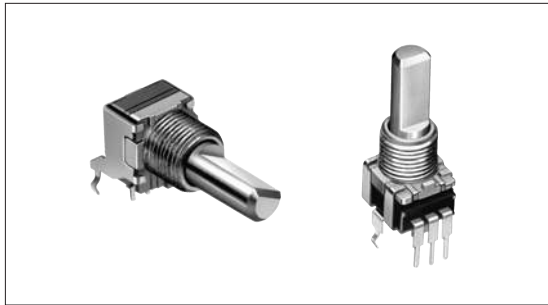


# Metal Shaft Potentiometer 9mm Size Metal Shaft Snap-in Type

RK09L Series



Single-unit and dual-unit type suits a variety of controls.



## Features

- Snap-in structure assures easy mounting.
- Closed structure improves dust and flux resistance.
- Available in horizontal and vertical type.

## Applications

- For various control in audio equipment products - DVD players/recorders, mini component systems, portable audio equipment
- For various control in mixing consoles and electronic musical instruments

Rotary Potentiometers

Slide Potentiometers

Multi Control Devices

Sensors

Metal Shaft

Insulated Shaft

Hollow Type

Knob Operating

## Typical Specifications

Items	Specifications
Total resistance tolerance	±20%
Maximum operating voltage	50V AC , 10V DC
Total rotational angle	300±5°
Rotational torque	2 to 25mN·m
Operating life	15,000cycles
Operating temperature range	-10°C to +70°C

## Recommended Products List

Number of resistor elements	Mounting direction	Shaft type	Length of the shaft (mm)	Center detent	Total resistance (kΩ)	Resistance taper	Minimum packing unit (pcs.)	Products No.	Drawing No.							
Single-unit	Horizontal type	Flat	15	Without	10	15A	100	RK09L1120A2S	1							
				With		1B		RK09L1120036								
			20	Without		15A		RK09L1120A69								
						Vertical type		12.5		Without	1B	RK09L1140A5E	2			
	15		50	RK09L1140A66												
			20	10				RK09L1140A5P								
	25			With				5	RK09L1140A2U							
			Dual-unit	Horizontal type for tone				15	With			50		15A	100	RK09L114001T
	Without								100			RK09L1140A65				
	Horizontal type for vol.			25		Without		50	RK09L122002M							
10		3B			RK09L1220A1B											
Vertical type for tone	15	With		50	1B	RK09L12B0A31										
				20	Without	10	15A	RK09L124000Z								
	15	Without	50					1B	RK09L1240A0W							
				20	Without	10	15A		RK09L12D0A1W							
RK09L12D0A1T	4															


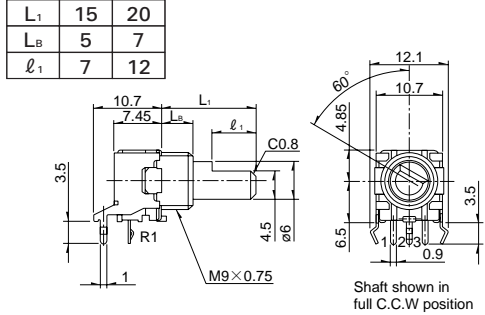
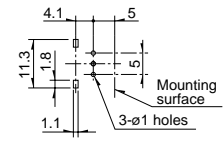

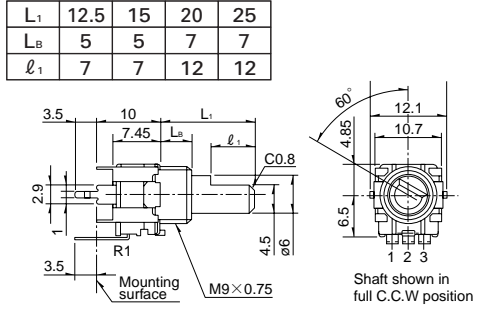
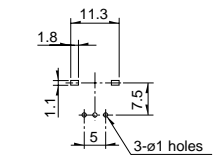

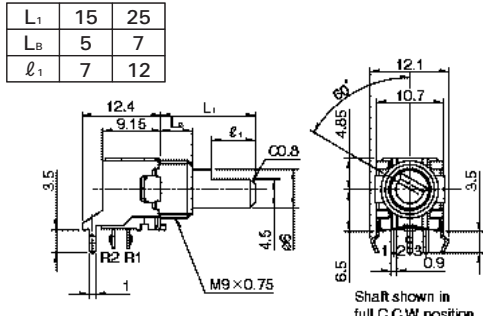
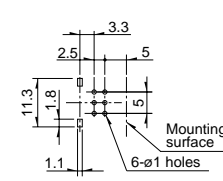

