

Metal Shaft Potentiometer 9mm Size Metal Shaft Multi-ganged Type

RK097 Series



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 ^{+10°} _{-5°})
Rotational torque	2 to 25mN·m
Operating life	15,000cycles
Operating temperature range	-20°C to +70°C -40°C ~ +85°C (Vehicle-compatible)

Rotary
Potentiometers

Slide
Potentiometers

Product Line

Single-shaft without switch type

Number of resistor elements	Mounting direction	Shaft type	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	15	Without	10	15A	2,400 (A type)	RK097111080J	1
					20	1B		RK0971110909	
				With	10	15A		RK0971110D7F	
					Without	50		1B	
			20	Without	10	15A		RK097111080R	
					With	10		1B	
				Without	50	1B		RK09711100F8	
					Without			10	
			25	10	1B	2,400 (A type)	RK0971110D57		
			15	50		1,600 (B type)	RK09712100AV		
Dual-unit for tone	Horizontal type	Flat	20	With	20	1B	1,600 (B type)	RK0971210Z2M	2
			25	Without	10		2,400 (A type)	RK0971210097	
			15					15A	
20	3B	RK09712200MY							
Dual-unit for vol.	Horizontal type	Flat	15			Without	10	15A	
				3B	1,600 (B type)			RK097122008T	
			20	15A	1,600 (B type)			RK09712200MT	
				20				15A	

Notes

1. Products other than those listed in above products are also available. Please contact us for details.
2. For automotive use, please contact us with detailed specifications.
3. Please place purchase orders per minimum order unit N (integer).

Metal
Shaft

Insulated
Shaft

Knob
Operating

Ring Type
Devices



Automotive
Use

Refer to P.356, 357 for product varieties.
Refer to P.356, 359, 470 for resistance taper.
Refer to P.379 for attached parts.

Rotary
Potentiometers

Slide
Potentiometers

Metal
Shaft

Insulated
Shaft

Knob
Operating

Ring Type
Devices

Automotive
Use

Product Line
Single-shaft with rotary switch type

Number of resistor elements	Mounting direction	Shaft type	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	15	Without	20	15A	1,400 (C type)	RK0971111Z0P	3
					50			RK0971111Z32	
			20		10	1B		RK09711110AL	
15						20		RK0971221Z05	4
			20		RK0971221Z11				

Single-shaft push-on push-off (1.5mm travel) sswitch type

Number of resistor elements	Mounting direction	Shaft type	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	25	Without	10	15A	1,400 (C type)	RK097111202P	5
						1B		RK097111202Q	
Dual-unit for vol.			20		50	3B	1,200 (D type)	RK097122200G	6

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

Number of resistor elements	Mounting direction	Shaft type	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	15	With	10	3B	1,400 (C type)	RK0971114D0B	7
Dual-unit for tone			20	Without		1B		RK0971214Z06	8
Dual-unit for vol.						15A		RK0971224Z01	

Single-shaft momentary push (1.5mm travel) switch type

Number of resistor elements	Mounting direction	Shaft type	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	20	Without	10	1B	1,400 (C type)	RK0971114Z07	9

Notes

1. Products other than those listed in above products are also available. Please contact us for details.
2. Please place purchase orders per minimum order unit N (integer).

Refer to P.356, 357 for product varieties.
Refer to P.358 for switches.
Refer to P.356, 359, 470 for resistance taper.
Refer to P.379 for attached parts.

Product Line

Single-shaft with push-lock mechanism type

Number of resistor elements	Mounting direction	Shaft type	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	25	Without	10	1B	1,400 (C type)	RK097111T065	10
					100	15A		RK097111TZ17	
						With		10	
				100	RK097111TD2M				
					100			RK097111TD44	
Dual-unit for tone				1,200 (D type)	Without	10		15A	
Dual-unit for vol						50	3B	RK097122T017	
	RK097122TZ0A								

Dual-shaft, dual-unit without switch type

Number of resistor elements	Mounting direction	shaft	Shaft type	Length of the shaft (mm)	Center detent	Total resistance (kΩ)	Resistance taper	Minimum order unit (pcs.)	Products No.	Drawing No.
Dual-unit (Single-shaft, Single-unit)	Horizontal type	The outer shaft	Slotted	15	Without	10	15A	1,400 (C type)	RK097221005C	12
		The inner shaft	Flat	25						
		The outer shaft	Slotted	15			15C		RK097221004C	
		The inner shaft	Flat	25						

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	375 × 490 × 185
B type	800	1,600	373 × 540 × 207
C type	700	1,400	373 × 540 × 181
D type	600	1,200	373 × 540 × 225

Notes

1. Products other than those listed in above products are also available. Please contact us for details.
2. For automotive use, please contact us with detailed specifications.
3. Please place purchase orders per minimum order unit N (integer).

