIONS

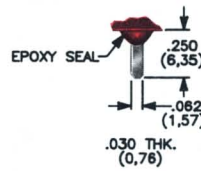
Z (Std.)



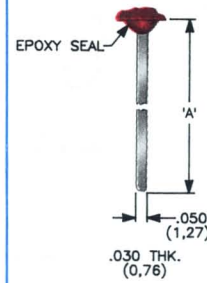
C



Z3 QUICK CONNECT



W-W4 WIRE-WRAP

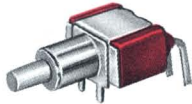


OPTION CODE	DIM. 'A'
W	.750 (19,05)
W1	.964 (24,48)
W3	.425 (10,80)
W4	1.062 (26,97)

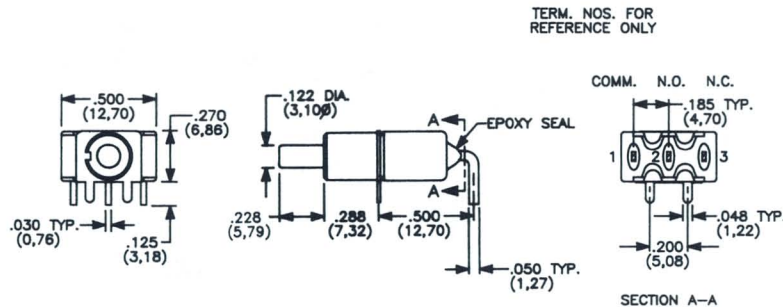
Mating quick connector available; order part no. 5301.

Wire-Wrap is a registered trademark of the Gardner-Denver Company.

A

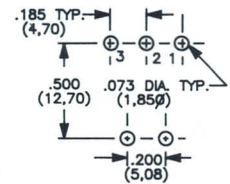


SPDT

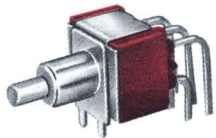


Term. bend radii mfg. option.

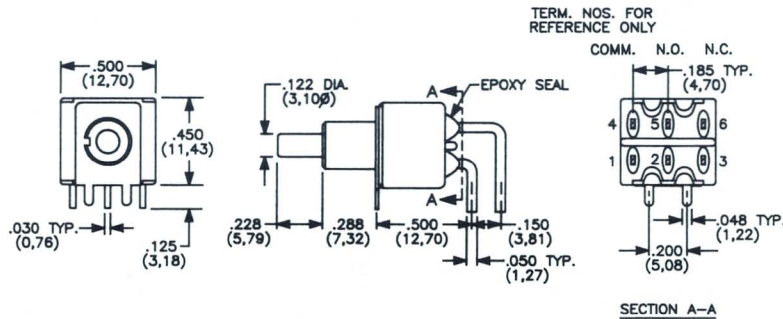
P.C. MOUNTING



A

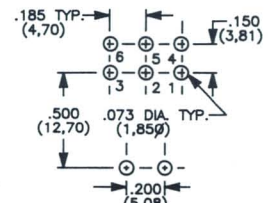


DPDT

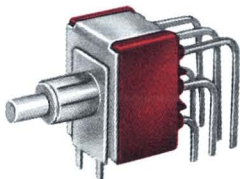


Term. bend radii mfg. option.

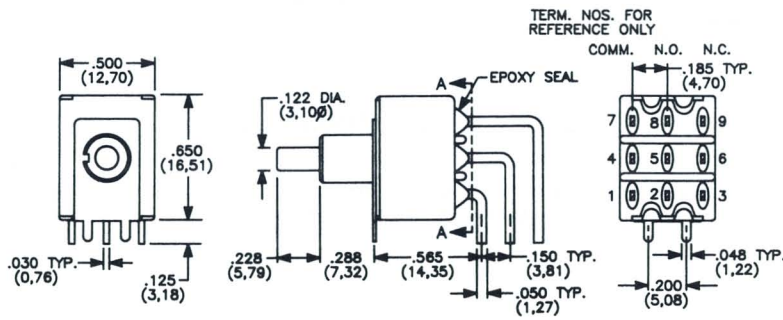
P.C. MOUNTING



A

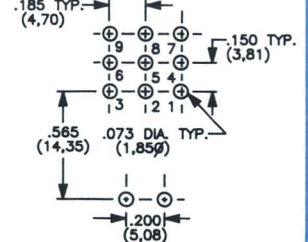


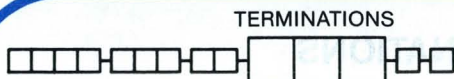
3PDT



Term. bend radii mfg. option.

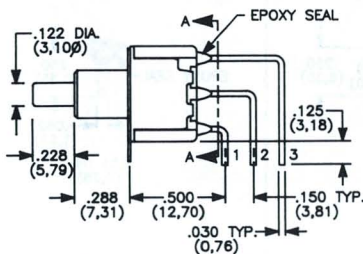
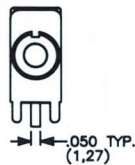
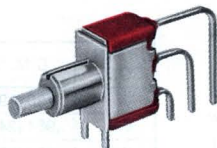
P.C. MOUNTING



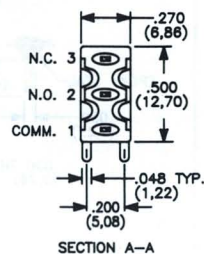


TERMINATIONS (cont'd.)

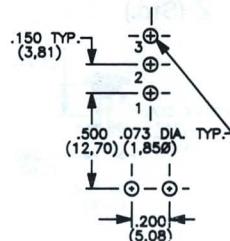
AV2



TERM. NOS. FOR REFERENCE ONLY



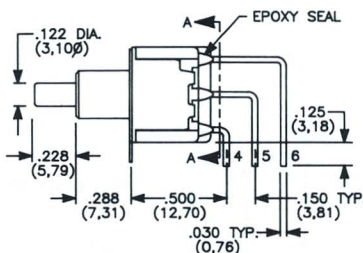
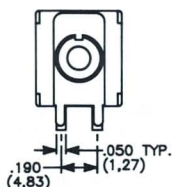
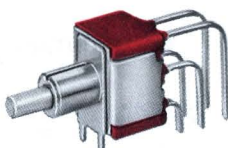
P.C. MOUNTING



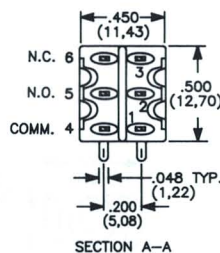
SPDT

Term. bend radii mfg. option.

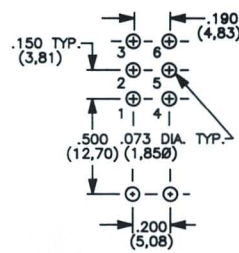
AV2



TERM. NOS. FOR REFERENCE ONLY



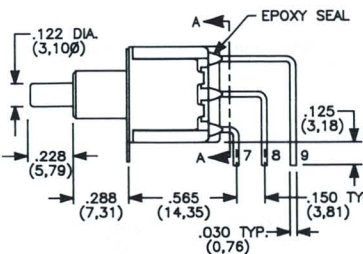
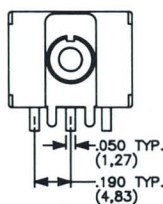
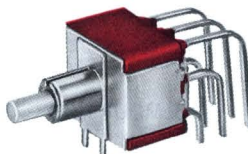
P.C. MOUNTING



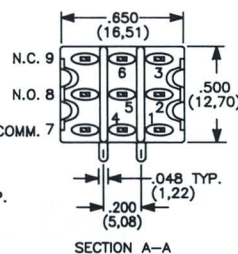
DPDT

Term. bend radii mfg. option.

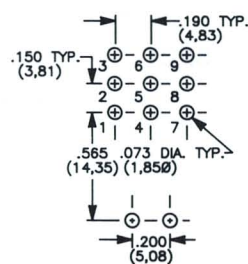
AV2



TERM. NOS. FOR REFERENCE ONLY



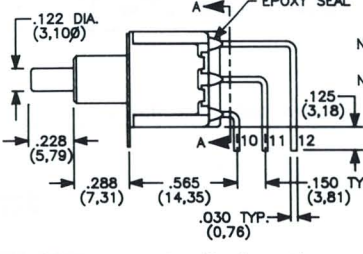
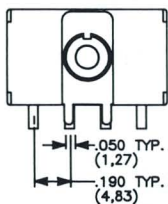
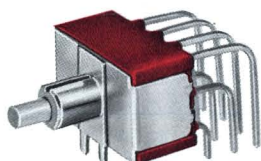
P.C. MOUNTING



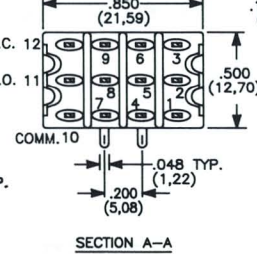
3PDT

Term. bend radii mfg. option.

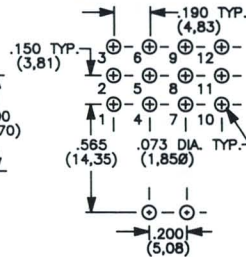
AV2



TERM. NOS. FOR REFERENCE ONLY



P.C. MOUNTING

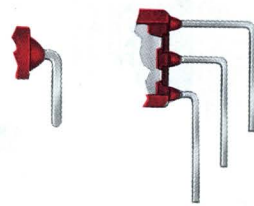


4PDT

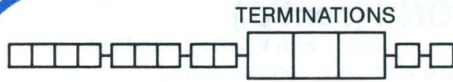
Term. bend radii mfg. option.

EXTENDED TERMINAL OPTION

Switches with A or AV2 terminations may be ordered with extended terminals, as shown. This provides easier installation into P.C. boards. To order, specify 'Extended Terminals' in word form after order number.

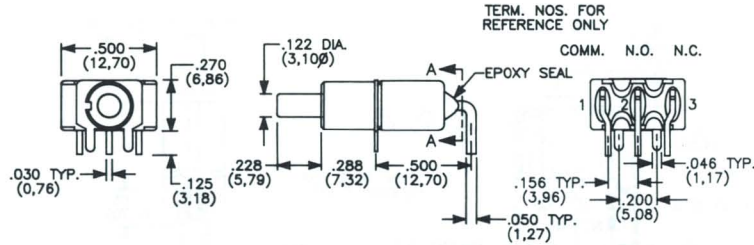
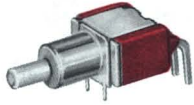


C&K 8020 Series Snap-Acting Momentary Pushbutton Switches

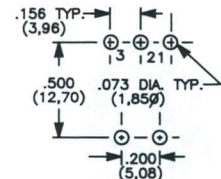


TERMINATIONS (cont'd.)

A2



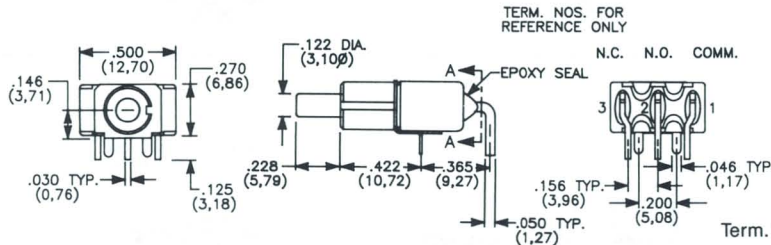
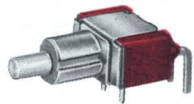
P.C. MOUNTING



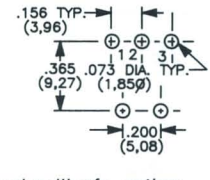
SPDT

Term. bend radii mfg. option.

A4



P.C. MOUNTING

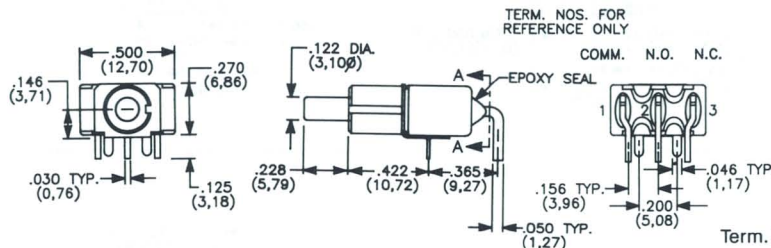
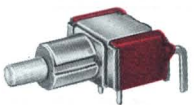


SPDT

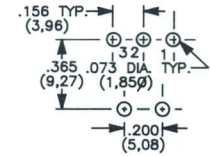
The A4 and R2 termination options are functionally identical and fit the same P.C. mounting pattern. The switches are shifted relative to the mounting hole, however. Unlike the R2, the A4 option is available with UL listing.

Term. bend radii mfg. option.

A6



P.C. MOUNTING

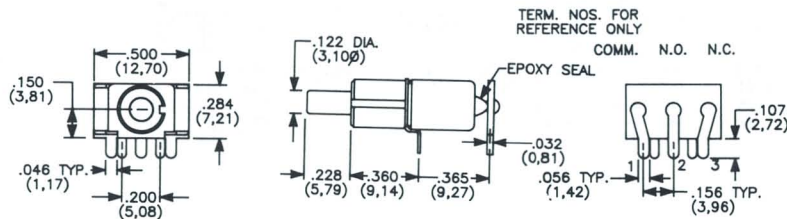
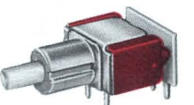


SPDT

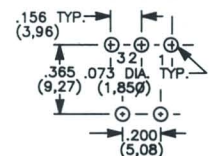
The A6 and R termination options are functionally identical and fit the same P.C. mounting pattern. The switches are shifted relative to the mounting hole, however. Unlike the R, the A6 option is available with UL listing.

Term. bend radii mfg. option.

R

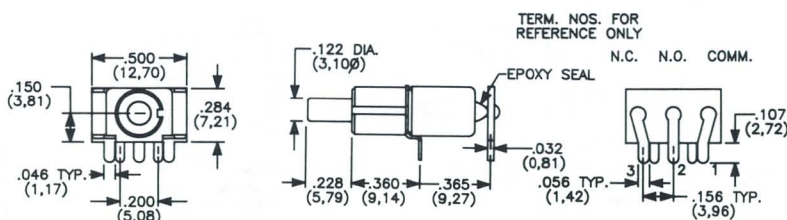
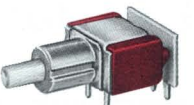


P.C. MOUNTING

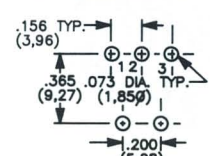


SPDT

R2



P.C. MOUNTING

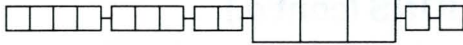


SPDT



8020 Series Snap-Acting Momentary Pushbutton Switches

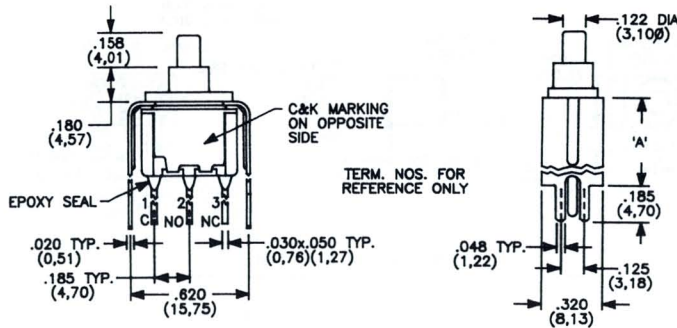
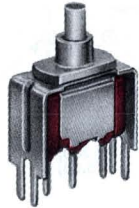
TERMINATIONS



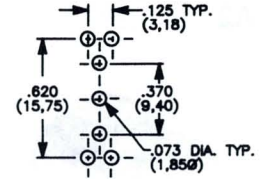
TERMINATIONS (cont'd.)

Note: No bushing option code required on models with V3-V9 terminations. Plunger length insufficient for use with caps, consult factory.

V3-V4-V9



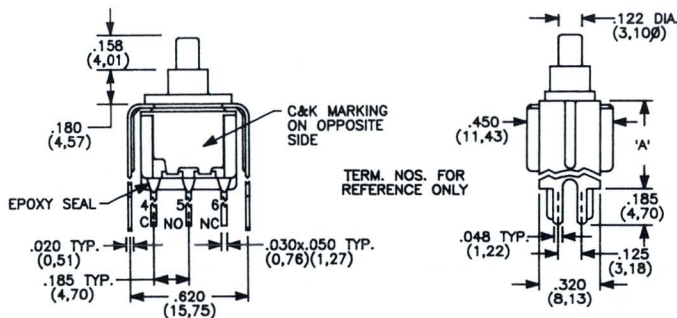
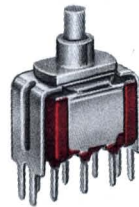
P.C. MOUNTING



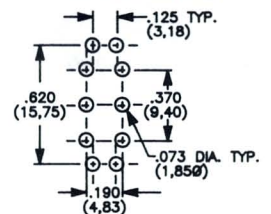
OPTION CODE	DIM. 'A'
V3	.460 (11,68)
V4	.630 (16,00)
V9	1.150 (29,21)

SPDT

V3-V4-V9



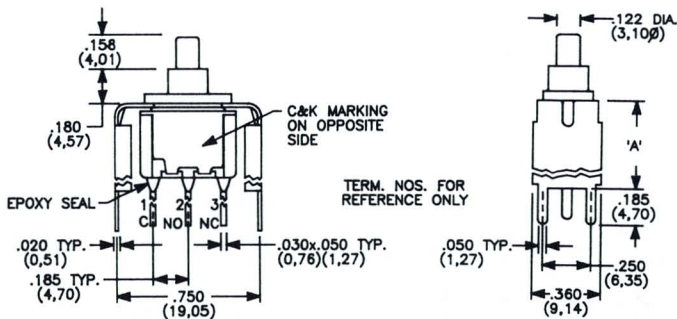
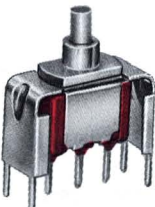
P.C. MOUNTING



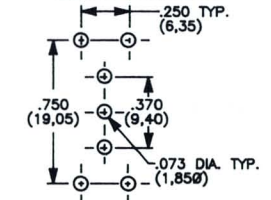
OPTION CODE	DIM. 'A'
V3	.460 (11,68)
V4	.630 (16,00)
V9	1.150 (29,21)

DPDT

V6-V7-V8



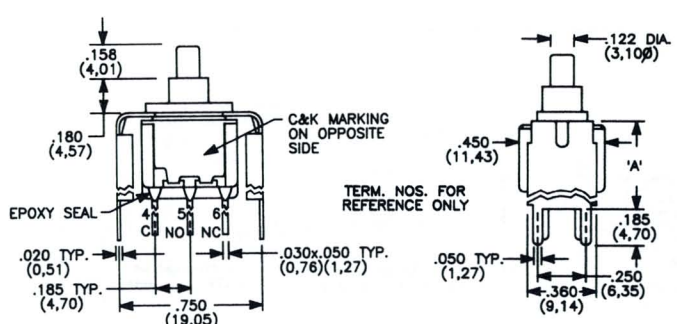
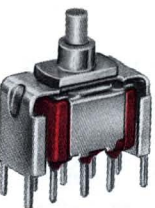
P.C. MOUNTING



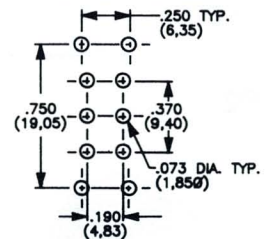
OPTION CODE	DIM. 'A'
V6	.460 (11,68)
V7	.630 (16,00)
V8	.953 (24,21)

SPDT

V6-V7-V8



P.C. MOUNTING



OPTION CODE	DIM. 'A'
V6	.460 (11,68)
V7	.630 (16,00)
V8	.953 (24,21)

DPDT



8020 Series Snap-Acting Momentary Pushbutton Switches

CONT. MAT'L.



CONTACT MATERIALS

- B** Models ending in -5 only:
 N.O. & N.C. CONTACTS: Brass, with gold plate over nickel plate.
 COMMON CONTACT & ALL TERMINALS: Brass, with gold plate over nickel plate.
 RATING: 0.4 VA max. @ 20 V AC or DC max.
 (Must be ordered with all models ending in -5)
- G** Models ending in -1 only:
 N.O. & N.C. CONTACTS: Coin silver, with gold plate over nickel plate.
 COMMON CONTACT & ALL TERMINALS: Brass, with gold plate over nickel plate.
 RATING: 0.4 VA max. @ 20 V AC or DC max. or 1 AMP @ 120 V AC or 28 V DC.
 (Must be ordered with all models ending in -1)

Note: 'G' contact material can be used where either dry circuit* or power conditions are encountered. However, when the dry circuit rating is exceeded, the gold plating is removed from the contact interface and the switch cannot then be used in dry circuits. The 'G' option, (all models ending in -1 only) should be specified where UL listing is required on a switch used in a dry circuit application.

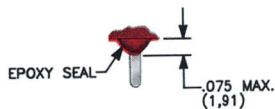
*Dry circuit = conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

SEAL

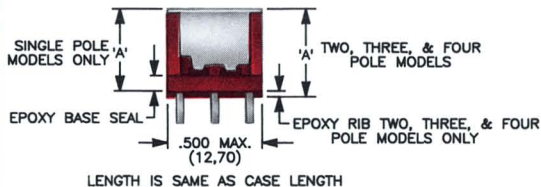


SEALING

E (Std.)



I



POLES	DIM. 'A'
SP	.410 (10,41)
DP	.440 (11,18)
3P	.505 (12,83)
4P	.505 (12,83)

Available only with Z, C, Z3 or W-W4 terminations.

HOW TO ORDER

Complete the order number below by selecting the desired model no., actuator or plunger, bushing (with plunger options only), termination, contact material and terminal sealing options from the preceding sections. Place the option codes in the appropriate boxes of the ordering format. Some boxes may be unfilled. Where applicable, write cap and frame colors in word form after order number. (Example: **U8111-J81** - - - **Z** - - **G-E** with orange cap and white frame). If no color is specified, black will be supplied.

For **J85** and **J95** actuator options, write L.E.D. color in word form after order number. L.E.D.'s not furnished with **J82** or **J84** actuator options. Plunger lengths vary with bushing option selected, some std. plunger lengths not suitable for caps. No bushing selection necessary with **V3-V9** termination options. See **PLUNGER** and **BUSHING** option sections.

Note that **B** contact material must be ordered with all models ending in **-5**, (Example: **8225-S** - - - **H** - - **C** - - **B-E**). **G** contact material must be ordered with all models ending in **-1**, (Example: **8221-S** - - - **H** - - **C** - - **G-E**).

S plunger, **H** bushing, **Z** terminations and **E** epoxy terminal seal are supplied if no options are specified.

UL listed with all options when ordered with model nos. **U811** thru **U841** and **G** contact material.

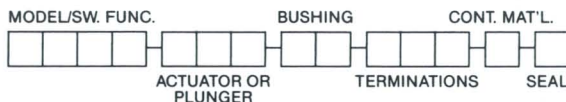
Note: Custom markings and legends available, see inside front cover and consult factory.

HARDWARE: Two mounting nuts, locking ring and lockwasher are supplied standard, where applicable. Optional mounting nut styles, locking rings, frames and caps available. Write part descriptions and part nos. in word form after order number. If nothing is specified, standard hardware will be supplied. Hardware is also available separately, see **HARDWARE** section, page D-14.

UNAVAILABLE OPTION COMBINATIONS

Model or Option	Options Not Available
8121 thru 8421, U811 thru U841	B *
8125 thru 8425	G
I	A, AV2, A2, A4, A6, R, R2, V3-V9, V30-V90

*UL listed switches must be ordered with G contact material because UL considers for listing only those components suitable for power applications.



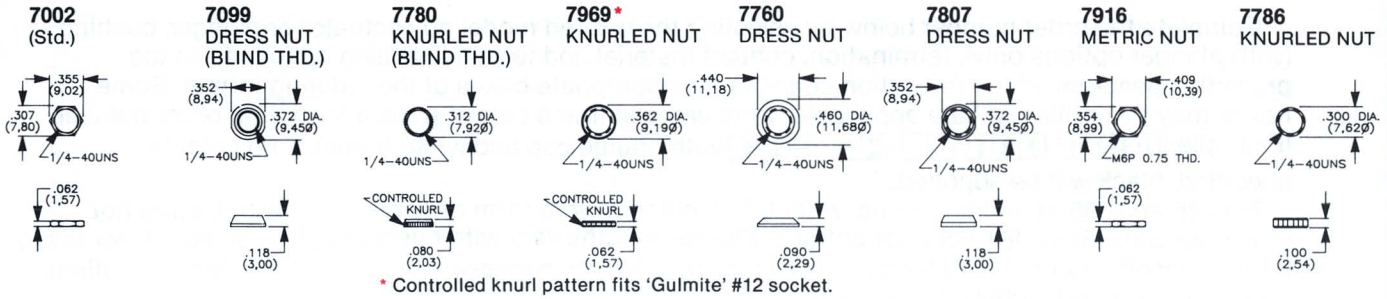


8020 Series Snap-Acting Momentary Pushbutton Switches

AVAILABLE HARDWARE

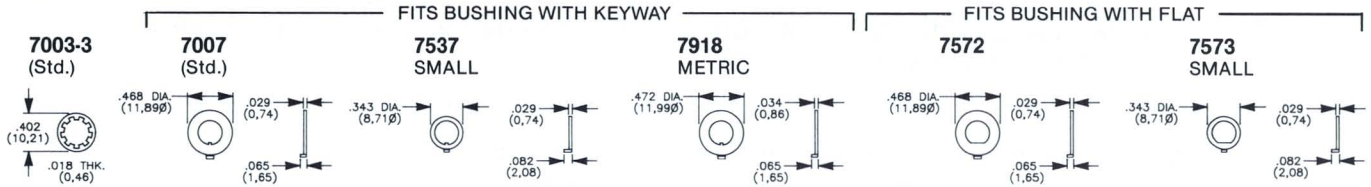
The following hardware is available separately. To order, write part nos., descriptions and colors where applicable.

NUTS



LOCKWASHER

LOCKING RINGS



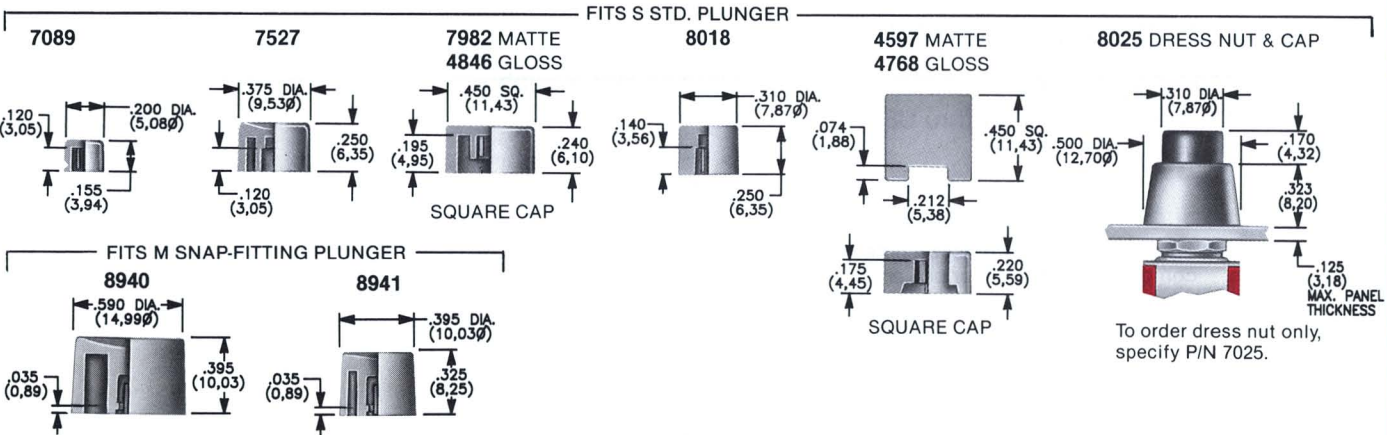
MATERIALS NUTS, LOCKING RINGS - Brass, nickel plated.
LOCKWASHERS - Steel, bright nickel plated.

WRENCHES

Wrenches are available to fit most nut styles. See page A-13.

CAPS

All caps: finish, gloss, except where noted; material, nylon. See color chart below.



FRAMES

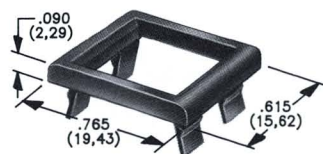
Frames for the following actuator options are available separately. Chart shows available colors. For illustrations and dimensions of parts not shown, see pages noted. Frame finish: matte; material, nylon.

FRAME P/N	FITS ACTUATOR OPTION	SEE PAGE NO.
7890	J81, J86	D-3, D-4
8058	J82	D-4

SNAP-IN FRAMES

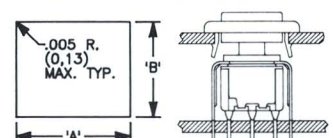
Frames below snap into panel opening and are independent from switch mounting. They are recommended for P.C. mounted switches with A, AV2, V3 - V9 or V30 - V90 terminations and square caps. Accurate positioning of the P.C. mounted switch relative to the panel opening is necessary to provide proper clearance between the cap and the frame. See charts for correct part no., panel thickness and available colors. Frame finish: matte; material, nylon.

CAP AND FRAME COLORS			
1	White	6	Green
2	Black(Std.)	7	Blue
3	Red	8	Brown
4	Orange	9	Gray
5	Yellow		



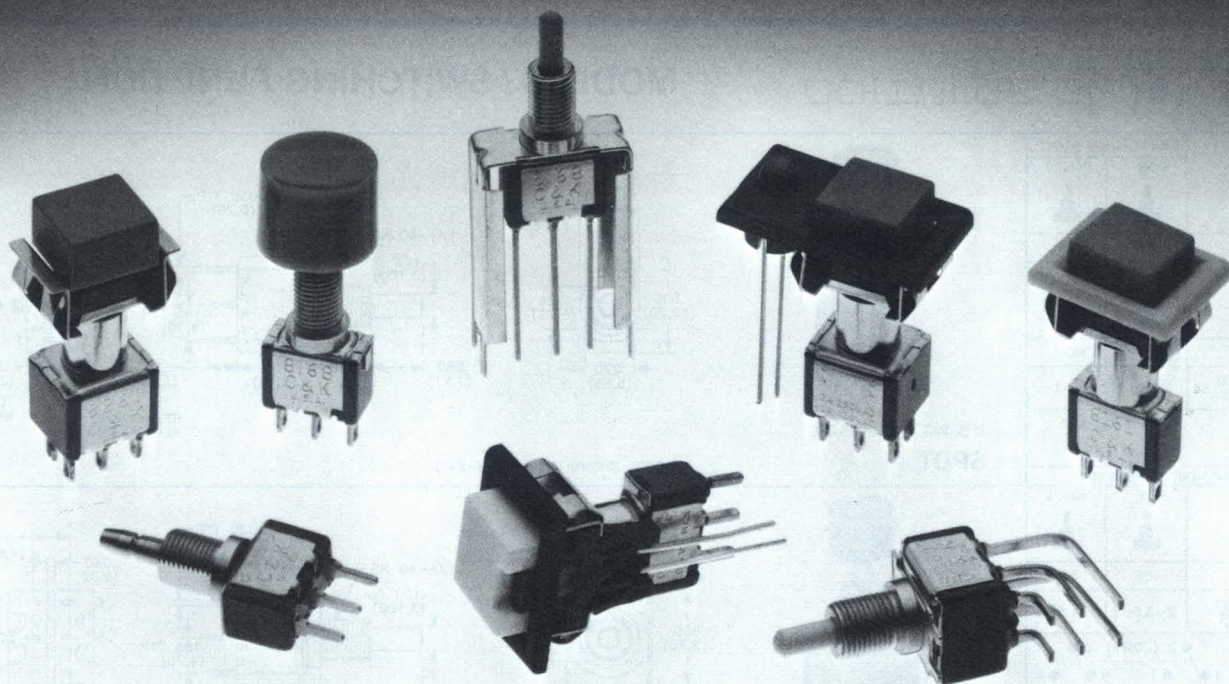
FRAME PART NO.	PANEL THICKNESS	DIM. 'A'	DIM. 'B'
4325	.047 (1,19)	.595-.605	.495-.500
4326	.062 (1,57)	(15,11-15,37)	(12,57-12,70)
4327	.090 (2,29)	.620-.625	.495-.500
4328	.125 (3,18)	(15,75-15,88)	(12,57-12,70)

MOUNTING INFORMATION



8060 SERIES

ALTERNATE ACTION & MOMENTARY PUSHBUTTON SWITCHES

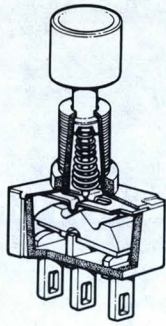


SECTION E



8060 Series

Alternate Action and Momentary Pushbutton Switches



SPECIFICATIONS

CONTACT RATING: 6 AMPS @ 120 V AC or 28 V DC; 3 AMPS @ 250 V AC.
 ELECTRICAL LIFE: Models ending in -61 (alternate action): 100,000 actuations at full load. Models ending in -68 (momentary): 50,000 actuations.
 CONTACT RESISTANCE: Below 20 milliohms typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.
 INSULATION RESISTANCE: 10^9 ohms min.
 DIELECTRIC STRENGTH: 1,000 V RMS min. @ sea level.
 OPERATING TEMPERATURE: -30°C to 65°C .

MATERIALS

CASE: Diallyl phthalate (DAP) or melamine phenolic.
 PLUNGER: Glass filled nylon or glass filled polyester.
 BUSHING: Brass, nickel plated.
 HOUSING: Stainless steel.
 SWITCH SUPPORT: Brass or steel, electrotin plated.
 END CONTACTS: Coin silver, silver plated (Q cont. mat'l.).
 CENTER CONTACT & ALL TERMINALS: Brass, silver plated (Q cont. mat'l.).
 TERMINAL SEAL: Epoxy.
 HARDWARE: Nut-Brass, nickel plated.
 Locking ring- Brass, bright nickel plated.
 Lockwasher- Steel, bright nickel plated.

NOTE

Specifications and Materials listed above are general specifications for switches with standard options. See option sections for additional information. Specifications available for specific models, consult factory.

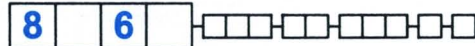
INTRODUCTION

Available options for 8060 SERIES ALTERNATE ACTION and MOMENTARY PUSHBUTTON SWITCHES are shown on pages E-2 thru E-9. Make selections from the following option sections: Model/Switching Function, Actuator or Plunger, Bushing, Terminations, Contact Material and (if desired) Epoxy Terminal

Seal. Each section begins with the ordering format, with the appropriate boxes enlarged. Complete HOW TO ORDER information is on page E-9. Available hardware and accessories shown on page E-10.

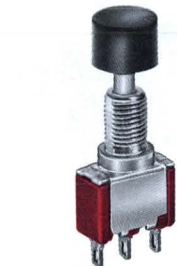
8161 and 8168 models UL / CSA listed with all options when ordered with G or Q contact material. Z termination option CSA listed only when ordered with I epoxy base seal. See HOW TO ORDER, page E-9.

MODEL/SW. FUNC.



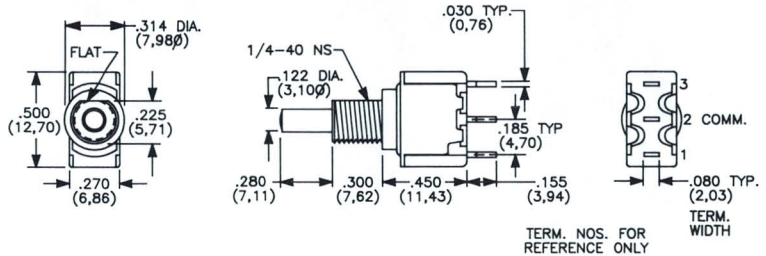
MODELS / SWITCHING FUNCTION

MODEL NO.	SWITCHING FUNC.	
	POS 1	POS 2
8161	ON	ON
8168	POS 1	POS 2
	ON	MOM.
CONNECTED TERMINALS	2-3	2-1
SCHMATIC		
MOM. = MOMENTARY POSITION		
8261	POS 1	POS 2
	ON	ON
CONNECTED TERMINALS	2-3,5-6	2-1,5-4
SCHMATIC		



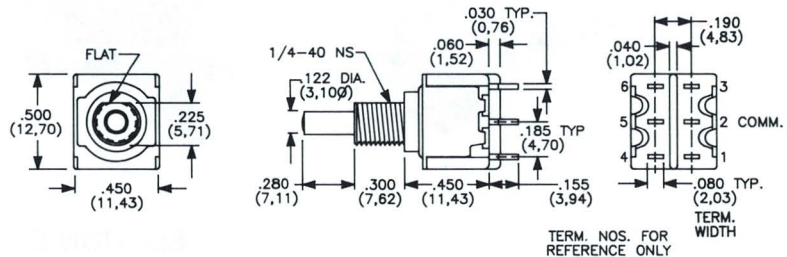
U.S. PAT. NO. 4,095,070

SPDT



U.S. PAT. NO. 4,095,070

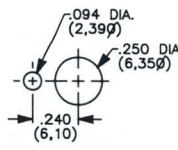
DPDT



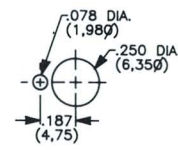
PANEL MOUNTING



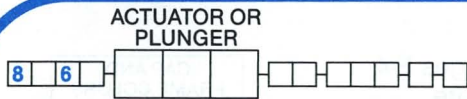
WITHOUT LOCKING RING



WITH STD. LOCKING RING



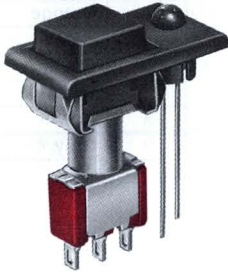
WITH SMALL LOCKING RING



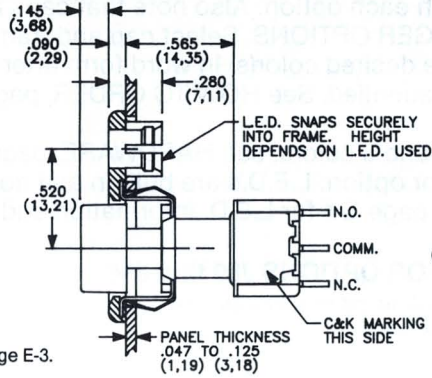
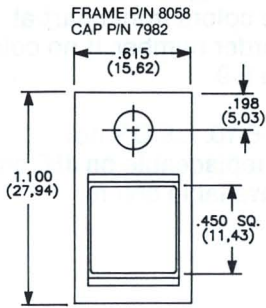
ACTUATOR OPTIONS FOR SNAP-IN FRONT MOUNTING (cont'd.)

Available with Z, C, Z3 or W-W5 terminations.

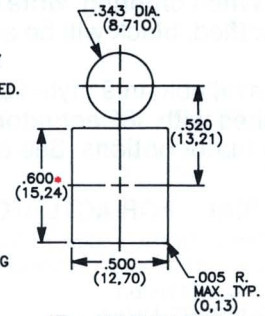
J82 WITH FRAME FOR L.E.D.



U.S. PAT. NO. 4,004,120 Cap and frame finish: matte; available colors, see page E-3.

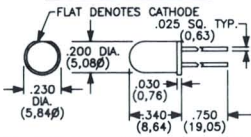


PANEL MOUNTING



*For .125 (3,18) THK. panel, increase this DIM. to .620 / .625 (15,75/15,88).

RECOMMENDED L.E.D. DIMENSIONS



L.E.D. INFORMATION (L.E.D. NOT SUPPLIED)

SUGGESTED L.E.D. LAMP MODELS AND SUPPLIERS

GEN. INSTRUMENT	XCITON	SIEMENS CORP.
MV5054-Red	XC556-Red	LD41-Red
MV5253-Green	XC556G-Green	LD57-Green
MV5353-Yellow	XC556Y-Yellow	LD55-Yellow

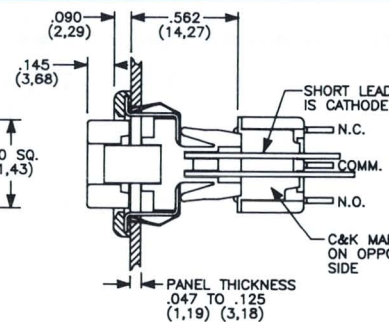
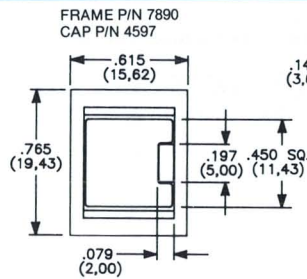
TYPICAL L.E.D. RATINGS

Forward Voltage	Current	Power	Max. Reverse Voltage
2.3V	50mA	100mW	5V

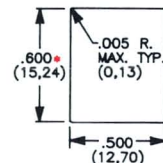
J86 WITH BUILT-IN L.E.D.



Cap and frame finish: matte; available colors, see page E-3.



PANEL MOUNTING



*For .125 (3,18) THK. panel, increase this DIM. to .620 / .625 (15,75/15,88).

L.E.D. INFORMATION

COLOR	TYP. INTENSITY	TYP. FORWARD VOLTAGE	TYP. FORWARD CURRENT
Green	2.5 mcd	2.1V	20mA
Red	8.0 mcd	2.1V	20mA
Yellow	3.0 mcd	2.1V	20mA

Max. Forward Voltage 2.5V*
Max. Continuous Forward Current 50mA*
Power Dissipation 100mW*
*Max. Ratings at 25°C Ambient Temp.
Process information: Soldering to L.E.D. leads must be completed within 5 seconds at 500°F (260°C) maximum

L.E.D. COLORS

COLOR NO.	COLOR
3	Red (Std.)
5	Yellow
6	Green

CAUTION: Circuit elements must limit forward current of L.E.D. to 50mA max. continuous

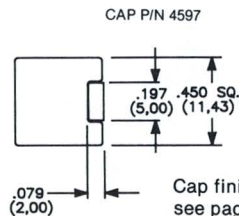
J96 WITH BUILT-IN L.E.D.



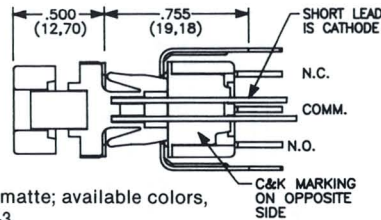
SPDT MODELS ONLY

ACTUATOR OPTION FOR P.C. MOUNTING

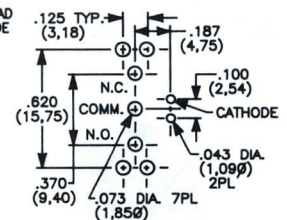
Available with V30 termination option only.



Cap finish: matte; available colors, see page E-3.



P.C. MOUNTING



L.E.D. INFORMATION

COLOR	TYP. INTENSITY	TYP. FORWARD VOLTAGE	TYP. FORWARD CURRENT
Green	2.5 mcd	2.1V	20mA
Red	8.0 mcd	2.1V	20mA
Yellow	3.0 mcd	2.1V	20mA

Max. Forward Voltage 2.5V*
Max. Continuous Forward Current 50mA*
Power Dissipation 100mW*
*Max. Ratings at 25°C Ambient Temp.
Process information: Soldering to L.E.D. leads must be completed within 5 seconds at 500°F (260°C) maximum

L.E.D. COLORS

COLOR NO.	COLOR
3	Red (Std.)
5	Yellow
6	Green

CAUTION: Circuit elements must limit forward current of L.E.D. to 50mA max. continuous.

ACTUATOR OR PLUNGER

PLUNGERS

S (Std.)

Black cap, P/N 7527 supplied std. Other caps available, see **HARDWARE**, page E-10.

Plunger material: glass filled nylon or glass filled polyester.

L SNAP FITTING

Black cap, P/N 8941 supplied std. Other caps available, see **HARDWARE**, page E-10.

Plunger material, brass, nickel plated.

When selecting plunger option, bushing selection must also be made, see below.

BUSHING

BUSHINGS

H H9 UNTHREADED

Will withstand 12 in.-lbs. of torque with no distortion.

H bushing std. with Z, C, Z3 or W-W5 terminations.
H9 bushing std. with A, AV2 or V30-V90 terminations.

Y3 METRIC

Will withstand 12 in.-lbs. of torque with no distortion.

When selecting bushing option, plunger selection must also be made, see above. Std. S plunger shown.

TERMINATIONS

TERMINATIONS

Z (Std.)

.030 THK. (0,76)

C

.030 THK. (0,76)

Z3 QUICK CONNECT

EPOXY SEAL

Mating quick connector available; order part no. 5301.

W-W5 WIRE-WRAP

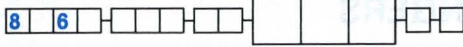
EPOXY SEAL

OPTION CODE	DIM. 'A'
W	.750(19,05)
W1	.964(24,48)
W3	.425(10,80)
W4	1.082(26,97)
W5	1.305(33,15)

Wire-Wrap is a registered trademark of the Gardner-Denver Company.

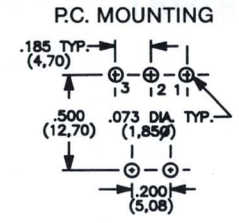
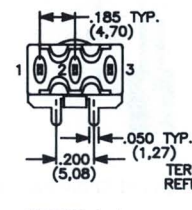
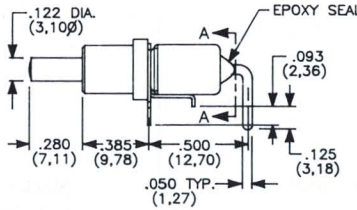
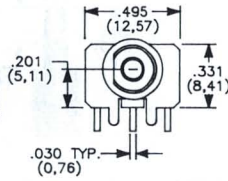
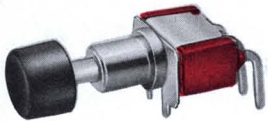
'Q' Contact Material Std.
'Q' Contact Material Std.
'Q' Contact Material Std.
'B' Contact Material Std.

TERMINATIONS



TERMINATIONS (cont'd.)

A



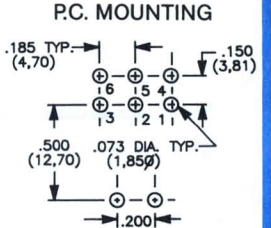
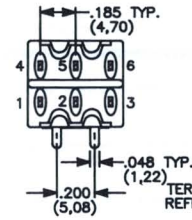
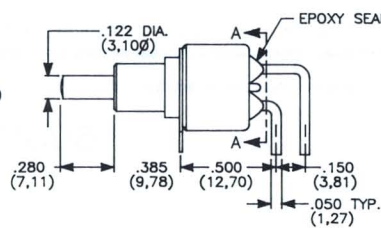
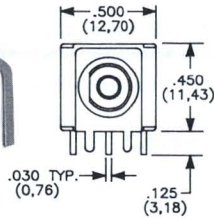
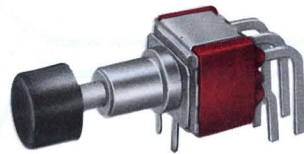
SPDT

'B' Contact Material Std.

SECTION A-A

Term. bend radii mfg. option.

A



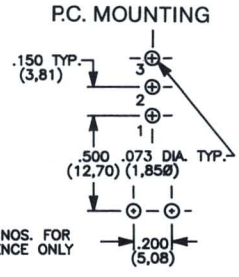
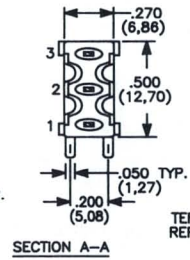
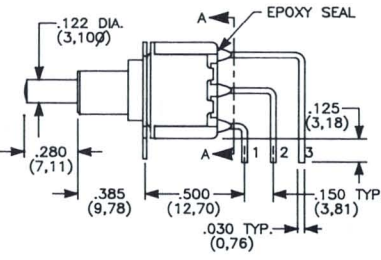
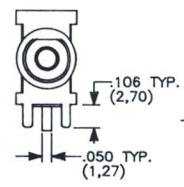
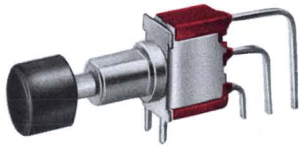
DPDT

'B' Contact Material Std.

SECTION A-A

Term. bend radii mfg. option.

AV2



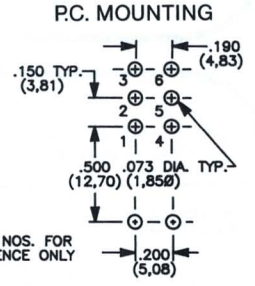
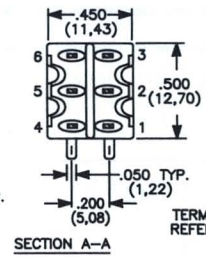
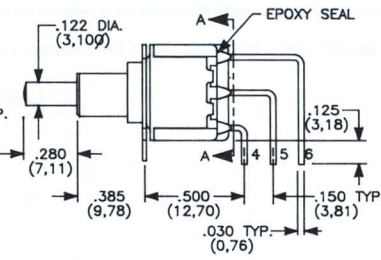
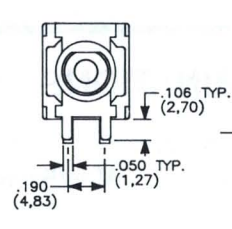
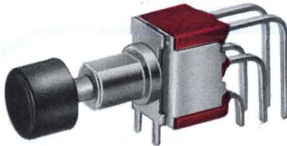
SPDT

'B' Contact Material Std.

SECTION A-A

Term. bend radii mfg. option.

AV2



DPDT

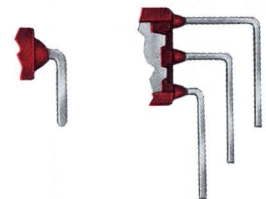
'B' Contact Material Std.

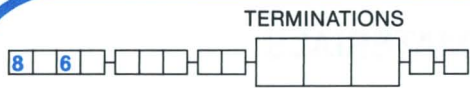
SECTION A-A

Term. bend radii mfg. option.

EXTENDED TERMINAL OPTION

Switches with A or AV2 terminations may be ordered with extended terminals, as shown. This provides easier installation into P.C. boards. To order, specify 'Extended Terminals' in word form after order number.



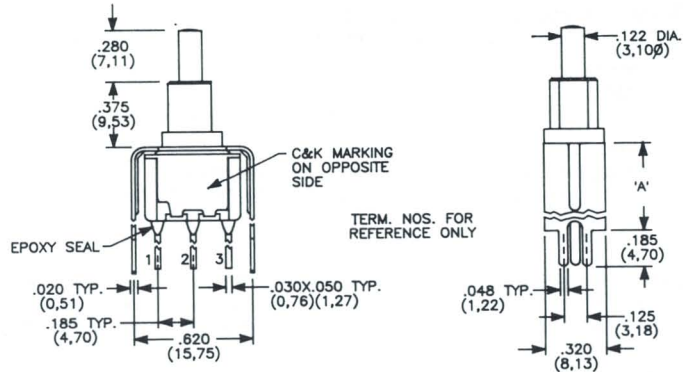


TERMINATIONS (cont'd.)

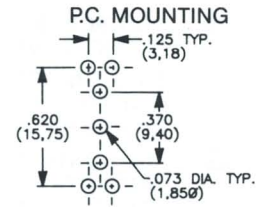
V30-V40-V90



SPDT



'B' Contact Material Std.

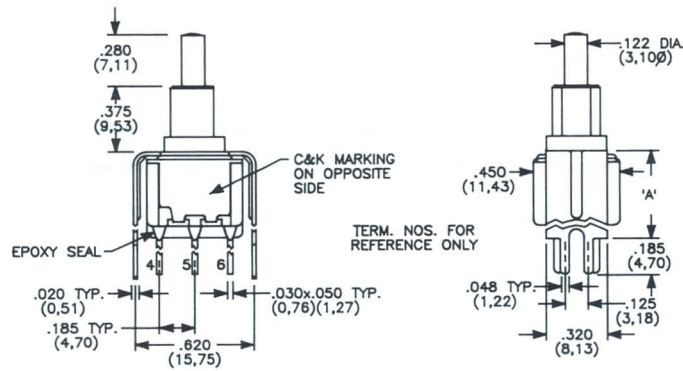


OPTION CODE	DIM. 'A'
V30	.460 (11,68)
V40	.630 (16,00)
V90	1.150 (29,21)

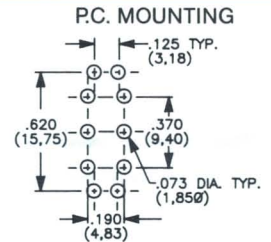
V30-V40-V90



DPDT



'B' Contact Material Std.

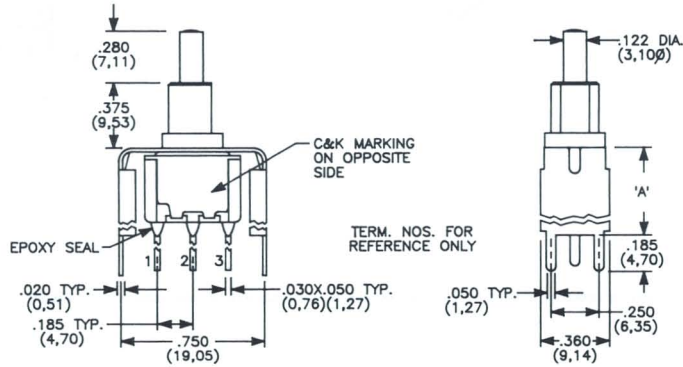


OPTION CODE	DIM. 'A'
V30	.460 (11,68)
V40	.630 (16,00)
V90	1.150 (29,21)

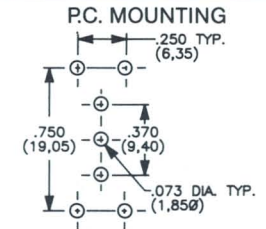
V60-V70-V80



SPDT



'B' Contact Material Std.

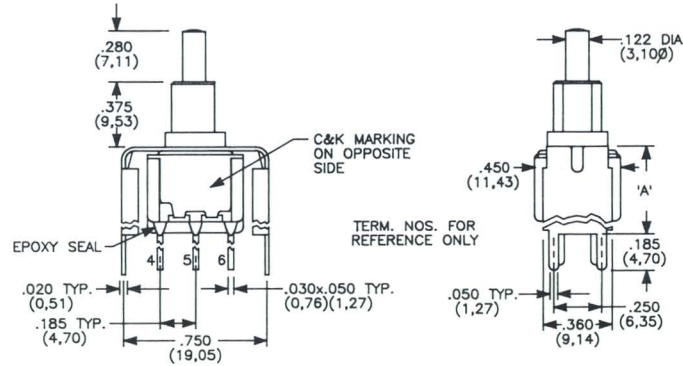


OPTION CODE	DIM. 'A'
V60	.460 (11,68)
V70	.630 (16,00)
V80	.953 (24,21)

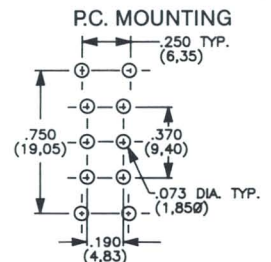
V60-V70-V80



DPDT

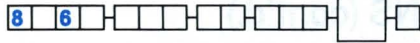


'B' Contact Material Std.



OPTION CODE	DIM. 'A'
V60	.460 (11,68)
V70	.630 (16,00)
V80	.953 (24,21)

CONT. MAT'L.



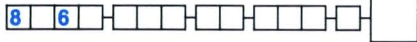
CONTACT MATERIALS

- B** CONTACTS & TERMINALS: Brass, with gold plate over nickel plate.
RATING: 0.4 VA max. @ 20 V AC or DC max. (Std. with all termination options exc. Z, C, Z3)
- Q** END CONTACTS: Coin silver, silver plated.
CENTER CONTACT & ALL TERMINALS: Brass, silver plated.
RATING: 6 AMPS @ 120 V AC or 28 V DC; 3 AMPS @ 250 V AC. (Std. with termination options Z, C, Z3)
- G** END CONTACTS: Coin silver, with gold plate over nickel plate.
CENTER CONTACT & ALL TERMINALS: Brass, with gold plate over nickel plate.
RATING: 0.4 VA max. @ 20 V AC or DC max. or 6 AMPS @ 120 V AC or 28 V DC; 3 AMPS @ 250 V AC.

Note: 'G' contact material is equivalent to both 'B' and 'Q' contact materials and can be used where either dry circuit* or power conditions are encountered. However, when the dry circuit rating is exceeded, the gold plating is removed from the contact interface and the switch cannot then be used in dry circuits. This option should be specified where UL or CSA listing is required on a switch used in a dry circuit application.

*Dry circuit = conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

SEAL



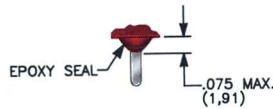
SEALING

(None)

No seal

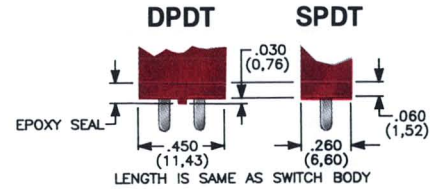
Std. with Z, C terminations, not avail. with all other terminations. Not avail. with all 8168 models with all terminations.

E



Std. with Z3, W-W5, A, AV2, V30-V90 terminations and all 8168 models with all terminations.

I



Available only with Z, C, Z3 or W-W5 terminations.

HOW TO ORDER

Complete the order number below by selecting the desired model no., actuator or plunger, bushing (with plunger options only), termination, contact material and terminal sealing options from the preceding sections. Place the option codes in the appropriate boxes of the ordering format. Some boxes may be unfilled. Where applicable, write cap and frame colors in word form after order number. (Example: 8161-J82-□□-C□□-B□ with red cap and white frame).

If no color is specified, black will be supplied. Black cap, P/N 7527, supplied standard, not installed, on all models with S plunger option. Black cap, P/N 8941, supplied with L plunger option.

For J86 and J96 actuator options, write L.E.D. color in word form after order number. L.E.D.'s not furnished with J82 actuator option.

S plunger, H bushing, Z terminations and Q contact material are supplied if no options are specified. H9 bushing standard with A, AV2 and V30-V90 terminations.

E epoxy terminal seal standard with Z3, W-W5, A, AV2, V30-V90 terminations and all 8168 models with all terminations.

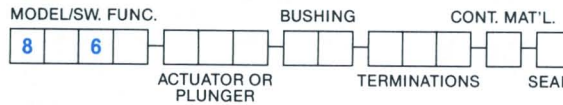
8161 and 8168 models UL/CSA listed with all options when ordered with G or Q contact material. Z termination option CSA listed only when ordered with I epoxy base seal.

Note: Custom markings and legends available, see inside front cover and consult factory.

HARDWARE: Two mounting nuts, locking ring and lockwasher are supplied standard, where applicable. Optional mounting nut styles, locking rings, frames and caps available. Write part descriptions and part nos. in word form after order number. If nothing is specified, standard hardware will be supplied. Hardware is also available separately, see **HARDWARE** section, page E-10.

UNAVAILABLE OPTION COMBINATIONS

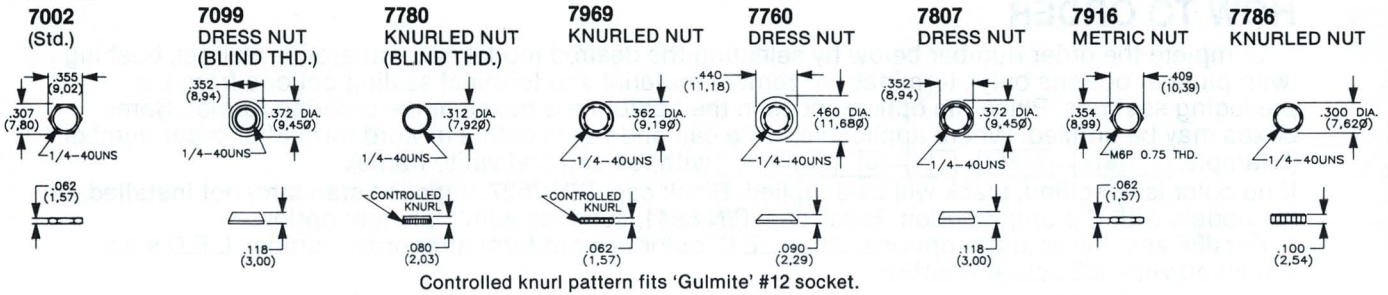
Model or Option	Options Not Available
I	A, AV2, V30-V90



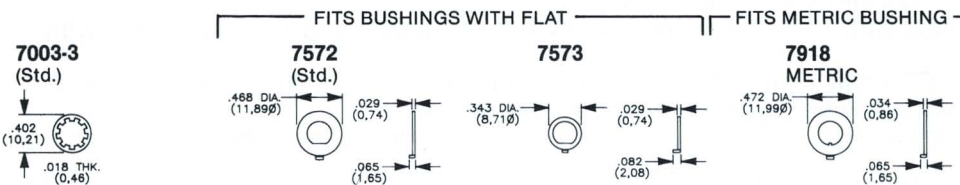
AVAILABLE HARDWARE

The following hardware is available separately. To order, write part nos., descriptions and colors where applicable.

NUTS



LOCKWASHER LOCKING RINGS



MATERIALS

NUTS, LOCKING RINGS - Brass, nickel plated.
LOCKWASHERS - Steel, bright nickel plated.

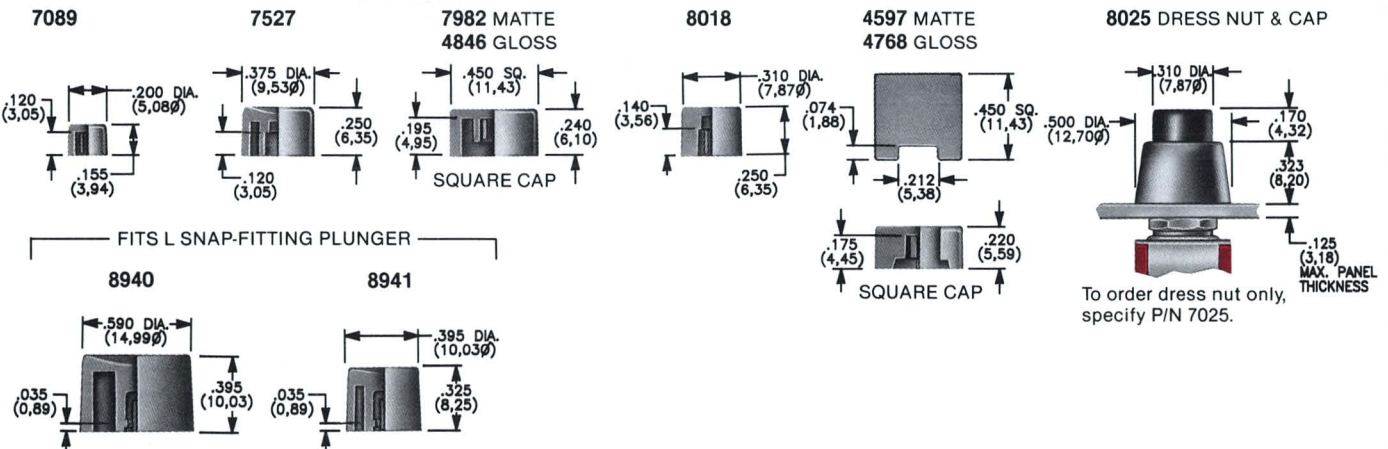
WRENCHES

Wrenches are available to fit most nut styles. See page A-13.

CAPS

All caps: finish, gloss, except where noted; material, nylon. See color chart below.

FITS S STD. PLUNGER



FRAMES

Frames for the following actuator options are available separately. Chart shows available colors. For illustrations and dimensions of parts not shown, see pages noted. Frame finish: matte; material, nylon.

FRAME P/N	FITS ACTUATOR OPTION	SEE PAGE NO.
7890	J81, J86	E-3, E-4
8058	J82	E-4

SNAP-IN FRAMES

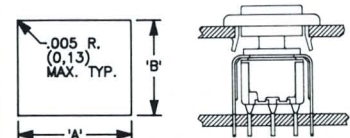
Frames below snap into panel opening and are independent from switch mounting. They are recommended for P.C. mounted switches with A, AV2 or V30 - V90 terminations and square caps. Accurate positioning of the P.C. mounted switch relative to the panel opening is necessary to provide proper clearance between the cap and the frame. See charts for correct part no., panel thickness and available colors. Frame finish: matte; material, nylon.

CAP AND FRAME COLORS			
1	White	6	Green
2	Black(Std.)	7	Blue
3	Red	8	Brown
4	Orange	9	Gray
5	Yellow		

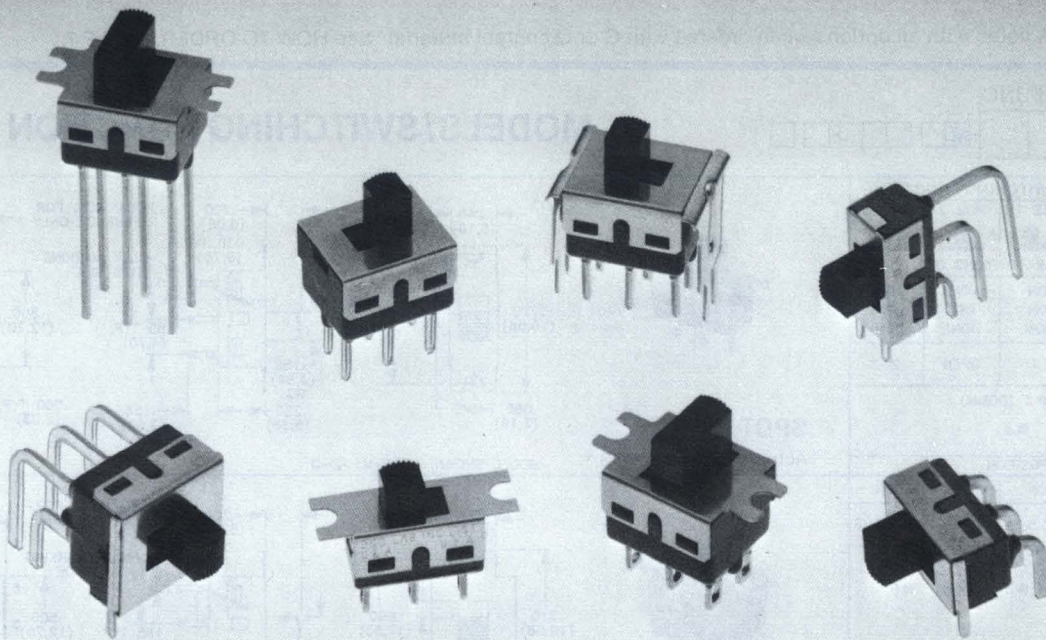


FRAME PART NO.	PANEL THICKNESS	DIM. 'A'	DIM. 'B'
4325	.047 (1,19)	.595-.605	.495-.500
4326	.062 (1,57)	(15,11-15,37)	(12,57-12,70)
4327	.090 (2,29)	.620-.625	.495-.500
4328	.125 (3,18)	(15,75-15,88)	(12,57-12,70)

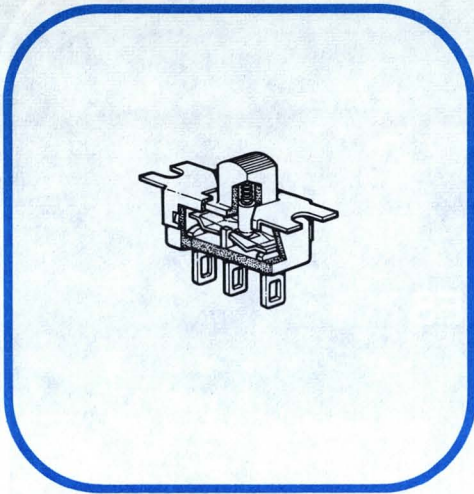
MOUNTING INFORMATION



1000 SERIES MINIATURE SLIDE SWITCHES



SECTION F



SPECIFICATIONS

CONTACT RATING: 6 AMPS @ 120 V AC or 28 V DC; 3 AMPS @ 250 V AC.
ELECTRICAL LIFE: 40,000 make-and-break cycles at full load on all models with 'Q' or 'G' contact material. 100,000 cycles on all models with 'B' contact material.
CONTACT RESISTANCE: Below 10 milliohms typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.
INSULATION RESISTANCE: 10⁹ ohms min.
DIELECTRIC STRENGTH: 1,000 V RMS min. @ sea level.
OPERATING TEMPERATURE: -30°C to 65°C.

MATERIALS

CASE: SP- diallyl phthalate (DAP) or melamine phenolic.
DP- diallyl phthalate (DAP).
ACTUATOR: Nylon, black, std.
HOUSING: Stainless steel.
SWITCH SUPPORT: Brass or steel, electrotin plated.
END CONTACTS: Coin silver, silver plated (Q cont. mat'l.).
CENTER CONTACT & ALL TERMINALS: Brass, silver plated (Q cont. mat'l.).

NOTE

Specifications and Materials listed above are general specifications for switches with standard options. See option sections for additional information. Specifications available for specific models, consult factory.

INTRODUCTION

Available options for 1000 SERIES MINIATURE SLIDE SWITCHES are shown on pages F-2 thru F-7. Make selections from the following option sections: Model/Switching Function, Mounting Style, Terminations, Contact Material and (if desired)

Epoxy Terminal Seal. Each section begins with the ordering format, with the appropriate boxes enlarged. Complete HOW TO ORDER information is on page F-7.

All models UL/CSA listed with all options when ordered with G or Q contact material. See HOW TO ORDER, page F-7.

MODEL/SW. FUNC.

