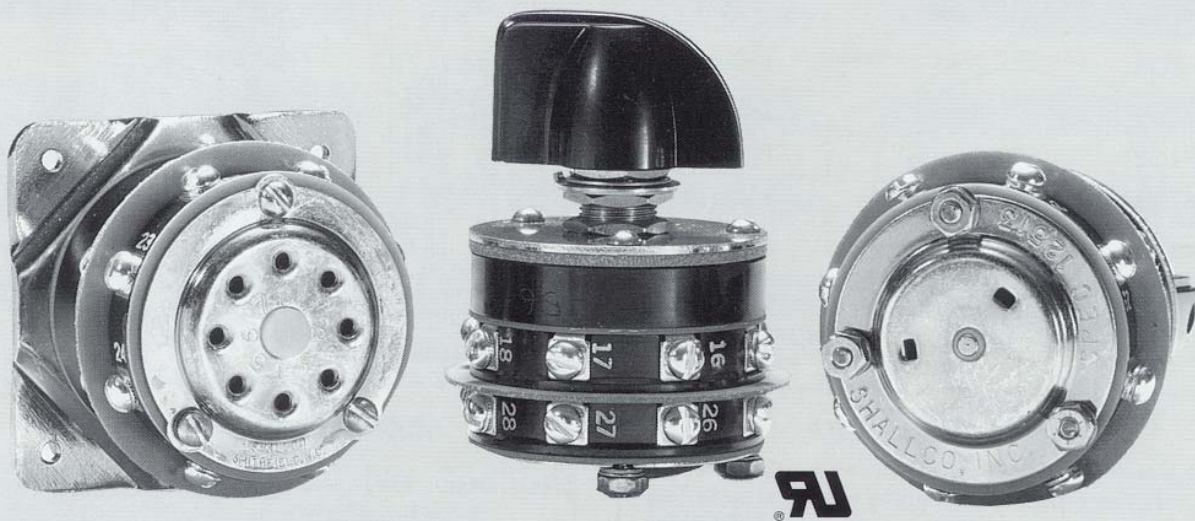


# POWER SWITCHES

## SERIES 16

- 10 AMPERES, MAX., 120VAC
- CLOSED CONSTRUCTION
- ROTARY DETENT ACTION
- SINGLE AND DOUBLE BREAK CIRCUITS
- MULTIPLE POLES
- ADJUSTABLE OR FIXED STOPS
- SCREW TERMINATIONS

STANDARD AND CUSTOM ASSEMBLIES FOR INDUSTRIAL  
CONTROL APPLICATIONS



*Shallco*

**SHALLCO, INC.**  
PRECISION ELECTRICAL COMPONENTS

SMITHFIELD INDUSTRIAL PARK • P.O. BOX 1089 • SMITHFIELD, N.C. 27577 • 919/934-3135

## Series 16 Rotary Switch, 10 Ampere, Single-Hole Mount

### General:

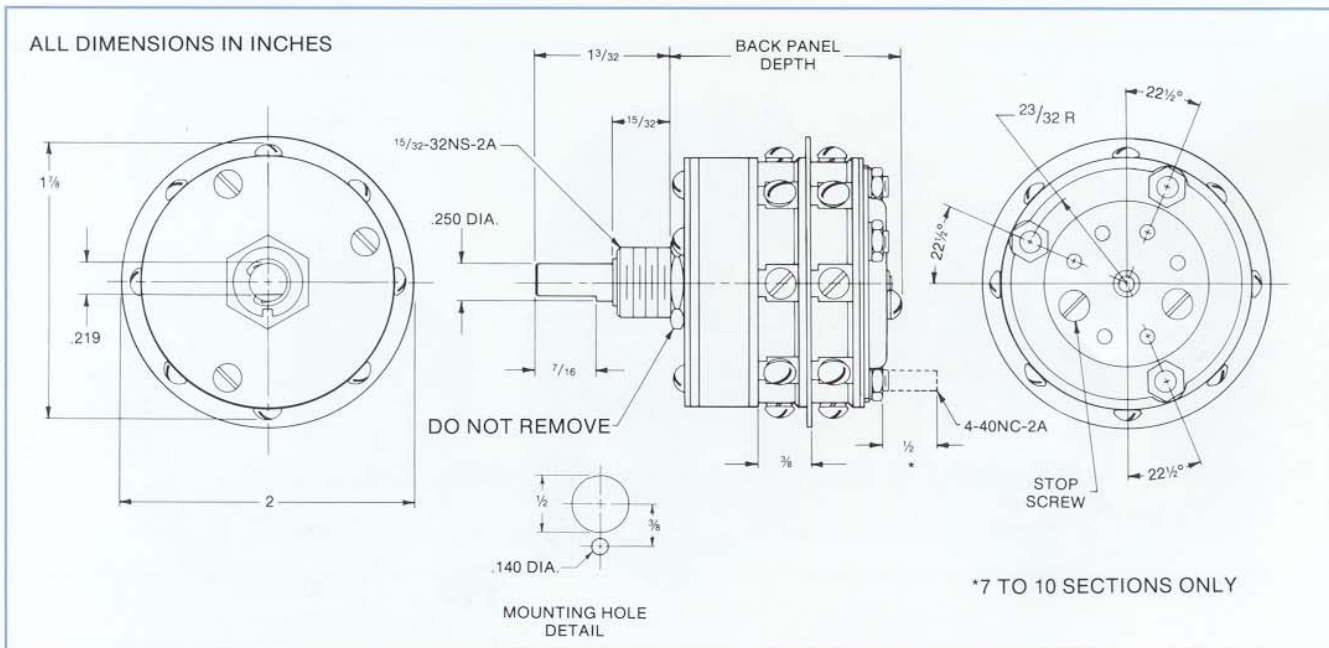
Meets requirements for 1 to 10 ampere switching of resistive loads to .75 power factor at voltages to 600V AC and 28V DC resistive loads

