

# 8020 Series Snap-acting Momentary Pushbutton Switches



## Features/Benefits

- **Positive tactile feel**
- **Multi-positions available**
- **Wide variety of termination options**
- **Epoxy terminal seal compatible with bottom wash cleaning**
- **RoHS compliant models available**



Models Available

## Typical Applications

- **Instrumentation**
- **Computer peripherals**
- **Telecommunications equipment**



## Specifications

**CONTACT RATING:** B contact material (8X25 Models): 0.4 VA max. @ 20 V AC or DC maximum. G contact material (8X21, U8X1 Models): 1 AMP @ 120 V AC or 28 V DC or 0.4 VA max. @ 20 V AC or DC max. Note: Break-before-make contacts. Multi-pole contacts do not make and break simultaneously. See page A-43 for additional ratings.

**ELECTRICAL LIFE:** 60,000 make-and-break cycles at full load.

**CONTACT RESISTANCE:** Below 50 mΩ typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

**INSULATION RESISTANCE:** 10<sup>9</sup>Ω min.

**DIELECTRIC STRENGTH:** 1,000 Vrms min. @ sea level.

**OPERATING TEMPERATURE:** 8X2X MODELS: -30°C to 75°C.  
U8X1 MODELS: -30°C to 65°C.

**CAP INSTALLATION FORCE:** 10 lbs. max. permissible.

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

**NOTE:** Any models supplied with B, P, R, or G contact material are RoHS compliant.

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

## Materials

**CASE:** Glass filled nylon 6/6 or diallyl phthalate (DAP), flame retardant (UL 94V-0).

**PLUNGER:** Glass filled nylon or glass filled polyester (PBT) (UL 94V-0).

**CAP & FRAME:** Nylon, black, standard.

**BUSHING:** Brass or zinc, nickel plated.

**HOUSING:** Stainless steel.

**SWITCH SUPPORT:** Brass or steel, matte-tin plated.

**N.O. & N.C. CONTACTS:** 8X21, U8X1 MODELS: G contact material: Coin silver, with gold plate over nickel plate. See page A-43 for additional contact materials.

8X25 MODELS: B contact material: Copper alloy, with gold plate over nickel plate. See page A-43 for additional contact materials.

**COMMON CONTACT & ALL TERMINALS:** Copper alloy, with gold plate over nickel plate.

**TERMINAL SEAL:** Epoxy. Refer to soldering and cleaning Technical Data Chapter.

**HARDWARE:** Nut & Locking Ring: Brass, nickel plated;  
Lockwasher: Steel, nickel plated.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-30 thru A-45. For additional options not shown in catalog, consult Customer Service Center. All models have epoxy terminal seal and are compatible with all "bottom-wash" PCB cleaning methods.

Switch Function	Actuator or Plunger	Bushing	Contact Material	Seal	Cap Color	Frame Color	LED Color
<b>8121</b> SPDT On-Mom. 1 Amp	<b>S</b> Plunger	<b>D9</b> .280" high, keyway	<b>B</b> Gold	<b>E</b> Epoxy	<b>2</b> Black	<b>2</b> Black	<b>3</b> Red
<b>8125</b> SPDT On-Mom. 0.4VA	<b>NONE</b> Snap-in	<b>H</b> .250" high, flat	<b>P</b> Gold, matte-tin	<b>I</b> Epoxy potted base	<b>NONE</b> Models without caps	<b>NONE</b> Models without frame	<b>NONE</b> Models without LED
<b>8221</b> DPDT On-Mom. 1 Amp	<b>J80</b> Snap-in	<b>NONE</b> No bushing choice required	<b>G</b> Gold over silver		<b>1</b> White	<b>1</b> White	<b>5</b> Yellow
<b>8225</b> DPDT On-Mom. 0.4VA	<b>J81</b> Snap-in w/frame	<b>D</b> .280" high, keyway	<b>R</b> Gold over silver, matte-tin		<b>6</b> Green	<b>3</b> Red	<b>6</b> Green
<b>8321</b> 3PDT On-Mom. 1 Amp	<b>J82</b> Snap-in w/frame for LED	<b>D2</b> .288" high, flat			<b>7</b> Blue	<b>5</b> Yellow	<b>9</b> Gray
<b>8325</b> 3PDT On-Mom. 0.4VA	<b>J83</b> Snap-in w/frame & flush cap	<b>D3</b> .180" high			<b>8</b> Orange	<b>6</b> Green	
<b>8421</b> 4PDT On-Mom. 1 Amp	<b>J84</b> Snap-in w/frame for LED, flush cap	<b>D8</b> .288" high, flat			<b>9</b> Gray		
<b>8425</b> 4PDT On-Mom. 0.4VA	<b>J85</b> Snap-in w/frame & LED	<b>H9</b> .250" high, flat, hi torque					
	<b>J95</b> PC w/V-bracket & LED	<b>Y</b> .350" high, keyway					
	<b>L</b> Plunger	<b>Y3</b> 6.35mm high, keyway, hi torque					
	<b>M</b> Snap-fitting plunger	<b>Y4</b> .378" high, flat, hi torque					
		<b>Y9</b> .350" high, keyway					