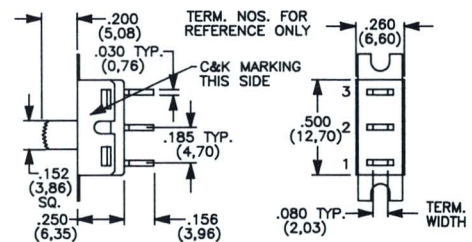
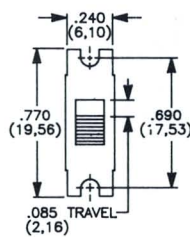


MODELS/SWITCHING FUNCTION

MODEL NO.	SWITCHING FUNCTION		
	POS 1	POS 2	POS 3
1101	ON	NONE	ON
1103	ON	OFF	ON
1108	MOM.	NONE	ON
CONNECTED TERMINALS	2-1	OPEN	2-3
SCHEMATIC			

SPDT

Actuator shown in POS.1.

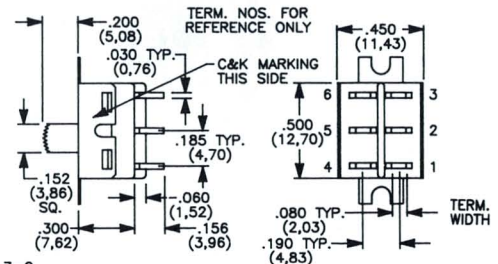
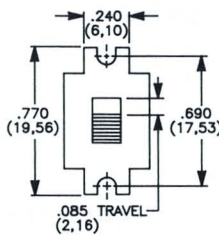


MODEL SHOWN: 1101-M1-Z-Q

1201			
ON	NONE	ON	
CONNECTED TERMINALS	2-1,5-4	OPEN	2-3,5-6
SCHEMATIC			

DPDT

Actuator shown in POS.1.

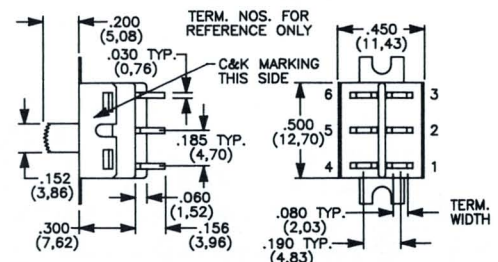
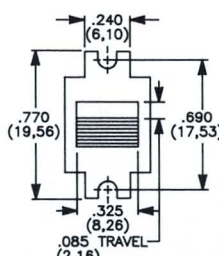


MODEL SHOWN: 1201-M1-Z-Q

1203			
ON	OFF	ON	
CONNECTED TERMINALS	2-1,5-4	OPEN	2-3,5-6
SCHEMATIC			

DPDT

Actuator shown in POS.1.



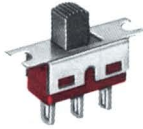
MODEL SHOWN: 1203-M1-Z-Q

MTG. STYLE

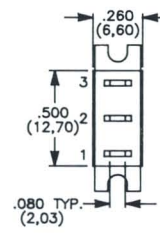
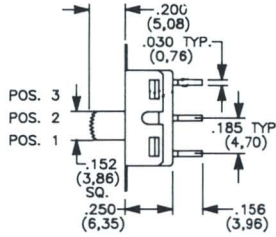
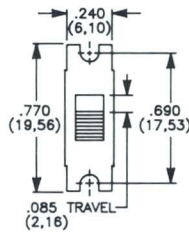


MOUNTING STYLE

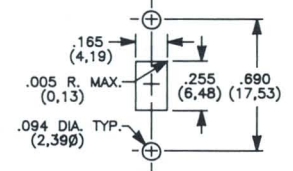
M1



SPDT



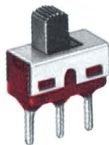
PANEL MOUNTING



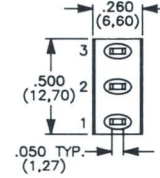
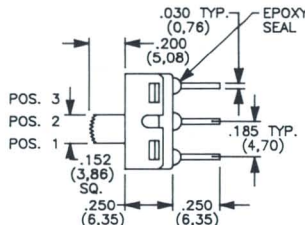
TERM. NOS. FOR REFERENCE ONLY

Available with Z, C, Z3 or W-W5 terminations.

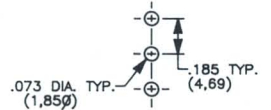
M2



SPDT



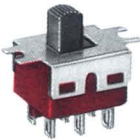
P.C. MOUNTING



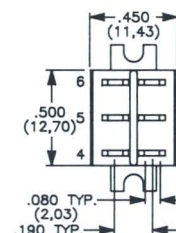
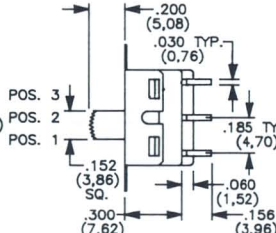
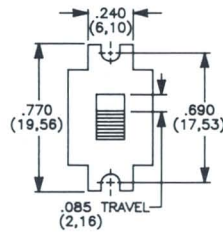
TERM. NOS. FOR REFERENCE ONLY

Available with C, A, AV2, V3, V4 or W-W5 terminations.

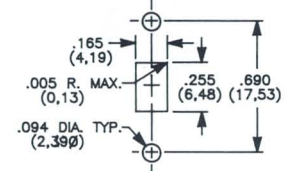
M1



**DPDT
1201 MODEL ONLY**



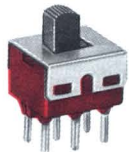
PANEL MOUNTING



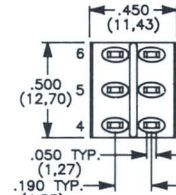
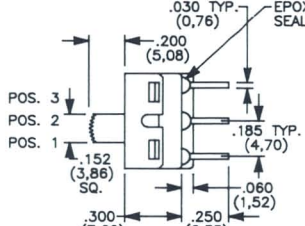
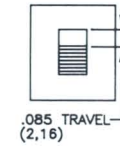
TERM. NOS. FOR REFERENCE ONLY

Available with Z, C, Z3 or W-W5 terminations.

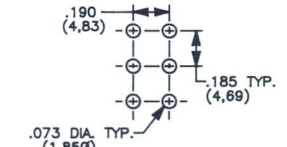
M2



**DPDT
1201 MODEL ONLY**



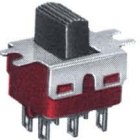
P.C. MOUNTING



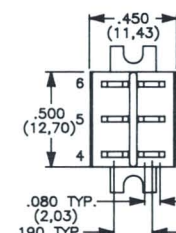
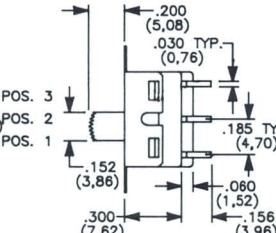
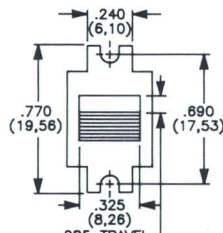
TERM. NOS. FOR REFERENCE ONLY

Available with C, A, AV2, V3, V4 or W-W5 terminations.

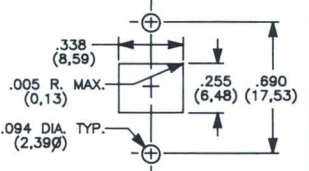
M1



**DPDT
1203 MODEL ONLY**



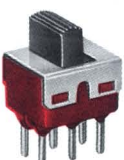
PANEL MOUNTING



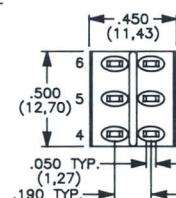
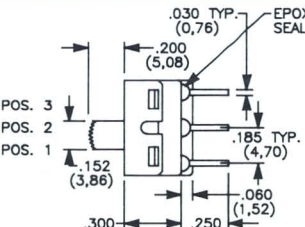
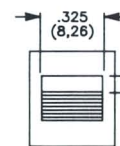
TERM. NOS. FOR REFERENCE ONLY

Available with Z, C, Z3 or W-W5 terminations.

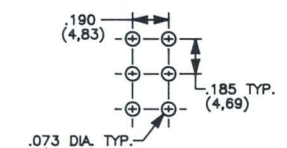
M2



**DPDT
1203 MODEL ONLY**



P.C. MOUNTING



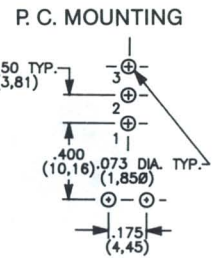
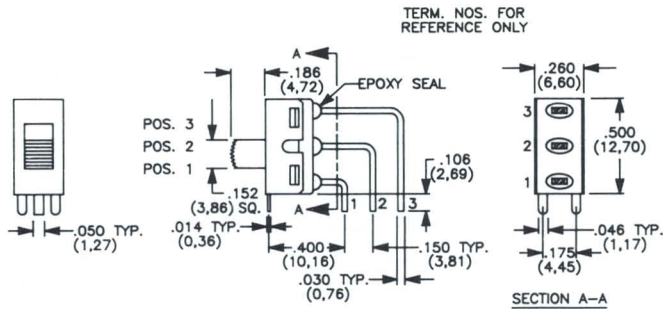
TERM. NOS. FOR REFERENCE ONLY

Available with C, A, AV2, V3, V4 or W-W5 terminations.



TERMINATIONS (cont'd.)

AV2

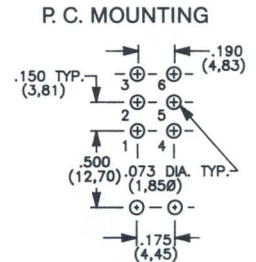
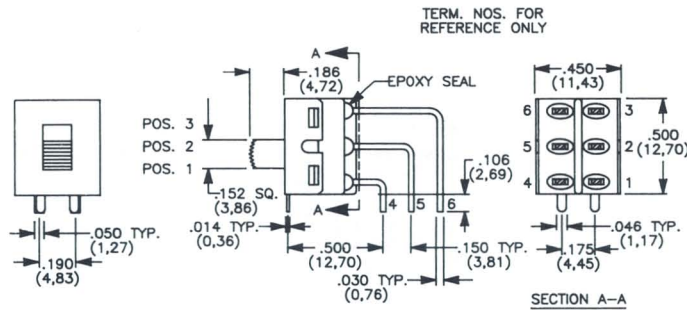


SPDT

'B' Contact Material Std.

Term. bend radii mfg. option.

AV2

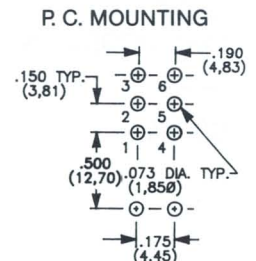
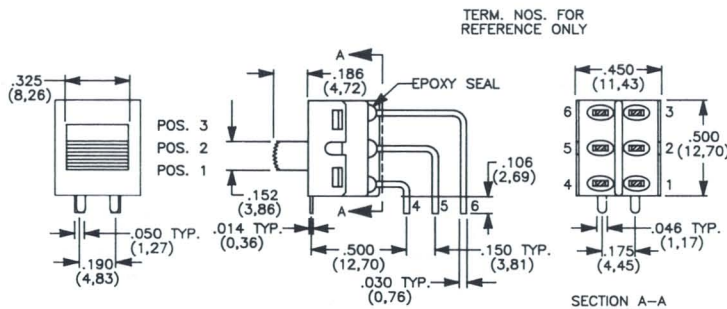
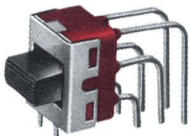


**DPDT
1201 MODEL ONLY**

'B' Contact Material Std.

Term. bend radii mfg. option.

AV2



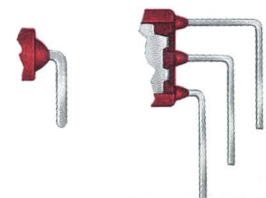
**DPDT
1203 MODEL ONLY**

'B' Contact Material Std.

Term. bend radii mfg. option.

EXTENDED TERMINAL OPTION

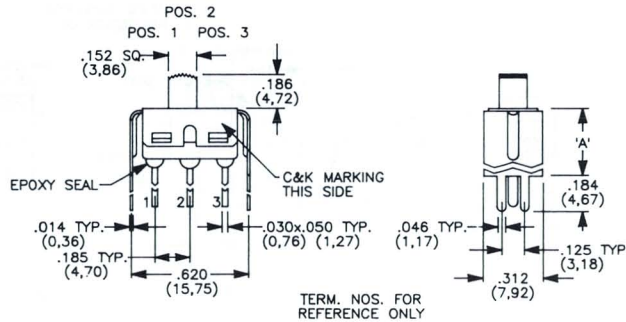
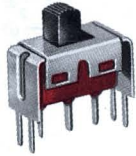
Switches with A or AV2 terminations may be ordered with extended terminals, as shown. This provides easier installation into P.C. boards. To order, specify 'Extended Terminals' in word form after order number.



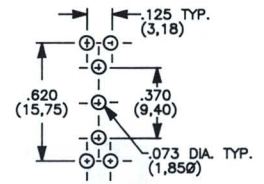


TERMINATIONS (cont'd.)

V3-V4



P. C. MOUNTING

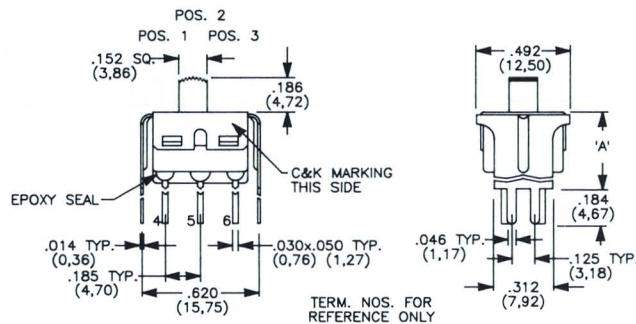
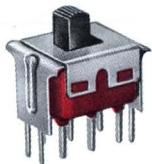


OPTION CODE	DIM. 'A'
V3	.350 (8,89)
V4	.525 (13,34)

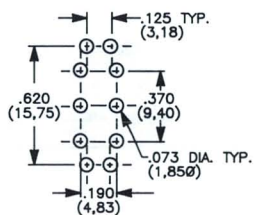
SPDT

'B' Contact Material Std.

V3-V4



P. C. MOUNTING

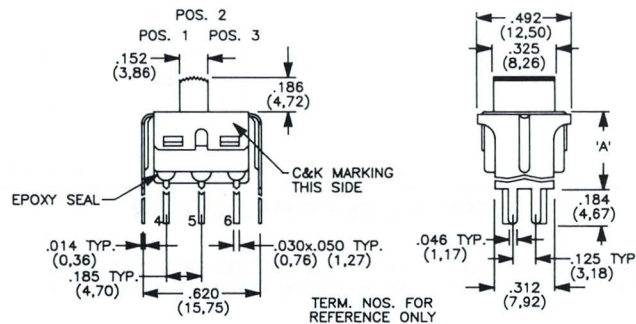
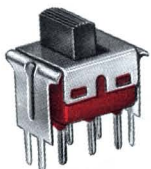


OPTION CODE	DIM. 'A'
V3	.400 (10,16)
V4	.575 (14,61)

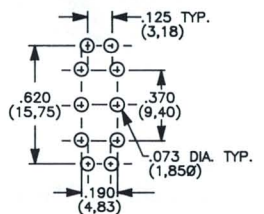
DPDT 1201 MODEL ONLY

'B' Contact Material Std.

V3-V4



P. C. MOUNTING



OPTION CODE	DIM. 'A'
V3	.400 (10,16)
V4	.575 (14,61)

DPDT 1203 MODEL ONLY

'B' Contact Material Std.

CONT. MAT'L.



CONTACT MATERIALS

- B** CONTACTS & TERMINALS: Brass, with gold plate over nickel plate.
RATING: 0.4 VA max. @ 20 V AC or DC max. (Std. with all termination options exc. Z, C, Z3)
- Q** END CONTACTS: Coin silver, silver plated.
CENTER CONTACT & ALL TERMINALS: Brass, silver plated.
RATING: 6 AMPS @ 120 V AC or 28 V DC; 3 AMPS @ 250 V AC. (Std. with termination options Z, C, Z3)
- G** END CONTACTS: Coin silver, with gold plate over nickel plate.
CENTER CONTACT & ALL TERMINALS: Brass, with gold plate over nickel plate.
RATING: 0.4 VA max. @ 20 V AC or DC max. or 6 AMPS @ 120 V AC or 28 V DC; 3 AMPS @ 250 V AC.

Note: 'G' contact material is equivalent to both 'B' and 'Q' contact materials and can be used where either dry circuit* or power conditions are encountered. However, when the dry circuit rating is exceeded, the gold plating is removed from the contact interface and the switch cannot then be used in dry circuits. This option should be specified where UL or CSA listing is required on a switch used in a dry circuit application.

*Dry circuit = conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

SEAL



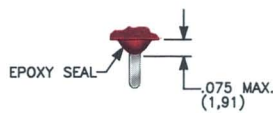
SEALING

(None)

No Seal

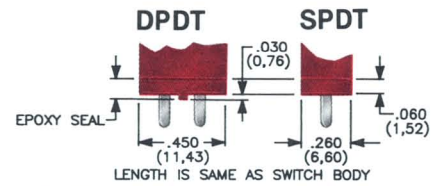
Std. with Z terminations, not avail. with C, Z3, W - W5, A, AV2, V3 - V4 terminations.

E



Std. with all termination options except Z.

I



Available only with Z, C, Z3 or W-W5 terminations.

HOW TO ORDER

Complete the order number below by selecting the desired model no., mounting style, termination, contact material and (if desired) terminal sealing options from the preceding sections. Place the option codes in the appropriate boxes of the ordering format. Some boxes may be unfilled. Write actuator color in word form after order number. (Example: 12011-M1-Z-G with blue actuator).

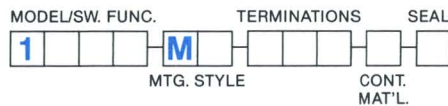
If no color is specified, black will be supplied.

M1 mounting style, Q contact material and no seal are supplied if no options are specified. No hardware is supplied. E epoxy terminal seal standard with all termination options except Z.

All models UL / CSA listed with all options when ordered with G or Q contact material.

ACTUATOR COLORS

1	White
2	Black(Std.)
3	Red
4	Orange
5	Yellow
6	Green
7	Blue
8	Brown
9	Gray



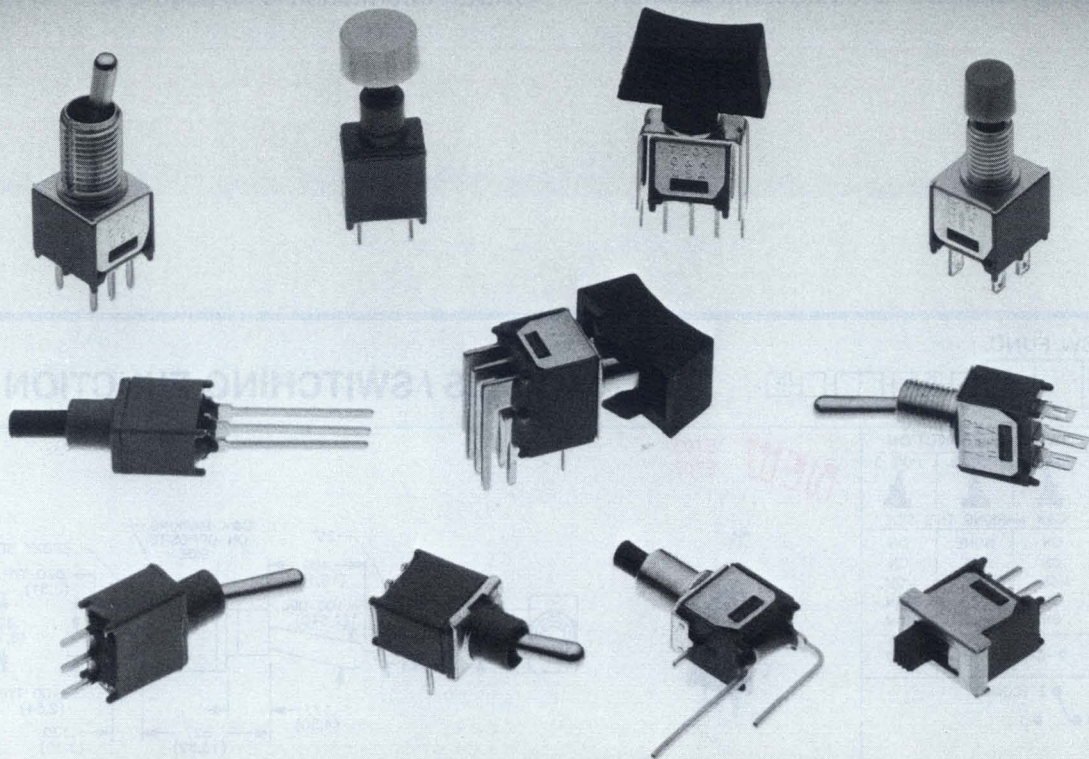


CONTACT MATERIALS

CONTACT

- a. CONTACT MATERIALS
- b. CONTACT MATERIALS
- c. CONTACT MATERIALS
- d. CONTACT MATERIALS
- e. CONTACT MATERIALS
- f. CONTACT MATERIALS
- g. CONTACT MATERIALS
- h. CONTACT MATERIALS
- i. CONTACT MATERIALS
- j. CONTACT MATERIALS
- k. CONTACT MATERIALS
- l. CONTACT MATERIALS
- m. CONTACT MATERIALS
- n. CONTACT MATERIALS
- o. CONTACT MATERIALS
- p. CONTACT MATERIALS
- q. CONTACT MATERIALS
- r. CONTACT MATERIALS
- s. CONTACT MATERIALS
- t. CONTACT MATERIALS
- u. CONTACT MATERIALS
- v. CONTACT MATERIALS
- w. CONTACT MATERIALS
- x. CONTACT MATERIALS
- y. CONTACT MATERIALS
- z. CONTACT MATERIALS

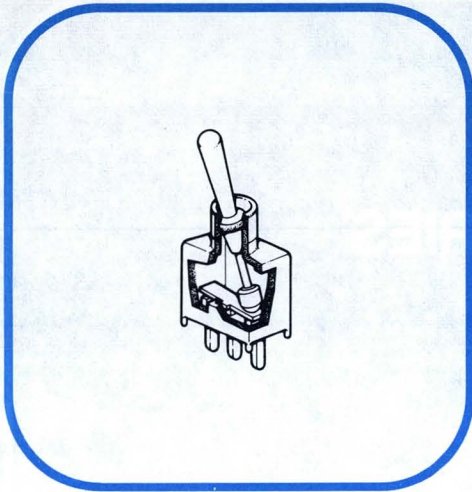
ET / EP / T / TP / TS SERIES TINY SWITCHES



SECTION G INDEX

ET Series Sealed Tiny Toggle Switches	G-2 thru G-4
ET Series Sealed Tiny Rocker Switches	G-5 thru G-8
EP Series Sealed Tiny Pushbutton Switches	G-9 thru G-12
T Series Tiny Toggle Switches	G-13 thru G-17
T Series Tiny Rocker Switches	G-18 thru G-21
TP Series Tiny Pushbutton Switches	G-22 thru G-28
TS Series Tiny Slide Switches	G-29 thru G-30

*Sealed to withstand wave soldering and cleaning processes.



SPECIFICATIONS

CONTACT RATING: 0.4 VA max. @ 20 V AC or DC max.
ELECTRICAL LIFE: 60,000 make-and-break cycles at full load on all models ending in -01 (ON-NONE-ON). All other models, 30,000 cycles.
CONTACT RESISTANCE: Below 20 milliohms typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.
INSULATION RESISTANCE: 10⁹ ohms min.
DIELECTRIC STRENGTH: 1,000 V RMS min. @ sea level.
OPERATING TEMPERATURE: -30°C to 85°C.

MATERIALS

CASE & BUSHING: Glass filled nylon 6/6, flame retardant, heat stabilized (UL 94V-0).
ACTUATOR: Brass, chrome plated, with internal o-ring seal.
SWITCH SUPPORT: Brass, electrotin plated.
CONTACTS & TERMINALS: Brass, with gold plate over nickel plate (B cont. mat'l.).
TERMINAL SEAL: Epoxy.

NOTE

Specifications and Materials listed above are general specifications for switches with standard options. See option sections for additional information. Specifications available for specific models, consult factory.

INTRODUCTION

Available options for ET SERIES SEALED TINY TOGGLE SWITCHES are shown on pages G-2 thru G-4. Make selections from the following option sections: Model/Switching Function, Actuator, Terminations,

Contact Material and Epoxy Terminal Seal. Each section begins with the ordering format, with the appropriate boxes enlarged. Complete HOW TO ORDER information is on page G-4.

MODEL/SW. FUNC.

E	T			D	1			E
---	---	--	--	---	---	--	--	---

MODELS / SWITCHING FUNCTION

MODEL NO.	SWITCHING FUNCTION		
	POS 1	POS 2	POS 3
	C&K MARKING THIS SIDE		
ET01	ON	NONE	ON
ET03	ON	OFF	ON
ET05	MOM.	OFF	MOM.
ET07	ON	OFF	MOM.
ET08	ON	NONE	MOM.
CONNECTED TERMINALS	2-3	OPEN	2-1

SCHEMATIC

MOM. = MOMENTARY POSITION

NEW

ET05
ET07

MODEL SHOWN: ET01-S-D1-C-B-E

P.C. MOUNTING

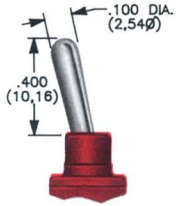
* Sealed to withstand wave soldering and cleaning processes.

ACTUATOR



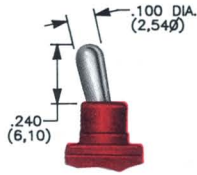
ACTUATORS

S



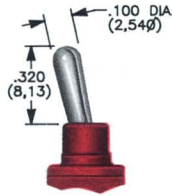
Std. with C or W terminations.

M



Std. with A, AV or V3 terminations.

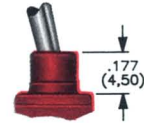
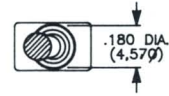
L



BUSHING



D1



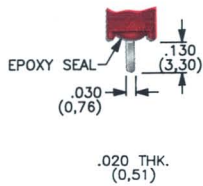
Internal o-ring actuator seal std.

TERMINATIONS



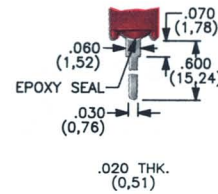
TERMINATIONS

C



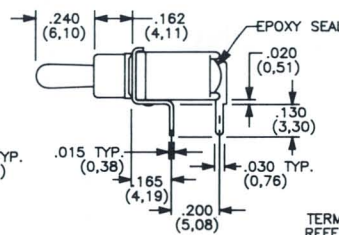
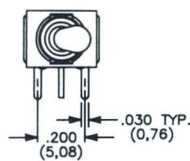
'B' Contact Material Std.

W

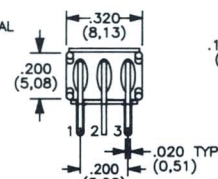


'B' Contact Material Std.

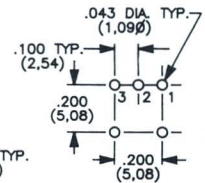
A



TERM. NOS. FOR REFERENCE ONLY



P.C. MOUNTING

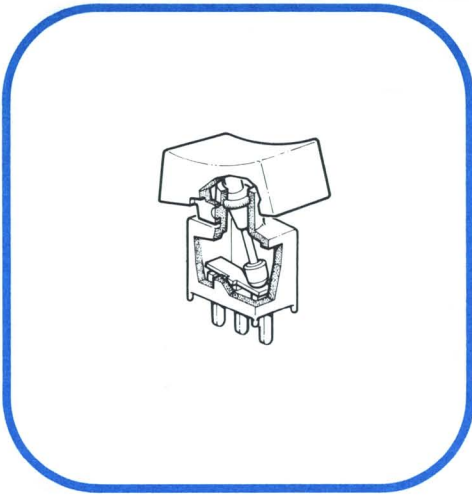


SPDT

Actuator shown in POS.1.

'B' Contact Material Std.

*Sealed to withstand wave soldering and cleaning processes.



SPECIFICATIONS

CONTACT RATING: 0.4 VA max. @ 20 V AC or DC max.
ELECTRICAL LIFE: 60,000 make-and-break cycles at full load on all models ending in -01 (ON-NONE-ON). All other models, 30,000 cycles.
CONTACT RESISTANCE: Below 20 milli-ohms typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.
INSULATION RESISTANCE: 10⁹ ohms min.
DIELECTRIC STRENGTH: 1,000 V RMS min. @ sea level.
OPERATING TEMPERATURE: - 30°C to 85°C.

NOTE

Specifications and materials listed above are general specifications for switches with standard options. See option sections for additional information. Specifications available for specific models, consult factory.

MATERIALS

CASE & BUSHING: Glass filled nylon 6/6, flame retardant, heat stabilized (UL 94V-0).
ACTUATOR: Nylon, black, std. Internal o-ring seal std.
SWITCH SUPPORT: Brass, electrotin plated.
CONTACTS & TERMINALS: Brass, with gold plate over nickel plate (B cont. mat'l.).
TERMINAL SEAL: Epoxy.

INTRODUCTION

Available options for ET SERIES SEALED TINY ROCKER SWITCHES are shown on pages G-5 thru G-7. Make selections from the following option sections: Model/Switching Function, Actuator,

Terminations, Contact Material and Epoxy Terminal Seal. Each section begins with the ordering format, with the appropriate boxes enlarged. Complete HOW TO ORDER information is on page G-8.

MODEL/SW. FUNC.

E T **J** **E**

MODELS/SWITCHING FUNCTION

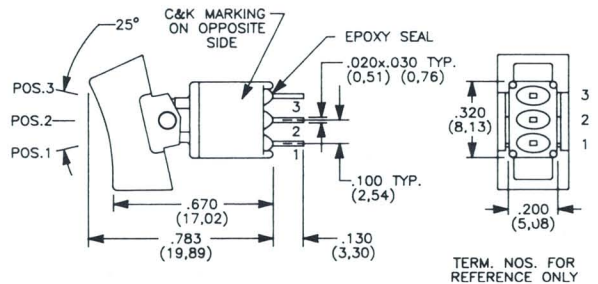
MODEL NO.	SWITCHING FUNCTION		
	POS 1	POS 2	POS 3
ET01	ON	NONE	ON
ET03	ON	OFF	ON
ET05	MOM.	OFF	MOM.
ET07	ON	OFF	MOM.
ET08	ON	NONE	MOM.
CONNECTED TERMINALS	2-3	OPEN	2-1
SCHEMATIC			

NEW ET05
ET07



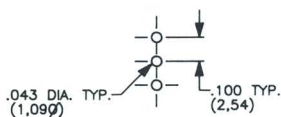
SPDT

MOM. = MOMENTARY POSITION

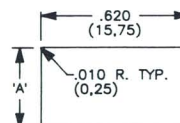


MODEL SHOWN: ET01-J1-C-B-E

P.C. MOUNTING



PANEL OPENING



ACTUATOR	DIM. 'A'
J1	.350 (8,89)
J6	.280 (7,11)

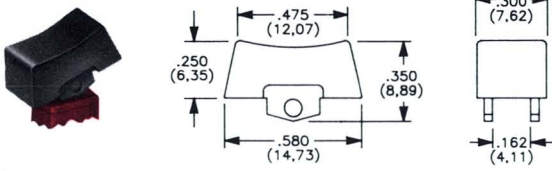
*Sealed to withstand wave soldering and cleaning processes.



ACTUATORS

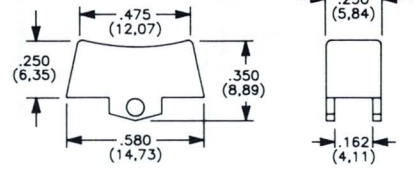
Available actuator colors, see page G-8.

J1



Std. with C, W, AV, or V3 terminations.

J6

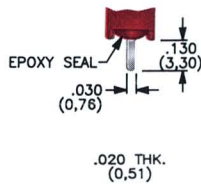


Std. with A terminations.



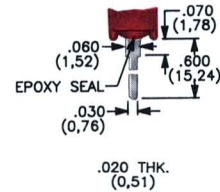
TERMINATIONS

C



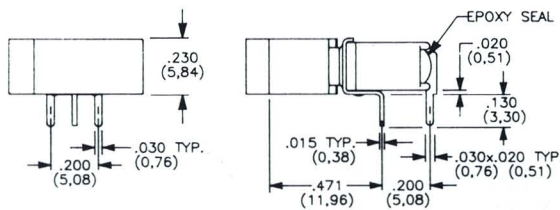
'B' Contact Material Std.

W



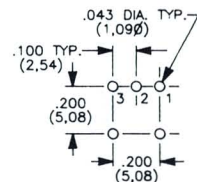
'B' Contact Material Std.

A



Actuator shown in POS. 1.

P.C. MOUNTING



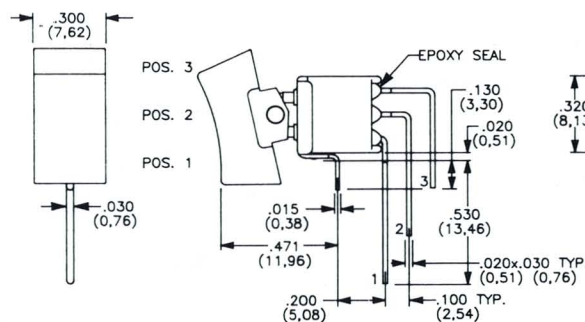
TERM. NOS. FOR REFERENCE ONLY

SPDT

Note: J6 actuator std. only on models with A terminations.

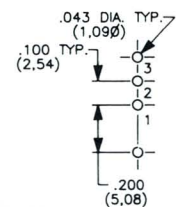
'B' Contact Material Std.

AV



Term. bend radii mfg. option

P.C. MOUNTING



TERM. NOS. FOR REFERENCE ONLY

'B' Contact Material Std.

SPDT

TERMINATIONS

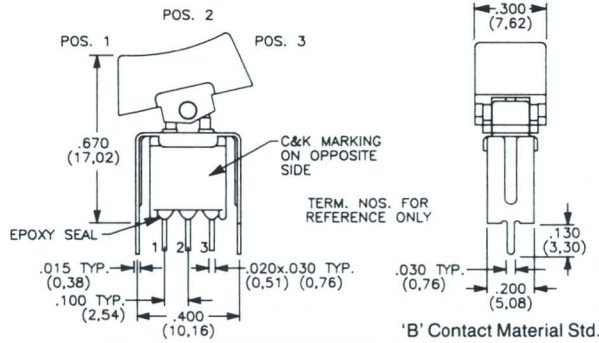


TERMINATIONS (cont'd.)

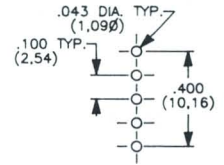
V3



SPDT



P.C. MOUNTING



'B' Contact Material Std.

CONT. MAT'L.



CONTACT MATERIALS

- B** CONTACTS & TERMINALS: Brass, with gold plate over nickel plate.
RATING: 0.4 VA max. @ 20 V AC or DC max. (Std. with all termination options).
- Q** END CONTACTS: Coin silver, silver plated.
CENTER CONTACTS & ALL TERMINALS: Brass, silver plated.
RATING: 3 AMPS @ 120 V AC or 28 V DC on all models ending in -01 (ON-NONE-ON).
All other models, 2 AMPS @ 120 V AC or 28 V DC.
- G** END CONTACTS: Coin silver, with gold plate over nickel plate.
CENTER CONTACTS & ALL TERMINALS: Brass, with gold plate over nickel plate.
RATING: 0.4 VA max. @ 20 V AC or DC max. or 3 AMPS @ 120 V AC or 28 V DC on all models ending in -01 (ON-NONE-ON).
All other models, 2 AMPS @ 120 V AC or 28 V DC.

Note: G contact material can be used where either dry circuit ** or power conditions are encountered. However, when the dry circuit rating is exceeded, the gold plating is removed from the contact interface and the switch cannot then be used in dry circuits.

**Dry circuit = conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

SEAL



SEALING

E (Std.)



HOW TO ORDER

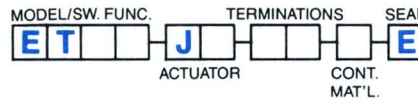
Complete the order number below by selecting the desired model no., actuator, terminations, contact material, and sealing options from the preceding sections. Place the option codes in the appropriate boxes of the ordering format. Some boxes may be unfilled. Write actuator color in word form after order number. (Example: **E****T****03**-**J6**-**C**-**G**-**E** with blue actuator).

If no color is specified, black will be supplied.

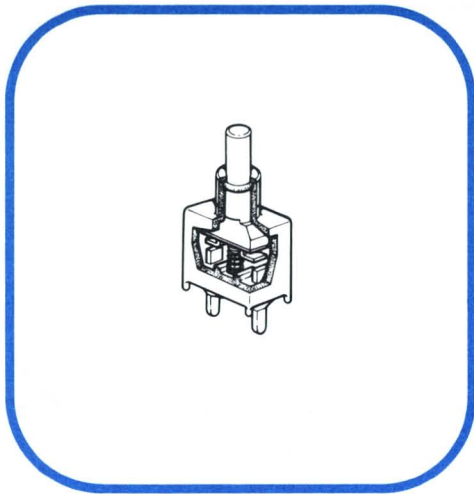
C terminations and **B** contact material are supplied if no options are specified. **E** epoxy terminal seal and internal actuator o-ring seal supplied standard. **J1** actuator (black) standard on all models except models with **A** termination option: **J6** actuator (black) standard.

Note: Custom actuator markings and legends available, consult factory.

ACTUATOR COLORS	
1	White
2	Black(Std.)
3	Red
4	Orange
5	Yellow
6	Green
7	Blue
8	Brown
9	Gray



*Sealed to withstand wave soldering and cleaning processes.



SPECIFICATIONS

CONTACT RATING: 0.4 VA max. @ 20 V AC or DC max.
ELECTRICAL LIFE: 60,000 make-and-break cycles at full load on all models ending in - 11 (SPST). 30,000 cycles on all models ending in - 12 (SPDT).
CONTACT RESISTANCE: Below 20 milliohms typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.
INSULATION RESISTANCE: 10⁹ ohms min.
DIELECTRIC STRENGTH: 1,000 V RMS min. @ sea level.
OPERATING TEMPERATURE: - 30°C to 65°C.

MATERIALS

CASE & BUSHING: Glass filled nylon 6/6, flame retardant, heat stabilized (UL 94V-0).
PLUNGER: Thermoplastic polyester (UL 94V-0), black, with internal o-ring seal.
SWITCH SUPPORT: Brass electrotin plated.
CONTACTS & TERMINALS: Brass, with gold plate over nickel plate (B cont. mat'l.).
TERMINAL SEAL: Epoxy.

NOTE

Specifications and Materials listed above are general specifications for switches with standard options. See option sections for additional information. Specifications available for specific models, consult factory.

INTRODUCTION

Available options for EP SERIES SEALED TINY PUSHBUTTON SWITCHES are shown on pages G-9 thru G-12. Make selections from the following option sections: Model/Switching Function, Bushing, Terminations, Contact Material and

Epoxy Terminal Seal. Each section begins with the ordering format, with the appropriate boxes enlarged. Complete HOW TO ORDER information is on page G-12. Available caps shown on page G-12.

MODEL/SW. FUNC.

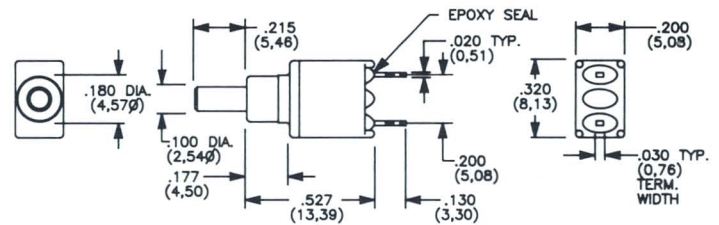
E P **D1**

MODELS / SWITCHING FUNCTION

MODEL NO.	SWITCHING FUNC.	
	POS 1	POS 2
EP11	OFF	MOM.
SCHEMATIC		
MOM. = MOMENTARY POSITION		
EP12	ON	MOM.
CONNECTED TERMINALS		
2-1 2-3		
SCHEMATIC		
MOM. = MOMENTARY POSITION		



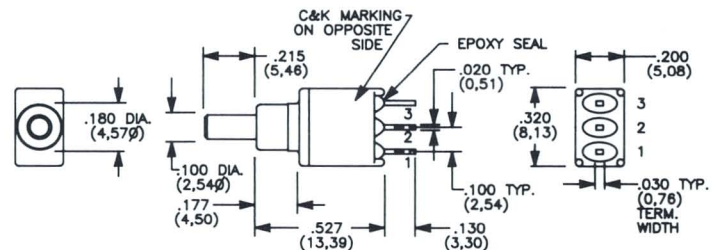
SPST



MODEL SHOWN: EP11-D1-C-B-E



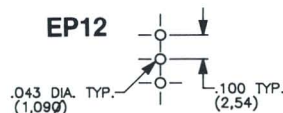
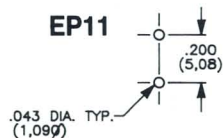
SPDT



MODEL SHOWN: EP12-D1-C-B-E

TERM. NOS. FOR REFERENCE ONLY

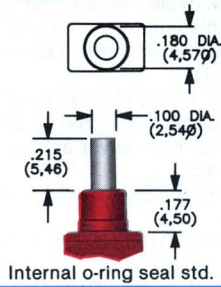
P.C. MOUNTING





BUSHING

D1 (Std.)

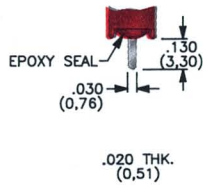


Internal o-ring seal std.



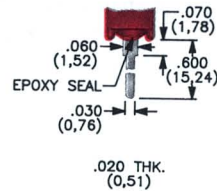
TERMINATIONS

C



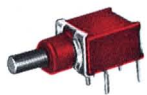
'B' Contact Material Std.

W

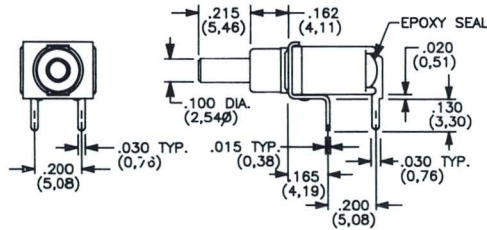


'B' Contact Material Std.

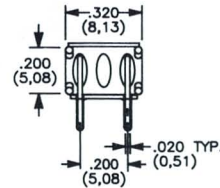
A



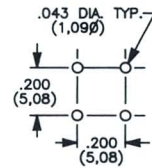
**SPST
EP11 MODEL ONLY**



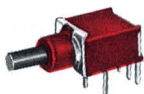
'B' Contact Material Std.



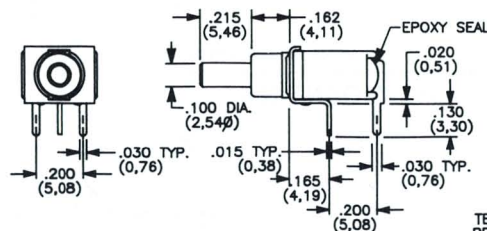
P.C. MOUNTING



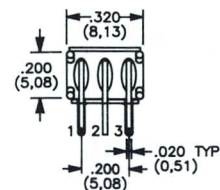
A



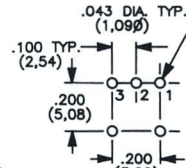
**SPDT
EP12 MODEL ONLY**



'B' Contact Material Std.



P.C. MOUNTING



TERM. NOS. FOR
REFERENCE ONLY

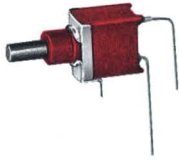
* Sealed to withstand wave soldering and cleaning processes.

TERMINATIONS

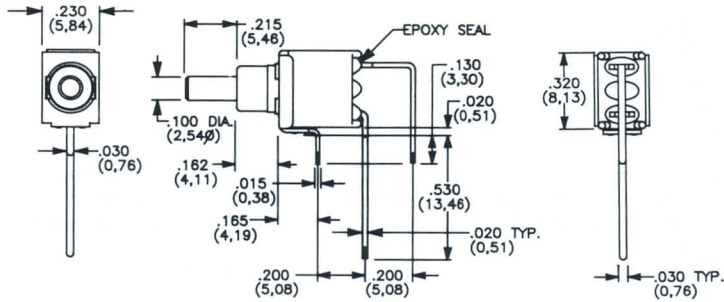


TERMINATIONS (cont'd.)

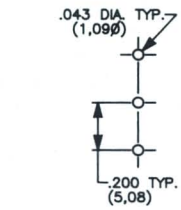
AV



**SPST
EP11 MODEL ONLY**



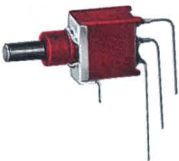
P.C. MOUNTING



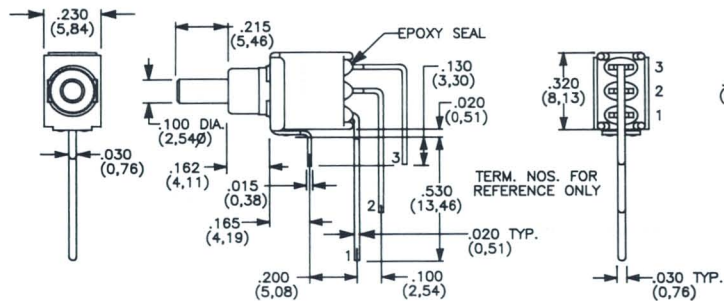
'B' Contact Material Std.

Term. bend radii mfg. option.

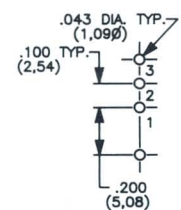
AV



**SPDT
EP12 MODEL ONLY**



P.C. MOUNTING



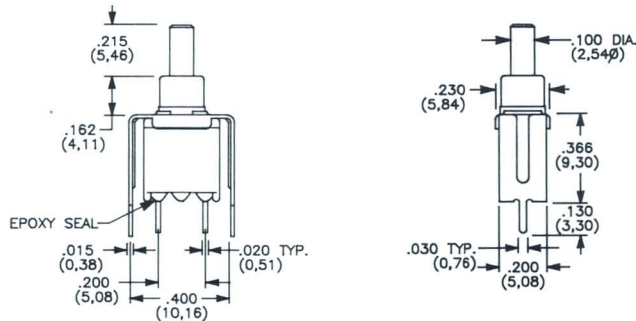
'B' Contact Material Std.

Term. bend radii mfg. option.

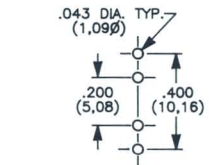
V3



**SPST
EP11 MODEL ONLY**



P.C. MOUNTING

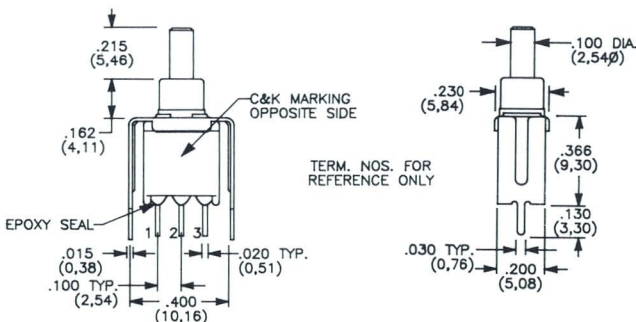


'B' Contact Material Std.

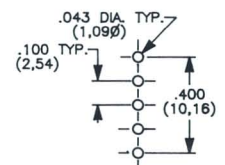
V3



**SPDT
EP12 MODEL ONLY**

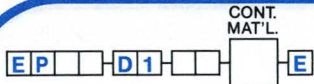


P.C. MOUNTING



'B' Contact Material Std.

*Sealed to withstand wave soldering and cleaning processes.



CONTACT MATERIALS

- B** CONTACTS & TERMINALS: Brass, with gold plate over nickel plate.
RATING: 0.4 VA max. @ 20 V AC or DC max. (Std. with all termination options)
- Q** CONTACTS: Coin silver, silver plated.
TERMINALS: Brass, silver plated.
RATING: 1 AMP @ 120 V AC or 28 V DC.
- G** CONTACTS: Coin Silver, with gold plate over nickel plate.
TERMINALS: Brass, with gold plate over nickel plate.
RATING: 0.4 VA max. @ 20 V AC or DC max. or 1 AMP @ 120 V AC or 28 V DC.

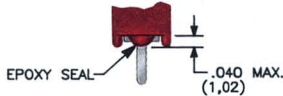
Note: 'G' contact material is equivalent to both 'B' and 'Q' contact materials and can be used where either dry circuit* or power conditions are encountered. However, when the dry circuit rating is exceeded, the gold plating is removed from the contact interface and the switch cannot then be used in dry circuits. This option should be specified where UL listing is required on a switch used in a dry circuit application.

*Dry circuit = conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.



SEALING

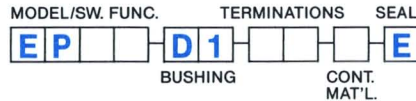
E (std.)



HOW TO ORDER

Complete the order number below by selecting the desired model no., bushing, termination, contact material and sealing options from the preceding sections. Place the option codes in the appropriate boxes of the ordering format. Some boxes may be unfilled. (Example: [E][P][1][1][][][] [D1][][][] [C][][][] [G][][][] [E]).

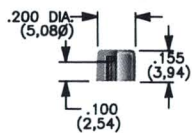
C terminations and B contact material are supplied if no options are specified. D1 bushing, E epoxy terminal seal and plunger internal o-ring seal supplied standard.



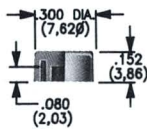
AVAILABLE HARDWARE

The following hardware is available separately. To order, write part nos., descriptions and colors where applicable.

5081 SM. CAP



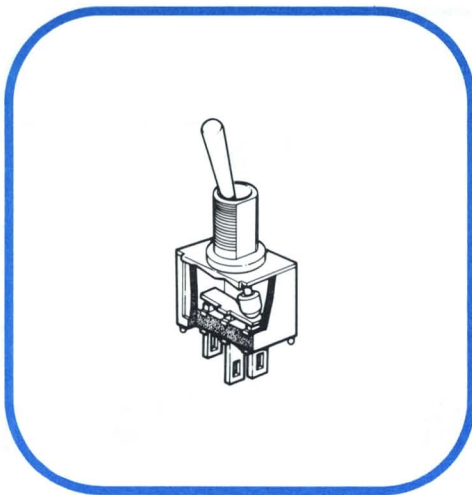
4658 LG. CAP



CAP COLORS

1	White	6	Green
2	Black(Std.)	7	Blue
3	Red	8	Brown
4	Orange	9	Gray
5	Yellow		

Cap finish: gloss; material, nylon.



SPECIFICATIONS

CONTACT RATING: 3 AMPS @ 120 V AC or 28 V DC on all models ending in -01 (ON-NONE-ON). All other models, 2 AMPS @ 120 V AC or 28 V DC.

ELECTRICAL LIFE: 60,000 make-and-break cycles at full load on all models ending in -01 (ON-NONE-ON). All other models, 30,000 cycles.

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

INSULATION RESISTANCE: 10⁹ ohms min.

DIELECTRIC STRENGTH: 1,000 V RMS min. @ sea level.

OPERATING TEMPERATURE: -30°C to 85°C.

MATERIALS

CASE: Glass filled phenolic or diallyl phthalate (DAP).

ACTUATOR: Brass, chrome plated.

BUSHING: Brass, nickel plated.

HOUSING: Stainless steel.

SWITCH SUPPORT: Brass, electrotin plated.

END CONTACTS: Coin silver, silver plated (Q cont. mat'l.).

HARDWARE: Nut — Brass, nickel plated.
Locking ring — Brass, bright nickel plated.
Lockwasher — Steel, bright nickel plated.

NOTE

Specifications and Materials listed above are general specifications for switches with standard options. See option sections for additional information. Specifications available for specific models, consult factory.

INTRODUCTION

Available options for T SERIES TINY TOGGLE SWITCHES are shown on pages G-13 thru G-16. Make selections from the following option sections: Model/Switching Function, Actuator, Bushing, Terminations, Contact Material and (if desired)

Epoxy Terminal Seal. Each section begins with the ordering format, with the appropriate boxes enlarged. Complete HOW TO ORDER information is on page G-17. Available hardware and accessories shown on page G-17.

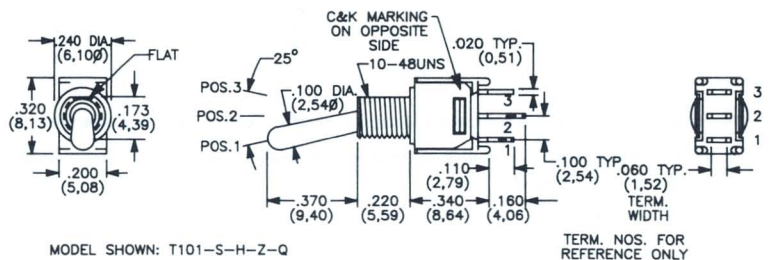
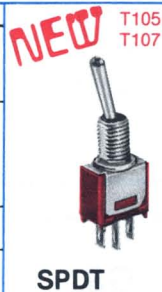
T101, T103, T108, T201, T203, T211 models UL listed with all options when ordered with G or Q contact material. See HOW TO ORDER, page G-17.

MODEL/SW. FUNC.

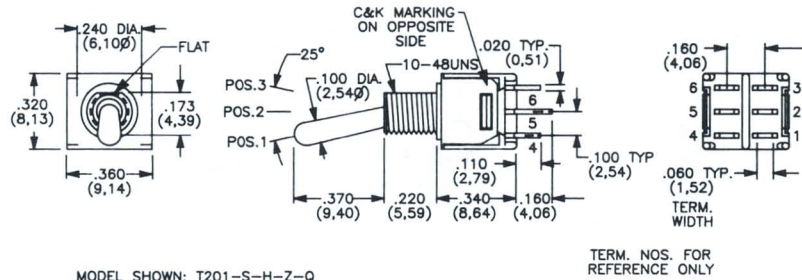


MODELS / SWITCHING FUNCTION

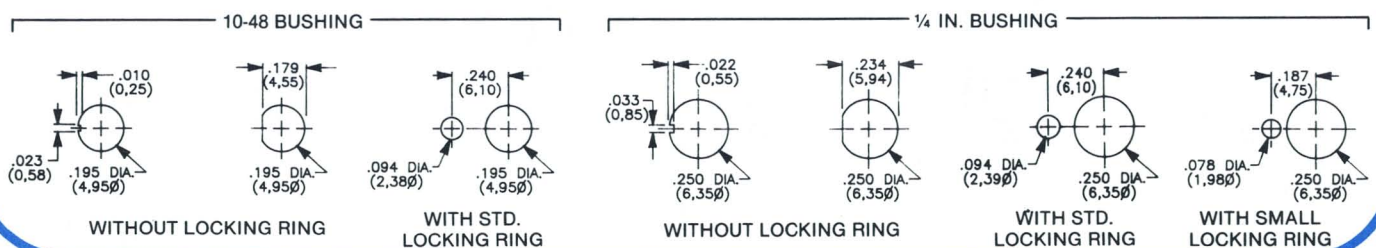
MODEL NO.	SWITCHING FUNCTION		
	POS 1	POS 2	POS 3
T101	ON	NONE	ON
T103	ON	OFF	ON
T105	MOM.	OFF	MOM.
T107	ON	OFF	MOM.
T108	ON	NONE	MOM.
CONNECTED TERMINALS	2-3	OPEN	2-1
SCHEMATIC			



MODEL NO.	SWITCHING FUNCTION		
	POS 1	POS 2	POS 3
T201	ON	NONE	ON
T203	ON	OFF	ON
T205	MOM.	OFF	MOM.
T207	ON	OFF	MOM.
T208	ON	NONE	MOM.
CONNECTED TERMINALS	2-3,5-6	OPEN	2-1,5-4
T211	ON	ON	ON
CONNECTED TERMINALS	2-3,5-6	2-3,5-4	2-1,5-4
SCHEMATIC			



PANEL MOUNTING



* WIRING FOR 3-WAY SWITCH, SEE PAGE VIII

ACTUATOR



ACTUATORS

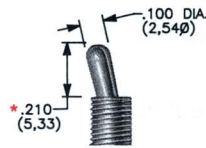
S



Std. with Z, C or W terminations.

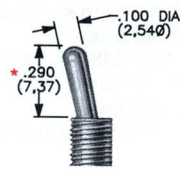
* Actuators shown with std. H bushing. Subtract .040 (1,02) for TD and D9 bushings, subtract .090 (2,29) for T, T9, TK and K9 bushings.

M

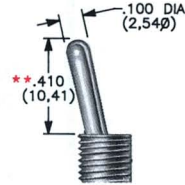


Std. with A, AV or V3 terminations.

L

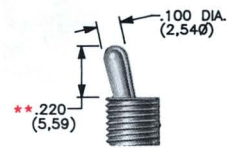


S1

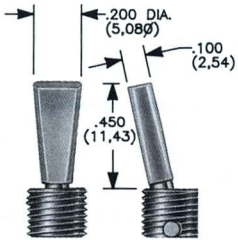


** Actuators shown with T and TK bushings. Add .050 (1,27) for TD and D9 bushings, add .090 (2,29) for H, H9, Y and Y9 bushings.

M1

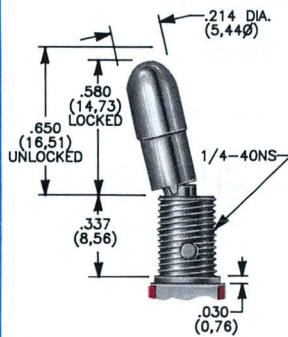


P3 WITH ANTIROTATION



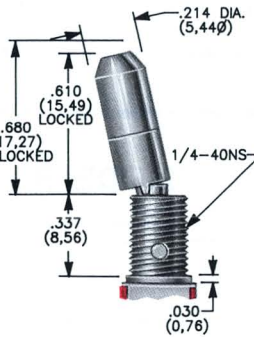
Avail. with T, T9 bushing options only.

K LOCKING LEVER



Bushing option code not required with K, K1 actuator options. Not avail. with A, AV, V3 terminations.

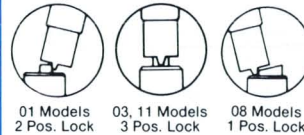
K1 LOCKING LEVER



K & K1 options

To prevent accidental actuation, toggles must be lifted before being actuated. When released, toggles again lock in place.

Add cap color in word form after order number. If no color is specified, natural aluminum will be supplied. Keyway on right side.



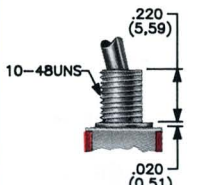
CAP COLORS	
Natural AL.	(Std.)
Black Anodized AL.	
Red Anodized AL.	
Blue Anodized AL.	

BUSHING



BUSHINGS

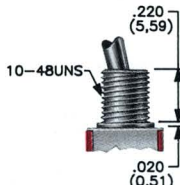
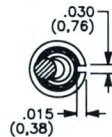
H H9 UNTHREADED



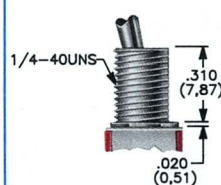
H std. with Z, C or W terminations.

H9 std. with A, AV or V3 terminations.

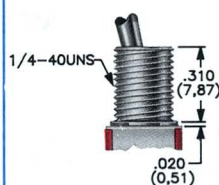
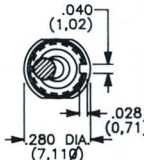
Y Y9 UNTHREADED



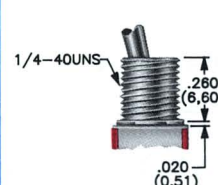
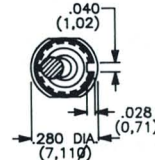
T T9 UNTHREADED



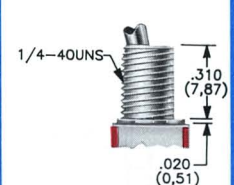
TK K9 UNTHREADED



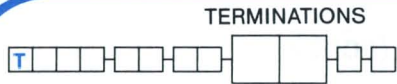
TD D9 UNTHREADED



CW SPLASHPROOF

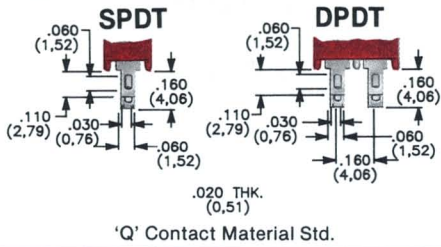


Internal actuator seal std.

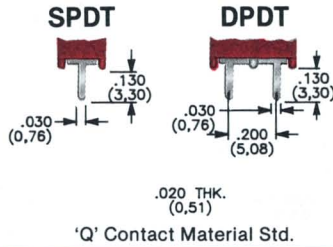


TERMINATIONS

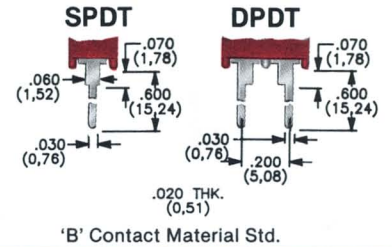
Z (Std.)



C



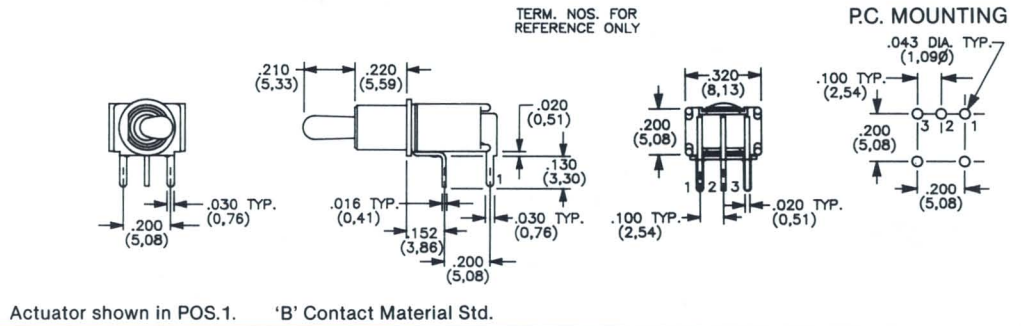
W



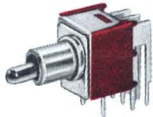
A



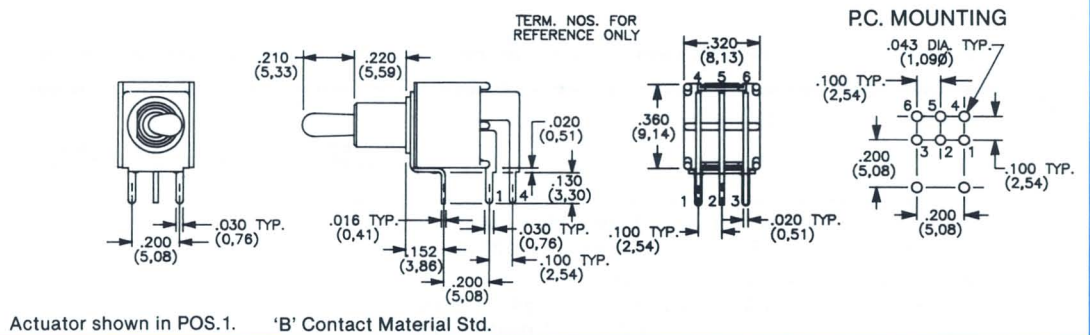
SPDT



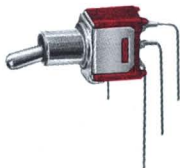
A



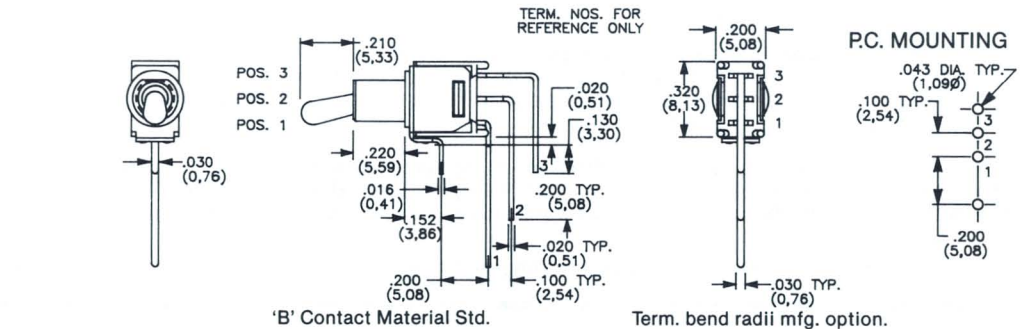
DPDT



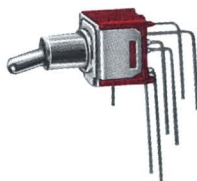
AV



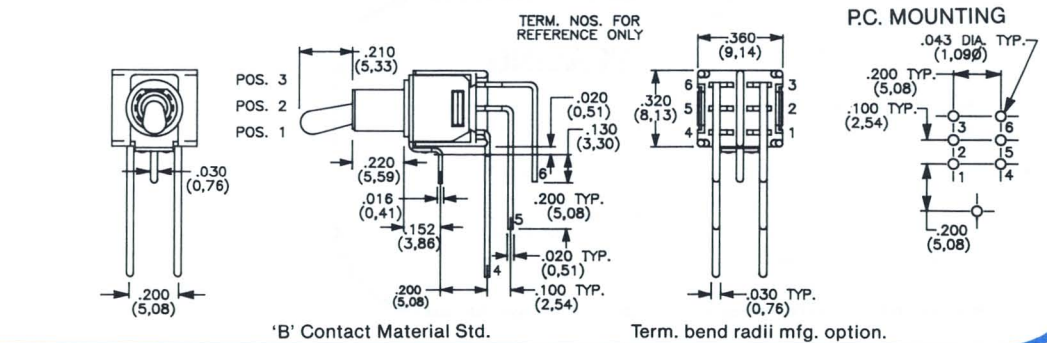
SPDT

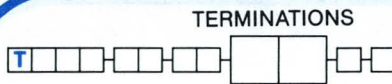


AV



DPDT



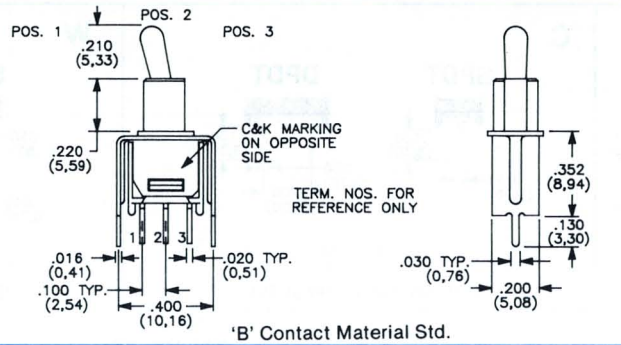


TERMINATIONS (cont.)

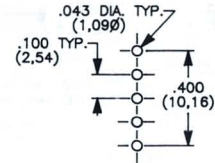
V3



SPDT



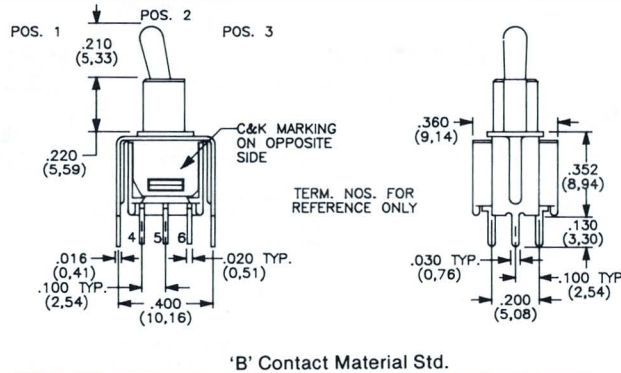
PC MOUNTING



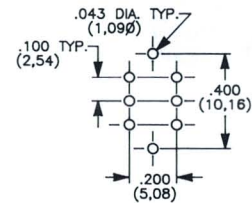
V3



DPDT



PC MOUNTING

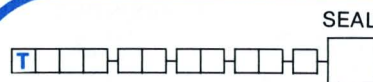


CONTACT MATERIALS

- B** CONTACTS & TERMINALS: Brass, with gold plate over nickel plate.
RATING: 0.4 VA max. @ 20 V AC or DC max. (Std. with all termination options exc. Z, C)
- Q** END CONTACTS: Coin silver, silver plated.
CENTER CONTACT & ALL TERMINALS: Brass, silver plated.
RATING: 3 AMPS @ 120 V AC or 28 V DC on all models ending in -01 (ON-NONE-ON). All other models, 2 AMPS @ 120 V AC or 28 V DC.
(Std. with termination options Z, C)
- G** END CONTACTS: Coin Silver, with gold plate over nickel plate.
CENTER CONTACT & ALL TERMINALS: Brass, with gold plate over nickel plate.
RATING: 0.4 VA max. @ 20 V AC or DC max. or 3 AMPS @ 120 V AC or 28 V DC on all models ending in -01 (ON-NONE-ON). All other models, 2AMPS @ 120 V AC or 28 V DC.

NOTE: 'G' contact material is equivalent to both 'B' and 'Q' contact materials and can be used where either dry circuit* or power conditions are encountered. However, when the dry circuit rating is exceeded, the gold plating is removed from the contact interface and the switch cannot then be used in dry circuits. This option should be specified where UL listing is required on a switch used in a dry circuit application.