### Electrical:

- Voltages: 28V DC, 600V AC
- Current carrying capacity: 10 amperes
- Current switching capacity: up to 10 amperes
- Dielectric withstanding voltage: 1500V rms, initial
- Contact resistance: Initial, 10 milliohms max.
- Insulation resistance: 1000 megohms, initial

### Mechanical:

- Sections: 1 to 10; Poles 1 to 20, total
- Positions: 8, adjustable, 2 to 8 or continuous
- Shorting and non-shortng options
- Indexing: 45° positive detent
- Rotational life, mechanical: 10,000 cycles
- Rotational torque: 1-17 pound-inches, 1-10 sections
- Terminals: screw type, hardware supplied



### Materials and Finishes:

- Rotors and stators: thermoset plastic, UL 94VO
- Rotor contacts: silver-plated phosphor-bronze
- Stator contacts: silver-plated copper

- Exterior metal: steel, zinc-plated, plus chromate
- Terminal hardware: silver-plated brass
- Knob: thermoset, black w/pointer

### • Back-Panel Depth

Deck	Inches	Deck	Inches
1	1.16	6	3.06
2	1.54	7	3.80
3	1.92	8	4.16
4	2.30	9	4.54
5	2.68	10	4.92

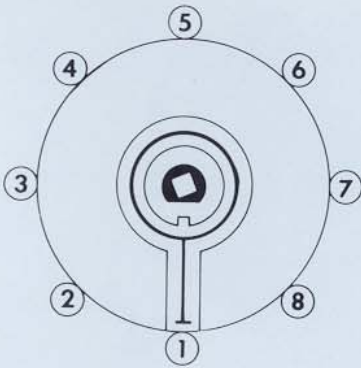
### • Approximate Weight

Single deck switch: 115 grams (4 oz.)  
Each additional deck: 25 grams (1 oz.)

- Mounting hardware: supplied (nuts, non-turn tab washer and lockwasher)
- Knob: supplied

## Series 16 Rotary Switch, 10 Ampere, Single-Hole Mount

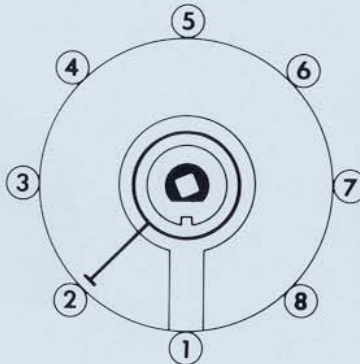
Circuit Diagrams, (shown with pointer knob in the 12 o'clock position)



**Circuit A**

One pole/section  
 (off & 7 tap positions)

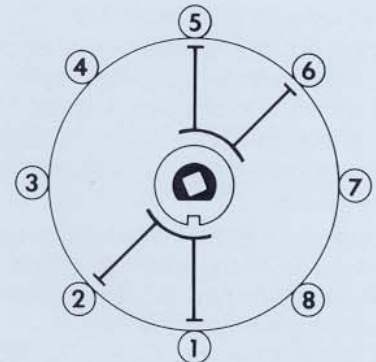
No. Sec.	P/N
1	16A1-B-1
2	16A1-B-2
3	16A1-B-3
4	16A1-B-4
5	16A1-B-5
6	16A1-B-6



**Circuit B**

One pole/section  
 (7 tap positions & off)

No. Sec.	P/N
1	16B1-B-1
2	16B1-B-2
3	16B1-B-3
4	16B1-B-4
5	16B1-B-5
6	16B1-B-6



**Circuit C**

Two poles/section  
 (double break switching)

No. Sec.	P/N
1	16C1-B-1
2	16C1-B-2
3	16C1-B-3
4	16C1-B-4
5	16C1-B-5
6	16C1-B-6

Maximum of 10 sections available

### Part Number Code

Series    Mounting    No. Sections  
**16    B    1    - B -    1**  
 Circuit    BBM/MBB

Example: Series 16, circuit B, single-hole mount,  
 break-before-make, single section

### Marking of Terminals

First number = section (1 - 10)  
 Second number = terminal (1 - 8)

Examples: 16, section one, terminal six  
 24, section two, terminal four  
 63, section six, terminal three  
 105, section ten, terminal five

### Adjustable Stops

All Series 16 rotary switches are equipped with an adjustable stop plate at the rear of the switch. Either one or two screws may be installed in the tapped holes provided. These screws limit the rotation of the switch to only those positions required by the user's application. All switches are supplied without the stop screws installed which allows for continuous rotation. Use only the screws and washers supplied for these stops. Fixed stops option available.