Rotary Potentiometers
Slide Potentiometers

Metal Shaft
Insulated Shaft
Knob Operating
Ring Type Devices

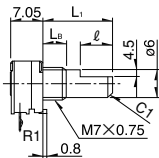
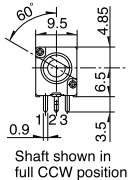
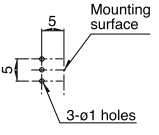
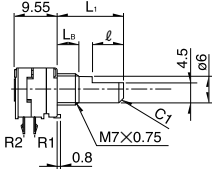
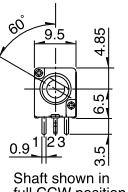
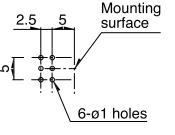
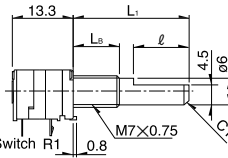
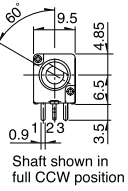
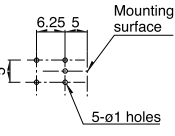
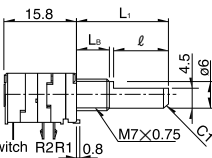
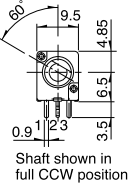
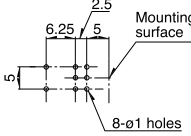


Automotive Use

Refer to P.356, 357 for product varieties.
Refer to P.356, 359, 470 for resistance taper.
Refer to P.379 for attached parts.

Dimensions

Unit:mm

No.	Photo	Style	PC board mounting hole dimensions (Viewed from mounting side)												
1	Single-shaft, single-unit RK0971110	<table><tr><td>L₁</td><td>15</td><td>20</td><td>25</td></tr><tr><td>L_B</td><td>5</td><td>7</td><td>10</td></tr><tr><td>ℓ</td><td>7</td><td>12</td><td>12</td></tr></table>   Shaft shown in full CCW position	L ₁	15	20	25	L _B	5	7	10	ℓ	7	12	12	
L ₁	15	20	25												
L _B	5	7	10												
ℓ	7	12	12												
2	Single-shaft, dual-unit RK0971210 (For tone) RK0971220 (For vol.)	<table><tr><td>L₁</td><td>15</td><td>20</td><td>25</td></tr><tr><td>L_B</td><td>5</td><td>7</td><td>10</td></tr><tr><td>ℓ</td><td>7</td><td>12</td><td>12</td></tr></table>   Shaft shown in full CCW position	L ₁	15	20	25	L _B	5	7	10	ℓ	7	12	12	
L ₁	15	20	25												
L _B	5	7	10												
ℓ	7	12	12												
3	Single-shaft, single-unit with rotary switch RK0971111-5R1211	<table><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>ℓ</td><td>7</td><td>12</td></tr></table>   Shaft shown in full CCW position	L ₁	15	20	L _B	5	7	ℓ	7	12	 			
L ₁	15	20													
L _B	5	7													
ℓ	7	12													
4	Single-shaft, dual-unit with rotary switch RK0971221-5R1211 (For vol.)	<table><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>ℓ</td><td>7</td><td>12</td></tr></table>   Shaft shown in full CCW position	L ₁	15	20	L _B	5	7	ℓ	7	12	 			
L ₁	15	20													
L _B	5	7													
ℓ	7	12													