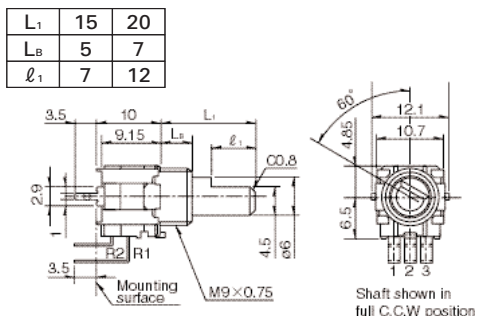
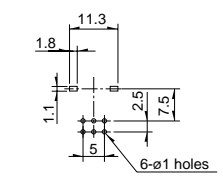
## Note

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

Refer to P.13 for product varieties.  
Refer to P.52 for product specifications.

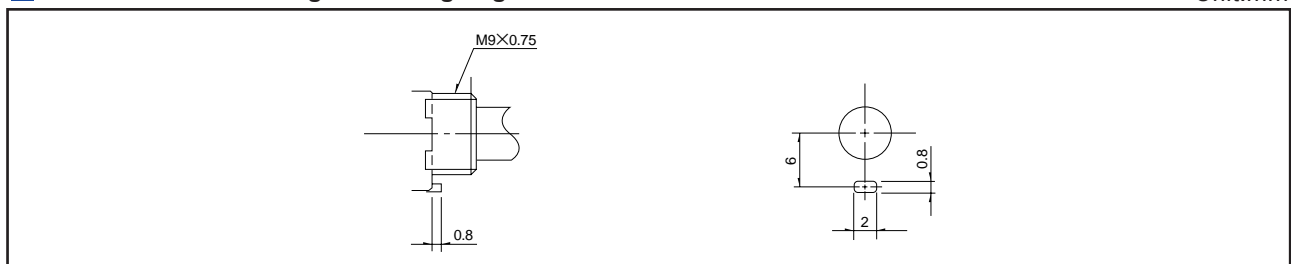
**Dimensions**

Unit:mm

No.	Photo	Style	PC board mounting hole dimensions (Viewed from mounting side)															
1	<p><b>Single-shaft, single-unit Horizontal type</b>                      RK09L1120</p> 	<table border="1"> <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 C.C.W position</p>	L <sub>1</sub>	15	20	L <sub>B</sub>	5	7	ℓ <sub>1</sub>	7	12							
L <sub>1</sub>	15	20																
L <sub>B</sub>	5	7																
ℓ <sub>1</sub>	7	12																
2	<p><b>Single-shaft, single-unit Vertical type</b>                      RK09L1140</p> 	<table border="1"> <tr><td>L<sub>1</sub></td><td>12.5</td><td>15</td><td>20</td><td>25</td></tr> <tr><td>L<sub>B</sub></td><td>5</td><td>5</td><td>7</td><td>7</td></tr> <tr><td>ℓ<sub>1</sub></td><td>7</td><td>7</td><td>12</td><td>12</td></tr> </table>  <p>Shaft shown in full C.C.W position</p>	L <sub>1</sub>	12.5	15	20	25	L <sub>B</sub>	5	5	7	7	ℓ <sub>1</sub>	7	7	12	12	
L <sub>1</sub>	12.5	15	20	25														
L <sub>B</sub>	5	5	7	7														
ℓ <sub>1</sub>	7	7	12	12														
3	<p><b>Single-shaft, dual-unit Horizontal type</b>                      RK09L1220 (For tone)                      RK09L12B0 (For vol.)</p> 	<table border="1"> <tr><td>L<sub>1</sub></td><td>15</td><td>25</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 C.C.W position</p>	L <sub>1</sub>	15	25	L <sub>B</sub>	5	7	ℓ <sub>1</sub>	7	12							
L <sub>1</sub>	15	25																
L <sub>B</sub>	5	7																
ℓ <sub>1</sub>	7	12																
4	<p><b>Single-shaft, dual-unit Vertical type</b>                      RK09L1240 (For tone)                      RK09L12D0 (For vol.)</p> 	<table border="1"> <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 C.C.W position</p>	L <sub>1</sub>	15	20	L <sub>B</sub>	5	7	ℓ <sub>1</sub>	7	12							
L <sub>1</sub>	15	20																
L <sub>B</sub>	5	7																
ℓ <sub>1</sub>	7	12																

**Dimensions of Bushing and Fixing Lug**

Unit:mm



## Product Varieties

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

### Total Resistance Variety

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

Resistance taper	15A	1B	3B	15C
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### Shaft Variety

Unit:mm

Shaft shown in full CCW position

**Detail dimensions**

L <sub>1</sub>	L <sub>B</sub>	l <sub>1</sub>
12.5	5	7
15	5	7
17.5	5	7
20	7	12
25	7	12

#### Note

marked are specifications recommended by ALPS.

