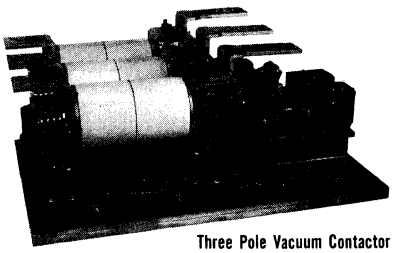
# vacuum contactors

INTRODUCTION: Vacuum contactors offer the most reliable means available to control large amounts of power at high voltage. Units designed for dc, power frequency, and rf currents are available in voltage ratings to 50 kv and current ratings to 900 amperes continuous.

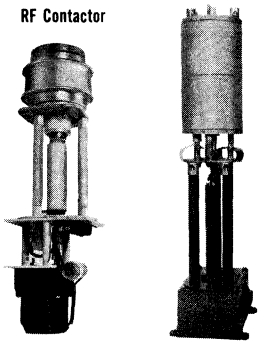
ADVANTAGES: The advantages of this type of unit include a high voltage capability, small physical size, high speed quiet operation, long life with minimum maintenance, non-exposed high voltage arcs, and low stable internal losses.

APPLICATIONS: Contactor applications include primary control of power supplies, industrial control of motors, switching in induction heating and mining equipment, tap changing in rf systems, and fault protection of transmitters.



Three Pole Vacuum Contactor

RF Contactor



AC or DC Contactor

**Alternating and Direct Current Contactors**—For industrial control applications.

| MODEL NUMBER | Test Voltage (Pk KV) | Operate Voltage (Pk KV) | Continuous Current (Amps) | Max. Interrupt AC Current (Amps RMS) | Max. Interrupt DC Power (KW) | Capacitor Discharge Decaying to 0 in 200 μs | Contact Arrangement | Actuator Voltage (Volts) | Time to Close (Ms) | Break Time (Ms) | Weight (Lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| RP101F4903D21B20<br>RP101F4904D21B20 | 50 | 30 | 200<br>DC | N/A | 300<br>(10 A Max.) | N/A | N/O<br>N/C | 115<br>60 Hz | 60 | 50 | 8¾ |
| RP101F4302D26B20<br>RP101F4304D26B20 | 50 | 30 | 200<br>DC | N/A | 300<br>(10 A Max.) | N/A | N/O<br>N/C | 100<br>DC | 75<br>55 | 17<br>42 | 8¾ |
| RP103F4903D21B20<br>RP103F4904D21B20 | 50 | 30 | 200<br>RMS | 2000 | N/A | 50<br>K Amps | N/O<br>N/C | 115<br>60 Hz | 60 | 50 | 8¾ |
| RP103F4302D26B20 | 50 | 30 | 200<br>RMS | 2000 | N/A | 50<br>K Amps | N/O | 100 | 75 | 17 | 8¾ |
| RP901K4903D21B30<br>RP901K4904D21B30 | 70 | 50 | 400<br>DC | N/A | 500<br>(10 A Max.) | N/A | N/O<br>N/C | 115<br>60 Hz | 60 | 50 | 15 |
| RP901K4601D26B30<br>RP901K4602D26B30 | 70 | 50 | 400<br>DC | N/A | 500<br>(10 A Max.) | N/A | N/O<br>N/C | 100<br>DC | 34<br>27 | 11<br>17 | 15 |
| RP900K4903D21B30<br>RP900K4904D21B30 | 70 | 50 | 400<br>RMS | 4000<br>at 13 KV RMS | N/A | 100<br>K Amps | N/O<br>N/C | 115<br>60 Hz | 60 | 50 | 15 |
| RP900K4601D26B30<br>RP900K4602D26B30 | 70 | 50 | 400<br>RMS | 4000<br>at 13 KV RMS | N/A | 100<br>K Amps | N/O<br>N/C | 100<br>DC | 34<br>27 | 11<br>17 | 15 |

**High Voltage RF Contactors**—For high power rf load control.

| UNIT | Peak Operate Voltage 32 MHz | Continuous Current 32 MHz RMS | Contact Resistance Ohms Max. | Contact Capacitance Pf | Contact Inductance Nh | Contact Arrangement | Open Time | Close Time | Pull-in Current RMS | Hold Current RMS | Hold Power Watts | Actuating Voltage | Motor Current 60 Hz | Weight | Life | Auxiliary Contacts Ratings<br>Volt RMS Current RMS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RP233X4513004M00 | 25 | 35 | .0005 | 2 | 25 | N/O | 17 Ms. | 75 Ms. | .7 | .09 | 10 | 100 VDC | N/A | 3 lbs. | $1 \times 10^5$ | Form C 230/7 |
| RF20B4319D31G00 | 25 | 200 | .0001 | 10 | 2.5 | latching | 7 Sec. | 7 Sec. | N/A | N/A | N/A | 115 VAC | .11A | 5 lbs. 6 oz. | $1 \times 10^5$ | Form C 230/7 |

