

Metal Shaft Potentiometer 16mm Size Metal Shaft Type

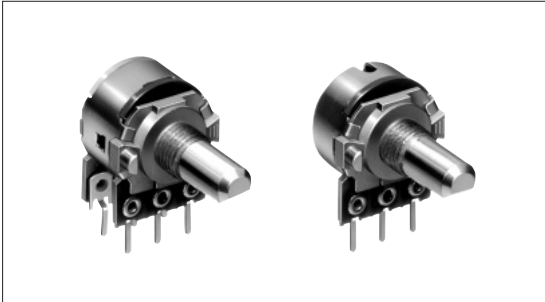
RK163 Series



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

Rotary
Potentiometers

Slide
Potentiometers



Typical Specifications

Items	Specifications
Total resistance tolerance	$\pm 20\%$
Maximum operating voltage	150V AC, 5V DC
Total rotational angle	$300 \pm 3^\circ$
Rotational torque	3 to 25mN·m
Operating life	15,000cycles
Operating temperature range	-10°C to $+70^\circ\text{C}$

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 (kΩ)	Resistance taper	Minimum order unit (pcs.)	Products No.	Drawing No.
Single-unit	Horizontal type	Flat	For PC board	15	Without	10	1B	600	RK1631110TBK	1
				20			15A		RK1631110TT3	
			Lead				1B		RK1631110U1Q	
				Knurled		For PC board		15	20	200
		Lead	600				RK1631110TTU		3	
			Lead	200		RK1631110U0Q	4			
Dual-unit for tone		Flat		For PC board	20	With	10	600	RK1631210AWN	5
			Knurled						RK1631210A2	
Dual-unit for vol.		Flat			15	Without			15A	RK1631210AX9
			20		50		RK16312A0B85			5
		25			10		15A		RK16312A0BKH	
			Knurled						15	RK16312A0BKR

Packing Specifications

Bulk

Terminal style	Number of packages (pcs.)		Export package measurements (mm)
	1 case /Japan	1 case/export packing	
For PC board	600	1,200	326×532×386
Lead	200	400	270×360×155

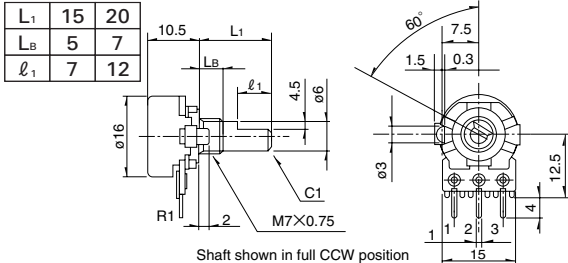
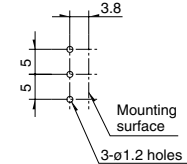
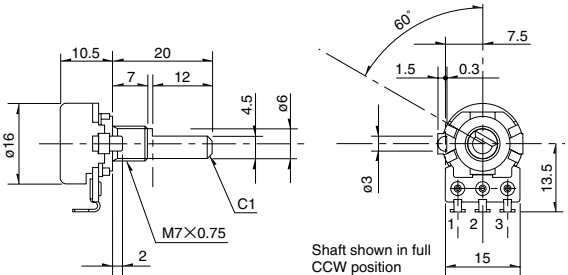
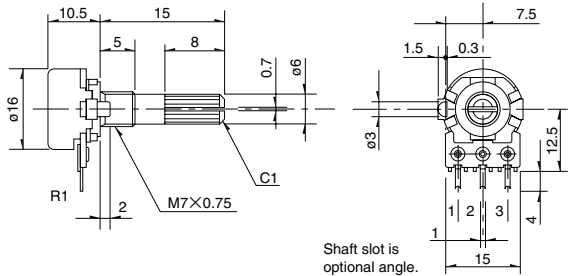
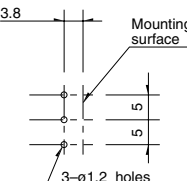
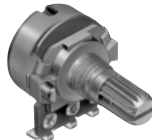
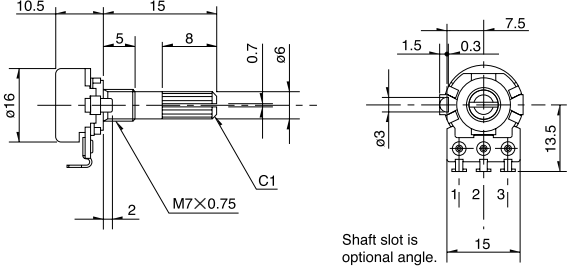
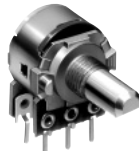
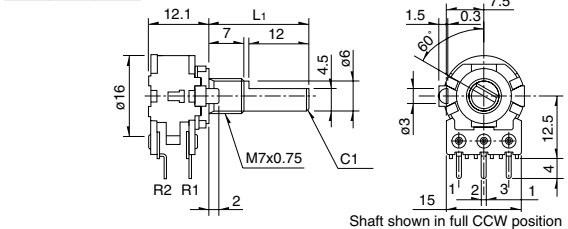
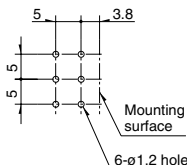
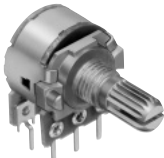
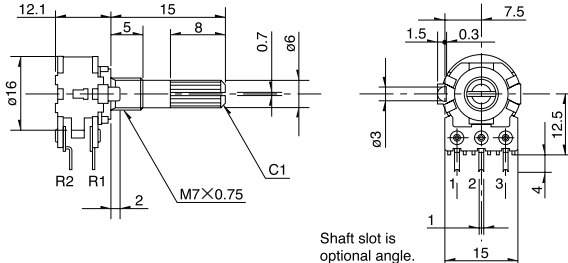
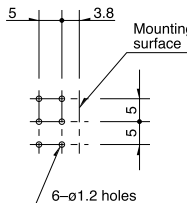
Note