* Dry circuit = conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.



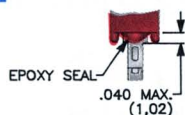
SEALING

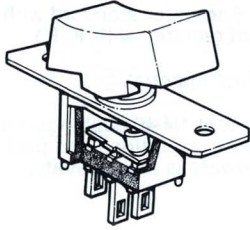
(None)

No seal

Std. with all termination options.

E





SPECIFICATIONS

CONTACT RATING: 3 AMPS @ 120 V AC or 28 V DC on all models ending in -01 (ON-NONE-ON). All other models, 2 AMPS @ 120 V AC or 28 V DC.

ELECTRICAL LIFE: 60,000 make-and-break cycles at full load on all models ending in -01 (ON-NONE-ON). All other models, 30,000 cycles.

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

INSULATION RESISTANCE: 10⁹ ohms min.
DIELECTRIC STRENGTH: 1,000 V RMS min. @ sea level.

OPERATING TEMPERATURE: -30°C to 85°C.

MATERIALS

CASE: Glass filled phenolic or diallyl phthalate (DAP).

ACTUATOR: Nylon, black, std.

BUSHING: Brass, nickel plated.

HOUSING: Stainless steel.

SWITCH SUPPORT: Brass, electrotin plated.

MOUNTING BRACKET: Stainless steel.

END CONTACTS: Coin silver, silver plated (Q cont. mat'l.).

CENTER CONTACT & ALL TERMINALS: Brass, silver plated (Q cont. mat'l.).

HARDWARE: Nut — Brass, nickel plated.

Screw — Stainless Steel.

Lockwasher — Steel, bright nickel plated.

Standoff — Aluminum or nylon.

NOTE

Specifications and Materials listed above are general specifications for switches with standard options. See option sections for additional information. Specifications available for specific models, consult factory.

INTRODUCTION

Available options for T SERIES TINY ROCKER SWITCHES are shown on pages G-18 thru G-21. Make selections from the following option sections: Model/Switching Function, Actuator, Terminations, Contact Material and (if desired)

Epoxy Terminal Seal. Each section begins with the ordering format, with the appropriate boxes enlarged. Complete HOW TO ORDER information is on page G-21. Available hardware and accessories shown on page G-21.

T101, T103, T108, T201, T203, T211 models UL listed with all options when ordered with G or Q contact material. See HOW TO ORDER, page G-21.

MODEL/SW. FUNC.

T J

MODELS / SWITCHING FUNCTION

MODEL NO.	SWITCHING FUNCTION		
	POS 1	POS 2	POS 3
T101	ON	NONE	ON
T103	ON	OFF	ON
T105	MOM.	OFF	MOM.
T107	ON	OFF	MOM.
T108	ON	NONE	MOM.

CONNECTED TERMINALS	2-3	OPEN	2-1
---------------------	-----	------	-----

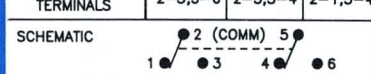


MOM. = MOMENTARY POSITION

T201	ON	NONE	ON
T203	ON	OFF	ON
T205	MOM.	OFF	MOM.
T207	ON	OFF	MOM.
T208	ON	NONE	MOM.

CONNECTED TERMINALS	2-3,5-6	OPEN	2-1,5-4
---------------------	---------	------	---------

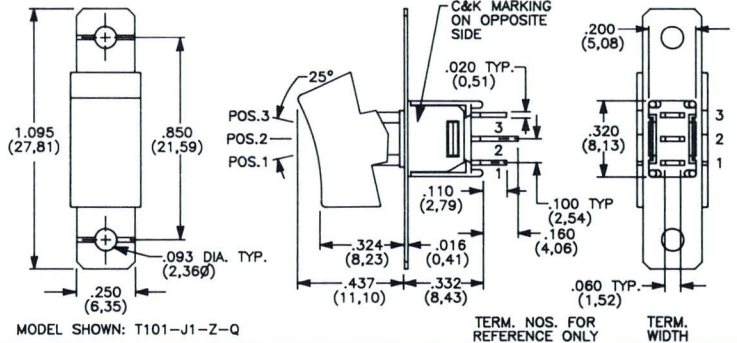
CONNECTED TERMINALS	2-3,5-6	2-3,5-4	2-1,5-4
---------------------	---------	---------	---------



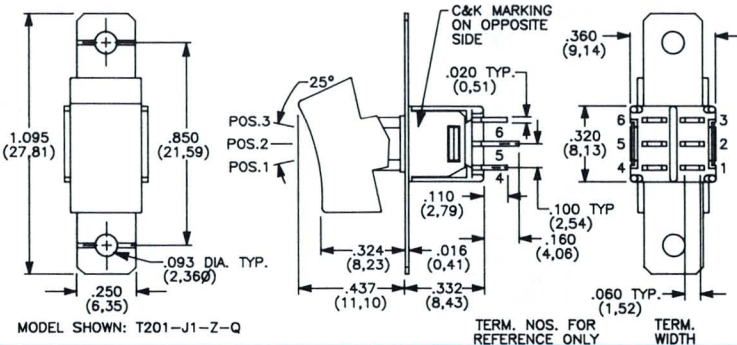
MOM. = MOMENTARY POSITION



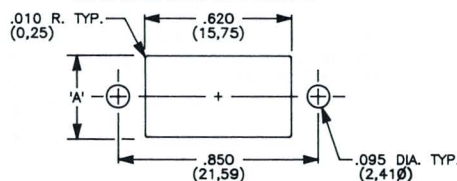
SPDT



DPDT



PANEL MOUNTING



ACTUATOR	DIM. 'A'
J1	.350 (8,89)
J6	.280 (7,11)

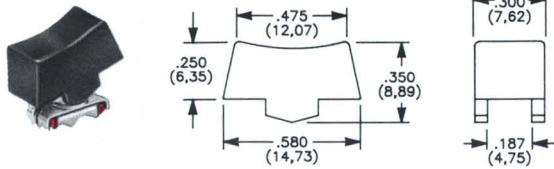
* WIRING FOR 3-WAY SWITCH, SEE PAGE VIII



ACTUATORS

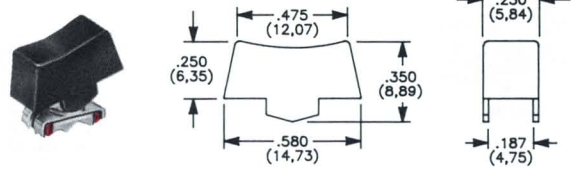
Available actuator colors, see page G-21.

J1



Std. all models except SPDT models with A terminations.

J6



Std. on SPDT models with A terminations.

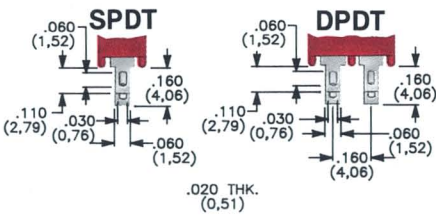
TERMINATIONS



TERMINATIONS

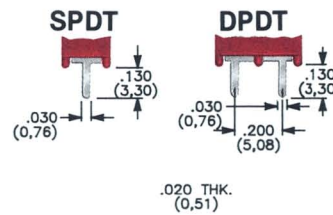
Note: Models with Z, C or W terminations supplied with panel mounting bracket standard, as shown on page G-18.

Z (Std.)



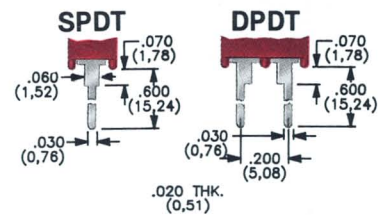
'Q' Contact Material Std.

C



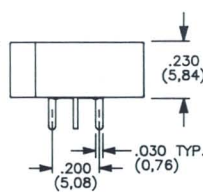
'Q' Contact Material Std.

W



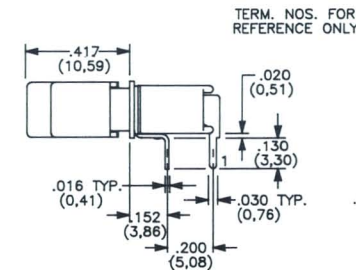
'B' Contact Material Std.

A



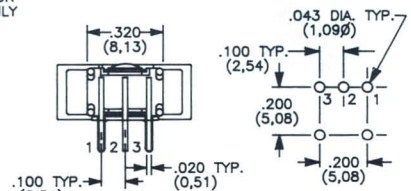
SPDT

Note: J6 actuator std. only on SPDT models with A terminations.



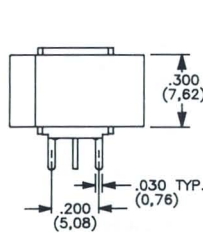
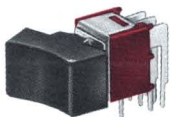
'B' Contact Material Std.

P.C. MOUNTING

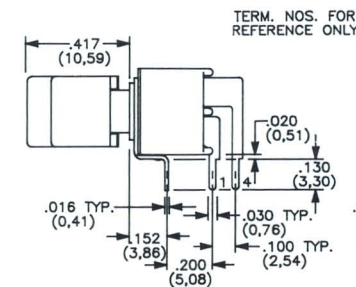


Actuator shown in POS.1.

A

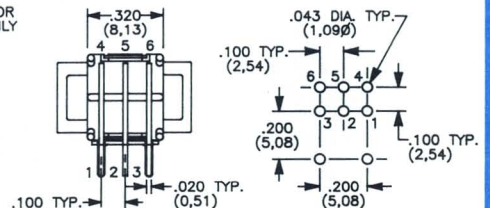


DPDT



'B' Contact Material Std.

P.C. MOUNTING



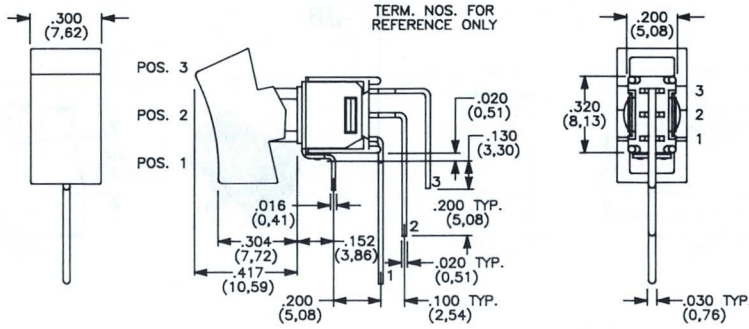
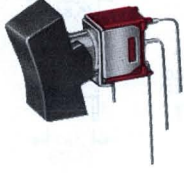
Actuator shown in POS.1.

TERMINATIONS

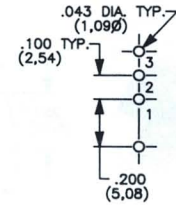


TERMINATIONS (cont'd.)

AV



P.C. MOUNTING

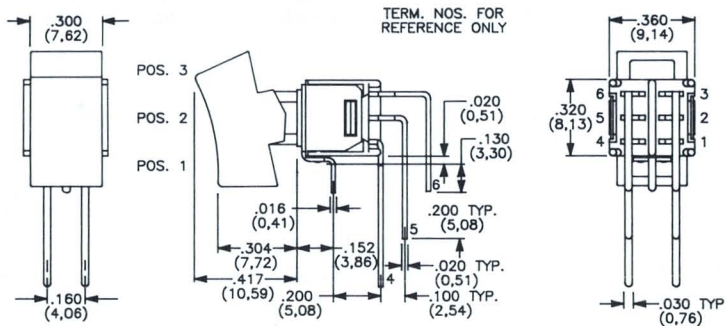
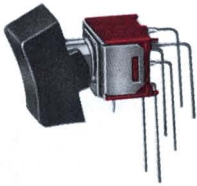


SPDT

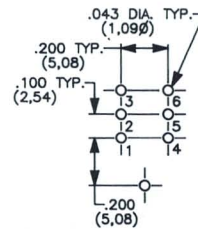
'B' Contact Material Std.

Term. bend radii mfg. option.

AV



P.C. MOUNTING

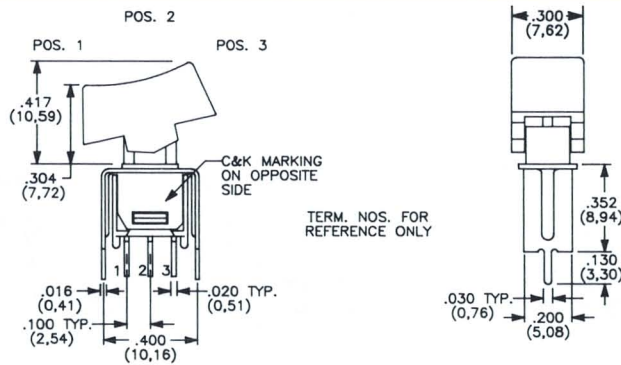


DPDT

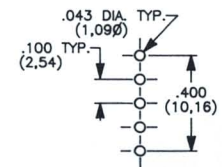
'B' Contact Material Std.

Term. bend radii mfg. option.

V3



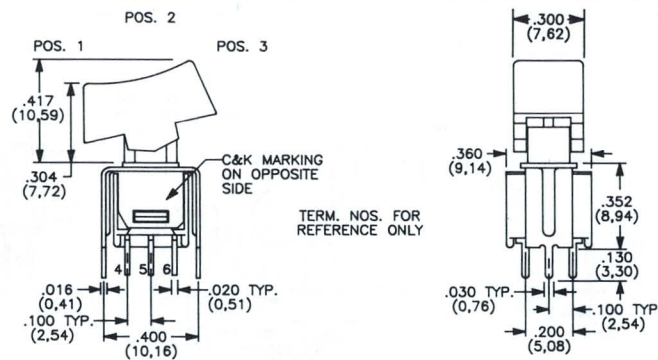
P.C. MOUNTING



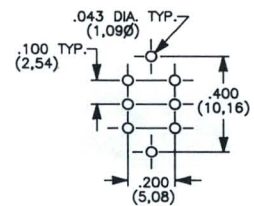
SPDT

'B' Contact Material Std.

V3



P.C. MOUNTING



DPDT

'B' Contact Material Std.

CONT. MAT'L.



CONTACT MATERIALS

- B** CONTACTS & TERMINALS: Brass, with gold plate over nickel plate.
RATING: 0.4 VA max. @ 20 V AC or DC max. (Std. with all termination options exc. Z, C)
- Q** END CONTACTS: Coin silver, silver plated.
CENTER CONTACT & ALL TERMINALS: Brass, silver plated.
RATING: 3 AMPS @ 120 V AC or 28 V DC on all models ending in -01 (ON-NONE-ON). All other models, 2 AMPS @ 120 V AC or 28 V DC.
(Std. with termination options Z, C)
- G** END CONTACTS: Coin Silver, with gold plate over nickel plate.
CENTER CONTACT & ALL TERMINALS: Brass, with gold plate over nickel plate.
RATING: 0.4 VA max. @ 20 V AC or DC max. or 3 AMPS @ 120 V AC or 28 V DC on all models ending in -01 (ON-NONE-ON). All other models, 2 AMPS @ 120 V AC or 28 V DC.

NOTE:

'G' contact material is equivalent to both 'B' and 'Q' contact materials and can be used where either dry circuit* or power conditions are encountered. However, when the dry circuit rating is exceeded, the gold plating is removed from the contact interface and the switch cannot then be used in dry circuits. This option should be specified where UL listing is required on a switch used in a dry circuit application.

*Dry circuit = conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

SEAL



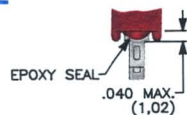
SEALING

(None)

No seal

Std. with all termination options.

E



HOW TO ORDER

Complete the order number below by selecting the desired model no., actuator, termination, contact material and (if desired) terminal sealing options from the preceding sections. Place the option codes in the appropriate boxes of the ordering format. Some boxes may be unfilled. Write actuator color in word form after order number. (Example: T208-J6-A-G with green actuator). If no color is specified, black will be supplied.

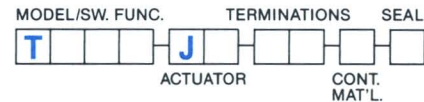
Z terminations, Q contact material and no seal are supplied if no options are specified. J1 actuator (black) standard on all models except SPDT A termination option: J6 actuator (black) standard.

T101, T103, T108, T201, T203, T211 models UL listed with all options when ordered with G or Q contact material.

Note: Custom actuator markings and legends available, see inside front cover and consult factory.

ACTUATOR COLORS	
1	White
2	Black(Std.)
3	Red
4	Orange
5	Yellow
6	Green
7	Blue
8	Brown
9	Gray

HARDWARE: Two mounting screws, two nuts, two standoffs for 1/8 in. thk. panel and two lockwashers are supplied standard on panel mounted switches with Z, C or W terminations. Hardware for optional panel thicknesses available. See chart below to determine correct standoff length and part no. Write part description and part no. in word form after order number. If nothing is specified, standard hardware will be supplied. Hardware is also available separately, see **HARDWARE** section below.



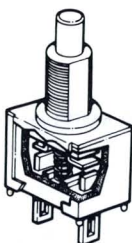
AVAILABLE HARDWARE

The following mounting hardware is available separately. To order, see chart, right, and write part nos. and descriptions in word form. Mounting hardware consists of two screws, two nuts, two standoffs and two lockwashers per switch.

MOUNTING HARDWARE		
HARDWARE P/N	PANEL THK.	STANDOFF LENGTH
7611-01	1/16 in. (.159)	.295 (7,49)
7611-02	3/32 in. (.238)	.264 (6,71)
7611-03 (Std.)	1/8 in. (.318)	.233 (5,92)

MATERIALS:

SCREWS, NUTS, LOCKWASHERS- Stainless Steel.
STANDOFFS- Aluminum or nylon.



SPECIFICATIONS

CONTACT RATING: 1 AMP @ 120 V AC or 28 V DC.
ELECTRICAL LIFE: 60,000 make-and-break cycles at full load on all models ending in -11 (SPST) or -21 (DPST). 30,000 cycles on all models ending in -12 (SPDT).
CONTACT RESISTANCE: Below 20 milliohms typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.
INSULATION RESISTANCE: 10⁹ ohms min.
DIELECTRIC STRENGTH: 1,000 V RMS min. @ sea level.
OPERATING TEMPERATURE: -30°C to 65°C.

MATERIALS

CASE: Glass filled phenolic or diallyl phthalate (DAP).
PLUNGER: Thermoplastic polyester (UL 94V-0), black.
BUSHING: Brass, nickel plated.
HOUSING: Stainless steel.
SWITCH SUPPORT: Brass, electrotin plated.
CONTACTS: Coin silver, silver plated (Q cont. mat'l.).
TERMINALS: Brass, silver plated (Q cont. mat'l.).
HARDWARE: Nut- Brass, nickel plated.
 Locking ring- Brass, bright nickel plated.
 Lockwasher- Steel, bright nickel plated.

NOTE

Specifications and Materials listed above are general specifications for switches with standard options. See option sections for additional information. Specifications available for specific models, consult factory.

INTRODUCTION

Available options for TP SERIES TINY PUSHBUTTON SWITCHES are shown on pages G-22 thru G-27. Make selections from the following option sections: Model/Switching Function, Actuator or Bushing, Terminations, Contact Material and (if desired) Epoxy Terminal Seal. Each section begins with the

ordering format, with the appropriate boxes enlarged. Complete HOW TO ORDER information in on page G-27. Available hardware and accessories shown on page G-28.

All models (exc. TP21) UL listed with all options when ordered with G or Q contact material. See HOW TO ORDER, page G-27.

MODEL/SW. FUNC.

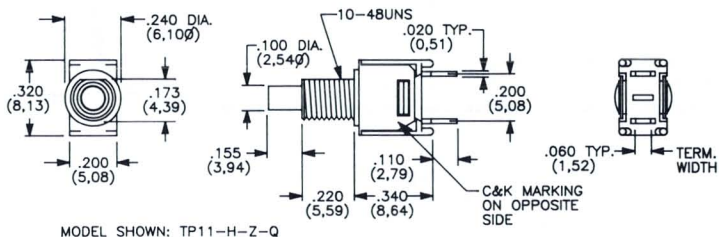


MODELS / SWITCHING FUNCTION

MODEL NO.	SWITCHING FUNC.	
	POS 1	POS 2
TP11	OFF	MOM.

SCHEMATIC

SPST



MOM. = MOMENTARY POSITION

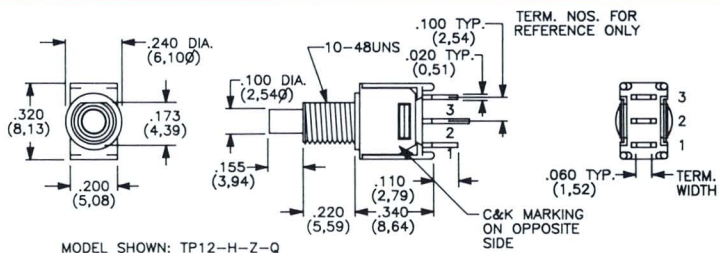
MODEL NO.	ON	MOM.
TP12	2-1	2-3

CONNECTED TERMINALS

SCHEMATIC

NC 1 2 (COMM) 3 NO

SPDT



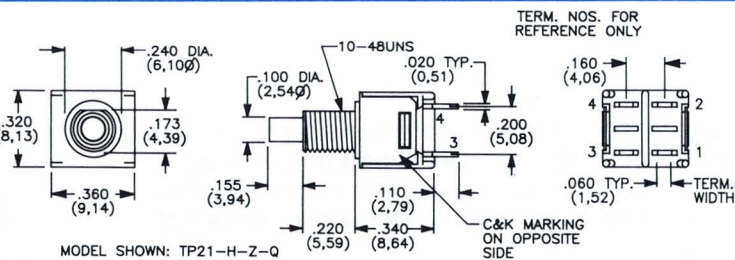
MOM. = MOMENTARY POSITION

MODEL NO.	OFF	MOM.
TP21		

SCHEMATIC

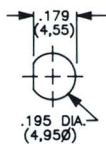
1 2 3 4

DPST

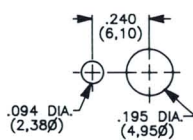
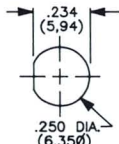


PANEL MOUNTING

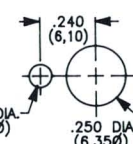
10-48 BUSHING WITHOUT LOCKING RING



1/4-40 BUSHING WITHOUT LOCKING RING



10-48 BUSHING WITH LOCKING RING



1/4-40 BUSHING WITH LOCKING RING

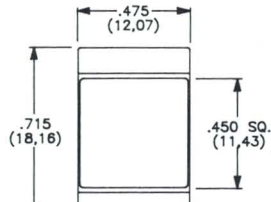
ACTUATOR OR BUSHING



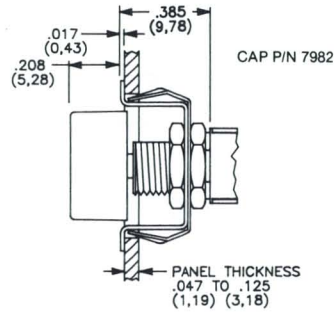
ACTUATOR OPTIONS FOR SNAP-IN FRONT MOUNTING

Available with Z, C, or W terminations.

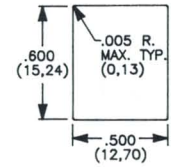
J80



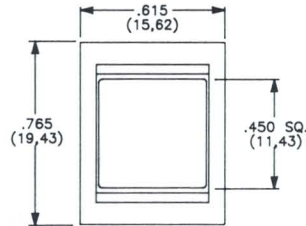
Cap finish: matte;
available colors, see
page G-27.



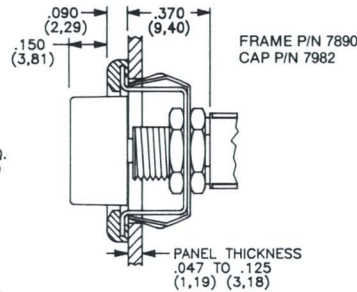
PANEL MOUNTING



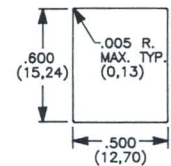
J81



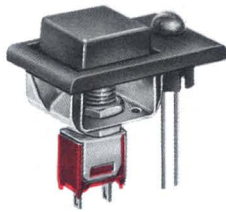
Cap and frame finish: matte;
available colors, see page G-27.



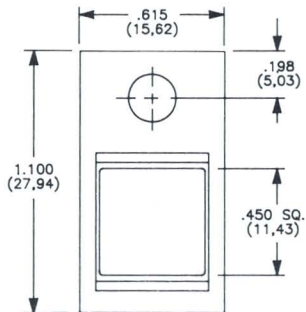
PANEL MOUNTING



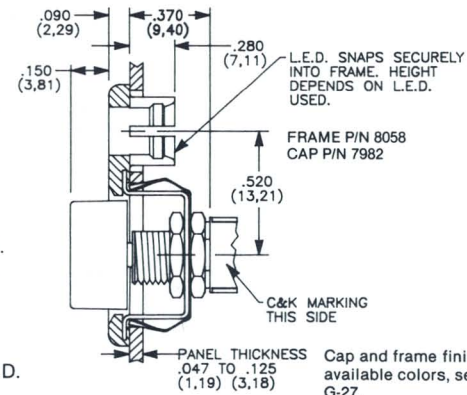
J82



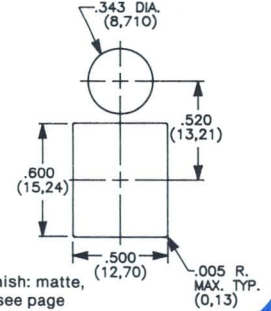
U.S. PAT. NO. 4,004,120



L.E.D. NOT INCLUDED. FOR L.E.D.
INFORMATION, SEE PAGE A-25.



PANEL MOUNTING

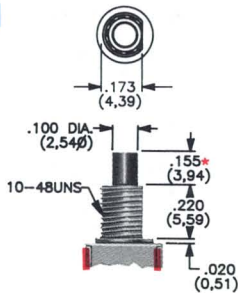


ACTUATOR OR BUSHING



BUSHINGS

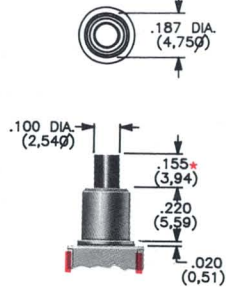
H9 UNTHREADED
H



H std. with Z, C or W
terminations.

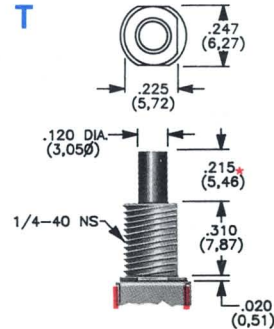
H9 std. with A, AV or V3
terminations.

H8 UNTHREADED

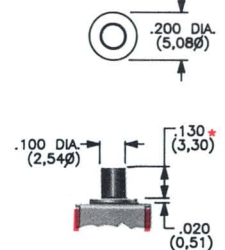


* Subtract .016 (0,41) for models with A, AV or V3 terminations.

T9 UNTHREADED
T



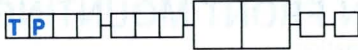
S9



Not available with Z
terminations.

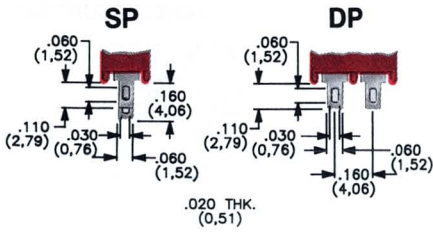
Plunger length insuffi-
cient for use with caps.
consult factory.

TERMINATIONS



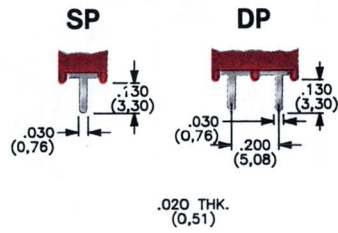
TERMINATIONS

Z (Std.)



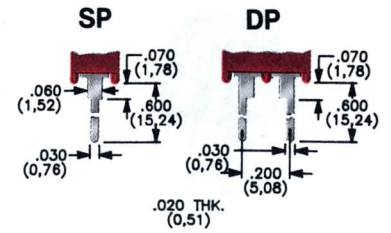
'Q' Contact Material Std.

C



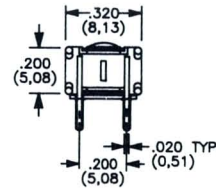
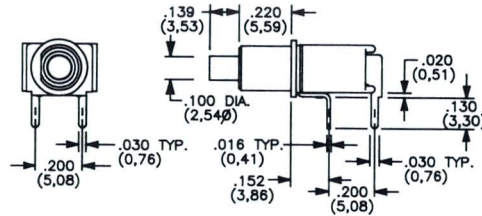
'Q' Contact Material Std.

W

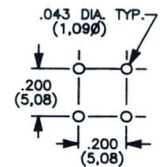


'B' Contact Material Std.

A



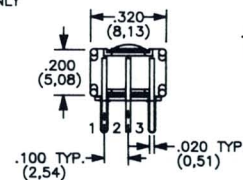
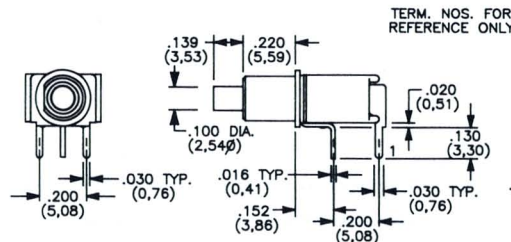
P.C. MOUNTING



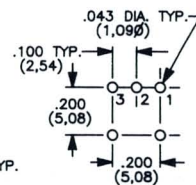
SPST TP11 MODEL ONLY

'B' Contact Material Std.

A



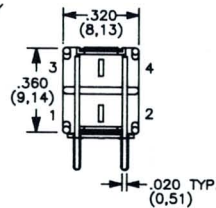
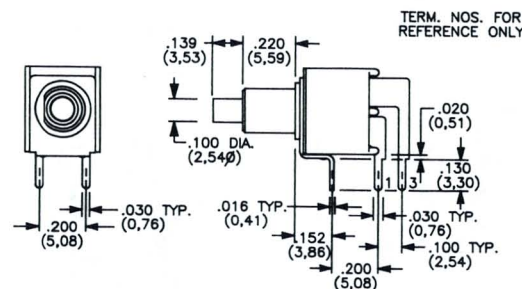
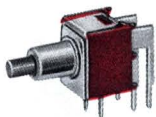
P.C. MOUNTING



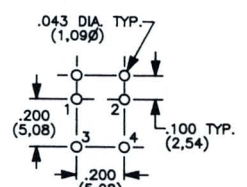
SPDT TP12 MODEL ONLY

'B' Contact Material Std.

A



P.C. MOUNTING



DPST TP21 MODEL ONLY

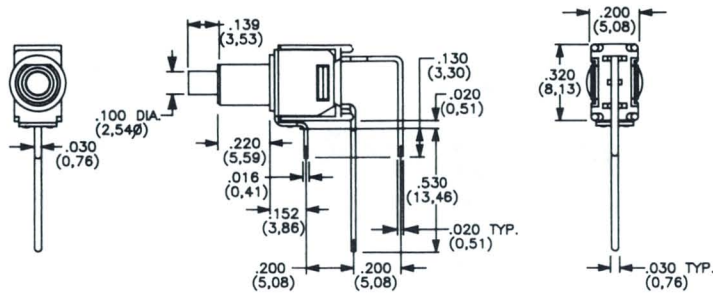
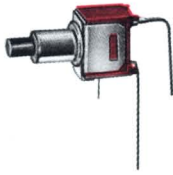
'B' Contact Material Std.

TERMINATIONS

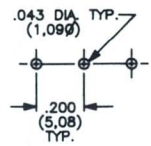


TERMINATIONS (cont'd.)

AV



P.C. MOUNTING

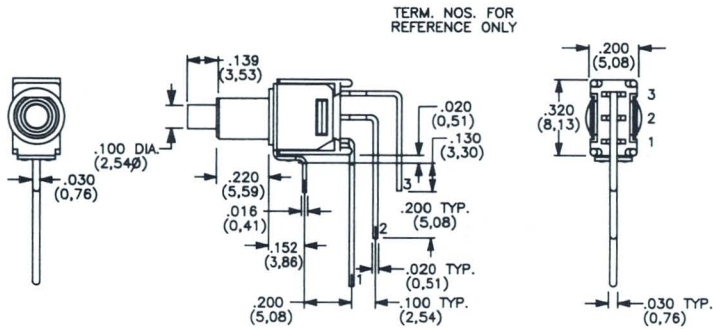
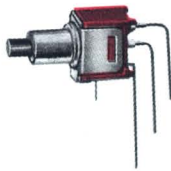


**SPST
TP11 MODEL ONLY**

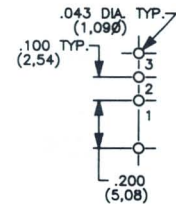
'B' Contact Material Std.

Term. bend radii mfg. option.

AV



P.C. MOUNTING

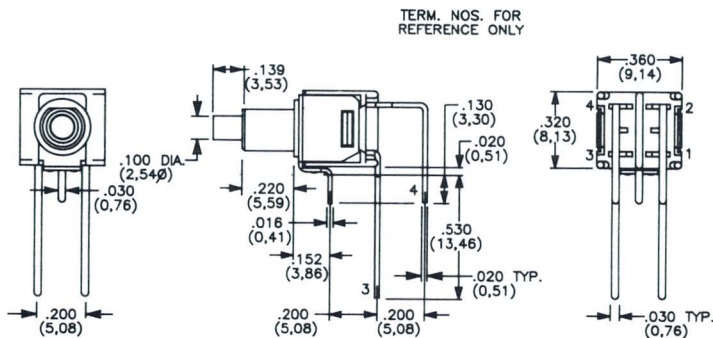


**SPDT
TP12 MODEL ONLY**

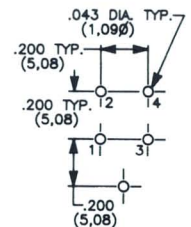
'B' Contact Material Std.

Term. bend radii mfg. option.

AV



P.C. MOUNTING



**DPST
TP21 MODEL ONLY**

'B' Contact Material Std.

Term. bend radii mfg. option.



CONTACT MATERIALS

- B** CONTACTS & TERMINALS: Brass, with gold plate over nickel plate.
RATING: 0.4 VA max. @ 20 V AC or DC max. (Std. with all termination options exc. Z, C)
- Q** CONTACTS: Coin silver, silver plated.
TERMINALS: Brass, silver plated.
RATING: 1 AMP @ 120 V AC or 28 V DC. (Std. with termination options Z, C)
- G** CONTACTS: Coin Silver, with gold plate over nickel plate.
TERMINALS: Brass, with gold plate over nickel plate.
RATING: 0.4 VA max. @ 20 V AC or DC max. or 1 AMP @ 120 V AC or 28 V DC.

Note: 'G' contact material is equivalent to both 'B' and 'Q' contact materials and can be used where either dry circuit* or power conditions are encountered. However, when the dry circuit rating is exceeded, the gold plating is removed from the contact interface and the switch cannot then be used in dry circuits. This option should be specified where UL listing is required on a switch used in a dry circuit application.

*Dry circuit = conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.



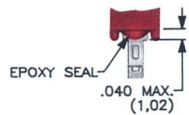
SEALING

(None)

No seal

Std. with all termination options.

E



HOW TO ORDER

Complete the order number below by selecting the desired model no., actuator or bushing, termination, contact material and (if desired) terminal sealing options from the preceding sections. Place the option codes in the appropriate boxes of the ordering format. Some boxes may be unfilled. Where applicable, write cap and frame colors in word form after order number. (Example: TP111-J81-C-G with white cap and brown frame).

If no color is specified, black will be supplied.

L.E.D.'s not furnished with J82 actuator option.

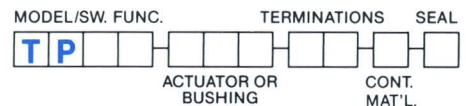
Plunger lengths vary with bushing and termination options selected, see BUSHING and TERMINATION option sections.

H bushing, Z terminations, Q contact material and no seal are supplied if no options are specified.

All models (exc. TP21) UL listed with all options when ordered with G or Q contact material.

HARDWARE: One mounting nut, locking ring and lockwasher supplied standard, where applicable (except 1/4-40 bushings: two mounting nuts supplied standard). Optional mounting nut styles, locking rings and caps available. Write part descriptions and part nos. in word form after order number. If nothing is specified, standard hardware will be supplied. Hardware is also available separately, see HARDWARE section, page G-28.

CAP AND FRAME COLORS			
1	White	6	Green
2	Black(Std.)	7	Blue
3	Red	8	Brown
4	Orange	9	Gray
5	Yellow		

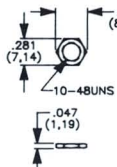


AVAILABLE HARDWARE

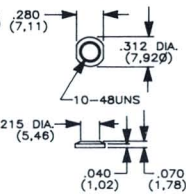
The following hardware is available separately. To order, write part nos., descriptions and colors where applicable.

NUTS

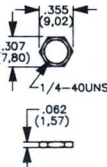
4649
(Std.)



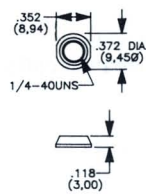
4657
DRESS NUT



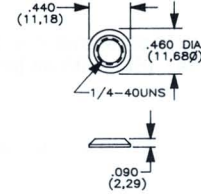
7002



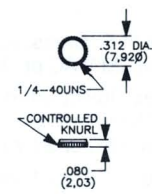
7099
DRESS NUT
(BLIND THD.)



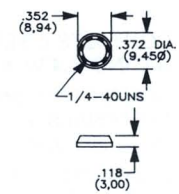
7760
DRESS NUT



7780
KNURLED NUT
(BLIND THD.)

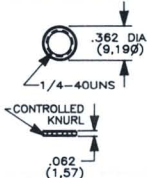


7807
DRESS NUT

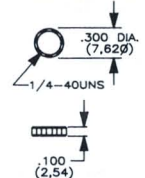


NUTS

7969*
KNURLED NUT



7786
KNURLED NUT



* Controlled knurl pattern fits 'Gulmite' #12 socket.

CAPS

All caps: finish, gloss, except where noted; material, nylon. See color chart below.

LOCKING RINGS

FITS 10-48 BUSHING

4650



7572

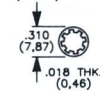


7573

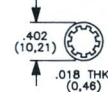


LOCKWASHERS

4652 FITS 10-48
(Std.) BUSHINGS



7003-3 FITS 1/4 IN.
BUSHINGS

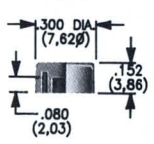


MATERIALS

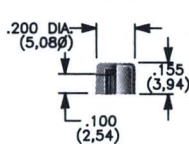
NUTS, LOCKING RINGS - Brass, nickel plated.
LOCKWASHERS - Steel, bright nickel plated.

FITS .100 (2,54) DIA. PLUNGERS

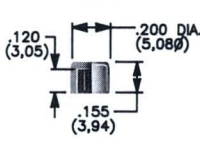
4658



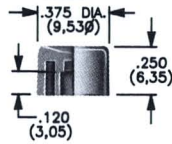
5081**



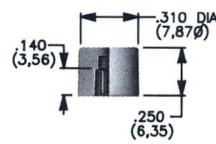
7089



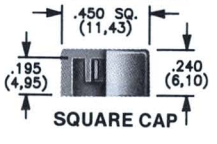
7527



8018



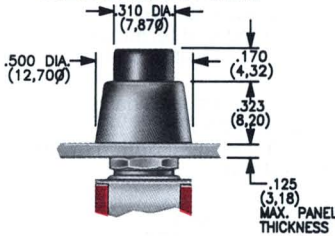
7982 MATTE
4846 GLOSS



FITS .120 (3,05) DIA. PLUNGERS

FITS T BUSHING OPTION ONLY

8025 DRESS NUT & CAP



To order dress nut only, specify P/N 7025.

FRAMES

Frames for the following actuator options are available separately. Chart shows available colors. For illustrations and dimensions of parts not shown, see pages noted. Frame finish: matte; material, nylon.

FRAME P/N	FITS ACTUATOR OPTION	SEE PAGE NO.
7890	J81	G-23
8058	J82	G-23

CAP AND FRAME COLORS			
1	White	6	Green
2	Black(Std.)	7	Blue
3	Red	8	Brown
4	Orange	9	Gray
5	Yellow		

WRENCHES

Switches are normally mounted to panel using two mounting nuts: one front of panel, one back of panel. To avoid damaging front of panel, always tighten back of panel nut. When ordering, specify 4 digit part no.

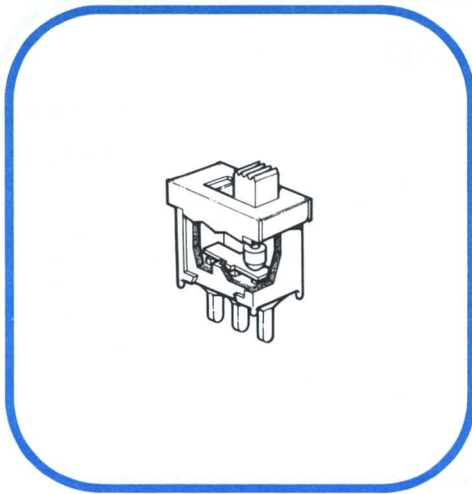


P/N 4815 or
P/N 8942

P/N 7785 or
P/N 4653

WRENCH P/N	FITS NUTS P/N
4653	4649, 4657
7785	7002, 7099, 7807
8942	7969
4815	7780

**Models with S9 bushing option or A, AV or V3 terminations have plunger length insufficient for use with cap P/N 5081. Order cap P/N 5387 with .080 (2,03) plunger engagement. Consult factory for alternate plunger lengths.



SPECIFICATIONS

CONTACT RATING: 3 AMPS @ 120 V AC or 28 V DC on all models ending in -01 (ON-NONE-ON). All other models, 1 AMP @ 120 V AC or 28 V DC.

ELECTRICAL LIFE: 60,000 make-and-break cycles at full load on all models ending in -01 (ON-NONE-ON). All other models, 30,000 cycles.

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

INSULATION RESISTANCE: 10⁹ ohms min.

DIELECTRIC STRENGTH: 1,000 V RMS min. @ sea level.

OPERATING TEMPERATURE: -30°C to 85°C.

MATERIALS

CASE: Glass filled phenolic or diallyl phthalate (DAP).

ACTUATOR: Nylon, black.

HOUSING: Stainless steel. Models with A Termination Option: stainless steel, nickel plated.

END CONTACTS: Coin silver, silver plated (Q cont. mat'l.).

CENTER CONTACT & ALL TERMINALS: Brass, silver plated (Q cont. mat'l.).

NOTE

Specifications and Materials listed above are general specifications for switches with standard options. See option sections for additional information. Specifications available for specific models, consult factory.

INTRODUCTION

Available options for TS SERIES TINY SLIDE SWITCHES are shown below and on page G-30. Make selections from the following option sections: Model/Switching Function, Terminations, Contact Material

and (if desired) Epoxy Terminal Seal. Each section begins with the ordering format, with the appropriate boxes enlarged. Complete HOW TO ORDER information is on page G-30.

All models UL listed with all options when ordered with G or Q contact material. See HOW TO ORDER, page G-30.

MODEL/SW. FUNC.

T S

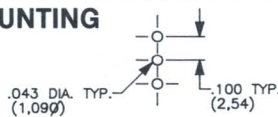
MODELS / SWITCHING FUNCTION

MODEL NO.	SWITCHING FUNC.		
	POS. 1	POS. 2	POS. 3
TS01	ON	NONE	ON
TS03	ON	OFF	ON
CONNECTED TERMINALS	1-2	OPEN	2-3
SCHEMATIC			

SPDT

MODEL SHOWN: TS01-C-B

P.C. MOUNTING



TERMINATIONS

T S

TERMINATIONS

C (Std.)

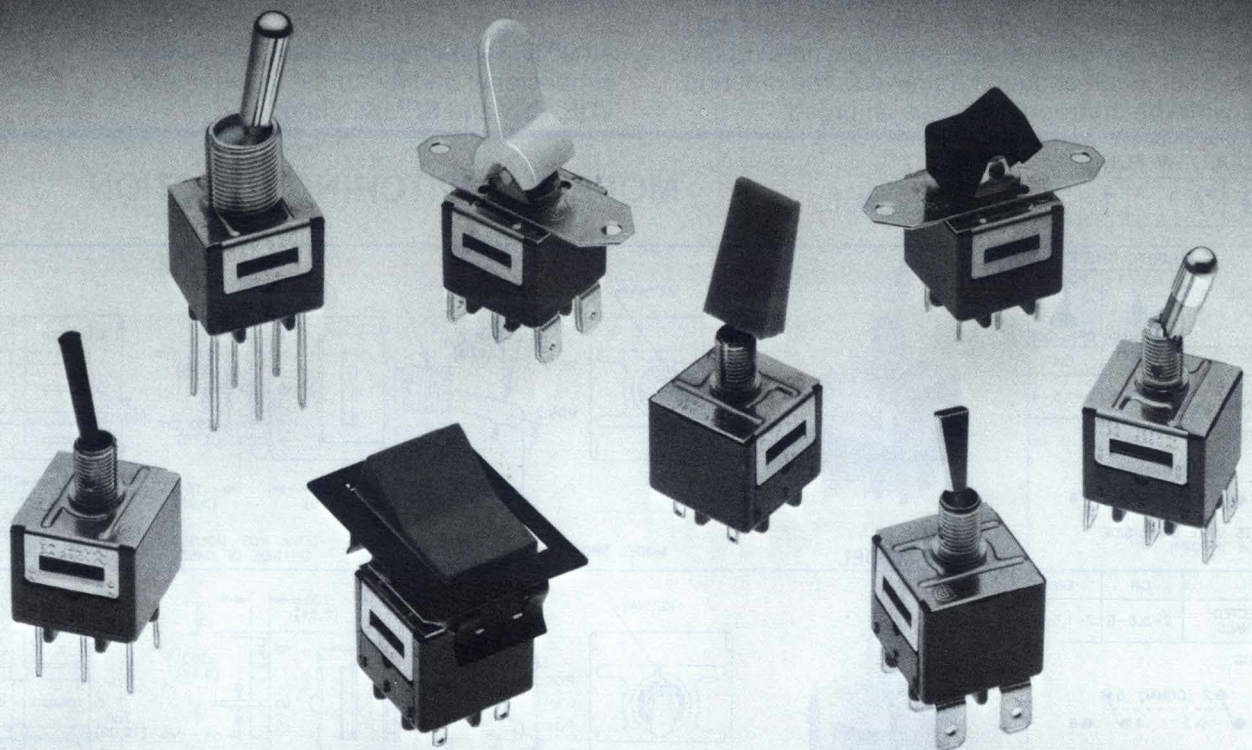
'Q' Contact Material Std.

W

'B' Contact Material Std.

9000 SERIES

POWER TOGGLE, ROCKER & LEVER HANDLE SWITCHES



SECTION H INDEX

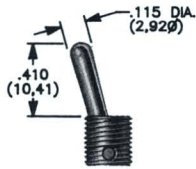
Power Toggle Switches	H-2 thru H-7
Power Rocker & Lever Handle Switches	H-8 thru H-12

ACTUATOR

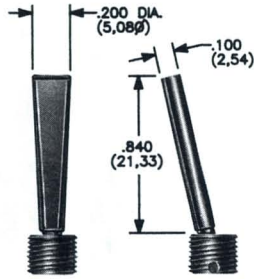


ACTUATORS

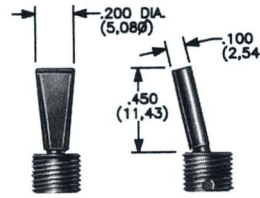
S WITH ANTIROTATION (Std.)



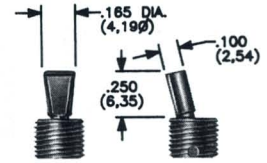
P1 WITH ANTIROTATION



P3 WITH ANTIROTATION

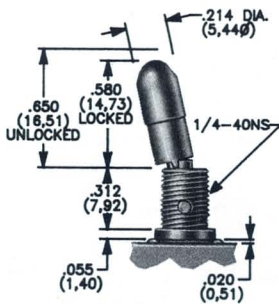


P4 WITH ANTIROTATION

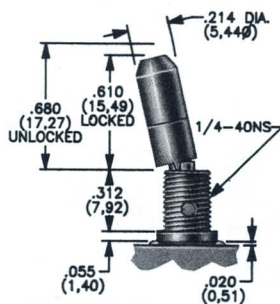


Hardware on P1, P3, P4 actuators: P/N 7099 dress nut supplied standard.

K LOCKING LEVER



K1 LOCKING LEVER



K & K1 options



CAP COLORS	
Natural AL.	(Std.)
Black Anodized AL.	
Red Anodized AL.	
Blue Anodized AL.	

To prevent accidental actuation, toggles must be lifted before being actuated. When released, toggles again lock in place.

Add cap color in word form after order number. If no color is specified, natural aluminum will be supplied.

Bushing option code not required.

L WITH ANTIROTATION



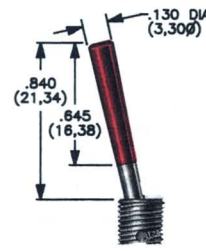
L1 WITH ANTIROTATION



L2 WITH ANTIROTATION



L3 PLASTIC WITH ANTIROTATION



L4 PLASTIC WITH ANTIROTATION



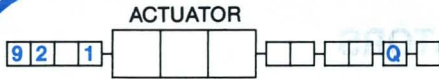
Bushing option code not required with these actuators: K, K1, T, T1; CW bushing may be specified with T or T1 actuators.

Antirotation: is standard on all actuators, provides anti-'push-in' feature and reduces risk of internal switch damage from impact forces on the actuator.

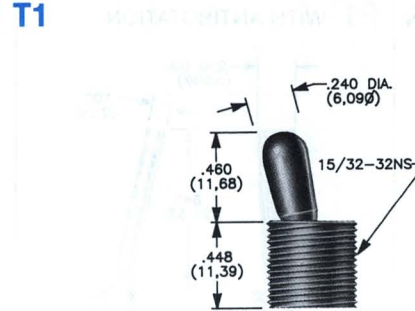
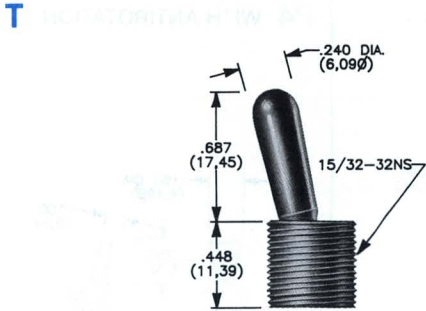
All actuators (except K, K1, L3, L4, L40- L43) are available with satin chrome or black finish. Write 'SATIN CHROME ACTUATOR' or 'BLACK ACTUATOR' in word form after order number. If nothing is specified, chrome plated actuators will be supplied.

1	White
2	Black(Std.)
3	Red
4	Orange
5	Yellow
6	Green
7	Blue
8	Brown
9	Gray

Add actuator color in word form after order number. If no color is specified, black will be supplied. Finish: gloss.



ACTUATORS (cont'd.)

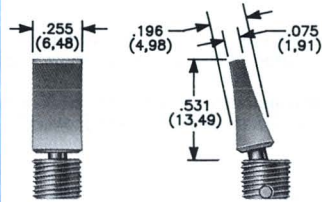


Bushing option code not required unless CW splashproof bushing option desired.

L40

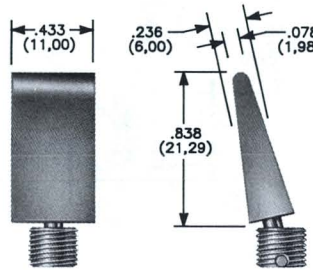


L41 LEVER HANDLE



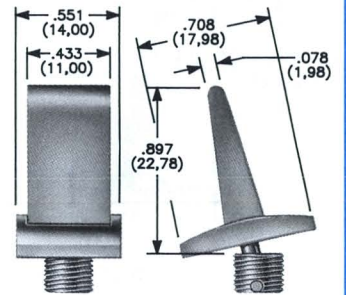
LEVER HANDLE P/N: 4810

L42 LEVER HANDLE



LEVER HANDLE P/N: 4811

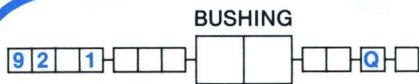
L43 LEVER HANDLE



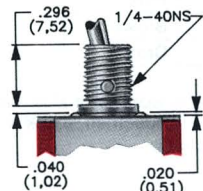
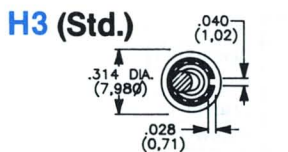
LEVER HANDLE P/N: 4812

Add lever handle color in word form after order number. If no color is specified, black will be supplied. Lever handles can be ordered separately, specify part no. and color. For interchangeability, order L40 actuator option and order lever handles separately. Finish: matte.

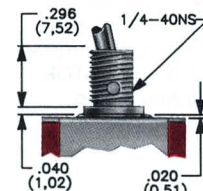
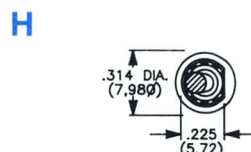
1	White	6	Green
2	Black(Std.)	7	Blue
3	Red	8	Brown
4	Orange	9	Gray
5	Yellow		



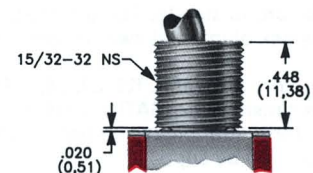
BUSHINGS



Will withstand 12 in.-lbs. of torque with no distortion.



Will withstand 12 in.-lbs. of torque with no distortion.



Available with T, T1 actuators only.

Internal actuator seal std. Bushing sealing washer available from: Multi-Flex Seals, Inc. Hackensack, New Jersey Part No. MFS-60064

HOW TO ORDER

Complete the order number below by selecting the desired model no., actuator, bushing (where required), termination and (if desired) terminal sealing options from the preceding sections. Place the option codes in the appropriate boxes of the ordering format. Some boxes may be unfilled. Where applicable, write actuator color in word form after order number.

(Example: 9201-L3-H-C-Q with red actuator). If no color is specified, black will be supplied.

S actuator, H3 bushing, Z terminations on 9201 models or Z4 terminations on 9221 models, Q contact material and no seal are supplied if no options are specified. E epoxy terminal seal standard with Z3 and W-W4 terminations on 9201 models, not available with Z4 terminations on 9221 models.

All models UL/CSA/VDE/SEV/SEMKO listed with all options.

ADDITIONAL ORDERING INFORMATION

ACTUATORS: Satin chrome or black finish available on all actuators except K, K1, L3, L4, L40-L43. Write 'SATIN CHROME ACTUATOR' or 'BLACK ACTUATOR' in word form after order number. If nothing is specified, chrome plated actuators will be supplied.

K, K1 ACTUATORS: Write actuator cap color in word form after order number. If nothing is specified, natural aluminum caps will be supplied. Bushing option code not required.

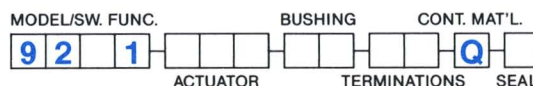
T, T1 ACTUATORS: Bushing option code not required unless CW splashproof bushing option is desired.

HARDWARE: Two mounting nuts, locking ring and lockwasher are supplied standard (except P1, P3, P4 actuators: one P/N 7099 dress nut, one hex nut, locking ring and lockwasher supplied standard).

Optional mounting nut styles, locking rings and caps available. Write part descriptions and part nos. in word form after order number. If nothing is specified, standard hardware will be supplied. Hardware is also available separately, see HARDWARE section, page H-7.

UNAVAILABLE OPTION COMBINATIONS:

Model or Option	Options Not Available
9221	Z, C, Z3, W-W4, E
Z4	E

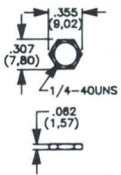


AVAILABLE HARDWARE

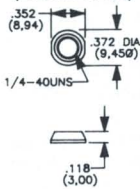
The following hardware is available separately. To order, write part nos., descriptions and colors where applicable.

NUTS

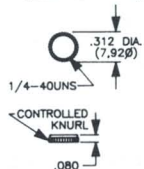
7002
(Std.)



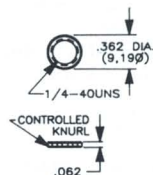
7099
DRESS NUT
(BLIND THD.)



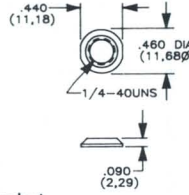
7780
DRESS NUT
(BLIND THD.)



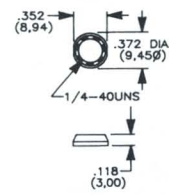
7969*
KNURLED NUT



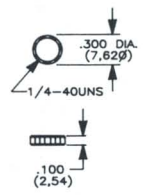
7760
DRESS NUT



7807
DRESS NUT



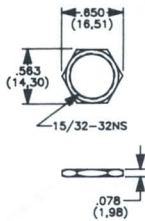
7786
KNURLED NUT



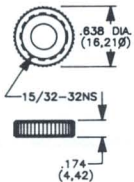
* Controlled knurl pattern fits 'Gulmire' #12 socket.

NUTS

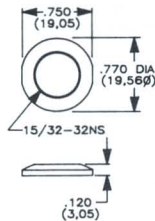
7071



4713
KNURLED NUT
(BLIND THD.)

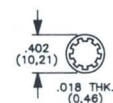


8951
DRESS NUT

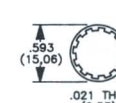


LOCKWASHERS

7003-3
(Std.)
FITS 1/4 IN.
BUSHINGS



7003-2
FITS 15/32 IN.
BUSHINGS



MATERIALS

NUTS, LOCKING RINGS -
Brass, nickel plated.
LOCKWASHERS - Steel, bright
nickel plated.

Black finish hardware is available, and is supplied when black bushings are specified. To order, write 'BLACK HARDWARE' in word form with descriptions and part nos.

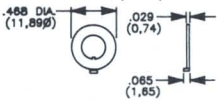
LOCKING RINGS

FITS BUSHINGS WITH KEYWAY

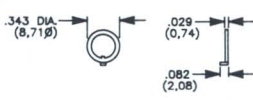
FITS BUSHINGS WITH FLAT

FITS 15/32 IN. BUSHINGS

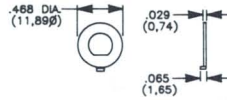
7007
(Std.)



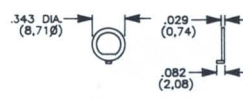
7537



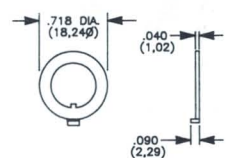
7572



7573



7072



WRENCHES

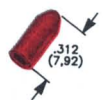
Switches are normally mounted to panel using two mounting nuts: one front of panel, one back of panel. To avoid damaging front of panel, always tighten back of panel nut. When ordering, specify 4 digit part no.



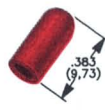
P/N 4815 or
P/N 8942

WRENCH P/N	FITS NUTS P/N
7785	7002, 7099, 7807, 7916
8942	7969
4815	7780

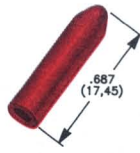
TOGGLE CAPS



7062
Fits S actuator
option; material:
vinyl.



8968
Fits S actuator
option;
material:
polyethylene.



7637
Fits L actuator
option;
material: vinyl.

Plastic caps, available in 9 colors, fit either S or L actuator options. When ordering, specify cap part no. and color in word form.

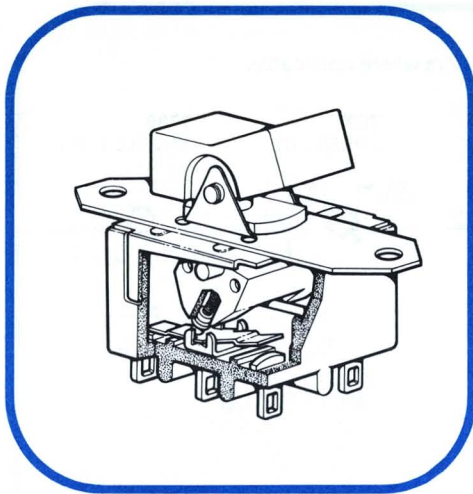
CAP COLORS			
1	White	6	Green
2	Black(Std.)	7	Blue
3	Red	8	Brown
4	Orange	9	Gray
5	Yellow		

LEVER HANDLES FOR L40 ACTUATOR OPTION

Lever handles available in 3 styles and 9 colors, fit L40 actuator option. For illustrations and dimensions, see page H-4. Lever handles snap-fit and may be installed or replaced by user. When ordering, specify part no. and color in word form. Finish: matte.

LEVER HANDLE P/N	MAKES ACTUATOR OPTION
4810	L41
4811	L42
4812	L43

LEVER HANDLE COLORS			
1	White	6	Green
2	Black(Std.)	7	Blue
3	Red	8	Brown
4	Orange	9	Gray
5	Yellow		



SPECIFICATIONS

CONTACT RATING:
 9201 models: 6 AMPS @ 120 V AC.
 or 28 V DC; 3 AMPS @ 250 V AC.
 9221 models: 10 AMPS @ 125 V AC
 or 28 V DC; 5 AMPS @ 250 V AC.

ELECTRICAL LIFE: 25,000
 make-and-break cycles at full load.

CONTACT RESISTANCE: Below 10
 milliohms typ. initial @ 2-4 V DC,
 100 mA.

INSULATION RESISTANCE: 10^9 ohms
 min.

DIELECTRIC STRENGTH: 2,500 V RMS
 min. @ sea level.

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

MATERIALS

CASE: Diallyl phthalate (DAP).
ACTUATOR: Nylon, black, std.
BUSHING: Brass, nickel plated.
HOUSING: Stainless steel.
MOUNTING BRACKET: Stainless steel.
END CONTACTS: Coin silver, silver
 plated (Q cont. mat'l.).
CENTER CONTACTS: Brass, silver plated
 (Q cont. mat'l.).
ALL TERMINALS: 9201 models: Brass,
 silver plated.
 9221 models: Brass, electrotin plated.
HARDWARE: Nut- Stainless steel.
 Screw- Stainless steel.
 Lockwasher- Stainless steel.
 Standoff- Aluminum or nylon.

NOTE

Specifications and Materials listed above are general specifications for switches with standard options. See option sections for additional information. Specifications available for specific models, consult factory.

INTRODUCTION

Available options for 9000 SERIES POWER ROCKER AND LEVER HANDLE SWITCHES are shown on pages H-8 thru H-11. Make selections from the following option sections: Model/ Switching Function, Actuator, Terminations, Contact Material and (if desired) Epoxy Terminal Seal. Each section begins with the

ordering format, with the appropriate boxes enlarged. Complete HOW TO ORDER information is on page H-11. Available hardware and accessories shown on page H-12.

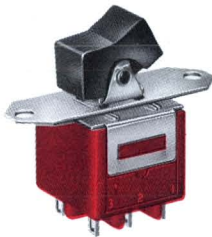
All 9000 Series models meet international dimensional and electrical requirements; UL, CSA, VDE, SEV and SEMKO listed.

MODEL/SW. FUNC.

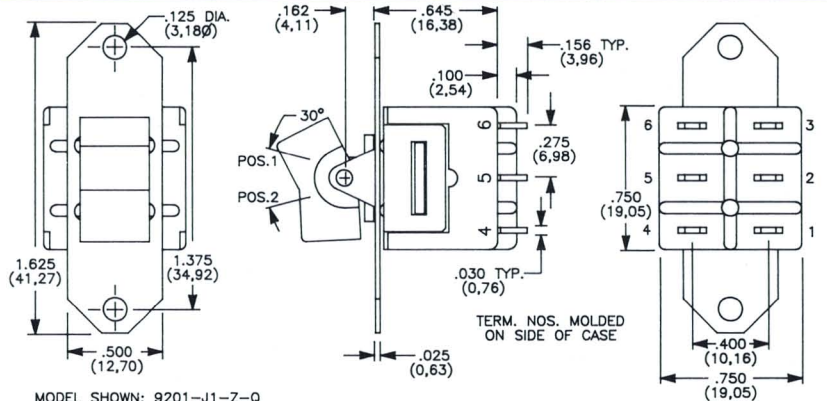
9 2 1 J Q

MODELS / SWITCHING FUNCTION

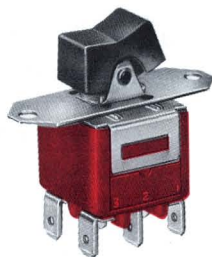
MODEL NO.	SWITCHING FUNC.	
	POS 1	POS 2
9201	ON	ON
CONNECTED TERMINALS	2-3,5-6	2-1,5-4
SCHEMATIC		
CONTACTS MAKE SAME SIDE ACTUATOR THROWN.		



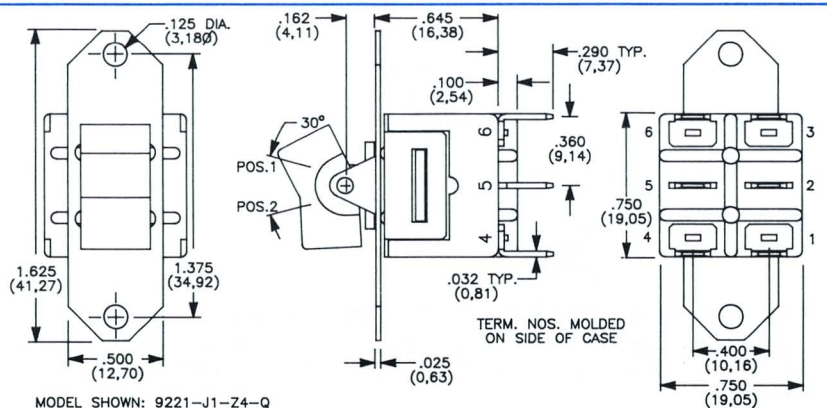
DPDT
6 AMP MODEL



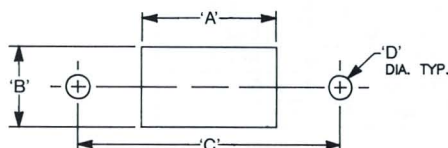
9221	ON	ON
CONNECTED TERMINALS	2-3,5-6	2-1,5-4
SCHEMATIC		
CONTACTS MAKE SAME SIDE ACTUATOR THROWN.		



DPDT
10 AMP MODEL

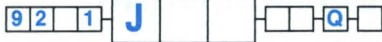


PANEL MOUNTING



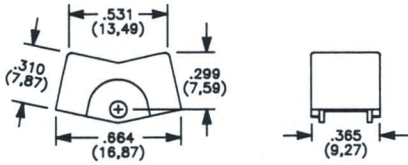
ACTUATOR OPTION	'A' DIM.	'B' DIM.	'C' DIM.	'D' DIM.
J1, J2	.707 (17,96)	.418 (10,62)	1.375 (34,93)	.125 (3,18)
J3, J4, J5	1.095 (27,81)	.648 (16,46)	1.375 (34,93)	.125 (3,18)
J10	1.375 (34,93)	.648 (16,46)	1.625 (41,28)	.140 (3,56)
J50, J60, J90	.503 (12,78)	.493 (12,52)	1.375 (34,93)	.125 (3,18)

ACTUATOR



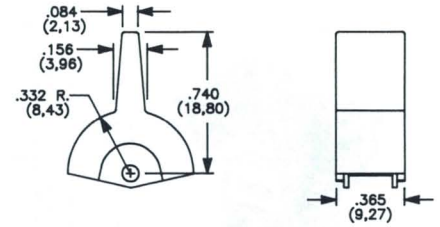
ACTUATOR OPTIONS FOR PANEL MOUNTING

J1



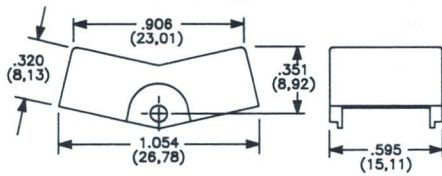
ACTUATOR P/N 7602

J2



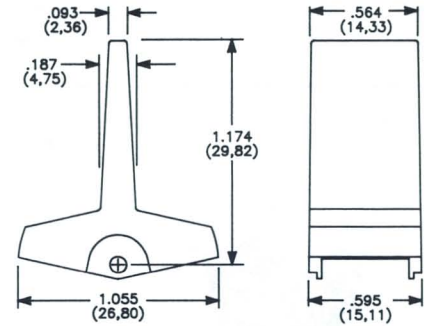
ACTUATOR P/N 7605

J3



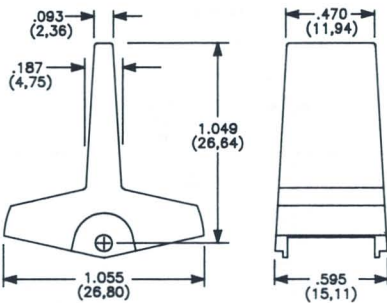
ACTUATOR P/N 7666

J4



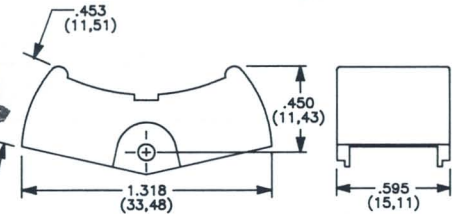
ACTUATOR P/N 7733

J5



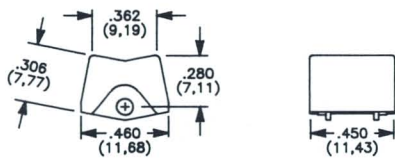
ACTUATOR P/N 7912

J10



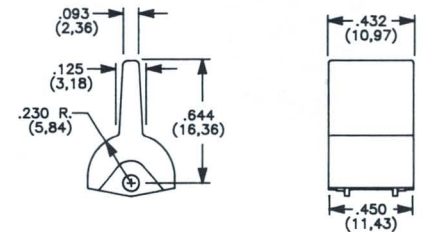
ACTUATOR P/N 7695

J50



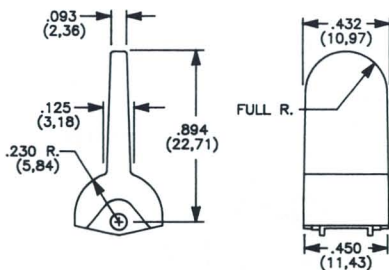
ACTUATOR P/N 7870

J60



ACTUATOR P/N 7868

J90

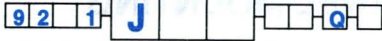


ACTUATOR P/N 7904

1	White
2	Black(Std.)
3	Red
4	Orange
5	Yellow
6	Green
7	Blue
8	Brown
9	Gray

Add actuator color in word form after order number. If no color is specified black will be supplied. Finish: matte.