**Three Pole Vacuum Contactors**—For three-phase and multi-pole power control applications.

| MODEL NUMBER | Operate Voltage 50/60/400 Hz | Operate Current 60 Hz | Interrupt Current Amps RMS | Mech. Life (Min.) | Actuator Voltage | Approx. Pull-in Current Amps RMS | Approx. Hold Current Amps RMS | Interrupt Time | Auxiliary Contacts | Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| RP151B4541X44R20 | 600 | 250 | 3000 | $1 \times 10^6$ | 26.5 VDC | 2.8 | .4 | Less than 1 Cycle | 2 SPDT 230 VAC/10 A | 16 lbs. |
| RP154B4549X41TX0 (60 Hz)<br>RP154B4549X4KTX0 (50 Hz) | 1500 | 300 | 3000 | $1 \times 10^6$ | 115 VAC | 22.0 | 1.9 | Less than 2 Cycles | 4 SPDT 230 VAC/5 A | 25 lbs. |

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ITT JENNINGS

**WRITE FOR CATALOG E1J203A**

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DIVISION OF INTERNATIONAL TELEPHONE AND TELEGRAPH CORPORATION

ITT **JENNINGS** **SWITCHES**

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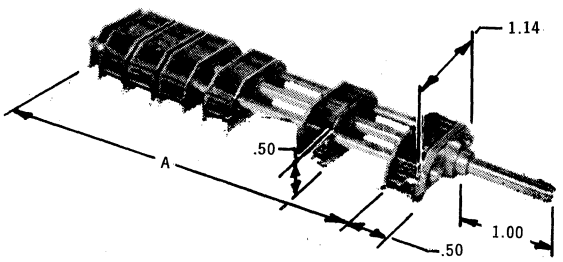
## P.C. ROTARY SWITCH TYPE JSR-325

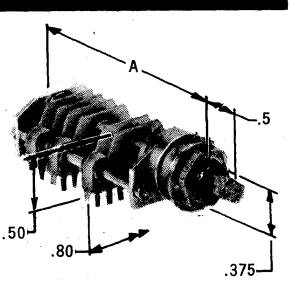



JSR-325 is a miniature, low profile rotary switch specifically designed for printed circuit application. Completely enclosed sections insure uniformly low contact resistance below 30 milliohms for non-shorting contacts. Current rating 50 milliamps switching max. 2 amps max. carry, 60 volts or 3 watts max. All 12 spring loaded, silver bridging contacts insure 50,000 cycle life. Double ball 30° detent, and angle of throw mechanism. Up to five sliding switch sections per switch offer maximum flexibility. Twist tabs provide secure mounting to PC board. Shaft .125 inch diameter, 1 inch long. Temperature range −40°C to +50°C. (Other combinations are available directly from factory including shorting switches.)

