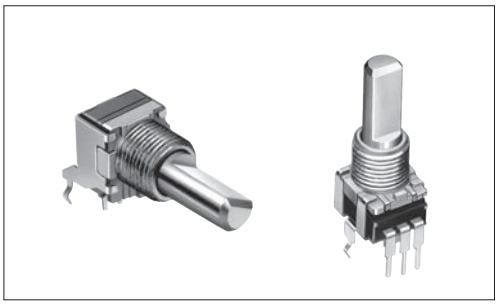
RK09L 9mm Size Metal Shaft Snap-in Type

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



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	15,000 cycles
Operating temperature range	−10℃ to +70℃

Product Line

Number of resistor elements	Mounting direction	Shaft type	Length of the shaft L1 (mm)	Center detent	Total resistance (kΩ)	Resistance taper	Minimumorder unit (pcs.) Japan	Minimumorder unit (pcs.) Export	Products No.	Drawing No.
Single-unit	Horizontal type	Flat	15	Without	10	15A	1,000	2,000	**RK09L1120A2S**	1
				With	20	1B			**RK09L112003P**	
			20	Without	10	15A			**RK09L1120A69**	
	Vertical type		12.5						**RK09L1140A5E**	2
			15		50	1B			**RK09L1140A66**	
			20		10				**RK09L1140A5P**	
				With					**RK09L1140A2U**	
			25	Without	5				**RK09L114001T**	
									RK09L1140A65	
Dual-unit	Horizontal type for tone		15	With	50				**RK09L122002M**	3
				Without	100				**RK09L1220A1B**	
	Horizontal type for vol.				50	15A			**RK09L12B0A31**	
			25		10	3B			**RK09L12B0A3Z**	
	Vertical type for tone		15	With	50	1B			**RK09L124000Z**	4
			20	Without	10				**RK09L1240A12**	
	Vertical type for vol.		15			15A			**RK09L12D0A1W**	
			20						**RK09L12D0A1T**	

Note

Other varieties are also available. Refer to "Other Specifications" (P.315).

Packing Specifications

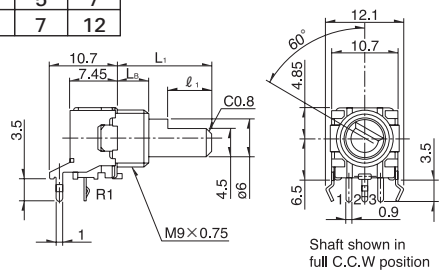
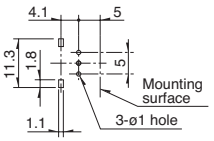
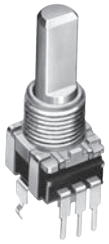
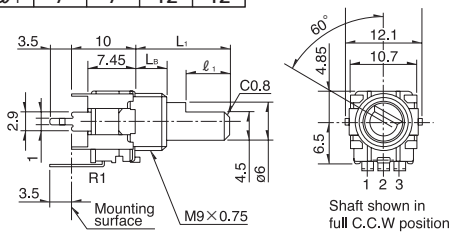
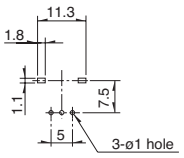
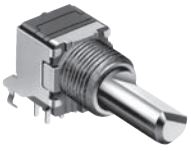
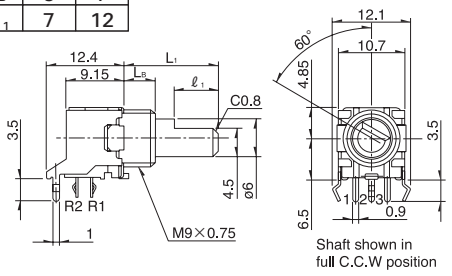
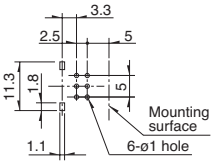
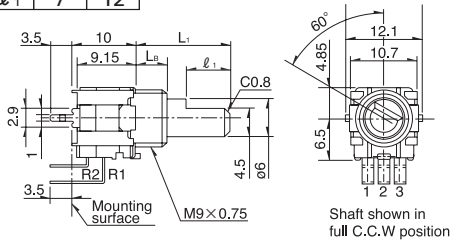
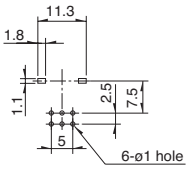
Tray

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.315 for other specifications.
Refer to P.315 for attached parts.
Refer to P.316 for ordering products not listed.
Refer to P.349 for soldering conditions.