1. Products other than those listed in above products are also available. Please contact us for details.
2. Please place purchase orders per minimum order unit N (integer).

Refer to P.367 for product varieties.
Refer to P.367, 368, 456 for resistance taper.
Refer to P.377 for attached parts.

Dimensions

Unit:mm

No.	Photo	Style	PC board mounting hole dimensions (Viewed from mounting side)									
1	Single-shaft, single-unit RK163111 	<table border="1"><tr><td>L₁</td><td>15</td><td>20</td></tr><tr><td>L_B</td><td>5</td><td>7</td></tr><tr><td>ℓ₁</td><td>7</td><td>12</td></tr></table>  Shaft shown in full CCW position	L ₁	15	20	L _B	5	7	ℓ ₁	7	12	
L ₁	15	20										
L _B	5	7										
ℓ ₁	7	12										
2	Single-shaft, single-unit RK163111 	 Shaft shown in full CCW position										
3	Single-shaft, single-unit RK163111 	 Shaft slot is optional angle.										
4	Single-shaft, single-unit RK163111 	 Shaft slot is optional angle.										
5	Single-shaft, dual-unit RK163121 (For tone) RK16312A (For volume) 	<table border="1"><tr><td>L₁</td><td>20</td><td>25</td></tr></table>  Shaft shown in full CCW position	L ₁	20	25							
L ₁	20	25										
6	Single-shaft, dual-unit RK163121 (For tone) RK16312A (For volume) 	 Shaft slot is optional angle.										

Rotary
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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 31 41
Single-shaft, dual-unit	RK16312	General or Volume and tone control	

Total Resistance Variety

Total resistance (kΩ)	5	10	20	50	100	200
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Resistance Taper

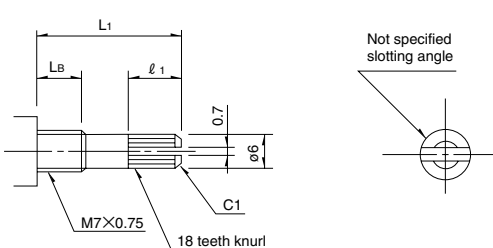
Resistance taper	15A	1B	3B	15C
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Dimensions of Shaft