| CATALOG NUMBER (All contacts non-shorting) | Number of Sections | Poles per Section | Total No. of Poles | Number of Positions | Inner Shaft Length | LIST PRICE |
|---|---|---|---|---|---|---|
| JSR-325-30-1100NA | 1 | 1 | 1 | Cont. rot | 1.04 | $6.70 |
| JSR-325-30-1112NA | 1 | 1 | 1 | 12 | 1.04 | 6.70 |
| JSR-325-30-1206NA | 1 | 2 | 2 | 6 | 1.04 | 7.05 |
| JSR-325-30-1204NA | 1 | 3 | 3 | 4 | 1.04 | 7.40 |
| JSR-325-30-1403NA | 1 | 4 | 4 | 3 | 1.04 | 7.65 |
| JSR-325-30-1602NA | 1 | 6 | 6 | 2 | 1.04 | 8.30 |
| JSR-325-30-2100NA | 2 | 1 | 2 | Cont. rot. | 1.81 | 9.60 |
| JSR-325-30-2112NA | 2 | 1 | 2 | 12 | 1.81 | 9.60 |
| JSR-325-30-2206NA | 2 | 2 | 4 | 6 | 1.81 | 10.20 |
| JSR-325-30-2304NA | 2 | 3 | 6 | 4 | 1.81 | 10.85 |
| JSR-325-30-2403NA | 2 | 4 | 8 | 3 | 1.81 | 11.50 |
| JSR-325-30-3100NA | 3 | 1 | 3 | Cont. rot. | 2.56 | 12.40 |
| JSR-325-30-3112NA | 3 | 1 | 3 | 12 | 2.56 | 12.40 |
| JSR-325-30-3206NA | 3 | 2 | 6 | 6 | 2.56 | 13.35 |
| JSR-325-30-3304NA | 3 | 3 | 9 | 4 | 2.56 | 14.30 |
| JSR-325-30-3403NA | 3 | 4 | 12 | 3 | 2.56 | 15.25 |
| JSR-325-30-4100NA | 4 | 1 | 4 | Cont. rot. | 3.50 | 15.25 |
| JSR-325-30-4112NA | 4 | 1 | 4 | 12 | 3.50 | 15.25 |
| JSR-325-30-4206NA | 4 | 2 | 8 | 6 | 3.50 | 16.55 |
| JSR-325-30-4304NA | 4 | 3 | 12 | 4 | 3.50 | 17.80 |
| JSR-325-30-4403NA | 4 | 4 | 16 | 3 | 3.50 | 19.00 |
| JSR-325-30-5100NA | 5 | 1 | 5 | Cont. rot. | 4.05 | 18.10 |
| JSR-325-30-5112NA | 5 | 1 | 5 | 12 | 4.05 | 18.10 |
| JSR-325-30-5206NA | 5 | 2 | 10 | 6 | 4.05 | 19.70 |
| JSR-325-30-5304NA | 5 | 3 | 15 | 4 | 4.05 | 21.25 |
| JSR-325-30-5403NA | 5 | 4 | 20 | 3 | 4.05 | 23.60 |

## P.C. ROTARY SWITCH MINIATURE TYPE JSR-106

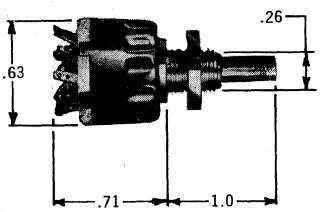
The JSR-106 is a miniature, low profile PC rotary switch with up to three poles and up to six positions. Designed with both PC and chassis mounting, the switch is available with up to five sliding sections. Contact resistance is below 30 milliohms, current rating is 50 milliamps switching, 1.5 amps carry, 60 volts or 3 watts max. Open type bridging contacts gold flash for 50,000 cycle life. Double ball 30° detent angle. Standard shaft .156 inch diameter, ½ inch length from chassis. Temperature range −40°C to +50°C (other combinations available from factory include shorting contacts).




## TYPE JSR-106 continued

| CATALOG NUMBER (All contacts non-shorting) | Number of Sections | Poles per Section | Total No. of Poles | Number of Positions | Inner Shaft Length A | LIST PRICE |
|---|---|---|---|---|---|---|
| JSR-106-30-1100NA | 1 | 1 | 1 | Cont. rot. | .87 | $6.30 |
| JSR-106-30-1106NA | 1 | 1 | 1 | 6 | .87 | 6.30 |
| JSR-106-30-1203NA | 1 | 2 | 2 | 3 | .87 | 6.45 |
| JSR-106-30-1302NA | 1 | 3 | 3 | 2 | .87 | 6.55 |
| JSR-106-30-2100NA | 2 | 1 | 2 | Cont. rot. | 1.26 | 8.30 |
| JSR-106-30-2106NA | 2 | 1 | 2 | 6 | 1.26 | 8.30 |
| JSR-106-30-2203NA | 2 | 2 | 4 | 3 | 1.26 | 8.55 |
| JSR-106-30-2302NA | 2 | 3 | 6 | 2 | 1.26 | 8.85 |
| JSR-106-30-3100NA | 3 | 1 | 3 | Cont. rot. | 1.65 | 10.30 |
| JSR-106-30-3106NA | 3 | 1 | 3 | 6 | 1.65 | 10.30 |
| JSR-106-30-3203NA | 3 | 2 | 6 | 3 | 1.65 | 10.75 |
| JSR-106-30-3302NA | 3 | 3 | 9 | 2 | 1.65 | 11.10 |
| JSR-106-30-4100NA | 4 | 1 | 4 | Cont. rot. | 2.04 | 12.35 |
| JSR-106-30-4106NA | 4 | 1 | 4 | 6 | 2.04 | 12.35 |
| JSR-106-30-4203NA | 4 | 2 | 8 | 3 | 2.04 | 12.85 |
| JSR-106-30-4302NA | 4 | 3 | 12 | 2 | 2.04 | 13.30 |
| JSR-106-30-5100NA | 5 | 1 | 5 | Cont. rot. | 2.43 | 14.55 |
| JSR-106-30-5106NA | 5 | 1 | 5 | 6 | 2.43 | 14.55 |
| JSR-106-30-5203NA | 5 | 2 | 10 | 3 | 2.43 | 15.00 |
| JSR-106-30-5302NA | 5 | 3 | 15 | 2 | 2.43 | 15.60 |