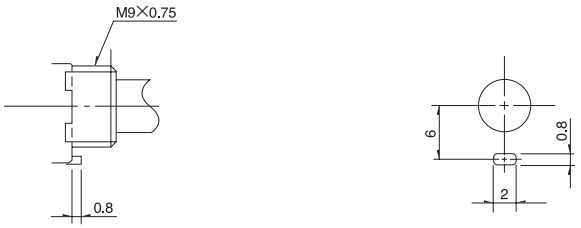
Dimensions

Unit:mm

No.	Photo	Style	PC board mounting hole dimensions (Viewed from mounting side)
1	**Single-shaft, single-unit Horizontal type RK09L1120** 	L_1 15 20 L_B 5 7 ℓ_1 7 12 	
2	**Single-shaft, single-unit Vertical type RK09L1140** 	L_1 12.5 15 20 25 L_B 5 5 7 7 ℓ_1 7 7 12 12 	
3	**Single-shaft, dual-unit Horizontal type RK09L1220 (For tone) RK09L12B0 (For vol.)** 	L_1 15 25 L_B 5 7 ℓ_1 7 12 	
4	**Single-shaft, dual-unit Vertical type RK09L1240 (For tone) RK09L12D0 (For vol.)** 	L_1 15 20 L_B 5 7 ℓ_1 7 12 	

Dimensions of Bushing and Fixing Lug

Unit:mm



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

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

Total Resistance Variety

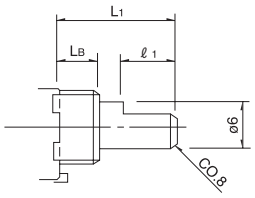
Total resistance (k Ω)	5	10	20	50	100

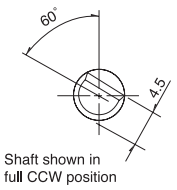
Resistance Taper

Resistance taper	15A	1B	3B	15C

Shaft Variety

Unit:mm





Shaft shown in full CCW position

Detail dimensions

L_1	L_B	ℓ_1
12.5	5	7
15	5	7
17.5	5	7
20	7	12
25	7	12

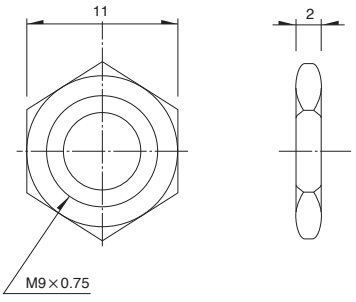
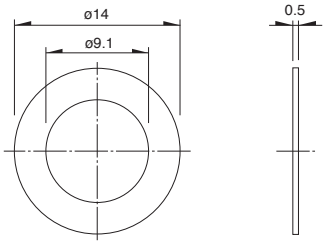
Note

Marked are specifications recommended by Alps.

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

The following parts are included with the product.

Unit:mm

Nut	Washer
	

Refer to P.316 for ordering products not listed..

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

Sample Part Number

R	K	0	9	L	1	1	4	0	–	F	1	5	–	C	0	–	B	1	0	3

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_1 (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	—	—

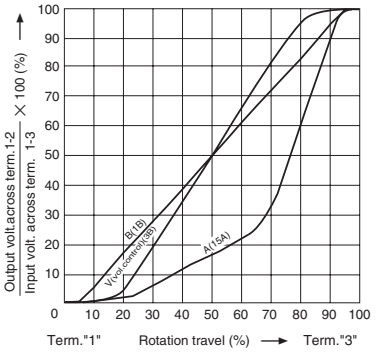
Detent

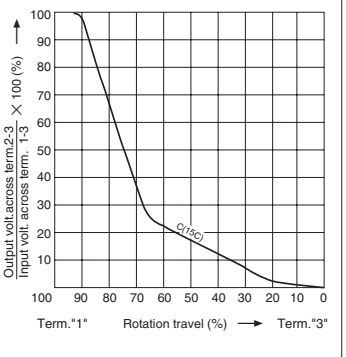
Code	Center detent
C0	Without
C1	With

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 (k Ω)	Code	Total resistance (k Ω)
502	5	503	50
103	10	104	100
203	20	—	—

Note

Marked are specifications recommended by Alps.