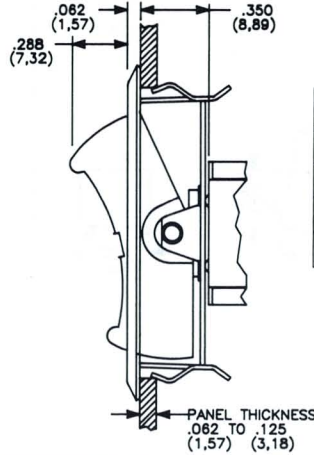
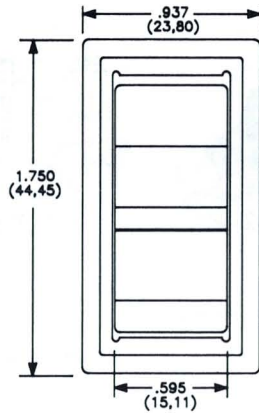
ACTUATOR



ACTUATOR OPTIONS FOR REAR MOUNTING

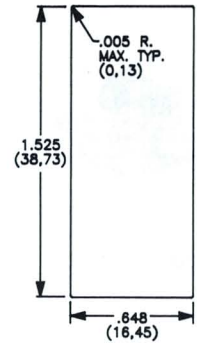
Available actuator colors, see page H-9. Select frame colors below.

J19

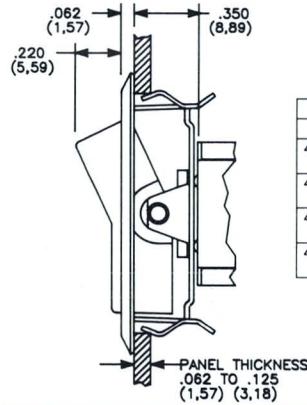
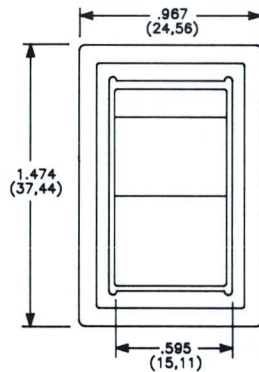


FRAME COLORS	
P/N	FINISH
7810-1	BRIGHT CHROME
7810-2	BLACK (Std.)
7810-3	SATIN CHROME
7810-4	WHITE ENAMEL

PANEL MOUNTING

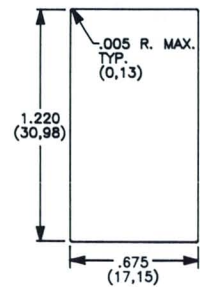


J37

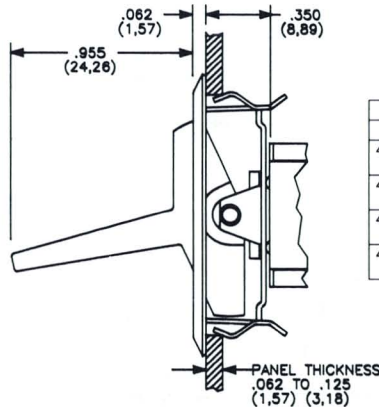
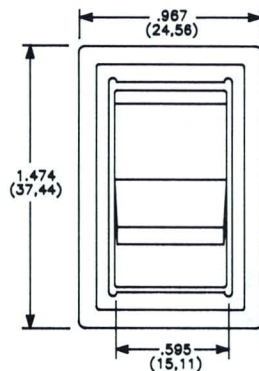


FRAME COLORS	
P/N	FINISH
4454-1	BRIGHT CHROME
4454-2	BLACK (Std.)
4454-3	SATIN CHROME
4454-4	WHITE ENAMEL

PANEL MOUNTING

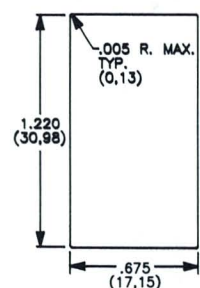


J47

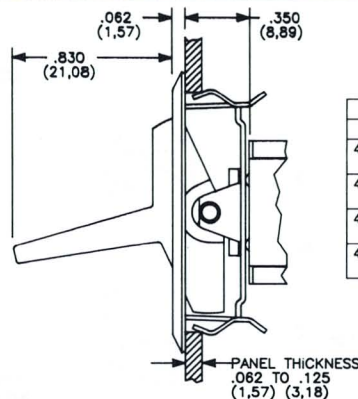
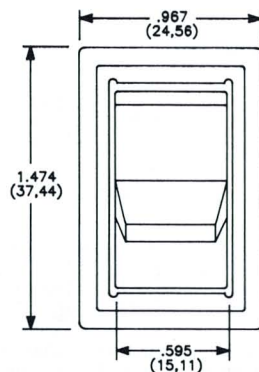


FRAME COLORS	
P/N	FINISH
4454-1	BRIGHT CHROME
4454-2	BLACK (Std.)
4454-3	SATIN CHROME
4454-4	WHITE ENAMEL

PANEL MOUNTING

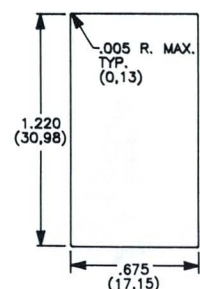


J57



FRAME COLORS	
P/N	FINISH
4454-1	BRIGHT CHROME
4454-2	BLACK (Std.)
4454-3	SATIN CHROME
4454-4	WHITE ENAMEL

PANEL MOUNTING



TERMINATIONS

9 2 1 J [] [] [] Q []

Z

Std. with 9201 models.

C

Z3 QUICK CONNECT

Mating quick connector available; order part no. 5301.

Z4 QUICK CONNECT

Only term. avail. with 9221 models.
'E' epoxy seal not available.
Mating quick connector available from:
Hollingsworth Solderless Terminals, Phoenixville, PA., 19460
AMP Special Industries, Harrisburg, PA., 17105

W-W4 WIRE-WRAP

OPTION CODE	DIM. 'A'
W	.750 (19,05)
W1	.964 (24,48)
W3	.425 (10,80)
W4	1.062 (26,97)

Wire-Wrap is a registered trademark of the Gardner-Denver Company.

CONT. MAT'L.

9 2 1 J [] [] [] Q []

CONTACT MATERIAL

Q 9201 MODELS:
END CONTACTS: Coin silver, silver plated.
CENTER CONTACT & ALL TERMINALS: Brass, silver plated.
RATING: 6 AMPS @ 120 V AC or 28 V DC; 3 AMPS @ 250 V AC.

9221 MODELS:
END CONTACTS: Coin Silver, silver plated.
CENTER CONTACT: Brass, silver plated.
ALL TERMINALS: Brass, electrotin plated.
RATING: 10 AMPS @ 125 V AC or 28 V DC; 5 AMPS @ 250 V AC (Avail. with Z4 terminations only).

SEAL

9 2 1 J [] [] [] Q []

SEALING

(None)

No seal

Std. with Z, C, Z4 terminations.

Not avail. with Z3, W-W4 terminations.

E

Std. with Z3, W-W4 terminations.

Not available with Z4 terminations or all 9221 models.

HOW TO ORDER

Complete the order number below by selecting the desired model no., actuator, termination and (if desired) terminal sealing options from the preceding sections. Place the option codes in the appropriate boxes of the ordering format. Some boxes may be unfilled. Write actuator color and, where applicable, frame color in word form after order number.

(Example: 9 2 0 1 J 4 7 W [] Q [] with yellow actuator and white frame).

If no color is specified, black will be supplied.

Z terminations on 9201 models or Z4 terminations on 9221 models, Q contact material and no seal are supplied if no options are specified. E epoxy terminal seal standard with Z3 and W-W4 terminations on 9201 models, not available with Z4 terminations on 9221 models.

All models UL/CSA/VDE/SEV/SEMKO listed with all options.

Note: Custom actuator markings and legends available, see inside front cover and consult factory.

HARDWARE: Two mounting screws, two nuts, two standoffs for 1/8 in. thk. panel and two lockwashers are supplied standard on panel mounted switches. Hardware for optional panel thicknesses available. See chart on page H-12 to determine correct standoff length and part no. Write part description and part no. in word form after order number. If nothing is specified, standard hardware will be supplied. Hardware is also available separately, see **HARDWARE** section, page H-12.

UNAVAILABLE OPTION COMBINATIONS:

Model or Option

9221

Z4

Options Not Available

Z, C, Z3, W-W4, E

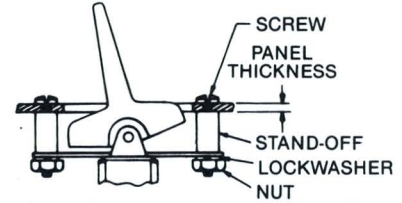
E



AVAILABLE HARDWARE

The following hardware is available separately. To order, write part nos., descriptions and colors in word form. Mounting hardware consists of two screws, two nuts, two standoffs and two lockwashers per switch. See chart.

HARDWARE P/N	MOUNTING HARDWARE		ACTUATOR OPTION
	PANEL THK.	STANDOFF LENGTH	
7706-01	1/16 in. (1,59)	.295 (7,49)	J1, J2, J3, J50, J60, J90
7706-02	3/32 in. (2,38)	.264 (6,71)	
7706-03 (Std.)	1/8 in. (3,18)	.233 (5,92)	
7750-01	1/16 in. (1,59)	.375 (9,53)	J4, J5
7750-02	3/32 in. (2,38)	.344 (8,74)	
7750-03 (Std.)	1/8 in. (3,18)	.312 (7,92)	
7707-01	1/16 in. (1,59)	.295 (7,49)	J10
7707-02	3/32 in. (2,38)	.264 (6,71)	
7707-03 (Std.)	1/8 in. (3,18)	.233 (5,92)	



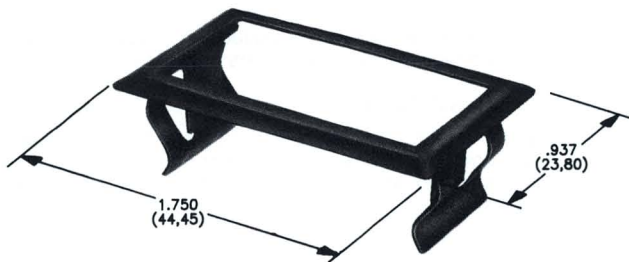
MATERIALS: SCREWS, NUTS, LOCKWASHERS- Stainless Steel. STANDOFFS- Aluminum or nylon.

FRAMES



FOR J37, J47, J57 ACTUATORS

FRAME COLORS	
P/N	FINISH
4454-1	BRIGHT CHROME
4454-2	BLACK (Std.)
4454-3	SATIN CHROME
4454-4	WHITE ENAMEL

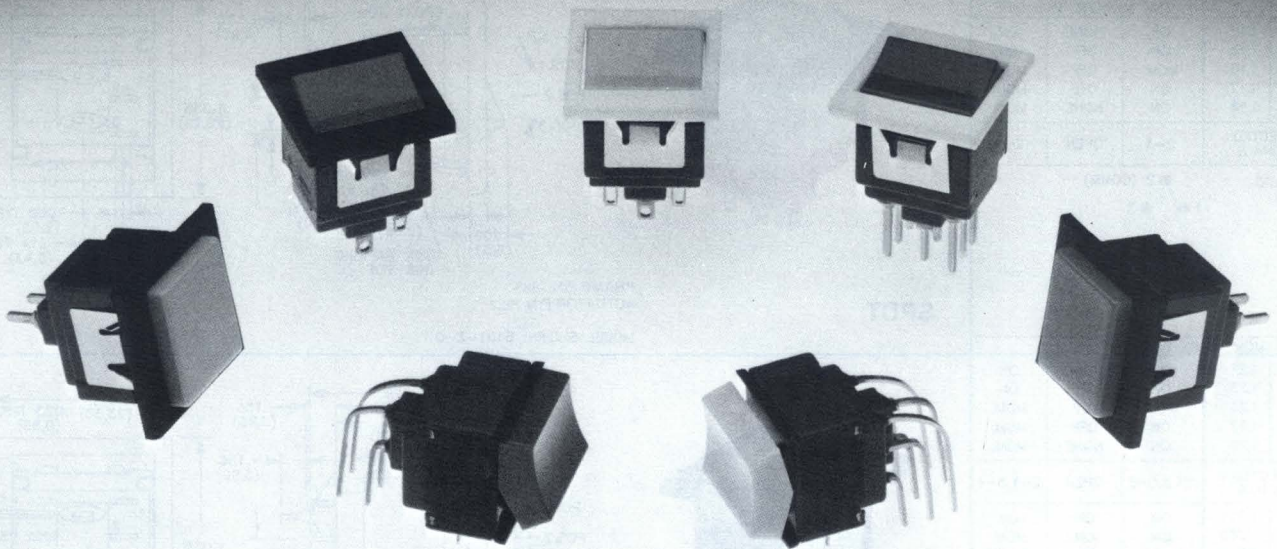


FOR J19 ACTUATOR

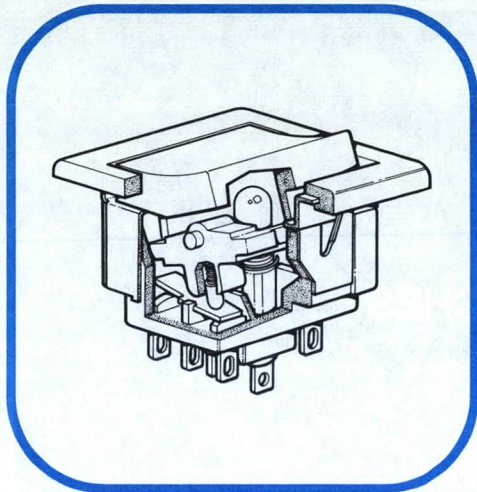
FRAME COLORS	
P/N	FINISH
7810-1	BRIGHT CHROME
7810-2	BLACK (Std.)
7810-3	SATIN CHROME
7810-4	WHITE ENAMEL

Frame snaps-in from front of panel, switch snaps to frame from rear. See page H-10 for panel opening dimensions.
Material: spring steel.

5000 SERIES ILLUMINATED ROCKER SWITCHES



SECTION J



SPECIFICATIONS

CONTACT RATING: 5 AMPS @ 120 V AC or 28 V DC; 2 AMPS @ 250 V AC.
ELECTRICAL LIFE: 100,000 make-and-break cycles at full load on all models ending in -01 (ON-NONE-ON). All other models, 40,000 cycles.
CONTACT RESISTANCE: Below 10 milliohms typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.
INSULATION RESISTANCE: 10⁹ ohms min.
DIELECTRIC STRENGTH: 1,000 V RMS min. @ sea level.
OPERATING TEMPERATURE: -30°C to 85°C.

NOTE

Specifications and Materials listed above are general specifications for switches with standard options. See option sections for additional information. Specifications available for specific models, consult factory.

MATERIALS

CASE: Diallyl phthalate (DAP).
ACTUATOR: Polycarbonate, white, std.
FRAME: Nylon, black, std.
HOUSING: Stainless steel, black passivate.
MOUNTING SPRING: Spring steel, nickel plated.
END CONTACTS: Coin silver, silver plated (Q cont. mat'l.).
CENTER CONTACT & ALL TERMINALS: Brass, silver plated (Q cont. mat'l.).
LAMP SOCKET TERMINALS: Brass, electrotin plated.

INTRODUCTION

Available options for 5000 SERIES ILLUMINATED ROCKER SWITCHES are shown on pages J-2 thru J-4. Make selections from the following option sections: Model/Switching Function, Terminations, Contact Material and (if desired) Epoxy Terminal

Seal. Each section begins with the ordering format, with the appropriate boxes enlarged. Complete HOW TO ORDER information is on page J-4. Available Indicator Light shown on page J-4. UL, CSA listings available. See HOW TO ORDER, page J-4.

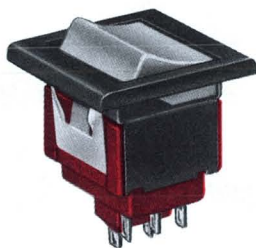
MODEL/SW. FUNC.



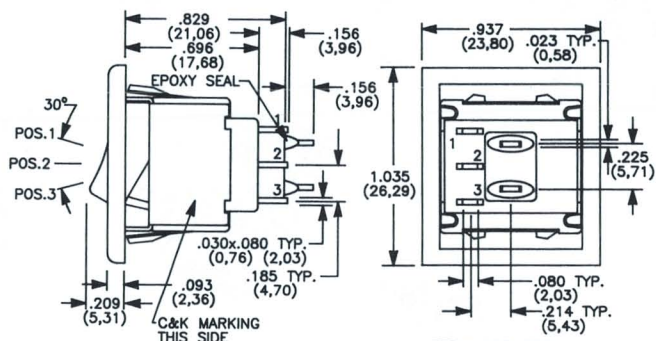
MODELS / SWITCHING FUNCTION

MODEL NO.	UL MODEL NO.	SWITCHING FUNCTION		
		POS 1	POS 2	POS 3
5101	L11	ON	NONE	ON
5103	L13	ON	OFF	ON
5105	L15	MOM.	OFF	MOM.
5107	L17	ON	OFF	MOM.
5108	L18	ON	NONE	MOM.

CONNECTED TERMINALS	2-3	OPEN	2-1
---------------------	-----	------	-----



SPDT



FRAME P/N 7888
ACTUATOR P/N 7922

MODEL SHOWN: 5101-Z-Q

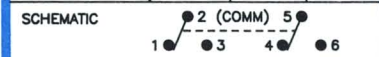
MOM. = MOMENTARY POSITION

MODEL NO.	UL MODEL NO.	POS 1	POS 2	POS 3
5201	L21	ON	NONE	ON
5203	L23	ON	OFF	ON
5205	L25	MOM.	OFF	MOM.
5207	L27	ON	OFF	MOM.
5208	L28	ON	NONE	MOM.

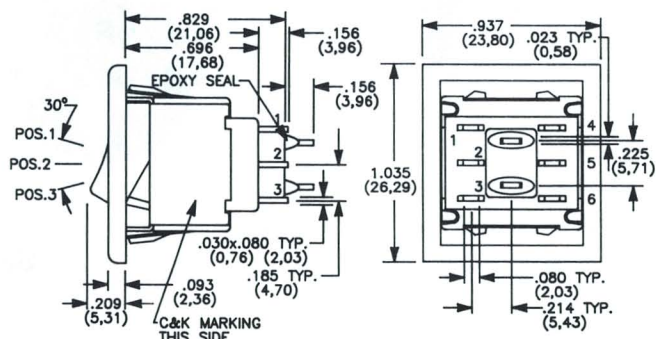
CONNECTED TERMINALS	2-3,5-6	OPEN	2-1,5-4
---------------------	---------	------	---------

5211 • 5211	ON	ON	ON
5213 • 5213	ON	ON	MOM.
5215 • 5215	MOM.	ON	MOM.

CONNECTED TERMINALS	2-3,5-6	2-3,5-4	2-1,5-4
---------------------	---------	---------	---------



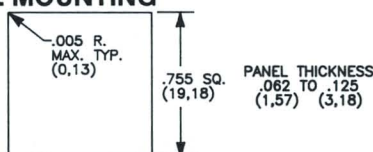
DPDT



FRAME P/N 7888
ACTUATOR P/N 7922

MODEL SHOWN: 5201-Z-Q

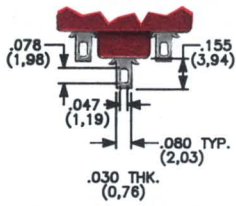
PANEL MOUNTING





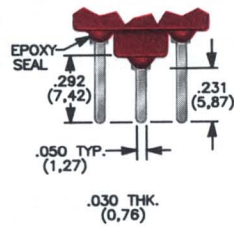
TERMINATIONS

Z (Std.)



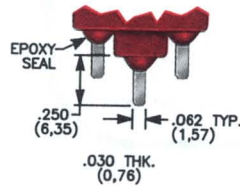
'Q' Contact Material Std.

C1



'Q' Contact Material Std.

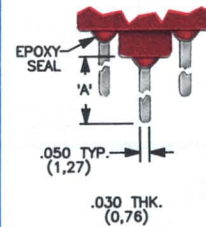
Z3 QUICK CONNECT



Mating quick connector available; order part no. 5301.

'Q' Contact Material Std.

W-W5 WIRE-WRAP

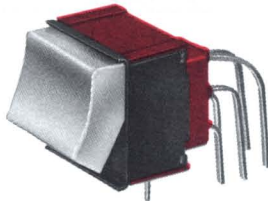


'B' Contact Material Std.

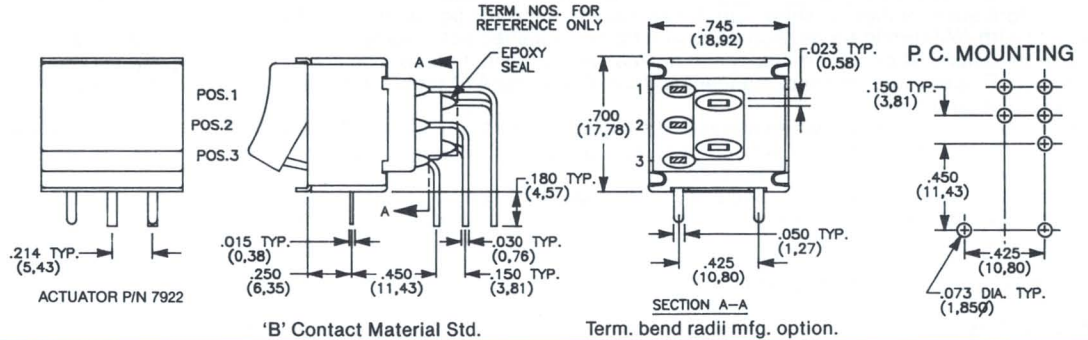
OPTION CODE	DIM. 'A'
W	.750(19,05)
W1	.964(24,48)
W3	.425(10,80)
W4	1.062(26,97)
W5	1.305(33,15)

Wire-Wrap is a registered trademark of the Gardner-Denver Company.

AV2



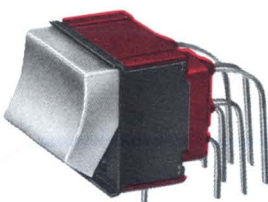
SPDT



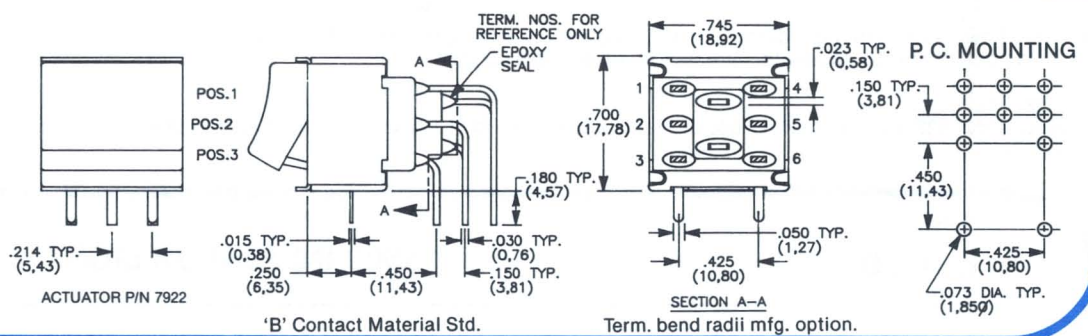
'B' Contact Material Std.

Term. bend radii mfg. option.

AV2



DPDT



'B' Contact Material Std.

Term. bend radii mfg. option.

CONT. MAT'L.

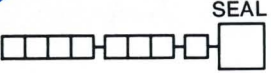


CONTACT MATERIALS

- B** CONTACTS & TERMINALS: Brass, with gold plate over nickel plate.
RATING: 0.4 VA max. @ 20 V AC or DC max.
(Std. with all termination options exc. Z, C1, Z3)
- Q** END CONTACTS: Coin silver, silver plated.
CENTER CONTACT & ALL TERMINALS: Brass, silver plated.
RATING: 5 AMPS @ 120 V AC or 28 V DC; 2 AMPS @ 250 V AC.
(Std. with termination options Z, C1, Z3)
- G** END CONTACTS: Coin silver, with gold plate over nickel plate.
CENTER CONTACT & ALL TERMINALS: Brass, with gold plate over nickel plate.
RATING: 0.4 VA max. @ 20 V AC or DC max. or 5 AMPS @ 120 V AC or 28 V DC; 2 AMPS @ 250 V AC.

Note: 'G' contact material is equivalent to both 'B' and 'Q' contact materials and can be used where either dry circuit* or power conditions are encountered. However, when the dry circuit rating is exceeded, the gold plating is removed from the contact interface and the switch cannot then be used in dry circuits. This option should be specified where UL or CSA listing is required on a switch used in a dry circuit application.

*Dry circuit = conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.



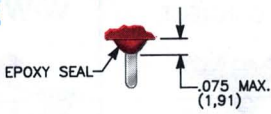
SEAL

(None)

No seal

Std. with Z terminations, not avail. with all other terminations.

E



EPOXY SEAL

.075 MAX. (1,91)

Std. with C1, Z3, W - W5, AV2 terminations.

LAMP INFORMATION

- 1.) Lamps are replaceable from front on both switches and indicators. No special tools are required.
- 2.) Bulbs are not supplied with either the switch or indicator.
- 3.) Midget Screw Base bulbs sizes T 1½ and T 1¾ fit both the switch and indicator. Suggested spherical candlepower range is .34 M.S.C.P. to .75 M.S.C.P. Instrument grade bulbs are recommended for dimensional consistency with a maximum overall length of: .635" (M.O.L.) by .200" max. O.D.

HOW TO ORDER

Complete the order number below by selecting the desired model no., termination, contact material and (if desired) terminal sealing options from the preceding sections. Place the option codes in the appropriate boxes of the ordering format. Some boxes may be unfilled. Write actuator color and, where applicable, frame color in word form after order number. (Example: L211 Z G with yellow actuator and blue frame). If no colors are specified, a white actuator and black frame will be supplied. No frame on models with **AV2** terminations. Actuators and frames supplied not installed.

Z terminations, **Q** contact material and no seal are supplied if no options are specified. **E** epoxy terminal seal standard with **Z3**, **W-W5** and **AV2** terminations and all bulb socket terminals.

UL listed with all options when ordered with model nos. **L11** thru **L28** or **5211** thru **5215**, and **G** or **Q** contact material. CSA listing available on all UL listed switches, specify 'with CSA listing' in word form after order number.

Note: Bulbs are not furnished. See LAMP INFORMATION above.

Note: Custom markings and legends available, see inside front cover and consult factory.

UNAVAILABLE OPTION COMBINATIONS:

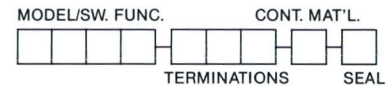
Model or Option
L11 thru L28

Options Not Available
B*

* UL listed switches must be ordered with G or Q contact material because UL considers for listing only those components suitable for power applications.

COLOR NO.	FRAME COLORS
1	White
2	Black(Std.)
3	Red
4	Orange
5	Yellow
6	Green
7	Blue
8	Brown
9	Gray

COLOR NO.	ACTUATOR/ LENS COLORS
1	White (Std.)
3	Red
4	Orange (Amber)
5	Yellow
6	Green




HARDWARE

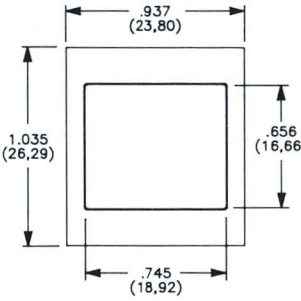
Actuator, P/N 7922 and frame, P/N 7888 available separately. To order, write desired part no., description and color. See color charts above.

MODEL NO.

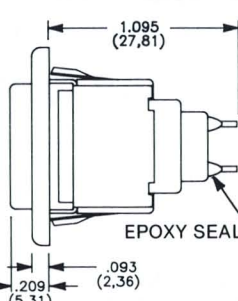
5 6 0 0

5600 INDICATOR LIGHT

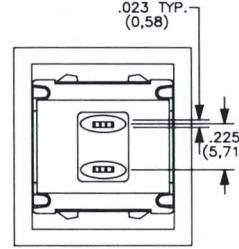




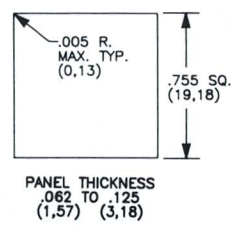
FRAME P/N 7888
LENS P/N 7952



EPOXY SEAL



PANEL MOUNTING



PANEL THICKNESS
.062 TO .125
(1,57) (3,18)

MODEL SHOWN: 5600-C

INDICATOR LIGHT: HOW TO ORDER

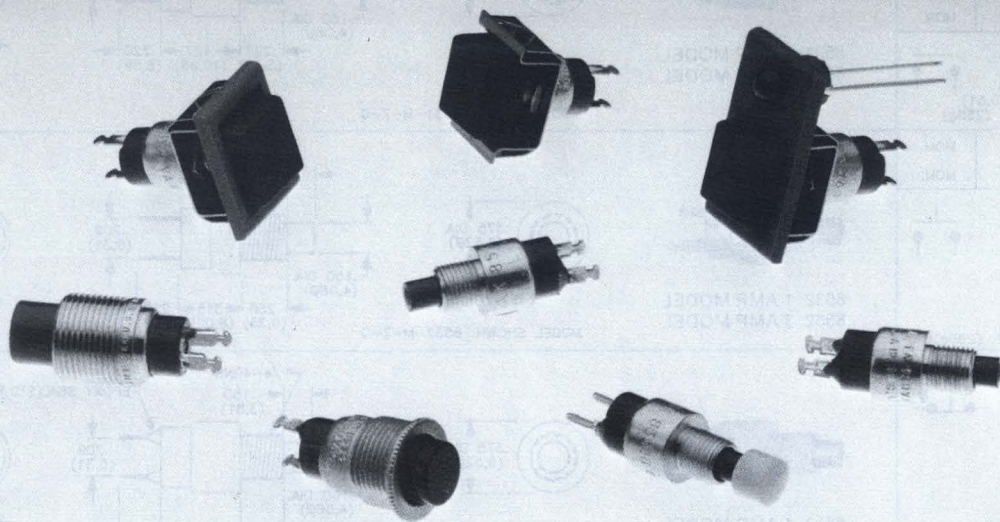
Specify model no. **5600** and desired termination option. Indicator light available with **Z**, **C**, **Z3** or **W-W4** terminations. Write lens color and frame color in word form after order number. (Example: 5600 C with orange lens and blue frame).

If no color is specified, a white lens and black frame will be supplied. **Z** terminations and epoxy terminal seal supplied std.

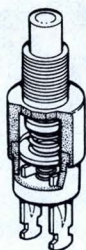
Note: Bulbs not furnished. See LAMP INFORMATION above. Lens, P/N 7952 and frame, P/N 7888 available separately. To order, write desired part no., description and color. See color charts above. Lenses and frames supplied not installed.



8500 SERIES SUBMINIATURE PUSHBUTTON SWITCHES



SECTION K



SPECIFICATIONS

CONTACT RATING: 853X Models: 1 AMP @ 120 V AC or 28 V DC.
855X Models: 3 AMPS @ 120 V AC or 28 V DC.

ELECTRICAL LIFE: 853X Models: 250,000 actuations at full load.
855X Models: 10,000 actuations at full load.

CONTACT RESISTANCE: Below 30 milliohms typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE: 10⁹ ohms min.

DIELECTRIC STRENGTH: 1,000 V RMS min. @ sea level.

OPERATING TEMPERATURE: -30°C to 65°C.

MATERIALS

CASE: Glass filled phenolic or diallyl phthalate (DAP).

PLUNGER: Phenolic or glass filled polyester, black, std.

BUSHING: Brass, nickel plated.

CONTACTS: Coin silver, silver plated (Q cont. mat'l.).

TERMINALS: Brass, silver plated (Q cont. mat'l.).

HARDWARE: Nut- Brass, nickel plated.
Lockwasher- Steel, bright nickel plated.

NOTE

Specifications and Materials listed above are general specifications for switches with standard options. See option sections for additional information. Specifications available for specific models, consult factory.

INTRODUCTION

Available options for 8500 SERIES SUBMINIATURE PUSHBUTTON SWITCHES are shown on pages K-2 thru K-4. Make selections from the following option sections: Model/Switching Function, Actuator or Plunger, Terminations, Contact Material and (if desired) Epoxy Terminal Seal. Each section

begins with the ordering format, with the appropriate boxes enlarged. Complete HOW TO ORDER information is on page K-4. Available hardware and accessories shown on page K-4. UL listed with all options when ordered with G or Q contact material. See HOW TO ORDER, page K-4.

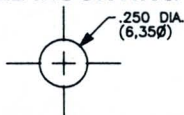
MODEL/SW. FUNC.

8	5						
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MODELS / SWITCHING FUNCTION

MODEL NO.	SWITCHING FUNC.		SCHEMATIC	MODEL SHOWN	DIMENSIONS	TERMINALS
	POS 1	POS 2				
8531 8551	OFF OFF	MOM. MOM.		8531: 1 AMP MODEL 8551: 3 AMP MODEL		
8532 8552	OFF OFF	MOM. MOM.		8532: 1 AMP MODEL 8552: 3 AMP MODEL		
8533	ON	MOM.		8533: 1 AMP MODEL		
8534	ON	MOM.		8534: 1 AMP MODEL		

PANEL MOUNTING



ACTUATORS / PLUNGERS

Select desired option from available actuators below OR plungers, next page.
Available cap and frame colors shown right, black std. Plungers available in black and red only, black std. Add plunger or cap and frame colors in word form after order number. If no color is specified, black will be supplied.

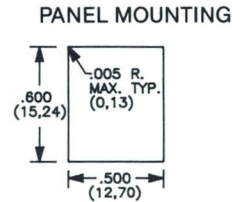
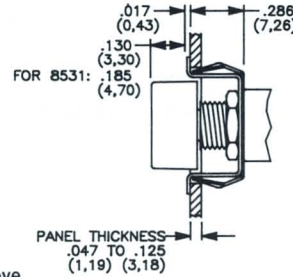
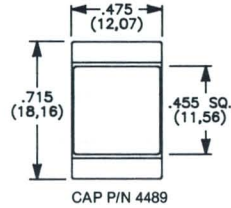
CAP AND FRAME COLORS			
1	White	6	Green
2	Black(Std.)	7	Blue
3	Red	8	Brown
4	Orange	9	Gray
5	Yellow		

ACTUATOR OR PLUNGER



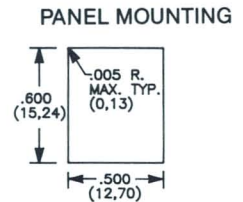
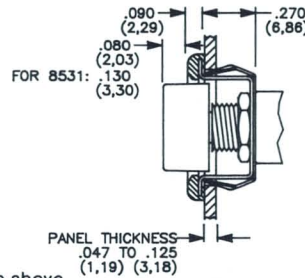
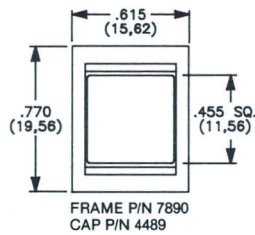
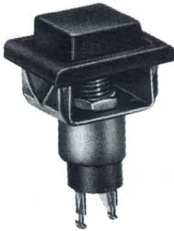
ACTUATORS

J80



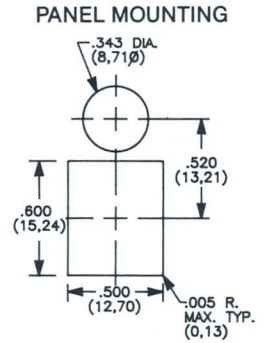
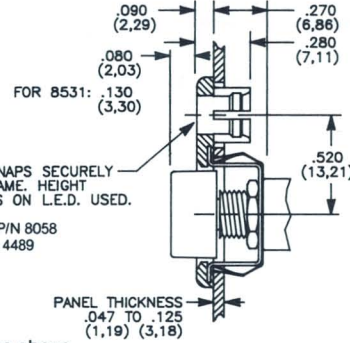
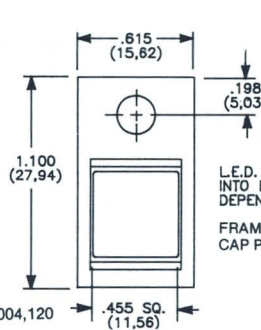
Cap finish: matte; available colors, see above.

J81



Cap and frame finish: matte; available colors, see above.

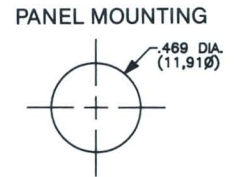
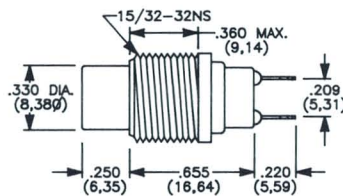
J82



L.E.D. NOT INCLUDED. FOR L.E.D. INFORMATION, SEE PAGE A-25.

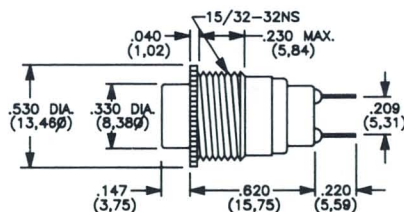
Cap and frame finish: matte; available colors, see above.

T



Cap finish: gloss; available colors, see above.

T1



8532, 8534 MODELS ONLY

Cap finish: gloss; available colors, see above.

ACTUATOR OR PLUNGER

PLUNGERS

M (Std.)

S

Black plunger std., red available. Add plunger color in word form after order number. If no color is specified, black will be supplied.

TERMINATIONS

TERMINATIONS

Z (Std.)

C

'Q' Contact Material Std.

CONT. MAT'L.

CONTACT MATERIALS

B CONTACTS & TERMINALS: Brass, with gold plate over nickel plate. RATING: 0.4 VA max. @ 20 V AC or DC max.

Q CONTACTS: Coin silver, silver plated. TERMINALS: Brass, silver plated. RATING: 853X Models: 1 AMP @ 120 V AC or 28 V DC. 855X Models: 3 AMPS @ 120 V AC or 28 V DC. (Std. with all term. options)

G CONTACTS: Coin Silver, with gold plate over nickel plate. TERMINALS: Brass, with gold plate over nickel plate. RATING: 853X Models: 0.4 VA max. @ 20 V AC or DC max. or 1 AMP @ 120 V AC or 28 V DC. 855X Models: 0.4 VA max. @ 20 V AC or DC max. or 3 AMPS @ 120 V AC or 28 V DC.

Note: 'G' contact material is equivalent to both 'B' and 'Q' contact materials and can be used where either dry circuit* or power conditions are encountered. However, when the dry circuit rating is exceeded, the gold plating is removed from the contact interface and the switch cannot then be used in dry circuits. This option should be specified where UL listing is required on a switch used in a dry circuit application.

*Dry circuit = conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

SEAL

SEALING

(None)

No seal

Std. with 8531, 8532, 8551, 8552 models. Not avail. with 8533, 8534 models.

E

EPOXY SEAL

Std. on 8533, 8534 models.

HOW TO ORDER

Complete the order number below by selecting the desired model no., actuator or plunger, termination and contact material options from the preceding sections. Place the option codes in the appropriate boxes of the ordering format. Some boxes may be unfilled. (Example: 8531-S-C-B).

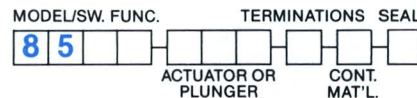
For epoxy terminal seal on 8531, 8532, 8551, models, specify 'E' in SEAL box, for no seal, leave box empty. Epoxy seal standard on 8533, 8534 models.

M plunger (black), Z terminations and Q contact material are supplied if no options are specified. One mounting nut and lockwasher are supplied standard, where applicable (except T actuator option: two mounting nuts and lockwasher supplied standard). Where applicable, add plunger, cap and frame colors in word form after order number. (Example: 8531-T-Z-Q-E with red cap). If no color is specified, black will be supplied. UL listed when ordered with G or Q contact material.

UNAVAILABLE OPTION COMBINATIONS

Model or Option
8531, 8533, 8551

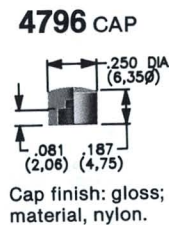
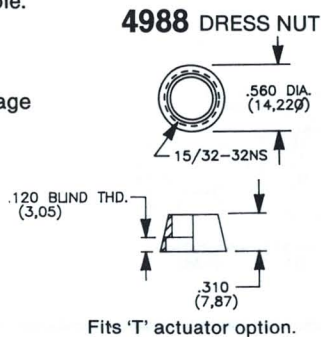
Options Not Available
T1



AVAILABLE HARDWARE

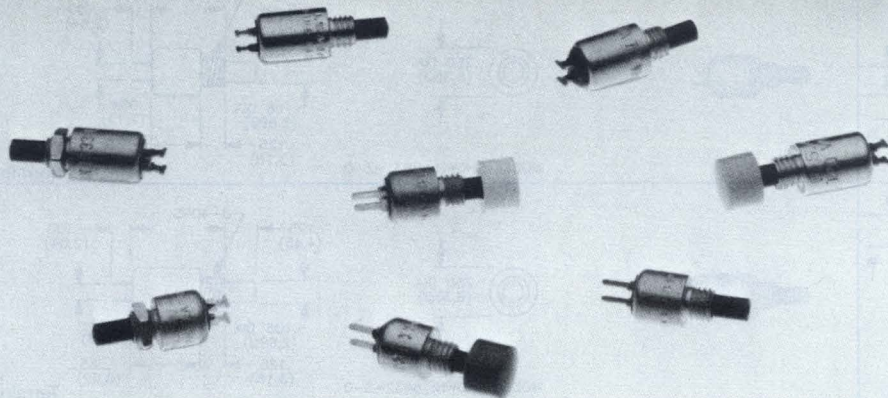
The following hardware is available separately. For illustrations and dimensions of parts not shown, see pages noted. To order, write part nos., descriptions and colors where applicable.

NUTS: 7002, 7071 (see page A-13)
LOCKWASHERS: 7003-2, 7003-3 (see page A-13)
WRENCH: 7785 (see page A-13)
FRAMES: 7890, 8058 (see page K-3)

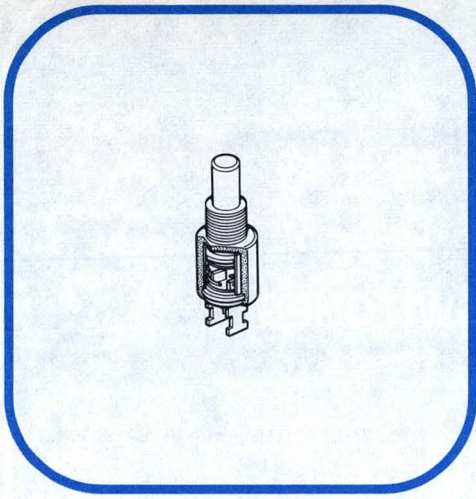


CAP AND FRAME COLORS	
1	White
2	Black(Std.)
3	Red
4	Orange
5	Yellow
6	Green
7	Blue
8	Brown
9	Gray

8600 SERIES MICROMINIATURE PUSHBUTTON SWITCHES



SECTION L



SPECIFICATIONS

CONTACT RATING:
 8631, 8632 models: 500 mA @ 120 V AC or 28 V DC; 250 mA @ 250 V AC.
 8633 model: 250 mA @ 120 V AC or 28 V DC; 125 mA @ 250 V AC.

ELECTRICAL LIFE:
 8631, 8633 models: 250,000 actuations at full load.
 8632 model: 100,000 actuations at full load.

CONTACT RESISTANCE: Below 30 milliohms typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE: 10⁹ ohms min.

DIELECTRIC STRENGTH: 500 V RMS min. @ sea level.

OPERATING TEMPERATURE: -30°C to 65°C.

MATERIALS

CASE: Glass filled phenolic or diallyl phthalate (DAP).

PLUNGER: Glass filled nylon or glass filled polyester, black, std.

BUSHING: Brass, nickel plated.

CONTACTS: Coin silver, silver plated (Q cont. mat'l.).

TERMINALS: Brass, silver plated (8633 models: coin silver). 8631, 8632 models: terminals insert molded.

HARDWARE: Nut- Brass, nickel plated.

NOTE

Specifications and Materials listed above are general specifications for switches with standard options. See option sections for additional information. Specifications available for specific models, consult factory.

INTRODUCTION

Available options for 8600 SERIES MICROMINIATURE PUSHBUTTON SWITCHES are shown on pages L-2 and L-3. Make selections from the following option sections: Model/Switching Function, Terminations, Contact Material and

(if desired) Epoxy Terminal Seal. Each section begins with the ordering format, with the appropriate boxes enlarged. Complete HOW TO ORDER information is on page L-3. Available hardware and accessories shown on page L-3.

8631, 8632 models UL listed when ordered with G or Q contact material. See HOW TO ORDER, page L-3.

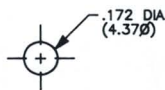
MODEL/SW. FUNC.

8	6	3			
---	---	---	--	--	--

MODELS / SWITCHING FUNCTION

MODEL NO.	SWITCHING FUNC.		SCHEMATIC	MODEL SHOWN	DIMENSIONS	TERMINALS
	POS 1	POS 2				
8631	OFF	MOM.				
8632	OFF	MOM.				
8633	ON	MOM.				

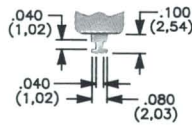
PANEL MOUNTING



TERMINATIONS



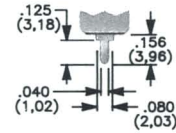
Z (Std.)



'Q' Contact Material Std.

TERMINATIONS

C



'Q' Contact Material Std. Available with 8631, 8632 models only.

CONT. MAT'L.



CONTACT MATERIALS

- B** CONTACTS & TERMINALS: Brass, with gold plate over nickel plate.
RATING: 0.4 VA max. @ 20 V AC or DC max.
- Q** CONTACTS: Coin silver, silver plated.
TERMINALS: Brass, silver plated (exc. 8633: coin silver).
RATING: 8631, 8632 models: 500 mA @ 120 V AC or 28 V DC; 250 mA @ 250 V AC.
8633 models: 250 mA @ 120 V AC or 28 V DC; 125 mA @ 250 V AC (Std. with all termination options)
- G** CONTACTS: Coin Silver, with gold plate over nickel plate.
TERMINALS: Brass, with gold plate over nickel plate (exc. 8633: coin silver, with gold plate over nickel plate).
RATING: 0.4 VA max. @ 20 V AC or DC max. or
8631, 8632 models: 500 mA @ 120 V AC or 28 V DC; 250 mA @ 250 V AC.
8633 models: 250 mA @ 120 V AC or 28 V DC; 125 mA @ 250 V AC

Note: 'G' contact material is equivalent to both 'B' and 'Q' contact materials and can be used where either dry circuit* or power conditions are encountered. However, when the dry circuit rating is exceeded, the gold plating is removed from the contact interface and the switch cannot then be used in dry circuits. This option should be specified where UL listing is required on a switch used in a dry circuit application.

*Dry circuit = conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

SEAL

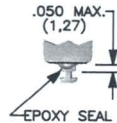


SEALING

(None)

No seal — std.

E



Available on 8633 models only.

HOW TO ORDER

Complete order number below by selecting the desired model no., termination and contact material options from the preceding sections. Place the option codes in the appropriate boxes of the ordering format. Write plunger color (black or red) in word form after order number. (Example: 8633-Z-B with red plunger). If no color is specified, black will be supplied.

E epoxy terminal seal option avail. on 8633 model only, specify 'E' in SEAL box, for no seal, leave box empty. Terminals insert molded on 8631, 8632 models, and E epoxy terminal seal not required. Black plunger and Q contact material are supplied if no options are specified. One mounting nut is supplied standard. C printed circuit termination option avail. on 8631, 8632 models only.

8631, 8632 models UL listed when ordered with G or Q contact material.



UNAVAILABLE OPTION COMBINATIONS

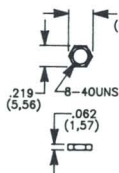
Model or Option
8631, 8632
8633

Options Not Available
E (not req'd., terms. insert molded)
C

AVAILABLE HARDWARE

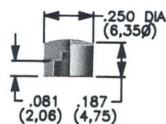
The following hardware is available separately. To order, write part nos., descriptions and colors where applicable.

7752 NUT



Material: brass, nickel plated.

7851 CAP



Cap finish; gloss; material, nylon.

CAP COLORS

1	White	6	Green
2	Black(Std.)	7	Blue
3	Red	8	Brown
4	Orange	9	Gray
5	Yellow		



TERMINATIONS

TERMINATIONS

TERMINATIONS

TERMINATIONS

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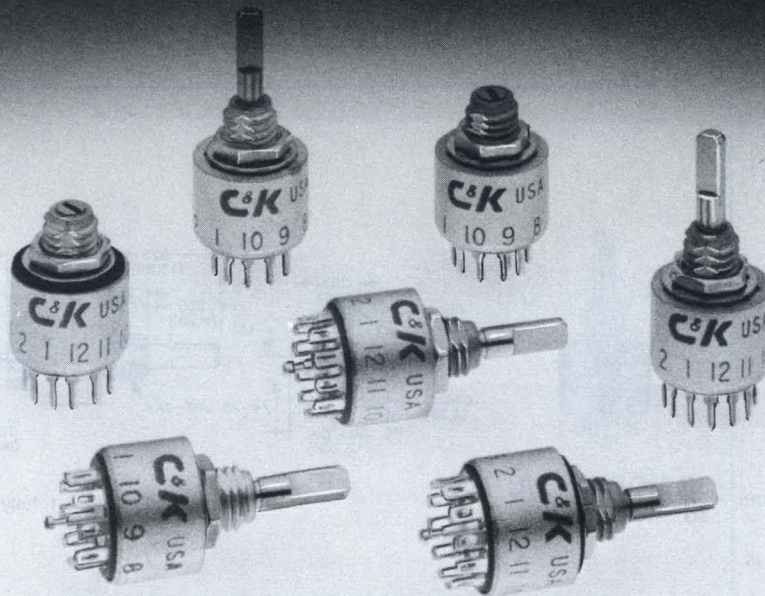
TERMINATIONS

TERMINATIONS

TERMINATIONS

TERMINATIONS

M SERIES HALF-INCH ROTARY SWITCHES



SECTION M

MODEL/SW. FUNC.



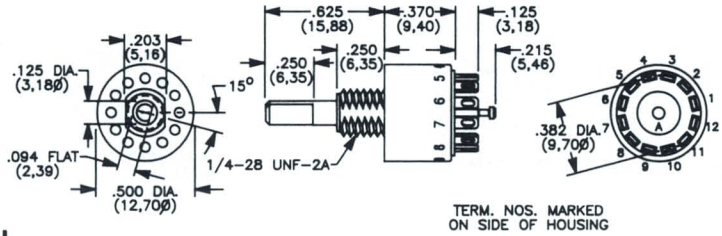
MODELS / SWITCHING FUNCTION (cont'd.)

MODEL NO.	SW. FUNCTION
MC00	SP 12 POS. No Stops
MC02	SP 2 POS.
MC03	SP 3 POS.
MC04	SP 4 POS.
MC05	SP 5 POS.
MC06	SP 6 POS.
MC07	SP 7 POS.
MC08	SP 8 POS.
MC09	SP 9 POS.
MC10	SP 10 POS.
MC11	SP 11 POS.
MC12	SP 12 POS.

All above models 30° indexing. Number of positions or stops preset at factory (Note: MC00 models have full 360° rotation with no stops. Stop pins supplied for user-selectable stops). All terminals present regardless of number of switch positions.



SP MODELS WITH 30° INDEXING



Actuator shown in POS.1, fully CCW.

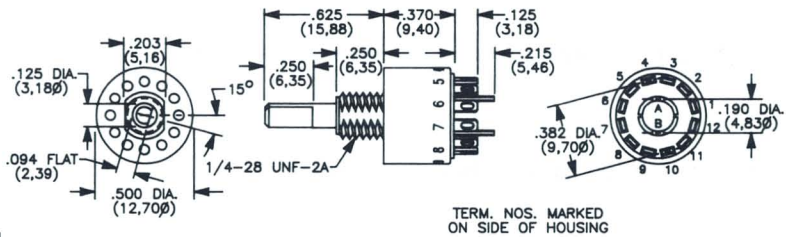
MODEL SHOWN: MC00-L1-N-Z-Q

MODEL NO.	SW. FUNCTION
MD00	DP 6 POS. No Stops
MD02	DP 2 POS.
MD03	DP 3 POS.
MD04	DP 4 POS.
MD05	DP 5 POS.
MD06	DP 6 POS.

All above models 30° indexing. Number of positions or stops preset at factory (Note: MD00 models have full 360° rotation with no stops. Stop pins supplied for user-selectable stops). All terminals present regardless of number of switch positions.



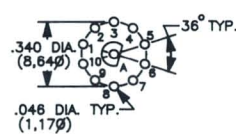
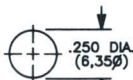
DP MODELS WITH 30° INDEXING



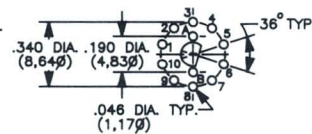
Actuator shown in POS.1, fully CCW.

MODEL SHOWN: MD00-L1-N-Z-Q

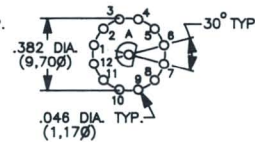
PANEL MOUNTING



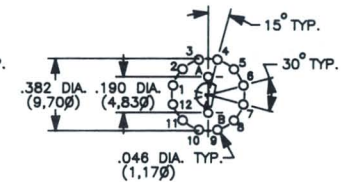
SP MODELS WITH 36° INDEXING



DP MODELS WITH 30° INDEXING

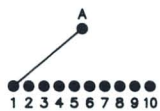


SP MODELS WITH 30° INDEXING

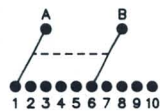


DP MODELS WITH 30° INDEXING

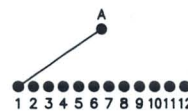
SCHEMATICS



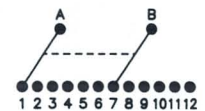
SP MODELS WITH 36° INDEXING



DP MODELS WITH 36° INDEXING



SP MODELS WITH 30° INDEXING



DP MODELS WITH 30° INDEXING

Terminal nos. marked on side of housing. Actuators and schematics shown in pos. 1. All terminals present regardless of number of switch positions.

ACTUATORS

ACTUATOR

ACTUATORS

L1 (Std.)

L2

L3

All actuators shown in pos. 1.

SHORTING / NON-SHORTING CONTACTS

SHORTING/
NON-SHORTING

SHORTING / NON-SHORTING CONTACTS

N (Std.) Non-shorting contacts — break before make.

S Shorting contacts — make before break.

TERMINATIONS

TERMINATIONS

TERMINATIONS

Z (Std.)

SP

DP

C

SP

DP

Terminals insert molded. All terminals present regardless of number of switch positions.



CONTACT MATERIALS

- Q** MOVABLE CONTACT: Non-shorting—Brass, silver plated.
Shorting—Zinc alloy, silver plated.
STATIONARY CONTACTS & TERMINALS: Brass, silver plated.
RATING: Switch—250 mA @ 125 V AC or 28 V DC.
Carry—6 AMPS continuous. (Std. with all termination options)
- G** MOVABLE CONTACT: Non-shorting—Brass, with gold plate over nickel plate over silver plate.
Shorting—Zinc alloy, with gold plate over nickel plate over silver plate.
STATIONARY CONTACTS & TERMINALS: Brass, with gold plate over nickel plate over silver plate.
RATING: 0.4 VA max. @ 20 V AC or DC max. or
Switch—250 mA @ 125 V AC or 28 V DC.
Carry—6 AMPS continuous.

Note: 'G' contact material is equivalent to both 'B' and 'Q' contact materials and can be used where either dry circuit* or power conditions are encountered. However, when the dry circuit rating is exceeded, the gold plating is removed from the contact interface and the switch cannot then be used in dry circuits.

*Dry circuit = conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

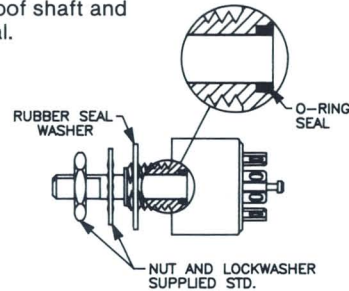


SEALING

(None)

No seal — Std.

F Splashproof shaft and panel seal.

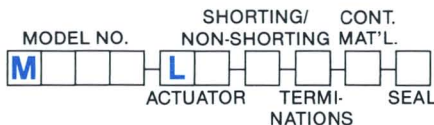


HOW TO ORDER

Complete the order number below by selecting the desired model no., actuator, shorting or non-shorting contacts, termination, contact material and (if desired) sealing options. Place the option codes in the appropriate boxes of the ordering format. Some boxes may be unfilled. (Example: **MA05-L2-S-C-G-**).

For sealing option, specify **F** in SEAL box, for no seal, leave box empty. **L1** actuator, **N** non-shorting contacts, **Z** terminations, **Q** contact material and no seal are supplied if no options are specified. One hex mounting nut and lockwasher are supplied standard, not installed.

Note: Number of positions or stops are pre-set at factory. **MA00**, **MB00**, **MC00** and **MD00** models have full 360° rotation with no stops. Stop pins are supplied for user-selectable stops. See SETTING STOPS, page M-6, for installation instructions.



SETTING STOPS**MA00, MB00, MC00, MD00 MODELS ONLY:**

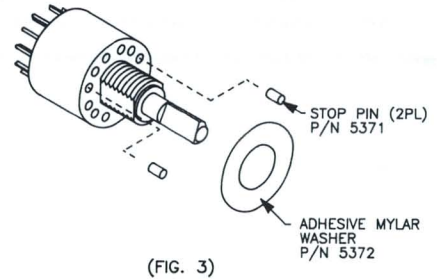
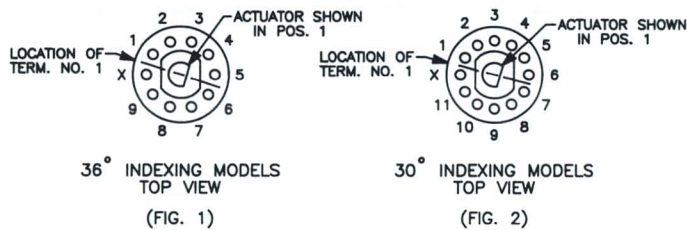
The number of switch positions or stops is adjustable by means of stop pins provided with each switch. Switches are normally shipped with stop pins and hardware in bulk, not installed. Without stop pins, switches have full 360° rotation and no stops. Note that all two pole models begin to repeat when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

To set stops, refer to figs. 1 & 2. 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. 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 fig. 3.

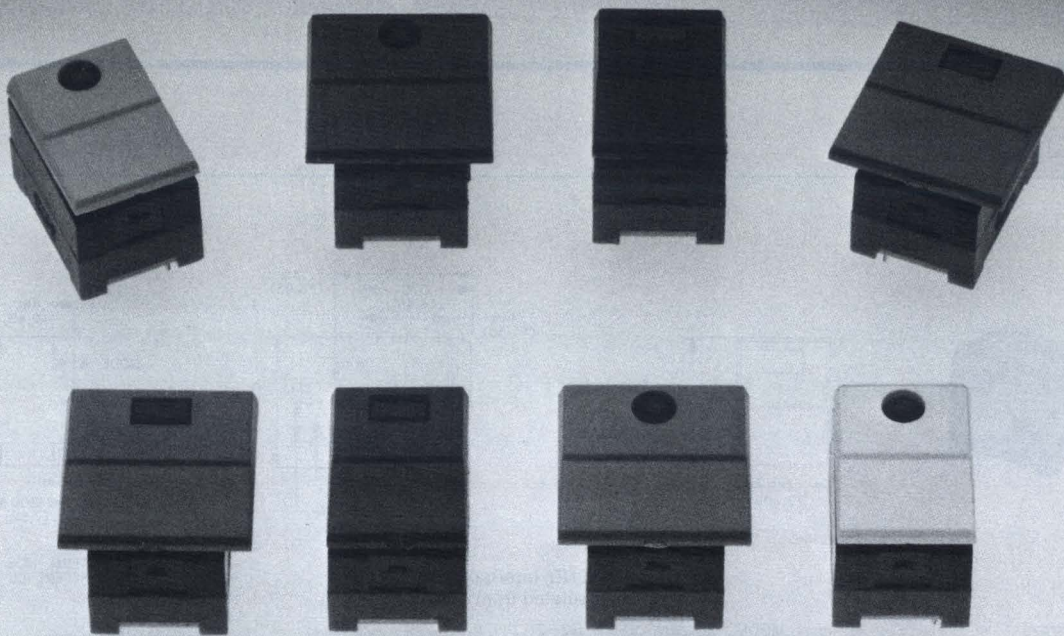
ALL OTHER MODELS:

All models except MA00, MB00, MC00, MD00 have number of switch positions or stops pre-set at factory and are not adjustable.

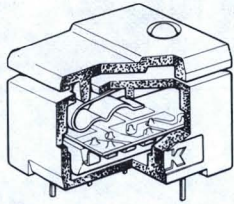


SS SERIES

SOLID STATE PUSHBUTTON SWITCHES



SECTION N



SPECIFICATIONS

SWITCHING FUNCTION: SPDT,
Momentary or alternate action, user
choice with jumper in external
circuit.

OPERATING TEMPERATURE: 0°C to
70°C.

OPERATING FORCE: 150 grams typ.
See complete SPECIFICATIONS and
RATINGS, PAGE N-4.

- Self Contained Electronics
- Logic Compatible Circuit
- User Selectable Operation —
Momentary or Maintained
- Bounce-Free Outputs

MATERIALS

CASE: Glass filled nylon.

CAP: Polycarbonate - ABS blend
(UL 94V-0), matte finish, 8 colors
available, black std.

TERMINALS: Solder clad, insert molded.

- Wide Supply Voltage Range
- DIP Pattern Compatible
- Built-In Internally Connected L.E.D.
for Status Indication

INTRODUCTION

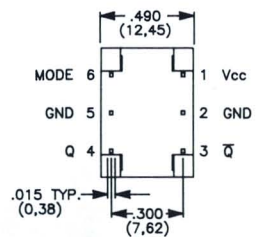
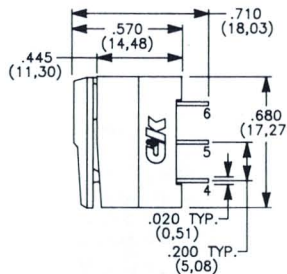
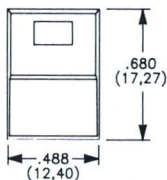
Available options for SS SERIES SOLID STATE
PUSHBUTTON SWITCHES are shown on pages N-2
thru N-4. Make selections from the following option
sections: Model/Switching Function, Cap Style, Cap
Color and L.E.D. Color. Each section begins with the

ordering format, with the appropriate boxes enlarged.
Complete HOW TO ORDER information is on page
N-4. Available caps, which may be user-installed,
shown on page N-3.

MODEL NO.



MODEL



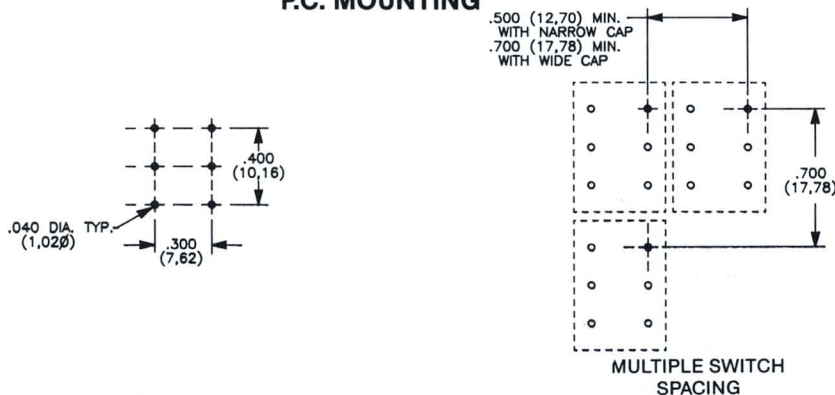
Terminals 2, 5 (GND) internally connected.
All terminals insulated from case.

TERM. NOS. FOR
REFERENCE ONLY

U.S. PAT. NO. 4,379,973

MODEL SHOWN: SS01-R2-2-1

P.C. MOUNTING



CAP STYLE

CAP STYLES

<p>R1</p> <p style="text-align: center;">(P/N 4779)</p>	<p>R2</p> <p style="text-align: center;">(P/N 4780)</p>
<p>S1</p> <p style="text-align: center;">(P/N 4781)</p>	<p>S2</p> <p style="text-align: center;">(P/N 4782)</p>

The above cap styles are available in 8 colors, black std. (see chart). Caps snap in place and may be factory installed, installed by user or replaced in the field without special tools. Caps can be ordered separately by specifying the 4 digit P/N and color. Switches are also available without caps. See HOW TO ORDER, page N-4. Cap finish: matte.

CAP COLOR

CAP COLORS

Select desired cap color from chart and place the option code in the appropriate box of the ordering format. If no color is specified, black will be supplied. Caps can be ordered separately by specifying the 4 digit P/N and color. Cap finish: matte.

OPTION CODE	CAP COLORS
1	White
2	Black(STD)
3	Red
4	Orange
5	Yellow
6	Green
7	Blue
9	Gray

L.E.D. COLOR

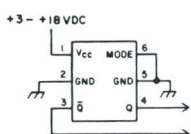
L.E.D. COLORS

L.E.D.s are available in 2 styles and 3 colors, red std. (see chart). Select desired color and place option code in the appropriate box of the ordering format. If no color is specified, red will be supplied. Round or rectangular style is determined by cap selection. L.E.D.'s are internally connected to I.C., and no external circuitry is required.

OPTION CODE	L.E.D. COLOR
3	Red (Std.)
5	Yellow
6	Green

TYPICAL APPLICATIONS

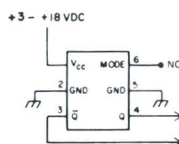
MOMENTARY



Truth Table - Momentary
(mode pin ground)

Power	Q	Q̄
0	0	1
0	0	1
D	1	0
0	0	1

ALTERNATE ACTION

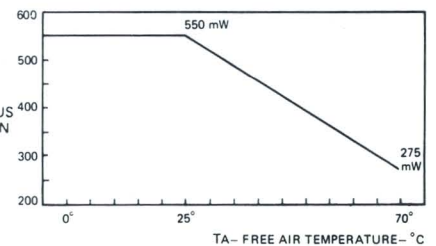


Truth Table - Alternate
Action (mode pin open)

Power	Q	Q̄
0	0	1
0	0	1
D	1	0
0	0	1

MAXIMUM CONTINUOUS DISSIPATION - mW

DISSIPATION DERATING CURVE



(See specifications, page N-4)

Note: 1 = High 0 = Low/Open D = Depressed

States Q, Q̄ are for identification of outputs. "POWER" indicates status of switch at turn-on without depression of the Switch Cap.

FUNCTIONAL DESCRIPTION

The custom integrated circuit provides all of the "cleaning" functions necessary to interface the switch directly to user logic. The mechanical switching assembly, a single pole double throw contact spring, is connected to the input of a conventional R-S flip-flop to provide positive debounce. The low input current requirement and large voltage compliance of the flip-flop allow a low-force long life switch design.

Depending upon the status of the mode pin, the signal out of the debounce circuitry is directed to a divide-by-two flip-flop (for alternate action operation) or directly to the output drivers (for momentary operation). Positive output of the circuit is provided by the use of current-mirror circuitry, achieving the closest possible tracking of the supply over a large output range and minimum standby current requirements. Sufficient current sink capability is maintained via large area devices to drive a minimum of 10 TTL

style loads. The I.C. also supplies regulated current to an integral L.E.D. display.

Power up circuitry insures that the status of the switch is determined at the time of system turn-on. The 'Q' output is in the 'OFF' (low level) state. The opposite logic condition exists at the 'Q̄' output, due to internal inversion and duplication of the power output stage. The two outputs are loaded independently, and are capable of driving full loads simultaneously. Short circuits to either the supply or ground are permitted for indefinite periods at the outputs without interference to normal operation since the output pins are totally buffered from the switching input section. In fact, operation at normal logic levels is possible from one output even when the other output is shorted. A linked short at the ground terminals reduces the complication of board layout for mounting of multiple switch units.