**Terminations**

<b>A</b> Right angle, PC thru-hole	<b>A4</b> Right angle, PC thru-hole, reversed terminals	<b>V2</b> .555" high, V-bracket	<b>V31</b> .460" high, snap-in V-bracket
<b>AV2</b> Vertical right angle, PC thru-hole	<b>A6</b> Right angle, PC thru-hole	<b>V3</b> .460" high, V-bracket	<b>V61</b> .460" high, snap-in V-bracket
<b>C</b> PC Thru-hole	<b>AV</b> Vertical right angle, PC thru-hole	<b>V4</b> .630" high, V-bracket	<b>W</b> .750" long, wire wrap
<b>Z</b> Solder lug	<b>AV1</b> Vertical right angle, PC thru-hole	<b>V6</b> .460" high, V-bracket	<b>W1</b> .964" long, wire wrap
<b>A2</b> Right angle, PC thru-hole	<b>AV3</b> Vertical right angle, snap-in, PC thru-hole	<b>V7</b> .630" high, V-bracket	<b>W3</b> .425" long, wire wrap
<b>A3</b> Right angle, snap-in, PC thru-hole	<b>R</b> Right angle with PCB	<b>V8</b> .953" high, V-bracket	<b>W4</b> 1.062" long, wire wrap
	<b>R2</b> Right angle with PCB, reversed terminals	<b>V9</b> 1.150" high, V-bracket	<b>Z3</b> Quick connect



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

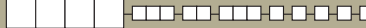







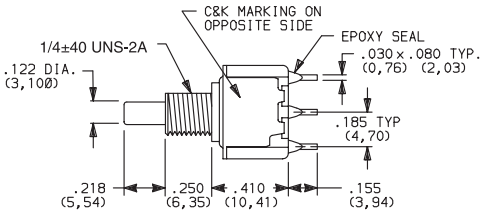
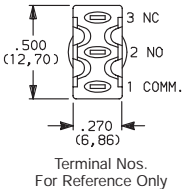
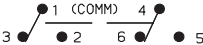
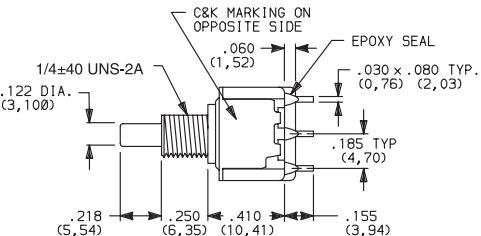
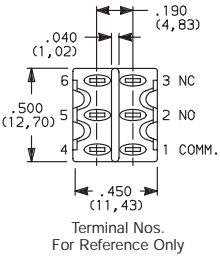
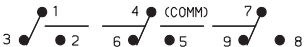
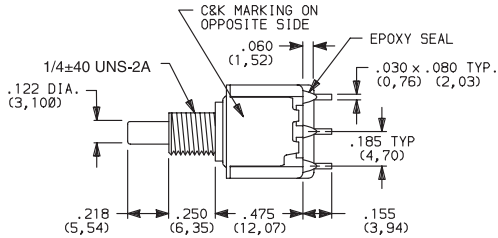
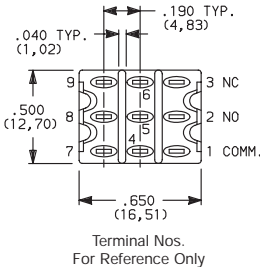
A

