

Metal Shaft Potentiometer 16mm Size Metal Shaft Type

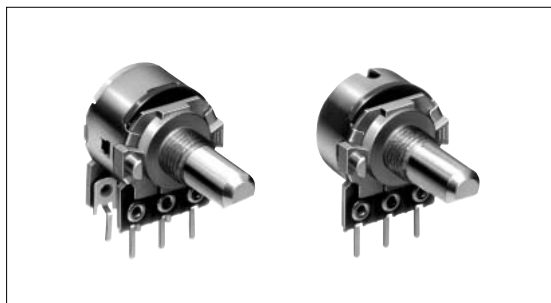
RK163 Series



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°C to +70°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	800	RK1631110TBK	1
				20			15A		RK1631110TT3	
			Lead				1B		600	
		For PC board		15		20		800	RK1631110TNP	3
			Lead			10		600	RK1631110TTU	
		Flat					For PC board	20	With	
Knurled			15	Without	RK1631210AWN					6
		Flat			20	20		15A	RK1631210A2	
Knurled			25						3B	
		Flat		15	10					15A
Knurled			20			50		3B		
		Flat		25			10		15A	
Knurled	20		10		15A					RK16312A0BKR
		Flat		25		10		15A		RK16312A0BKR
Knurled	20						10		15A	RK16312A0BKR
		Flat	25	10	15A					RK16312A0BKR
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Knurled	20					10				

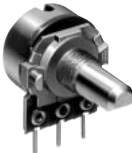
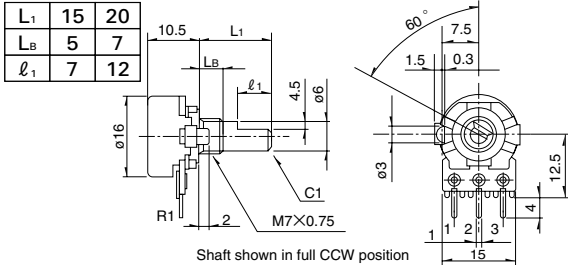
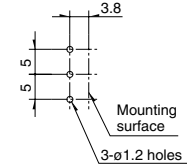
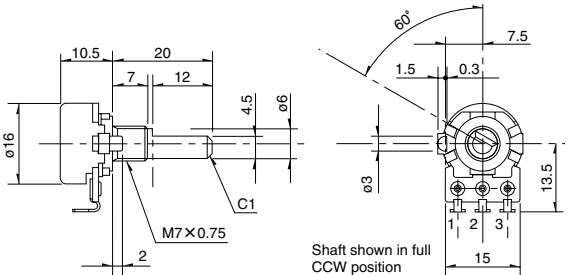
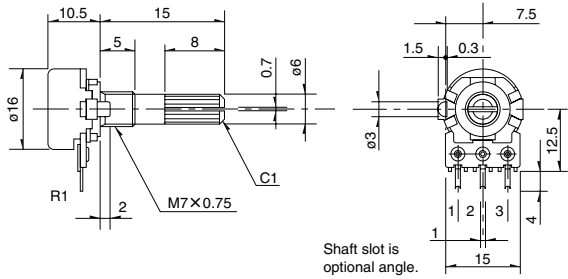
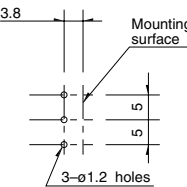
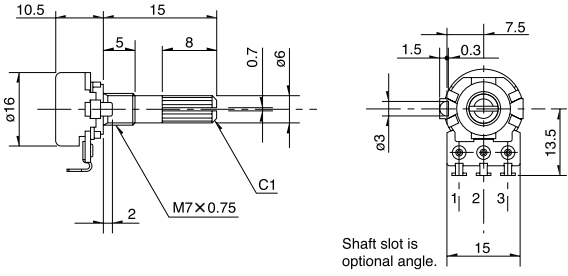
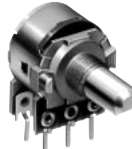
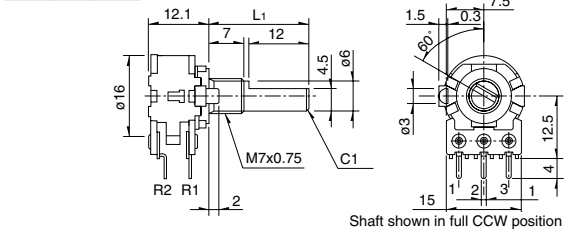
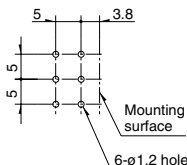
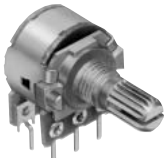
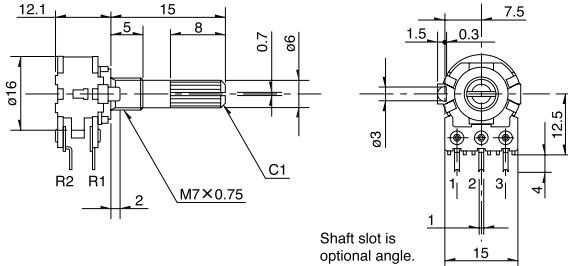
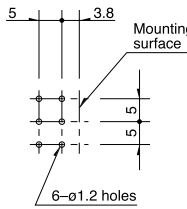
Note

