

# Metal Shaft Potentiometer 16mm Size Metal Shaft Type

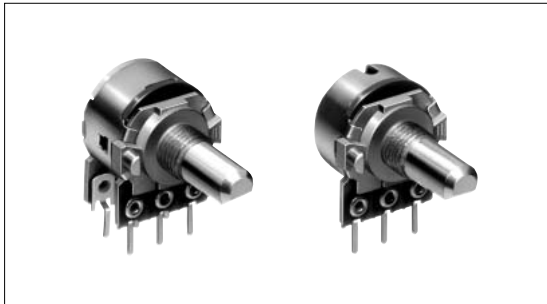
RK163 Series



A wide range of versatility products applicable for various types of control.

Rotary Potentiometers

Slide Potentiometers



## Typical Specifications

Items	Specifications
Total resistance tolerance	± 20%
Maximum operating voltage	150V AC, 5V DC
Total rotational angle	300 ± 3 °
Rotational torque	3 to 25mN·m
Operating life	15,000cycles
Operating temperature range	- 10 to + 70

Metal Shaft

Insulated Shaft

Knob Operating

## Product Line

Number of resistor elements	Mounting direction	Shaft type	Terminal style	Length of the shaft (mm)	Center detent	Total resistance (k )	Resistance taper	Minimum order unit (pcs.)	Products No.	Drawing No.
Single-unit	Horizontal type	Flat	For PC board	15	Without	10	1B	800	RK1631110TBK	1
			Lead	20			15A		RK1631110TT3	
							1B		RK1631110U1Q	
		Knurled	For PC board	15		20	800	RK1631110TNP	2	
			Lead				10	800	RK1631110TTU	3
								600	RK1631110U0Q	4
Dual-unit for tone	Horizontal type	Flat	For PC board	20	With	10	800	RK1631210AWN	5	
								RK1631210A2		
Knurled		15		20	Without	15A		5	RK1631210AX9	6
									25	10
Knurled		15		10	15A	RK16312A0BKH		6		
						RK16312A0BKR				


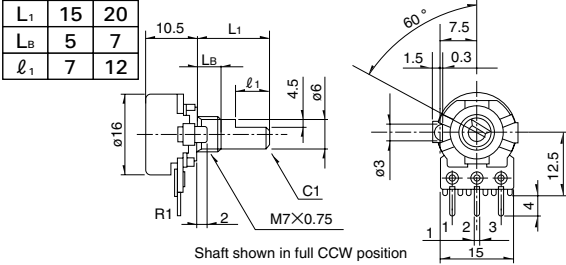
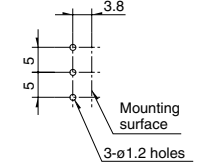

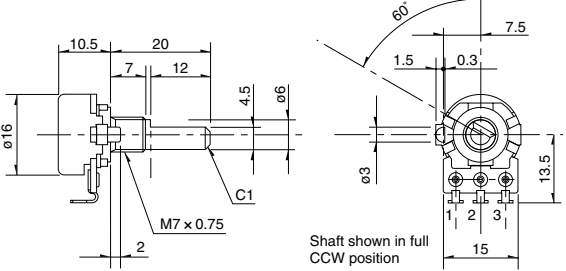
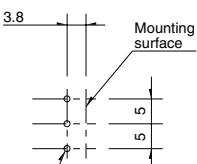

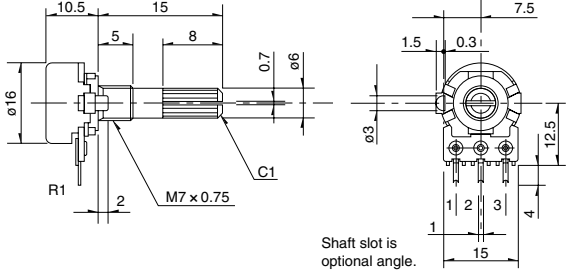
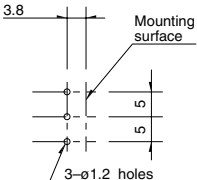

