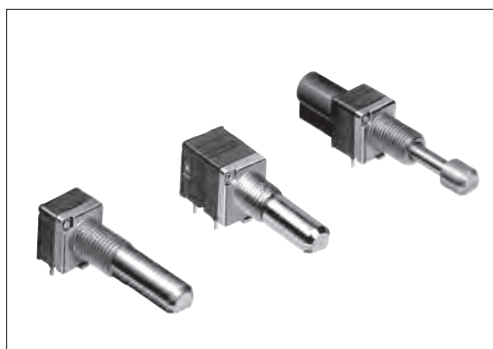


9.5mm width potentiometer ideal for various types of control



Typical Specifications



Items	Specifications
Total resistance tolerance	±20%
Maximum operating voltage	50V AC, 10V DC
Total rotational angle	300°±5° (For shaft movable type, 300° $\pm$ $\frac{10'}{5}$)
Rotational torque	2 to 25mN·m
Operating life	15,000 cycles
Operating temperature range	-20°C to +70°C -40°C to +85°C (Vehicle-compatible)

Product Line

Single-shaft without switch type

Number of resistor elements	Shaft type	Length of the shaft L ₁ (mm)	Center detent	Total resistance (kΩ)	Resistance taper	Minimum order unit (pcs.)		Products No.	Drawing No.
						Japan	Export		
Single-unit	Flat	20	Without	10	15A	1,200 (A type)	2,400 (A type)	RK097111080R	1
			With		1B			RK0971110D88	
Dual-unit for tone			With		1B	800 (B type)	1,600 (B type)	RK0971210DBH	2
Dual-unit for vol.			Without		15A	800 (B type)	1,600 (B type)	RK09712200HA	

Single-shaft with rotary switch type

Number of resistor elements	Shaft type	Length of the shaft L ₁ (mm)	Center detent	Total resistance (kΩ)	Resistance taper	Minimum order unit (pcs.)		Products No.	Drawing No.
						Japan	Export		
Single-unit	Flat	20	Without	10	1B	700 (C type)	1,400 (C type)	RK09711110EL	3
Dual-unit					15A			RK0971221Z0X	4

Single-shaft momentary push (0.5mm travel) switch type

Number of resistor elements	Shaft type	Length of the shaft L ₁ (mm)	Center detent	Total resistance (kΩ)	Resistance taper	Minimum order unit (pcs.)		Products No.	Drawing No.
						Japan	Export		
Single-unit	Flat	15	With	10	1B	700 (C type)	1,400 (C type)	RK0971114Z1N	5
Dual-unit for vol.		20	Without		15A			RK0971224Z01	6

Notes

1. Other varieties are also available. Refer to "Other Specifications" (P.291, 292).
2. For automotive use, please contact us with detailed specifications.

Refer to P.291 for other specifications.
 Refer to P.293 for attached parts.
 Refer to P.295 for ordering products not listed.
 Refer to P.311 for soldering conditions.

Product Line

Single-shaft with push-lock mechanism type

Number of resistor elements	Shaft type	Length of the shaft L ₁ (mm)	Center detent	Total resistance (k Ω)	Resistance taper	Minimum order unit (pcs.)		Products No.	Drawing No.
						Japan	Export		
Single-unit	Flat	25	Without	10	1B	700 (C type)	1,400 (C type)	RK097111T065	7
			With					RK097111TD2M	
Dual-unit for vol.			Without		15A	600 (D type)	1,200 (D type)	RK097122T017	8

Single-shaft with push-lock switch type

Number of resistor elements	Shaft type	Length of the shaft L ₁ (mm)	Center detent	Total resistance (k Ω)	Resistance taper	Minimum order unit (pcs.)		Products No.	Drawing No.
						Japan	Export		
Single-unit	Flat	25	Without	5	1B	700 (C type)	1,400 (C type)	RK097111U00S	9

Dual-shaft, dual-unit without switch type

Number of resistor elements	Shaft	Shaft type	Length of the shaft L ₁ L ₂ (mm)	Center detent	Total resistance (k Ω)	Resistance taper	Minimum order unit (pcs.)		Products No.	Drawing No.
							Japan	Export		
Dual-unit (Single-shaft, Single-unit)	The outer shaft	Slotted	15	Without	10	15A	700 (C type)	1,400 (C type)	RK097221005C	10
	The inner shaft	Flat	25							

Notes

1. Other varieties are also available. Refer to "Other Specifications" (P.291, 292).
2. For automotive use, please contact us with detailed specifications.