Rotary
Potentiometers

Slide
Potentiometers

Metal
Shaft

Insulated
Shaft

Knob
Operating

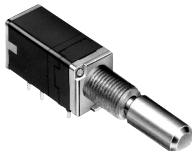
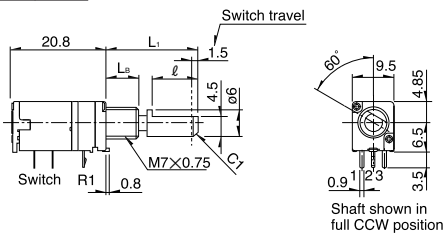
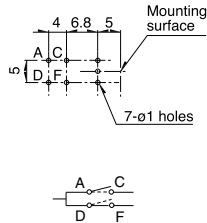
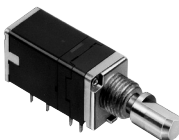
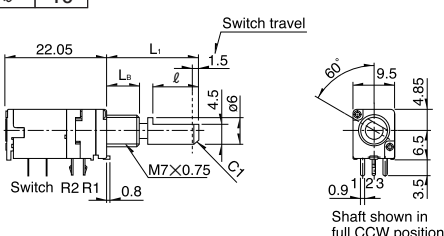
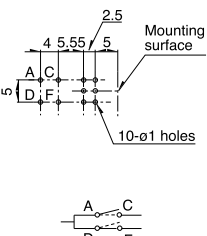
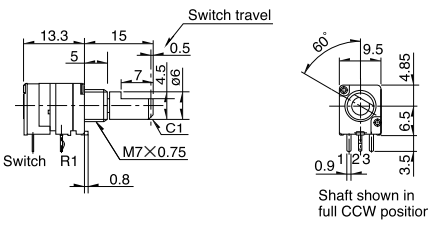
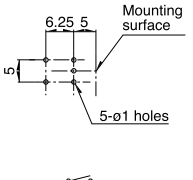
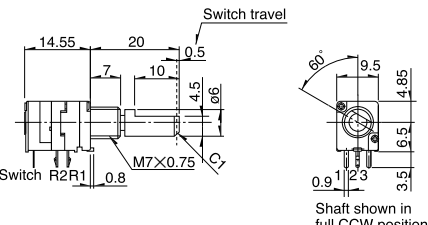
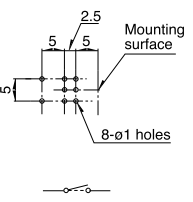
Ring Type
Devices



Automotive
Use

Dimensions

Unit:mm

No.	Photo	Style	PC board mounting hole dimensions (Viewed from mounting side)						
5	Single-shaft, single-unit with push-on push-off switch RK0971112-5R2412 	<table><tr><td>L₁</td><td>25</td></tr><tr><td>L_B</td><td>10</td></tr><tr><td>ℓ</td><td>12</td></tr></table>  Switch travel Shaft shown in full CCW position	L ₁	25	L _B	10	ℓ	12	 Mounting surface 7-φ1 holes
L ₁	25								
L _B	10								
ℓ	12								
6	Single-shaft, dual-unit with push-on push-off switch RK0971222-5R2412 (For vol.) 	<table><tr><td>L₁</td><td>20</td></tr><tr><td>L_B</td><td>7</td></tr><tr><td>ℓ</td><td>10</td></tr></table>  Switch travel Shaft shown in full CCW position	L ₁	20	L _B	7	ℓ	10	 Mounting surface 10-φ1 holes
L ₁	20								
L _B	7								
ℓ	10								
7	Single-shaft, single-unit with momentary push switch travel 0.5mm RK0971114-5R4211 	 Switch travel Shaft shown in full CCW position	 Mounting surface 5-φ1 holes						
8	Single-shaft, dual-unit with momentary push switch travel 0.5mm RK0971214-5R4211 (For tone) RK0971224-5R4211 (For vol.) 	 Switch travel Shaft shown in full CCW position	 Mounting surface 8-φ1 holes						