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	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
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 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

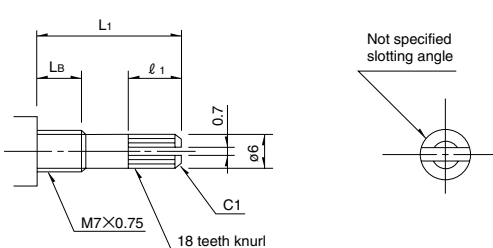
Resistance taper	15A	1B	3B	15C
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Dimensions of Shaft

1) 18 teeth knurl

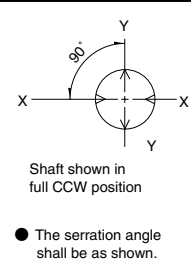
Unit:mm

Die-casting shaft



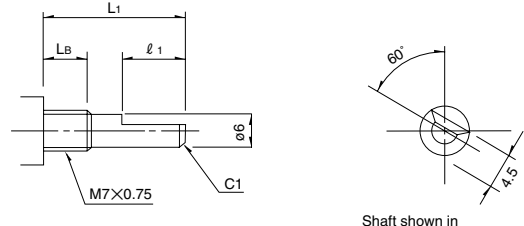
Detail dimensions

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



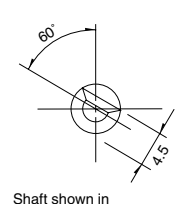
2) Flat type

Unit:mm



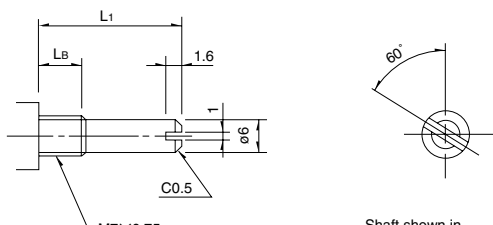
Detail dimensions

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



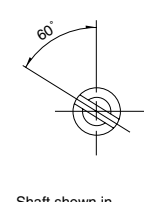
3) Slotted type

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

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.) (mm)