Packing Specifications

Tray

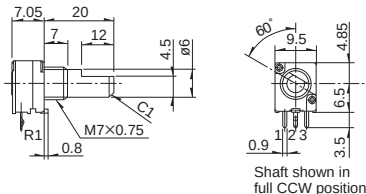
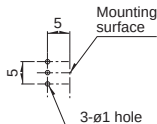
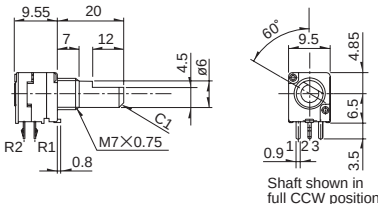
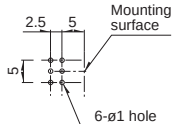
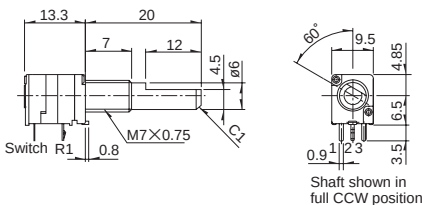
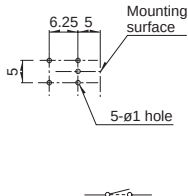
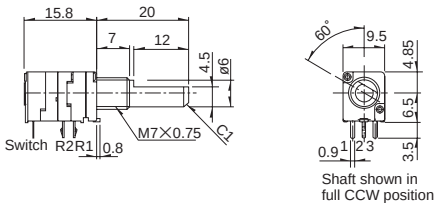
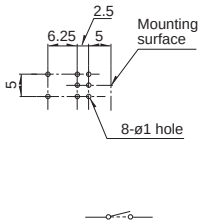
Minimum order unit type	Number of packages (pcs.)		Export package measurements (mm)
	1 case /Japan	1 case /export packing	
A type	1,200	2,400	463×375×185
B type	800	1,600	540×373×207
C type	700	1,400	540×373×181
D type	600	1,200	540×373×225

Refer to P.291 for other specifications.
 Refer to P.293 for switch specifications.
 Refer to P.293 for attached parts.
 Refer to P.295 for ordering products not listed.
 Refer to P.311 for soldering conditions.

RK097 9mm Size Metal Shaft Multi-ganged Type

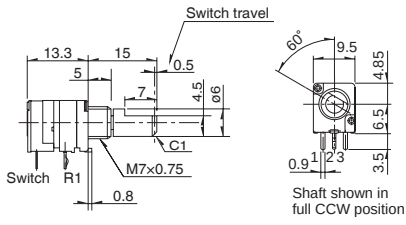
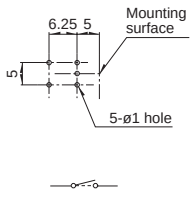
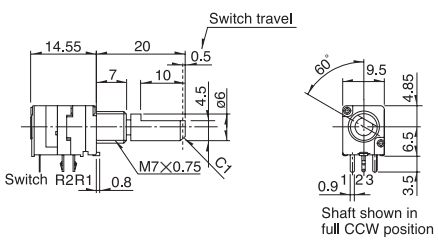
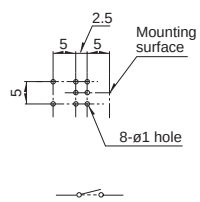
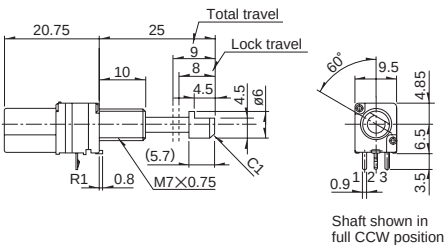
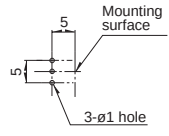
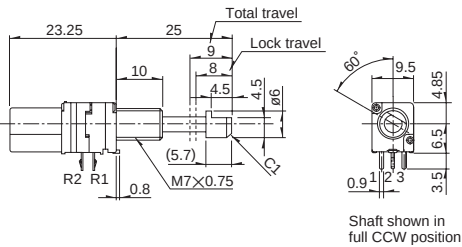
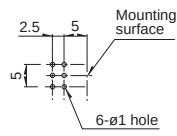
Dimensions