## Series 16 Rotary Switch, 10 Ampere, Four-Hole Mount

### General:

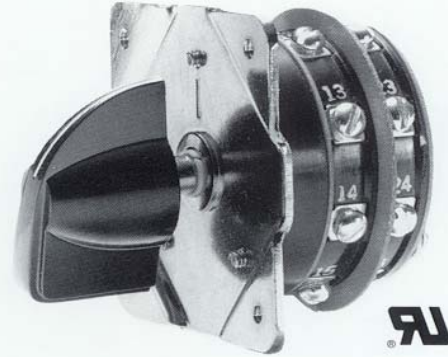
Meets requirements for 1 to 10 ampere switching of resistive loads to .75 power factor at voltages to 600V AC and 28V DC resistive loads

### Electrical:

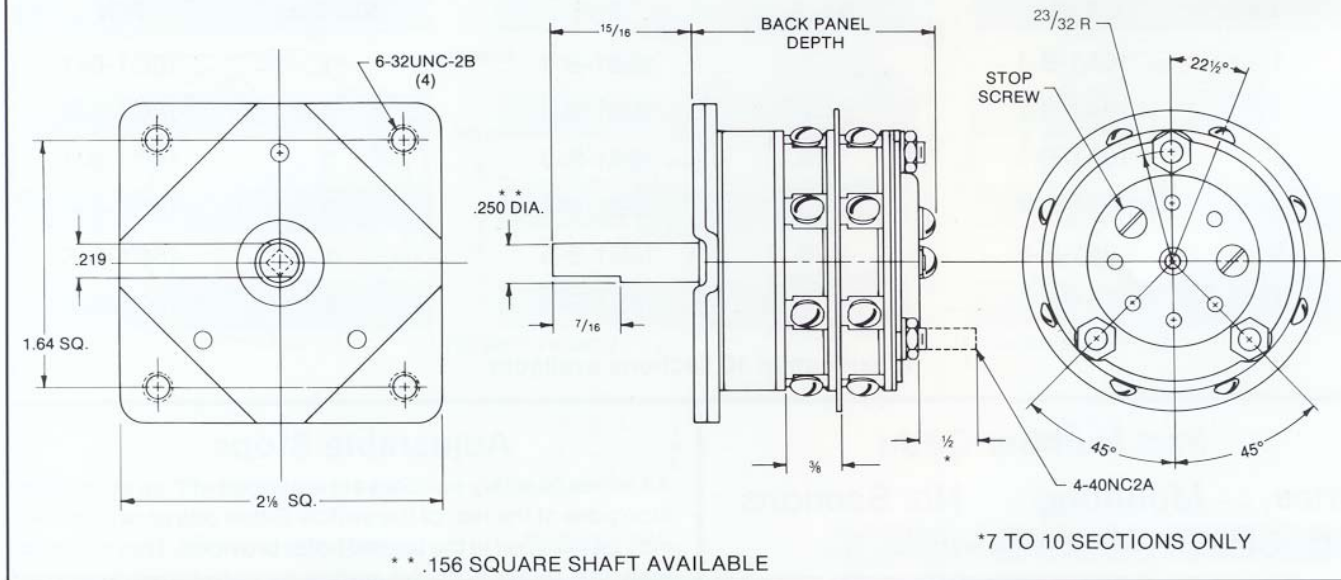
- Voltages: 28V DC, 600V AC
- Current carrying capacity: 10 amperes
- Current switching capacity: up to 10 amperes
- Dielectric withstanding voltage: 1500V rms, initial
- Contact resistance: Initial, 10 milliohms max.
- Insulation resistance: 1000 megohms, initial

### Mechanical:

- Sections: 1 to 10; Poles 1 to 20, total
- Positions: 8, adjustable, 2 to 8 or continuous
- Shorting and non-shorting options
- Indexing: 45° positive detent
- Rotational life, mechanical: 10,000 cycles
- Rotational torque: 6-17 pound-inches, 1-10 sections
- Terminals: screw type, hardware supplied



ALL DIMENSIONS IN INCHES



### Materials and Finishes:

- Rotors and stators: thermoset plastic, UL 94VO
- Rotor contacts: silver-plated phosphor-bronze
- Stator contacts: silver-plated copper

- Exterior metal: steel, zinc-plated, plus chromate
- Terminal hardware: silver-plated brass
- Knob: thermoset, black w/pointer

### • Back-Panel Depth

Deck	Inches	Deck	Inches
1	1.25	6	3.15
2	1.63	7	3.87
3	2.01	8	4.25
4	2.39	9	4.63
5	2.77	10	5.00

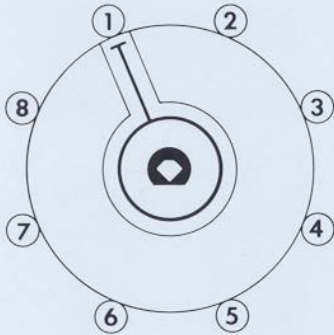
### • Approximate Weight

Single deck switch: 115 grams (4 oz.)  
 Each additional deck: 25 grams (1 oz.)

- Mounting hardware: supplied (four 6-32 screws)
- Knob: supplied

## Series 16 Rotary Switch, 10 Ampere, Four-Hole Mount

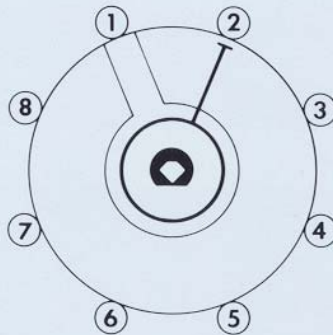
Circuit Diagrams, (shown with pointer knob in the 12 o'clock position)



**Circuit A**

One pole/section  
 (off & 7 tap positions)

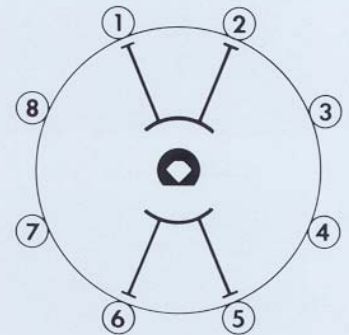
No. Sec.	P/N
1	16A4-B-1
2	16A4-B-2
3	16A4-B-3
4	16A4-B-4
5	16A4-B-5
6	16A4-B-6



**Circuit B**

One pole/section  
 (7 tap positions & off)