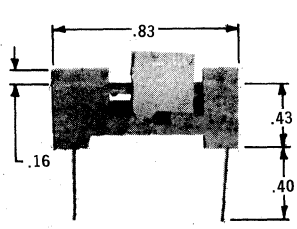
## ROTARY SWITCH TYPE JSR-170




Built in accordance with MIL-S-3786 for resistance to vibration to a level greater than 10G, this switch is suitable for switching very low signal voltages or current up to 2 amperes at 30 Volts AC/DC for over 20,000 cycles. Insulation resistance of the ceramic wafer between contacts is greater than $2x10^{13}$ ohms. Carry current 2.5 amp. Solid silver movable contacts, each pressured by a long life coil spring, insure uniformly low contact resistance. Positive 30° snap action detenting provides accurate positioning through its life.

| CATALOG NUMBER | No. of Poles | No. of Pos. | PRICE |
|---|---|---|---|
| JSR-170-30-1100NA | 1 | Cont. Rot. | $4.60 |
| JSR-170-30-1112NA | 1 | 12 | 4.60 |
| JSR-170-30-1206NA | 2 | 6 | 4.75 |
| JSR-170-30-1304NA | 3 | 4 | 5.05 |
| JSR-170-30-1403NA | 4 | 3 | 5.20 |
| JSR-170-30-1602NA | 6 | 2 | 5.50 |

## TRACK SWITCH TYPE JRTA




This switch is designed to mount directly on a conductive track on a printed circuit board. The wafer thin design avoids distortion of the circuit layout when switches are mounted side-by-side. Bifurcated contacts insure low contact resistance in the range of 10 milliohm. Plastic body with white slide button standard. Red, yellow, green, and blue slide buttons also available. Temperature range −40°C to +50°C.

| CATALOG NUMBER | Button Color | Contact Arrangement | Rating (amps) | Life (ops.) | Contact Resistance (ohms) | Contact Material | LIST PRICE |
|---|---|---|---|---|---|---|---|
| JRTA-1001W | White | 1 Form A (SPST) | 1.5 | 10,000 | 0.010 | Gold over Silver | $.65 |
| JRTA-1001R | Red | | 1.5 | 10,000 | 0.010 | | .65 |
| JRTA-1001Y | Yellow | | 1.5 | 10,000 | 0.010 | | .65 |
| JRTA-1001G | Green | | 1.5 | 10,000 | 0.010 | | .65 |
| JRTA-1001B | Blue | | 1.5 | 10,000 | 0.010 | | .65 |

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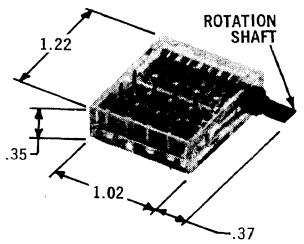
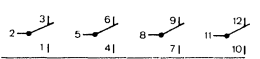
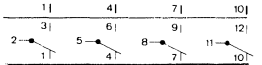
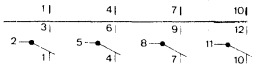
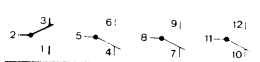
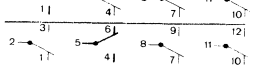
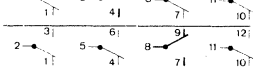
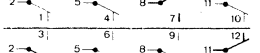
# SWITCHES

## PROGRAMMED 4 PDT SWITCH — TYPE JAEP

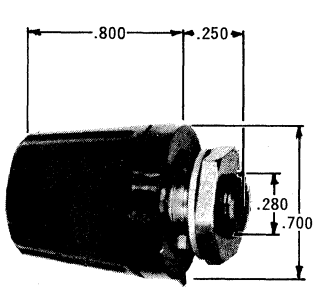



Hand or mechanical actuated printed circuit switch. Ideal for changing programs on boards. Switches may be mounted side by side and up to three coupled to common shafting. Twin contacts rated 50 VA, 1 amp max. switching load. 100 volts max. Life greater than $5x10^5$ ops. 10G vibration resistance. 100°C max. ambient.