Unit:mm

No.	Photo	Style	PC board mounting hole dimensions (Viewed from mounting side)
1		 Shaft shown in full CCW position	 Mounting surface 3-Ø1 hole
2		 Shaft shown in full CCW position	 Mounting surface 6-Ø1 hole
3		 Shaft shown in full CCW position	 Mounting surface 5-Ø1 hole
4		 Shaft shown in full CCW position	 Mounting surface 8-Ø1 hole

Dimensions

Unit:mm

No.	Photo	Style	PC board mounting hole dimensions (Viewed from mounting side)
5	Single-shaft, single-unit with momentary push switch travel 0.5mm RK0971114-5R4211 	 Switch travel Switch R1 Shaft shown in full CCW position	 Mounting surface 5-ϕ1 hole
6	Single-shaft, dual-unit with momentary push switch travel 0.5mm RK0971214-5R4211 (For tone) RK0971224-5R4211 (For vol.) 	 Switch travel Switch R2R1 Shaft shown in full CCW position	 Mounting surface 8-ϕ1 hole
7	Single-shaft, single-unit with push-lock mechanism RK097111T 	 Total travel Lock travel Shaft shown in full CCW position	 Mounting surface 3-ϕ1 hole
8	Single-shaft, dual-unit with push-lock mechanism RK097122T (For vol.) 	 Total travel Lock travel Shaft shown in full CCW position	 Mounting surface 6-ϕ1 hole

Rotary
PotentiometersSlide
Potentiometers

Metal Shaft

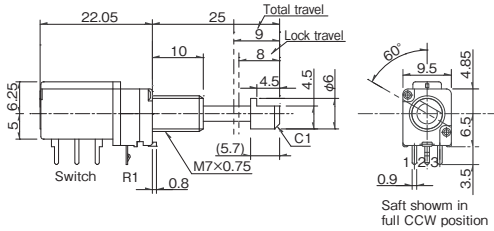
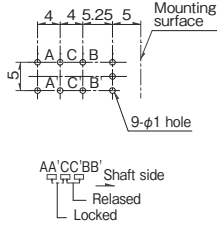
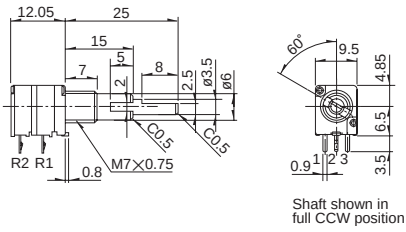
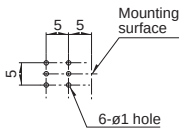
Insulated
ShaftKnob
OperatingThrough
Shaft Type

Ring Type

RK097 9mm Size Metal Shaft Multi-ganged Type

■ Dimensions

Unit:mm

No.	Photo	Style	PC board mounting hole dimensions (Viewed from mounting side)
9	Single-shaft, single-unit with push-lock switch RK097111U-5R2522 		
10	Dual-shaft, dual-unit RK0972210 		

Rotary
Potentiometers
Slide
Potentiometers

Metal Shaft

Insulated
Shaft

Knob
Operating

Through
Shaft Type

Ring Type

9mm Size Metal Shaft Multi-ganged Type / Other Specifications

In addition to the Product Line, we accommodate the following specifications. Combinations not included in the Product Line are treated as semi-standard products.