SPECIFICATIONS

ABSOLUTE MAXIMUM RATINGS—FREE AIR OPERATION (unless noted)*

Supply Voltage	18v
Output Voltage	$V_{cc} - .8$
Output Sink Current	25 mA
Continuous Total Dissipation (at 25°C free air temp.)**	550 mW
Operating Free Air Temperature	0° to 70°C
Storage Temperature	-55° to 125°C
Lead Temperature 1/16 in. from case 10 sec.	300°C
Lead Temperature 1/16 in. from case 60 sec.	250°C

RECOMMENDED OPERATING CONDITIONS

	MIN.	NOM.	MAX.	UNIT
Supply Voltage, V_{cc}	3.0	5 - 16	18	V
High Level Output Current I_{OH}	-5.0	-9.0	—	mA
Low Level Output Current, I_{OL}	20	25	—	mA
Operating Free Air Temperature	0°	25°	70°	°C

ELECTRICAL CHARACTERISTICS @ 25°C

PARAMETER	MIN.	TYP.	MAX.	UNIT
V_{OH} (high level output at 3,4)	$V_{cc} - 1$	$V_{cc} - .5$	—	V
V_{OL} (low level output at 3,4)	—	0.5	0.8	V
I_{CCO} (standby current L.E.D. off)	—	8	12	mA
I_{CCD} (circuit current L.E.D. on)	20	25	30	mA
I_m (mode pin current)	—	1.5	2.5	mA
V_m (voltage at mode pin for momentary function)	—	.8	1.1	V
I_{OSH} (output short circuit high)	-5	-9	—	mA
I_{OSL} (output short circuit low)	25	32	—	mA
Short Circuit Duration†	Either output to V_{cc} or ground indefinitely			
Operating Force	100	150	300	grams

*All values with respect to ground (terminals 2,5).

**For operation above 25°C, see derating curve, Page N-3.

†Not more than one output should be shorted at a time.

NOTE: Negative values indicate current out of a terminal, positive, current in.

HOW TO ORDER

Complete the order number below by selecting the desired cap style, cap color no. and L.E.D. color no. from the preceding sections. Place the option codes in the appropriate boxes of the ordering format. Note that L.E.D. style is determined by cap selection.

(Example: **S****S****0****1**—**R****2**—**4**—**5**). If no colors are specified, a black cap and red L.E.D. will be supplied. **R1** cap (black) and round red L.E.D. are supplied if no options are specified.

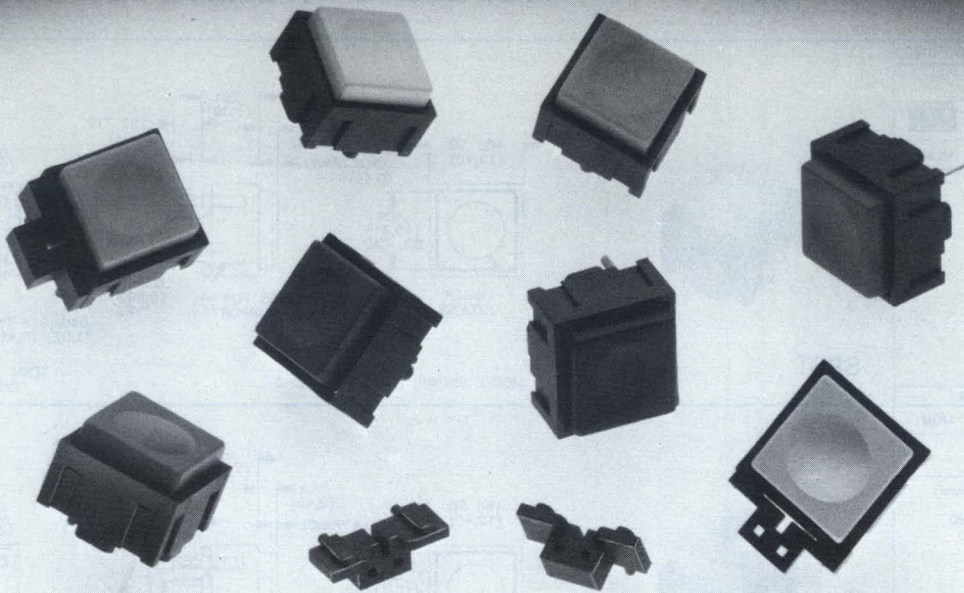
SWITCH WITHOUT CAP: Switches are also available without caps. Place **01** in CAP STYLE ordering boxes for switch with round L.E.D.; **02** for switch with rectangular L.E.D. Indicate L.E.D. color code as above. (Example: **S****S****0****1**—**0****2**—**□**—**3**).

Custom cap markings are available, see inside front cover and consult factory.

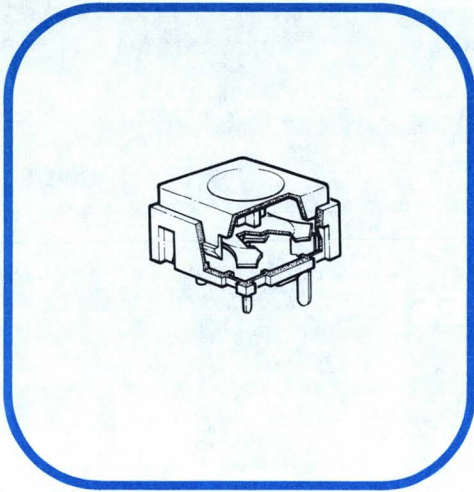
CAPS: Caps are also available separately and may be user-installed. Select desired cap color from chart, page N-3. When ordering, write cap part no. and color in word form.



KS SERIES PUSHBUTTON KEY SWITCHES



SECTION 0



SPECIFICATIONS

CONTACT RATING: 25 mA max. @ 50 V AC or DC max.
 MECHANICAL LIFE: 100,000 actuations.
 CONTACT RESISTANCE: Below 20 milliohms typ. initial @ 2-4 V DC, 100 mA.
 INSULATION RESISTANCE: 10⁹ ohms min.
 DIELECTRIC STRENGTH: 1,000 V RMS min. @ sea level.
 OPERATING TEMPERATURE: -30°C to 65°C.

MATERIALS

CASE: Glass filled nylon (UL 94 V-0).
 ACTUATOR: ABS or polycarbonate — ABS blend, matte finish, 9 colors available, black std.
 MOVABLE CONTACT: Stainless steel, silver clad or beryllium copper, silver plated.
 STATIONARY CONTACTS & TERMINALS: Brass, silver plated.

NOTE

Specifications and Materials listed above are general specifications for switches with standard options. See option sections for additional information. Specifications available for specific models, consult factory.

INTRODUCTION

Available options for KS SERIES PUSHBUTTON KEY SWITCHES are shown on pages O-2 and O-3. Make selections from the following option sections: Model/Switching Function, Cap Style, Cap Color, L.E.D. Support (if desired), Terminations

and Contact Material. Each section begins with the ordering format, with the appropriate boxes enlarged. Complete HOW TO ORDER information is on page O-4.

MODEL/SW. FUNC.

K
S
R2
C
Q

MODELS / SWITCHING FUNCTION

MODEL NO.	SWITCHING FUNC.	
	POS 1	POS 2
KS11	OFF	MOM.

SCHEMATIC

SPST

MODEL SHOWN: KS11-R2-2-C-Q

TERM. NOS. MOLDED ON HOUSING

MOM. = MOMENTARY POSITION		
MODEL	ON	MOM.
KS12		

CONNECTED TERMINALS

1-4 1-3

SPDT

MODEL SHOWN: KS12-R2-2-C-Q

TERM. NOS. MOLDED ON HOUSING

P.C. MOUNTING

KS11

KS12

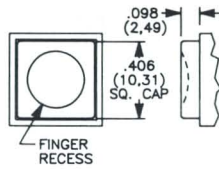
MULTIPLE SWITCH SPACING

CAP STYLE



CAP STYLE

R2 (Std.)



CAP COLOR



CAP COLOR

Select desired cap color from chart and place the option code in the appropriate box of the ordering format. If no color is specified, black will be supplied. Cap finish: matte. Custom marking available, consult factory.

OPTION CODE	CAP COLORS
1	White
2	Black(Std.)
3	Red
4	Orange
5	Yellow
6	Green
7	Blue
8	Brown
9	Gray

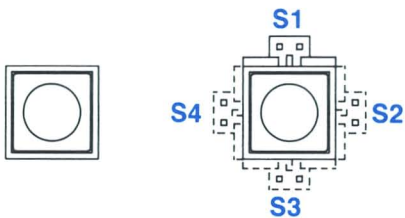
L.E.D. SUPPORT



L.E.D. SUPPORT

(None)

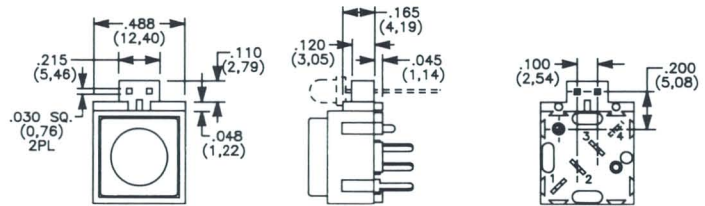
S1-S4



No L.E.D. support — Std.

Position of factory installed L.E.D. support.

TYPICAL INSTALLATION:



L.E.D. support shown in position S1.

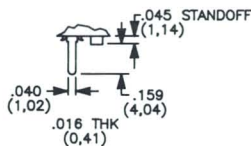
L.E.D. not supplied. L.E.D. support also available separately, consult factory.

TERMINATIONS



TERMINATIONS

C (Std.)



CONT. MAT'L.

CONTACT MATERIAL



Q (Std.) MOVABLE CONTACTS: Stainless steel, silver clad or beryllium copper, silver plated.
 STATIONARY CONTACTS & TERMINALS: Brass, silver plated.
 RATING: 25 mA max. @ 50 V AC or DC max.

HOW TO ORDER

Complete the order number below by selecting the desired model no., cap style, cap color, L.E.D. support (if desired), termination and contact material options from the preceding sections. Place the option codes in the appropriate boxes of the ordering format. Some boxes may be unfilled.

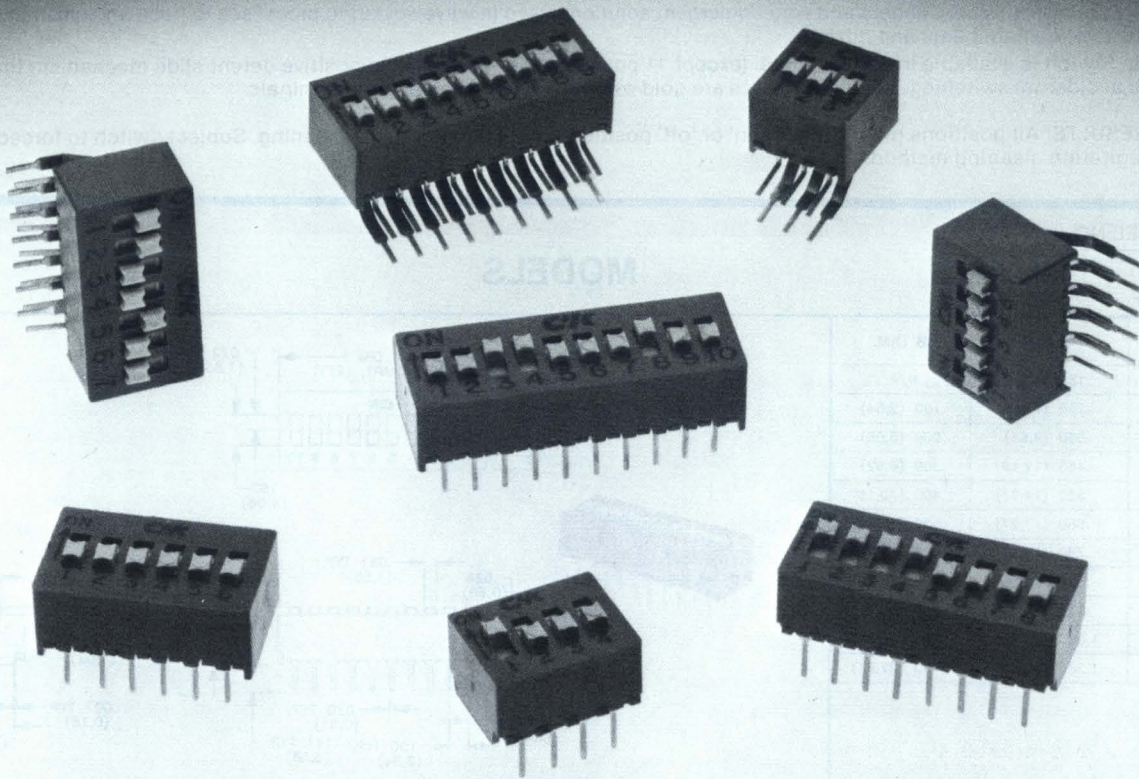
(Examples: **K****S****1****2** **R****2** **3** **C** **Q** or **K****S****1****2** **R****2** **5** **S****1** **C** **Q**). If no cap color is specified, black will be supplied.

No L.E.D. support supplied unless specified. **R2** cap style, **C** terminations and **Q** contact material supplied std.

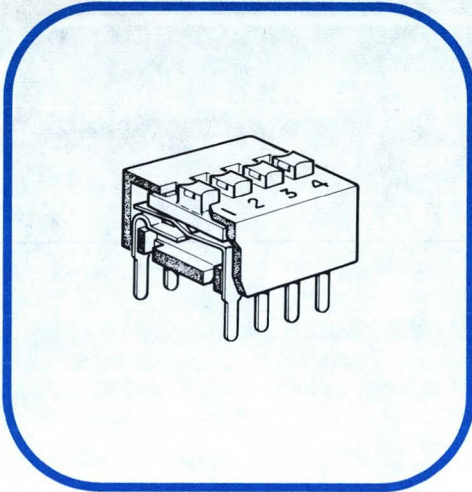
Custom cap marking available, consult factory.



BD SERIES DIP SWITCHES



SECTION P



SPECIFICATIONS

SWITCHING FUNCTION: SPST, 1 thru 12 pos. avail. (except 11 pos.)
 CONTACT RATING: Carry- 100 mA max. @ 50 V DC.
 Switch- 100 mA max. @ 5 V DC or 25 mA max. @ 25 V DC.
 ELECTRICAL LIFE: 10,000 make-and-break cycles, each circuit.
 MECHANICAL LIFE: 10,000 make-and-break cycles, each circuit.
 CONTACT RESISTANCE: Below 100 milliohms typ. initial @ 2-4 V DC, 100 mA.
 INSULATION RESISTANCE: 10^9 ohms min. between adjacent terminals.
 DIELECTRIC STRENGTH: 500 V RMS min. @ sea level between adjacent terminals.
 CAPACITANCE: 5 pF max. between adjacent terminals.
 OPERATING TEMPERATURE: 0°C to 70°C.

STORAGE TEMPERATURE: -40°C to 75°C.
 SHOCK: withstands 20 g 11 ms sawtooth waveform with no contact opening greater than 10 microseconds.
 VIBRATION: no contact opening greater than 10 microseconds and no contact closure when exposed to vibration .06 in. DA or 5 g, whichever is less, from 10 to 55 Hz. and 10 g from 55 to 500 Hz.

MATERIALS

CASE & COVER: Glass filled polyester, red.
 ACTUATOR: Glass filled nylon, white.
 CONTACTS: Gold over nickel over phosphor bronze.
 TERMINALS: Solder clad over phosphor bronze.

INTRODUCTION

C&K's reliable, inexpensive DIP Switch can be wave soldered* without the use of boots, caps, tapes or special attention. A unique open base design allows solvent cleaners and water/detergent solutions used in wave soldering processes to flush and clean the electrical contacts of contaminants and fluxes.

The C&K Dip Switch is available in 1 thru 12 pos. (except 11 pos.) configurations with a positive detent slide mechanism that all but eliminates accidental switching. Wiping contacts are gold over nickel, with solder clad terminals.

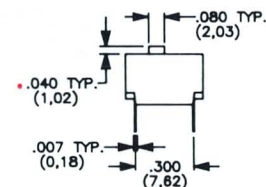
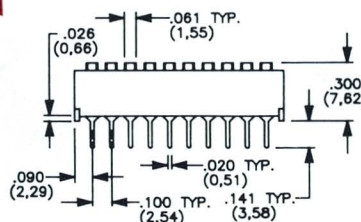
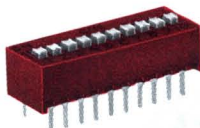
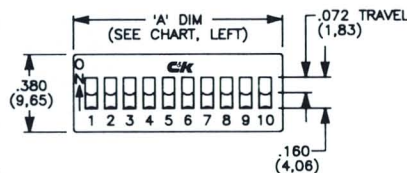
*FOR BEST RESULTS: All positions must be in 'open' or 'off' position during soldering and cleaning. Subject switch to forced rinse or high agitation cleaning method.

MODEL NO.

B	D		
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MODELS

MODEL NO.	NO. POS.	'A' DIM.	'B' DIM.
BD01	1	.180 (4,57)	N/A
BD02	2	.280 (7,11)	.100 (2,54)
BD03	3	.380 (9,65)	.200 (5,08)
BD04	4	.480 (12,19)	.300 (7,62)
BD05	5	.580 (14,73)	.400 (10,16)
BD06	6	.680 (17,27)	.500 (12,70)
BD07	7	.780 (19,81)	.600 (15,24)
BD08	8	.880 (22,35)	.700 (17,78)
BD09	9	.980 (24,89)	.800 (20,32)
BD10	10	1.080 (27,43)	.900 (22,86)
BD12	12	1.280 (32,51)	1.100 (27,94)

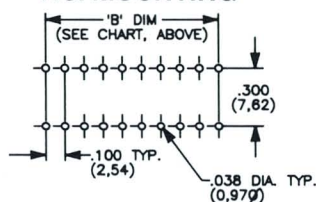


MODEL SHOWN: BD10

SCHEMATIC (TYP.)



P.C. MOUNTING



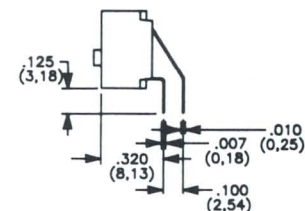
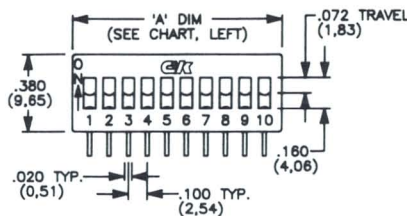
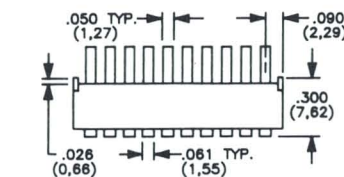
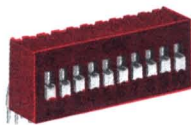
MODEL NO.

B **D**

MODELS (cont'd.)

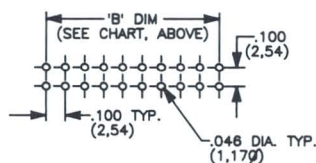
MODEL NO.	NO. POS.	'A' DIM.	'B' DIM.
BD02-AV	2	.280 (7,11)	.100 (2,54)
BD03-AV	3	.380 (9,65)	.200 (5,08)
BD04-AV	4	.480 (12,19)	.300 (7,62)
BD05-AV	5	.580 (14,73)	.400 (10,16)
BD06-AV	6	.680 (17,27)	.500 (12,70)
BD07-AV	7	.780 (19,81)	.600 (15,24)
BD08-AV	8	.880 (22,35)	.700 (17,78)
BD09-AV	9	.980 (24,89)	.800 (20,32)
BD10-AV	10	1.080 (27,43)	.900 (22,86)
BD12-AV	12	1.280 (32,51)	1.100 (27,94)

SCHEMATIC (TYP.)



MODEL SHOWN: BD10-AV
Term. bend radii mfg. option.

P.C. MOUNTING



HOW TO ORDER

Complete the order number below by selecting the desired model no. from the preceding sections. Place the option codes in the appropriate boxes of the ordering format. Some boxes may be unfilled. (Example: **BD08**--).

MODEL NO.

B **D**

INSTALLATION, SOLDERING & CLEANING INSTRUCTIONS

C&K's reliable, inexpensive DIP Switch can be wave soldered without the use of boots, caps, tapes or special attention. A unique open base design allows solvent cleaners and water/detergent solutions used in wave soldering processes to flush and clean the electrical contacts of contaminants and fluxes. For best results, follow these recommendations:

- 1) Wave soldering recommended at 500°F solder temp.
- 2) Hand solder using 30 watt small tip iron controlled at 500°F, 10 sec. max./terminal.
- 3) Flux clean using forced rinse, high agitation or triple bath cleaning method. Freon TMC or TF, or Methylene Chloride give excellent results. *Do not* mask or cover switch during cleaning as switch is designed for easy solvent flush out.
- 4) All switch positions must be 'off' or 'open' during cleaning.

CROSS REFERENCE CHART

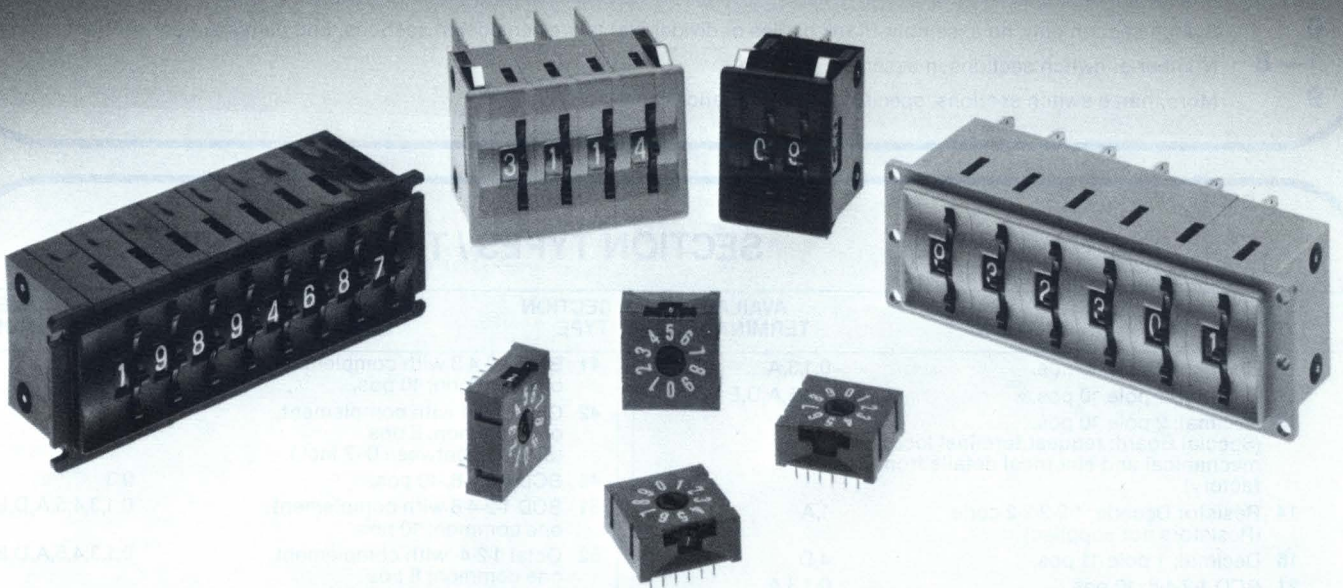
C&K P/N	AMP P/N	GRAYHILL P/N		CTS P/N	EECO P/N
		ROCKER ACT.	SLIDE ACT.		
BD02	2-435166-9	76SB02	78B02	206-2	240002G
BD03	3-435166-0	76SB03	78B03	206-3	240003G
BD04	435166-2	76SB04	78B04	206-4	240004G
BD05	435166-3	76SB05	78B05	206-5	240005G
BD06	435166-4	76SB06	78B06	206-6	240006G
BD07	435166-1	76SB07	78B07	206-7	240007G
BD08	435166-5	76SB08	78B08	206-8	240008G
BD09	435166-6	76SB09	78B09	206-9	240009G
BD10	435166-7	76SB10	78B10	206-10	2400010G
BD12	3-435166-2	76SB12	—	206-12	—

MODEL 8-1000

REV. 10-74

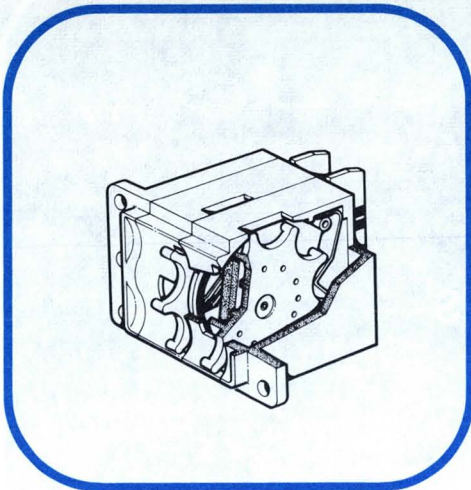
NO.	DESCRIPTION	QTY.	UNIT PRICE	TOTAL
1
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100

3 / 3M SERIES THUMBWHEEL SWITCHES



SECTION R INDEX

3 Series Thumbwheel Switches	R-2 thru R-12
3M Series Minithumbwheel Switches	R-13 thru R-14



SPECIFICATIONS

CONTACT RATING: Carry- 1 AMP continuous.
Switch- 100 mA max.
OPERATING VOLTAGE: 50 mV to 28 V DC or 120 V AC.
ELECTRICAL LIFE: 10⁵ detent operations between any two adjacent positions @ 25°C.
CONTACT RESISTANCE: Below 100 milliohms typ. initial @ 2 – 4 V DC, 100 mA.
INSULATION RESISTANCE: 10⁹ohms min.
DIELECTRIC STRENGTH: 500 V RMS min. @ sea level between common terminal and any output.
OPERATING TEMPERATURE: – 10°C to 65°C.

MATERIALS

SWITCH BODY: ABS plastic.
THUMBWHEEL: ABS plastic.
ROTOR CONTACTS: Precious metal on copper alloy.
STATOR CONTACTS: Hard gold over nickel over 2 oz. copper on epoxy fiberglass.

INTRODUCTION

Available configurations and options for 3 SERIES THUMBWHEEL SWITCHES are shown on pages R-2 thru R-10. Make selections from the following option sections: Number of Sections, Section Type, Mounting Style, Assembly Type, Terminations, Color/Marking/Stops and Sealing. Each section begins with the

ordering format, with the appropriate boxes enlarged. Complete HOW TO ORDER information is on page R-9. A sample CONFIGURATION FORM for special assemblies is provided on page R-11, along with instructions. Available hardware and accessories shown on pages R-8 and R-10.

NO. SECTIONS



NUMBER OF SECTIONS

- 0** Switch section only, no assembly. Blank bodies or divider plates are considered sections. End plates are not sections.
- 1–8** Number of switch sections in assemble.
- 9** More than 8 switch sections, specify on "configuration form".

SECTION TYPE



SECTION TYPES / TRUTH TABLES

SECTION TYPE	DESCRIPTION	AVAILABLE TERMINATIONS	SECTION TYPE	DESCRIPTION	AVAILABLE TERMINATIONS
11	Decimal; 1 pole 10 pos.	0,1,3,A	41	BCD 1-2-4-8 with complement, one common; 10 pos.	0,1,3,A
12	Decimal; 1 pole 10 pos.	1,4,5,A,D,E	42	Octal 1-2-4 with complement, one common; 8 pos. (Stopped between 0-7 incl.)	0,1,3,A
13	Decimal; 2 pole 10 pos. (Special Board; request terminal location mechanical and electrical details from factory)	M	45	BCD 1-2-4-8; 10 pos.	0,3
14	Resistor Decode; 1-2-2-2-code (Resistors not supplied)	1,A	51	BCD 1-2-4-8 with complement, one common; 10 pos.	0,1,3,4,5,A,D,E
16	Decimal; 1 pole 11 pos.	4,D	52	Octal 1-2-4- with complement, one common; 8 pos. (Stopped between 0-7 incl.)	0,1,3,4,5,A,D,E
21	BCD 1-2-4-8; 10 pos.	0,1,3,A	58	7 Segment Decoder with Blank and BCD Output (TTL) (Special Board; request terminal location, mechanical and electrical details from factory)	M
22	Octal 1-2-4; 8 pos. (Stopped between 0-7 incl.)	0,1,3,A	59	7 Segment Decoder	1,A
23	Complement of BCD 1-2-4-8; 10 pos.	0,1,3,A	61	SPDT repeating; 10 pos. Plus (+) and Minus (-) alternating	0,1,3,4,5,A,D,E
24	Complement of Octal 1-2-4; 8 pos. (Stopped between 0-7 incl.)	0,1,3,A	70	Binary Coded Hexadecimal; 16 pos. with Parity Bit	0,3
26	Complement of BCD 1-2-4-8; 10 pos.	6,B	71	Binary Coded Hexadecimal; 16 pos.	0,1,3,A
27	BCD 1-2-4-8; 10 pos.	6,B	72	Binary Coded Hexadecimal; 16 pos.	6,B
28	Complement of 9's Complement; 10 pos	7C	81	BCD 1-2-4-8; 10 pos.	6,B
29	BCD 1-2-4-8; 10 pos.	6,B	83	Binary Coded Hexadecimal; 16 pos.	6,B
31	BCD 1-2-4-8; 10 pos.	0,1,3,4,5,A,D,E	91	Blank Section (inactive)	8
32	Octal 1-2-4; 8 pos. (Stopped between 0-7 incl.)	0,1,3,4,5,A,D,E	92	Blank section with ribbed center (inactive)	8
33	Complement of BCD 1-2-4-8; 10 pos.	1,4,5,A,D,E	99	Intermixed Sections Specify on "Configuration Form"	Depends on section types
34	Complement of Octal 1-2-4; 8 pos. (Stopped between 0-7 incl.)	1,4,5,A,D,E			
35	BCD 1-2-4-8 with Separate Common To Not True Bits; 10 pos.	0,1,3,A			

SECTION TYPE



SECTION TYPES/TRUTH TABLES (Cont'd).

See Terminal Location Diagrams, Fig. 1, Fig. 2, Page R-8.

11 DECIMAL — 1 Pole; 10 Position

WHEEL	SIGNALS CONNECTED TO COMMON SIGNAL C										
	0	1	2	3	4	5	6	7	8	9	
0	•										
1		•									
2			•								
3				•							
4					•						
5						•					
6							•				
7								•			
8									•		
9										•	
	2	3	4	5	6	7	8	9	10	11	12

See Fig. 1.

12 DECIMAL — 1 Pole; 10 Position

WHEEL	SIGNALS CONNECTED TO COMMON SIGNAL C										
	0	1	2	3	4	5	6	7	8	9	
0	•										
1		•									
2			•								
3				•							
4					•						
5						•					
6							•				
7								•			
8									•		
9										•	
	2	3	4	5	7	8	9	10	11	12	8

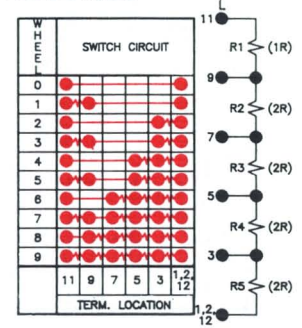
See Fig. 1.

13 DECIMAL — Double Pole; 10 Position

WHEEL	COMMON A CONN. TO:	COMMON B CONN. TO:
	0	0
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5
6	6	6
7	7	7
8	8	8
9	9	9

FOR TERM. LOC. CONSULT C&K

14 RESISTOR DECADE 1-2-2-2-2 CODE



See Fig. 1.

16 DECIMAL — 1 Pole; 11 Position

WHEEL	SIGNALS CONNECTED TO COMMON SIGNAL A										
	0	1	2	3	4	5	6	7	8	9	10
0	•										
1		•									
2			•								
3				•							
4					•						
5						•					
6							•				
7								•			
8									•		
9										•	
10											•
	1	2	3	4	5	7	8	9	10	11	6

See Fig. 1.

21 BCD: 1-2-4-8
22 (Type 22 Octal NO Pos. 8 & 9)

WHEEL	SIGNALS CONN. TO COMM. SIG. C									
	1	2	4	8						
0	•									
1		•								
2			•							
3				•						
4					•					
5						•				
6							•			
7								•		
8									•	
9										•
	3	5	7	11	9					

See Fig. 1.

23 COMPLEMENT OF BCD: 1-2-4-8
24 (Type 24 Octal NO Pos. 8 & 9)

WHEEL	SIGNALS CONN. TO COMM. SIG. C									
	T	Z	7	8						
0	•	•	•	•						
1		•	•	•						
2			•	•						
3				•						
4					•					
5						•				
6							•			
7								•		
8									•	
9										•
	3	9	11	5	7					

See Fig. 1.

26 COMPLEMENT OF BCD: 1-2-4-8

WHEEL	SIGNALS CONN. TO COMM. SIG. C									
	T	Z	7	8						
0	•	•	•	•						
1		•	•	•						
2			•	•						
3				•						
4					•					
5						•				
6							•			
7								•		
8									•	
9										•
	4	5	1	2	3					

See Fig. 2.

27 BCD: 1-2-4-8

WHEEL	SIGNALS CONN. TO COMM. SIG. C									
	1	2	4	8						
0	•									
1		•								
2			•							
3				•						
4					•					
5						•				
6							•			
7								•		
8									•	
9										•
	4	5	1	2	3					

See Fig. 2.

28 COMPLEMENT OF 9's COMPLEMENT

WHEEL	SIGNALS CONN. TO COMM. SIG. C									
	1	2	4	8						
0	•	•	•	•						
1		•	•	•						
2			•	•						
3				•						
4					•					
5						•				
6							•			
7								•		
8									•	
9										•
	2	1	5	4	3					

See Fig. 2.

29 BCD: 1-2-4-8

NEW

WHEEL	SIGNALS CONN. TO COMM. SIG. C									
	1	2	4	8						
0	•									
1		•								
2			•							
3				•						
4					•					
5						•				
6							•			
7								•		
8									•	
9										•
	2	3	4	5	1					

See Fig. 2.

31 BCD: 1-2-4-8
32 (Type 32 Octal NO Pos. 8 & 9)

WHEEL	SIGNALS CONN. TO COMM. SIG. C									
	1	2	4	8						
0	•									
1		•								
2			•							
3				•						
4					•					
5						•				
6							•			
7								•		
8									•	
9										•
	2	3	11	9	8					

See Fig. 1.

33 COMPLEMENT OF BCD: 1-2-4-8
34 (Type 34 Octal NO Pos. 8 & 9)

WHEEL	SIGNALS CONN. TO COMM. SIG. C									
	T	Z	7	8						
0	•	•	•	•						
1		•	•	•						
2			•	•						
3				•						
4					•					
5						•				
6							•			
7								•		
8									•	
9										•
	2	3	11	9	8					

See Fig. 1.

35 BCD: 1-2-4-8
W/Separate Common to Not True Bits

WHEEL	SIGNALS CONN. TO COMMON SIGNALS									
	1	2	4	8	X	Y				
0	•	•	•	•	•	•				
1		•	•	•	•	•				
2			•	•	•	•				
3				•	•	•				
4					•	•				
5						•				
6							•			
7								•		
8									•	
9										•
	8	8	4	2	12	10				

See Fig. 1.

41 BCD: 1-2-4-8; W/COMPLEMENT
42 (Type 42 Octal NO Pos. 8 & 9)

WHEEL	SIGNALS CONN. TO COMM. SIG. C									
	1	2	4	8	T	Z	7	8		
0					•	•	•	•		
1		•			•	•	•	•		
2			•		•	•	•	•		
3				•	•	•	•	•		
4					•	•	•	•		
5						•	•	•		
6							•	•		
7								•		
8									•	
9										•
	10	9	8	7	3	4	5	6	11	

See Fig. 1.

45 BCD: 1-2-4-8

NEW

WHEEL	SIGNALS CONN. TO COMM. SIG. C									
	1	2	4	8						
0	•									
1		•								
2			•							
3				•						
4					•					
5						•				
6							•			
7								•		
8									•	
9										•
	5	6	7	8	9					

See Fig. 1.

SECTION TYPE



SECTION TYPES/TRUTH TABLES (Cont'd).

See Terminal Location Diagrams, Fig. 1, Fig. 2, Page R-8.

51 BCD: 1-2-4-8; W/COMPLEMENT
52 (Type 52 Octal NO Pos. 8 & 9)

WHEEL	SIGNALS CONN. TO COMM. SIG. C								
	1	2	4	8	T	7	8	C	
0									
1									
2									
3									
4									
5									
6									
7									
8									
9									
	5	4	3	2	10	9	8	7	6

TERM. LOCATION

See Fig. 1.

58 7 Segment Decoder with Blank and BCD output (TTL)

WHEEL	SIGNALS CONNECT TO COMMON GROUND							
	a	b	c	d	e	f	g	Grnd/Voc
0								
1								
2								
3								
4								
5								
6								
7								
8								
9								

FOR TERMINAL LOCATIONS CONSULT C&K

Note: Connections for RBO and RBI supplied.

NEW

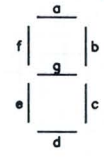
59 7 Segment Decoder

WHEEL	COMMON (C) CONNECTED TO TERMINAL INDICATED								
	a	b	c	d	e	f	g	Grnd/Voc	
0									
1									
2									
3									
4									
5									
6									
7									
8									
9									
	6	5	4	3	2	8	7	1	12

TERM. LOCATION

See Fig. 1.

Note: Use decoder type 7446/7.



NEW

61 SPDT REPEATING

WHEEL	SIG. CONN. TO C		
	+	-	C
+			
-			
+			
-			
+			
-			
+			
-			
+			
-			
	9	8	2

TERM. LOC.

See Fig. 1.

70 Binary Coded Hexadecimal with Parity Bit

NEW

WHEEL	SIGNALS CONN. TO COMM. SIG. C					
	1	2	4	8	P C	
0						
1						
2						
3						
4						
5						
6						
7						
8						
9						
A						
B						
C						
D						
E						
F						
	3	5	7	11	1	9

TERM. LOCATION

See Fig. 1.

71 Binary Coded Hexadecimal

WHEEL	SIGNALS CONN. TO COMM. SIG. C				
	1	2	4	8	C
0					
1					
2					
3					
4					
5					
6					
7					
8					
9					
A					
B					
C					
D					
E					
F					
	3	5	7	11	9

TERM. LOCATION

See Fig. 1.

72 Binary Coded Hexadecimal

NEW

WHEEL	SIGNALS CONN. TO COMM. SIG. C				
	1	2	4	8	C
0					
1					
2					
3					
4					
5					
6					
7					
8					
9					
A					
B					
C					
D					
E					
F					
	2	3	4	5	1

TERM. LOCATION

See Fig. 2.

81 BCD: 1-2-4-8

NEW

WHEEL	SIGNALS CONN. TO COMM. SIG. C				
	1	2	4	8	
0					
1					
2					
3					
4					
5					
6					
7					
8					
9					
	1	2	3	5	4

TERM. LOCATION

See Fig. 2.

83 Binary Coded Hexadecimal

NEW

WHEEL	SIGNALS CONN. TO COMM. SIG. C				
	1	2	4	8	
0					
1					
2					
3					
4					
5					
6					
7					
8					
9					
A					
B					
C					
D					
E					
F					
	1	2	3	5	4

TERM. LOCATION

See Fig. 2.

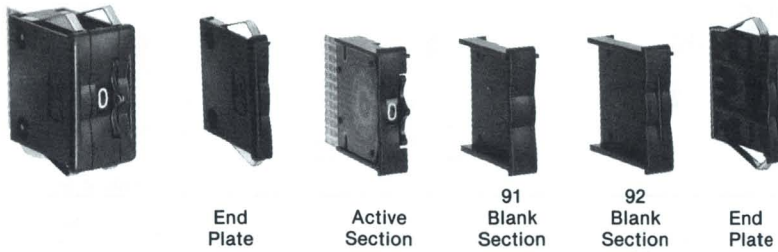
Other section types and functions available, consult factory.

MTG. STYLE



MOUNTING STYLES

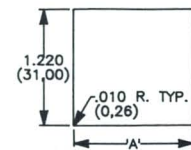
0



End Plate Active Section 91 Blank Section 92 Blank Section w/rib End Plate

SNAP-IN FRONT MOUNTING

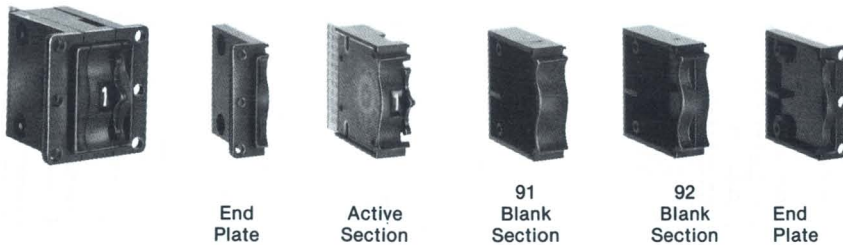
PANEL MOUNTING



ASS'Y TYPE		A
Front Mounting	0	(.315 × N) + .326 (800 × N) + (8.28)
	3	(.394 × N) + .326 (10.0 × N) + (8.28)
	4	(.500 × N) + .326 (12.7 × N) + (8.28)

N = Number of Sections
Recommended Panel Thickness—
.046 - .125 (1,16 - 3, 18)

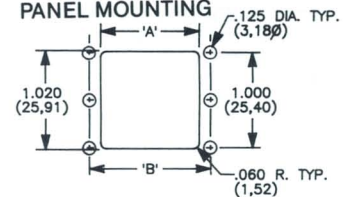
1



End Plate Active Section 91 Blank Section 92 Blank Section w/rib End Plate

REAR MOUNTING

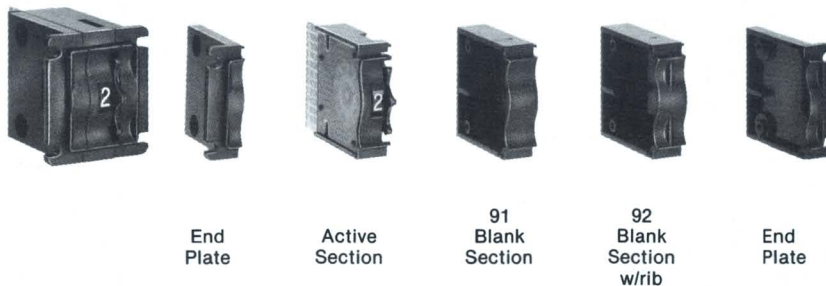
PANEL MOUNTING



ASS'Y TYPE		A	B
Rear Mounting	0	(.350 × N) + .340 (8.89 × N) + (8.64)	(.350 × N) + .560 (8.89 × N) + (14.22)
	4	(.500 × N) + .340 (12.7 × N) + (8.64)	(.500 × N) + .560 (12.7 × N) + (14.22)

N = Number of Sections
Recommended Panel Thickness—
.046 - .125 (1,16 - 3, 18)

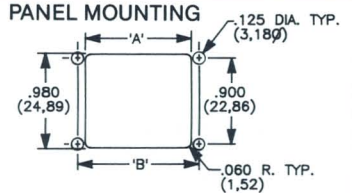
2



End Plate Active Section 91 Blank Section 92 Blank Section w/rib End Plate

REAR MOUNTING

PANEL MOUNTING



ASS'Y TYPE		A	B
Rear Mounting	0	(.350 × N) + .420 (8.89 × N) + (10.67)	(.350 × N) + .580 (8.89 × N) + (14.73)
	4	(.500 × N) + .420 (12.7 × N) + (10.67)	(.500 × N) + .580 (12.7 × N) + (14.73)

N = Number of Sections
Recommended Panel Thickness—
.046 - .125 (1,16 - 3, 18)

ASSY. TYPE



ASSEMBLY TYPE

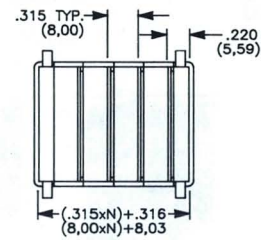
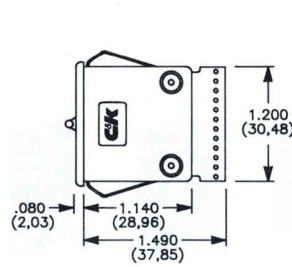
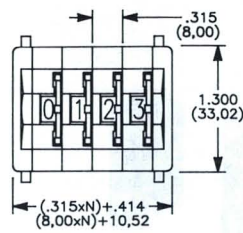
- 0** Switch assembly with end plates. .315 terminal spacing, center to center, front-mounting. .350 terminal spacing, center to center, rear mounting.
- 3** 10mm terminal spacing center to center, assembly with end plates, front-mounting only.
- 4** 0.50 terminal spacing, center to center, assembly with end plates front and rear mounting.
- 9** Switch sections unassembled without end plates, front and rear mounting.

NOTE: 10mm (type 3) and 0.50 (type 4) switch section assemblies are produced by using spacers as shown on page R-10.

MOUNTING STYLES & ASSEMBLY TYPES ILLUSTRATED

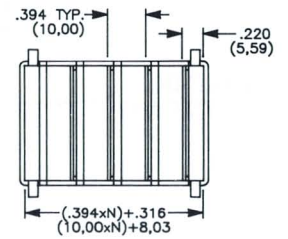
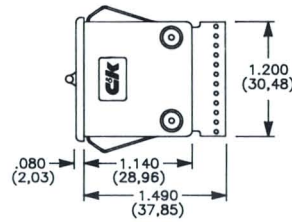
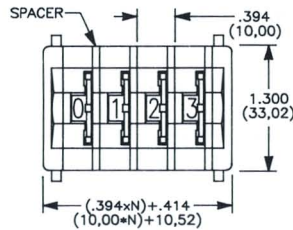
Below, and on next page, are shown the available mounting style / assembly type combinations.

SNAP-IN FRONT MOUNTING
Section Pitch: .315 (8,00)
Mounting Style: 0
Assembly Type: 0



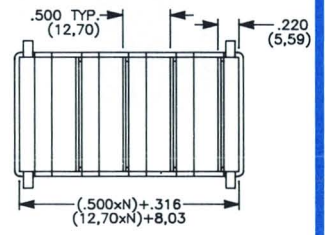
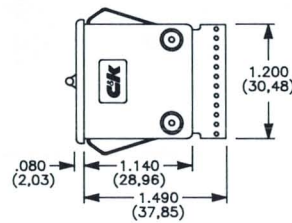
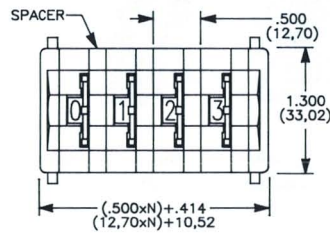
N = Number of Sections

SNAP-IN FRONT MOUNTING
Section Pitch: 10mm
Mounting Style: 0
Assembly Type: 3



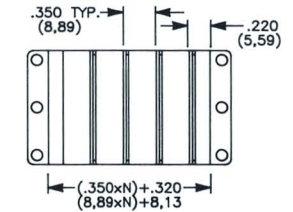
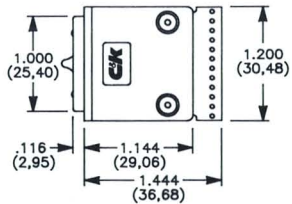
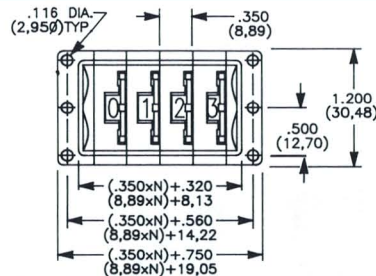
N = Number of Sections

SNAP-IN FRONT MOUNTING
Section Pitch: .500 (12,70)
Mounting Style: 0
Assembly Type: 4



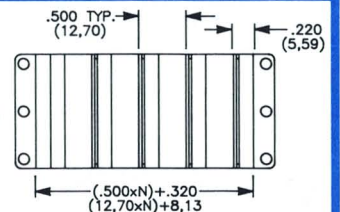
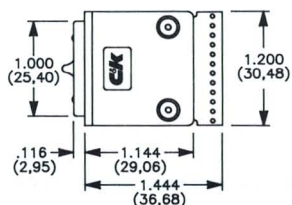
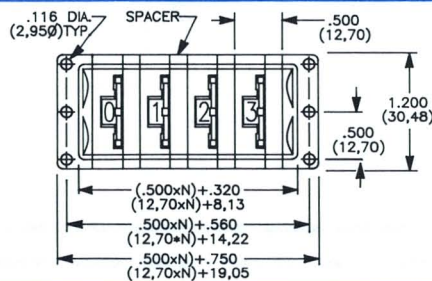
N = Number of Sections

REAR MOUNTING
Section Pitch: .350 (8,89)
Mounting Style: 1
Assembly Type: 0



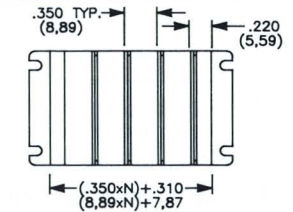
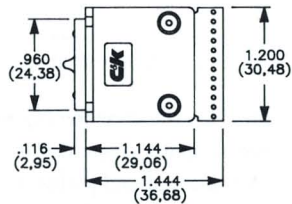
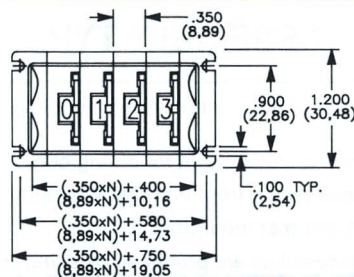
N = Number of Sections

REAR MOUNTING
Section Pitch: .500 (12,70)
Mounting Style: 1
Assembly Type: 4



N = Number of Sections

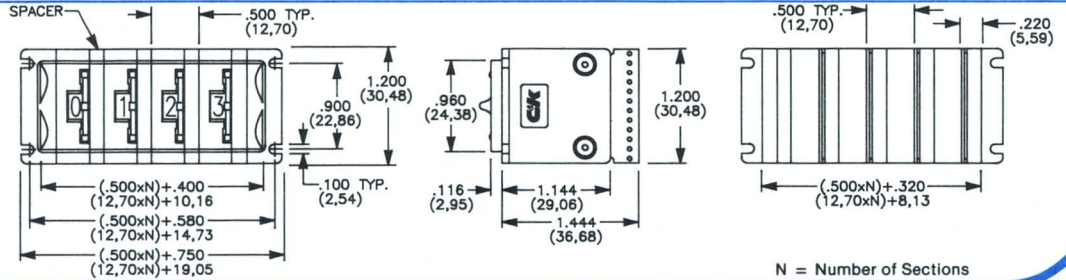
REAR MOUNTING
Section Pitch: .350 (8,89)
Mounting Style: 2
Assembly Type: 0



N = Number of Sections

MOUNTING STYLES & ASSEMBLY TYPES ILLUSTRATED (cont'd.)

REAR MOUNTING
 Section Pitch: .500 (12,70)
 Mounting Style: 2
 Assembly Type: 4



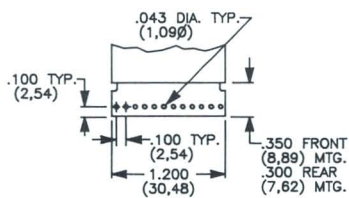
N = Number of Sections

TERMINATIONS



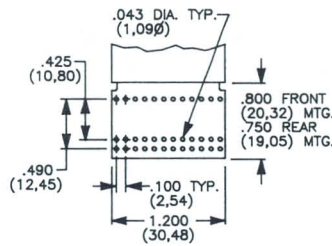
TERMINATIONS

0



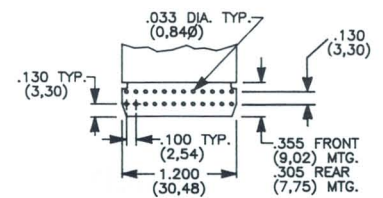
P.C. BOARD 1/32" THK. (0,79)

1



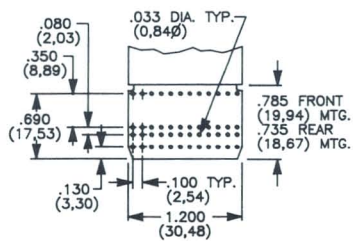
P.C. BOARD 1/32" THK. (0,79)
 Note: Signal traces cut except for common(s).

4



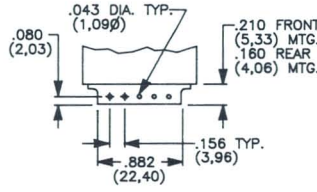
P.C. BOARD 1/32" THK. (0,79)

5



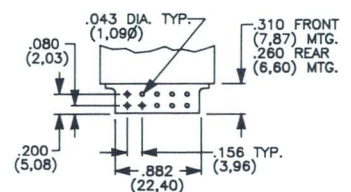
P.C. BOARD 1/32" THK. (0,79)
 Note: Signal traces cut except for common(s).

6



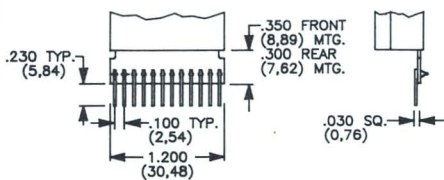
P.C. BOARD 1/32" THK. (0,79)

7



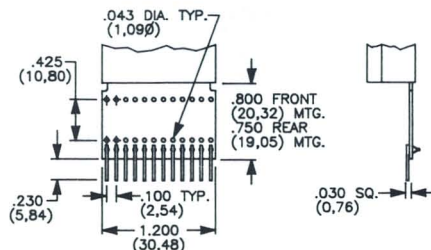
P.C. BOARD 1/32" THK. (0,79)

3



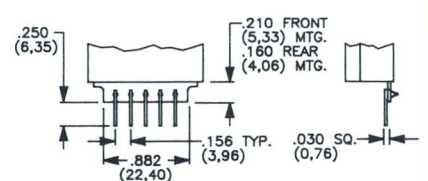
P.C. BOARD 1/32" THK. (0,79)

A



P.C. BOARD 1/32" THK. (0,79)
 Note: Signal traces cut except for common(s).

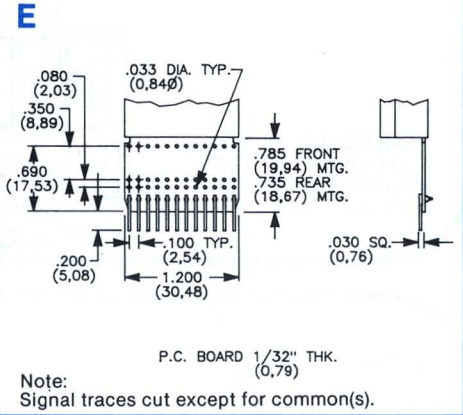
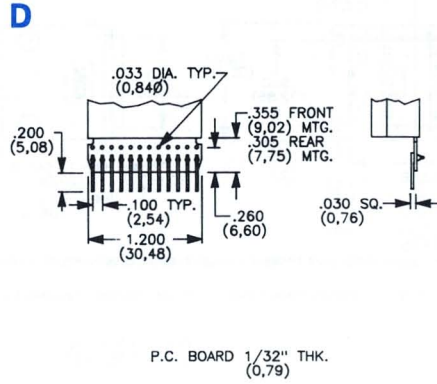
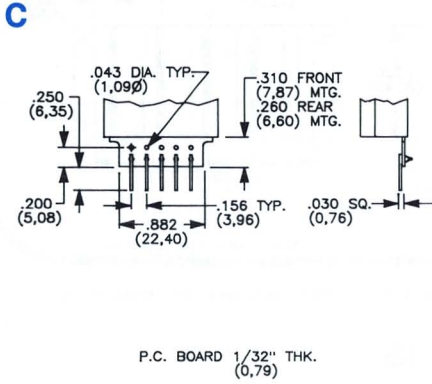
B



P.C. BOARD 1/32" THK. (0,79)



TERMINATIONS (cont'd.)



8
Termination N/A

9
Any Combination of Termination Configurations. Specify on 'Configuration Form', see page R-11.

M
Special Termination (consult factory)

AVAILABLE COMBINATIONS: SECTION TYPES / TERMINATIONS

		SECTION TYPE																							
		11	12	13	14	16	21	22	23	24	26	27	28	31	32	33	34	35	41	42	51	52	61	71	
TERMINATIONS	D	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	1	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	3	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	4	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	5	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	6	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	7	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	A	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	D	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	E	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	M	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

● INDICATES CURRENTLY AVAILABLE COMBINATION

4046 CONNECTOR



FITS 0, 1, 4, 5 TERMINATIONS.

To order, specify part no. and description.

TERMINATION LOCATION DIAGRAMS



See TRUTH TABLES, Pages R-3 and R-4, for Signal Locations

COLOR/MARKING/STOPS

COLOR / MARKING / STOPS

0	1	2	3	4	9
Matte black body; Glossy black wheel with white characters	Matte gray body; Glossy black wheel with white characters	Special Colors/Wheel and/or body Specify on "Configuration Form"	Special Marking on Wheel and/or body Specify on "Configuration Form"	Special Stops Specify on "Configuration Form"	Any Combination of 2, 3, or 4. Specify on "Configuration Form"

COLORS AVAILABLE: **Marking** — white or black
Body — matte black or matte gray
Wheel — white, black, red, orange, yellow, green, blue, brown or gray

SEAL

SEALING

0	1	2	3	8	9	
Unsealed Switching Contacts	Sealed Switching Contacts Switching contact area is protected from moisture, oil, and airborne contaminants. Sealing is by means of an "O" ring rotary seal and a cured-in-place elastomer gasket.	Dust Lens The Dust Lens protects the character face of the wheel from abrasion and dirt.		With Dust Lens and Sealed Switching Contacts (Option 1 and 2)	Sealing N/A, must be specified when ordering blank sections or divider plates.	Sealing variations, section to section within assembly must be specified on "configuration form"

HOW TO ORDER

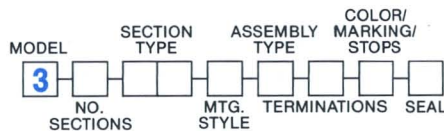
Complete the order number below by selecting the desired number of sections, section type, mounting style, assembly type, termination, color/markings/stops and sealing options from the preceding sections. Place the option codes in the appropriate boxes of the ordering format. (Example: **3-6-11-1-4-3-0-2**).

SPECIAL CONFIGURATION:

For special configurations which cannot be expressed in the 9 digit order number, copy and fill in the CONFIGURATION FORM on page R-11. Special instructions also on page R-11.

INACTIVE SECTIONS AND HARDWARE:

Inactive sections, spacers, end plates and assembly hardware are available separately, see page R-10. Available terminal connector, see page R-8.

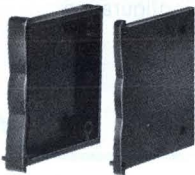


HARDWARE

To order, specify part no., description and color in word form.

† SPACERS

FOR TYPE '0' FRONT MOUNT



4106 SPACER FOR .500 (12,70) FRONT MT.
.185 (4,70) width
4108 SPACER FOR 10mm FRONT MT. .078 (1,98) width

4106 4108 SPECIFY BLACK OR GRAY

FOR TYPE '1' REAR MOUNT



4107 SPACER FOR .500 (12,70) REAR MT. .150 (3,81) width

4107 SPECIFY BLACK OR GRAY

FOR TYPE '2' REAR MOUNT



4736 SPACER FOR .500 (12,70) REAR MOUNT. .150 (3,81) width

4736 SPECIFY BLACK OR GRAY

† To be used in combination with active and / or blank sections to obtain .500 (12,70) or 10mm spacing.

END PLATES

FOR TYPE '0' FRONT MOUNT



4134 FRONT MT. END PLATE
(2 pcs. required for complete assembly)

4134 SPECIFY BLACK OR GRAY

FOR TYPE '1' REAR MOUNT



4004 REAR MT. END PLATE
(2 pcs. required for complete assembly)

4004 SPECIFY BLACK OR GRAY

FOR TYPE '2' REAR MOUNT



4732 REAR MT. END PLATE
(2 pcs. required for complete assembly)

4732 SPECIFY BLACK OR GRAY

BLANK (INACTIVE) SECTIONS

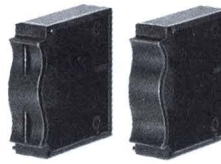
FOR TYPE '0' FRONT MOUNT



4136 BLANK SECTION W/RIB
4135 BLANK SECTION (PLAIN)
FRONT MOUNTING W/ SPRING .315 (8,00) width
SPECIFY BLACK OR GRAY

4136 4135

FOR TYPE '1' REAR MOUNT



4006 BLANK SECTION W/RIB
4008 BLANK SECTION (PLAIN)
REAR MOUNTING .350 (8,89) width
SPECIFY BLACK OR GRAY

4006 4008

FOR TYPE '2' REAR MOUNT



4734 BLANK SECTION W/RIB
4733 BLANK SECTION (PLAIN)
REAR MOUNTING .350 (8,89) width
SPECIFY BLACK OR GRAY

4734 4733

HARDWARE FOR FIELD ASSEMBLY

SCREWS FOR FIELD ASSEMBLY OF THUMBWHEEL SWITCHES
(2 Screws needed per assembly + 4035 nuts)

4029 STOP PIN



4061 NUT DRIVER FOR #4035 nut
Not required for assembly
Not supplied w/sample pieces.

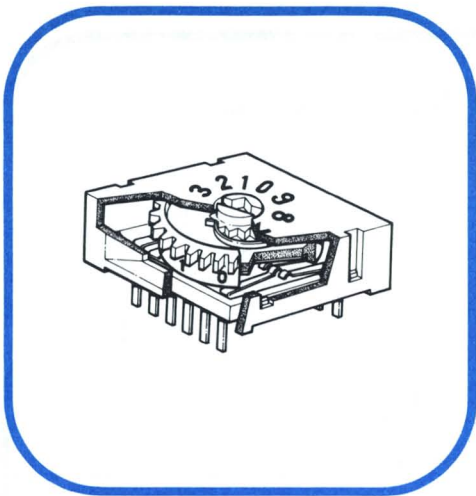
*SCREW PART NUMBER	NUMBER OF SECTIONS IN ASSEMBLY				
	FRONT MOUNTING 315" Mtg. Style - 0 Assy. Type - 0	REAR MOUNTING 350" Mtg. Style - 1, 2 Assy. Type - 0	FRONT MOUNTING 10mm Mtg. Style - 0 Assy. Type - 3	FRONT MOUNTING 5" Mtg. Style - 0 Assy. Type - 4	REAR MOUNTING 5" Mtg. Style - 1, 2 Assy. Type - 4
4127-01	1-3	1-3	1-3	1-2	1-2
4127-02	4-7	4-6	4-5	3-4	3-4
4127-03	8-10	7-9	6-8	5-6	5-6
4127-04	11-13	10-12	9-10	7-8	7-8
4127-05	14-16	13-15	11-13	9-10	9-10



4035 NUT
2 nuts required per assembly and screws.

*Note: Thread size is 0-80 UNF.





SPECIFICATIONS

CONTACT RATING: Carry- 1 AMP continuous @ 28 V DC.
 Switch- 100 mA max. @ 28 V DC.
 ELECTRICAL LIFE: 10⁵ detent operations @ 25°C.
 CONTACT RESISTANCE: Below 100 milliohms typ. initial @ 2-4 V DC, 100 mA.
 INSULATION RESISTANCE: 10⁸ ohms min. (dry).
 DIELECTRIC STRENGTH: 250 V RMS min. @ sea level.
 OPERATING TEMPERATURE: -10°C to 65°C.

MATERIALS

COVER: Thermoplastic polyester.
 BASE: Glass filled nylon.
 THUMBWHEEL: Nylon.
 ROTOR CONTACTS: Hard gold over nickel over copper on epoxy fiberglass.
 STATOR CONTACTS: Copper alloy, with gold over nickel.
 TERMINALS: Solder clad over copper alloy, insert molded.

INTRODUCTION

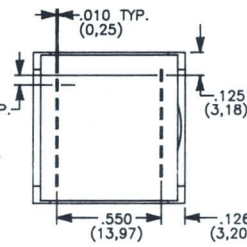
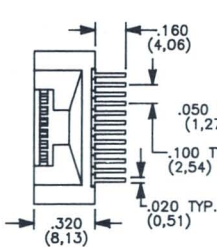
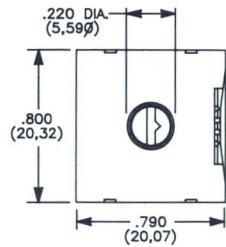
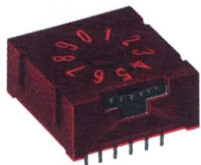
Available options for 3M SERIES MINITHUMBWHEEL SWITCHES are shown on pages R-13 and R-14. Make selections from the following option sections: Model, Function Codes and Marking

Orientation. Each section begins with the ordering format, with the appropriate boxes enlarged. Complete HOW TO ORDER information is on page R-14.

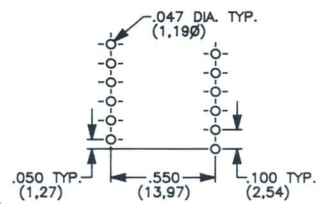
MODEL NO.

3 M

MODEL



PC. MOUNTING



MODEL SHOWN: 3M-12-0

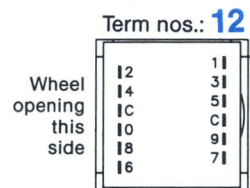
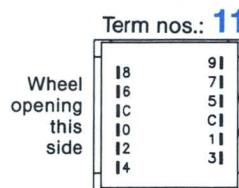
FUNC. CODE

3 M

FUNCTION CODES / TRUTH TABLES

11Decimal, CCW, 1 Pole
12Decimal, CW, 1 Pole

W H E E L	COMMON (C) CONNECTED TO TERMINAL INDICATED									
	0	1	2	3	4	5	6	7	8	9
0	●									
1		●								
2			●							
3				●						
4					●					
5						●				
6							●			
7								●		
8									●	
9										●



CCW: Counter clockwise rotation (viewed from top).
 CW: Clockwise rotation (viewed from top).
 All codes 10 position.

FUNC. CODE.

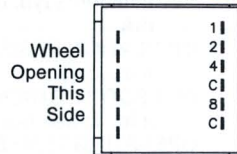


FUNCTION CODES / TRUTH TABLES (cont'd.)

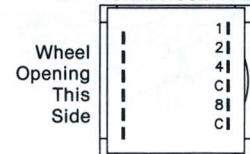
- 21** BCD, CCW, 1 Pole
- 22** BCD, CW, 1 Pole

WHEEL POSITION	COMM. (C) CONN. TO TERM. IND.			
	1	2	4	8
0				
1	•			
2		•		
3	•	•		
4			•	
5	•		•	
6		•	•	
7	•	•	•	
8				•
9	•			•

Term. nos.: **21**



Term. nos.: **22**

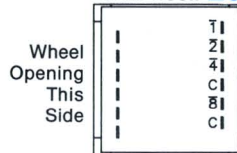


CCW: Counter clockwise rotation (viewed from top).
 CW: Clockwise rotation (viewed from top).
 All codes 10 position.
 All unused terminals should not be connected.

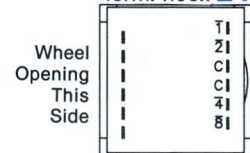
- 23** Complement of BCD, CCW, 1 Pole
- 24** Complement of BCD, CW, 1 Pole

WHEEL POSITION	COMM. (C) CONN. TO TERM. IND.			
	1	2	4	8
0	•	•	•	•
1				
2	•			
3		•		
4	•		•	
5		•	•	
6	•		•	
7		•	•	
8	•	•	•	
9	•			•

Term. nos.: **23**

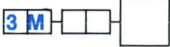


Term. nos.: **24**



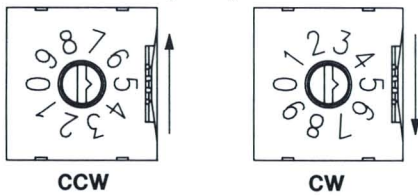
CCW: Counter clockwise rotation (viewed from top).
 CW: Clockwise rotation (viewed from top).
 All codes 10 position.
 All unused terminals should not be connected.

MARKING

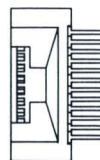


MARKING

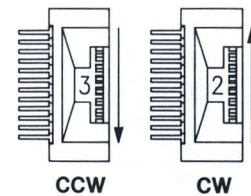
TOP MARKING (Std.)



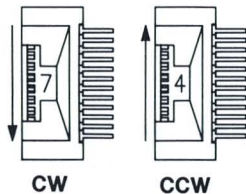
0 NO WHEEL MARKING (Std.)



