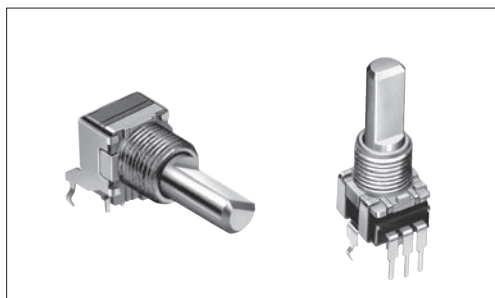


Single-unit and dual-unit types suit a variety of controls.

Rotary Potentiometers  
Slide Potentiometers



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

Metal Shaft  
Insulated Shaft  
Knob Operating  
Ring Type

Product Line

Number of resistor elements	Mounting direction	Shaft type	Length of the shaft (L <sub>1</sub> ) (mm)	Center detent	Total resistance (kΩ)	Resistance taper	Minimum order unit (pcs.)		Products No.	Drawing No.		
							Japan	Export				
Single-unit	Horizontal type	Flat	15	Without	10	15A	1,000	2,000	RK09L1120A2S	1		
				With	20	1B			RK09L112003P			
	Vertical type		12.5	Without	10	50			15A		RK09L1120A69	2
											20	
	25		Without	5	10	1B			RK09L1140A66			
									20	With	10	
	Dual-unit		Horizontal type for tone	15	Without	50						15A
									Horizontal type for vol.	25	10	
Vertical type for tone		15	With	50	1B	RK09L122002M						
						Vertical type for vol.	20	Without	10	15A	RK09L1220A1B	
15		Without	10	15A	RK09L12B0A31							
					20	Without	10	15A	RK09L12B0A3Z			
15		Without	10	15A					RK09L124000Z			
					20	Without	10	15A	RK09L1240A12			
15	Without	10	15A	RK09L12D0A1W								
				20	Without	10	15A	RK09L12D0A1T				

Note

Other varieties are also available. Refer to "Other Specifications" (P.294).

Packing Specifications

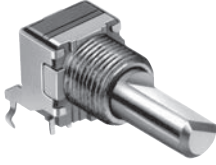
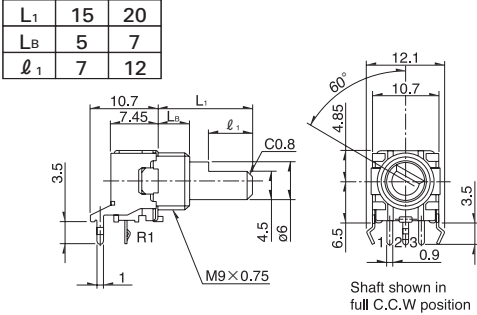
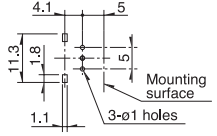

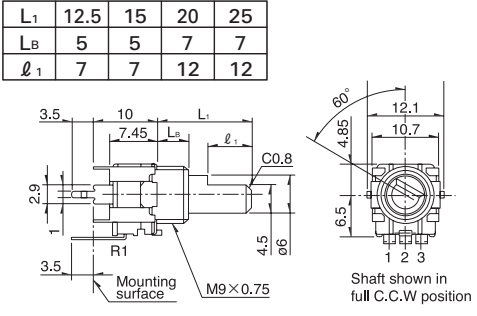
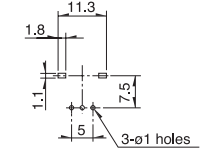
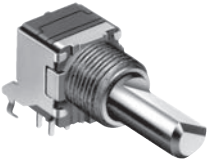
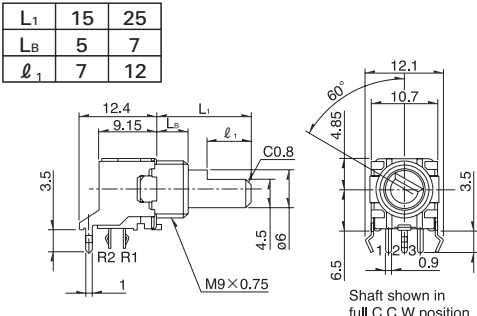
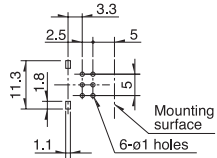