No. Sec.	P/N
1	16B4-B-1
2	16B4-B-2
3	16B4-B-3
4	16B4-B-4
5	16B4-B-5
6	16B4-B-6



**Circuit C**

Two poles/section  
 (double break switching)

No. Sec.	P/N
1	16C4-B-1
2	16C4-B-2
3	16C4-B-3
4	16C4-B-4
5	16C4-B-5
6	16C4-B-6

Maximum of 10 sections available

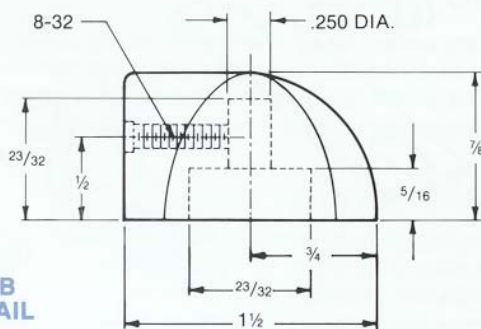
### Part Number Code

Series    Mounting    No. Sections

16    A    4 - B - 2

Circuit    BBM/MBB

Example: Series 16, circuit A, four-hole mount, break-before-make, two section



**KNOB  
 DETAIL**

### DESIGN FEATURES



**DUAL WIPING CONTACTS**



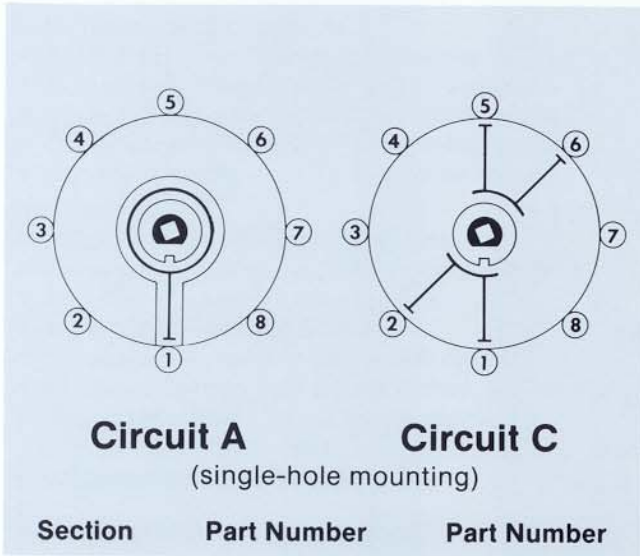
**POSITIVE  
 DETENT**



**SPRING  
 RETURN**

## Spring Return

Note: All circuit diagrams shown in the 12 o'clock rest position

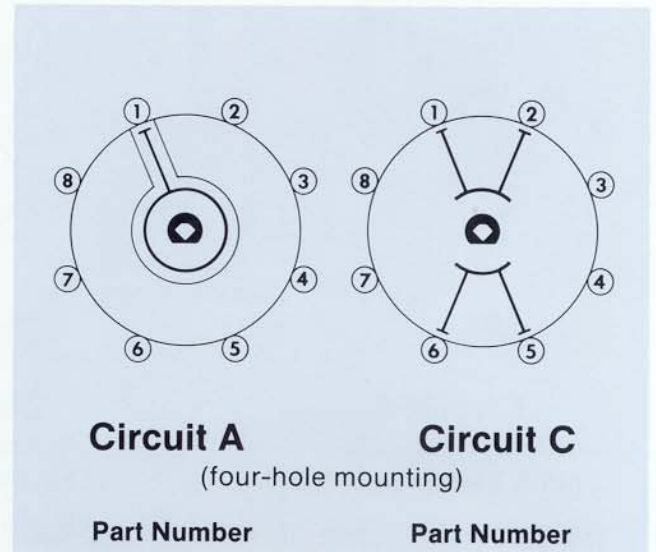


**Circuit A**

**Circuit C**

(single-hole mounting)

Section	Part Number	Part Number
1	16A1-B-1SR	16C1-B-1SR
2	16A1-B-2SR	16C1-B-2SR
3	16A1-B-3SR	16C1-B-3SR



**Circuit A**

**Circuit C**

(four-hole mounting)

Part Number	Part Number
16A4-B-1SR	16C4-B-1SR
16A4-B-2SR	16C4-B-2SR
16A4-B-3SR	16C4-B-3SR

- Notes:
1. Up to 2 positions clockwise (CW) or counterclockwise (CCW), stop hardware supplied unmounted
  2. All mounting and terminal hardware supplied unmounted
  3. Knob supplied
  4. Custom Applications: Combination detented and spring return actions available

### Military Grade Options Available

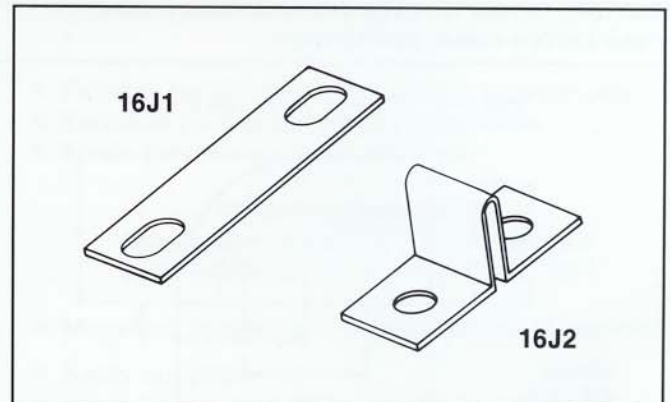
All **Series 16** designs are available with electrical, mechanical, materials and finishes designed to meet the requirements of MIL-S-6807. Please contact the factory for information on specific applications.