Pushbutton

# 8020 Series Snap-acting Momentary Pushbutton Switches

## SWITCH FUNCTION



NO. POLES	MODEL NO.	UL/CSA* MODEL NO.	SWITCH FUNCTION		CONNECTED TERMINALS		SCHEMATIC
			POS. 1	POS. 2	POS. 1	POS. 2	
							
			C&K marking on opposite side		C&K marking on opposite side		
SP	8121	U811	ON	MOM.	1-3	1-2	
	8125		ON	MOM.			
SPDT							
							
							
Part number shown: 8121SHZGE							
DP	8221	U821	ON	MOM.	1-3,4-6	1-2,4-5	
	8225		ON	MOM.			
DPDT							
							
							
Part number shown: 8221SHZGE							
3P	8321	U831	ON	MOM.	1-3,4-6,7-9	1-2,4-5,7-8	
	8325		ON	MOM.			
3PDT							
							
							
Part number shown: 8321SHZGE							

MOM. = Momentary

\*U811 thru U841 model numbers with all options (except R, R2 terminations) when ordered with G, L or R contact material.

8X25 models must be ordered with B or P contact material.

8X21 and U8X1 models must be ordered with G or R contact material.

**C&K**
Third Angle  
Projection

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# 8020 Series Snap-acting Momentary Pushbutton Switches

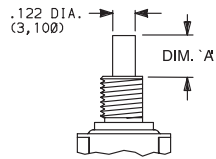
A

Pushbutton

## PLUNGER

ACTUATOR OR PLUNGER

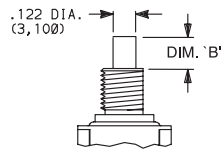
### S PLUNGER



**NONE** NO PLUNGER CHOICE REQUIRED  
(JXX ACTUATORS)

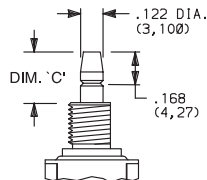
AVAILABLE BUSHINGS	DIM. 'A' FOR C, W-W4, Z & Z3 TERMINATIONS	DIM. 'A' FOR A, A2, A3, A4, A6, AV-A3, R & R2 TERMINATIONS	DIM. 'A' FOR V3-V61 TERMINATIONS
D, D9	.244 (6,20)	.228 (5,79)	.224 (5,69)
H, H9	.218 (5,54)	.202 (5,13)	.198 (5,03)
Y, Y9	.203 (5,16)	.187 (4,75)	.183 (4,65)
Y3	(5,54)	(5,13)	(5,03)
Y4	.185 (4,70)	.169 (4,29)	.165 (4,19)
D2, D8	N/A	.232 (5,89)	.228 (5,79)
D3	N/A	.162 (4,11)	.158 (4,01)

### L PLUNGER



AVAILABLE BUSHINGS	DIM. 'B' FOR C, W-W4, Z & Z3 TERMINATIONS	DIM. 'B' FOR A, A2, A3, A4, A6, AV-A3, R & R2 TERMINATIONS	DIM. 'B' FOR V3-V61 TERMINATIONS
Y, Y9	.178 (4,52)	.162 (4,11)	.158 (4,01)
Y4	.090 (2,29)	.074 (1,88)	.070 (1,78)