Total Resistance Variety

Total resistance (kΩ)	5	10	20	50	100
-----------------------	---	----	----	----	-----

Resistance Taper

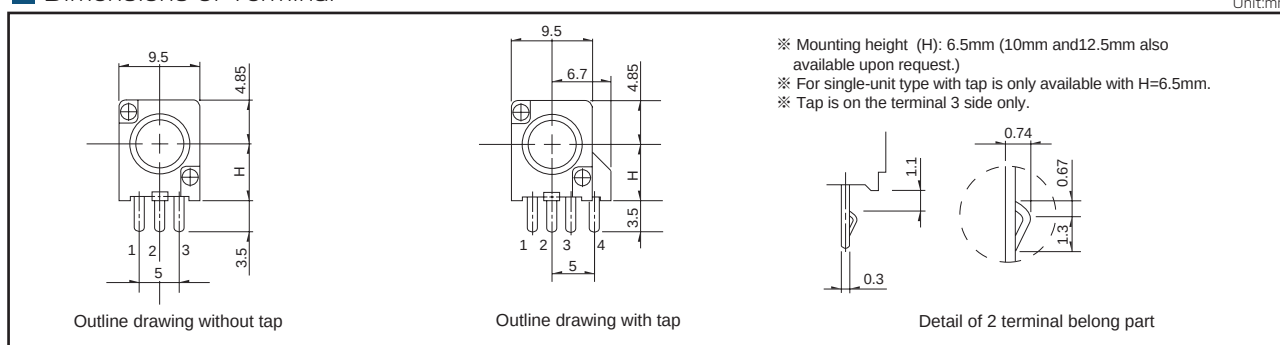
Resistance taper	15A	1B	3B	15C
------------------	-----	----	----	-----

Notes

Can be fitted with center-taps.

Dimensions of Terminal

Unit:mm



Dimensions of Bushings

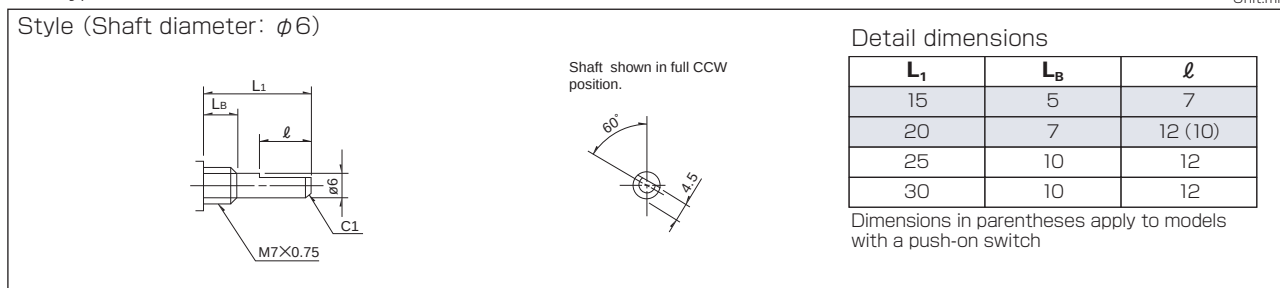
Unit:mm

Bushing	M7	M9
Dimensions		
Applications	For single and dual-shaft	For dual-shaft only

Single-shaft Dimension

Flat type

Unit:mm



Note

Marked are specifications recommended by Alps Alpine.

9mm Size Metal Shaft Multi-ganged Type / Other Specifications

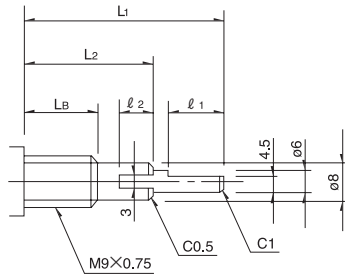
In addition to the Product Line, we accommodate the following specifications. Combinations not included in the Product Line are treated as semi-standard products.

■ Dimension of Dual-shaft Type

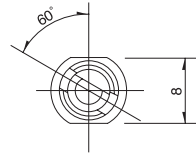
Flat type for inner shaft, slotted type for outer shaft

Unit:mm

Style (Inner-shaft: $\phi 6$ Outer-shaft: $\phi 8$)



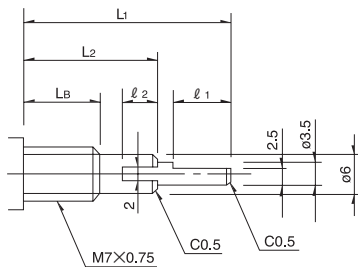
Shaft shown in full CCW position.