Two standard programs available with 360° rotation. 1) all contacts off-on-off-on. 2) Every 90° turn momentarily on. 1, 2, 3, 4.

| CATALOG NUMBER | Contact Material | Program Position | Output Contacts 1 2 3 4 | PRICE |
|---|---|---|---|---|
| JAEP-3750A | Ag/Pd | 1 |  | $2.30 |
| | | 2 |  | |
| | | 3 |  | |
| JAEP-3770G | Au/Ag | 4 |  | 3.10 |
| JAEP-3752A | Ag/Pd | 1 |  | 2.30 |
| | | 2 |  | |
| | | 3 |  | |
| JAEP-3772G | Au/Ag | 4 |  | 3.10 |

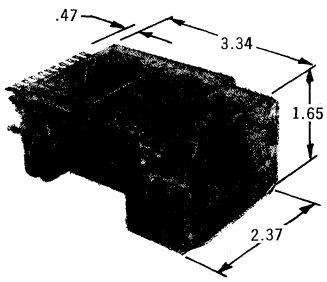
## DETENT IN KNOB — J-MIKE




A complete detenting mechanism built into a knob. For designers requiring to reduce space directly behind control panels. Knob contains click detent mechanism for 1 through 12 positions. 30 degree throw. Supplied ready for using in positions 2, 4, 5, 7, 8, 10, 11 and 12 as stops. Accessory ring available when 3, 6 and 9 positions are desired. With J-MIKE all click torque is contained in the knob and click assembly and is not transmitted along the shaft to contacts or potentiometer. 30° detent, 10 to 20 in-oz torque. Adjustable stops, 0.125 shaft diameter. Mounted by hexagonal nut or locking spring.

| CATALOG NUMBER | PRICE |
|---|---|
| J-MIKE-1 | $2.65 |

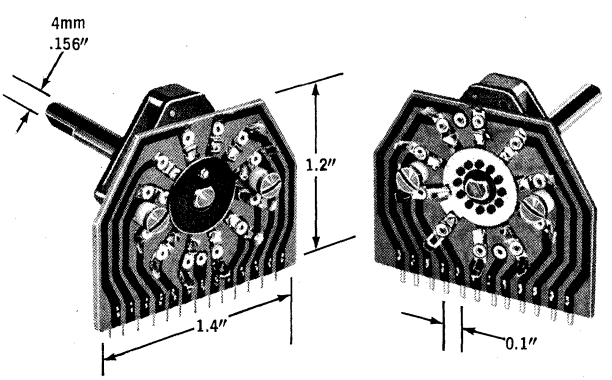
## 10 COUNTS / DC or AC ACTUATED — TYPE JKAA




A DC or ½ wave AC operated counting and storing relay rated .3 amps @ 30 VDC or 10 W resistive max. Its compact size, and telephone system reliability render it invaluable for applications such as machine tool control, sending and packaging systems, traffic control, etc. Mount to either chassis or by bar or plug into socket. Transparent dust cover standard. 10 normally open (Form A) individually operated counting contacts plus one set of auxiliary contacts in choice of Form A or B. The contacts are electrically insulated from each other and therfore can be used to control different circuits. Counts on each pulse to coil. Reset coil erases count anytime desired. Long life is assured as there is effectively no mechanical wear. Temperature range −10°C to +50°C. Weight 17.5 oz.

| CATALOG NUMBER | Nominal Volts | Coil Ohms | Power Watts | CONTACT Arrangement/ material | CONTACT Rating (amps) | LIST PRICE |
|---|---|---|---|---|---|---|
| JKAA-1036 | 12 DC | 9 | 12 to 19.5 | 10 Form A | 200 mA | $25.60 |
| JKAA-1040 | 24 DC | 37 | pulsed | +1 aux. | 200 mA | 25.60 |
| JKAA-1044 | 48 DC | 96 | power | **break** | 200 mA | 25.60 |
| JKAA-1048 | 60 DC | 145 | | | | 25.60 |
| JKAA-1037 | 12 DC | 9 | 12 to 19.5 | 10 Form A | 200 mA | 25.60 |
| JKAA-1041 | 24 DC | 37 | pulsed | +1 aux. | 200 mA | 25.60 |
| JKAA-1045 | 48 DC | 96 | power | **make** | 200 mA | 25.60 |
| JKAA-1049 | 60 DC | 145 | | | | 25.60 |
| JKAS-1000 | Mounting kit (necessary when mounting directly to any magnetic material) | | | | | 1.10 |
| JKAS-1001 | Socket with accessories | | | | | 5.60 |