Rotary Potentiometers
Slide Potentiometers

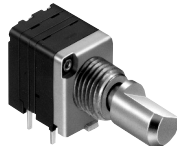
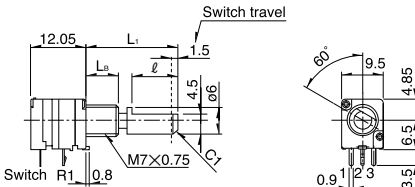
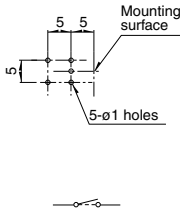
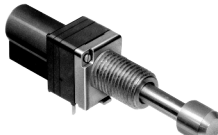
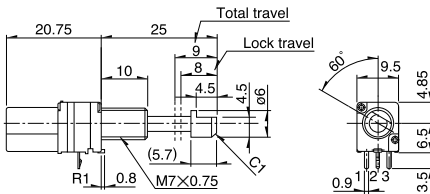
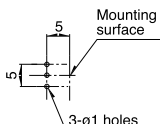
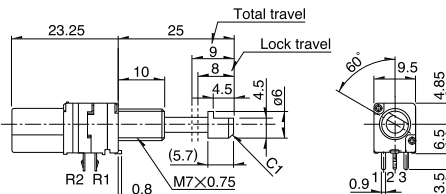
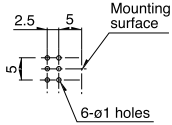
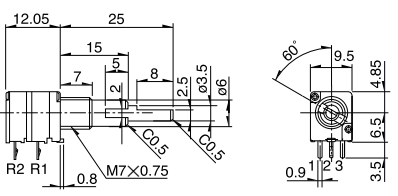
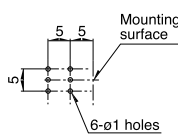
Metal Shaft
Insulated Shaft
Knob Operating
Ring Type Devices



Automotive Use

Dimensions

Unit:mm

No.	Photo	Style	PC board mounting hole dimensions (Viewed from mounting side)						
9	Single-shaft, single-unit with momentary push switch travel 1.5mm RK0971114-5R4611 	<table border="1"><tr><td>L₁</td><td>20</td></tr><tr><td>L_B</td><td>7</td></tr><tr><td>ℓ</td><td>10</td></tr></table>  Switch travel Shaft shown in full CCW position	L ₁	20	L _B	7	ℓ	10	 Mounting surface 5-ø1 holes
L ₁	20								
L _B	7								
ℓ	10								
10	Single-shaft, single-unit with push-lock mechanism RK097111T 	 Total travel Lock travel Shaft shown in full CCW position	 Mounting surface 3-ø1 holes						
11	Single-shaft, dual-unit with push-lock mechanism RK097121T (For tone) RK097122T (For vol.) 	 Total travel Lock travel Shaft shown in full CCW position	 Mounting surface 6-ø1 holes						
12	Dual-shaft, dual-unit RK0972210 	 Shaft shown in full CCW position	 Mounting surface 6-ø1 holes						

Rotary
Potentiometers

Slide
Potentiometers

Metal
Shaft

Insulated
Shaft

Knob
Operating

Ring Type
Devices

Automotive
Use

Product Varieties

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

Total Resistance Variety

Total resistance (kΩ)	10	20	50	100
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Resistance Taper

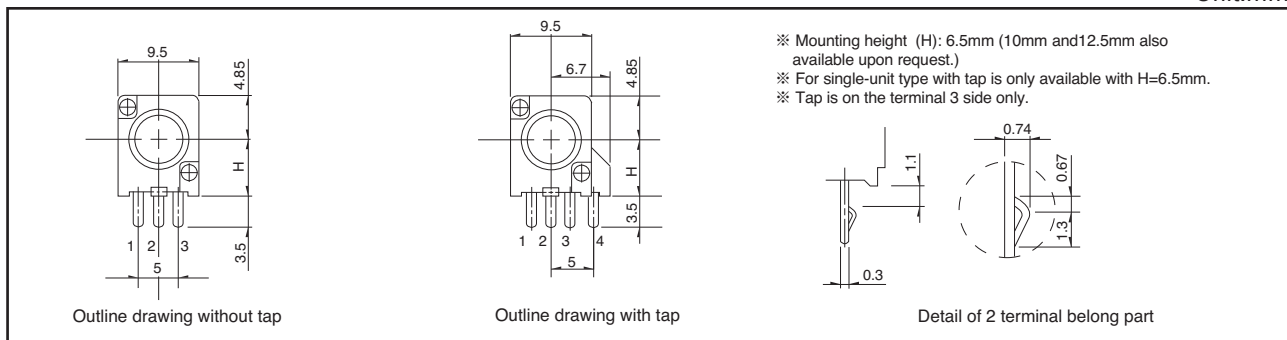
Resistance taper	15A	1B	3B	15C
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Note

Can be fitted with center-taps.