1) 18 teeth knurl

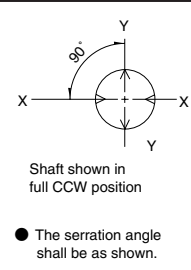
Unit:mm

Die-casting shaft



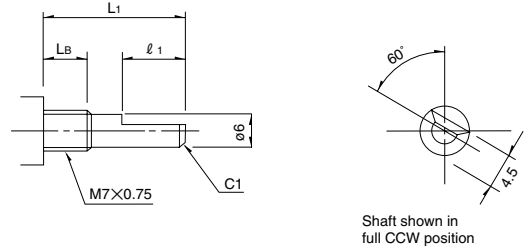
Detail dimensions

L ₁	L _B	l ₁
15	5	8
20	5	12
25	7	12
30	7	12



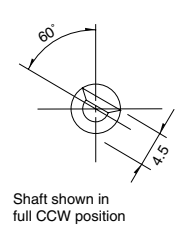
2) Flat type

Unit:mm



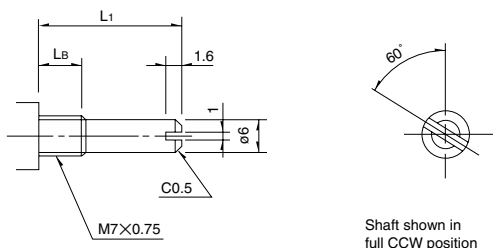
Detail dimensions

L ₁	L _B	l ₁
15	5	7
20	7	12
25	7	12
30	7	12



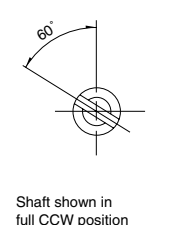
3) Slotted type

Unit:mm



Detail dimensions

L ₁	L _B
15	7
20	7
25	7
30	7



Note

marked are specifications recommended by ALPS.

Refer to P.368, 456 for resistance taper.
Refer to P.377 for attached parts.

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

R K 1 6 3 **1 1 1 0** — **F 2 0** — **C 0** — **B 1 0 3** — **P**

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_s) (mm)

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

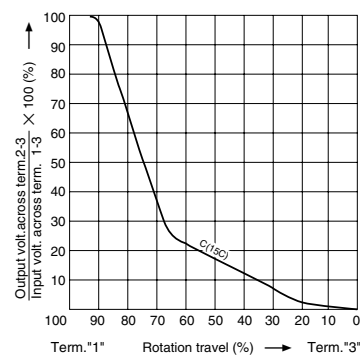
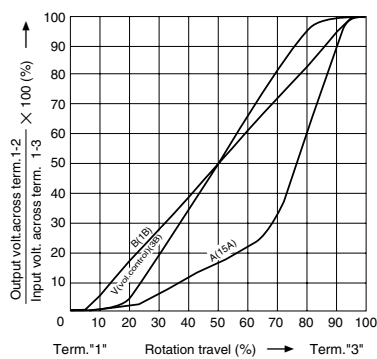
Detent