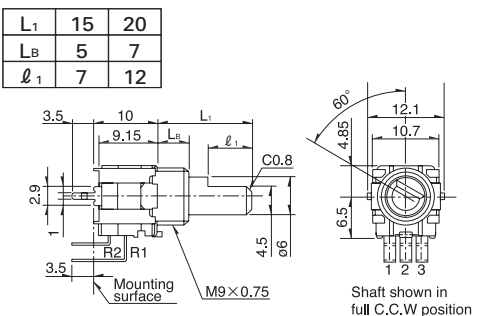
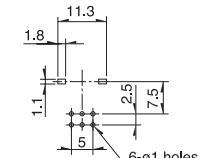
Tray

Number of packages (pcs.)		Export package measurements (mm)
1 case / Japan	1 case / export packing	
1,000	2,000	364 × 473 × 176

Refer to P.294 for other specifications.  
Refer to P.294 for attached parts.  
Refer to P.295 for ordering products not listed.  
Refer to P.328 for soldering conditions.

## Dimensions

Unit:mm

No.	Photo	Style	PC board mounting hole dimensions (Viewed from mounting side)															
1	<p><b>Single-shaft, single-unit</b> <b>Horizontal type</b> <b>RK09L1120</b></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	 <p>3-ø1 holes</p>						
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</b> <b>Vertical type</b> <b>RK09L1140</b></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	 <p>3-ø1 holes</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														
3	<p><b>Single-shaft, dual-unit</b> <b>Horizontal type</b> <b>RK09L1220 (For tone)</b> <b>RK09L12B0 (For vol.)</b></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	 <p>6-ø1 holes</p>						
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</b> <b>Vertical type</b> <b>RK09L1240 (For tone)</b> <b>RK09L12D0 (For vol.)</b></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	 <p>6-ø1 holes</p>						
L <sub>1</sub>	15	20																
L <sub>B</sub>	5	7																
ℓ <sub>1</sub>	7	12																

Rotary Potentiometers

Slide Potentiometers

Metal Shaft

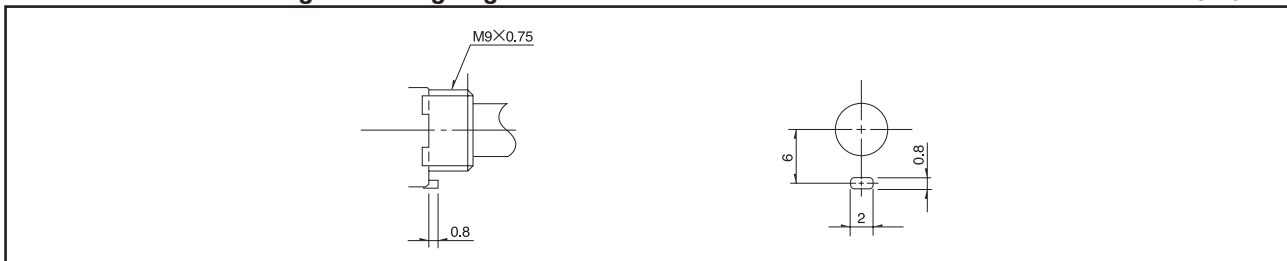
Insulated Shaft

Knob Operating

Ring Type

## Dimensions of Bushing and Fixing Lug

Unit:mm



## 9mm Size Metal Shaft Snap-in Type Potentiometer / Other Specifications

In addition to the products listed, we can accommodate the follow specifications.

### ■ Total Resistance Variety

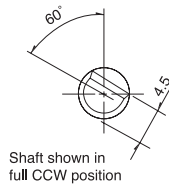
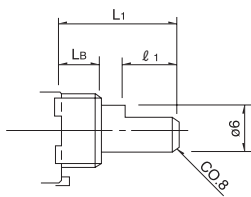
Total resistance (kΩ)	5	10	20	50	100
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### ■ Resistance Taper

Resistance taper	15A	1B	3B	15C
------------------	-----	----	----	-----

### ■ Shaft Variety

Unit:mm



#### 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.

## 9mm Size Metal Shaft Snap-in Type Potentiometer / Attached Parts

The following parts are included with the product.