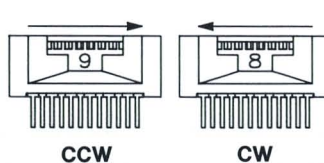
1



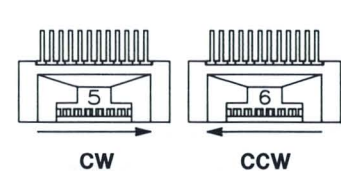
2



3

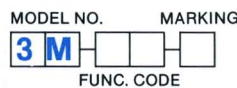


4



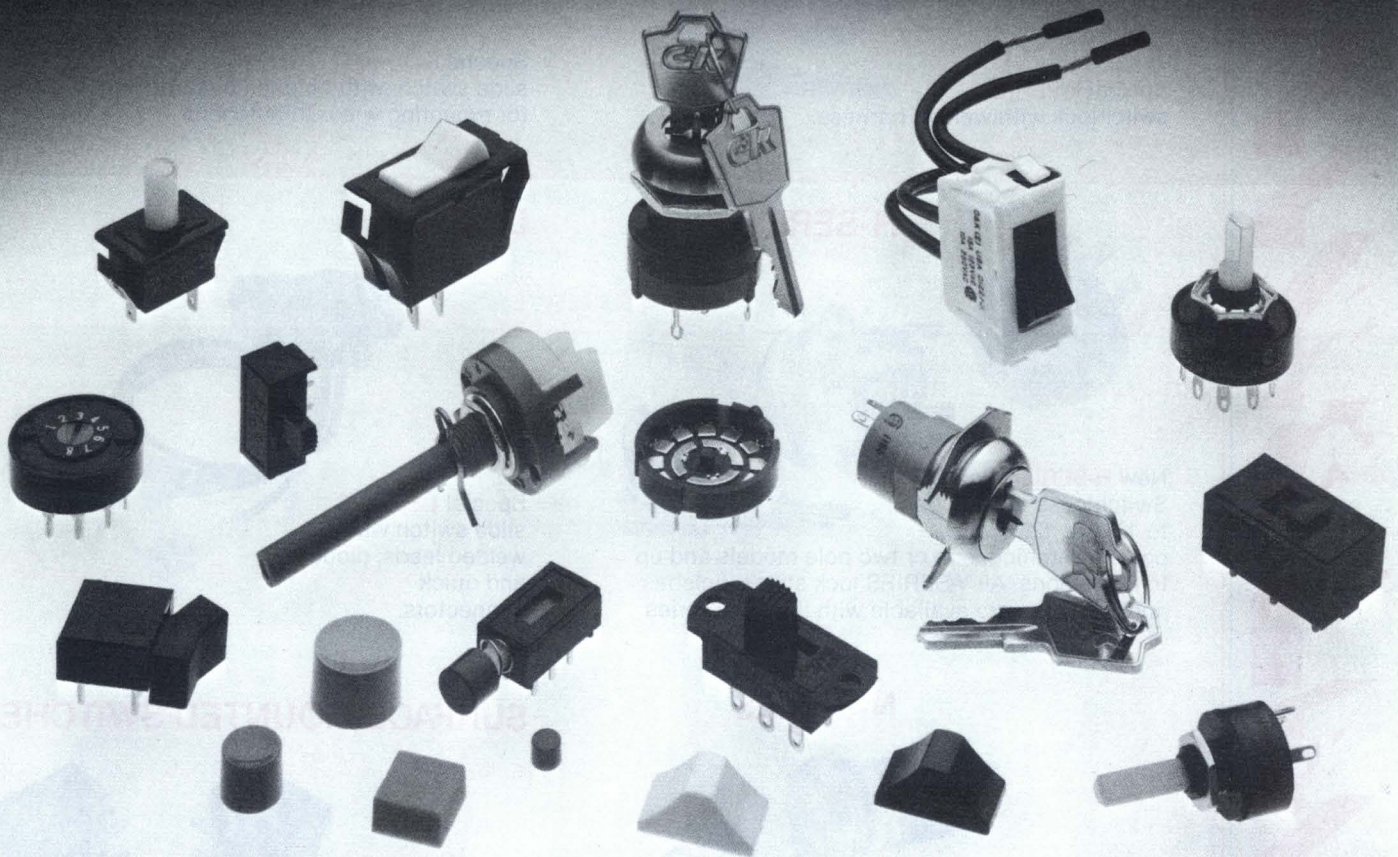
HOW TO ORDER

Complete the order number below by selecting the desired function code and marking orientation. Place the option codes in the appropriate boxes of the ordering format. (Example: 3M-21-3).





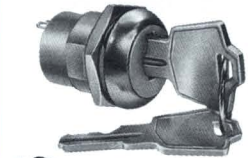
CLAYTON DIVISION PRODUCTS



SECTION Z INDEX

Y Series 4 and 5 Tumbler Switchlocks	Z-5 thru Z-11
Y Series 6 Tumbler Double-Bitted Switchlocks	Z-12 thru Z-13
Y Series 7 Tumbler Tubular Switchlocks	Z-14 thru Z-15
A Series Switchlocks	Z-16 thru Z-20
A Series Rotary Switches	Z-21 thru Z-25
M Series Half-Inch Rotary Switchlocks	Z-26 thru Z-29
H Series Power ROTA-SLIDE® Rotary Switches	Z-30 thru Z-31
R Series ROTA-SLIDE® Rotary Switches	Z-32 thru Z-35
F Series Miniature ROTA-SLIDE® Rotary Switches	Z-36 thru Z-39
V Series Power & Line Voltage Select Slide Switches	Z-40 thru Z-43
S Series Slide Switches	Z-44 thru Z-49
L Series Miniature Slide Switches	Z-50 thru Z-55
C Series Power Rocker Switches	Z-56 thru Z-60
D Series Miniature Power Rocker Switches	Z-61 thru Z-63
J Series Rocker Switches	Z-64 thru Z-65
K Series Pushbutton Switches	Z-66 thru Z-67
MP Series Mechanical Pushbutton Switches	Z-68 thru Z-70
KM Series Pushbutton Switches	Z-71 thru Z-73

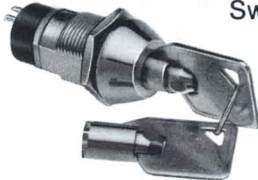
INTRODUCTION, AGENCY LISTINGS, ORDERING INFORMATION Z-4



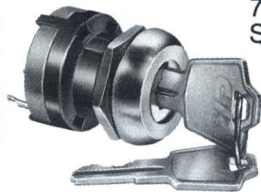
Y SERIES
4 and 5 Tumbler
Switchlocks Z-5 thru Z-11



Y SERIES
6 Tumbler Double - Bitted
Switchlocks Z-12 thru Z-13



Y SERIES
7 Tumbler Tubular
Switchlocks Z-14 thru Z-15



A SERIES
Switchlocks Z-16 thru Z-20



A SERIES
Rotary Switches .. Z-21 thru Z-25



M SERIES
Switchlocks Z-26 thru Z-29



H SERIES
Power ROTA-SLIDE® Rotary
Switches Z-30 thru Z-31



R SERIES
ROTA-SLIDE® Rotary
Switches Z-32 thru Z-35



F SERIES
Miniature ROTA-SLIDE® Rotary
Switches Z-36 thru Z-39



V SERIES
Power & Line Voltage Select
Slide Switches ... Z-40 thru Z-43



S SERIES
Slide Switches ... Z-44 thru Z-49



L SERIES
Miniature
Slide Switches ... Z-50 thru Z-55



C SERIES
Power Rocker
Switches Z-56 thru Z-60



D SERIES
Miniature Power
Rocker Switches Z-61 thru Z-63



J SERIES
Rocker Switches Z-64 thru Z-65



K SERIES
Pushbutton
Switches Z-66 thru Z-67



MP SERIES
Mechanical Pushbutton
Switches Z-68 thru Z-70



KM SERIES
Pushbutton
Switches Z-71 thru Z-73



INTRODUCTION

Welcome to the all new C&K CLAYTON DIVISION SWITCH CATALOG! Many new models and options, plus a new, easier-to-use format make this the biggest and best catalog yet. Most switch series shown have complete order numbers for selected standard models, or create your own model from options provided. See HOW TO ORDER information following each series.

AGENCY LISTINGS

Most C&K switches are available with UL and CSA listing, when ordered with G (gold over silver) or Q (silver) contact material. Note that B (gold) contact material is not listed because UL and other agencies consider listing only those components suitable for power applications. B contact material is used in low power and 'dry circuit' applications only, i.e., where no arcing occurs during switching (0.4 VA max. @ 20 V AC or DC max.).

Some switches are UL listed automatically when ordered with the appropriate contact material (examples: Y-Series, C-Series, S-Series). Most UL listed models are also available with CSA listing. See appropriate switch sections for specific contact material and rating information and ordering instructions.

AVAILABLE LISTINGS

UL All series (except A, M, & MP) with all options are listed when ordered with G or Q contact material. See 'CONTACT MATERIALS', this page.

CSA Most Y, R, F, V, S, L, C, D, J & K series models are CSA listed when ordered with G or Q contact material. See 'CONTACT MATERIALS', this page.

Some V-Series models are VDE listed. See V-Series section, pages Z-40 thru Z-43.

Some C-Series models are VDE, SEV, SEMKO, JETL, and Australia listed. See C-Series section, pages Z-56 thru Z-60.

UL File No.: E42363

CSA File No.: LR49546, Clayton, N.C.

VDE File No.: 8869-4401

SEV File No.: 81.1162.01

SEMKO File No.: 43-63118/1-6

JETL File No.: 41-13749

Aust. Elec. Board Reg. No.: CS81215V

At C&K, we are continuously upgrading our agency certifications, and new models and options are being added. If the listing you require does not appear, consult factory with your needs.

CONTACT MATERIALS

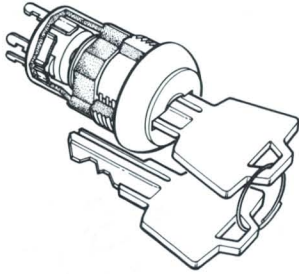
All switch series (except M, H, V, C, D, & MP) offer 3 contact materials:

B DRY CIRCUIT RATED- 0.4 VA max. @ 20 V AC or DC max. Material: copper or brass, with gold plate over nickel plate.

Q POWER RATED- Ratings from 350 mA to 15 AMPS @ 125 V AC available. See switch sections for applicable ratings and available agency listings. Material: copper or brass, silver plated.

G POWER OR DRY CIRCUIT RATED- Equivalent to both B and Q contact materials. Advantageous where either dry circuit or power conditions are encountered. However, when the dry circuit rating is exceeded, the gold plating is removed from the contact interface and the switch cannot then be used in dry circuits. This option should be specified where UL or CSA listing is required on a switch used in a dry circuit application. See switch sections for applicable ratings and available agency listings.
Material: copper or brass, with gold plate over nickel plate over silver plate.





SPECIFICATIONS

CONTACT RATING: 4 AMPS @ 125 V AC or 28 V DC; 2 AMPS @ 250 V AC (UL/CSA).
ELECTRICAL LIFE: 10,000 make-and-break cycles at full load.
CONTACT RESISTANCE: Below 10 milliohms typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.
INSULATION RESISTANCE: 10⁹ ohms min.
DIELECTRIC STRENGTH: 1,000 V RMS min. @ sea level.
INDEXING: 45° or 90° - one contact models, 5 pos. max.; two contact models, 4 pos. max.

NOTE

Specifications and Materials listed above are general specifications for switches with standard options. See option sections for additional information. Specifications available for specific models, consult factory.

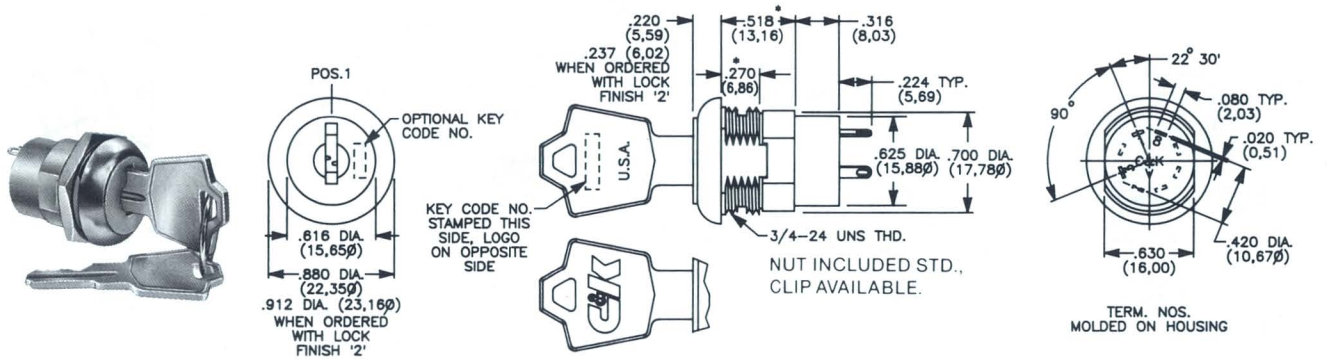
MATERIALS

LOCK: Zinc alloy, bright nickel plated, std.; stainless steel facing, black finish, and polished nickel also avail. 4 or 5 tumbler mechanisms avail.
KEYS: Brass, with code no.
SWITCH HOUSING & TOP PLATE: Glass filled polyester (UL 94V-0).
CONTACTS: Copper, silver plated (Q cont. mat'l).
TERMINALS: Copper, silver plated (Q cont. mat'l).
CONTACT SPRING: Music wire or stainless steel.
MOUNTING NUT: Zinc alloy, nickel or bright zinc plated.
MOUNTING CLIP: Steel, nickel or bright zinc plated.

U.S. PAT. NO. 4,558,193

INTRODUCTION

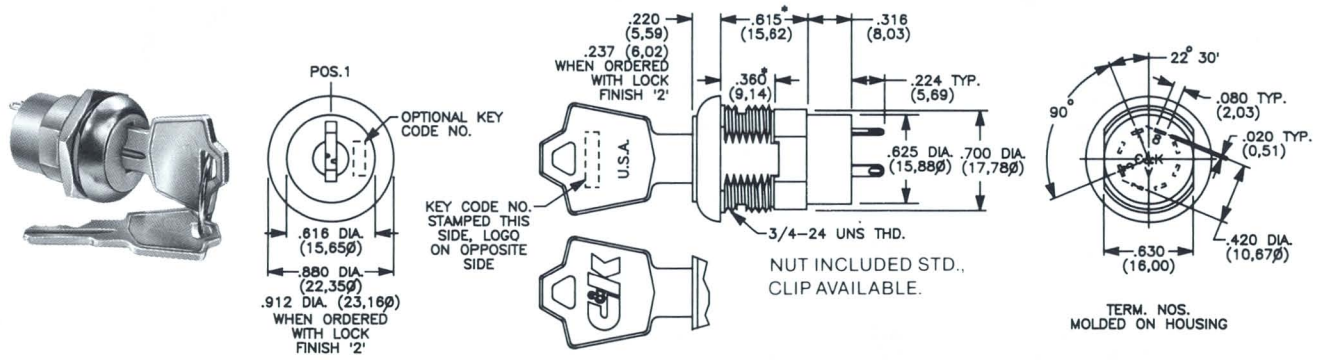
Available options for Y SERIES SWITCHLOCKS are shown on pages Z-7 thru Z-11. Typical models are shown below and on next page. Make selections from the following option selections: Model/Switching & Lock Function, Keying, Lock Type, Lock Finish, Terminations, Mounting Style/Lock Style, Contact Material, and (if desired) Epoxy Terminal Seal. Each section begins with the ordering format, with appropriate boxes enlarged. Complete HOW TO ORDER information is on page Z-11. UL/CSA listed with all options when ordered with G or Q contact material. 01 terminations, UL listed only.



**A LOCK TYPE
(4 TUMBLER MODELS)**

*SUBTRACT .020 (0,51) FROM THESE DIMS. WHEN ORDERED WITH STAINLESS LOCK FINISH, OPTION '2'.

MODEL SHOWN: Y101-13-0-A-1-03-N-Q



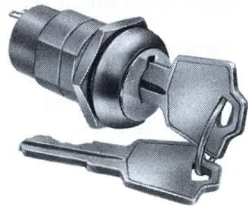
**B OR C LOCK TYPES
(4 OR 5 TUMBLER MODELS)**

*SUBTRACT .020 (0,51) FROM THESE DIMS. WHEN ORDERED WITH STAINLESS LOCK FINISH, OPTION '2'.

MODEL SHOWN: Y101-13-0-B-1-03-N-Q

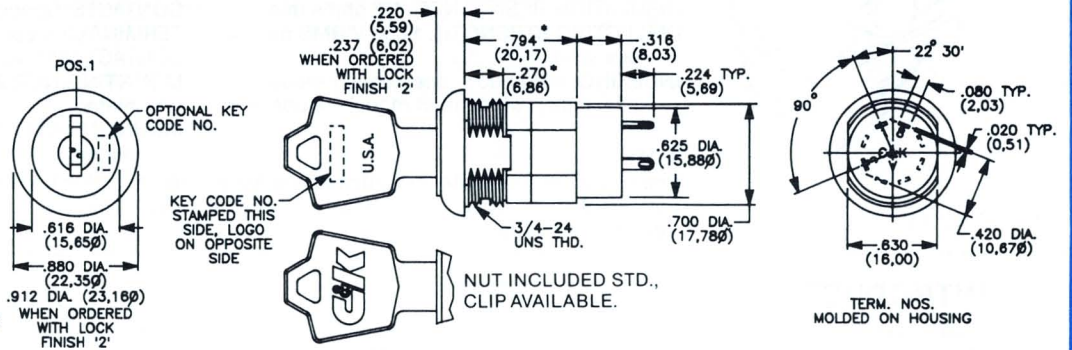
ANTI-STATIC SWITCHLOCKS

STATIC RESISTANCE: Y Series ANTI-STATIC MODELS exceed 20,000 V DC static resistance @ sea level, lock body to terminals.



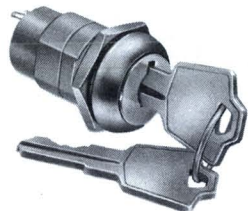
N SHORT ANTI-STATIC LOCK TYPE (4 TUMBLER MODELS)

PAT. PENDING



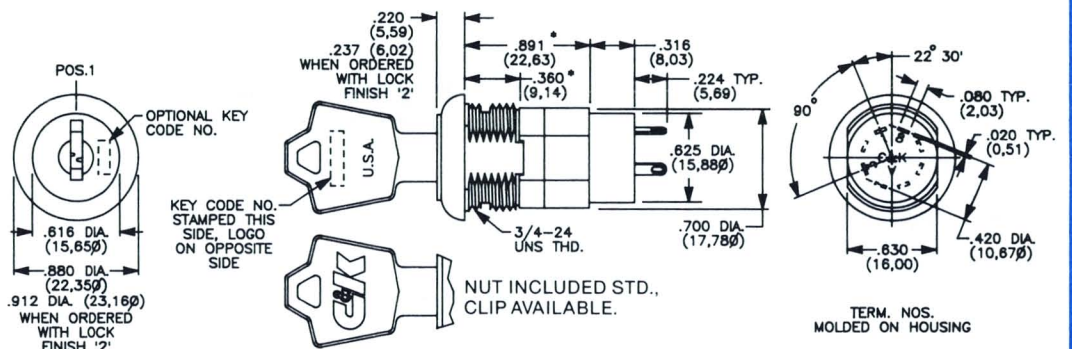
*SUBTRACT .020 (0,51) FROM THESE DIMS. WHEN ORDERED WITH STAINLESS LOCK FINISH, OPTION '2'.

MODEL SHOWN: Y101-13-0-N-1-03-N-Q



P OR R SHORT ANTI-STATIC LOCK TYPES (4 OR 5 TUMBLER MODELS)

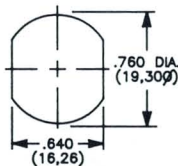
PAT. PENDING



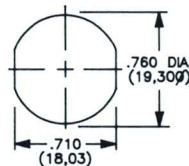
*SUBTRACT .020 (0,51) FROM THESE DIMS. WHEN ORDERED WITH STAINLESS LOCK FINISH, OPTION '2'.

MODEL SHOWN: Y101-13-0-P-1-03-N-Q

PANEL MOUNTING

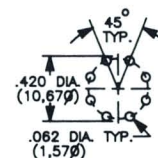


FOR MODELS WITH N, D, S OR T MOUNTING STYLES



FOR MODELS WITH R OR L MOUNTING STYLES

P.C. MOUNTING



LOCK TYPE	MTG. STYLE	PANEL THICKNESS
A, N	NUT	** .125 (3, 18) max.
4 tumbler models	CLIP	** .085-.105 (2, 16-2,67)
B, C, P, R	NUT	** .215 (5, 46) max.
4 & 5 tumbler models	CLIP	** .085-.105 (2, 16-2,67)

**For models with stainless steel lock finish, subtract .020 (0,51) from all dims.



MODELS/SWITCHING AND LOCK FUNCTION

(For legend, see page Z-8.)

LOCK CONFIGURATION (AS VIEWED FROM KEY END)	MODEL NO.	NO. POLES	CONNECTED TERMINALS (For terminal locations, see page Z-8.)					KEY PULL POSSIBLE THESE POSITIONS
			POS. 1	POS. 2	POS. 3	POS. 4	POS. 5	
45° INDEXING	Y100-13 Y200-13	SP DP	8-1 8-1,4-5	1-2 1-2,5-6	2-3 2-3,6-7			POS.1
45° INDEXING	Y100-1C Y200-1C	SP DP	8-1 8-1,4-5	1-2 1-2,5-6	2-3 2-3,6-7			POS.3
45° INDEXING	Y100-1U Y200-1U	SP DP	8-1 8-1,4-5	1-2 1-2,5-6	2-3 2-3,6-7			POS.1 POS.3
45° INDEXING	Y100-82 Y200-82	SP DP	8-1 8-1,4-5	1-2 1-2,5-6	7-8 7-8,3-4			POS.1
45° INDEXING	Y100-AA Y200-AA	SP DP	8-1 8-1,4-5	1-2 1-2,5-6	7-8 7-8,3-4			POS.1 POS.2 POS.3
45° INDEXING	Y100-AB Y200-AB	SP DP	8-1 8-1,4-5	1-2 1-2,5-6	2-3 2-3,6-7	3-4 3-4,7-8		POS.1, POS.2, POS.3, POS.4
45° INDEXING	Y100-73	SP	8-1	1-2	2-3	7-8	6-7	POS.1
45° INDEXING	Y100-7C	SP	8-1	1-2	2-3	7-8	6-7	POS.3 POS.5
45° INDEXING	Y100-7U	SP	8-1	1-2	2-3	7-8	6-7	POS.1 POS.3 POS.5
90° INDEXING	Y101-13 Y201-13	SP DP	8-1 8-1,4-5	1-3 1-3,5-7				POS.1
90° INDEXING	Y101-1C Y201-1C	SP DP	8-1 8-1,4-5	1-3 1-3,5-7				POS.2
90° INDEXING	Y101-1U Y201-1U	SP DP	8-1 8-1,4-5	1-3 1-3,5-7				POS.1 POS.2
45°/90° INDEXING	Y101-73	SP	8-1	1-3	7-8	6-7		POS.1
45°/90° INDEXING	Y101-7C	SP	8-1	1-3	7-8	6-7		POS.2 POS.4
45°/90° INDEXING	Y101-7U	SP	8-1	1-3	7-8	6-7		POS.1 POS.2 POS.4
45° INDEXING MOMENTARY	Y108-12 Y208-12	SP DP	8-1 8-1,4-5	1-2 1-2,5-6				POS.1
45°/90° INDEXING	Y140-73	SP	7-1	1-2	2-3	6-7		POS.1
45°/90° INDEXING	Y140-7C	SP	7-1	1-2	2-3	6-7		POS.3 POS.4
45°/90° INDEXING	Y140-7U	SP	7-1	1-2	2-3	6-7		POS.1 POS.3 POS.4
90° INDEXING	Y141-73	SP	7-1	1-3	6-7			POS.1
90° INDEXING	Y141-7C	SP	7-1	1-3	6-7			POS.2 POS.3
90° INDEXING	Y141-7U	SP	7-1	1-3	6-7			POS.1 POS.2 POS.3

(cont'd.)



MODELS/SWITCHING AND LOCK FUNCTION CONT.

(See legend, below)

LOCK CONFIGURATION (AS VIEWED FROM KEY END)	MODEL NO.	NO. POLES	CONNECTED TERMINALS (See terminal locations, below.)					KEY PULL POSSIBLE THESE POSITIONS
			POS. 1	POS. 2	POS. 3	POS. 4	POS. 5	
NEW 	Y190-1E	SP	C-1	C-2	C-3			POS.2
NEW 	Y190-15	SP	C-1	C-2	C-3			POS.1 POS.3
NEW 	Y190-1W	SP	C-1	C-2	C-3			POS.1 POS.2 POS.3
NEW 	Y190-01	SP	C-1	C-2	C-3	C-4		POS.1 POS.3
NEW 	Y190-0A	SP	C-1	C-2	C-3	C-4		POS.2 POS.4
NEW 	Y190-0S	SP	C-1	C-2	C-3	C-4		POS.1, POS.2, POS.3, POS.4

LEGEND:

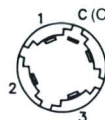
- ▼ = Momentary position (45°).
- = Detent positions (45° or 90°).
- ⊙ = Key pull possible in these positions.
- ▼ or • or ⊙ = Stop positions.
- C = Common Terminal

TERMINAL NUMBERS

(BOTTOM VIEWS)



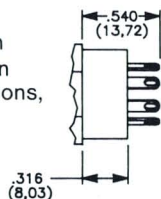
All models except Y190-XX. Terminal nos. molded on bottom of housing.



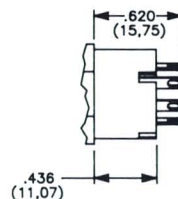
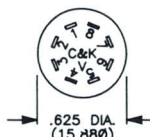
All Y190-XX models. Terminal nos. for reference only.

SWITCH HOUSING

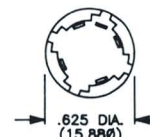
Switch housing configuration varies with model/sw. function option selected. See illustrations, right.



All models except Y190-XX.



All Y190-XX models.



KEYING

OPTION CODE NO.	NO. KEYS	KEY CODE STAMPED ON LOCK	ORDER KEYED ALIKE
0 (STD.)*	2	NO	YES
1	1	NO	YES
4	2	YES	YES
5	1	YES	YES

For more than one key code, master keying, replacement keys, or other special features, consult factory.

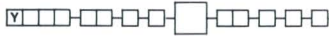
*Std. keying features include two brass keys ringed together, no key code no. on face of lock, all switchlocks supplied with the same key code.



LOCK TYPES

- A 4 tumbler lock.
- B 5 tumbler lock (added security, more key codes avail., consult factory).
- C 4 tumbler lock, with positive detent mechanism in lock.
- N 4 tumbler lock, short Anti-static model.
- P 5 tumbler lock, short Anti-static model.
- R 4 tumbler lock, with positive detent mechanism in lock, short Anti-static model.

For lock and switch dimensions, see pages Z-5 and Z-6.



LOCK FINISHES

1 Nickel



2 Stainless Facing*



3 Black Chrome



4 Polished Nickel

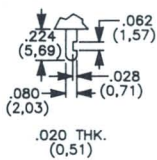


*Not available with L, R, S or T mounting styles.

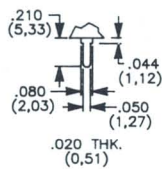


TERMINATIONS

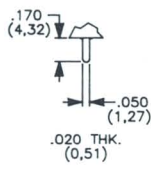
01 †



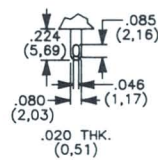
02 †



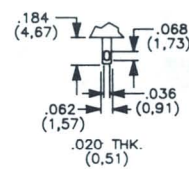
02 **



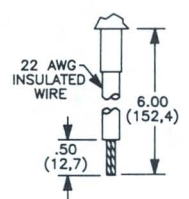
03 †



07 **



WC



** Available only on Y190-XX models.

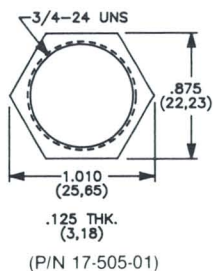
† Not available on Y190-XX models.

Black wire std., other colors, gages, and lengths avail., consult factory.

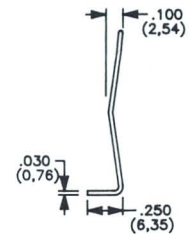
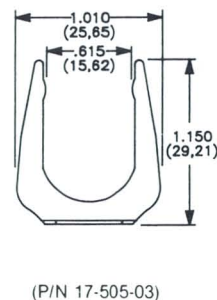


MOUNTING STYLES/LOCK STYLES

N (Std.)



D CLIP

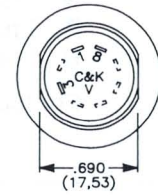
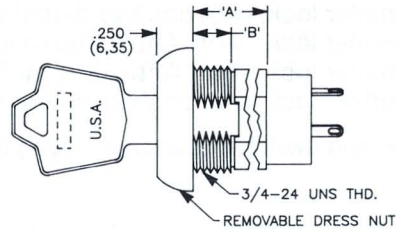


(CONT'D.)



MOUNTING STYLES/LOCK STYLES (Cont'd)

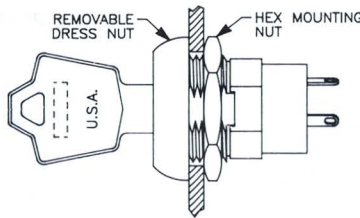
R REMOVABLE DRESS NUT*



*Not available with stainless lock finish, option '2'.

TYPICAL INSTALLATION

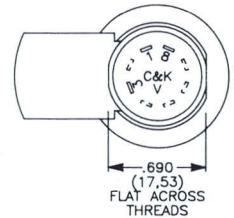
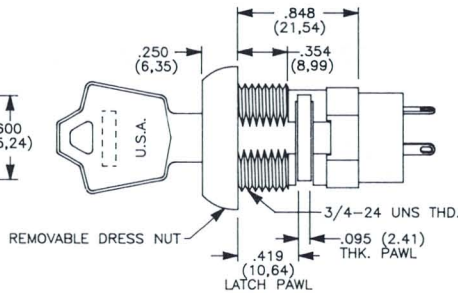
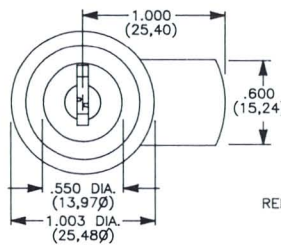
Install hex nut, leaving clearance for dress nut and panel. From rear-of-panel place switch through panel cutout. Install and tighten dress nut by hand then tighten hex nut. Always tighten assembly with back-of-panel hex nut to avoid damaging front of panel.



LOCK TYPE	DIMENSION	
	'A'	'B'
A	.518 (13,16)	.270 (6,86)
B or C	.615 (15,62)	.360 (9,14)
N	.794 (20,17)	.270 (6,86)
P or R	.891 (22,63)	.360 (9,14)

Panel mounting information, see Z-5.

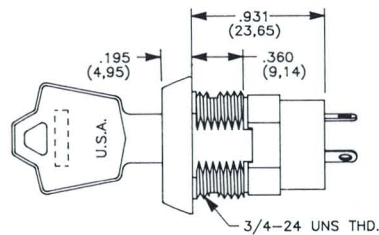
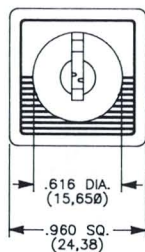
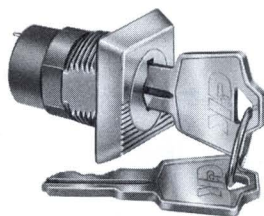
NEW L REMOVABLE DRESS NUT WITH LATCH PAWL**



Key and latch pawl shown in Pos. 1.

**Available only on YX01-1U models with C or R lock type. Not available with stainless lock finish, option '2'.

NEW S SQUARE FACING, WITH MOUNTING NUT. + T SQUARE FACING, WITH MOUNTING CLIP. +



+ Not available with A, N lock types or stainless lock finish option 2.



CONTACT / TERMINAL MATERIALS

- B** CONTACTS & TERMINALS: Copper, with gold plate over nickel plate.
RATING: 0.4 VA max. @ 20 V AC or DC max.
- Q** CONTACTS & TERMINALS: Copper, silver plated. (Std. with all termination options.)
RATING: 4 AMPS @ 125 V AC or 28 V DC; 2 AMPS @ 250 V AC (UL/CSA).
- G** CONTACTS & TERMINALS: Copper, with gold plate over nickel plate over silver plate.
RATING: 0.4 VA max. @ 20 V AC or DC max. or 4 AMPS @ 125 V AC or 28 V DC; 2 AMPS @ 250 V AC (UL/CSA).

Note: 'G' contact material is equivalent to both 'B' and 'Q' contact materials. See 'CONTACT MATERIALS', p. Z-4.
01 terminations UL listed, all other terminations UL/CSA listed.



SEALING

(None)
No Seal-Std.



LOCK FEATURES

Four or five tumbler brass mechanism. Zinc die cast lock with attractive bright nickel plating std., available black, polished nickel or stainless steel facing. Two keys provided, stamped with key code no. Locks have 45° or 90° indexing, with various key pulls available. One hex mounting nut provided. Optional: key code no. stamped on face of lock, one key per lock, clip mounting style, or removable dress nut with or without latch pawl, and positive detent in lock mechanism.

SWITCH FEATURES

One and two contact models, with C&K's ROTA-SLIDE® break-before-make switching contacts. Solder lug terminals std., 5 termination styles available. Switch housing components are UL 94V-0 rated. UL/CSA listed see CONTACT MATERIALS, above.

HOW TO ORDER

Complete the order number below by selecting the desired model no., keying, lock type, lock finish, termination, mounting style/lock style, and contact material options. Place the option codes in the appropriate boxes of the ordering format. Some boxes may be unfilled.

(Example: **Y**141-7U-5-B-2-02-D-B-□).

For epoxy terminal seal, specify 'E' in SEAL box, for no seal, leave box empty. 0 keying option, A four tumbler lock, 1 nickel pl. finish, N mounting style with nut, and Q contact material are supplied if no options are specified.

UL/CSA listed with all options when ordered with G or Q contact material.

Note: 01 terminations, UL listed only.

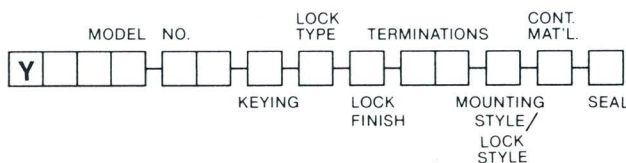
UNAVAILABLE OPTION COMBINATIONS

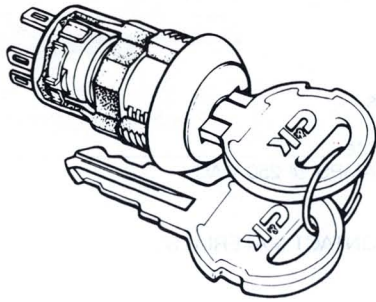
Model or Option

- YX08-12
- YX00-AA
- YX00-AB
- Y190-XX
- YX00-1X, YX00-7X
- All models except YX01-1U
- All models except Y190-XX
- R, L mtg./lock styles
- S, T mtg./lock styles

Options Not Available

- N, P, R lock types
- A, B, N, P lock types
- A, B, N, P lock types
- 01, 03 terms.
- C lock type
- L mtg./lock style
- 07 terms.
- 2 finish
- 2 finish, A, N lock types





SPECIFICATIONS

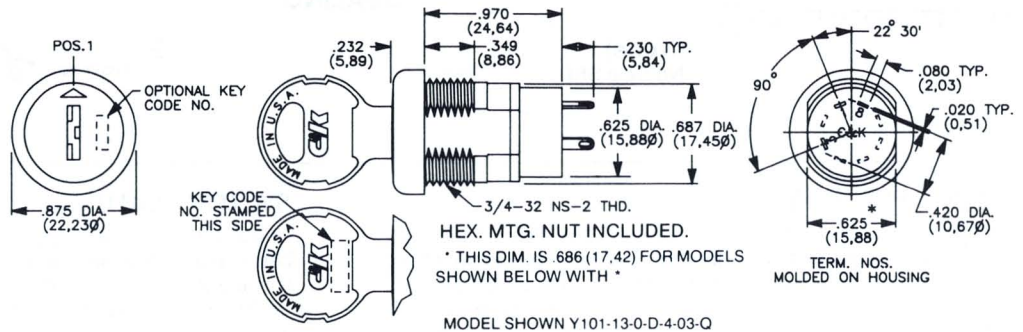
CONTACT RATING: 4 AMPS @ 125 V AC or 28 V DC; 2 AMPS @ 250 V AC (UL/CSA).
ELECTRICAL LIFE: 10,000 make-and-break cycles at full load.
CONTACT RESISTANCE: Below 10 milliohms typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.
INSULATION RESISTANCE: 10⁹ ohms min.
DIELECTRIC STRENGTH: 1,000 V RMS min. @ sea level.
INDEXING: 45° or 90°, 3 pos. max.
STATIC RESISTANCE: For Anti-Static 'L' lock type models only, exceeds 20,000 V DC static resistance @ sea level, lock body to terminals.

MATERIALS

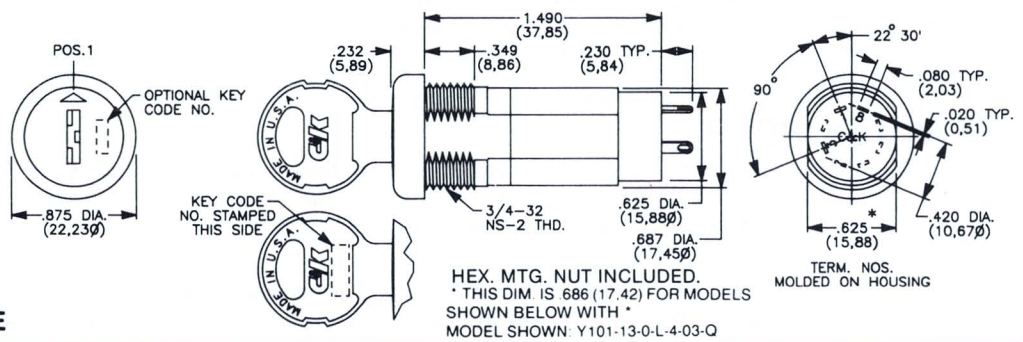
LOCK: Zinc alloy, polished nickel finish.
KEYS: Brass, with code no.
SWITCH HOUSING & TOP PLATE: 6/6 nylon (UL 94V-2).
CONTACTS: Copper, silver plated (Q cont. mat'l.).
TERMINALS: Copper, silver plated (Q cont. mat'l.).
CONTACT SPRING: Music wire or stainless steel.
MOUNTING NUT: Steel, zinc plated.

NOTE

Specifications and materials listed above are general specifications for switches with standard options. See option sections for additional information. Specifications available for specific models, consult factory.



D LOCK TYPE



L ANTI-STATIC LOCK TYPE



MODELS/SWITCHING AND LOCK FUNCTION

(For legend, see page Z-13.)

LOCK CONFIGURATION (As viewed from key end)	MODEL NO. NO. POLES	CONNECTED TERMINALS (For terminal locations, see page Z-13.)			KEY PULL POSSIBLE THESE POSITIONS
		POSITION 1	POSITION 2	POSITION 3	
45° INDEXING	Y100-13 SP Y200-13 DP	8-1 8-1,4-5	1-2 1-2,5-6	2-3 2-3,6-7	POS. 1
45° INDEXING	Y100-1U* SP Y200-1U* DP	8-1 8-1,4-5	1-2 1-2,5-6	2-3 2-3,6-7	POS. 1 POS. 3
45° INDEXING	Y100-82 SP Y200-82 DP	8-1 8-1,4-5	1-2 1-2,5-6	2-3 2-3,6-7	POS. 1
90° INDEXING	Y101-13 SP Y201-13 DP	8-1 8-1,4-5	1-3 1-3,5-7		POS. 1
90° INDEXING	Y101-1U* SP Y201-1U* DP	8-1 8-1,4-5	1-3 1-3,5-7		POS. 1 POS. 2
90° INDEXING	Y141-73 SP	1-3	3-5	8-1	POS. 1
90° INDEXING	Y141-7U* SP	1-3	3-5	8-1	POS. 1 POS. 2 POS. 3

LEGEND

For model section, previous page.

- = Detent positions (45° or 90°).
- ⊙ = Key pull possible in this position.
- ⊙ or ⊙ = Stop positions.

Bottom view shown for clarification of connected terminals from model section, previous page.



TERM. NOS. MOLDED ON HOUSING



KEYING

OPTION CODE NO.	NO. KEYS	KEY CODE STAMPED ON LOCK	ORDER KEYED ALIKE
0 (Std.)*	2	NO	YES
1	1	NO	YES
4	2	YES	YES
5	1	YES	YES

For more than one key code, replacement keys or other special features, consult factory.
 *Std. keying features include two brass keys ringed together, no key code no. on face of lock, and all switchlocks supplied with the same key code.



LOCK TYPES

- D** 6 tumbler, double-bitted lock.
- L** 6 tumbler, double-bitted lock, anti-static model.

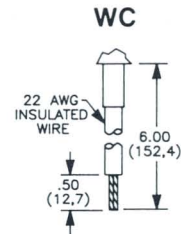
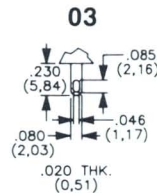
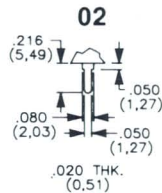
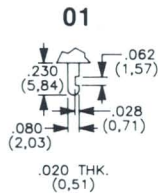


LOCK FINISH

- 4** Polished nickel.



TERMINATIONS



Black wire std. other colors, gages, and lengths avail. consult factory



CONTACT MATERIALS

CONTACT / TERMINAL MATERIALS

- B** CONTACTS & TERMINALS: Copper, with gold plate over nickel plate.
RATING: 0.4 VA max @ 20 V AC or DC max.
- Q** CONTACTS & TERMINALS: Copper, silver plated. (Std. with all termination options.)
RATING: 4 AMPS @ 125 V AC or 28 V DC; 2 AMPS @ 250 V AC (UL/CSA).
- G** CONTACTS & TERMINALS: Copper, with gold plate over nickel plate over silver plate.
RATING: 0.4 VA max. @ 20 V AC or DC max. or 4 AMPS @ 125 V AC or 28 V DC; 2 AMPS @ 250 V AC (UL/CSA).

Note: 'G' contact material is equivalent to both 'B' and 'Q' contact materials. See 'CONTACT MATERIALS', p. Z-4.
 01 terminations UL listed, all other terminations UL/CSA listed.



SEALING

(None)

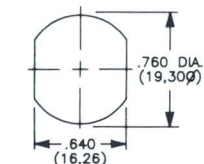
No seal

Std. with all termination options.

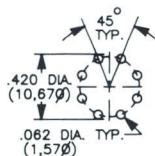
E



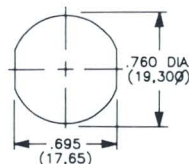
MOUNTING INFORMATION



PANEL MTG
(For all models except XXXX-XU)



P C MTG



PANEL MTG
(For XXXX-XU models only)

HOW TO ORDER

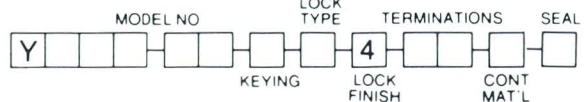
Complete the order number below by selecting the desired model no., keying, lock type, lock finish, termination, and contact material options. Place the option codes in the appropriate boxes of the ordering format. Some boxes may be unfilled.

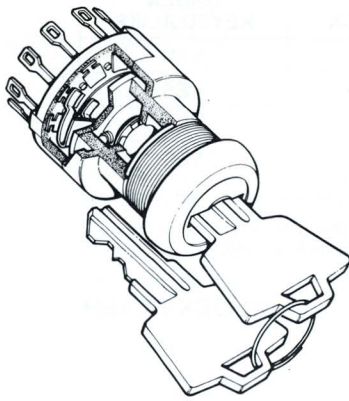
(Example: Y 2 0 1 1 3 1 D 4 0 2 Q □)

For epoxy terminal seal, specify 'E' in SEAL box, for no seal, leave box empty.

UL/CSA listed with all options when ordered with 'G' or 'Q' contact material.

Note: '01' terminations, UL listed only.





SPECIFICATIONS

CONTACT RATING: Switch- 350 mA @ 110 V AC or DC; 150 mA @ 250 V AC or DC. Carry- 5 AMPS continuous.
ELECTRICAL LIFE: 15,000 make-and-break cycles at full load up to 300,000 detent operations.
CONTACT RESISTANCE: Below 20 milliohms typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.
INSULATION RESISTANCE: 10⁹ ohms min.
DIELECTRIC STRENGTH: 1,000 V RMS min. @ sea level.
OPERATING TEMPERATURE: - 30°C to 85°C.

INDEXING: 30°- 45°- 90° indexing available, see MODELS, page Z-18.

MATERIALS

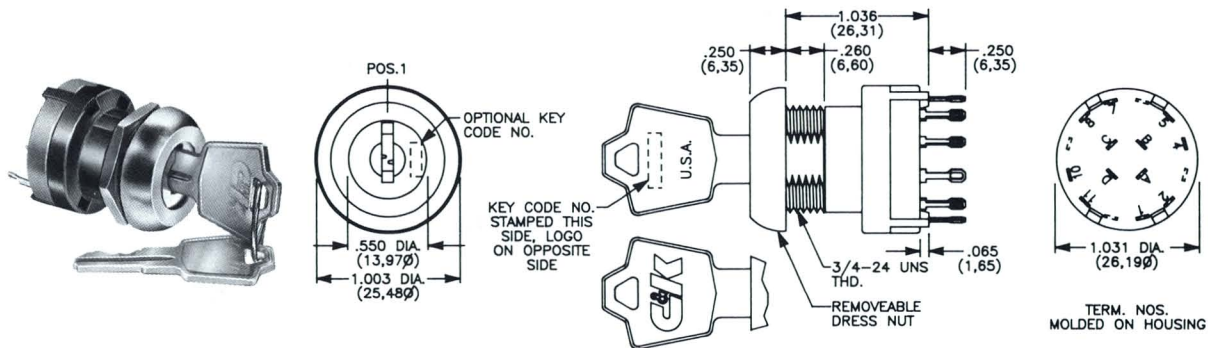
LOCK: Zinc alloy, bright nickel plated, std. Four or five tumbler mechanisms avail.
KEYS: Brass, with code no.
SWITCH HOUSING: Glass filled nylon.
TOP PLATE: Glass filled nylon.
MOVABLE CONTACT: Copper alloy, silver plated (Q cont. mat'l.).
STATIONARY CONTACTS & TERMINALS: Brass, silver plated (Q cont. mat'l.).
DRESS NUT: Brass, nickel plated.
MOUNTING NUT: Zinc alloy, nickel or bright zinc plated.

NOTE

Specifications and Materials listed above are general specifications for switches with standard options. See option sections for additional information. Specifications available for specific models, consult factory.

INTRODUCTION

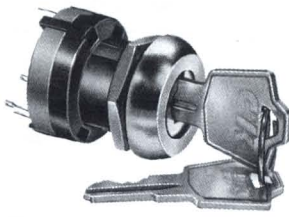
Available options for A SERIES SWITCHLOCKS are shown on pages Z-18 thru Z-20. Typical models are shown below and on next page. Make selections from the following option sections: Model/Switching & Lock Function, Keying, Lock Type, Lock Finish, Shorting/Non-Shorting Contacts, Terminations, Contact Material and (if desired) Epoxy Terminal Seal. Each section begins with the ordering format, with the appropriate boxes enlarged. Complete HOW TO ORDER information is on page Z-20.



MODEL SHOWN: A420-19-0-A-1-N-Z-Q

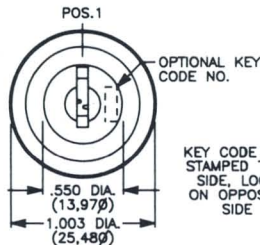
HEX MGT. NUT INCLUDED.

**A LOCK TYPE
(4 TUMBLER MODELS)**

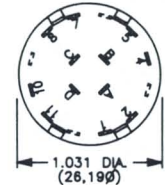
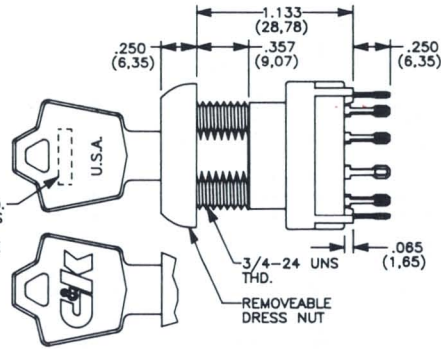


NEW

**B LOCK TYPE
(5 TUMBLER MODELS)**



KEY CODE NO. STAMPED THIS SIDE, LOGO ON OPPOSITE SIDE

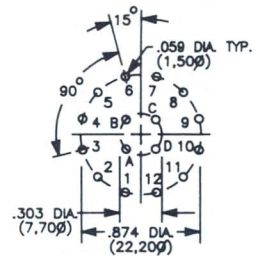
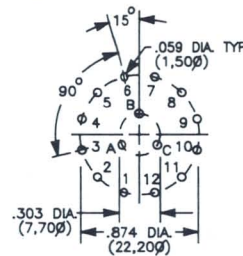
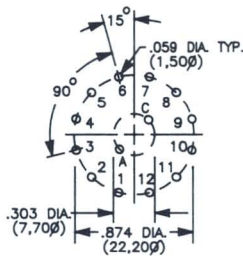
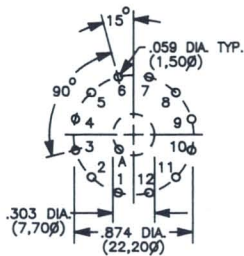


TERM. NOS. MOLDED ON HOUSING

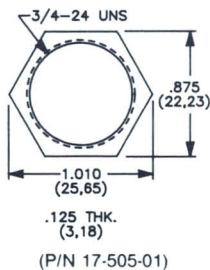
MODEL SHOWN: A420-19-0-B-1-N-Z-Q

HEX. MTG. NUT INCLUDED.

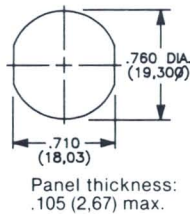
P.C. MOUNTING



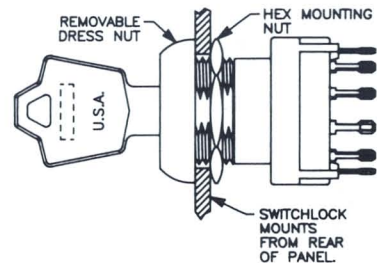
**HEX MTG. NUT
(INCLUDED WITH SWITCH)**



PANEL MOUNTING



TYPICAL ASSEMBLY



To avoid damaging front of panel, install switchlock from rear with hex nut threaded on fully. Tighten dress nut by hand. Always tighten assembly with back of panel hex nut.

LOCK FEATURES

Four or five tumbler brass mechanism. Zinc die cast lock with removable brass dress nut, bright nickel plated. Two keys provided, stamped with key code no. Locks have 30°, 45° or 90° indexing, with various key pulls available. One hex mounting nut provided. Optional: key code no. stamped on face of lock, one key per lock.

SWITCH FEATURES

True one thru four pole rotary switching available with shorting or non-shorting contacts. Solder lug terminations std., P.C. terminations available. Ratings from dry circuit to 350 mA @ 110 V AC or DC. See CONTACT MATERIALS, Z-20.



MODELS / SWITCHING AND LOCK FUNCTION

(For legend, see page Z-19.)

LOCK CONFIGURATION (AS VIEWED FROM KEY END)	MODEL NO. NO. POLES	CONNECTED TERMINALS (For terminal locations, see page Z-19.)							KEY PULL POSSIBLE THESE POSITIONS
		POS. 1	POS. 2	POS. 3	POS. 4	POS. 5	POS. 6	POS. 7	
90° INDEXING	A114-13 SP A214-13 DP A314-13 3P	A-1 A-1,C-7 A-1,B-5,C-9	A-4 A-4,C-10 A-4,B-8,C-12						POS. 1
90° INDEXING	A114-1C SP A214-1C DP A314-1C 3P	A-1 A-1,C-7 A-1,B-5,C-9	A-4 A-4,C-10 A-4,B-8,C-12						POS. 2
90° INDEXING	A114-1U SP A214-1U DP A314-1U 3P	A-1 A-1,C-7 A-1,B-5,C-9	A-4 A-4,C-10 A-4,B-8,C-12						POS. 1 POS. 2
45° INDEXING	A115-13 SP A215-13 DP A315-13 3P	A-1 A-1,C-7 A-1,B-5,C-9	A-2 A-2,C-8 A-2,B-6,C-10	A-4 A-4,C-10 A-4,B-8,C-12					POS. 1
45° INDEXING	A115-1C SP A215-1C DP A315-1C 3P	A-1 A-1,C-7 A-1,B-5,C-9	A-2 A-2,C-8 A-2,B-6,C-10	A-4 A-4,C-10 A-4,B-8,C-12					POS. 3
45° INDEXING	A115-1U SP A215-1U DP A315-1U 3P	A-1 A-1,C-7 A-1,B-5,C-9	A-2 A-2,C-8 A-2,B-6,C-10	A-4 A-4,C-10 A-4,B-8,C-12					POS. 1 POS. 3
45° INDEXING	A115-82 SP A215-82 DP	A-4 A-4,C-10	A-5 A-5,C-11	A-2 A-2,C-8					POS. 1
30° INDEXING	A116-13 SP A216-13 DP A316-13 3P	A-1 A-1,C-7 A-1,B-5,C-9	A-2 A-2,C-8 A-2,B-6,C-10	A-3 A-3,C-9 A-3,B-7,C-11	A-4 A-4,C-10 A-4,B-8,C-12				POS. 1
30° INDEXING	A116-1C SP A216-1C DP A316-1C 3P	A-1 A-1,C-7 A-1,B-5,C-9	A-2 A-2,C-8 A-2,B-6,C-10	A-3 A-3,C-9 A-3,B-7,C-11	A-4 A-4,C-10 A-4,B-8,C-12				POS. 4
30° INDEXING	A116-1U SP A216-1U DP A316-1U 3P	A-1 A-1,C-7 A-1,B-5,C-9	A-2 A-2,C-8 A-2,B-6,C-10	A-3 A-3,C-9 A-3,B-7,C-11	A-4 A-4,C-10 A-4,B-8,C-12				POS. 1 POS. 4
90° INDEXING	A117-73 SP	A-1	A-4	A-10					POS. 1
90° INDEXING	A117-7C SP	A-1	A-4	A-10					POS. 2 POS. 3
90° INDEXING	A117-7U SP	A-1	A-4	A-10					POS. 1 POS. 2 POS. 3
45° INDEXING	A118-73 SP	A-1	A-2	A-4	A-11	A-10			POS. 1
45° INDEXING	A118-7C SP	A-1	A-2	A-4	A-11	A-10			POS. 3 POS. 5
45° INDEXING	A118-7U SP	A-1	A-2	A-4	A-11	A-10			POS. 1 POS. 3 POS. 5
30° INDEXING	A119-73 SP	A-1	A-2	A-3	A-4	A-12	A-11	A-10	POS. 1
30° INDEXING	A119-7C SP	A-1	A-2	A-3	A-4	A-12	A-11	A-10	POS. 4 POS. 7
30° INDEXING	A119-7U SP	A-1	A-2	A-3	A-4	A-12	A-11	A-10	POS. 1 POS. 4 POS. 7
30° INDEXING	A120-19 SP A220-19 DP A320-19 3P A420-19 4P	A-1 A-1,C-7 A-1,B-5,C-9 A-1,B-4,C-7,D-10	A-2 A-2,C-8 A-2,B-6,C-10 A-2,B-5,C-8,D-11						POS. 1
45° INDEXING	A121-12 SP A221-12 DP A321-12 3P A421-12 4P	A-1 A-1,C-7 A-1,B-5,C-9 A-1,B-4,C-7,D-10	A-2 A-2,C-8 A-2,B-6,C-10 A-2,B-5,C-8,D-11						POS. 1
30° INDEXING	A123-10 SP A223-10 DP A323-10 3P A423-10 4P	A-1 A-1,C-7 A-1,B-5,C-9 A-1,B-4,C-7,D-10	A-2 A-2,C-8 A-2,B-6,C-10 A-2,B-5,C-8,D-11	A-3 A-3,C-9 A-3,B-7,C-11					POS. 1

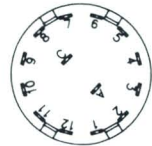
TERMINAL NUMBERS

(BOTTOM VIEWS)

LEGEND: ● = Detent positions (30°, 45° or 90°).
 ⊙ = Key pull possible in these positions.
 ● or ⊙ = Stop positions.



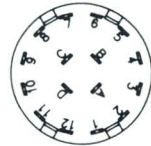
SP MODELS



DP MODELS



3P MODELS



4P MODELS

Term. nos. molded on bottom of housing.

Note: Switchlock models A114, A115, A116, A120, A121 and A123 with C terminations have additional terminal no. 8 as switch support only. This terminal is not connected electrically inside switch.

KEYING



OPTION CODE NO.	NO. KEYS	KEY CODE STAMPED ON LOCK	ORDER KEYED ALIKE
0 (STD.)*	2	NO	YES
1	1	NO	YES
4	2	YES	YES
5	1	YES	YES

For more than one key code, master keying, replacement keys or other special features, consult factory.

*Std. keying features include two brass keys ringed together, no key code no. on face of lock, all switchlocks supplied with the same key code.

LOCK TYPE



- A** 4 tumbler lock.
- B** 5 tumbler lock.

LOCK FINISH



- 1** (Std.) Nickel plated lock and dress nut.
- 3** Black chrome finish lock and dress nut.
- 4** Polished nickel plated lock and dress nut.

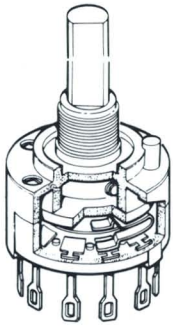
For lock and switch dimensions, see pages Z-16 and Z-17.

SHORTING/NON-SHORTING CONTACTS



- N** (Std.) Non-shorting contacts- break before make.
- S** Shorting contacts- make before break.

Note: S shorting contacts not avail. with the following models: A114, A214, A314 and A117.



SPECIFICATIONS

CONTACT RATING: Switch- 350 mA @ 110 V AC or DC; 150 mA @ 250 V AC or DC. Carry- 5 AMPS continuous.
ELECTRICAL LIFE: 15,000 make-and-break cycles at full load up to 300,000 detent operations.
CONTACT RESISTANCE: Below 20 milliohms typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.
INSULATION RESISTANCE: 10^9 ohms min.
DIELECTRIC STRENGTH: 1,000 V RMS min. @ sea level.
OPERATING TEMPERATURE: - 30°C to 85°C.

INDEXING: 30°, 45°, 90° avail., see MODELS, p. Z-23.

MATERIALS

HOUSING: Glass filled nylon, red.
TOP PLATE & BUSHING: Glass filled nylon, gray.
ACTUATOR: Glass filled nylon, gray.
MOVABLE CONTACT: Copper alloy, silver plated (Q cont. mat'l.).
STATIONARY CONTACTS & TERMINALS: Brass, silver plated (Q cont. mat'l.).
HARDWARE: Nut- Zinc, nickel plated.
 Lockwasher- Steel, bright zinc plated.
 Stop Ring- Brass, nickel plated.

NOTE

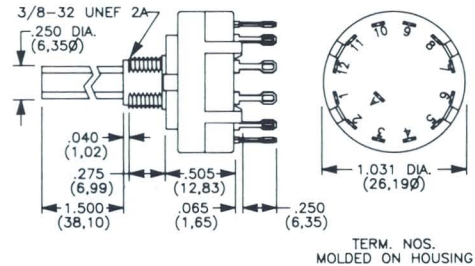
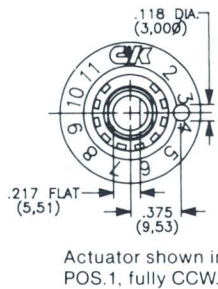
Specifications and Materials listed above are general specifications for switches with standard options. See option sections for additional information. Specifications available for specific models, consult factory.

INTRODUCTION

A selection of complete A SERIES ROTARY SWITCH order numbers is shown below and on page Z-22. To order alternate configurations, see available options on pages Z-23 and Z-24. Complete HOW TO ORDER information is on page Z-25.

ORDER NO.	SW. FUNCTION
A101-15-R-N-Z-Q	SPST
A102-15-R-N-Z-Q	SPDT
A103-15-R-N-Z-Q	SP 3 POS.
A104-15-R-N-Z-Q	SP 4 POS.
A105-15-R-N-Z-Q	SP 5 POS.
A106-15-R-N-Z-Q	SP 6 POS.
A107-15-R-N-Z-Q	SP 7 POS.
A108-15-R-N-Z-Q	SP 8 POS.
A109-15-R-N-Z-Q	SP 9 POS.
A110-15-R-N-Z-Q	SP 10 POS.
A111-15-R-N-Z-Q	SP 11 POS.
A112-15-R-N-Z-Q	SP 12 POS.
A114-15-R-N-Z-Q	SP 2 POS. 90° INDEX
A115-15-R-N-Z-Q	SP 3 POS. 45° INDEX
A124-15-R-N-Z-Q	SP 4 POS. 90° INDEX
A125-15-R-N-Z-Q	SP 8 POS. 45° INDEX

All models 30° indexing unless otherwise noted.

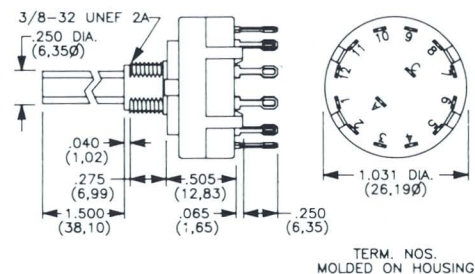
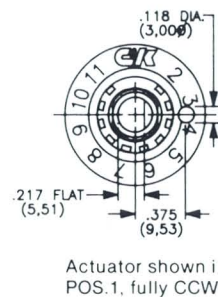


SP MODELS

MODEL SHOWN: A112-15-R-N-Z-Q

ORDER NO.	SW. FUNCTION
A201-15-R-N-Z-Q	DPST
A202-15-R-N-Z-Q	DPDT
A203-15-R-N-Z-Q	DP 3 POS.
A204-15-R-N-Z-Q	DP 4 POS.
A205-15-R-N-Z-Q	DP 5 POS.
A206-15-R-N-Z-Q	DP 6 POS.
A214-15-R-N-Z-Q	DP 3 POS. 90° INDEX
A215-15-R-N-Z-Q	DP 3 POS. 45° INDEX

All models 30° indexing unless otherwise noted.

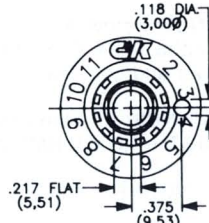


DP MODELS

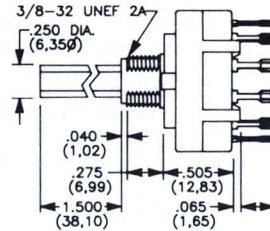
MODEL SHOWN: A206-15-R-N-Z-Q

ORDER NO. SW. FUNCTION

- A301-15-R-N-Z-Q 3PST
- A302-15-R-N-Z-Q 3PDT
- A303-15-R-N-Z-Q 3P 3 POS.
- A304-15-R-N-Z-Q 3P 4 POS.
- A314-15-R-N-Z-Q 3P 2 POS.
90° INDEX
- A315-15-R-N-Z-Q 3P 3 POS.
45° INDEX



Actuator shown in POS.1, fully CCW.



TERM. NOS. MOLDED ON HOUSING

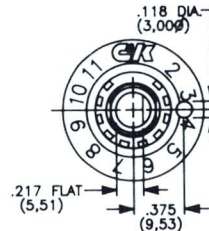
All models 30° indexing unless otherwise noted.

3P MODELS

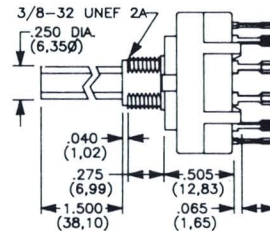
MODEL SHOWN: A304-15-R-N-Z-Q

ORDER NO. SW. FUNCTION

- A401-15-R-N-Z-Q 4PST
- A402-15-R-N-Z-Q 4PDT
- A403-15-R-N-Z-Q 4P 3 POS.



Actuator shown in POS.1, fully CCW.



TERM. NOS. MOLDED ON HOUSING

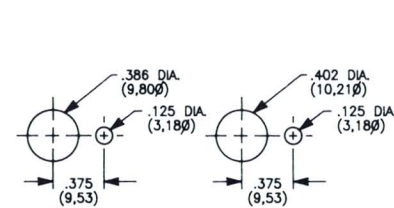
All models 30° indexing unless otherwise noted.

4P MODELS

MODEL SHOWN: A403-15-R-N-Z-Q

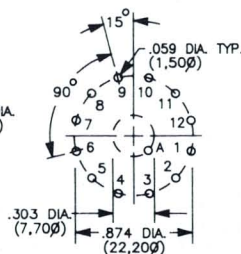
PANEL MOUNTING

P.C. MOUNTING

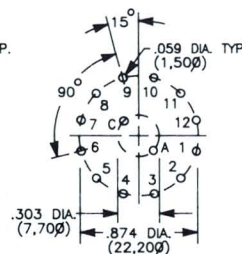


3/8 IN. BUSHING

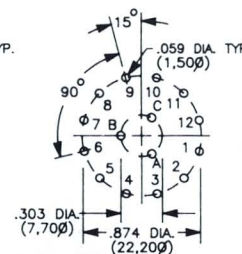
METRIC BUSHING



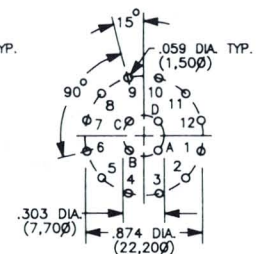
SP MODELS



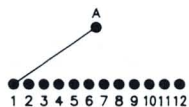
DP MODELS



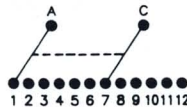
3P MODELS



4P MODELS

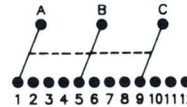


SP MODELS

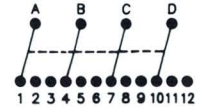


DP MODELS

SCHEMATICS



3P MODELS



4P MODELS

ACTUATOR IN POS. 1

A SERIES OPTIONS

Switches different from those shown on pages Z-21 and Z-22 can be ordered by selecting desired options which begin below. See HOW TO ORDER information, page Z-25.



MODELS

(DP models)

(3P models)

Model (SP models)		
Model No.	Sw. Func.	Terms.
A101	ST	A, 2*
A102	DT	A, 1, 2*
A103	3 pos.	A, 1, 3*
A104	4 pos.	A, 1, 4*
A105	5 pos.	A, 1, 5*
A106	6 pos.	A, 1, 6*
A107	7 pos.	A, 1, 7
A108	8 pos.	A, 1, 8
A109	9 pos.	A, 1, 9
A110	10 pos.	A, 1, 10
A111	11 pos.	A, 1, 11
A112	12 pos.	A, 1, 12
A114	2 pos.-90° index	A, 1, 4*
A115	3 pos.-45° index	A, 1, 2, 4*
A124	4 pos.-90° index	A, 1, 4, 7, 10
A125	8 pos.-45° index	A, 1, 2, 4, 5, 7, 8, 10, 11

Model (DP models)		
Model No.	Sw. Func.	Terms.
A201	ST	A, C, 2, 8
A202	DT	A, C, 1, 2, 7, 8
A203	3 pos.	A, C, 1, 3, 7-9
A204	4 pos.	A, C, 1, 4, 7-10
A205	5 pos.	A, C, 1, 5, 7-11
A206	6 pos.	A, C, 1-12
A214	2 pos.-90° index	A, C, 1, 4, 7, 10
A215	3 pos.-45° index	A, C, 1, 2, 4, 7, 8, 10

Model (3P models)		
Model No.	Sw. Func.	Terms.
A301	ST	A, B, C, 2, 6, 10
A302	DT	A, B, C, 1, 2, 5, 6, 9, 10
A303	3 pos.	A, B, C, 1, 3, 5, 7, 9-11
A304	4 pos.	A, B, C, 1-12
A314	2 pos.-90° index	A, B, C, 1, 4, 5, 8, 9, 12
A315	3 pos.-45° index	A, B, C, 1, 2, 4, 5, 6, 8, 9, 10, 12

(4P models)

Model (4P models)		
Model No.	Sw. Func.	Terms.
A401	ST	A, B, C, D, 2, 5, 8, 11
A402	DT	A, B, C, D, 1, 2, 4, 5, 7, 8, 10, 11
A403	3 pos.	all terms.

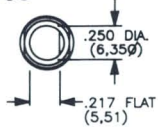
*Note: Switches with C or MC terminations have additional terminal no. 9 as switch support only. This terminal is not connected electrically inside switch.

All models 30° indexing unless otherwise noted.

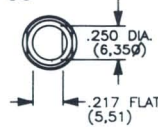


ACTUATORS

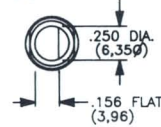
03



05



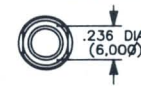
14



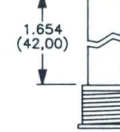
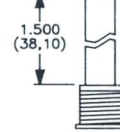
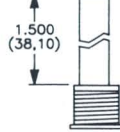
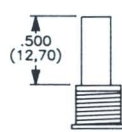
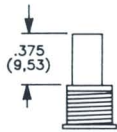
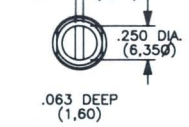
15 (Std.)



42 METRIC



S1

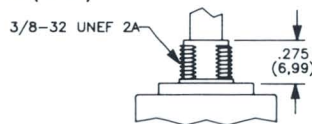


Actuators shown in POS.1., fully CCW.

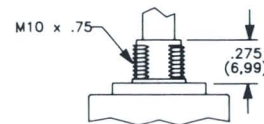
BUSHING



R (Std.)



M METRIC



SHORTING / NON-SHORTING CONTACTS



N (Std.) Non-shorting contacts- break before make.

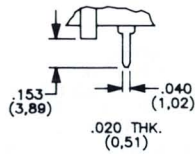
S Shorting contacts- make before break.

Note: S shorting contacts not avail. with A114, A124, A214, A314 models.