Rotary Potentiometers

Slide Potentiometers

Multi Control Devices

Sensors

Metal Shaft

Insulated Shaft

Hollow Type

Knob Operating

Refer to P.14, 211 for resistance taper.

# Orders For Specifications Not Listed In The Recommended Products

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

## Sample Part Number



### Model type

Code	Model type
112	Single-unit horizontal type
<b>114</b>	Single-unit vertical type
122	Dual-unit horizontal type for tone
124	Dual-unit vertical type for tone
12B	Dual-unit horizontal type for vol.
12D	Dual-unit vertical type for vol.

### Shaft type

Code	Shaft type
<b>F</b>	Flat

\* Only available in flat format.

### Length of the shaft (L<sub>1</sub>) (mm)

Code	Length of the shaft	Code	Length of the shaft	Code	Length of the shaft
12	12.5	17	17.5	25	25
<b>15</b>	15	20	20		

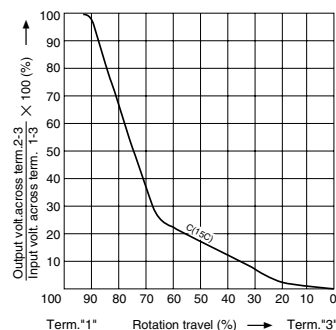
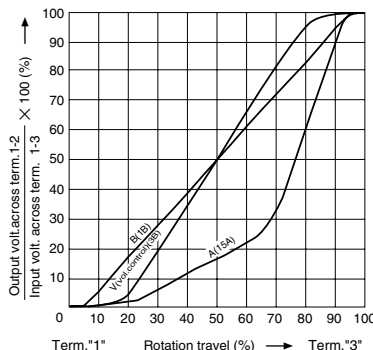
### Detent

Code	Center detent
<b>C0</b>	Without
C1	With

### Resistance taper

Code	Resistance taper	Code	Resistance taper
A	15A	V	3B
<b>B</b>	1B	<b>C</b>	15C

B:For tone & general(model type : 112,114,122,124)  
V:For vol.(model type : 112,114,12B,12D)



### Total resistance

Code	Total resistance (kΩ)	Code	Total resistance (kΩ)
502	5	503	50
<b>103</b>	10	<b>104</b>	100
203	20		

### Note

marked are specifications recommended by ALPS.