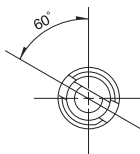
Detail dimensions

L_1	L_2	L_B	l_1	l_2
20	10	5	8	4
25	15	7	8	5
30	20	10	8	5
35	25	10	8	5

Style (Inner-shaft: $\phi 3.5$ Outer-shaft: $\phi 6$)



Shaft shown in full CCW position.



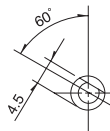
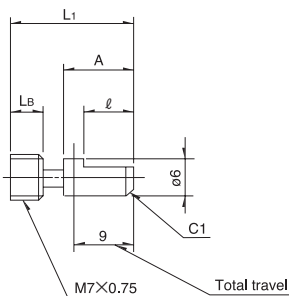
Detail dimensions

L_1	L_2	L_B	l_1	l_2
20	10	5	8	4
25	15	7	8	5
30	20	10	8	5
35	25	10	8	5

Applications Both switchless and rotary switch models are available.

■ Shaft Dimensions of with Push-lock Mechanism/Switch

Unit:mm



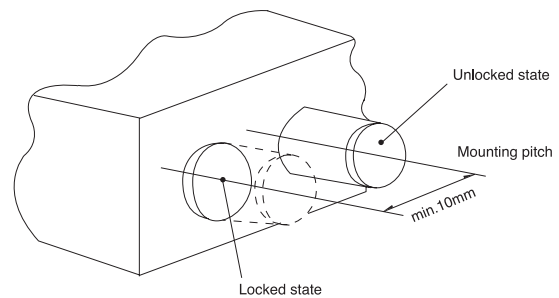
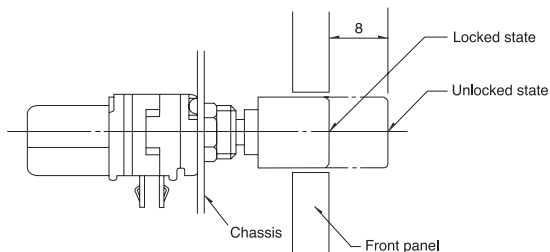
Shaft shown in full CCW position.

Detail dimensions

$\ast L_1$	L_B	A	l
25	10	(5.7)	4.5
30	10	(10.7)	7
35	10	(15.7)	12

$\ast$ Dimensions in unlocked state

Example of uses



Note

Marked are specifications recommended by Alps Alpine.

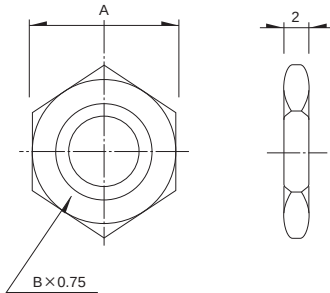
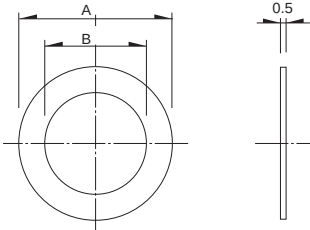
9mm Size Metal Shaft Multi-ganged Type / Switch Specifications

Switch type		Rotary switch	Momentary push switch	Push-lock switch
		5R1211	5R4211	5R2522
Contact arrangement		Single pole and single throw	Single pole and single throw	Double pole and double throw
Travel		50° max.	$0.5^{+0.7}_{-0.3}$ mm	8 ± 0.5 mm
Changeover force		50mN·m max.	4^{+4}_{-2} N	8N max.
Operating life under load		10,000 cycles		
Electrical performance	Rating	3A 16V DC (10mA 16V DC min. ratings)	0.5A 12V DC (10mA 12V DC min. ratings)	0.3A 12V DC
	Contact resistance	100mΩ max. for initial period, 200mΩ max. after operating life.		
	Insulation resistance	100MΩ min. 250V DC		
	Voltage proof	300V AC for 1 minute		