Dimensions of Terminal

Unit:mm



Dimensions of Bushings

Unit:mm

Bushing	M6	M7	M9
Dimensions			
Applications	For single-shaft only	For single and dual-shaft	For dual-shaft only

Single-shaft Dimension

Flat type

Unit:mm

Style (Shaft diameter : $\phi 6$)

Shaft shown in full CCW position.

Detail dimensions

L_1	L_B	l
15	5	7
20	7	12(10)
25	10	12
30	10	12

Models in parenthesis apply to those with a push-on switch and those with a push-on, push-off switch.

Style (Shaft diameter : $\phi 3.5$)

Shaft shown in full CCW position.

Detail dimensions

L_1	L_B	l
15	5	7
20	7	12(10)
25	10	12
30	10	12

Models in parenthesis apply to those with a push-on switch and those with a push-on, push-off switch.

Refer to P.359, 470 for resistance taper.
 Refer to P.379 for attached parts.

Switch Specifications

Mechanical Characteristics

Switch type		Contact arrangement	Rating	Operating force	Changeover angle (travel)
Rotary switch	5R1211	SPST	3A 16V DC	50mN·m max.	50° max.
	5R1212	SPDT	1A 16V DC		
Push-on push-off switch	5R2412		3A 16V DC	12±8N	1.5mm
	5R2421	DPST			
Momentary push switch	5R4211	SPST	0.5A 12V DC	4 ⁺⁴ ₋₂ N	0.5mm
	5R4611			5±2N	1.5mm

Rotary Potentiometers

Slide Potentiometers

Electrical Characteristics

Model	Contact resistance	Insulation resistance	Voltage proof
5R1211, 5R1212 5R2412, 5R2421 5R4211, 5R4611	100mΩ for initial period, 200mΩ after operating life	100MΩ min. Measured with a 250V DC insulation tester	300V AC 1 minute min.

Durability

Operating life under load	5R1211, 5R1212 5R2412, 5R2421 5R4211	The switch under a rated resistance load shall be subjected to a total of 10,000 cycles of operation at a speed of 600 to 1,000 cycles per hour. The contact resistance after testing should not exceed 200mΩ.
	5R4611	The switch under a rated resistance load shall be subjected to a total of 20,000 cycles of operation at a speed of 600 to 1,000 cycles per hour. The contact resistance after testing should not exceed 200mΩ.