Metal Shaft Potentiometers

List of Varieties

Type		9mm size				11mm size
Series		RK09L		RK0971	RK0972	RK119
		Single-shaft			Dual-shaft	Single-shaft
Number of resistor elements		Single/dual			Dual	Single
Photo						
Terminal mounting		Horizontal	Vertical	Horizontal		Vertical
Fixing method of bushing		Screw				Guide
Operating temperature range		−10℃ to +70℃		−20℃ to +70℃ − 40℃ to + 85℃ (Vehicle-compatible)		−40℃ to +85℃
Operating life		15,000 cycles				
Available for automotive use		—	—	○	○	○
Life cycle (availability)		★2	★2	★2	★2	★2
Mechanical performance	Total resistance (k Ω)	10, 20, 50, 100				10
	Resistance taper	15A, 1B, 3B, 15C				1B
	Rated Power	0.05W				
	Residual resistance	R≦10kΩ 20Ω max. 10kΩ<R<50kΩ 30Ω max. 50kΩ≦R Nominal total resistance of 0.1% or less				R≦10kΩ 50Ω max.
	Maximum attenuation (Volume control)	5kΩ≦R< 10kΩ 70dB min. 10kΩ≦R< 50kΩ 80dB min. 50kΩ≦R 90dB min.		5kΩ≦R< 10kΩ 70dB min. 10kΩ≦R< 50kΩ 80dB min. 50kΩ≦R<100kΩ 90dB min. 100kΩ≦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		Without
	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		313		317		328

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 details.
3. ○ Indicates applicability to some products in the series.

Reference for Manual Soldering

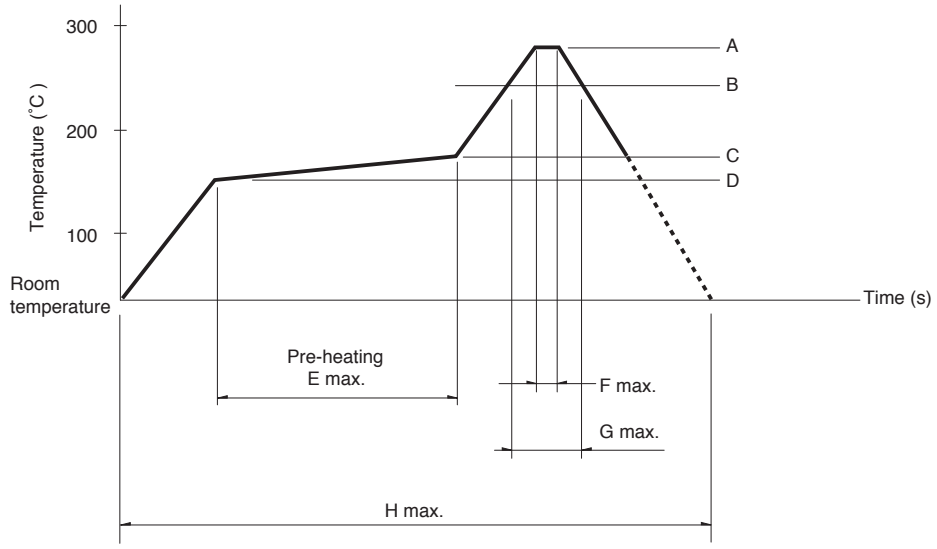
Series		Tip temperature	Soldering time	No. of solders
RK09L, RK097		350℃ max.	3s max.	1 time
RK203		300℃ max.	3s max.	1 time
RK119		350±10℃	$3\ ^{+1}_{0}$ s	1 time
RK271		350℃ max.	5s max.	1 time
RK501		350±10℃	$5\ ^{+1}_{0}$ s	1 time
RK163		350℃ max.	5s max.	1 time
RK168	**Potentiometer terminal**	300℃ max.	3s max.	1 time
	Motor terminal	350℃ 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℃ max.	2 min. max.	260±5℃	5±1s	2 time max.
RK501	120±10℃	2 min. max.	260±5℃	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℃	230℃	180℃	150℃	2 min.	3s	40s	4 min.	2 time max.

Notes

1. When using an infrared reflow oven, solder may sometimes not be applied. Be sure to use a hot air reflow oven or at type that uses infrared rays in combination with hot air.
2. 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℃ or greater.
3. Conditions vary to some extent depending on the type of reflow bath used. Be sure to give due consideration to this prior to use.