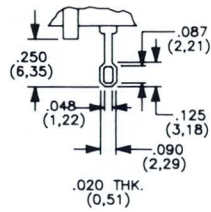
TERMINATIONS



C

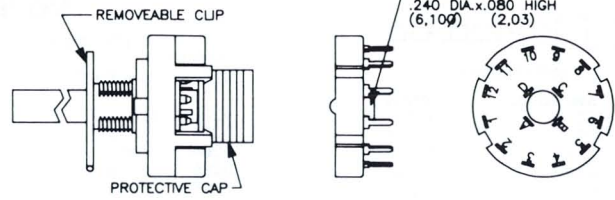


Z



MC

MODULAR BASE FOR WAVE SOLDERING



Solder and clean switch base on P.C. board with other components, then snap on housing / actuator assy. See page Z-25 for installation instructions.

CONTACT MATERIALS



CONTACT / TERMINAL MATERIALS

- B** MOVABLE CONTACT: Copper alloy, with gold plate over nickel plate.
STATIONARY CONTACTS & TERMINALS: Brass, with gold plate over nickel plate.
RATING: 0.4 VA max. @ 20 V AC or DC max.
- Q** MOVABLE CONTACT: Copper alloy, silver plated.
STATIONARY CONTACTS & TERMINALS: Brass, silver plated.
RATING: Switch- 350 mA @ 110 V AC or DC; 150 mA @ 250 V AC or DC.
Carry- 5 AMPS continuous.
(Std. with all termination options)
- G** MOVABLE CONTACT: Copper alloy, with gold plate over nickel plate over silver plate.
STATIONARY CONTACTS & TERMINALS: Brass, with gold plate over nickel plate over silver plate.
RATING: 0.4 VA max. @ 20 V AC or DC max. or
Switch- 350 mA @ 110 V AC or DC; 150 mA @ 250 V AC or DC.
Carry- 5 AMPS continuous.

Note: 'G' contact material is equivalent to both 'B' and 'Q' contact materials. See 'CONTACT MATERIALS', p. Z-4.

SEALING

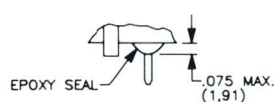


(None)

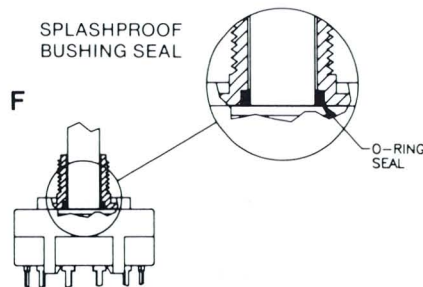
No seal

Std. with all termination options.

E

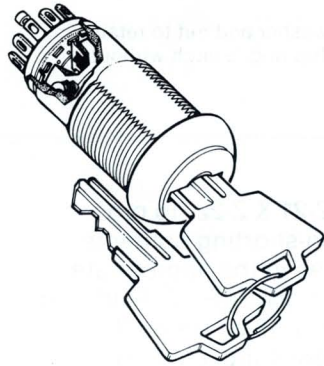


F



K

Both E epoxy terminal seal and F splashproof bushing seal.



SPECIFICATIONS

CONTACT RATING: Switch—250 mA max. @ 125 V AC or 28 V DC.
 Carry—6 AMPS continuous.
 Non-shorting contacts std.
ELECTRICAL LIFE: 10,000 make-and-break cycles at 150 mA, 125 V AC or 28 V 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.
INDEXING: 30°, 4 positions.

Note: Specifications and Materials listed above are general specifications for switches with standard options. See option sections for additional information. Specifications available for specific models, consult factory.

MATERIALS

LOCK & SWITCH HOUSING: One piece zinc alloy, bright nickel plated, std.; stainless steel facing, black finish and polished nickel also avail.
KEYS: Brass, with code no.
SWITCH BASE: Thermoset plastic, with insert molded terminals.
ROTOR: Glass filled polyester (UL94V-0).
MOVABLE CONTACTS:
 Non-shorting—Brass, silver plated (Q cont. mat'l.).
 Shorting—Zinc alloy, silver plated (Q cont. mat'l.).
STATIONARY CONTACTS: Brass, silver plated (Q cont. mat'l.).
TERMINALS: Brass, silver plated (Q cont. mat'l.). Terminals insert molded. All terminals present regardless of number of switch positions.
CONTACT SPRING: Music wire, phosphate coated or stainless steel.
MOUNTING NUT: Zinc alloy, nickel or bright zinc plated.
MOUNTING CLIP: Steel, nickel or bright zinc plated.

INTRODUCTION

Available options for M SERIES HALF-INCH ROTARY SWITCHLOCKS are shown on pages Z-27 thru Z-29. Typical models are shown below. Make selections from the following option sections: Model/Switching & Lock Function, Keying, Lock Type, Lock Finish, Shorting/Non-Shorting Contacts, Terminations, Mounting Style and Contact Material. Each section begins with the ordering format, with the appropriate boxes enlarged. Complete HOW TO ORDER information is on page Z-29.

SP MODELS

POS. 1
 .616 DIA. (15,65)
 .880 DIA. (22,35)
 .912 DIA. (23,16) WHEN ORDERED WITH LOCK FINISH '2'

OPTIONAL KEY CODE NO.
 KEY CODE NO. STAMPED THIS SIDE, LOGO ON OPPOSITE SIDE

.222 (5,64) WHEN ORDERED WITH LOCK FINISH '2'

U.S.A.

1.161 (29,49)
 .700 (17,78)
 .215 (5,46)
 .125 (3,18)
 .548 DIA. (13,92)
 .630 DIA. (16,00)
 3/4-24 UNS THD.

NUT INCLUDED STD., CLIP AVAILABLE.

TERM. NOS. ON HOUSING

*SUBTRACT .020 (0,51) FROM THESE DIMS. WHEN ORDERED WITH STAINLESS LOCK FINISH, OPTION '2'.

MODEL SHOWN: M116-1U-0-B-1-N-Z-N-Q

DP MODELS

POS. 1
 .616 DIA. (15,65)
 .880 DIA. (22,35)
 .912 DIA. (23,16) WHEN ORDERED WITH LOCK FINISH '2'

OPTIONAL KEY CODE NO.
 KEY CODE NO. STAMPED THIS SIDE, LOGO ON OPPOSITE SIDE

.222 (5,64) WHEN ORDERED WITH LOCK FINISH '2'

U.S.A.

1.161 (29,49)
 .700 (17,78)
 .215 (5,46)
 .125 (3,18)
 .548 DIA. (13,92)
 .630 DIA. (16,00)
 3/4-24 UNS THD.

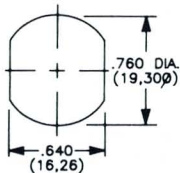
NUT INCLUDED STD., CLIP AVAILABLE.

TERM. NOS. ON HOUSING

*SUBTRACT .020 (0,51) FROM THESE DIMS. WHEN ORDERED WITH STAINLESS LOCK FINISH, OPTION '2'.

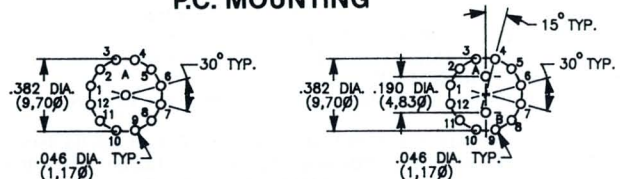
MODEL SHOWN: M216-1U-0-B-1-N-Z-N-Q

PANEL MOUNTING



LOCK FINISH	MTG. STYLE	PANEL THICKNESS
1, 3, 4	NUT	.550 (13,97) max.
1, 3, 4	CLIP	.085 (2,16) - .105 (2,67)
2	NUT	.530 (13,46) max.
2	CLIP	.065 (1,65) - .085 (2,16)

P.C. MOUNTING



SP

DP



SHORTING / NON-SHORTING CONTACTS

N (Std.) Non-shorting contacts — break before make.

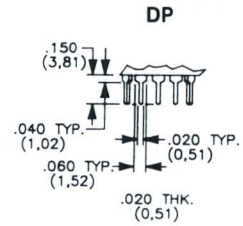
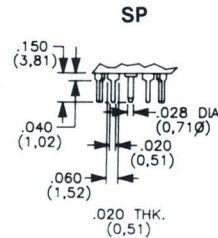
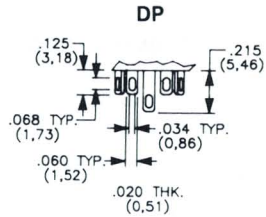
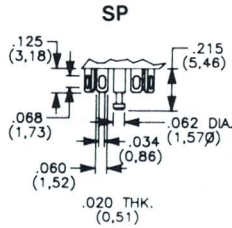
S Shorting contacts — make before break.



TERMINATIONS

Z (Std.)

C



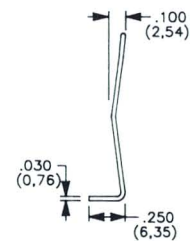
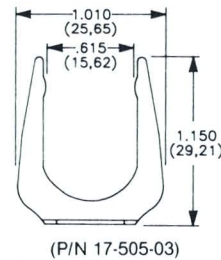
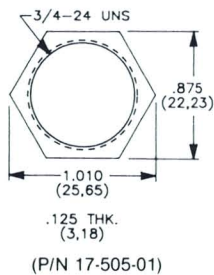
Terminals insert molded. All terminals present regardless of number of switch positions.



MOUNTING STYLES

N (Std.)

D CLIP



Panel mounting information, see page Z-26.



CONTACT MATERIALS / RATINGS

Q MOVABLE CONTACT: Non-shorting — Brass, silver plated.
Shorting — Zinc alloy, silver plated.

STATIONARY CONTACTS & TERMINALS: Brass, silver plated.

RATING: Switch — 250 mA @ 125 V AC or 28 V DC.

Carry — 6 AMPS continuous.

(Std. with all termination options)

G MOVABLE CONTACT: Non-shorting — Brass, with gold plate over nickel plate over silver plate.

Shorting — Zinc, alloy, with gold plate over nickel plate over silver plate.

STATIONARY CONTACTS & TERMINALS: Brass, with gold plate over nickel plate over silver plate.

RATING: 0.4 VA max. @ 20 V AC or DC max. or

Switch — 250 mA @ 125 V AC or 28 V DC.

Carry — 6 AMPS continuous.

Note: G contact material can be used where either dry circuit* or power conditions are encountered. However, when the dry circuit rating is exceeded, the gold plating is removed from the contact interface and the switch cannot then be used in dry circuits.

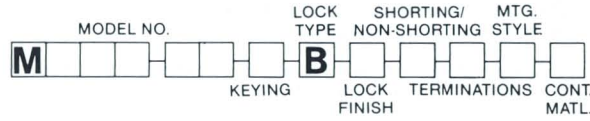
* Dry circuit = conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

HOW TO ORDER

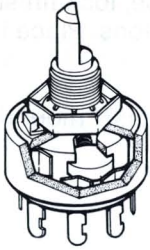
Complete the order number below by selecting the desired model no., keying, lock type, lock finish, shorting or non-shortening contacts, termination, mounting style and contact material options. Place the option codes in the appropriate boxes of the ordering format.

(Example: **M**216-1U-0-B-2-N-C-D-G).

0 keying option, B five tumbler lock, 1 nickel plated lock finish, N non-shortening contacts, N mounting style with nut and Q contact material are supplied if no options are specified.



C&K H Series **NEW** CONSTRUCTION Power ROTA-SLIDE® Rotary Switches



SPECIFICATIONS

CONTACT RATING: 12 AMPS @ 125 V AC;
6 AMPS @ 250 V AC; 1 AMP @ 125 V DC
(UL/CSA pending).
ELECTRICAL LIFE: 10,000 make-and-break
cycles at full load.
MECHANICAL LIFE: 100,000 cycles min.
CONTACT RESISTANCE: Below 10 milliohms
typ. initial @ 2-4 V DC, 100 mA.
INSULATION RESISTANCE: 10⁹ ohms min.
DIELECTRIC STRENGTH: 1,000 V RMS min.
@ sea level.
INDEXING: 45°—one contact models, 8 pos.
max.; two contact models, 4 pos. max.

MATERIALS

HOUSING: 6/6 nylon (UL 94V-2), black.
TOP PLATE & BUSHING: 6/6 nylon (UL 94V-2),
black.
ACTUATOR: 6/6 nylon (UL 94V-2), natural.
CONTACTS: Copper, silver plated (Q cont.
mat'l.).
TERMINALS: Copper, silver plated (Q cont.
mat'l.).
CONTACT SPRING: Music wire or stainless
steel.
MOUNTING NUT: Steel, zinc plated.

NOTE Specifications and Materials listed above are general specifications for switches with standard options. See option sections for additional information. Specifications available for specific models, consult factory.

INTRODUCTION

A selection of complete H SERIES POWER ROTA-SLIDE ROTARY SWITCH order numbers is shown below. To order alternate configuration, see available options on page Z-31. Complete HOW TO ORDER information is also on page Z-31. UL/CSA pending.

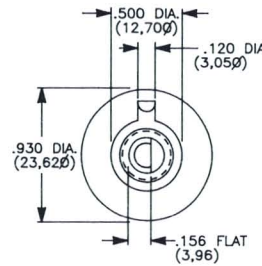
ORDER NO. SW. FUNCTION

(one contact models)

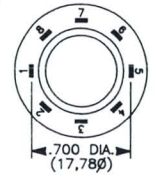
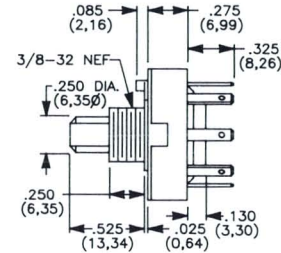
H100-07-RR-05-Q	8 POS. No Stops
H101-07-RR-05-Q	ST
H102-07-RR-05-Q	DT
H103-07-RR-05-Q	3 POS.
H104-07-RR-05-Q	4 POS.
H105-07-RR-05-Q	5 POS.
H106-07-RR-05-Q	6 POS.
H107-07-RR-05-Q	7 POS.
H108-07-RR-05-Q	8 POS.

(two contact models)

H200-07-RR-05-Q	4 POS. No Stops
H201-07-RR-05-Q	ST
H202-07-RR-05-Q	DT
H203-07-RR-05-Q	3 POS.
H204-07-RR-05-Q	4 POS.



MOUNTING NUT P/N 17-500-01



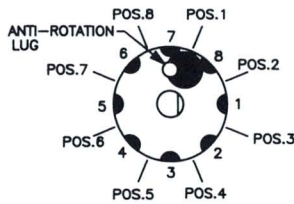
TERM. NOS. MOLDED ON HOUSING

MODEL SHOWN: H204-07-RR-05-Q

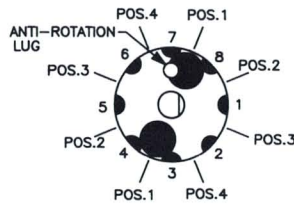
SCHEMATICS

PANEL MOUNTING

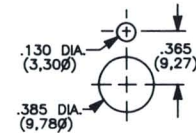
TOP VIEWS



ONE CONTACT MODELS



TWO CONTACT MODELS



Break before make contacts.
Term. nos. molded on bottom of housing.
Actuators and contacts shown in pos. 1.

H SERIES OPTIONS

Switches different from those shown on page Z-30 can be ordered by selecting desired options below. See HOW TO ORDER information.

MODELS

H 07 RR Q

(One contact models)

Model No.	Sw. Func.	Terms.
H100	8 pos.—no stops	All terms.
H101	ST	8-1
H102	DT	7-8-1
H103	3 pos.	7-8-1-2
H104	4 pos.	7-8-1-2-3

Model No.	Sw. Func.	Terms.
H105	5 pos.	7-8-1-2-3-4
H106	6 pos.	7-8-1-2-3-4-5
H107	7 pos.	All terms.
H108	8 pos.	All terms.

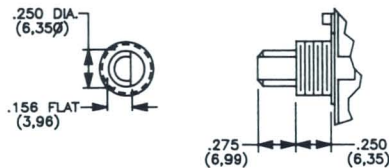
(Two contact models)

Model No.	Sw. Func.	Terms.
H200	4 pos.—no stops	All terms.
H201	ST	8-1,4-5
H202	DT	7-8-1,3-4-5
H203	3 pos.	All terms.
H204	4 pos.	All terms.

ACTUATOR

H 07 RR Q

07



MOUNTING STYLE

H 07 RR Q

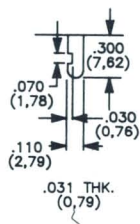
RR

Panel mount, with 3/8"-32 threaded bushing.
Mounting nut included.
Mounting nut P/N 17-500-01.

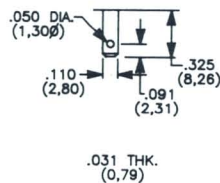
TERMINATIONS

H 07 RR Q

01



05



CONTACT MATERIALS

H 07 RR Q

CONTACT / TERMINAL MATERIALS

Q CONTACTS & TERMINALS: Copper, silver plated.

RATING: 12 AMPS @ 125 V AC; 6 AMPS @ 250 V AC; 1 AMP @ 125 V DC (UL/CSA pending).

HOW TO ORDER

Complete order numbers for selected H-SERIES models are provided on page Z-30. To order alternate configuration, select desired model no., actuator, mounting style, termination and contact material options. Place the option codes in the appropriate boxes of the ordering format. (Example: H201-07-RR-01-Q).

One mounting nut is supplied standard, not installed. UL/CSA pending.

Note:

Number of positions or stops pre-set at factory.

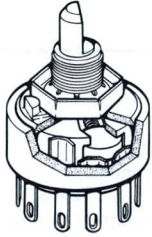




R Series

NEW CONSTRUCTION

ROTA-SLIDE® Rotary Switches



SPECIFICATIONS

CONTACT RATING: 5 AMPS @ 125 V AC;
2.5 AMPS @ 250 V AC; 0.5 AMP @
125 V DC (UL/CSA).
ELECTRICAL LIFE: 10,000 make-and-break
cycles at full load.
MECHANICAL LIFE: 100,000 cycles min.
CONTACT RESISTANCE: Below 10
milliohms typ. initial @ 2-4 V DC, 100
mA, for both silver and gold plated
contacts.
INSULATION RESISTANCE: 10⁹ ohms min.
DIELECTRIC STRENGTH: 1,000 V RMS min.
@ sea level.
INDEXING: 36°- one contact models, 10 pos.
max.; two contact models, 5 pos. max.

NOTE

Specifications and Materials listed above are general specifications for switches with standard options. See option sections for additional information. Specifications available for specific models, consult factory.

MATERIALS

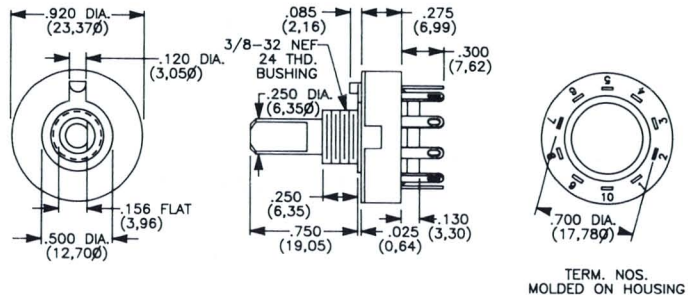
HOUSING: 6/6 nylon (UL 94V-2), black.
TOP PLATE & BUSHING: 6/6 nylon (UL
94V-2), black.
ACTUATOR: 6/6 nylon (UL 94V-2), natural.
CONTACTS: Copper, silver plated (Q cont.
mat'l.).
TERMINALS: Copper, silver plated (Q cont.
mat'l.).
CONTACT SPRING: Music wire or stainless steel.
MOUNTING NUT: Steel, zinc plated.

U.S. Pat No. 4,258,237

INTRODUCTION

A selection of complete R SERIES ROTA-SLIDE ROTARY SWITCH order numbers is shown below and on page Z-33. To order alternate configuration, see available options on pages Z-33 thru Z-35. Complete HOW TO ORDER information is on page Z-35. UL/CSA listed with all options when ordered with G or Q contact material.

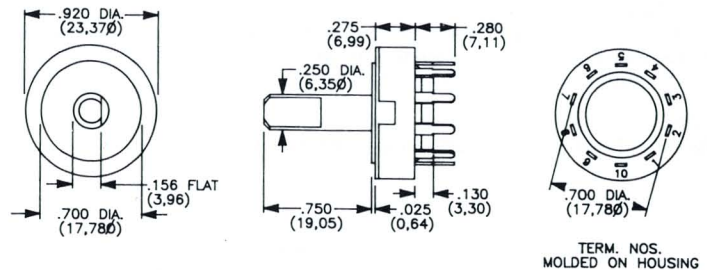
ORDER NO.	SW. FUNCTION
(one contact models)	
R100-07-RR-03-Q	10 POS.
	No Stops
R101-07-RR-03-Q	ST
R102-07-RR-03-Q	DT
R103-07-RR-03-Q	3 POS.
R104-07-RR-03-Q	4 POS.
R105-07-RR-03-Q	5 POS.
R106-07-RR-03-Q	6 POS.
R107-07-RR-03-Q	7 POS.
R108-07-RR-03-Q	8 POS.
R109-07-RR-03-Q	9 POS.
(two contact models)	
R200-07-RR-03-Q	5 POS.
	No Stops
R201-07-RR-03-Q	ST
R202-07-RR-03-Q	DT
R203-07-RR-03-Q	3 POS.
R204-07-RR-03-Q	4 POS.
R205-07-RR-03-Q	5 POS.



MOUNTING NUT P/N 17-500-01

MODEL SHOWN: R109-07-RR-03-Q

ORDER NO.	SW. FUNCTION
(one contact models)	
R100-07-RN-02-Q	10 POS.
	No Stops
R101-07-RN-02-Q	ST
R102-07-RN-02-Q	DT
R103-07-RN-02-Q	3 POS.
R104-07-RN-02-Q	4 POS.
R105-07-RN-02-Q	5 POS.
R106-07-RN-02-Q	6 POS.
R107-07-RN-02-Q	7 POS.
R108-07-RN-02-Q	8 POS.
R109-07-RN-02-Q	9 POS.
(two contact models)	
R200-07-RN-02-Q	5 POS.
	No Stops
R201-07-RN-02-Q	ST
R202-07-RN-02-Q	DT
R203-07-RN-02-Q	3 POS.
R204-07-RN-02-Q	4 POS.
R205-07-RN-02-Q	5 POS.



TERM. NOS. MOLDED ON HOUSING

MODEL SHOWN: R109-07-RN-02-Q



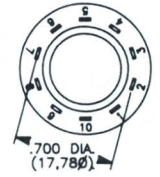
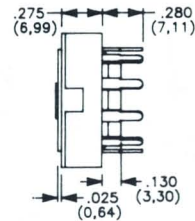
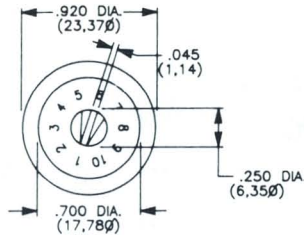
ORDER NO. SW. FUNCTION

(one contact models)

R100-15-RS-02-Q	10 POS.
	No Stops
R101-15-RS-02-Q	ST
R102-15-RS-02-Q	DT
R103-15-RS-02-Q	3 POS.
R104-15-RS-02-Q	4 POS.
R105-15-RS-02-Q	5 POS.
R106-15-RS-02-Q	6 POS.
R107-15-RS-02-Q	7 POS.
R108-15-RS-02-Q	8 POS.
R109-15-RS-02-Q	9 POS.

(two contact models)

R200-15-RS-02-Q	5 POS.
	No Stops
R201-15-RS-02-Q	ST
R202-15-RS-02-Q	DT
R203-15-RS-02-Q	3 POS.
R204-15-RS-02-Q	4 POS.
R205-15-RS-02-Q	5 POS.



POSITION NOS. MOLDED ON HOUSING,
ACTUATOR ARROW MARKED RED STD.

TERM. NOS.
MOLDED ON HOUSING

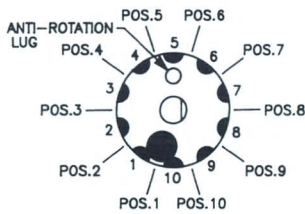
MODEL SHOWN: R109-15-RS-02-Q

SCHEMATICS

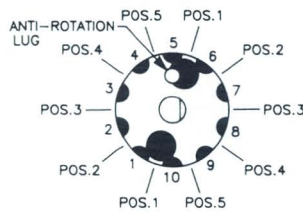
PANEL MOUNTING

P.C. MOUNTING

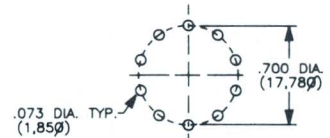
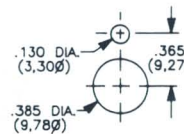
TOP VIEWS



ONE CONTACT MODELS



TWO CONTACT MODELS



Break before make contacts. Term. nos. molded on bottom of housing.
Actuators and contacts shown in pos.1.

R SERIES OPTIONS

Switches different from those shown above and on page Z-32 can be ordered by selecting desired options which begin below. See HOW TO ORDER information, page Z-35.



MODELS

(One contact models)

Model No.	Sw. Func.	Terms
R100	10 pos. no stops	All terms.
R101	ST	1-2
R102	DT	10-1-2
R103	3 pos.	10-1-2-3
R104	4 pos.	10-1-2-3-4
R105	5 pos.	10-1-2-3-4-5

(Two contact models)

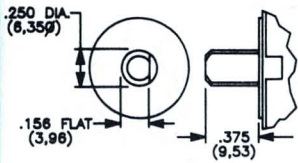
Model No.	Sw. Func.	Terms.
R106	6 pos.	10-1-2-3-4-5-6
R107	7 pos.	10-1-2-3-4-5-6-7
R108	8 pos.	10-1-2-3-4-5-6-7-8
R109	9 pos.	All terms.

Model No.	Sw. Func.	Terms.
R200	5 pos. no stops	All terms.
R201	ST	1-2,6-7
R202	DT	10-1-2,5-6-7
R203	3 pos.	10-1-2,3,5-6-7-8
R204	4 pos.	All terms.
R205	5 pos.	All terms.

ACTUATORS

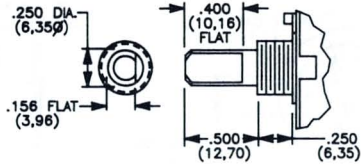


05



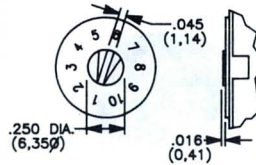
Shown with RN mounting style.

07



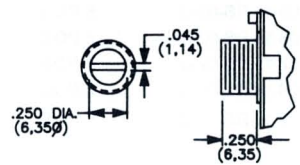
Shown with RR mounting style. For mounting styles without bushing, add .250 (6,35) to actuator length.

15



Arrow on actuator marked red, std. Shown with RS mounting style.

16

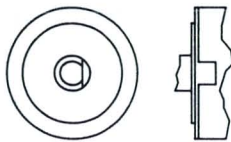


Shown with RR mounting style. For mounting styles without bushing, add .250 (6,35) to actuator length.

MOUNTING STYLES

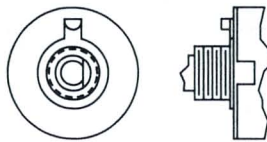


RN



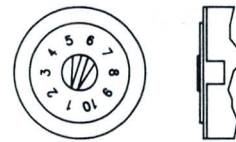
P.C. mount, no bushing.

RR



Panel mount, with 3/8" -32 threaded bushing. Mounting nut included.

RS WITH POSITION NOS.

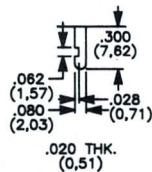


P.C. mount, no bushing, position numbers molded std. Shown with 15 actuator.

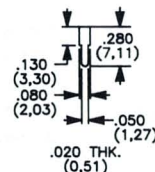
TERMINATIONS



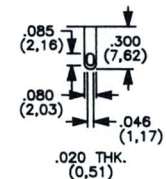
01



02



03





CONTACT MATERIALS

CONTACT / TERMINAL MATERIALS

- B** CONTACTS & TERMINALS: Copper, with gold plate over nickel plate.
RATING: 0.4 VA max. @ 20 V AC or DC max.
- Q** CONTACTS & TERMINALS: Copper, silver plated. (Std. with all termination options.)
RATING: 5 AMPS @ 125 V AC; 2.5 AMPS @ 250 V AC; 0.5 AMP @ 125 V DC (UL/CSA).
- G** CONTACTS & TERMINALS: Copper, with gold plate over nickel plate over silver plate.
RATING: 0.4 VA max. @ 20 V AC or DC max. or 5 AMPS @ 125 V AC; 2.5 AMPS @ 250 V AC; 0.5 AMP @ 125 V DC (UL/CSA).

Note: 'G' contact material is equivalent to both 'B' and 'Q' contact materials. See 'CONTACT MATERIALS', p. Z-4.



SEALING

(None)

No seal
Std. with all termination options.

E



HOW TO ORDER

Complete order numbers for selected R-SERIES models are provided on pages Z-32 & Z-33. To order alternate configuration, select desired model no., actuator, mounting style, termination and contact material options. Place the option codes in the appropriate boxes of the ordering format. Some boxes may be unfilled.

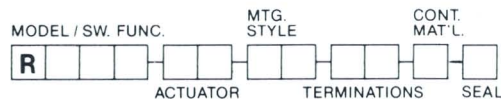
(Example: **R** [2] [0] [2] [1] [5] [R] [N] [0] [2] [G] []).

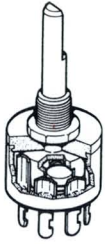
For epoxy terminal seal, specify 'E' in SEAL box, no seal, leave box empty. 07 actuator and Q contact material are supplied if no options are specified. One mounting nut is supplied standard, where applicable, not installed.

UL/CSA listed with all options when ordered with G or Q contact material.

Note:

Number of positions or stops pre-set at factory.





U.S. Pat. No. 4,258,237

SPECIFICATIONS

CONTACT RATING: 4 AMPS @ 125 V AC or 28 V DC; 2 AMPS @ 250 V AC (UL/CSA).
 ELECTRICAL LIFE: 10,000 make-and-break cycles at full load.
 MECHANICAL LIFE: 100,000 cycles min.
 CONTACT RESISTANCE: Below 10 milliohms typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.
 INSULATION RESISTANCE: 10⁹ ohms min.
 DIELECTRIC STRENGTH: 1,000 V RMS min. @ sea level.
 INDEXING: 45° or 90° - one contact models, 8 pos. max.; two contact models, 4 pos. max.
 Models with common term. - 90°, 4 pos. max.

NOTE

Specifications and Materials listed above are general specifications for switches with standard options. See option sections for additional information. Specifications available for specific models, consult factory.

MATERIALS

HOUSING: 6/6 nylon (UL 94V-2).
 TOP PLATE & BUSHING: 6/6 nylon (UL 94V-2), black.
 ACTUATOR: 6/6 nylon (UL 94V-2), natural
 CONTACTS: Copper, silver plated (Q cont. mat'l.).
 TERMINALS: Copper, silver plated (Q cont. mat'l.).
 CONTACT SPRING: Music wire or stainless steel.
 MOUNTING NUT: Brass, nickel plated.

INTRODUCTION

A selection of complete F SERIES MINIATURE ROTA-SLIDE ROTARY SWITCH order numbers is shown below and on page Z-37. To order alternate configuration, see available options on pages Z-38 and Z-39. Complete HOW TO ORDER information is on page Z-39. UL/CSA listed with all options when ordered with G or Q contact material. 01 terminations, UL listed only. FCXX models, UL/CSA pending.

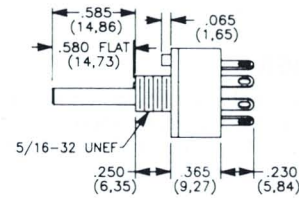
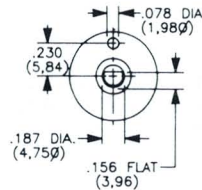
ORDER NO. SW. FUNCTION
(one contact models)

- F100-08-RS-03-Q **8 POS.**
No Stops
- F101-08-RS-03-Q **ST**
- F102-08-RS-03-Q **DT**
- F103-08-RS-03-Q **3 POS.**
- F104-08-RS-03-Q **4 POS.**
- F105-08-RS-03-Q **5 POS.**
- F106-08-RS-03-Q **6 POS.**
- F107-08-RS-03-Q **7 POS.**
- F108-08-RS-03-Q **8 POS.**

(two contact models)

- F200-08-RS-03-Q **4 POS.**
No Stops
- F201-08-RS-03-Q **ST**
- F202-08-RS-03-Q **DT**
- F203-08-RS-03-Q **3 POS.**
- F204-08-RS-03-Q **4 POS.**

All above models have 45° indexing.



TERM. NOS. MOLDED ON HOUSING

MOUNTING NUT P/N 17-502-02

45° INDEXING

MODEL SHOWN: F100-08-RS-03-Q

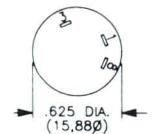
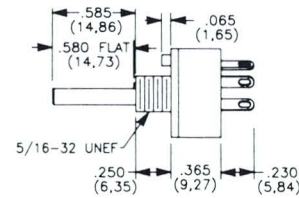
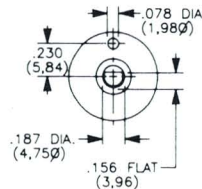
ORDER NO. SW. FUNCTION
(one contact models)

- FA01-08-RS-03-Q **DT**
- FA05-08-RS-03-Q **3 POS.**
- FA55-08-RS-03-Q **4 POS.**
No Stops

(two contact models)

- FB11-08-RS-03-Q **DT**

All above models have 90° indexing.



TERM. NOS. MOLDED ON HOUSING

MOUNTING NUT P/N 17-502-02

90° INDEXING

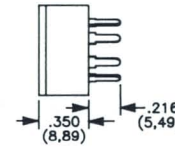
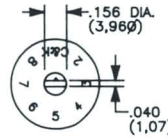
MODEL SHOWN: FA01-08-RS-093-Q



ORDER NO. SW. FUNCTION
(one contact models)

F100-15-RN-02-Q	8 POS. No Stops
F101-15-RN-02-Q	ST
F102-15-RN-02-Q	DT
F103-15-RN-02-Q	3 POS.
F104-15-RN-02-Q	4 POS.
F105-15-RN-02-Q	5 POS.
F106-15-RN-02-Q	6 POS.
F107-15-RN-02-Q	7 POS.
F108-15-RN-02-Q	8 POS.
(two contact models)	
F200-15-RN-02-Q	4 POS. No Stops
F201-15-RN-02-Q	ST
F202-15-RN-02-Q	DT
F203-15-RN-02-Q	3 POS.
F204-15-RN-02-Q	4 POS.

All above models have 45° indexing.



POSITION NOS.
MOLDED ON HOUSING

TERM. NOS.
MOLDED ON HOUSING

45° INDEXING

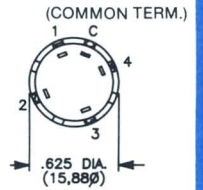
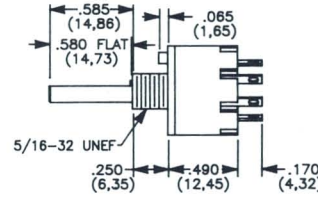
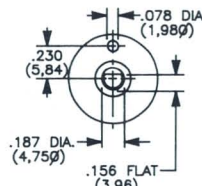
MODEL SHOWN: F100-15-RN-02-Q

ORDER NO. SW. FUNCTION

FC00-08-RS-07-Q	4 POS. No Stops
FC02-08-RS-07-Q	DT
FC03-08-RS-07-Q	3 POS.
FC04-08-RS-07-Q	4 POS.

All above models have 90° indexing with a common terminal.

NEW



Mounting Nut P/N 17-502-02

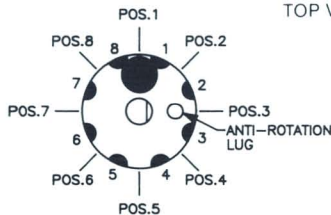
TERM. NOS.
MOLDED ON HOUSING

90° INDEXING WITH COMMON

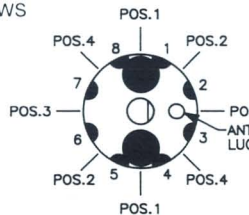
MODEL SHOWN: FC00-08-RS-07-Q

SCHEMATICS

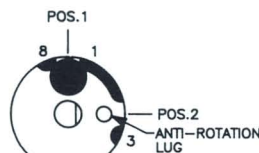
TOP VIEWS



ONE CONTACT MODELS



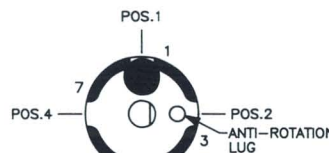
TWO CONTACT MODELS



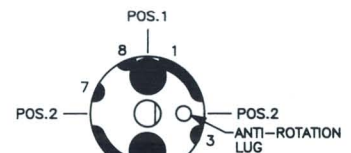
FA01 MODELS



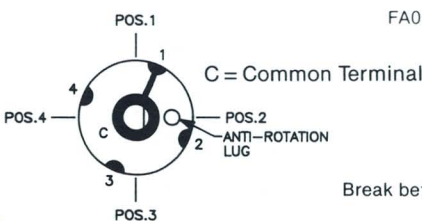
FA05 MODELS



FA55 MODELS (NO STOPS)

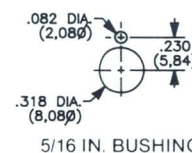


FB11 MODELS

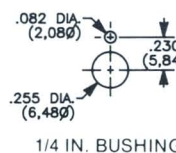


FCXX MODELS

PANEL MOUNTING

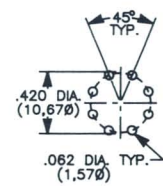


5/16 IN. BUSHING



1/4 IN. BUSHING

P.C. MOUNTING



Break before make contacts. Term. nos. molded on bottom of housing. Actuators and contacts shown in pos. 1.

F SERIES OPTIONS

Switches different from those shown on pages Z-36 and Z-37 can be ordered by selecting desired options which begin below. See HOW TO ORDER information, page Z-39.



MODELS

MODELS WITH 45° INDEXING

(One contact models)

Model No.	Sw. Func.	Terms.
F100	8 pos.—no stops	All terms.
F101	ST	1-2*
F102	DT	8-1-2*
F103	3 pos.	8-1-2-3*
F104	4 pos.	8-1-2-3-4
F105	5 pos.	8-1-2-3-4-5
F106	6 pos.	8-1-2-3-4-5-6
F107	7 pos.	All terms.
F108	8 pos.	All terms.

(Two contact models)

Model No.	Sw. Func.	Terms.
F200	4 pos.—no stops	All terms.
F201	ST	1-2,5-6
F202	DT	8-1-2,4-5-6
F203	3 pos.	All terms.
F204	4 pos.	All terms.

MODELS WITH 90° INDEXING

(One contact models)

Model No.	Sw. Func.	Terms.
FA01	DT	8-3-1
FA05	3 pos.	8-1-3-5
FA55	4 pos.—no stops	7-1-3-5

(Two contact models)

Model No.	Sw. Func.	Terms.
FB11	DT	8-1-3,4-5-7

(SP Models with common term.)

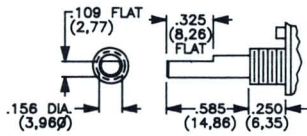
Model No.	Sw. Func.	Terms.
FC00	SP4 pos.—no stops	C-1,C-2,C-3,C-4
FC02	SPDT	C-1,C-2
FC03	SP3 pos.	C-1,C-2,C-3
FC04	SP4 pos.	C-1,C-2,C-3,C-4

* Switches with 02 and 12 P.C. Terminations have additional terminal no. 5 as switch support only. This terminal is not connected electrically inside switch.

ACTUATORS

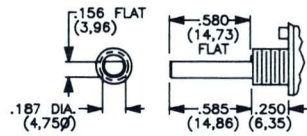


07



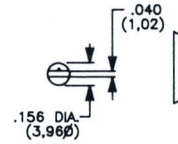
Shown with RR mounting style; not avail. with RS mounting style.

08



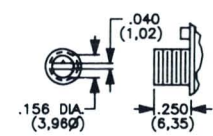
Must be ordered with RS mounting style.

15



Shown with RN mounting style; not avail. with RS mounting style or FCXX models.

16



Shown with RR mounting style; not avail. with RS mounting style.

MOUNTING STYLES

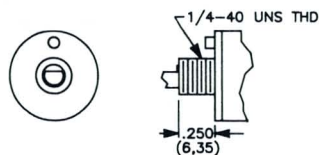


RN



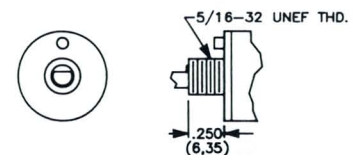
P.C. mount, no bushing, position numbers molded std. Shown with 15 actuator, not avail. with 08 actuator or FCXX models.

RR



Panel mount, with 1/4"-40 threaded bushing. Mounting nut included. 08 actuator not avail. Mounting nut P/N 7002.

RS

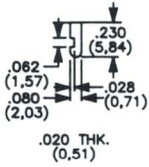


Panel mount, with 5/16"-32 threaded bushing. Mounting nut included. Must be ordered with 08 actuator option. Mounting nut P/N 17-502-02.

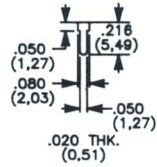
TERMINATIONS



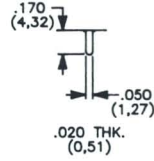
01†



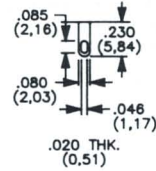
02†



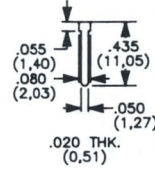
02*



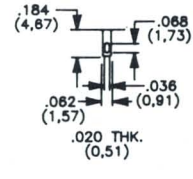
03†



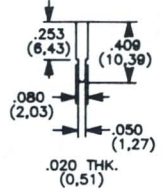
06††



07*



12††



*Available only on FCXX models.
 †Not available on FCXX models.
 ††Not available on FAXX, FBXX, FCXX models.

CONTACT MATERIALS



CONTACT / TERMINAL MATERIALS

- B CONTACTS & TERMINALS:** Copper, with gold plate over nickel plate.
 RATING: 0.4 VA max. @ 20 V AC or DC max.
- Q CONTACTS & TERMINALS:** Copper, silver plated. (Std. with all termination options.)
 RATING: 4 AMPS @ 125 V AC or 28 V DC; 2 AMPS @ 250 V AC (UL/CSA).
- G CONTACTS & TERMINALS:** Copper, with gold plate over nickel plate over silver plate.
 RATING: 0.4 VA max. @ 20 V AC or DC max. or 4 AMPS @ 125 V AC or 28 V DC; 2 AMPS @ 250 V AC (UL/CSA).

Note: 'G' contact material is equivalent to both 'B' and 'Q' contact materials. See 'CONTACT MATERIALS', p. Z-4.
 01 terminations UL listed, all other termination options UL/CSA listed. FCXX models, UL/CSA pending.

SEALING



(None)

No seal
 Std. with all termination options.

E



Not available on FCXX models.

HOW TO ORDER

Complete order numbers for selected F-SERIES models are provided on pages Z-36 and Z-37. To order alternate configuration, select desired model no., actuator, mounting style, termination and contact material options. Place the option codes in the appropriate boxes of the ordering format. Some boxes may be unfilled.

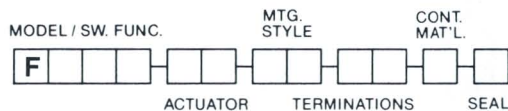
(Example: F1100-115-R1N-12-B-□).

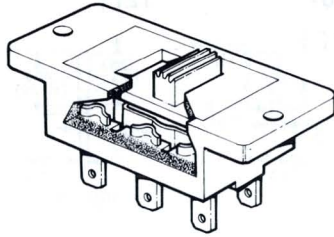
For epoxy terminal seal, specify 'E' in SEAL box. Q contact material is supplied if no option is specified. One mounting nut is supplied standard, where applicable, not installed.

UL/CSA listed with all options when ordered with G or Q contact material. Note: 01 terminations, UL listed only. FCXX models, UL/CSA pending.

Note:

Number of positions or stops pre-set at factory. F100, F200, FA55, and FC00 models have full 360° rotation with no stops.





SPECIFICATIONS

CONTACT RATING: 10.1 AMPS @ 125 V AC; 5 AMPS @ 250 V AC (UL/CSA).
 2.0 (0.5) AMPS @ 250 V AC, T85 (VDE).
 ELECTRICAL LIFE: 10,000 make-and-break cycles at full load.
 MECHANICAL LIFE: 100,000 cycles min.
 CONTACT RESISTANCE: Below 10 milli-ohms typ. initial @ 2-4 V DC, 100 mA.
 INSULATION RESISTANCE: 10⁹ ohms min.
 DIELECTRIC STRENGTH: 1,000 V RMS min. @ sea level.

NOTE

Specifications and Materials listed above are general specifications for switches with standard options. See option sections for additional information. Specifications available for specific models, consult factory.

MATERIALS

HOUSING: 6/6 nylon (UL94V-2), black.
 TOP PLATE: 6/6 nylon (UL 94V-2), black.
 ACTUATOR: Glass filled polyester (UL94V-0), 01 style, black std.; 12 and 13 styles, red std.
 CONTACTS: Copper, silver plated.
 TERMINALS: Copper, silver plated.
 CONTACT SPRING: Music wire or stainless steel.

INTRODUCTION TO UL/CSA SWITCHES

A selection of complete UL/CSA listed V SERIES POWER & LINE VOLTAGE SELECT SLIDE SWITCH order numbers is shown below and on page Z-41. To order alternate configuration, see available options on pages Z-42 and Z-43. Complete HOW TO ORDER information is on page Z-43. All models UL/CSA listed with all options. For VDE models, see pages Z-41 and Z-42.

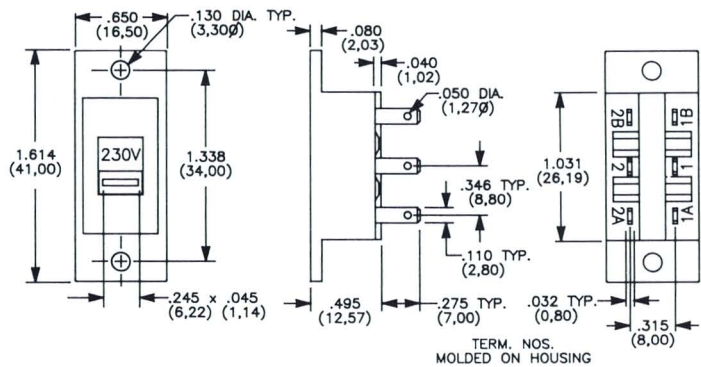
ORDER NO. SW. FUNCTION

V101-13-SS-05-Q		SPST
V102-13-SS-05-Q		SPDT
V201-13-SS-05-Q		DPST
V202-12-SS-05-Q		DPDT

Note actuator voltage markings std. on DPDT models only.



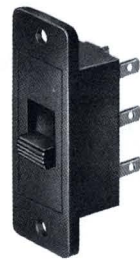
UL/CSA LISTED



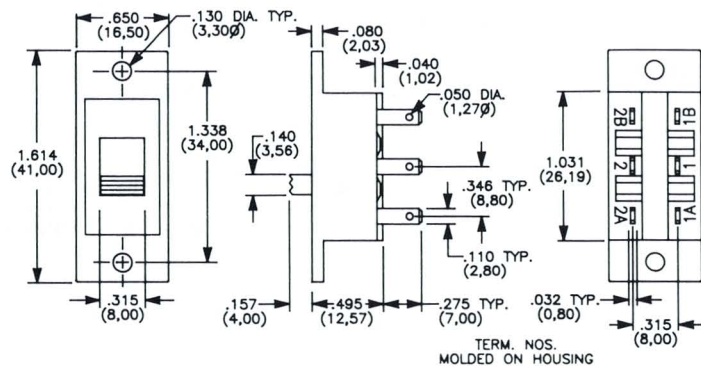
MODEL SHOWN: V202-12-SS-05-Q

ORDER NO. SW. FUNCTION

V101-01-SS-05-Q		SPST
V102-01-SS-05-Q		SPDT
V201-01-SS-05-Q		DPST
V202-01-SS-05-Q		DPDT



UL/CSA LISTED



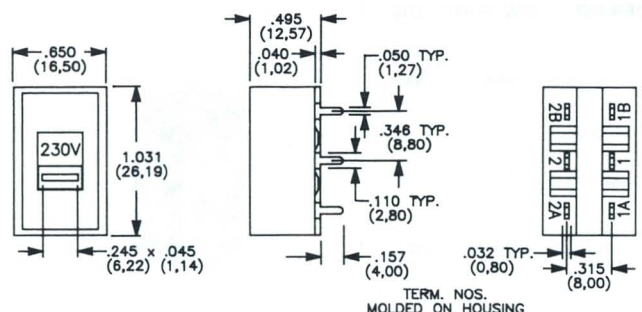
MODEL SHOWN: V202-01-SS-05-Q

ORDER NO.	SW. FUNCTION
V101-13-MS-02-Q	SPST
V102-13-MS-02-Q	SPDT
V201-13-MS-02-Q	DPST
V202-12-MS-02-Q	DPDT

Note actuator voltage markings std. on DPDT models only.



UL/CSA LISTED



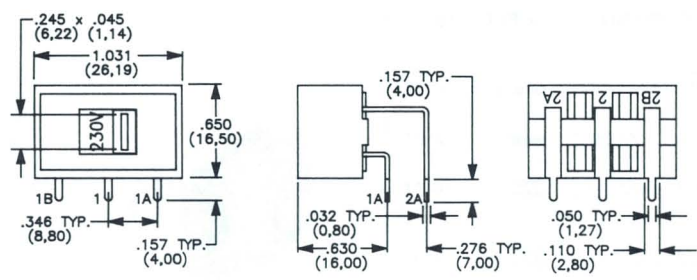
MODEL SHOWN: V202-12-MS-02-Q

ORDER NO.	SW. FUNCTION
V101-13-MA-08-Q	SPST
V102-13-MA-08-Q	SPDT
V201-13-MA-08-Q	DPST
V202-12-MA-08-Q	DPDT

Note actuator voltage markings std. on DPDT models only.



UL/CSA LISTED



MODEL SHOWN: V202-12-MA-08-Q

INTRODUCTION TO UL/CSA/VDE SWITCHES

A selection of complete UL/CSA/VDE listed V SERIES POWER & LINE VOLTAGE SELECT SLIDE SWITCH order numbers is shown below and on page Z-42. To order alternate configuration, see available options on pages Z-42 and Z-43. Complete HOW TO ORDER information is on page Z-43.

Although electrically and mechanically identical to UL/CSA listed switches, VDE listing requires a thicker top plate which increases the overall height of the switch housing by .125 (3,18).

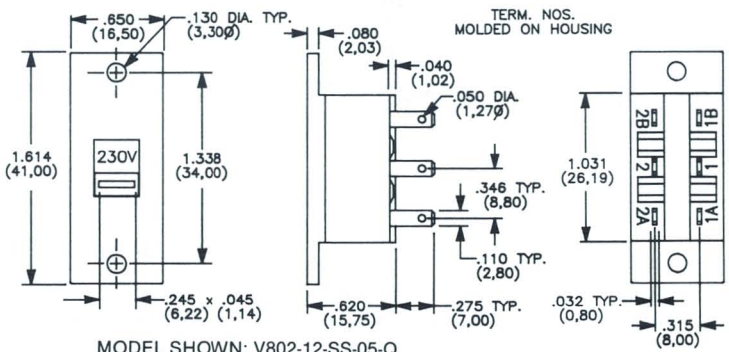
ORDER NO.	S W. FUNCTION
V701-14-SS-05-Q	SPST
V702-13-SS-05-Q	SPDT
V801-14-SS-05-Q	DPST
V802-12-SS-05-Q	DPDT

Note: actuator markings std. on all above models except SPDT. See ACTUATORS section.

NEW



UL/CSA/VDE LISTED



MODEL SHOWN: V802-12-SS-05-Q

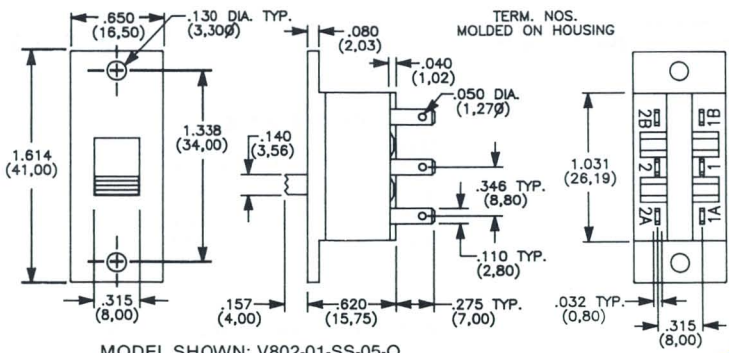
ORDER NO.	S W. FUNCTION
V701-02-SS-05-Q	SPST
V702-01-SS-05-Q	SPDT
V801-02-SS-05-Q	DPST
V802-01-SS-05-Q	DPDT

Note: actuator markings std. on SPST and DPST models. See ACTUATORS section.

NEW







UL/CSA/VDE LISTED



MODEL SHOWN: V802-01-SS-05-Q

ORDER NO. S W. FUNCTION

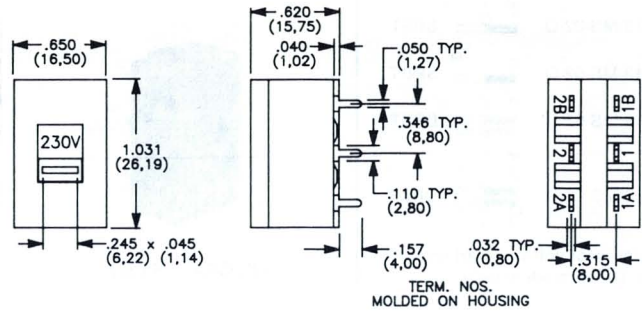
- V701-14-MS-02-Q  **SPST**
- V702-13-MS-02-Q  **SPDT**
- V801-14-MS-02-Q  **DPST**
- V802-12-MS-02-Q  **DPDT**

Note: actuator markings std. on all above models except SPDT. See ACTUATORS section.

NEW







UL/CSA/VDE LISTED



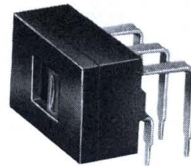
MODEL SHOWN: V802-12-MS-02-Q

ORDER NO. S W. FUNCTION

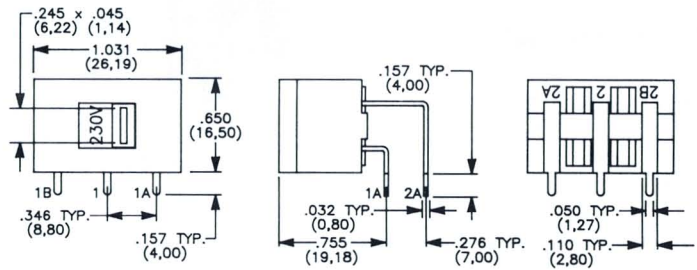
- V701-14-MA-08-Q  **SPST**
- V702-13-MA-08-Q  **SPDT**
- V801-14-MA-08-Q  **DPST**
- V802-12-MA-08-Q  **DPDT**

Note: actuator markings std. on all above models except SPDT. See ACTUATORS section.

NEW

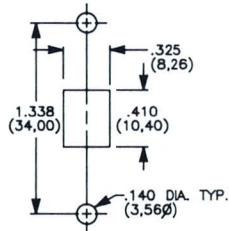


UL/CSA/VDE LISTED

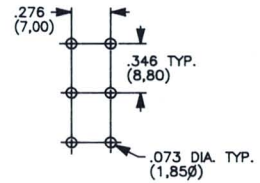
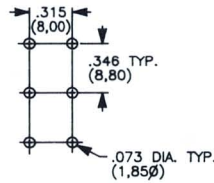


MODEL SHOWN: V802-12-MA-08-Q

PANEL MOUNTING



P.C. MOUNTING



ALL TERMINATIONS EXC. 08

08 TERMINATIONS

V SERIES OPTIONS

Switches different from those shown on pages Z-40 thru Z-42 can be ordered by selecting desired options from the available options below and on page Z-43. See HOW TO ORDER information on page Z-43.



MODELS

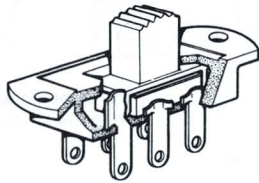
(UL/CSA MODELS)*

Model No.	Sw. Func.
V101	SPST
V102	SPDT
V201	DPST
V202	DPDT

(UL/CSA/VDE MODELS)*

Model No.	Sw. Func.
V701	SPST
V702	SPDT
V801	DPST
V802	DPDT

*See CONTACT MATERIALS section for complete contact ratings and agency listings.



SPECIFICATIONS

CONTACT RATING:
 S1XX, S2XX MODELS: 6 AMPS @ 125 V AC; 6 AMPS @ 250 V AC; 1 AMP @ 125 V DC (UL/CSA).
 S5XX, S6XX MODELS: 12 AMPS @ 125 V AC; 6 AMPS @ 250 V AC; 1 AMP @ 125 V DC (UL/CSA).
ELECTRICAL LIFE: 10,000 make-and-break cycles at full load.
MECHANICAL LIFE: 100,000 cycles min.
CONTACT RESISTANCE: Below 10 milliohms typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE: 10⁹ ohms min.
DIELECTRIC STRENGTH: 1,000 V RMS min. @ sea level.

MATERIALS

HOUSING: 6/6 nylon (UL 94V-2), black.
TOP PLATE: 6/6 nylon (UL 94V-2), black.
ACTUATOR: 6/6 nylon (UL 94V-2), black std.
CONTACTS: Copper, silver plated (Q cont. mat'l.).
TERMINALS: Copper, silver plated (Q cont. mat'l.).
CONTACT SPRING: Music wire or stainless steel.

NOTE

Specifications and Materials listed above are general specifications for switches with standard options. See option sections for additional information. Specifications available for specific models, consult factory.

U.S. Pat. No. 4,258,237

INTRODUCTION

A selection of complete S SERIES SLIDE SWITCH order numbers is shown below thru page Z-46. To order alternate configuration, see available options on pages Z-47 thru Z-49. Complete HOW TO ORDER information is on page Z-49. UL/CSA listed with all options when ordered with G or Q contact material.

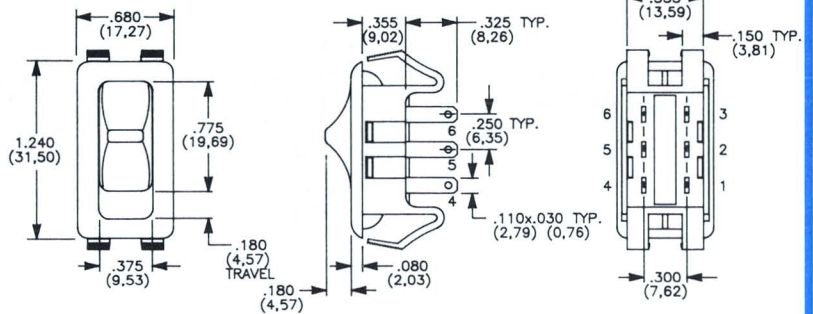
ORDER NO. SW. FUNCTION (12 AMP MODELS*)

S501-C2-1-S2-07-Q		SPST
S502-C2-1-S2-07-Q		SPDT
S511-C2-1-S2-07-Q		SPST
S512-C2-1-S2-07-Q		SPDT
S601-C2-1-S2-07-Q		DPST
S602-C2-1-S2-07-Q		DPDT

(Indicates Momentary)

*See SPECIFICATIONS for complete contact ratings.

NEW



12 AMP SNAP-IN MODELS

TERM. NOS. FOR REFERENCE ONLY

PAT. PENDING

MODEL SHOWN: S602-C2-1-S2-07-Q

See pages Z-47 for mtg. info.

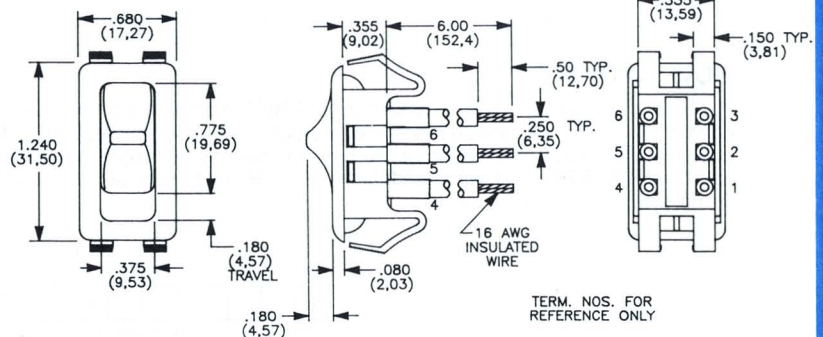
ORDER NO. SW. FUNCTION (12 AMP MODELS*)

S501-C2-1-S2-WC-Q		SPST
S502-C2-1-S2-WC-Q		SPDT
S511-C2-1-S2-WC-Q		SPST
S512-C2-1-S2-WC-Q		SPDT
S601-C2-1-S2-WC-Q		DPST
S602-C2-1-S2-WC-Q		DPDT

(Indicates Momentary)

*See SPECIFICATIONS for complete contact ratings.

NEW



12 AMP SNAP-IN MODELS





TERM. NOS. FOR REFERENCE ONLY

PAT. PENDING

MODEL SHOWN: S602-C2-1-S2-WC-Q

See pages Z-47 for mtg. info.

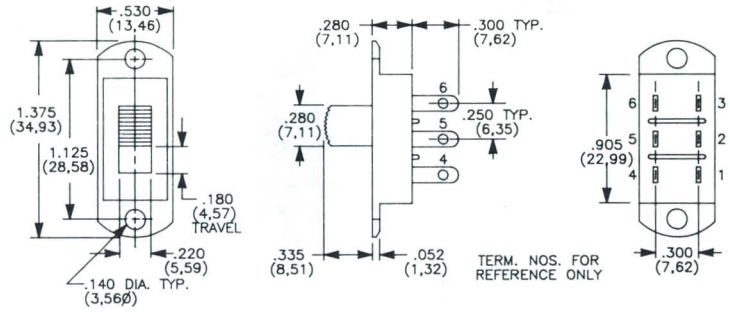
ORDER NO. SW. FUNCTION
(12 AMP MODELS*)

S501-03-1-SS-03-Q		SPST
S502-03-1-SS-03-Q		SPDT
S601-03-1-SS-03-Q		DPST
S602-03-1-SS-03-Q		DPDT

*See SPECIFICATIONS for complete contact ratings.




12 AMP MODELS



MODEL SHOWN: S602-03-1-SS-03-Q

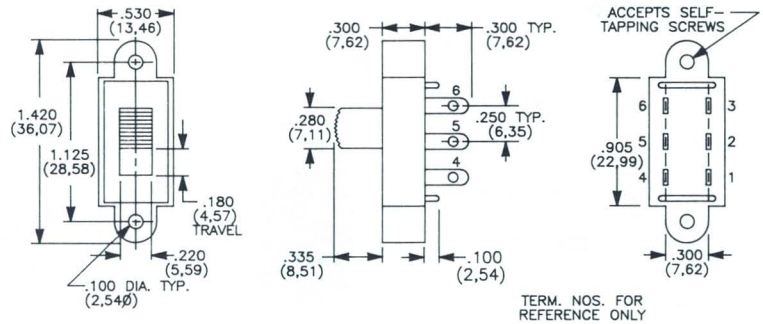
ORDER NO. SW. FUNCTION
(12 AMP MODELS*)

S601-03-1-TS-03-Q		DPST
S602-03-1-TS-03-Q		DPDT

*See SPECIFICATIONS for complete contact ratings.









**12 AMP MODELS
DP MODELS ONLY**



MODEL SHOWN: S602-03-1-TS-03-Q

ORDER NO. SW. FUNCTION
(6 AMP MODELS*)

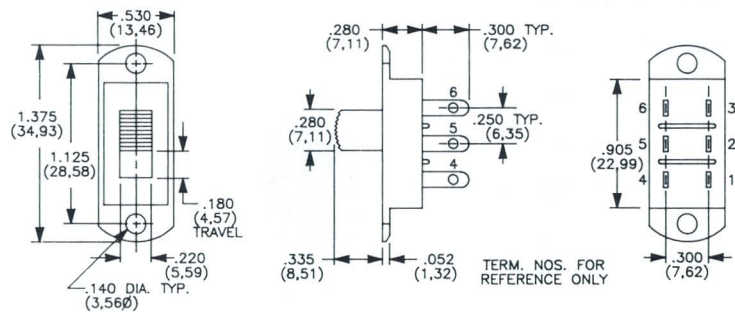
S101-03-1-SS-03-Q		SPST
S111-03-2-SS-03-Q		SPST
S102-03-1-SS-03-Q		SPDT
S112-03-2-SS-03-Q		SPDT
S201-03-1-SS-03-Q		DPST
S202-03-1-SS-03-Q		DPDT

() Indicates Momentary

*See SPECIFICATIONS for complete contact ratings.





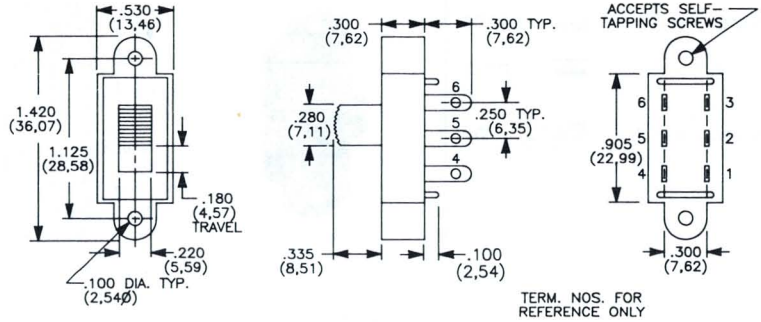
6 AMP MODELS



MODEL SHOWN: S202-03-1-SS-03-Q

**ORDER NO. SW. FUNCTION
(6 AMP MODELS*)**

S201-03-1-TS-03-Q		DPST
S202-03-1-TS-03-Q		DPDT









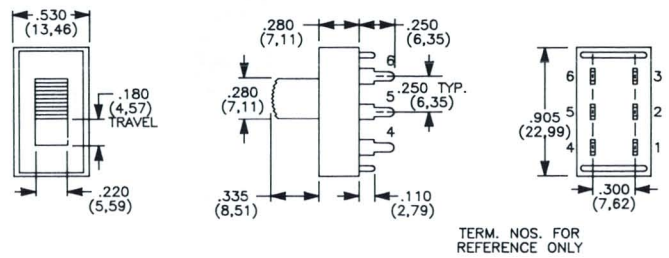
*See SPECIFICATIONS for complete contact ratings.

**6 AMP MODELS
DP MODELS ONLY**

MODEL SHOWN: S202-03-1-TS-03-Q

**ORDER NO. SW. FUNCTION
(6 AMP MODELS*)**

S101-03-1-MS-02-Q		SPST
S111-03-2-MS-02-Q		SPST
S102-03-1-MS-02-Q		SPDT
S112-03-2-MS-02-Q		SPDT
S201-03-1-MS-02-Q		DPST
S202-03-1-MS-02-Q		DPDT









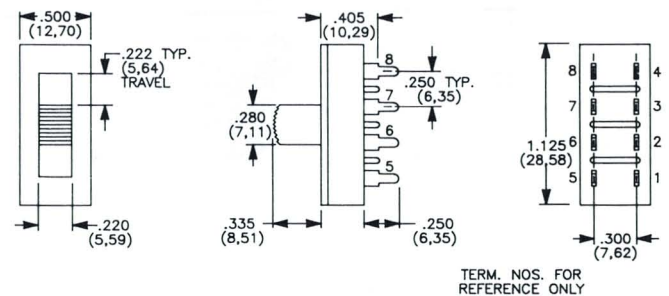
() Indicates Momentary

6 AMP MODELS

MODEL SHOWN: S202-03-1-MS-02-Q

**ORDER NO. SW. FUNCTION
(6 AMP MODELS*)**

S103-03-1-MS-02-Q		SP3T
S113-03-1-MS-02-Q		SP3T
S123-03-2-MS-02-Q		SP3T
S203-03-1-MS-02-Q		DP3T
S213-03-1-MS-02-Q		DP3T
S223-03-2-MS-02-Q		DP3T



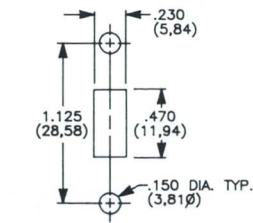
() Indicates Momentary

6 AMP MODELS

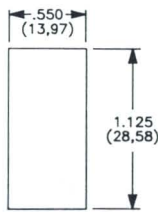
MODEL SHOWN: S203-03-1-MS-02-Q

*See SPECIFICATIONS for complete contact ratings.

PANEL MOUNTING



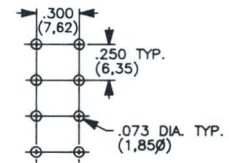
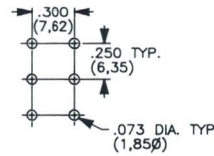
SS, TS, MOUNTING STYLE



S1-S9 MOUNTING STYLES

Panel thickness: .020 (0,51) to .200 (5,08).

P.C. MOUNTING



S SERIES OPTIONS

Switches different from those shown on pages Z-44 thru Z-46 can be ordered by selecting desired options which begin below. See HOW TO ORDER information, page Z-49.