Nut	Washer
<p style="text-align: center;">11</p> <p style="text-align: center;">M9 x 0.75</p>	<p style="text-align: center;">ø14</p> <p style="text-align: center;">ø9.1</p> <p style="text-align: center;">0.5</p>

# 9mm Size Metal Shaft Snap-in Type Potentiometer / Ordering Products Not Listed

When ordering product varieties that are not listed, specify referring to the examples below.

## Sample Part Number



### Model type

Code	Model type
112	Single-unit horizontal type
114	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
F	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
15	15	20	20		

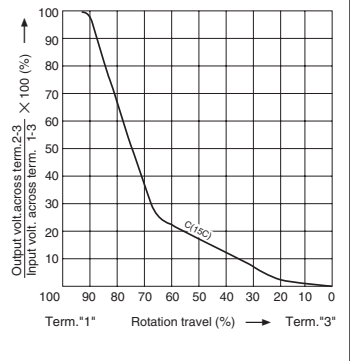
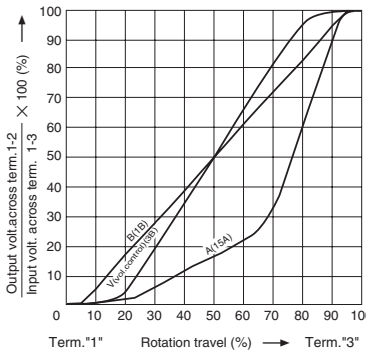
### Detent

Code	Center detent
C0	Without
C1	With

### Resistance taper

Code	Resistance taper	Code	Resistance taper
A	15A	V	3B
B	1B	C	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
103	10	104	100
203	20		

### Note

marked are specifications recommended by Alps.

Rotary Potentiometers

Slide Potentiometers

Metal Shaft











Insulated Shaft

Knob Operating

Ring Type

# Metal Shaft Potentiometers

## List of Varieties

Type	9mm size			11mm size		
Series	RK09L		RK0971	RK0972	RK119	
	Single-shaft			Dual-shaft	Single-shaft	
Photo						
Terminal mounting	Horizontal	Vertical	Horizontal		Vertical	
Fixing method of bushing	Screw				Guide	
Operating temperature range	- 10°C to + 70°C		- 20°C to + 70°C - 40°C to + 85°C (Vehicle-compatible)		- 40°C to + 85°C	
Operating life	15,000cycles					
Available for automotive use	—	—	○	○	○	
Life cycle (availability)						
Mechanical performance	Total resistance (kΩ)	10, 20, 50, 100			10, 20, 50	
	Resistance taper	15A, 1B, 3B, 15C			15A, 1B, 3B	
	Rated Power	0.05W				
	Residual resistance	$R \leq 10k \Omega$ $10k \Omega < R < 50k \Omega$ $50k \Omega \leq R$		$20 \Omega \text{ max.}$ $30 \Omega \text{ max.}$ Nominal total resistance of 0.1% or less		$R \leq 10k \Omega$ 50 Ω max. $10k \Omega < R \leq 50k \Omega$ 80 Ω max. $50k \Omega < R$ Nominal total resistance of 0.2% or less
	Maximum attenuation (Volume control)	$5k \Omega \leq R < 10k \Omega$ 70dB min. $10k \Omega \leq R < 50k \Omega$ 80dB min. $50k \Omega \leq R$ 90dB 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.		$5k \Omega \leq R < 10k \Omega$ 70dB min. $10k \Omega \leq R < 50k \Omega$ 80dB min. $50k \Omega \leq R < 100k \Omega$ 90dB min. $100k \Omega \leq R$ 100dB min.	
	Gang error applicable to Dual-unit parts for audio volume control purposes	-40dB to 0dB		3dB max.		—
	Insulation resistance	100MΩ min. 250V DC				
	Voltage proof	300V AC for 1minute			300V AC for 1 minute or 360V for 2s	
	Center-taps	Without		Without / With		Without
	Electrical performance	Detent	Without, Center		Without, Center, 11, 31	
Stopper strength		0.5N·m		0.5N·m (With push-lock mechanism: 0.4N·m)		0.5N·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				
Shaft style	Flat type			Inner-shaft: Flat type Outer-shaft: slotted type		Flat type
Terminal style	Insertion				Reflow	
Attached switch	—	—	Rotary switch Push-on push-off switch Push-on Switch	—	Push-on Switch	
Page	292		296		307	

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● Potentiometers Cautions	404
● Potentiometers Measurement and Test Methods	406
● Potentiometers Resistance Taper	408

### Notes

- 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 details.
- indicates applicability to some products in the series.