Rotary Potentiometers

Slide Potentiometers

Multi Control Devices

Sensors

Metal Shaft

Insulated Shaft

Hollow Type

Knob Operating

## Product Specifications

Model		RK09L	RK097 RK098	RK117	RK119	RK163 RK168
<b>Items</b>						
<b>Operating temperature range</b>		-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
<b>Electrical performance</b>	<b>Total resistance tolerance</b>	±20%				
	<b>Rated power</b>	0.05W				
	<b>Maximum operating voltage</b>	50V AC , 10V DC				RK163 :150V AC, 5V, DC RK168 : 50V AC
	<b>Residual resistance</b>	$R \leq 10k\Omega$ $10k\Omega < R < 50k\Omega$ $50k\Omega \leq R$	20Ω max. 30Ω max. Nominal total resistance of 0.1% or less		$R \leq 10k\Omega$ 50Ω max. $10k\Omega < R \leq 50k\Omega$ 80Ω max. $50k\Omega < R$ Nominal total resistance of 0.2% or less	$R \leq 10k\Omega$ 20Ω max. $10k\Omega < R \leq 50k\Omega$ 30max. $50k\Omega < R$ Nominal total resistance of 0.1% or less
	<b>Maximum attenuation (Volume control)</b>		$5k\Omega \leq R < 10k\Omega$ $10k\Omega \leq R < 50k\Omega$ $50k\Omega \leq R < 100k\Omega$ $100k\Omega \leq R$	70dB min. 80dB min. 90dB min. 100dB min.		
	<b>Insulation resistance</b>	100MΩ min. 250V DC				RK163:100MΩ min. 500V DC RK168:100MΩ min. 250V DC
	<b>Voltage proof</b>	300V AC (for 1minute)				RK163:500V AC for minute RK168:300V AC for minute
<b>Mechanical performance</b>	<b>Total rotational angle</b>	$300 \pm 5^\circ$	$300 \pm 5^\circ$ (Shaft movement type is $300 \pm 5^\circ$ )		$300 \pm 10^\circ$	RK163 : $300 \pm 3^\circ$ RK168 : $300 \pm 5^\circ$
	<b>Rotational torque</b>	2 to 25mN·m		5 to 20mN·m	$7.5 \pm 3.5mN \cdot m$	RK163 : 3 to 25mN·m RK168 : 10 to 40mN·m
	<b>Stopper strength</b>	0.5N·m (With push-lock mechanism type: 0.4N·m)			$0.5N \cdot m$	$0.9N \cdot m$
	<b>Push-pull strength</b>	80N max.	100N max.			
	<b>Vibration</b>	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				
	<b>Solder heat resistance</b>	<b>Manual soldering</b>	350°C max. 3s max.			$350 \pm 10^\circ C$ $3 \pm 0.5s$
<b>Dip soldering</b>		$260 \pm 5^\circ C, 5 \pm 1s$			—	
<b>Reflow soldering</b>		—			Please see P.35	—
<b>Endurance</b>	<b>Operating life</b>	15,000cycles				
<b>Environmental performance</b>	<b>Cold</b>	$-20^\circ C \pm 2^\circ C$ for 96h	$-30 \pm 2^\circ C$ for 96h		$-40 \pm 2^\circ C$ for 240h	$-20 \pm 2^\circ C$ for 96h
	<b>Dry heat</b>	$70 \pm 2^\circ C$ for 96h			$85 \pm 2^\circ C$ for 240h	$70 \pm 2^\circ C$ for 96h
	<b>Damp heat</b>	$40 \pm 2^\circ C, 90$ to 95%RH for 96h			$60 \pm 2^\circ C,$ 90 to 95%RH for 240h	$40 \pm 2^\circ C,$ 90 to 95%RH for 96h

### Push-on Switch Specifications

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

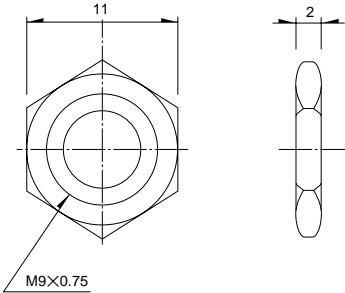
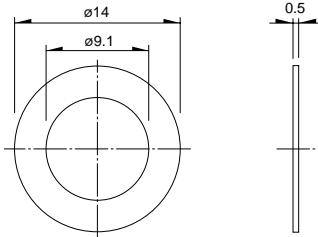
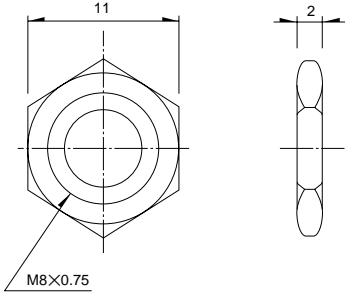
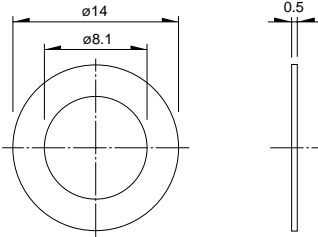
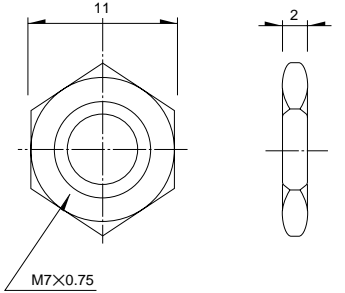
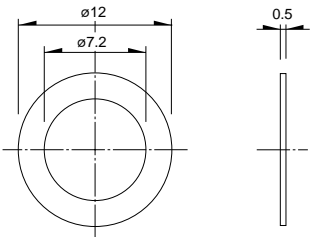
#### Note

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
Rotary Potentiometers Slide Potentiometers Multi Control Devices Sensors  RK09L RK168 RK097 RK203	M9		
Metal Shaft Insulated Shaft Hollow Type Knob Operating	M8		
RK097 RK098 RK163	M7		
RK097 RK098	M6	