Metal Shaft

Insulated Shaft

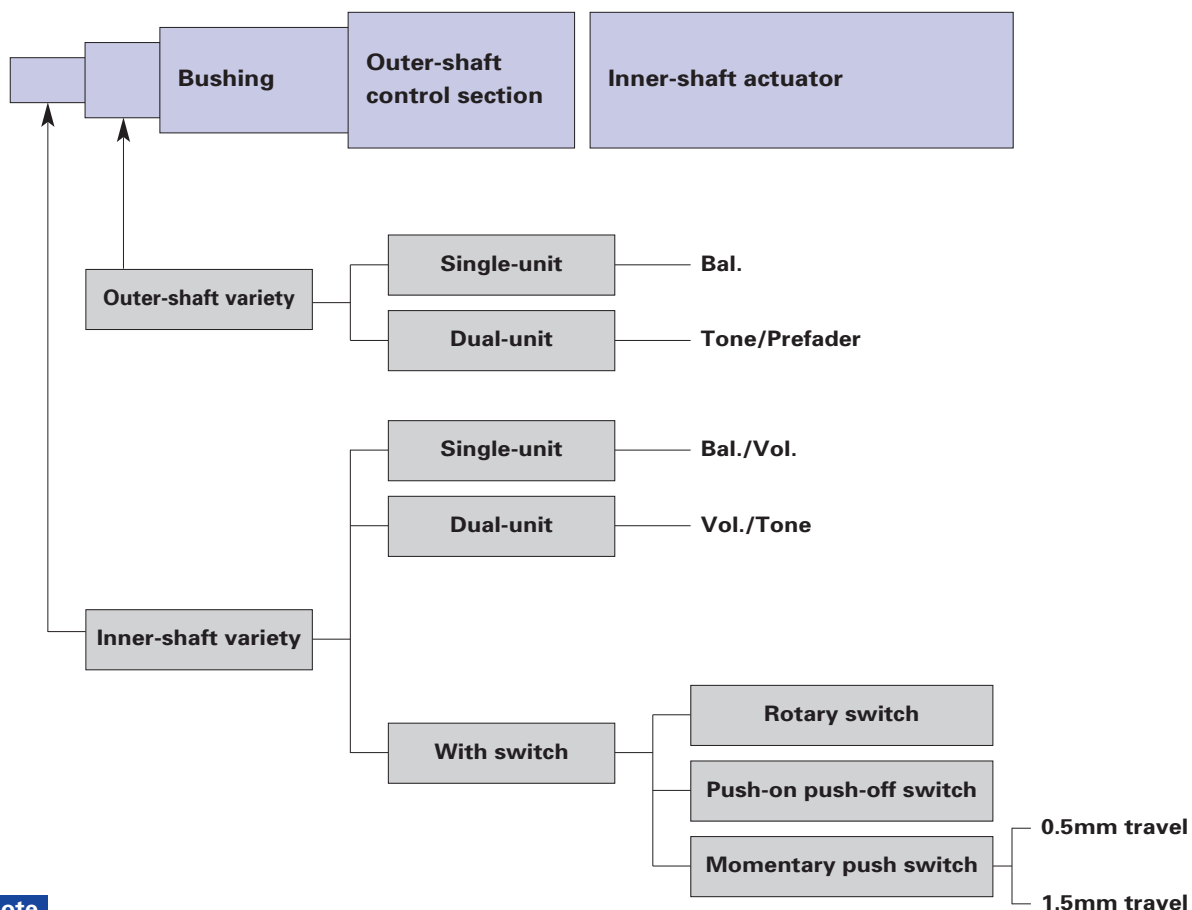
Knob Operating

Ring Type Devices

Note

The operating current should be 10mA or greater.

Configuration Chart



Note

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

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 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
2	With push-on push-off switch
4	With momentary push switch(0.5mm travel)
T	With push-lock mechanism

*Push on switch 1.5mm stroke is individually specified.

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	Code	Detent
C0	Without	11	11
C1	Center	31	31

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

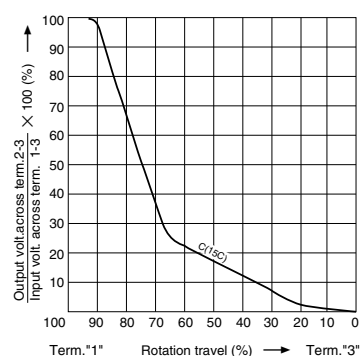
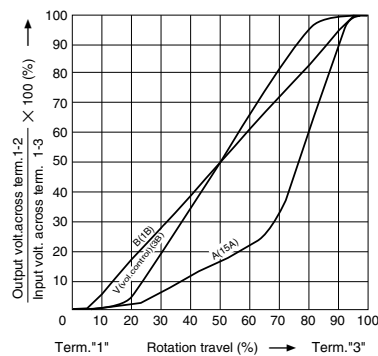
Resistance taper

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 (kΩ)	Code	Total resistance (kΩ)
103	10	503	50
203	20	104	100

Notes

1. marked are specifications recommended by ALPS.
2. The above specification is only applicable to the one-shaft single-unit model and dual-unit ganged model.

Rotary
Potentiometers

Slide
Potentiometers

Metal
Shaft

Insulated
Shaft

Knob
Operating

Ring Type
Devices

List of Varieties

Rotary
PotentiometersSlide
PotentiometersMetal
ShaftInsulated
ShaftKnob
OperatingRing Type
Devices