### Terminal Jumpers

Jumpers are available for strapping adjacent terminals on the same section or same terminal on adjacent sections. Jumpers available in packages of 10, 25 and 100.

Series 16	Part Number
Adjacent terminal, same section	16J1
Same terminal, adjacent sections	16J2

Custom wire jumpers are available on special order.

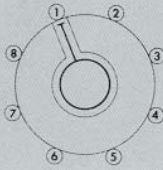


## Circuit Diagrams

(Shown with pointer knob in the 12 o'clock position, most circuits available with either BBM or MBB contacting)

### Circuit A

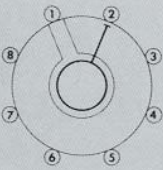
One pole/section, off and 7 tap positions.



SECTION	CONTACTS (SHAFT END)	POSITIONS							
		OFF	1	2	3	4	5	6	7
1	11		●						
	12			●					
	13				●				
	14					●			
	15						●		
	16							●	
	17								●
	18								

### Circuit B

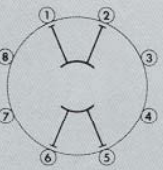
One pole/section, 7 tap positions and off.



SECTION	CONTACTS (SHAFT END)	POSITIONS							
		1	2	3	4	5	6	7	OFF
1	11	●							
	12		●						
	13			●					
	14				●				
	15					●			
	16						●		
	17							●	
	18								●

### Circuit C

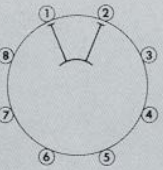
Two poles/section, double-break switching, normal limitation is 3 positions.



SECTION	CONTACTS (SHAFT END)	POSITIONS						
		1	2	3				
1	11	●						
	12		●					
	13			●				
	14				●			
	15					●		
	16						●	
	17							●
	18							

### Circuit D

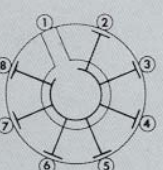
One pole/section, double-break switching.



SECTION	CONTACTS (SHAFT END)	POSITIONS							
		1	2	3	4	5	6	7	8
1	11	●							
	12		●						
	13			●					
	14				●				
	15					●			
	16						●		
	17							●	
	18								●

### Circuit E

Progressive opening, MBB (make-before-break) *only*. One circuit open; all other positions closed.



SECTION	CONTACTS (SHAFT END)	POSITIONS							
		1	2	3	4	5	6	7	8
1	11	●	●	●	●	●	●	●	●
	12		●	●	●	●	●	●	●
	13			●	●	●	●	●	●
	14				●	●	●	●	●
	15					●	●	●	●
	16						●	●	●
	17							●	●
	18								●

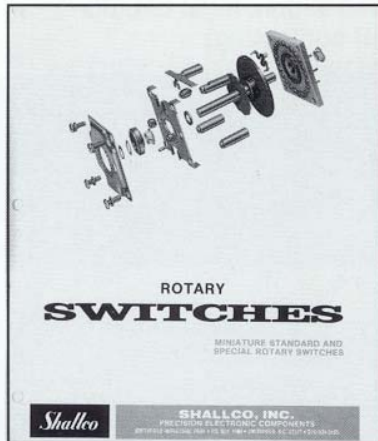
### Custom Circuits Available

Series 16 switches can be customized to accommodate special-purpose applications. Shorting and non-shorting rotor blades and contact/terminals permit circuit designers great flexibility. We invite your inquiries regarding a specific application. Shallco technical assistance is available by telephone and facsimile immediately. Sample units for custom applications can be supplied at nominal cost and assigned a unique part number to define your design.

### How to Order Series 16 Rotary Switches

Standard Series 16 switches are shown by circuit and part number on pages 2, 4, and 5. All examples listed are non-shorting (BBM) as designated by the letter "B" in the part number code. Shorting (MBB) is available and may be designated by changing the "B" to "M". For additional sections (10 maximum), change the last digit of the part number code to the number of sections required. Other variances require unique part number assignments at the factory.

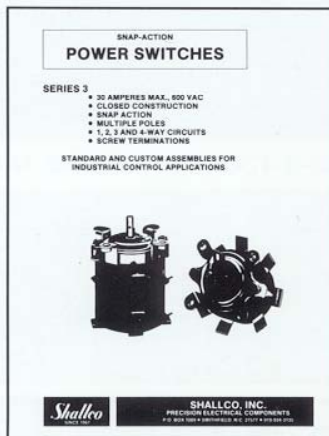
# ADDITIONAL PRODUCTS



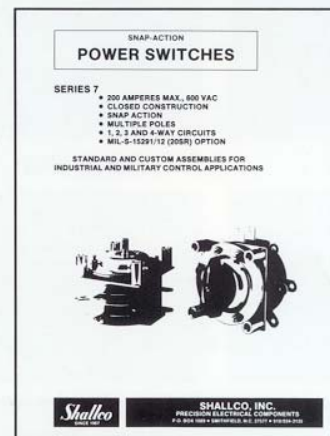
**STANDARD OPEN FRAME ROTARIES (CATALOG 10)**



**ENCLOSED SUBMINIATURE ROTARIES (BULLETIN G/K)**



**30 AMPERE SNAP-ACTION**



**200 AMPERE SNAP-ACTION**



**1-800-876-3135**  
TECHNICAL ASSISTANCE



**1-919-934-3298**  
DATA & GRAPHIC TRANSMISSIONS

**SHALLCO, INC.**  
SMITHFIELD INDUSTRIAL PARK  
P.O. BOX 1089  
SMITHFIELD, N.C. 27577  
TEL. 919/934-3135  
FAX 919/934-3298