## MINIATURE ROTARY PC SWITCHES — TYPE JSZVPL




NEW standard miniature PRINTED CIRCUIT rotary switches with 10 positions 12 positions, shorting or non-shorting, 36 degree or 30 degree detent up to 3 poles max (36°) and 4 poles max (30°) Single section shown but multi-sections available as required (add $1.95 per each added section). Detent available with adjustable stop contacts rated 1 amp/150 Volts.

| | | | | | |
|---|---|---|---|---|---|
| Part No. | JSZVPL10-1010N | 1 Pole, 10 Position | 36° Throw | Non-Shorting | $4.55 |
| Part No. | JSZVPL12-1012N | 1 Pole, 12 Position | 30° Throw | Non-Shorting | 4.55 |

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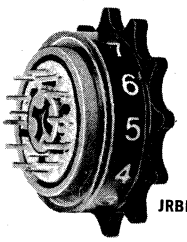
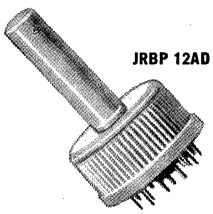
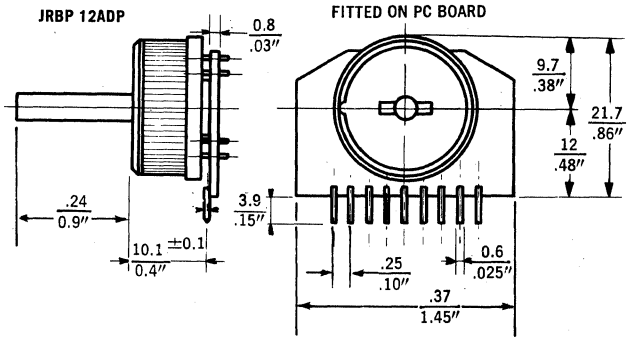
## SUB-MINIATURE ROTARY KNOB SWITCHES — TYPE JRBP



JRBP 12M

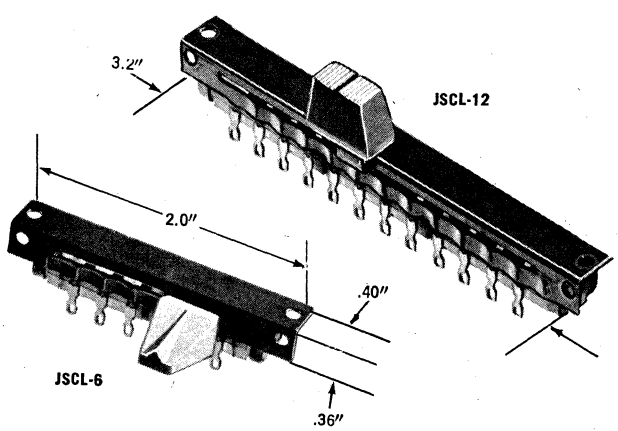

JRBP 12AD




NEW sub-miniature PRINTED CIRCUIT rotary knob switches designed for PC boards both axial and radial design. Detent and contacts in a single knob up to 6 poles, and 2 to 12 positions. Various styles available including thumbwheel, coin slot, concentric and added section — check factory.

| | | |
|---|---|---|
| Type JRBP 12M-1012N | 1 Pole, 12 Position | $2.50 |
| Type JRBP 12AD-1012N | 1 Pole, 12 Position | 1.25 |
| Type JRBP 12ADP-1012N | 1 Pole, 12 Position | 3.25 |

