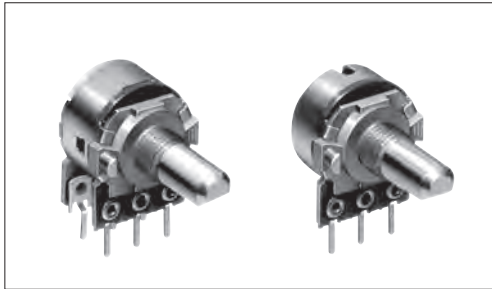


# RK163 16mm Size Metal Shaft Type

A wide range of versatile products applicable for various types of control



## Typical Specifications

Items	Specifications
Total resistance tolerance	±20%
Maximum operating voltage	150V AC, 5V DC
Total rotational angle	300° ±3°
Rotational torque	3 to 25mN·m
Operating life	15,000 cycles
Operating temperature range	-10°C to +70°C

## Product Line

Number of resistor elements	Shaft type	Terminal style	Length of the shaft L <sub>1</sub> (mm)	Center detent	Total resistance(k Ω)	Resistance taper	Minimum order unit (pcs.)		Products No.	Drawing No.
							Japan	Expert		
Single-unit	Flat	For PC board	20	Without	10	1B	600	1,200	<b>RK1631110U1Q</b>	1
		Lead							200	400
	Serrated	For PC board	15				600	1,200	<b>RK1631110U2A</b>	3
		Lead							200	400
Dual-unit for tone	Flat	For PC board	20	With			600	1,200	<b>RK16312101A2</b>	5
	Serrated		15	Without					<b>RK1631210AX9</b>	6
Dual-unit for vol.	Flat		20			Without			<b>RK16312A0B85</b>	5
	Serrated		15	<b>RK16312A0BKR</b>					6	

### Note

Other varieties are also available. Refer to "Other Specifications" (P.298).

## Packing Specifications

### Bulk

Terminal style	Number of packages (pcs.)		Export package measurements (mm)
	1 case /Japan	1 case /export packing	
<b>For PC board</b>	600	1,200	532×326×386
<b>Lead</b>	200	400	360×270×155

Refer to P.298 for other specifications.  
 Refer to P.299 for attached parts.  
 Refer to P.300 for ordering products not listed.  
 Refer to P.311 for soldering conditions

Dimensions

Unit:mm

No.	Photo	Style	PC board mounting hole dimensions (Viewed from mounting side)
1		<p>Shaft shown in full C.C.W. position</p>	<p>Mounting surface</p>
2		<p>Shaft shown in full CCW position</p>	
3		<p>Shaft slot is optional angle.</p>	<p>Mounting surface</p>
4		<p>Shaft slot is optional angle.</p>	
5		<p>Shaft shown in full CCW position</p>	<p>Mounting surface</p>
6		<p>Shaft slot is optional angle.</p>	<p>Mounting surface</p>

- Rotary Potentiometers
- Slide Potentiometers
- Metal Shaft
- Insulated Shaft
- Knob Operating
- Through Shaft Type
- Ring Type

# 16mm Size Metal Shaft 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.

## Product Specifications and Applications

Type	Model	Applications	Detent variety
Single-shaft, single-unit	<b>RK16311</b>	General	Center
Single-shaft, dual-unit	<b>RK16312</b>	General or Volume and tone control	

## Total Resistance Variety

Total resistance (kΩ)	5	10	20	50	100	200

## Resistance Taper

Resistance taper	15A	1B	3B	15C

## Dimensions of Shaft

### 1) 18 teeth serrated type

Unit:mm

L <sub>1</sub>	L <sub>B</sub>	l <sub>1</sub>
15	5	8
20	5	12
25	7	12
30	7	12

Not specified slotting angle

Shaft shown in full CCW position

● The serration angle shall be as shown.

### 2) Flat type

Unit:mm

L <sub>1</sub>	L <sub>B</sub>	l <sub>1</sub>
15	5	7
20	7	12
25	7	12
30	7	12

Shaft shown in full CCW position

### 3) Slotted type

Unit:mm

L <sub>1</sub>	L <sub>B</sub>
15	7
20	7
25	7
30	7

Shaft shown in full CCW position

## Note

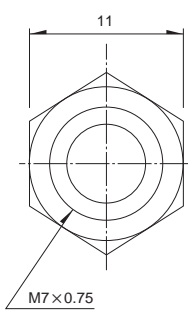
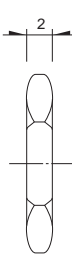
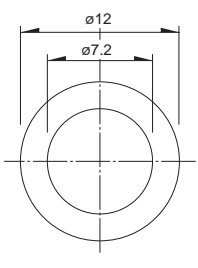
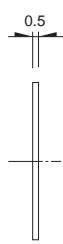
Marked are specifications recommended by Alps Alpine.  
Die-cast shaft is standard.

Refer to P.299 for attached parts.

Refer to P.300 for ordering products not listed.

# 16mm Size Metal Shaft Type / Attached Parts

The following parts are included with the product.