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

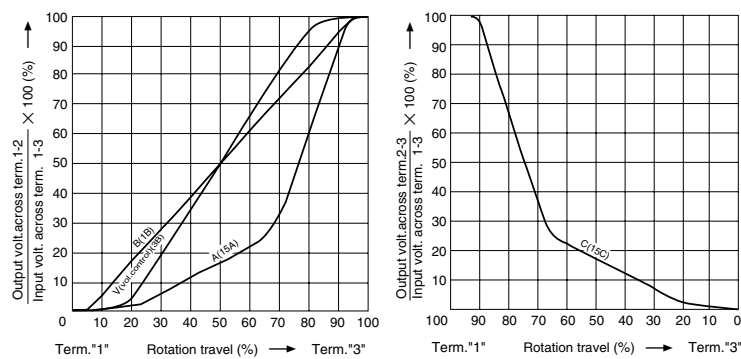
Detent

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
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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				Bushing screw clamp	
Terminal mounting		Horizontal type		Vertical type		Horizontal type		Vertical type				Horizontal type	
Attached switch		Without		Rotary switch ※1		Momentary push switch		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°C max. 3s max.						350±10°C 3 ⁺¹ ₀ s		350°C max. 3s max. Motor terminal : 350° max 2s max.		
	Dip soldering		260±5°C, 5±1s						—————				
	Reflow soldering		—————						Please see P.347		—————		
Operating emperature range		- 10°C to +70°C		- 20°C to +70°C		-30°C to +70°C		-40°C to +85°C		- 10°C to +70°C			
Electrical performance	Rated power		0.05W										
	Residual resistance		10kΩ ≤ R ≤ 10kΩ 10kΩ < R < 50kΩ 50kΩ ≤ R		20Ω max. 30Ω max. Nominal total resistance of 0.1% or less				R ≤ 10kΩ 50Ω max. 10kΩ < R ≤ 50kΩ 80Ω max. 50kΩ < R Nominal total resistance of 0.2% or less		R ≤ 10kΩ 20Ω max. 10kΩ < R ≤ 50kΩ 30Ω max. 50kΩ < R Nominal total resistance of 0.1% or less		
	Maximum attenuation (Volume control)				5kΩ ≤ R < 10kΩ 10kΩ ≤ R < 50kΩ 50kΩ ≤ R < 100kΩ 100kΩ ≤ R		70dB min. 80dB min. 90dB min. 100dB min.						
	Insulation resistance				100MΩ min. 250V DC						100MΩ 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°C±2°C for 96h		- 30±2°C for 96h				- 40±2°C for 240h		- 20±2 for 96h		
	Dry heat				70±2°C for 96h				85±2°C for 240h		70±2°C for 96h		
	Damp heat				40±2°C, 90 to 95%RH for 96h				60±2°C, 90 to 95%RH for 240h		40±2°C, 90 to 95%RH for 96h		
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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 ⁺⁴ ₋₂	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	100mΩfor initial period;200mΩafter 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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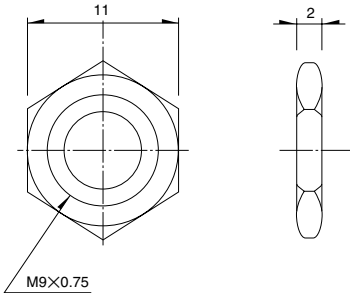
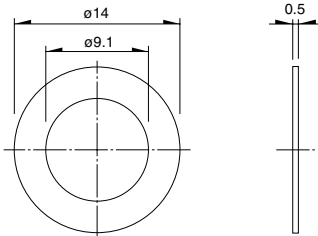
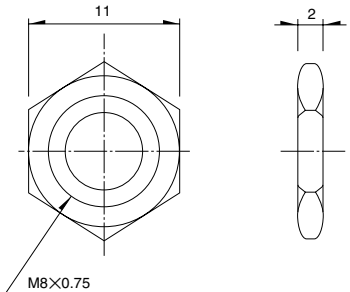
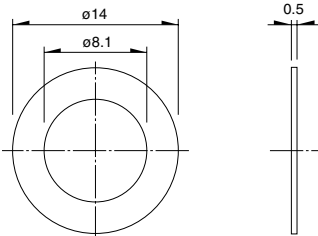
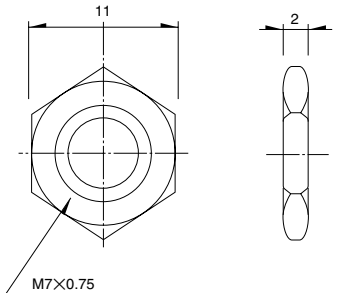
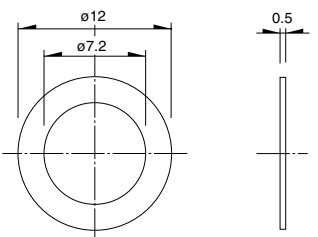
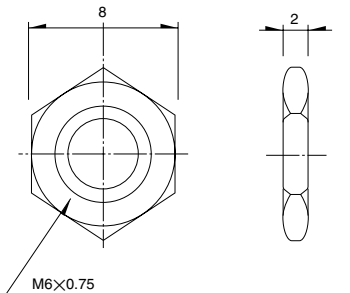
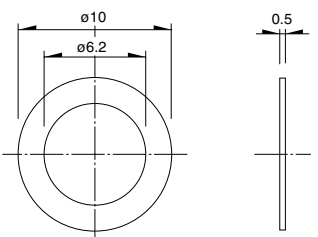
Notes

- ※1. For the switch attached, the single-shaft or inner shaft of the dual-shaft type can be chosen.
- 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

Slide
Potentiometers

Metal
Shaft

Insulated
Shaft

Knob
Operating