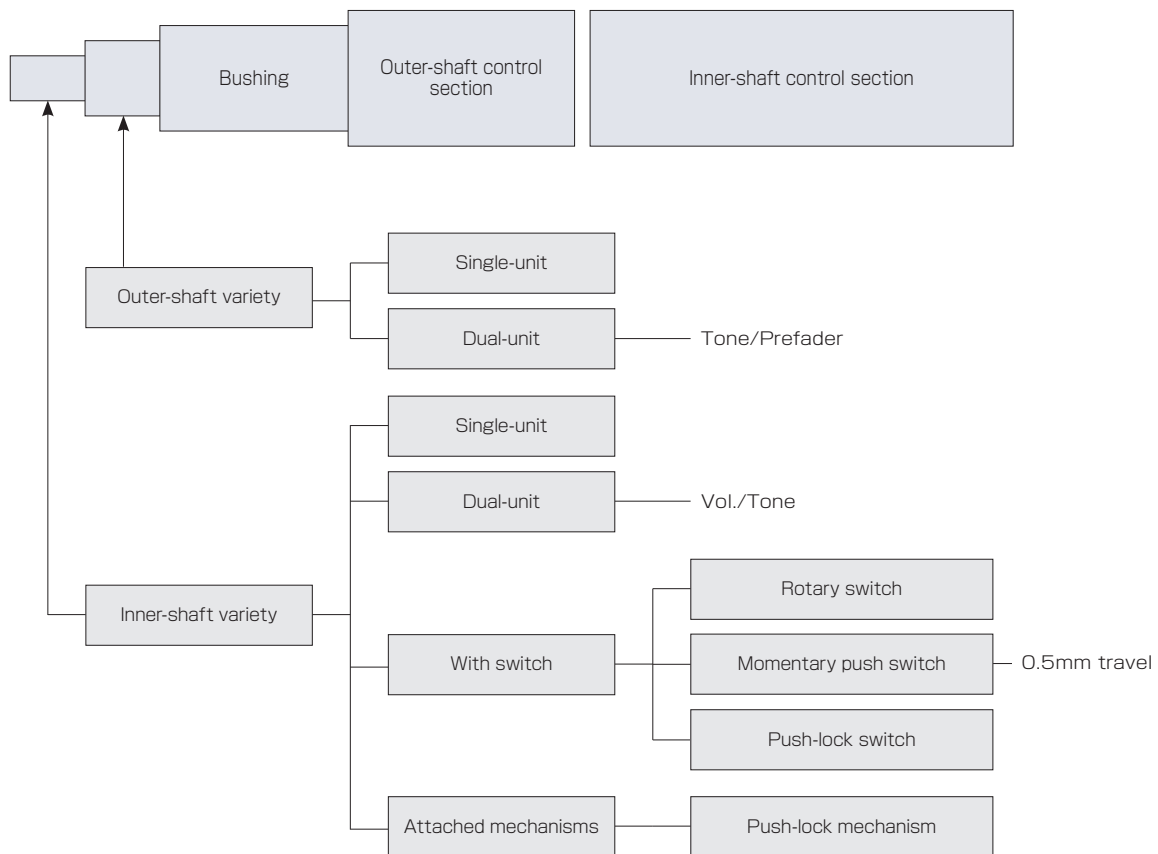
9mm Size Metal Shaft Multi-ganged Type / Attached Parts

The following parts are included with the product.

Unit:mm

Nut			Washer		
					
Bearing screw diameter	Dimension		Bearing screw diameter	Dimension	
	A	B		A	B
M7	11	M7	M7	φ12	φ7.2
M9	11	M9	M9	φ14	φ9.1

9mm Size Metal Shaft Multi-ganged Type / Configuration Chart



Note

The single-shaft type product lineups are the same as those in the inner-shaft variety.

9mm Size Metal Shaft Multi-ganged Type / Ordering Products Not Listed

In addition to the Product Line, we accommodate the following specifications. Combinations not included in the Product Line are treated as semi-standard products. Please refer to the notation example below.

Sample Part Number

R	K	0	9	7	1	1	1	0	—	F	1	5	—	C	0	—	B	1	0	3
----------	----------	----------	----------	----------	----------	----------	----------	----------	---	----------	----------	----------	---	----------	----------	---	----------	----------	----------	----------

Model type

Code	Model type
111	Single-shaft single-unit
121	Single-shaft dual-unit for tone
122	Single-shaft dual-unit for vol.