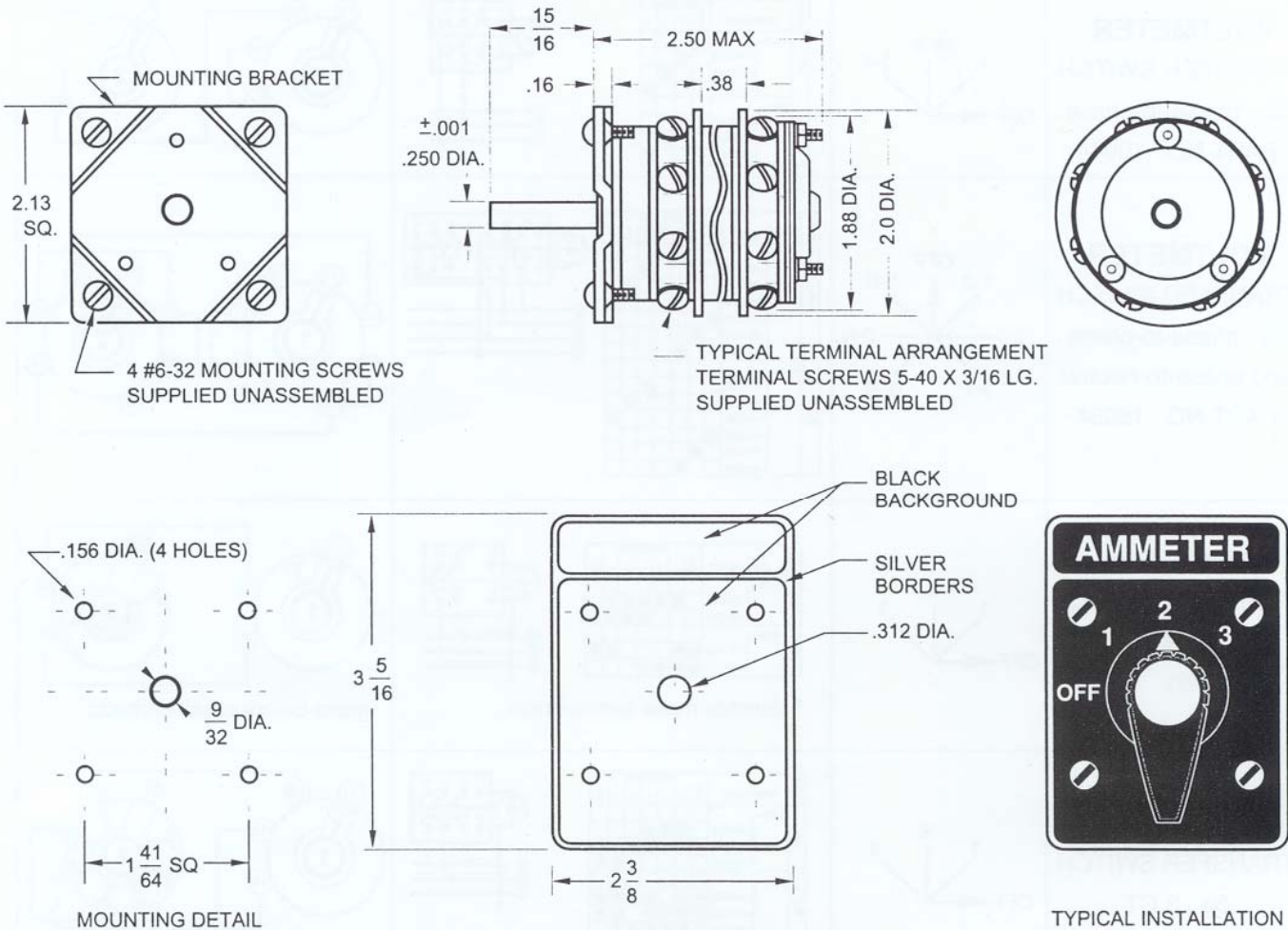
**Shallco**  
Since 1967

**SHALLCO, INC.**  
**PRECISION ELECTRICAL COMPONENTS**

308 COMPONENTS DRIVE • P.O. BOX 1089 • SMITHFIELD, N.C. 27577  
TELEPHONE: 919/934-3135 • FAX: 919/934-3298

**Series 16 Instrument Switches**

All instrument switches are supplied with jumpers installed, an engraved nameplate with matching knob, fixed stops and mounting hardware.



**General Description**

All Series 16 rotary power switches utilize detent action for positive positioning of the spring-loaded dual wiper blades, a feature that ensures continuity in applications subjected to shock and vibration. Both detent and electrical mechanisms are totally enclosed in rugged phenolic housings. Insulating barriers between sections prevent adjacent terminal shorts. Although instrument switches are supplied with fixed stops, standard Series 16 switches are supplied with adjustable stops to facilitate user selection of switched positions. Extensive testing has demonstrated its ruggedness and endurance of loads up to 10 amperes at 120 V AC.

## Series 16 Instrument Switches

All instruments switches are supplied with jumpers installed, an engraved nameplate with matching knob, fixed stops and mounting hardware.