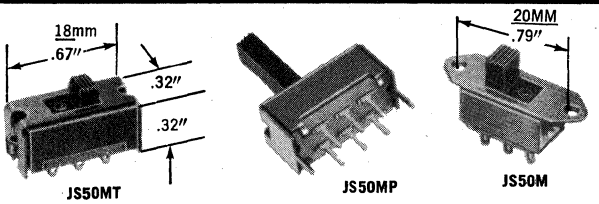
## MINIATURE SLIDE SWITCHES — TYPE JSCL




NEW miniature slide switches. Vertical button standard (horizontal button available), contacts 5 amps carry, 0.1 amps switched, 120/240 VAC, 0.2 inch pin spacing, PC or solder terminal (specify).

| | | |
|---|---|---|
| Type JSCL 12V-1X12 | 1 Pole, 12 Position | $3.00 |
| Type JSCL 6V-1X6 | 1 Pole, 6 Position | 3.50 |

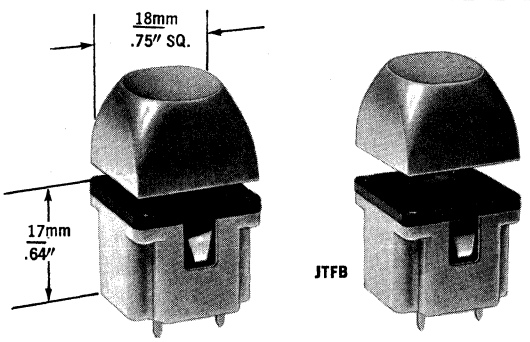
## SUB-MINIATURE SLIDE SWITCHES — TYPE JS-50




NEW subminiature slide switch; either single or double pole double throw PC or solder lug terminals. Carry 1 amp on contacts or switch max. 0.3 amp, 2.5 watts to 500 VDC or AC. Also available w/spring return.

| | | | |
|---|---|---|---|
| Type JS50M | (Solder Lug) | Single Pole | $.35 |
| Type JS51M | (Solder Lug) | Double Pole | .45 |
| Type JS50MP | (Printed Circuit Pins) | Single Pole | .35 |
| Type JS51MP | (Printed Circuit Pins) | Double Pole | .45 |

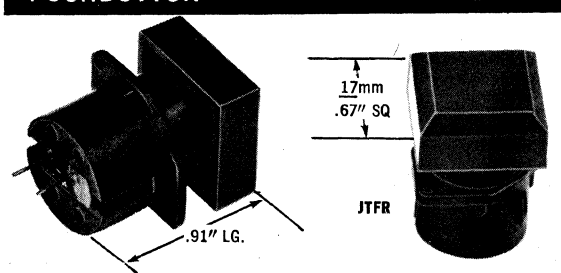
## KEY BOARD / PUSHBUTTONS — TYPE JTFB




NEW small momentary touch button or push on/push off type. Both for keyboards. Either 2 pole normally open or 2PDT. Both designed for PC board with operating pressure approx. 130 grams (perfect for human factor). Contacts rated 20 mA at 24 VDC. Life 5 million for FB and 100 K for FB-1D. Standard color button light grey (others available).

| | | | |
|---|---|---|---|
| Type JTFB-2NO | Momentary | 2 Pole NO | $1.00 |
| Type JTFB-1D-2NO | Latching | 2 Pole NO | 1.30 |
| Type JTFB-2RT | Momentary | 2PDT | 1.15 |
| Type JTFB-1D-2RT | Latching | 2PDT | 1.45 |

## MINIATURE MODULE PUSHBUTTON — TYPE JTFR




NEW miniature keyboard pushbutton WITH REED CONTACT. Momentary action single pole - normally open reed rated for 10 watts switching. Life expectancy of $10^7$ operations. Button travel 0.120″ with progressive operating pressure (0.4 - 0.8 newton). Standard button color dark grey, other colors available. Mounting on 1/16″ centers thru 0.610 inch dia. hole.

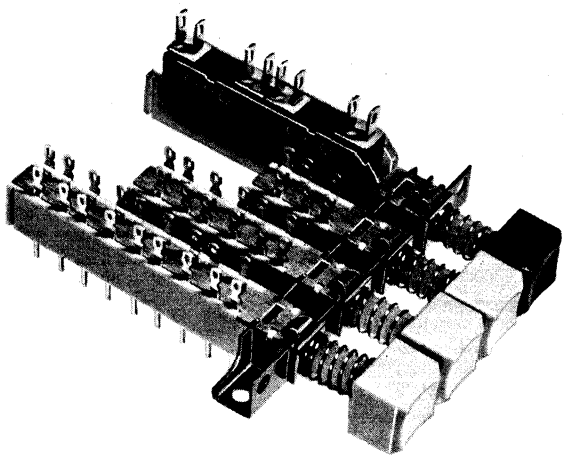
| | |
|---|---|
| Type JTFR-01G | $2.70 |