Type		9mm size metal shaft snap-in		9mm size metal shaft multi-ganged		11mm size metal shaft reflow
Number of drive shafts		Single-shaft			Dual-shaft	Single-shaft
Model		RK09L1		RK0971	RK0972	RK119
Photo						
Fixing method of bushing		Bushing screw clamp				Bushing guide type
Terminal mounting		Horizontal type	Vertical type	Horizontal type		Vertical type
Attached switch		Without		Rotary switch ※1		Momentary push switch
				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.				――
Solder heat resistance	Manual soldering	350℃ max. 3s max.				350±10℃ 3 ⁺ ₀ s
	Dip soldering	260±5℃, 5±1s				――
	Reflow soldering	――				Please see P.364
Operating emperature range		－10℃ to +70℃		－20℃ to +70℃ －40℃ to +85℃(Vehicle-compatible)		－40℃ to +85℃
Automotive use		――		○	○	○
Electrical performance	Rated power	0.05W				
	Residual resistance	10kΩ < R ≤ 10kΩ 20Ω max. 10kΩ ≤ R < 50kΩ 30Ω max. 50kΩ ≤ R 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
	Maximum attenuation (Volume control)	5kΩ ≤ R < 10kΩ 70dB min. 10kΩ ≤ R < 50kΩ 80dB min. 50kΩ ≤ R < 100kΩ 90dB min. 100kΩ ≤ R 100dB min.				
	Insulation resistance	100MΩ min. 250V DC				
	Voltage proof	300V AC for 1minute				
Mechanical performance	Stopper strength	0.5N・m		0.5N・m (With push-lock mechanism type: 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				
Environmental performance	Cold	－20℃±2℃ for 96h		－30±2℃ for 96h －40±2℃ for 96h(Vehicle-compatible)		－40±2℃ for 240h
	Dry heat	70±2℃ for 96h		70±2℃ for 96h 85±2℃ for 96h(Vehicle-compatible)		85±2℃ for 240h
	Damp heat	40±2℃, 90 to 95%RH for 96h				60±2℃, 90 to 95%RH for 240h
Page		346		350		360

Push-on Switch Specifications

Items	RK097		RK119	
Contact arrangement	Single pole and single throw(Push on)			
Travel (mm)	0.5	1.5	0.5	1.5
Operating force (N)	4 ⁺⁴ ₋₂	5±2	5±2	4±2
Rating	0.5A 12V DC		0.1A 5V DC (0.1mA 5V DC min.ratings)	
Contact resistance	100mΩ for initial period;200mΩ after operating life			
Operating life	10,000 cycles min.	20,000 cycles min.	100,000 cycles min.	20,000 cycles min. (Operating life without Load)

- Metal Shaft Potentiometers Attached Parts379
- Metal Shaft Potentiometers Cautions380, 381

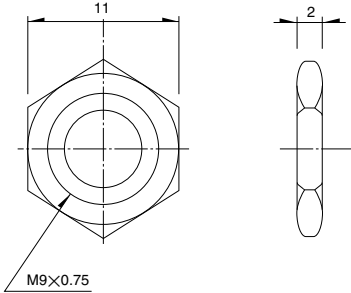
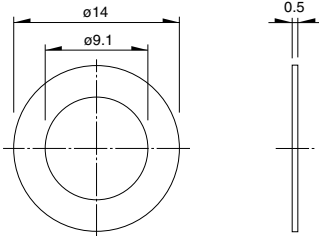
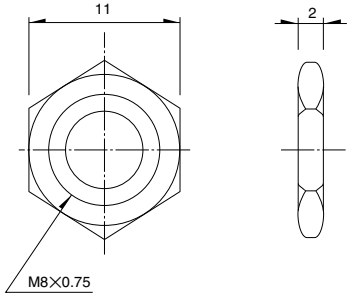
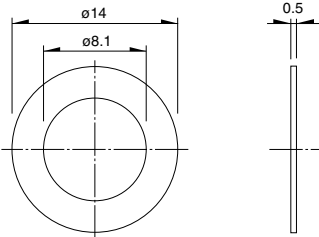
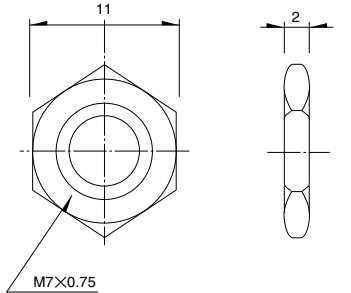
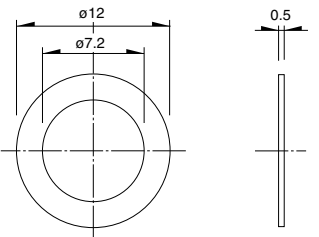
Notes

- ※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 details.
- marks in "Available for automotive use" indicate that some of the series products can work at the operating temperature range from -40°C to +85°C.

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 RK163	M7		
RK097	M6	