APPLICATION	POSITIONS	"●" CHART & WIRING	DECK LAYOUT
<b>VOLTMETER</b> TRANSFER SWITCH 3ø , phase-to-phase PART NO. 16044			
<b>VOLTMETER</b> TRANSFER SWITCH 3ø , phase-to-phase and phase-to-neutral PART NO. 16054			
<b>AMMETER</b> TRANSFER SWITCH 3ø , 2 CT PART NO. 16084		<p>* denotes make-before-break</p>	<p>make-before-break contacts</p>
<b>AMMETER</b> TRANSFER SWITCH 3ø , 3 CT PART NO. 16104		<p>* denotes make-before-break</p>	<p>make-before-break contacts</p>
<b>AMMETER</b> <b>VOLTMETER</b> TRANSFER SWITCH 3ø , 3 CT volts-phase-to-phase amps-phase PART NO. 16154		<p>* denotes make-before-break, Deck 3 &amp; 4.</p>	<p>Deck 3 &amp; 4 make-before-break contacts</p>

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## SERIES 16 KEY OPERATED SWITCHES

### General:

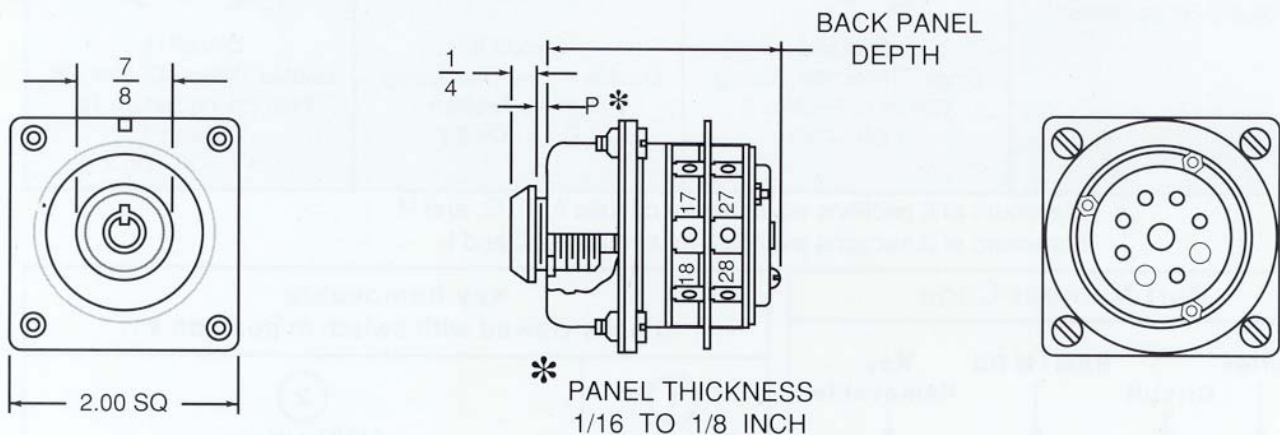
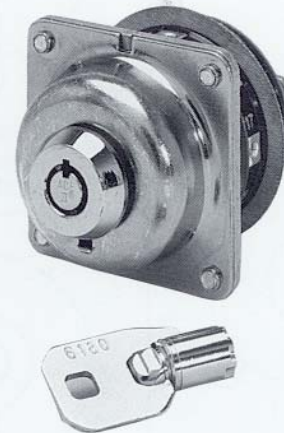
Meets requirements for 1 to 10 ampere switching of resistive loads to .75 power factor at voltages to 600 VAC and 28 VDC resistive loads (U.L. Recognized)

### Electrical:

- Voltages: 28 VDC, 600 VAC
- Current carrying capacity: 10 amperes
- Dielectric withstanding voltage: 1500 rms, initial
- Contact resistance: Initial, 10 milliohms max.
- Insulation resistance: 1000 megohms, initial

### Materials and Finishes:

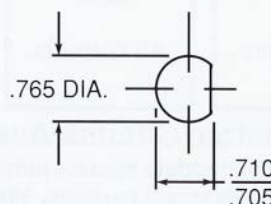
- Rotors and stators: thermoset plastic, UL 94VO
- Rotor contacts: silver-plated phosphor-bronze
- Stator contacts: silver-plated copper
- Lock: nickel-plated brass (2 keys supplied)
- Switch frame: steel, zinc-plated plus chromate
- Terminal hardware: silver-plated brass, supplied



### Mechanical:

- Sections: 1 to 6
- Positions: 8, adjustable, 2 to 7 and Off, or continuous
- Indexing: 45° positive detent
- Rotational life: 10,000 cycles
- Terminals: screw type
- Approximate weight:  
Single deck switch: 230 grams  
Each additional deck: 25 grams
- Normal mounting hardware: supplied