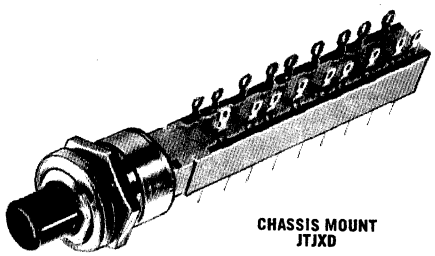
# JENNINGS
## INDUSTRIAL PRODUCTS

970 McLAUGHLIN AVENUE, SAN JOSE, CALIFORNIA 95116
PHONE: (408) 292-4025 TWX: 910-338-0159, TELEX: 34-6311

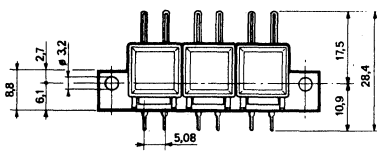
**FOR CURRENT SOURCE DATA CALL TOLL-FREE 800-645-9200 (IN N.Y. STATE CALL COLLECT (516) 294-0990)**

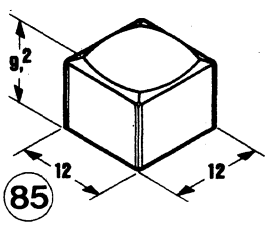
# SWITCHES



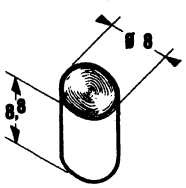


CHASSIS MOUNT
JTJXD

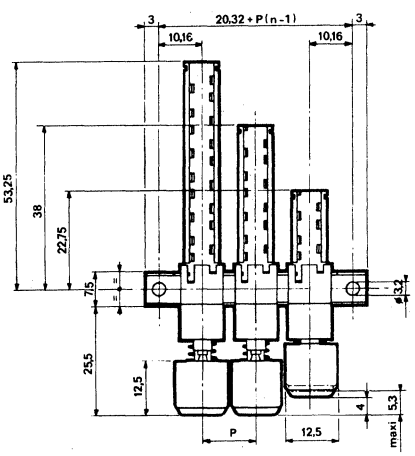


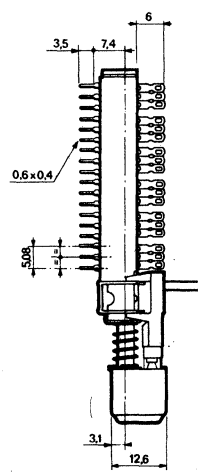




Standard

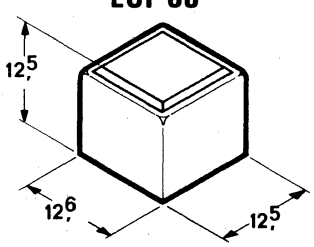



Standard




**LUF 88**




## PUSHBUTTON SWITCHES — TYPE JTJ

MINIATURE style pushbutton switches, with patented contact style which results in extremely long life and reliability. Also modules are designed with solder lug terminals on one side and PC pins on the other. Pins are 0.20 inch grid spaced for flexibility of design.

**Standard** center spacing is **0.5 inch** or 0.4 inch. Also available is 0.6 inch centers and 0.8 inch centers.

Number of Keys: 1 - 13 for 0.5", 0.4", and 0.6" center.
1 - 6 for 0.8 inch center.

Panel mounting by 2 holes ⅛" dia through front panel.

Either shorting or non-shorting contacts.

| | | Mounted - Price Per Station |
|---|---|---|
| 2PDT | JTJM | $ .75 |
| 4PDT | JTJ | 1.00 |
| 6PDT | JTJX | 1.20 |

Threaded bushing available for single button (suffix D) adder $.70 ea.

Mechanical functions (suffix):

| | |
|---|---|
| ID — push on, push off | $.30 adder |
| N — normal interlock | .10 adder |
| R — release button | .80 adder |
| FU — momentary contact | .20 adder |

Illuminated buttons (suffix LUF) includes lamp, socket and LUF88 button. Specify 12 or 24 VDC (standard color black). LUF (adder per station) $.40

Standard buttons: No. 81 and 85 (0.5 in center) $.10 ea.

Colors: red, green, blue, black, white, pale grey, dark grey.

Ask for detailed spec. sheets.