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

Type		16mm size metal shaft	20mm size metal shaft	27mm size metal shaft	Rotary motor-driven
Number of drive shafts		Single-shaft			
Model		RK1631□1 RK1631□A	RK203 / EC20A	RK2711	RK1681□ MG0
Photo					
Fixing method of bushing		Bushing screw clamp	The bushing can be fastened by use of screws	Bushing screw clamp	The bushing can be fastened by use of screws
Terminal mounting		Horizontal type	Vertical type	Horizontal type	
Attached switch		Without			
Gang error applicable to Dual-unit parts for audio volume control purposes		−40dB to 0dB 3dB max.	_____	−60dB to 0dB 3dB max.	−40dB to 0dB 3dB max.
Solder heat resistance	Manual soldering	350℃ max. 5s max.	300℃ max. 3s max.	350℃ max. 5s max.	300℃ max. 3s max. Motor terminal : 350℃ max 2s max.
	Dip soldering	_____	260±5℃, 5±1s	_____	_____
	Reflow soldering	_____			
Operating temperature range		−10℃ to +70℃	EC20A : −30℃ to +85℃ RK203 : −40℃ to +85℃	−10℃ to +70℃	
Electrical performance	Rated power	0.05W			0.05W
	Residual resistance	$R \leq 10k\Omega$ 20Ω max. $10k\Omega < R < 50k\Omega$ 30Ω max. $50k\Omega \leq R$ Nominal total resistance of 0.1% or less	_____	$R \leq 10k\Omega$ 20Ω max. $10k\Omega < R < 50k\Omega$ 30Ω max. $50k\Omega \leq R$ Nominal total resistance of 0.1% or less	_____
	Maximum attenuation (Volume control)	$5k\Omega \leq R < 10k\Omega$ 70dB min. $10k\Omega \leq R < 50k\Omega$ 80dB min. $50k\Omega \leq R < 100k\Omega$ 90dB min. $100k\Omega \leq R$ 100dB min.	_____	$5k\Omega \leq R < 10k\Omega$ 70dB min. $10k\Omega \leq R < 50k\Omega$ 80dB min. $50k\Omega \leq R < 100k\Omega$ 90dB min. $100k\Omega \leq R$ 100dB min.	
	Insulation resistance	100MΩ min. 500V DC	100MΩ min. 250V DC	100MΩ min. 500V DC	100MΩ min. 250V DC
	Voltage proof	500V AC for 1minute	300V AC for 1minute	500V AC for 1minute	300V AC for 1minute
Mechanical performance	Stopper strength(N・m)	0.9	0.5	0.9	
	Push-pull strength	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	−40±3℃ for 192h	−20±3℃ for 96h	−20±2 for 16h
	Dry heat	70±2℃ for 96h	85±3℃ for 192h	70±2℃ for 96h	70±2℃ for 96h
	Damp heat	40±2℃, 90 to 95%RH for 96h	60±3℃, 90 to 95%RH for 240h	40±2℃, 90 to 95%RH for 96h	40±2℃, 90 to 95%RH for 96h
Page		365	369	371	375

Rotary
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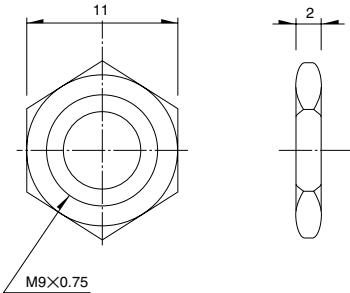
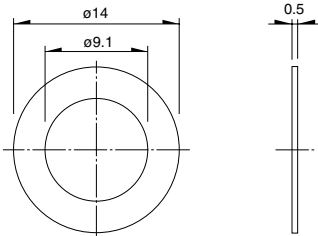
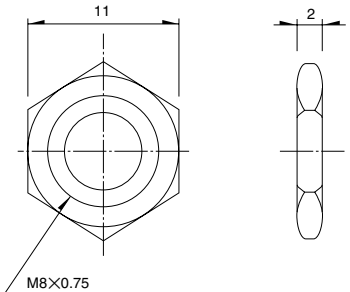
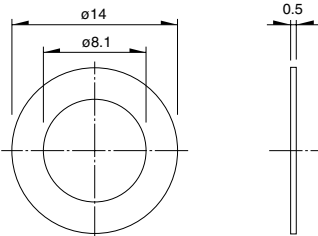
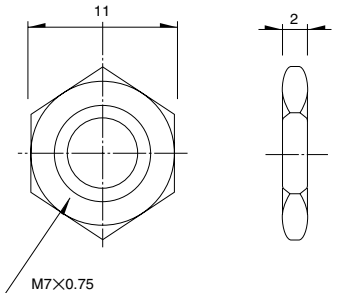
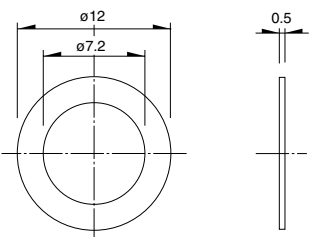
Metal
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- Metal Shaft Potentiometers Attached Parts377
- Metal Shaft Potentiometers Cautions378, 379

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 RK163	M7		
RK097	M6	