### M SNAP-FITTING PLUNGER



AVAILABLE BUSHINGS	DIM. 'C' FOR C, W-W4, Z & Z3 TERMINATIONS	DIM. 'C' FOR A, A2, A3, A4, A6, AV-A3, R & R2 TERMINATIONS	DIM. 'C' FOR V3-V61 TERMINATIONS
D, D9	.297 (7,54)	.281 (7,14)	.277 (7,04)
H, H9	.267 (6,78)	.251 (6,38)	.247 (6,27)
Y, Y9	.259 (6,58)	.243 (6,17)	.239 (6,07)
Y3	(6,78)	(6,37)	(6,27)
Y4	.259 (6,58)	.243 (6,17)	.239 (6,07)
D2, D8	N/A	.273 (6,93)	.269 (6,83)
D3	N/A	.361 (9,17)	.357 (9,07)

N/A = NOT AVAILABLE

**NOTE:** When selecting plunger option, bushing selection must also be made, see next page. No plunger option is required when any JXX actuator option is selected. Additional plunger lengths are available on SPDT and DPDT models, consult Customer Service Center. Not all plunger lengths sufficient for use with caps, see page A-44.

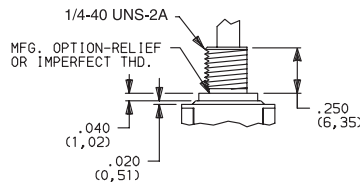
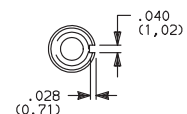
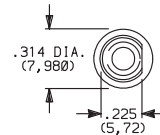
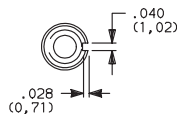
## BUSHING

**NONE** NO BUSHING  
CHOICE REQUIRED  
(JXX ACTUATORS)

**D** .280" HIGH THREADED, KEYWAY  
**D9** .280" HIGH UNTHREADED,  
KEYWAY

**H** .250" HIGH THREADED, FLAT  
**H9** .250" HIGH UNTHREADED, FLAT

**Y** .350" HIGH THREADED, KEYWAY  
**Y9** .350" HIGH UNTHREADED, KEYWAY



D9 bushing standard with A-A6,  
R, R2 AV-A3 terminations.

H bushing standard with C, W-W4, Z or Z3 terminations.  
H, H9 bushings not available on single pole models with  
A3-A6, R, R2 terminations.

**Will withstand 12 in./lbs. of torque with  
no distortion.**



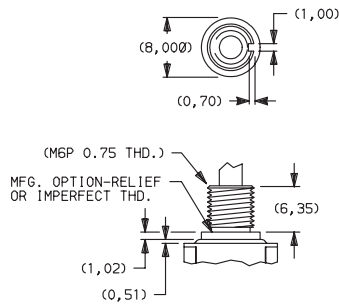
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Specifications and dimensions subject to change

**C&K**

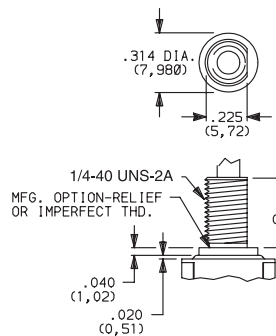
# 8020 Series Snap-acting Momentary Pushbutton Switches