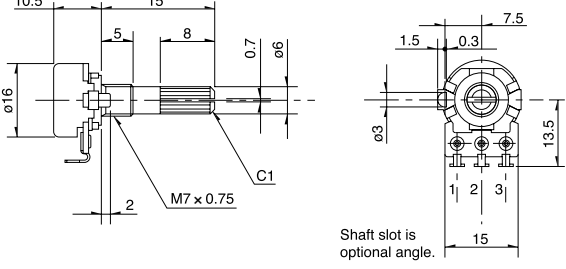
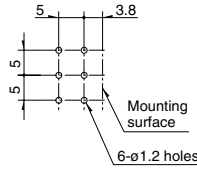
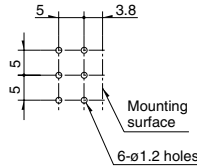
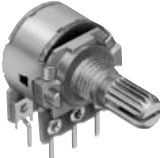
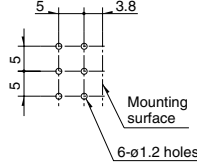
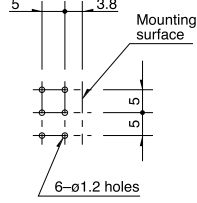
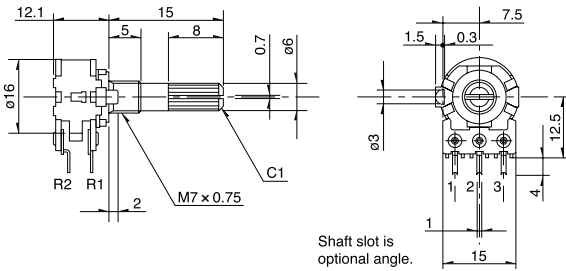
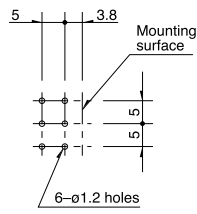
## Note

Products other than those listed in above products are also available. Please contact us for details.

Refer to P.350 for product varieties.

**Dimensions**

Unit:mm

No.	Photo	Style	PC board mounting hole dimensions (Viewed from mounting side)									
1	 <p>Single-shaft, single-unit RK163111</p>	<table border="1" data-bbox="592 331 727 412"> <tr> <td>L<sub>1</sub></td> <td>15</td> <td>20</td> </tr> <tr> <td>L<sub>B</sub></td> <td>5</td> <td>7</td> </tr> <tr> <td>l<sub>1</sub></td> <td>7</td> <td>12</td> </tr> </table>  <p>Shaft shown in full CCW position</p>	L <sub>1</sub>	15	20	L <sub>B</sub>	5	7	l <sub>1</sub>	7	12	 <p>3-ø1.2 holes</p>
L <sub>1</sub>	15	20										
L <sub>B</sub>	5	7										
l <sub>1</sub>	7	12										
2	 <p>Single-shaft, single-unit RK163111</p>	 <p>Shaft shown in full CCW position</p>	 <p>3-ø1.2 holes</p>									
3	 <p>Single-shaft, single-unit RK163111</p>	 <p>Shaft slot is optional angle.</p>	 <p>3-ø1.2 holes</p>									
4	 <p>Single-shaft, single-unit RK163111</p>	 <p>Shaft slot is optional angle.</p>	 <p>3-ø1.2 holes</p>									
5	 <p>Single-shaft, dual-unit RK163121( For tone ) RK16312A( For volume )</p>	<table border="1" data-bbox="592 1487 727 1509"> <tr> <td>L<sub>1</sub></td> <td>20</td> <td>25</td> </tr> </table>  <p>Shaft shown in full CCW position</p>	L <sub>1</sub>	20	25	 <p>6-ø1.2 holes</p>						
L <sub>1</sub>	20	25										
6	 <p>Single-shaft, dual-unit RK163121( For tone ) RK16312A( For volume )</p>	 <p>Shaft slot is optional angle.</p>	 <p>6-ø1.2 holes</p>									

Rotary Potentiometers  
 Slide Potentiometers

Metal Shaft  
 Insulated Shaft  
 Knob Operating

## Product Varieties

In addition to the recommended products, the following specifications can also be accommodated.