MODELS



Model No.	(6 AMP MODELS*) Sw. Func.
S101	SPST
S111	SPST-Momentary
S102	SPDT
S112	SPDT-Momentary
S103	SP3T
S113	SP3T-Momentary to one end
S123	SP3T-Momentary to both ends
S201	DPST
S202	DPDT
S203	DP3T
S213	DP3T-Momentary to one end
S223	DP3T-Momentary to both ends

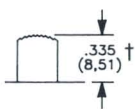
Model No.	(12 AMP MODELS*) Sw. Func.
S501	SPST
S502	SPDT
S511	SPST-Momentary
S512	SPDT-Momentary
S601	DPST
S602	DPDT

*See CONTACT MATERIALS for complete contact ratings. See SW. FUNCTION schematics for terminal nos.

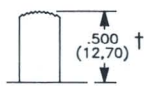
ACTUATORS



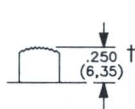
03 (std.)



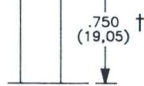
04



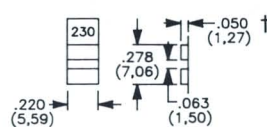
09



10

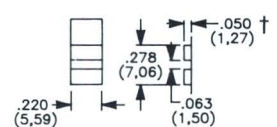


12



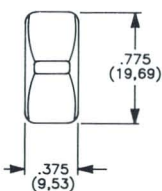
White 115-230 markings std.

13



Without markings.

C1-C9††



C1-C9 ACTUATOR COLORS

OPTION CODE	CAP COLORS
C1	White
C2	Black (Std.)
C3	Red
C4	Orange
C5	Yellow
C6	Green
C7	Blue
C8	Brown
C9	Gray

Select actuator cap color from chart. Place option codes in appropriate boxes of ordering format. Finish: matte. If no color is specified, black will be supplied. Colored actuator caps may also be ordered separately and user installed. See page Z-49.

All actuators: black std.; other colors avail., consult factory. 03-10 actuators: alternate heights avail., consult factory.

12-13 actuators: Avail. with DPST, DPDT models only.

† Subtract .090 (2,29) on models with S1-S9 mounting style.

†† Avail. only with S1-S9 mounting style.

DETENT



- 1 With Detent** Std. with S101, S102, S103, S113, S201, S202, S203, S213, S501, S502, S601, S602 models.
- 2 Without Detent** Std. with S111, S112, S123, S223, S511, S512 models.

MOUNTING STYLES



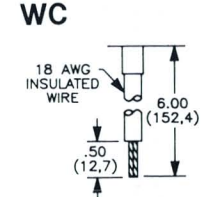
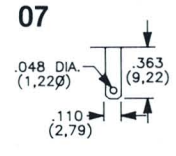
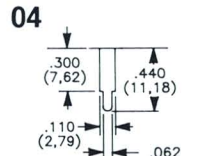
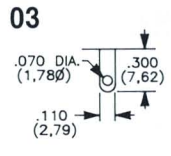
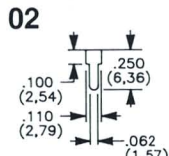
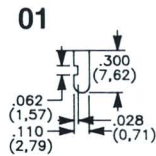
- MS** P.C. Mount. (Recommended with 02 or 04 terminations.)
- SS** Panel Mount with mounting ears. (Not avail. with SXX3 3 position models.)
- TS** Panel mount with integral mounting ears, accepts self-tapping screws (Not avail. with SXX3 3 position models.)
- S1-S9** Snap-In mounting style. (Not avail. with SXX3 3 position models.) Select top plate color option from chart. Black std. Avail. with 07, 57, WC and WR terminations only.

HOUSING TOP PLATE COLOR

Select top plate color from chart. Place option codes in appropriate boxes of ordering format. Finish of housing top plate: matte. If no color is specified, black will be supplied.

OPTION CODE	TOP PLATE COLOR
S1	White
S2	Black (Std.)
S3	Red
S4	Orange
S5	Yellow
S6	Green
S7	Blue
S8	Brown
S9	Gray

TERMINATIONS



02 and 04 terminations recommended with MS mounting style.

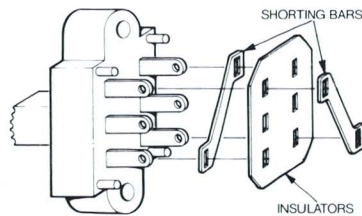
Recommended with DP models only.

Black wire std., other colors and lengths avail., consult factory.

Note: all terminals on S1XX, S2XX models .020 (0,51) thk.;
all terminals on S5XX, S6XX models .031 (0,79) thk.
07, 57 terminals avail. on S5XX, S6XX models only.
S1-S9 mounting style avail. with 07, 57, WC and WR terminations only.

REVERSING SWITCH OPTION

DPST and DPDT models only are available with two diagonal terminal jumper strips, providing reversing capability. Select desired termination option from chart.



REVERSING SWITCH TERMINATION OPTIONS	
OPTION CODE	DESCRIPTION
51	01 terms. + reversing feature
52	02 terms. + reversing feature
53	03 terms. + reversing feature
54	04 terms. + reversing feature
57	07 terms. + reversing feature
WR	WC terms. + reversing feature

CONTACT MATERIALS



- CONTACT / TERMINAL MATERIALS**
- B** CONTACTS & TERMINALS: Copper, with gold plate over nickel plate.
RATING: 0.4 VA max. @ 20 V AC or DC max.
- Q** CONTACTS & TERMINALS: Copper, silver plated. (Std. with all termination options.)
RATING: S1XX, S2XX MODELS: 6 AMPS @ 125 V AC; 6 AMPS @ 250 V AC; 1 AMP @ 125 V DC (UL/CSA).
S5XX, S6XX MODELS: 12 AMPS @ 125 V AC; 6 AMPS @ 250 V AC; 1 AMP @ 125 V DC (UL/CSA).
- G** CONTACTS & TERMINALS: Copper, with gold plate over nickel plate over silver plate.
RATING: S1XX, S2XX MODELS: 0.4 VA max. @ 20 V AC or DC max. or 6 AMPS @ 125 V AC; 6 AMPS @ 250 V AC; 1 AMP @ 125 V DC (UL/CSA).
S5XX, S6XX MODELS: 0.4 VA max. @ 20 V AC or DC max. or 12 AMPS @ 125 V AC; 6 AMPS @ 250 V AC; 1 AMP @ 125 V DC (UL/CSA).

Note: 'G' contact material is equivalent to both 'B' and 'Q' contact materials. See 'CONTACT MATERIALS', p. Z-4.

SEALING



(None)

No seal

Std. with all termination options.

E



Not avail. with reversing switch termination options.

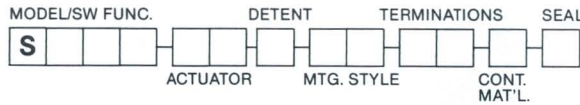
HOW TO ORDER

Complete order numbers for selected S-SERIES models are provided on pages Z-44 thru Z-46. To order alternate configuration, select desired model no., actuator, detent, mounting style, termination and contact material options. Place the option codes in the appropriate boxes of the ordering format. Some boxes may be unfilled. (Example:

S202-04-1-TS-53-Q-□).

For epoxy terminal seal, specify 'E' in SEAL box, for no seal, leave box empty. Q contact material is supplied if no option is specified.

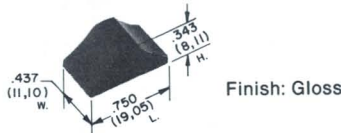
UL/CSA listed with all options when ordered with G or Q contact material.



GLAMOR CAPS

Add distinctive style at low cost. Specify part no. for desired color.

FITS 03 ACTUATOR

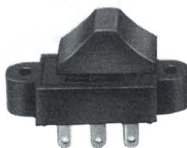


Finish: Gloss

Note: Full actuator engagement approx. .235 (5.97).

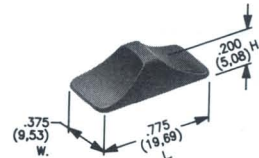
Part No.	Color	Part No.	Color
12-100-01-01	White	12-100-01-06	Green
12-100-01-02	Black(STD.)	12-100-01-07	Blue
12-100-01-03	Red	12-100-01-08	Brown
12-100-01-04	Orange	12-100-01-09	Gray
12-100-01-05	Yellow		

TYPICAL INSTALLATION



FITS C1-C9 ACTUATOR

NEW

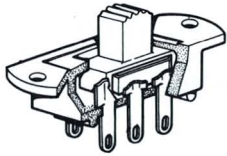


Caps avail. separately to fit C1-C9 actuators. Specify part no. for desired color. Will only fit C1-C9 actuators, avail. only on switches with S1-S9 mounting style. Finish: matte.

Part No.	Color	Part No.	Color
12-100-02-01	White	12-100-02-06	Green
12-100-02-02	Black(STD.)	12-100-02-07	Blue
12-100-02-03	Red	12-100-02-08	Brown
12-100-02-04	Orange	12-100-02-09	Gray
12-100-02-05	Yellow		

TYPICAL INSTALLATION





SPECIFICATIONS

CONTACT RATING: 4 AMPS @ 125 V AC; 2 AMPS @ 250 V AC; 0.5 AMP @ 125 V DC (UL/CSA).
 ELECTRICAL LIFE: 10,000 make-and-break cycles at full load.
 MECHANICAL LIFE: 100,000 cycles min.
 CONTACT RESISTANCE: Below 10 milliohms typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.
 INSULATION RESISTANCE: 10⁹ ohms min.

DIELECTRIC STRENGTH: 1,000 V RMS min. @ sea level.

MATERIALS

HOUSING: 6/6 nylon (UL 94V-2), black.
 TOP PLATE: 6/6 nylon (UL 94V-2), black.
 ACTUATOR: 6/6 nylon (UL94V-2), black std. (00, 13 actuators, natural std.)
 CONTACTS: Copper, silver plated (Q cont. mat'l.).
 TERMINALS: Copper, silver plated (Q cont. mat'l.).
 CONTACT SPRING: Music wire or stainless steel.


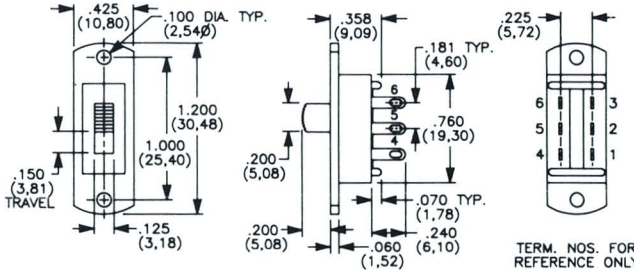

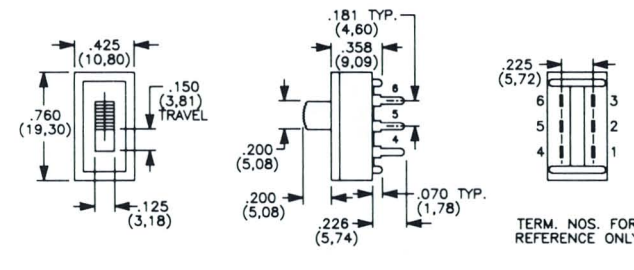

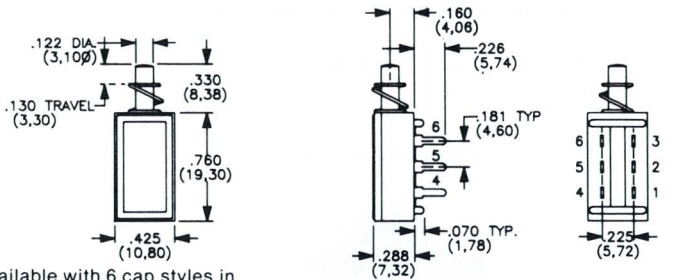
NOTE

Specifications and Materials listed above are general specifications for switches with standard options. See option sections for additional information. Specifications available for specific models, consult factory.

U.S. Pat. No. 4,258,237

INTRODUCTION

A selection of complete L SERIES MINIATURE SLIDE SWITCH order numbers is shown below thru page Z-52. To order alternate configuration, see available options on pages Z-52 thru Z-55. Complete HOW TO ORDER information is on page Z-55. UL/CSA listed with all options when ordered with G or Q contact material. 01 terminations, UL listed only.

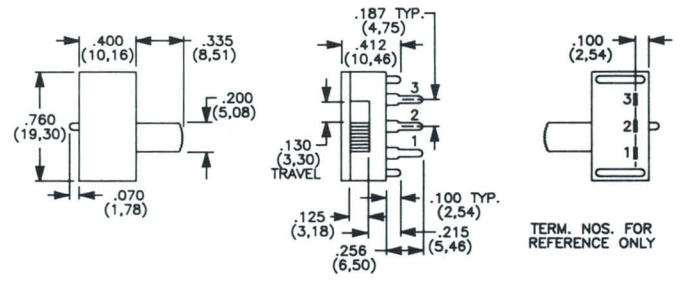
<p>ORDER NO. SW. FUNCTION</p> <p>L101-01-1-SS-03-Q SPST</p> <p>L111-01-2-SS-03-Q SPST</p> <p>L102-01-1-SS-03-Q SPDT</p> <p>L112-01-2-SS-03-Q SPDT</p> <p>L201-01-1-SS-03-Q DPST</p> <p>L202-01-1-SS-03-Q DPDT</p> <p>(Indicates Momentary)</p>	  <p>MODEL SHOWN: L202-01-1-SS-03-Q</p>
<p>ORDER NO. SW. FUNCTION</p> <p>L101-01-1-MS-02-Q SPST</p> <p>L111-01-2-MS-02-Q SPST</p> <p>L102-01-1-MS-02-Q SPDT</p> <p>L112-01-2-MS-02-Q SPDT</p> <p>L201-01-1-MS-02-Q DPST</p> <p>L202-01-1-MS-02-Q DPDT</p> <p>(Indicates Momentary)</p>	  <p>MODEL SHOWN: L202-01-1-MS-02-Q</p>
<p>ORDER NO. SW. FUNCTION</p> <p>L111-13-2-MV-02-Q SPST</p> <p>L112-13-2-MV-02-Q SPDT</p> <p>L211-13-2-MV-02-Q DPST</p> <p>L212-13-2-MV-02-Q DPDT</p> <p>(Indicates Momentary)</p>	  <p>Available with 6 cap styles in 9 colors, see ACTUATOR options.</p> <p>MODEL SHOWN: L212-13-2-MV-02-Q</p>

ORDER NO.	SW. FUNCTION
L101-02-1-ML-04-Q	SPST
L111-02-2-ML-04-Q	SPST
L102-02-1-ML-04-Q	SPDT
L112-02-2-ML-04-Q	SPDT

(Indicates Momentary)

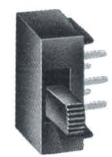


SP MODELS ONLY

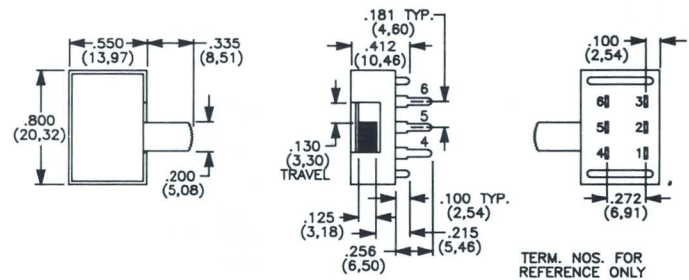


MODEL SHOWN: L102-02-1-ML-04-Q

ORDER NO.	SW. FUNCTION
L201-02-1-MA-04-Q	DPST
L202-02-1-MA-04-Q	DPDT



DP MODELS ONLY



MODEL SHOWN: L202-02-1-MA-04-Q

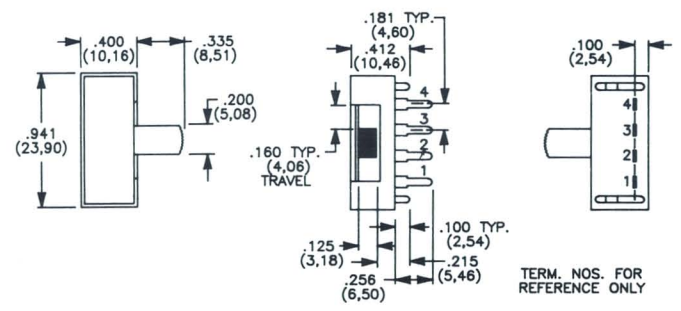
ORDER NO.	SW. FUNCTION
L103-02-1-MA-04-Q	SP3T
L113-02-1-MA-04-Q	SP3T
L123-02-2-MA-04-Q	SP3T

(Indicates Momentary)

NEW



SP MODELS ONLY



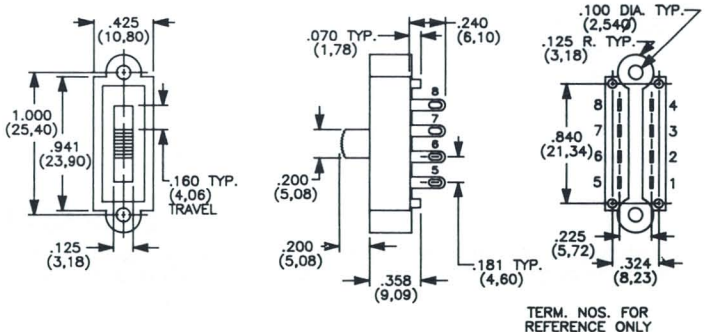
MODEL SHOWN: L103-02-1-MA-04-Q

ORDER NO.	SW. FUNCTION
L103-01-1-TS-03-Q	SP3T
L113-01-1-TS-03-Q	SP3T
L123-01-2-TS-03-Q	SP3T
L203-01-1-TS-03-Q	DP3T

(Indicates Momentary)

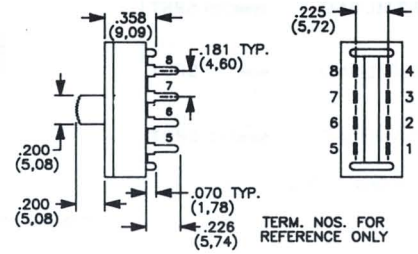
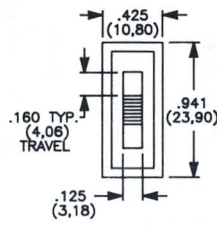


MODEL SHOWN: L203-01-1-TS-03-Q



ORDER NO.	SW. FUNCTION
L103-01-1-MS-02-Q	SP3T
L113-01-1-MS-02-Q	SP3T
L123-01-2-MS-02-Q	SP3T
L203-01-1-MS-02-Q	DP3T

(Indicates Momentary)

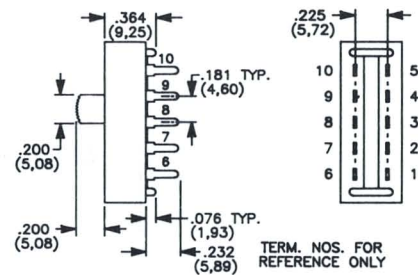
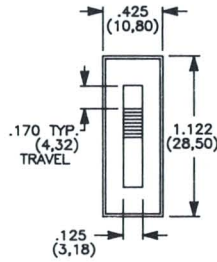


3 POS. MODELS

MODEL SHOWN: L203-01-1-MS-02-Q

ORDER NO.	SW. FUNCTION
L104-01-1-MS-02-Q	SP4T
L204-01-1-MS-02-Q	DP4T

NEW

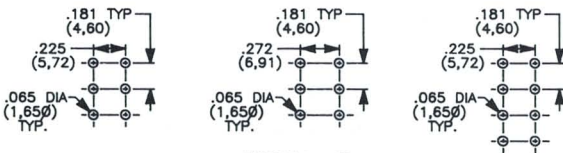


4 POS. MODELS

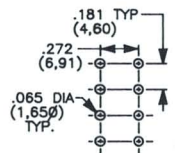
MODEL SHOWN: L204-01-1-MS-02-Q

P.C. MOUNTING

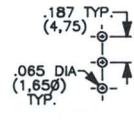
PANEL MOUNTING



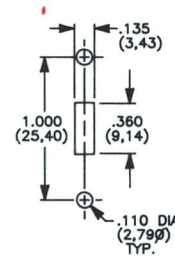
WITH 04 or 10 TERMINATIONS ONLY



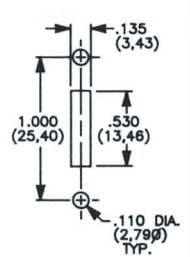
WITH 10 TERMINATIONS ONLY



ML MOUNTING STYLE WITH 04 TERMINATIONS ONLY



SS MOUNTING STYLE



TS MOUNTING STYLE

4 POS. MODELS

3 POS. SP MODELS

L SERIES OPTIONS

Switches different from those shown above and on pages Z-50 and Z-51 can be ordered by selecting desired options which begin on page Z-53. See HOW TO ORDER information, page Z-55.

MODELS



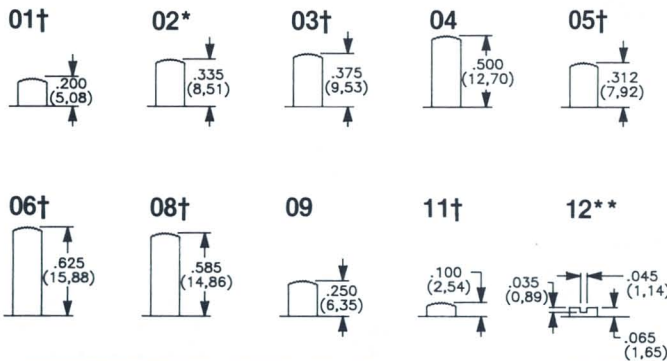
Model No.	Sw. Func.	Model No.	Sw. Func.
L101	SPST	L123	SP3T-Momentary to both ends
L111	SPST-Momentary	L104	SP4T
L102	SPDT	L201	DPST
L112	SPDT-Momentary	L202	DPDT
L103	SP3T	L211	DPST-Momentary (avail. MV mtg. style only)
L113	SP3T-Momentary to one end	L212	DPDT-Momentary (avail. MV mtg. style only)
		L203	DP3T
		L204	DP4T

See SW. FUNCTION schematics for terminal nos.

ACTUATORS



ACTUATOR OPTIONS FOR MA, ML, MS, SS, TS MOUNTING STYLES:



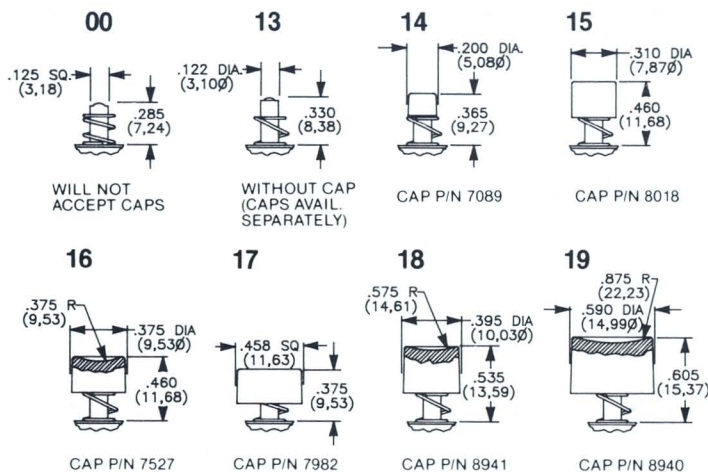
*Avail. with MA, ML mounting styles only.

**Not avail. on L1X3 models with MA mounting style.

†Not avail. on L2XX models with MA mounting style.

Note: Black std., other colors avail., consult factory.

ACTUATOR OPTIONS FOR MV MOUNTING STYLE:



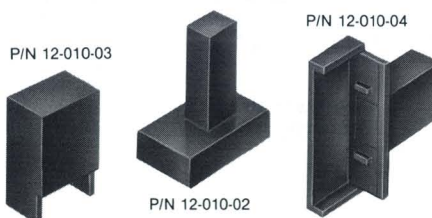
CAPS

Caps supplied installed std. To order, write desired cap color in word form after order no. Ex.: L211-17-2-MV-02-Q with blue cap. If no color is specified, black will be supplied. Caps may also be ordered separately and user installed by specifying the 4 digit P/N and color. For switches without caps, order 13 actuator option. Cap finish: gloss (exc. square cap P/N 7982, cap finish: matte).

CAP COLORS			
1	White	6	Green
2	Black(Std.)	7	Blue
3	Red	8	Brown
4	Orange	9	Gray
5	Yellow		

SPLASH CAPS

New protective splash caps for P.C. mounted L-SERIES slide switches provide splash protection during soldering and cleaning processes. They are available separately and are reusable. To order specify correct P/N. See chart.



SPLASH CAP P/N	FITS SWITCH MODELS
12-010-02	All LXX1, LXX2 models with MS mtg. style.
12-010-03	All LX11, LX12 models with MV mtg. style.
12-010-04	All L1X3 models with MA mtg. style.

CONTACT MATERIALS



CONTACT / TERMINAL MATERIALS

- B** CONTACTS & TERMINALS: Copper, with gold plate over nickel plate.
RATING: 0.4 VA max. @ 20 V AC or DC max.
- Q** CONTACTS & TERMINALS: Copper, silver plated. (Std. with all termination options.)
RATING: 4 AMPS @ 125 V AC; 2 AMPS @ 250 V AC; 0.5 AMP @ 125 V DC (UL/CSA).
- G** CONTACTS & TERMINALS: Copper, with gold plate over nickel plate over silver plate.
RATING: 0.4 VA max. @ 20 V AC or DC max. or 4 AMPS @ 125 V AC; 2 AMPS @ 250 V AC; 0.5 AMP @ 125 V DC (UL/CSA).

Note: 'G' contact material is equivalent to both 'B' and 'Q' contact materials. See 'CONTACT MATERIALS', p. Z-4.
01 terminations UL listed, all other terminations UL/CSA listed.

SEALING



(None)

No seal
Std. with all termination options.

E



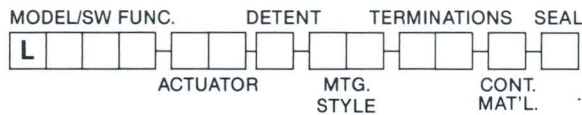
HOW TO ORDER

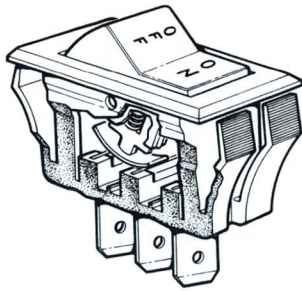
Complete order numbers for selected L-SERIES models are provided on pages Z-50 thru Z-52. To order alternate configuration, select desired model no., actuator, detent, mounting style, termination and contact material options. Place the option codes in the appropriate boxes of the ordering format. Some boxes may be unfilled. For 14 thru 19 actuator options, write cap color in word form after order number. (Example: L2112-15-2-MV-02-GA- with red cap). If no color is specified, black will be supplied.

For epoxy terminal seal, specify 'E' in SEAL box, for no seal, leave box empty. Q contact material is supplied if no option is specified.

UL/CSA listed with all options when ordered with G or Q contact material.

Note: 01 terminations, UL listed only.





Patent Pending

SPECIFICATIONS

CONTACT RATING:

C101, C102 models: 10 AMPS @ 125 V AC; 7.5 AMPS @ 250 V AC (UL/CSA).

C121, C122, C221, C222 models: 15 AMPS @ 125 V AC; 10 AMPS @ 250 V AC (UL/CSA).

C124 models: 15 AMPS @ 125 V AC. (VDE & other international listings also avail. See RATINGS section).

ELECTRICAL LIFE: 10,000 make-and-break cycles at full load.

MECHANICAL LIFE: 100,000 cycles min.

INSULATION RESISTANCE: 10^9 ohms min.

DIELECTRIC STRENGTH: 2,500 V RMS min. @ sea level.

NOTE

Specifications and Materials listed above are general specifications for switches with standard options. See option sections for additional information. Specifications available for specific models, consult factory.

MATERIALS

HOUSING: 6/6 nylon (UL 94V-2), black std.

ACTUATOR: 6/6 nylon (UL 94V-2), black std.

MOVABLE CONTACTS: Copper, silver plated.

STATIONARY CONTACTS & TERMINALS:

Copper, silver plated (15 AMP models with 'A' RATING: Copper).

CONTACT SPRING: Music wire or stainless steel.

ILLUMINATED MODELS:

ACTUATOR: Polycarbonate (UL 94V-2), colorless std.

LAMP: Std. high-brightness neon with 30K res.

LAMP RATING: 125 V AC, 25,000 hour life.

SWITCH TERMINALS (Nos. 1 & 2): Copper, silver plated.

LAMP TERMINAL (No. 3): Brass.

INTRODUCTION

A selection of complete C SERIES POWER ROCKER SWITCH order numbers is shown below and on page Z-57. To order alternate configuration, see available options on pages Z-58 thru Z-60. Complete HOW TO ORDER information is on page Z-60. All models (except C124) UL/CSA listed with all options. Some models also VDE, SEV, SEMKO, JETL and Australia listed. See HOW TO ORDER, page Z-60.

ORDER NO. SW. FUNCTION (10 AMP MODELS - UL/CSA*)

C101-J1-2-S2-05-QA SPDT

C102-J1-2-S2-05-QA SPST

(15 AMP MODELS - UL/CSA*)

C121-J1-2-S2-05-QA SPDT

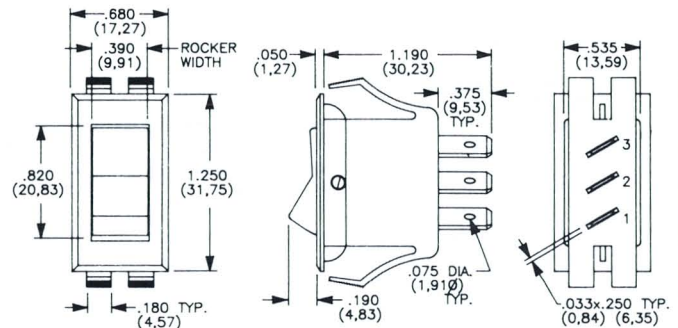
C122-J1-2-S2-05-QA SPST

*See RATINGS section for complete contact ratings and agency listings.

Contacts make on side opposite actuator thrown.



UL/CSA LISTED



TERM. NOS. FOR REFERENCE ONLY

MODEL SHOWN: C101-J1-2-S2-05-QA

ORDER NO. SW. FUNCTION (10 AMP MODELS - UL/CSA/VDE & other listings*)

C101-J1-2-S2-05-QF SPDT

C102-J1-2-S2-05-P-QF SPST

(15 AMP MODELS - UL/CSA/VDE & other listings*)

C121-J1-2-S2-05-QF SPDT

C122-J1-2-S2-05-P-QF SPST

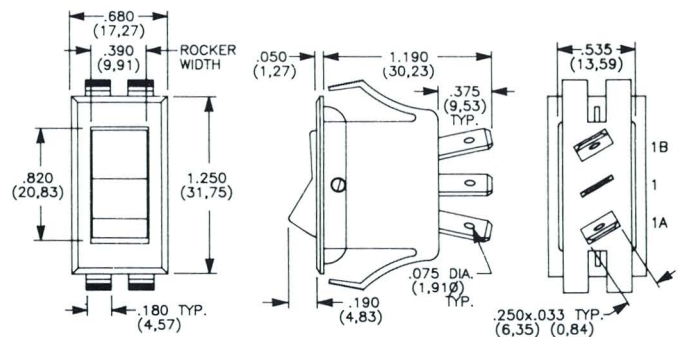
*See RATINGS section for complete contact ratings and agency listings.

Contacts make on side opposite actuator thrown.

Note: 'P' ACTUATOR MARKINGS std. on C102 and C122 models with 'F' RATING and international listings.







UL/CSA/VDE/SEV/SEMKO LISTED
(10 AMP MODELS ALSO JETL AND AUSTRALIA LISTED)



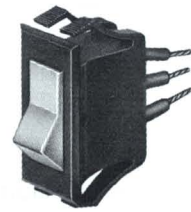
TERM. NOS. MARKED ON HOUSING

MODEL SHOWN: C101-J1-2-S2-05-QF

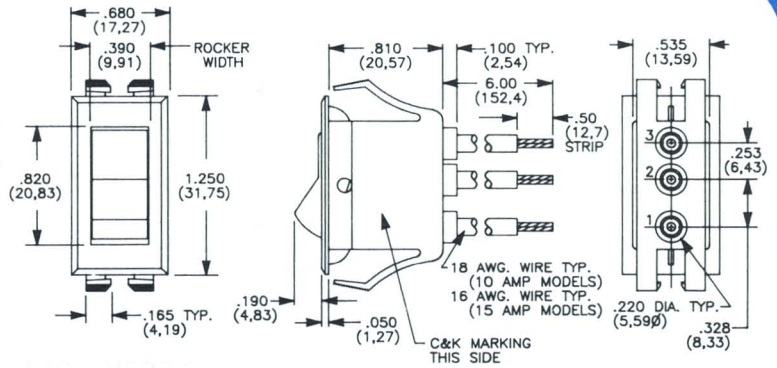
ORDER NO. SW. FUNCTION
(10 AMP MODELS-UL/CSA*)

- C101-J1-2-S2-WC-QA  SPDT
 C102-J1-2-S2-WC-QA  SPST
(15 AMP MODELS-UL/CSA*)
 C121-J1-2-S2-WC-QA  SPDT
 C122-J1-2-S2-WC-QA  SPST

*See RATINGS section for complete contact ratings and agency listings.
 Contacts make on side opposite actuator thrown.



UL/CSA LISTED



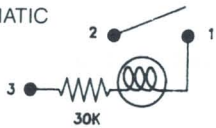
MODEL SHOWN: C101-J1-2-S2-WC-QA

TERM. NOS. FOR REFERENCE ONLY

ORDER NO. SW. FUNCTION
(15 AMP MODELS*)

- C124-J7-0-S2-05-Q1 SPST

SCHEMATIC



SPST

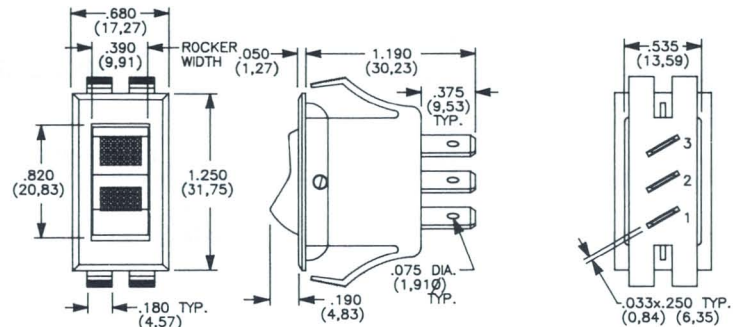
*See RATINGS section for complete contact ratings and agency listings.

Contacts make on side opposite actuator thrown.
 Lamp terminal (no. 3) is insulated from movable contact.

NEW





ILLUMINATED



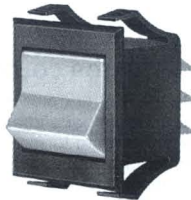
MODEL SHOWN: C124-J7-0-S2-05-Q1

TERM. NOS. FOR REFERENCE ONLY

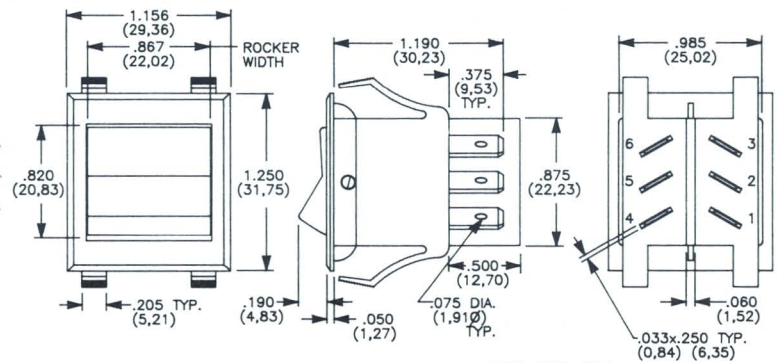
ORDER NO. SW. FUNCTION
(15 AMP MODELS-UL/CSA*)

- C221-J1-2-S2-05-QA  DPDT
 C222-J1-2-S2-05-QA  DPST

*See RATINGS section for complete contact ratings and agency listings.
 Contacts make on side opposite actuator thrown.



UL/CSA LISTED



MODEL SHOWN: C221-J1-2-S2-05-QA

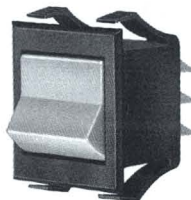
TERM. NOS. FOR REFERENCE ONLY

ORDER NO. SW. FUNCTION
(15 AMP MODELS-UL/CSA/VDE & other listings*)

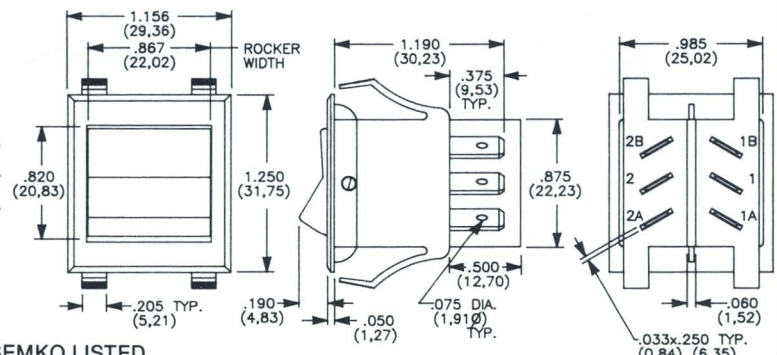
- C221-J1-2-S2-05-QF  DPDT
 C222-J1-2-S2-05-P-QF  DPST

*See RATINGS section for complete contact ratings and agency listings.
 Contacts make on side opposite actuator thrown.

Note: 'P' ACTUATOR MARKINGS std. on C222-models with 'F' RATING and international listings.



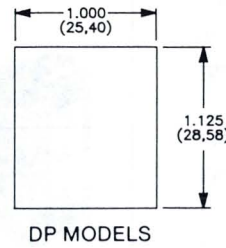
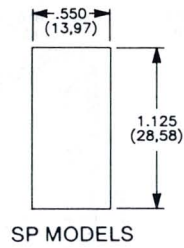
UL/CSA/VDE/SEV/SEMKO LISTED



MODEL SHOWN: C221-J1-2-S2-05-QF

TERM. NOS. MARKED ON HOUSING

PANEL MOUNTING



PANEL THICKNESS:
.020 (0,51) to .200 (5,08).

C SERIES OPTIONS

Switches different from those shown on pages Z-56 and Z-57 can be ordered by selecting the desired options which begin below. See HOW TO ORDER information, page Z-60.

MODELS



(10 AMP MODELS*)

Model No.	Sw. Func.
C101	SPDT
C102	SPST

(15 AMP MODELS*)

Model No.	Sw. Func.
C121	SPDT
C122	SPST
C221	DPDT
C222	DPST

(15 AMP ILLUMINATED MODELS*)

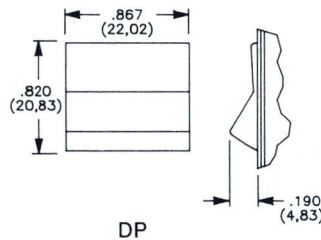
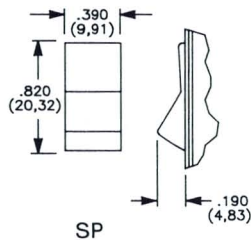
Model No.	Sw. Func.
C124	SPST Illuminated

* See RATINGS section for complete contact ratings and agency listings.

ACTUATORS / COLORS



J1

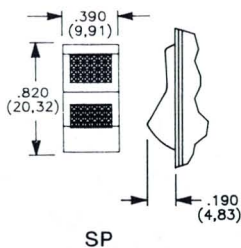


J1 ACTUATOR COLORS

Select actuator color from chart. Place option code in appropriate box of ordering format. Finish: gloss. Matte finish available on DP actuators. To order, write 'MATTE ACTUATOR' in word form after order number. If nothing is specified, gloss finish actuators will be supplied.

OPTION CODE	ACTUATOR COLOR
1	White
2	Black(Std.)
3	Red
4	Orange
5	Yellow
6	Green
7	Blue
8	Brown
9	Gray

J7



J7 ACTUATOR COLORS

Select actuator color from chart. Place option code in appropriate box of ordering format. All actuators are transparent, gloss finish. Colorless std.

OPTION CODE	ACTUATOR COLOR
0	Colorless
3	Red
4	Amber
6	Green

MOUNTING STYLE/HOUSING COLORS



S Snap-In Mounting.

HOUSING COLORS

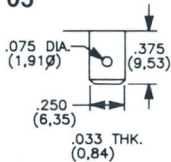
Select housing color from chart. Place option code in appropriate box of ordering format. Frame finish on housing: gloss. Matte finish available on DP housings. To order, write 'MATTE HOUSING' in word form after order number. If nothing is specified, gloss finish housings will be supplied.

OPTION CODE	HOUSING COLOR
1	White
2	Black(Std.)
3	Red
4	Orange
5	Yellow
6	Green
7	Blue
8	Brown
9	Gray

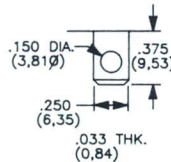
TERMINATIONS



05

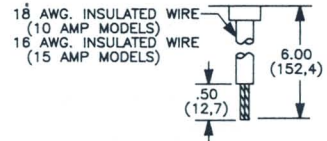


07



Available with A contact rating (UL/CSA listing) only.

WC



Available with A contact rating (UL/CSA listing) only, SP models only. Black wire std., other colors and lengths avail., consult factory.

ACTUATOR MARKINGS

Avail. on J1 actuators only. SP shown, DP also available. Markings not available on J7 actuator.

(NONE-STD.)



D



H



K



L



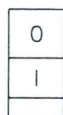
M



N



P



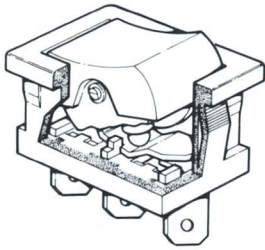
MARKING COLOR: RED.

D, H, K, L, M, P MARKING OPTIONS: Marking color white std. for all actuator colors except white and yellow actuators: marking color black std.

N MARKING OPTION: Marking color red std.

Other marking colors available, consult factory.

P actuator marking std. on C102, C122 and C222 models with international listings (QF CONTACT MATERIAL/RATING).



SPECIFICATIONS

CONTACT RATING:
 D1XX and D2XX Models: 4 AMPS @ 125 V AC; 2 AMPS @ 250 V AC. (UL/CSA).
 D5XX and D6XX Models: 10 AMPS @ 125 V AC; 5 AMPS @ 250 V AC. (UL/CSA).
ELECTRICAL LIFE: 10,000 make-and-break cycles at full load.
MECHANICAL LIFE: 100,000 cycles min.
INSULATION RESISTANCE: 10⁹ ohms min.
DIELECTRIC STRENGTH: 1,000 V RMS min. @ sea level.

NOTE

Specifications and Materials listed above are general specifications for switches with standard options. See option sections for additional information. Specifications available for specific models, consult factory.

MATERIALS

HOUSING: 6/6 nylon (UL94V-2), black std.
ACTUATOR: 6/6 nylon (UL94V-2), black std.
MOVABLE CONTACTS:
 D1XX and D2XX Models: Copper, silver plated.
 D5XX and D6XX Models: Coin silver, silver plated.
STATIONARY CONTACTS & TERMINALS: Copper, silver plated.
CONTACT SPRING: Music wire or stainless steel.

INTRODUCTION

A selection of complete D SERIES MINIATURE POWER ROCKER SWITCH order numbers is shown below and on page Z-62. To order alternate configuration, see available options on Z-62 and Z-63. Complete HOW TO ORDER information is also on page Z-63. UL/CSA listed with all options. International listings pending, consult factory.

ORDER NO. SW. FUNCTION

(4 AMP MODELS-UL/CSA*)

D101-J1-2-S2-05-QA SPDT

D102-J1-2-S2-05-QA SPST

(10 AMP MODELS-UL/CSA*)

D501-J1-2-S2-05-QA SPDT

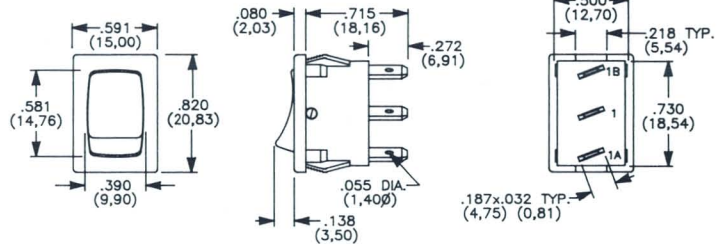
D502-J1-2-S2-05-QA SPST

*See CONTACT MATERIALS section for complete contact ratings and agency listings.

Contacts make on side opposite actuator thrown.



**SP MODELS
UL/CSA LISTED**



TERM. NOS. FOR REFERENCE ONLY

MODEL SHOWN: D101-J1-2-S2-05-QA

ORDER NO. SW. FUNCTION

(4 AMP MODELS*)

D201-J1-2-S2-05-QA DPDT

D202-J1-2-S2-05-QA DPST

(10 AMP MODELS*)

D601-J1-2-S2-05-QA DPDT

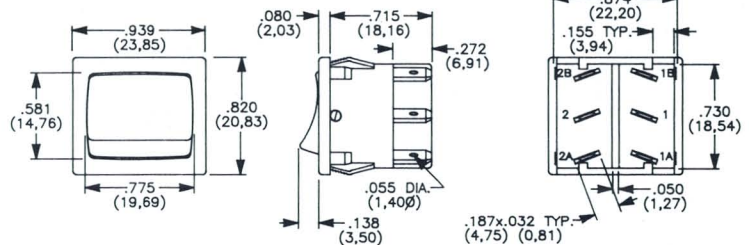
D602-J1-2-S2-05-QA DPST

*See CONTACT MATERIALS section for complete contact ratings and agency listings.

Contacts make on side opposite actuator thrown.



**DP MODELS
UL/CSA LISTED**



TERM. NOS. FOR REFERENCE ONLY

MODEL SHOWN: D201-J1-2-S2-05-QA

ORDER NO. SW. FUNCTION
(4 AMP MODELS-UL/CSA*)

D201-J5-2-S2-05-QA **DPDT**

D202-J5-2-S2-05-QA **DPST**

(10 AMP MODELS-UL/CSA*)

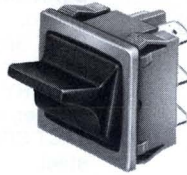
D601-J5-2-S2-05-QA **DPDT**

D602-J5-2-S2-05-QA **DPST**

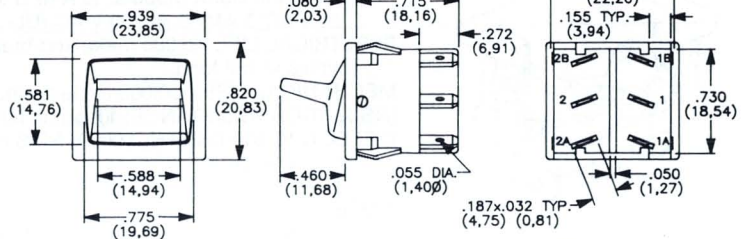
*See CONTACT MATERIALS section for complete contact ratings and agency listings.

Contacts made on side opposite actuator thrown.

NEW



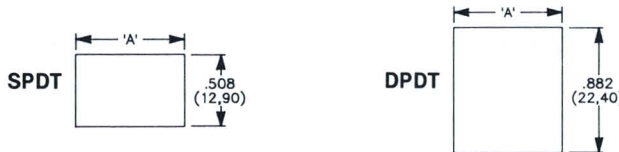
**DP MODELS
UL/CSA LISTED**



TERM. NOS. FOR REFERENCE ONLY

MODEL SHOWN: D201-J5-2-S2-05-QA

PANEL MOUNTING



PANEL THK.	DIM 'A'
.030-.049 (0,75) (1,25)	.756 (19,20)
.049-.079 (1,25) (2,00)	.764 (19,40)
.079-.118 (2,00) (3,00)	.780 (19,80)

D SERIES OPTIONS

Switches different from those shown above and on page Z-61 can be ordered by selecting desired options which begin below. See HOW TO ORDER information, page Z-63.

MODELS



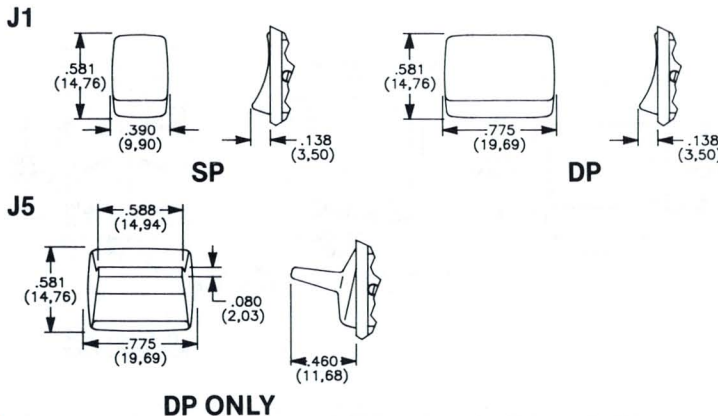
(4 AMP MODELS*)

(10 AMP MODELS*)

Model No.	Sw. Func.	Model No.	Sw. Func.
D101	SPDT	D501	SPDT
D102	SPST	D502	SPST
D201	DPDT	D601	DPDT
D202	DPST	D602	DPST

*See CONTACT MATERIALS section for complete contact ratings and agency listings.

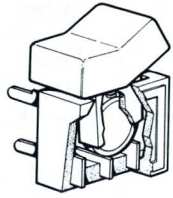
ACTUATORS / COLORS



ACTUATOR COLORS

Select actuator color from chart. Place option code in appropriate box of ordering format. Actuator finish: matte.

OPTION CODE	ACTUATOR COLOR
1	White
2	Black(Std.)
3	Red
4	Orange
5	Yellow
6	Green
7	Blue
8	Brown
9	Gray



Patent Pending

SPECIFICATIONS

CONTACT RATING: 6 AMPS @ 125 V AC; 3 AMPS @ 250 V AC (UL/CSA).
 ELECTRICAL LIFE: 10,000 make-and-break cycles at full load.
 MECHANICAL LIFE: 100,000 cycles min.
 CONTACT RESISTANCE: Below 10 milliohms typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.
 INSULATION RESISTANCE: 10⁹ ohms min.

NOTE

Specifications and Materials listed above are general specifications for switches with standard options. See option sections for additional information. Specifications available for specific models, consult factory.

DIELECTRIC STRENGTH: 1,000 V RMS min. @ sea level.

MATERIALS

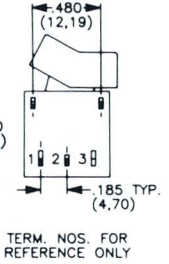
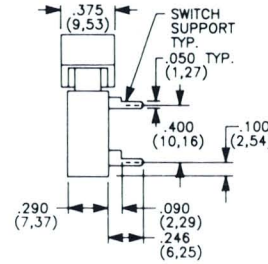
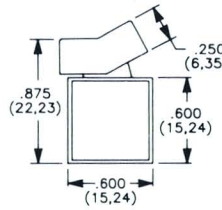
HOUSING: 6/6 nylon (UL 94V-2), black.
 TOP PLATE: 6/6 nylon (UL 94V-2), black.
 ACTUATOR: 6/6 nylon (UL 94V-2), black std.
 CONTACTS: Copper, silver plated (Q cont. mat'l.).
 TERMINALS: Copper, silver plated (Q cont. mat'l.).
 CONTACT SPRING: Music wire or stainless steel.

INTRODUCTION

A selection of complete J SERIES ROCKER SWITCH order numbers is shown below. To order alternate configuration, see available options on page Z-65. Complete HOW TO ORDER information is also on page Z-65. J102 model UL/CSA listed with all options when ordered with G or Q contact material.

ORDER NO. **SW. FUNCTION**
 J102-21-2-A2-02-Q SPDT

Note: Terminals make on side opposite actuator thrown.

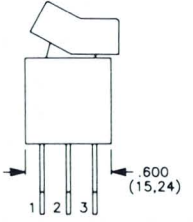
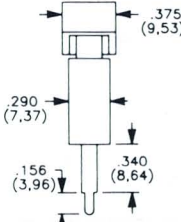
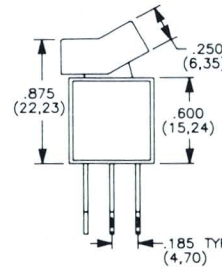


MODEL SHOWN: J102-21-2-A2-02-Q

ORDER NO. **SW. FUNCTION**
 J102-21-2-M2-12-Q SPDT
 J108-21-2-M2-12-Q SPDT

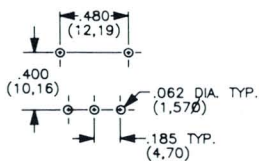
Note: Terminals make on side opposite actuator thrown.

(zzzz Indicates Momentary)

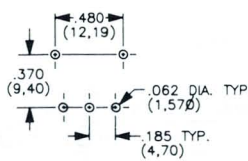


MODEL SHOWN: J102-21-2-M2-12-Q

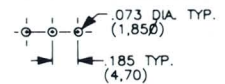
P.C. MOUNTING



02 TERMINATIONS

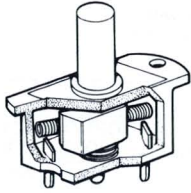


08 TERMINATIONS



12 TERMINATIONS





SPECIFICATIONS

CONTACT RATING: 0.4 VA max. @ 20 V AC or DC max.
ELECTRICAL/MECHANICAL LIFE: 25,000,000 actuations at full load on all models with 'B' contact material. 10,000 actuations on all models with 'Q' or 'G' contact material.
CONTACT RESISTANCE: Below 20 milliohms typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.
INSULATION RESISTANCE: 10^9 ohms min.
DIELECTRIC STRENGTH: 2,500 V RMS min. @ sea level, term. to term.
STATIC RESISTANCE: 10,000 V RMS min. @ sea level, plunger to terms.

CAPACITANCE: 1 pF max.
VIBRATION: Meets MIL STD. 202E, method 204C, test condition A.
SHOCK: Meets MIL STD. 202E, method 213B, test condition A.

MATERIALS

HOUSING: 6/6 nylon (UL 94V-2), black.
TOP PLATE: 6/6 nylon (UL 94V-2), black.
PLUNGER: Acetal, natural.
MOVABLE CONTACT: Phosphor bronze, with gold plate over nickel plate (B cont. mat'l.).
STATIONARY CONTACTS & TERMINALS: Brass, with gold plate over nickel plate (B cont. mat'l.).
RETURN SPRING: Music wire or stainless steel.

NOTE

Specifications and Materials listed above are general specifications for switches with standard options. See option sections for additional information. Specifications available for specific models, consult factory.

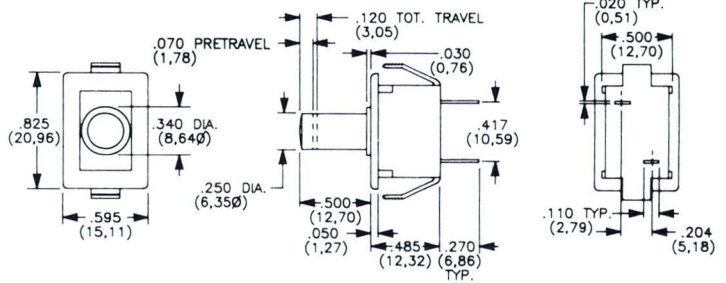
U.S. Pat. No. 4,473,727

INTRODUCTION

A selection of complete K SERIES PUSHBUTTON SWITCH order numbers is shown below. To order alternate configuration, see available options on page Z-67. Complete HOW TO ORDER information is also on page Z-67. UL/CSA Listed with all options when ordered with G or Q contact material.

ORDER NO. K101-00-JS-05-B
SW. FUNCTION SPST N.O. Momentary

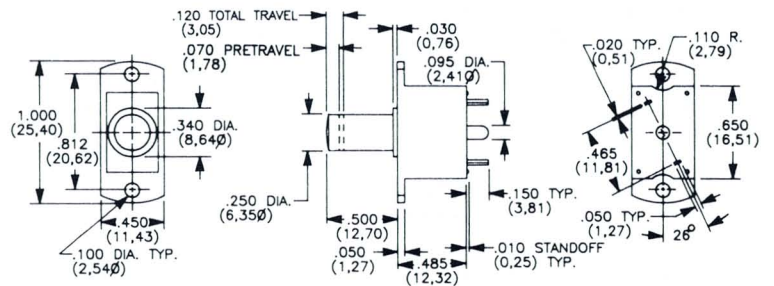
SCHEMATIC



MODEL SHOWN: K101-00-JS-05-B

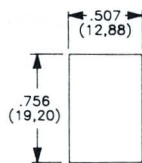
ORDER NO. K101-00-SS-02-B
SW. FUNCTION SPST N.O. Momentary

SCHEMATIC



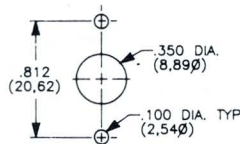
MODEL SHOWN: K101-00-SS-02-B

PANEL MOUNTING



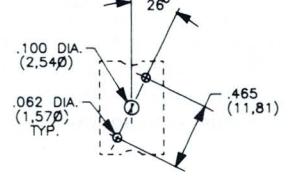
PANEL THICKNESS: .030 TO .125 (0,76) (3,18)

JS MOUNTING STYLE



SS MOUNTING STYLE

P.C. MOUNTING



02 TERMINATIONS

K SERIES OPTIONS

Switches different from those shown on page Z-66 can be ordered by selecting desired options below. See HOW TO ORDER information.

MODEL

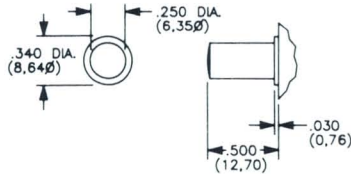


K101 SPST N.O. MOMENTARY

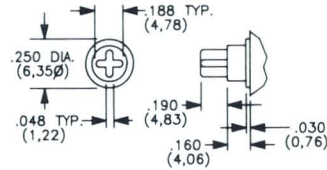
ACTUATORS



00



01 ACCEPTS KEY TOPS



MOUNTING STYLES



JS

Panel mount, snap-in. (Available with 05 terminations only.)

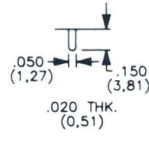
SS

Panel mount with mounting ears. (Available with 02 terminations only.)

TERMINATIONS

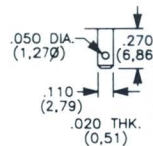


02



Available with SS mounting style only.

05



Available with JS mounting style only. Fits .110 in. quick connector

CONTACT MATERIALS



CONTACT / TERMINAL MATERIALS

- B** MOVABLE CONTACT: Phosphor bronze, with gold plate over nickel plate.
STATIONARY CONTACTS & TERMINALS: Brass or copper, with gold plate over nickel plate. (Std. with all termination options.)
RATING: 0.4 VA max. @ 20 V AC or DC max.
- Q** MOVABLE CONTACT: Phosphor bronze, silver plated.
STATIONARY CONTACTS & TERMINALS: Brass or copper, silver plated.
RATING: 0.5 AMP @ 125 V AC or DC; 0.25 AMP @ 250 V AC (UL/CSA).
- G** MOVABLE CONTACT: Phosphor bronze, with gold plate over nickel plate over silver plate.
STATIONARY CONTACTS & TERMINALS: Brass or copper, with gold plate over nickel plate over silver plate.
RATING: 0.4 VA max. @ 20 V AC or DC max. or 0.5 AMP @ 125 V AC or DC; 0.25 AMP @ 250 V AC (UL/CSA).

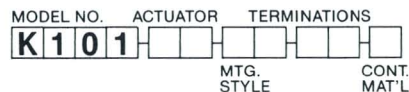
NOTE: 'G' contact material is equivalent to both 'B' and 'Q' contact materials. See 'CONTACT MATERIALS', p. Z-4.

HOW TO ORDER

Complete order numbers for selected K-SERIES models are provided on page Z-66. To order alternate configuration, select desired actuator, mounting style, termination, and contact material options. Place the option codes in the appropriate boxes of the ordering format.

(Example: **K11011-01-JS-05-Q**). B contact material is supplied if no option is specified.

UL/CSA listed with all options when ordered with G or Q contact material.





SPECIFICATIONS

CONTACT RATING: 0.25 AMPS @ 125 VAC.
 ELECTRICAL LIFE: 10,000 actuations at full load.
 CONTACT RESISTANCE: Below 30 milliohms
 typ. initial @ 2-4 V DC, 100 mA for both silver
 and gold plated contacts.
 INSULATION RESISTANCE: 10⁹ ohms min.
 DIELECTRIC STRENGTH: 1,000 V RMS min. @
 sea level.
 OPERATING TEMPERATURE: - 30°C to 85°C.
 CAP INSTALLATION FORCE: 10 lbs. max.
 permissible.

MATERIALS



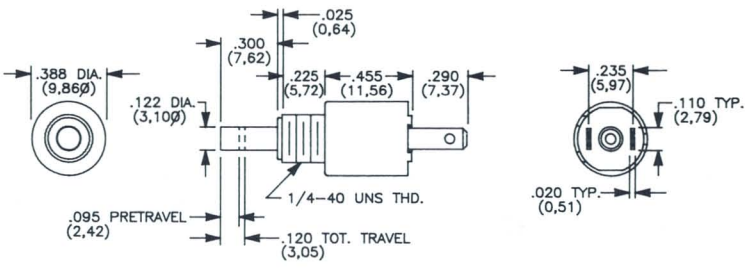

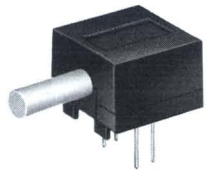
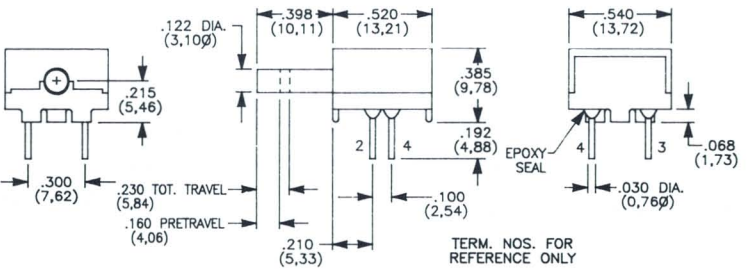
HOUSING & BUSHING: 6/6 nylon (UL 94V-2),
 black.
 ACTUATOR: 6/6 nylon (UL 94V-2), natural.
 MOVABLE CONTACT: Phosphor bronze or
 beryllium copper, silver plated (Q cont. mat'l.).
 STATIONARY CONTACTS & TERMINALS:
 Copper, silver plated (Q cont. mat'l.).
 RETURN SPRING: Music wire, phosphate
 coated.
 MOUNTING NUT: Brass, nickel plated.

NOTE

Specifications and Materials listed above are general specifications for switches with standard options. See option sections for additional information. Specifications available for specific models, consult factory.

INTRODUCTION

A selection of complete KM SERIES PUSHBUTTON SWITCH order numbers is shown below. To order alternate configuration, see available options on pages Z-72 and Z-73. Complete HOW TO ORDER information is on page Z-73. UL listed with all options when ordered with G or Q contact material.

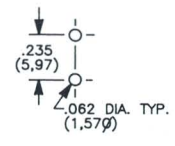
<p>ORDER NO. KM11-01-RR-05-Q</p> <p>SW. FUNCTION SPST N.O. Momentary</p>	   <p>MODEL SHOWN: KM11-01-RR-05-Q</p>
<p>ORDER NO. KM12-02-A-08-Q-E</p> <p>SW. FUNCTION SPDT Momentary</p> <p>NEW</p>	   <p>MODEL SHOWN: KM12-02-A-08-Q-E</p>

PANEL MOUNTING

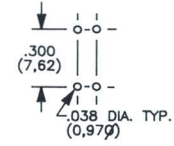


KM11 models only

P.C. MOUNTING



KM11 models only



KM12 models only

KM SERIES OPTIONS

Switches different from those shown on page Z-71 can be ordered by selecting desired options which begin below. See HOW TO ORDER information, page Z-73.



MODELS

KM11

SPST N.O. Momentary
Avail. with RR mtg. style only.

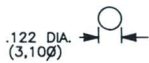
KM12

SPDT Momentary
Avail. with A mtg. style only.

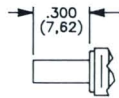


ACTUATORS

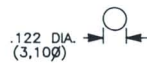
01



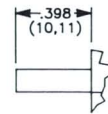
Avail. with KM11 models only.



02



Avail. with KM12 models only.

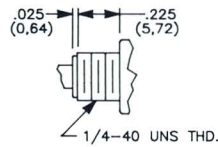


MOUNTING STYLE

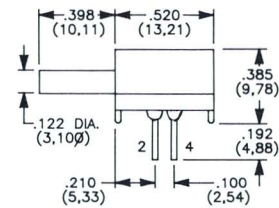
RR



Avail. with KM11 models only.
Mounting nut included. Mounting nut P/N 5404



A

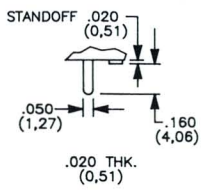


Avail. with KM12 models only.



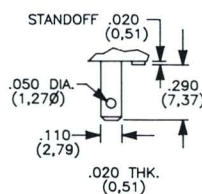
TERMINATIONS

02



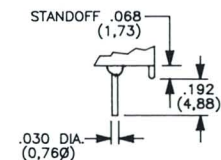
Avail. with KM11 models only.

05



Avail. with KM11 models only.

08



Avail. with KM12 models only.

CONTACT MATERIALS



- B** MOVABLE CONTACT: Phosphor bronze or beryllium copper, with gold plate over nickel plate.
STATIONARY CONTACTS & TERMINALS: Copper, with gold plate over nickel plate.
RATING: 0.4 VA max. @ 20 V AC or DC max.
- Q** MOVABLE CONTACT: Phosphor bronze or beryllium copper, silver plated.
STATIONARY CONTACTS & TERMINALS: Copper, silver plated.
RATING: 0.25 AMPS @ 125 V AC or DC (UL).
- G** MOVABLE CONTACT: Phosphor bronze or beryllium copper, with gold plate over nickel plate over silver plate.
STATIONARY CONTACTS & TERMINALS: Copper, with gold plate over nickel plate over silver plate.
RATING: 0.4 VA max. @ 20 V AC or DC max. or 0.25 AMPS @ 125 V AC or DC (UL).

Note: G contact material can be used where either dry circuit* or power conditions are encountered. However, when the dry circuit rating is exceeded, the gold plating is removed from the contact interface and the switch cannot then be used in dry circuits.

* Dry circuit = conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

SEALING



(None)

Std. on KM11 models.
Not avail. on KM12 models.

E



Std. on KM12 models.

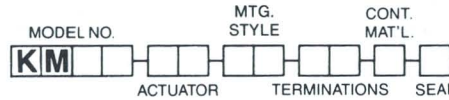
HOW TO ORDER

Complete order numbers for selected KM-SERIES models are provided on page Z-71. To order alternate configuration, select desired model no., actuator, mounting style, termination and contact material options. Place the option codes in the appropriate boxes of the ordering format. Some boxes may be unfilled.

(Example: **KM12-02-A-08-B-E**).

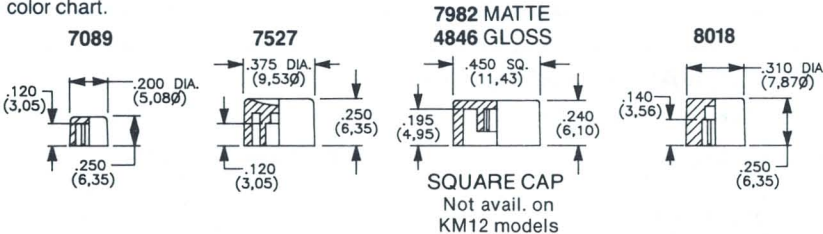
For epoxy terminal seal, specify 'E' in SEAL box, for no seal, leave box empty. E epoxy terminal seal standard on KM12 models.

One mounting nut is supplied standard, where applicable.
UL listed with all options when ordered with G or Q contact material.



CAPS

Caps are available separately. To order, write part no., description, and color. All caps: finish, gloss, except where noted; material, nylon. See color chart.



CAP COLORS			
1	White	6	Green
2	Black(Std.)	7	Blue
3	Red	8	Brown
4	Orange	9	Gray
5	Yellow		



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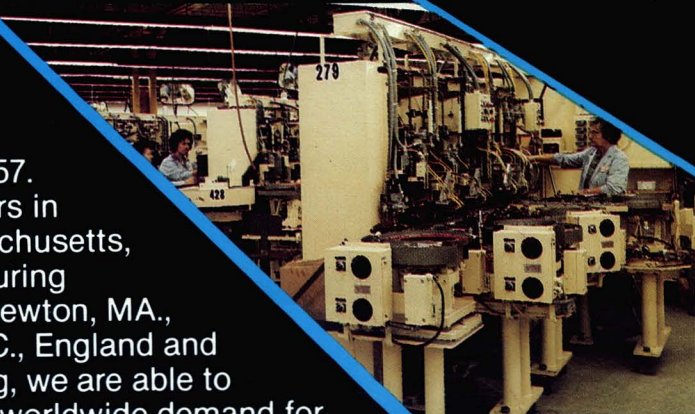
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C&K Components, Inc.
2035 Highway 70 East
Clayton, NC 27520-0687
Tel: (919) 553-3131
Telex: 579385
Twx: 510-920-1683
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