## BUSHING

**Y3** 6.35mm THREADED, KEYWAY

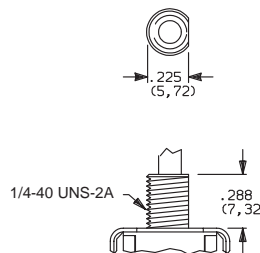


**Y4** .378" HIGH THREADED, FLAT

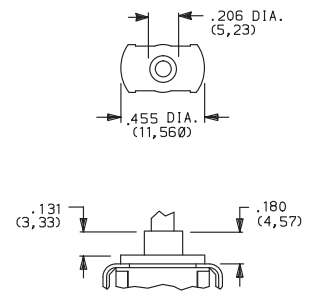


**D2** .288" HIGH THREADED, FLAT

**D8** .288" HIGH UNTHREADED, FLAT



**D3** .180" HIGH UNTHREADED



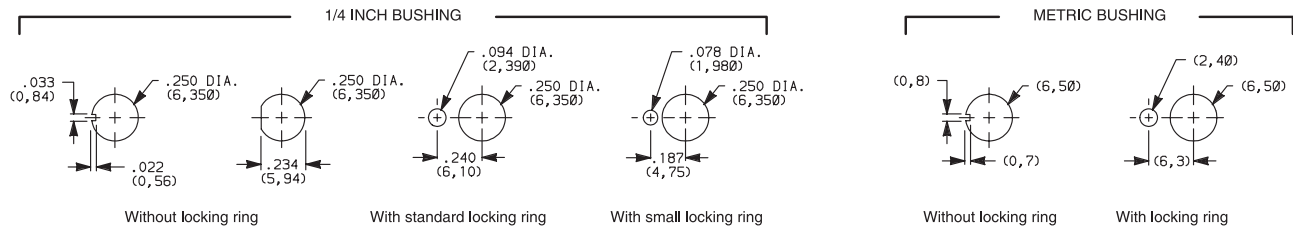
Y3 & Y4 bushings not available on single pole models with A3-A6, R, R2 terminations. Will withstand 12 in./lbs. of torque with no distortion.

D2, D8 bushings not available with C, W-W4, Z, Z3 terminations.

D3 bushing available with A, A2, A3, AV, AV2, AV3 and V2-V61 terminations only.

**NOTE:** No bushing option choice required when JXX actuator option is selected. When selecting bushing option, plunger selection must also be made, see previous page. Plunger lengths vary with bushing and termination options selected.

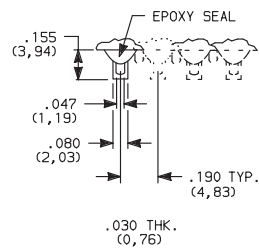
## PANEL MOUNTING



**NOTE:** Two mounting nuts, locking ring and lockwasher supplied standard with threaded bushings. Optional mounting nut and locking ring styles available, see section "Technical Data and Additional Hardware".

## TERMINATIONS

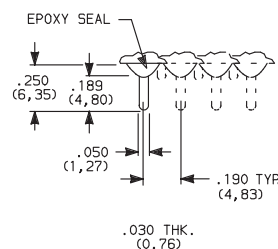
**Z** SOLDER LUG



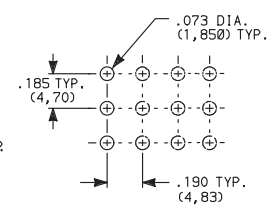
Not available with J95 actuator, P or R contact material.

**SPDT thru 4PDT**

**C** PC THRU-HOLE



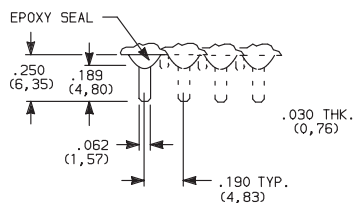
**PC MOUNTING**



Not available with J95 actuator option.

**SPDT thru 4PDT**

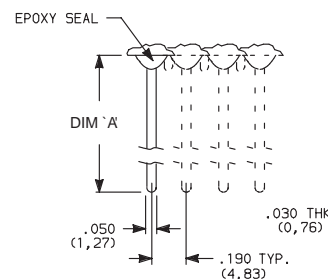
**Z3** QUICK CONNECT



Not available with J95 actuator, P or R contact material. Mating quick connector available, order part number 530100000, page A-44.

**SPDT thru 4PDT**

**W W1, W3, W4** WIRE WRAP



Not available with J95 actuator option.