### MOUNTING HOLE DETAIL



### BACK PANEL DEPTH

DECK(S)	INCHES
1	1.83
2	2.20
3	2.57
4	2.94
5	3.30
6	3.67

# Shallco

Since 1967

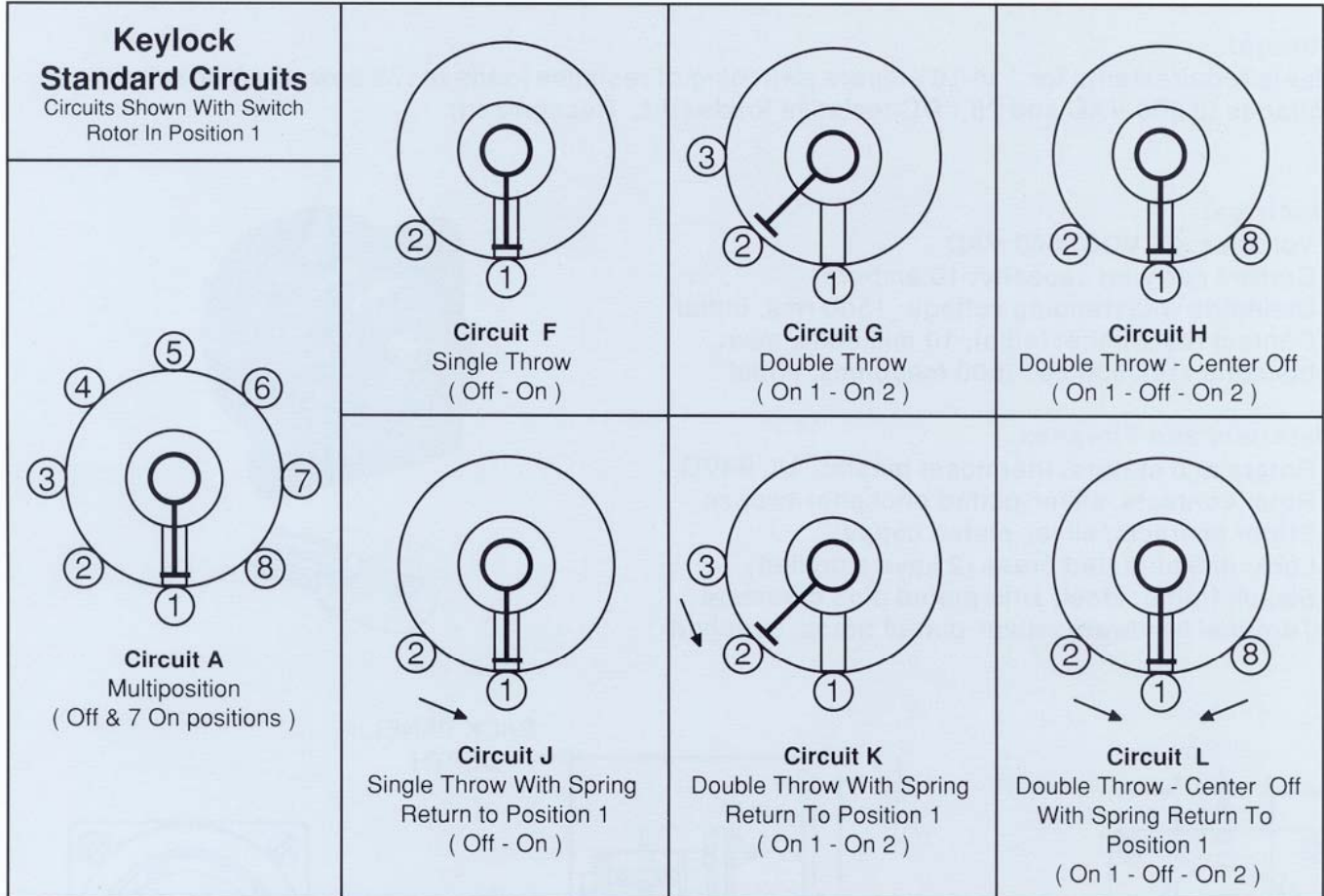
# SHALLCO, INC

PRECISION ELECTRICAL COMPONENTS

SMITHFIELD INDUSTRIAL PARK • P.O. BOX 1089 • SMITHFIELD, N.C. 27577

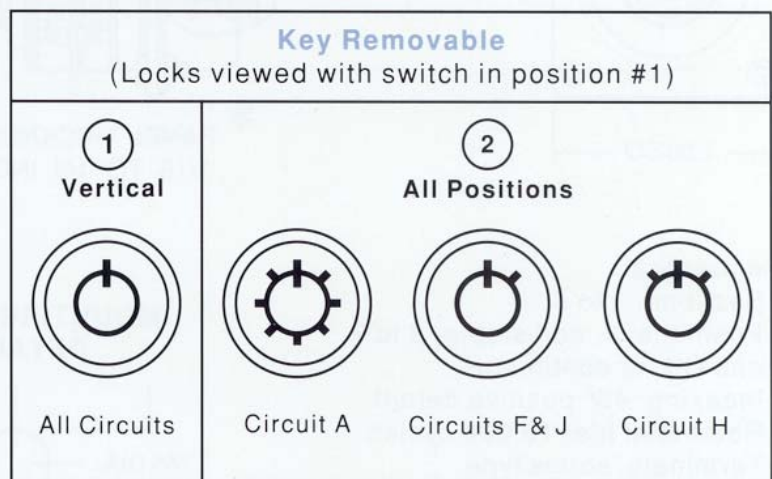
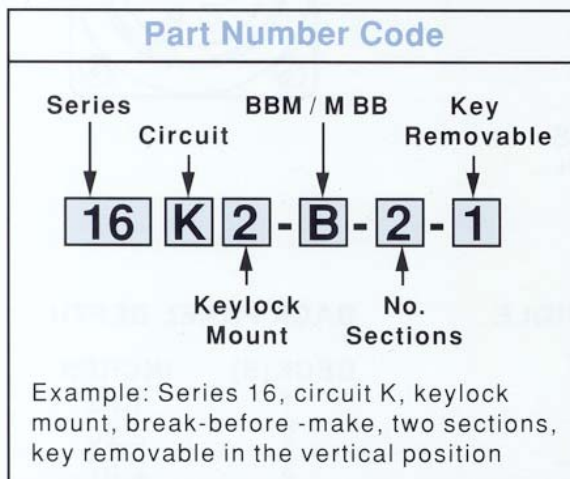
TELEPHONE: 919 / 934-3135 • FAX: 919 / 934-3298

## SERIES 16 KEY OPERATED SWITCHES



Maximum of 6 sections available for circuits A, F, G, and H

Maximum of 2 sections available for circuits J, K, and L



### Custom Circuits Available

Series 16 switches can be customized to accommodate special-purpose applications. Shorting and non-shorting rotor blades and contact / terminals permit circuit designers great flexibility. We invite your inquiries regarding a specific application. Shallco technical assistance is available by telephone and facsimile immediately. Sample units for custom applications can be supplied at nominal cost and assigned a unique part number to define your design.