### Product Specifications and Applications

Type	Model	Applications	Detent variety
Single-shaft, single-unit	RK16311	General	Center 21
Single-shaft, dual-unit	RK16312	General or Volume and tone control	31 41

### Total Resistance Variety

Total resistance(k $\Omega$ )	5	10	20	50	100	200

### Resistance Taper

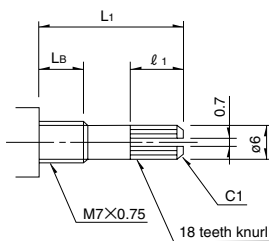
Resistance taper	15A	1B	3B	15C

### Dimensions of Shaft

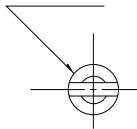
#### 1) 18 teeth knurl

Unit:mm

##### Die-casting shaft

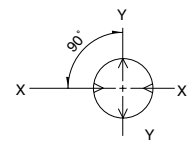


Not specified slotting angle



##### Detail dimensions

L <sub>1</sub>	L <sub>B</sub>	l <sub>1</sub>
15	5	8
20	5	12
25	7	12
30	7	12

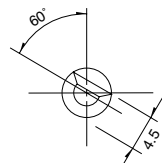
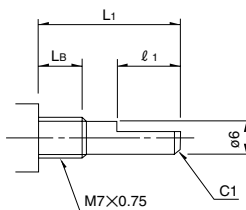


Shaft shown in full CCW position

● The serration angle shall be as shown.

#### 2) Flat type

Unit:mm



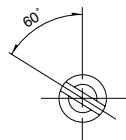
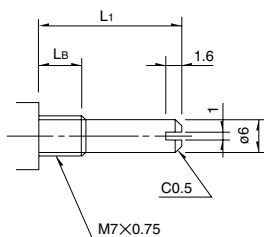
Shaft shown in full CCW position

##### Detail dimensions

L <sub>1</sub>	L <sub>B</sub>	l <sub>1</sub>
15	5	7
20	7	12
25	7	12
30	7	12

#### 3) Slotted type

Unit:mm



Shaft shown in full CCW position

##### Detail dimensions

L <sub>1</sub>	L <sub>B</sub>
15	7
20	7
25	7
30	7

### Note

marked are specifications recommended by ALPS.

Refer to P.363 for attached parts.  
Refer to P.351, 502 for resistance taper.

Rotary Potentiometers  
Slide Potentiometers

Metal Shaft  
Insulated Shaft  
Knob Operating

# Orders Other Than Recommended Products

When ordering product varieties that are not listed in the Product Line, please specify by referring to the below example.

## Sample Part Number



### Model type

Code	Model type
111	Single-unit
121	Dual-unit for tone
12A	Dual-unit for vol.

### Shaft type

Code	Shaft type
F	Flat
S	Slotted
K	Knurled

### Length of the shaft(L: X mm)

Code	Length of the shaft	Code	Length of the shaft
15	15	25	25
20	20	30	30

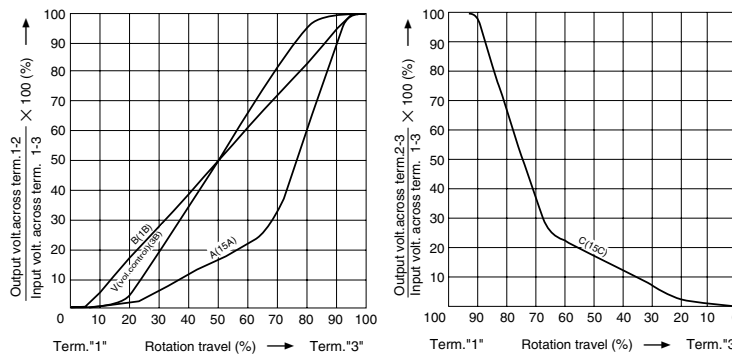
### Detent

Code	Detent	Code	Detent
C0	Without	31	31
C1	Center	41	41
21	21		

### Resistance taper

Code	Resistance taper	Code	Resistance taper
A	15A	V	3B
B	1B	C	15C

B: For tone & general(model type : 111,121)  
V: For vol.(model type : 111,12A)



### Total resistance

Code	Total resistance (kΩ)	Code	Total resistance (kΩ)
502	5	503	50
103	10	104	100
203	20	204	200

### Terminal style

Code	Terminal style
P	For PC board
L	Lead terminal







### Note

marked are specifications recommended by ALPS.