## Metal Shaft Potentiometers Soldering Conditions

### Reference for Hand Soldering

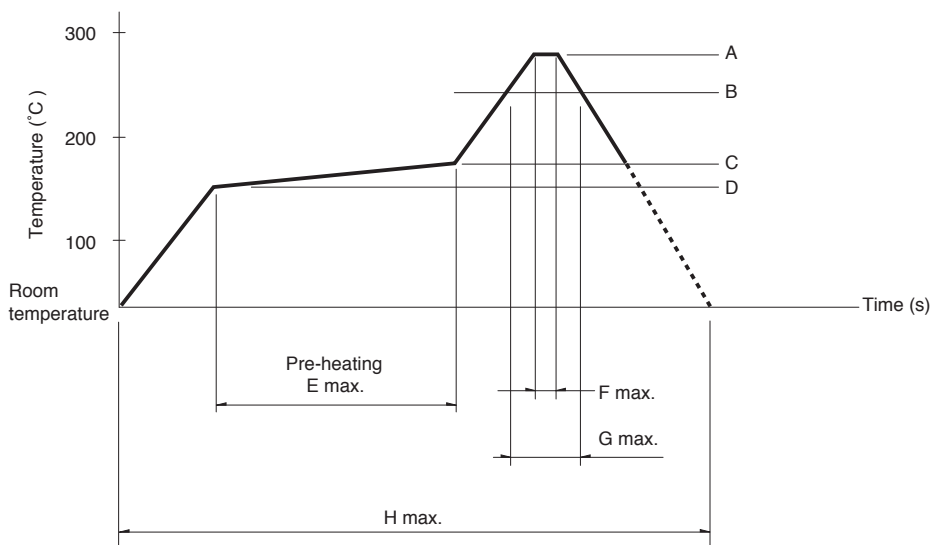
Series		Tip temperature	Soldering time	No. of solders
RK09L, RK097		350°C max.	3s max.	1 time
RK203		300°C max.	3s max.	1 time
RK119		350±10°C	3 <sup>+1</sup> <sub>0</sub> s	1 time
RK271		350°C max.	5s max.	1 time
RK501		350±10°C	5 <sup>+1</sup> <sub>0</sub> s	1 time
RK163		350°C max.	3s max.	1 time
RK168	Potentiometer terminal	300°C max.	3s max.	1 time
	Motor terminal	350°C max.	2s max.	1 time

### Reference for Dip Soldering

Series	Preheating		Dip soldering		No. of solders
	Soldering surface temperature	Heating time	Soldering temperature	Soldering time	
RK09L, RK097, RK203	100°C max.	2 min. max.	260±5°C	5±1s	2 time max.
RK501	120±10°C	2 min. max.	260±5°C	5±1s	2 time

### Example of Reflow Soldering Condition

Temperature profile



Series	A	B	C	D	E	F	G	H	No. of reflows
RK119	260°C	230°C	180°C	150°C	2 min.	3s	40s	4 min.	2 time max.

### Notes

- When using an infrared reflow oven, solder may sometimes not be applied. Be sure to use a hot air reflow oven or a type that uses infrared rays in combination with hot air.
- The temperatures given above are the maximum temperatures at the terminals of the potentiometer when employing a hot air reflow method. The temperature of the PC board and the surface temperature of the potentiometer may vary greatly depending on the PC board material, its size and thickness. Ensure that the surface temperature of the potentiometer does not rise to 250°C or greater.
- Conditions vary to some extent depending on the type of reflow bath used. Be sure to give due consideration to this prior to use.