**SPDT thru 4PDT**

OPTION CODE	DIM 'A'
<b>W</b>	.750 (19,05)
<b>W1</b>	.964 (24,49)
<b>W3</b>	.425 (10,80)
<b>W4</b>	1.062 (26,97)



Third Angle Projection

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

**C&K**

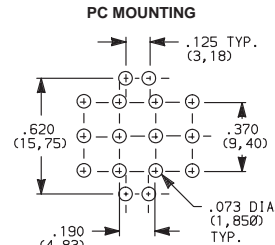
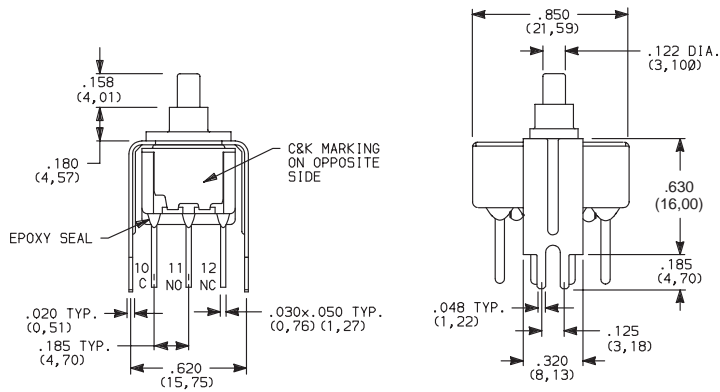
Pushbutton

A

# 8020 Series Snap-acting Momentary Pushbutton Switches

## TERMINATIONS

**V4, V9** VERTICAL MOUNT, V-BRACKET



**8421SD3V4GE  
4PDT**

OPTION CODE	DIM 'A'
<b>V4</b>	.630 (16,00)
<b>V9</b>	1.150 (29,21)

Not available with JXX actuators and I seal.

## CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATINGS	
<b>B</b>	GOLD <sup>1</sup>	GOLD <sup>1</sup>	LOW LEVEL/DRY CIRCUIT	8x25 MODELS ONLY: 0.4 MAX. @ 20 V AC OR DC MAX.
<b>P</b>		MATTE-TIN <sup>4</sup>		
<b>G</b>	GOLD OVER SILVER <sup>2,3</sup>	GOLD <sup>3</sup>	LOW LEVEL/DRY CIRCUIT OR POWER	8X21, U8X1 MODELS ONLY: 0.4 VA MAX @ 20 V AC OR DC MAX. OR 1 AMP @ 120 V AC OR 28 V DC.
<b>R</b>		MATTE-TIN <sup>4</sup>		

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.


<sup>1</sup> ALL CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.

<sup>2</sup> N.O. AND N.C. CONTACTS: Coin silver, with gold plate over nickel plate.

<sup>3</sup> COMMON CONTACTS & ALL TERMINALS: Copper alloy, with gold plate over nickel plate.

<sup>4</sup> TERMINALS: Copper alloy, with matte-tin over nickel plate.

**NOTE:** Any models supplied with B, P, R or G contact material are RoHS compliant.

U811-U841 models  with all options (except R, R2 terminations) when ordered with mandatory G, R or L contact material.

B or P contact material must be ordered with 8X25 models.

G or R contact material must be ordered with 8X21, U8X1 models.

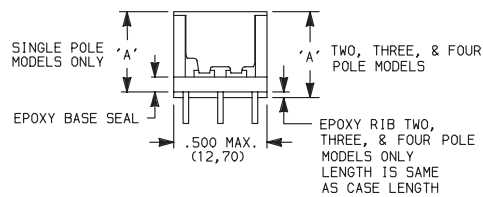
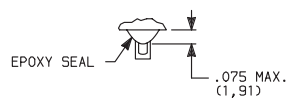
P or R contact material not available with Z, Z3 terminations.

K, L and M options represent Non RoHS tin lead product and are not recommended for new designs. For additional information please contact Customer Service.

## SEAL

**E** EPOXY SEAL

**I** EPOXY POTTED BASE



NO. POLES	DIM 'A'
SP	.410 (10,41)
DP	.440 (11,18)
3P	.505 (12,83)
4P	.505 (12,83)

**NOTE:** Available with C, W-W4, Z, Z3 terminations only.



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

**C&K**



**A**

Pushbutton