		Unit:mm	
Nut		Washer	
 <p>11</p> <p>M7 x 0.75</p>	 <p>2</p>	 <p>ø12</p> <p>ø7.2</p>	 <p>0.5</p>

Rotary  
Potentialmeters

Slide  
Potentialmeters

Metal Shaft

Insulated  
Shaft

Knob  
Operating

Through  
Shaft Type

Ring Type

# 16mm Size Metal Shaft 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 1 6 3 1 1 1 0 - F 2 0 - C 0 - B 1 0 3 - P**

### Model type

Code	Model type
111	Single-unit
121	Dual-unit for tone
12A	Dual-unit for vol.

### Shaft type

Code	Shaft type
F	Flat
S	Slotted
K	Serrated

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

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

### Detent

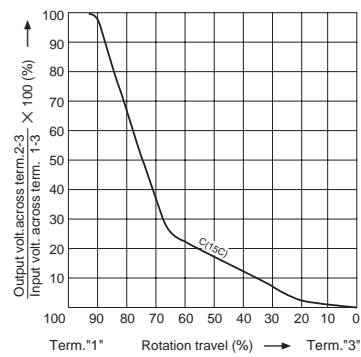
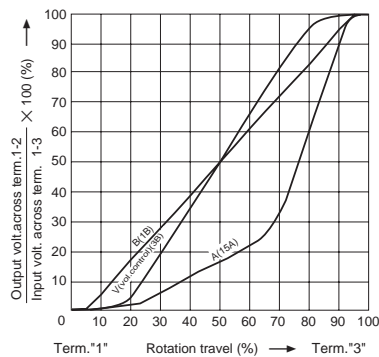
Code	Detent
C0	Without
C1	Center

### Resistance taper

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

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

V: For vol. (model type : 111, 12A)



### Total resistance









Code	Total resistance (kΩ)	Code	Total resistance (kΩ)
502	5	503	50
103	10	104	100
203	20	204	200

### Terminal Style

Code	Terminal style
P	For PC board
L	Lead terminal

### Note

Marked are specifications recommended by Alps Alpine.

Type	16mm size	27mm size	50mm size	Rotary motor-driven		
Series	RK163	RK271	RK501	RK168		
Single-shaft						
Number of resistor elements	Single/dual	Single/dual/quad	Dual/quad			
Photo						
Control part orientation	Horizontal					
Fixing method of bushing	Bushing screw clamp					
Operating temperature range	-10°C to +70°C					
Operating life	15,000 cycles					
Available for automotive use	—	—	—	—		
Life cycle (availability)						
Electrical performance	Total resistance (kΩ)	5, 10, 20, 50, 100, 200	5, 10, 20, 50, 100, 250	10, 20, 50, 100		
	Resistance taper	15A, 1B, 3B, 15C		15A, 3B		
	Rated Power	0.1W 0.05W (15A)		0.05W	0.1W	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 20Ω max. 10kΩ<R≤50kΩ 30Ω max. 50kΩ<R Nominal total resistance of 0.1% 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.		5kΩ≤R< 10kΩ 70dB min. 10kΩ≤R< 50kΩ 80dB min. 50kΩ≤R<100kΩ 90dB min. 100kΩ≤R 100dB min.		120dB min.
	Gang error applicable to Dual-unit parts for audio volume control purposes	-40dB to 0dB 3dB max.		-70dB to -60dB 3dB max. -60dB to 0dB 2dB max.		-100dB to 0dB 3dB max. ※
	Insulation resistance	100MΩ min. 500V DC			100MΩ min. 250V DC	
	Voltage proof	500V AC for 1 minute			300V AC for 1 minute	
	Center-taps	Without				
Mechanical performance	Detent	Without, Cente	Without, Center, 21, 31, 41	Without		
	Stopper strength	0.9 N·m		1.5 N·m	0.9 N·m	
	Push-pull strength	100N max.		150N 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 for 2 hours respectively				
Shaft style	Serrated type, Flat type, Slotted type		Slotted type, Flat type	Slotted type	Flat type	
Terminal style	Insertion, Lead		Insertion			
Attached switch	—					
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- Rotary Potentiometers
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**Note**

- Indicates applicability to some products in the series.
- ※ Gang error of 4-gang (quad) model: - 100dB to 0dB 3dB max. (applies only between R1 and R2 and between R3 and R4)

# Metal Shaft Potentiometers / Soldering Conditions

## Reference for Manual Soldering

Series		Tip temperature	Soldering time	No. of solders
<b>RK09L, RK097</b>		350°C max.	3s max.	1 time
<b>RK271</b>		350°C max.	5s max.	1 time
<b>RK501</b>		350±10°C	5 $\begin{smallmatrix} +1 \\ 0 \end{smallmatrix}$ s	1 time
<b>RK163</b>		350°C max.	5s max.	1 time
<b>RK168</b>	<b>Potentiometer terminal</b>	300°C max.	3s max.	1 time
	<b>Motor terminal</b>	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	
<b>RK09L, RK097</b>	100°C max.	2 min. max.	260±5°C	5±1s	2 times max.
<b>RK501</b>	120±10°C	2 min. max.	260±5°C	5±1s	2 times

Rotary Potentiometers

Slide Potentiometers

Metal Shaft

Insulated Shaft

Knob Operating

Through Shaft Type

Ring Type

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