Switch specifications

Code	Switch specifications
0	Without switch
1	With rotary switch
4	With momentary push switch (0.5mm travel)
T	With push-lock mechanism
U	Push-lock switch

Shaft type

Code	Shaft type
F	Flat (shaft diameter : 6)

* Shaft diameter 3.5 is individually specified.

Length of the shaft L₁ (mm)

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

Detent

Code	Detent
C0	Without
C1	Center

* With rotary switch; for applications in types other than push-lock mechanism.

Resistance taper

Code	Resistance taper	Code	Resistance taper
A	15A	V	3B
B	1B	C	15C

* The resistance taper for rotary switches are individually defined.

B: For tone & general (model type : 111, 121)

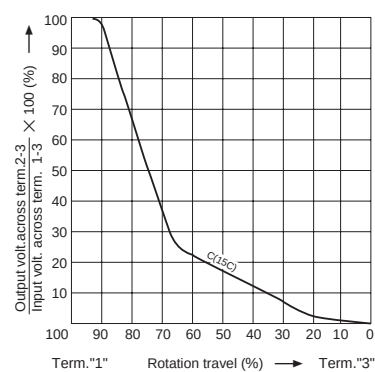
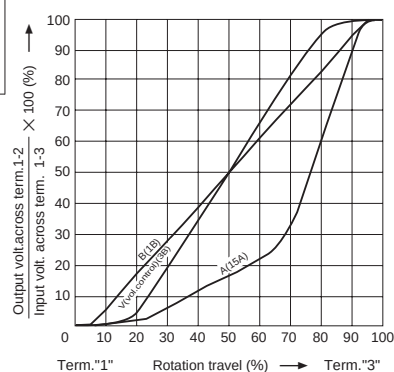
V: For vol. (model type : 111, 122)

Total resistance

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

Notes

- Marked are specifications recommended by Alps Alpine.
- The above specification is only applicable to the one-shaft single-unit model and dual-unit ganged model.



Metal Shaft Potentiometers

List of Varieties

Type		9mm size			
Series		RK09L		RK0971	RK0972
		Single-shaft			Dual-shaft
Number of resistor elements		Single/dual			Dual
Photo					
Control part orientation		Horizontal	Vertical	Horizontal	
Fixing method of bushing		Screw			
Operating temperature range		-10℃ to +70℃		-20℃ to +70℃ -40℃ to + 85℃ (Vehicle-compatible)	
Operating life		15,000 cycles			
Available for automotive use		—	—	○	○
Life cycle (availability)					
Electrical performance	Total resistance (k Ω)	10, 20, 50, 100			
	Resistance taper	15A, 1B, 3B, 15C			
	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			
	Maximum attenuation (Volume control)	5kΩ≤R< 10kΩ 10kΩ≤R< 50kΩ 50kΩ≤R	70dB min. 80dB min. 90dB min.	5kΩ≤R< 10kΩ 10kΩ≤R< 50kΩ 50kΩ≤R<100kΩ 100kΩ≤R	70dB min. 80dB min. 90dB min. 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 1 minute			
	Center-taps	Without		Without / With	
Mechanical performance	Detent	Without, Center			
	Stopper strength	0.5N·m		0.5N·m (With push-lock mechanism: 0.4N·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
Terminal style		Insertion			
Attached switch		—	—	Rotary switch Push-on switch Push-lock switch	—
Page		282		286	287

Metal Shaft Potentiometers Soldering Conditions	311
Potentiometers Cautions	384
Potentiometers Measurement and Test Methods	386
Potentiometers Resistance Taper	388

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°C max.	3s max.	1 time
RK271		350°C max.	5s max.	1 time
RK501		350±10°C	5 ⁺¹ ₀ s	1 time
RK163		350°C max.	5s max.	1 time
RK168	Potentiometer terminal	300°C max.	3s max.	1 time
	Motor terminal	350°C max.	2s max.	

Reference for Dip Soldering

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

Mouser Electronics

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