## List of Varieties

Rotary Potentiometers  
Slide Potentiometers

Metal Shaft  
Insulated Shaft  
Knob Operating

Type	9mm size metal shaft snap-in	9mm size metal shaft multi-ganged	11mm size metal shaft low-profile	11mm size metal shaft reflow	16mm size metal shaft	
Number of drive shafts	Single-shaft		Dual-shaft	Single-shaft		
Model	RK09L1	RK0971 RK0981	RK0972	RK117111	RK119	RK1631 1 RK1631 A
Photo						
Fixing method of bushing	The bushing can be screwed down		Bushing screw clamp	Bushing guide type		
Terminal mounting	Horizontal type	Vertical type	Horizontal type	Vertical type		
Attached switch	Without		Rotary switch 1	Momentary push switch		Without
			Push-on push-off switch 1			
			Momentary push switch 1			
Gang error applicable to Dual-unit parts for audio volume control purposes	- 40dB to 0dB 3dB max.		—————		- 40dB to 0dB 3dB max.	
Solder heat resistance	Manual soldering	350 max. 3s max.			350 ± 10 3 <sup>+1</sup> / <sub>0</sub> s	350 max. 3s max. Motor terminal: 360 max 2s max.
	Dip soldering	260 ± 5 , 5 ± 1s			—————	
	Reflow soldering	—————			Please see P.347	—————
Operating emperature range	- 10 to + 70	- 20 to + 70	- 30 to + 70	- 40 to + 85	- 10 to + 70	
Electrical performance	Rated power	0.05W				
	Residual resistance	10k < R < 50k 50k < R	20 max. 30 max. Nominal total resistance of 0.1% or less		R 10k 50 max. 10k < R 50k 80 max. 50k < R Nominal total resistance of 0.2% or less	R 10k 20 max. 10k < R 50k 30max. 50k < R Nominal total resistance of 0.1% or less
	Maximum attenuation (Volume control)		5k R < 10k 10k R < 50k 50k R < 100k 100k R	70dB min. 80dB min. 90dB min. 100dB min.		
	Insulation resistance	100M min. 250V DC				100M min. 500V DC
	Voltage proof	300V AC for 1minute				500V AC for 1minute
Mechanical performance	Stopper strength	0.5N·m( With push-lock mechanism type: 0.4N·m )			0.5N·m	0.9N·m
	Push-pull strength	80N max.	100N max.			
	Vibration	10 to 55 to 10Hz/min., the amplitude is 1.5mm for all the frequencies, in the 3 direction of X, Y and Z and for 2 hours respectively				
Environmental performance	Cold	- 20 ± 2 for 96h	- 30 ± 2 for 96h		- 40 ± 2 for 240h	- 20 ± 2 for 96h
	Dry heat	70 ± 2 for 96h			85 ± 2 for 240h	70 ± 2 for 96h
	Damp heat	40 ± 2 , 90 to 95%RH for 96h			60 ± 2 , 90 to 95%RH for 240h	40 ± 2 , 90 to 95%RH for 96h
Page	323	327	339	343	348	

### Push-on Switch Specifications

Items	RK097		RK117		RK119	
Contact arrangement	Single pole and single throw ( Push on )					
Travel(mm)	0.5	1.5	0.5	1.5	0.5 ± 0.3	1.5 ± 0.5
Operating force (N)	4 <sup>+1</sup> / <sub>2</sub>	5 ± 2	6 ± 3	5 ± 2		4 ± 2
Rating	0.5A 12V DC		3A 16V DC		0.1A 5V DC (1mA 5V DC min.ratings)	
Contact resistance	100m for initial period;200m after operating life					
Operating life	10,000 times min.	20,000 times min.	10,000 times min.	20,000 times min.	100,000 times min.	20,000 times min.

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Metal Shaft Potentiometers Cautions .....364, 365

### Notes

1. For the switch attached, the single-shaft or inner shaft of the dual-shaft type can be chosen.
2. The operating temperature range for automotive applications can be raised upon request. Please contact us for requirements of this kind.

## Attached Parts

The following parts are included with the product.

Unit:mm

Applicable products	Bearing screw diameter	Hexagonal nut	Flat washer
RK09L RK168 RK097 RK203	M9		
RK271	M8		
RK097 RK098 RK163	M7		
RK097 RK098	M6		

Rotary Potentiometers  
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Knob Operating



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