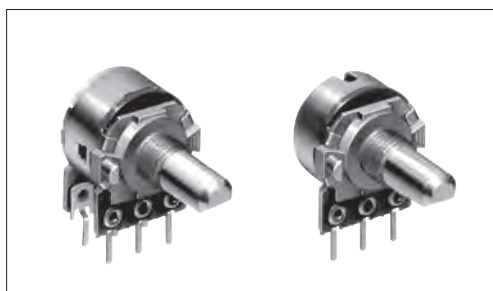


RK163 16mm Size Metal Shaft Type

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 ₁ (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	RK1631110U1Q	1
		Lead					200	400	RK1631110TNP	2
	Serrated	For PC board	15				600	1,200	RK1631110U2A	3
		Lead					200	400	RK1631110U0Q	4
Dual-unit for tone	Flat	For PC board	20	With		600	1,200	RK16312101A2	5	
	Serrated		15	Without				RK1631210AX9	6	
Dual-unit for vol.	Flat		20					RK16312A0B85	5	
	Serrated		15					RK16312A0BKR	6	

Note

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

Packing Specifications

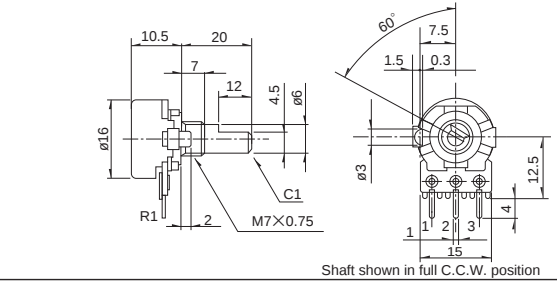
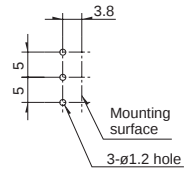
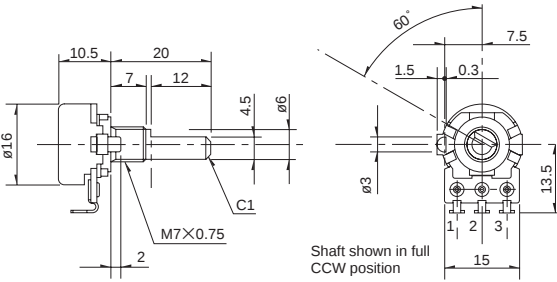
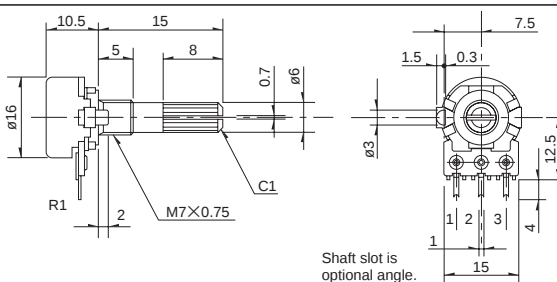
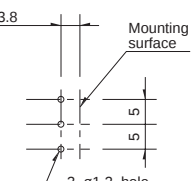
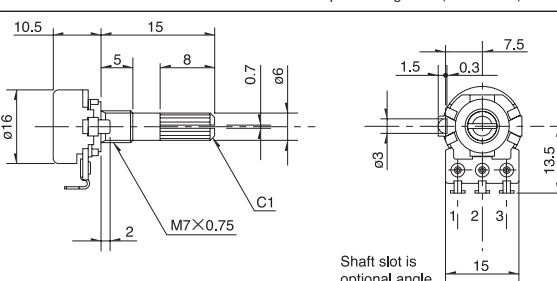
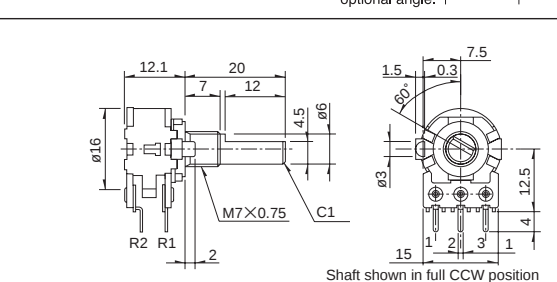
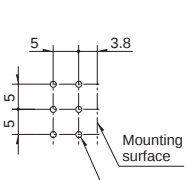
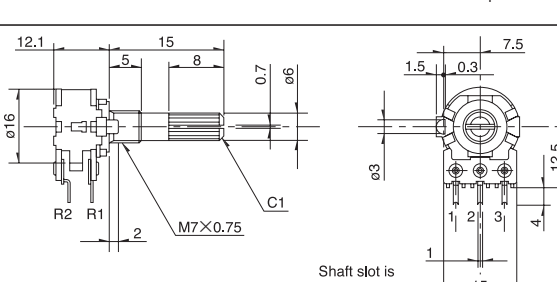
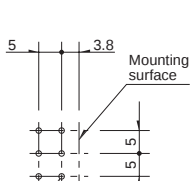
Bulk

Terminal style	Number of packages (pcs.)		Export package measurements (mm)
	1 case /Japan	1 case /export packing	
For PC board	600	1,200	532×326×386
Lead	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		 Shaft shown in full C.C.W. position	
2		 Shaft shown in full CCW position	
3		 Shaft slot is optional angle.	
4		 Shaft slot is optional angle.	
5		 Shaft shown in full CCW position	
6		 Shaft slot is optional angle.	

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	RK16311	General	Center
Single-shaft, dual-unit	RK16312	General or Volume and tone control	

Total Resistance Variety

Total resistance (kΩ)	5	10	20	50	100	200
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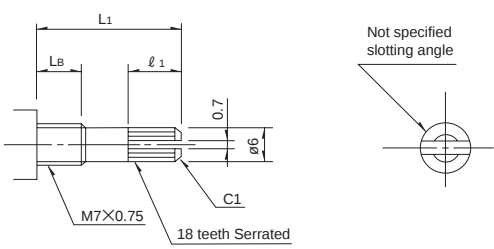
Resistance Taper

Resistance taper	15A	1B	3B	15C
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Dimensions of Shaft

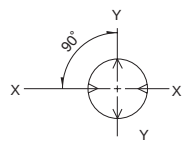
1) 18 teeth serrated type

Unit:mm



Detail dimensions

L ₁	L _B	l ₁
15	5	8
20	5	12
25	7	12
30	7	12

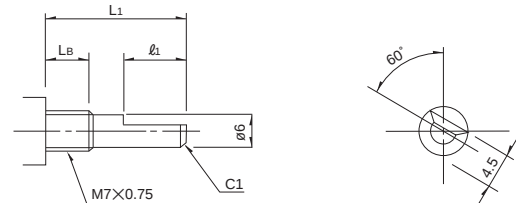


Shaft shown in full CCW position

● The serration angle shall be as shown.

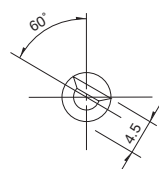
2) Flat type

Unit:mm



Detail dimensions

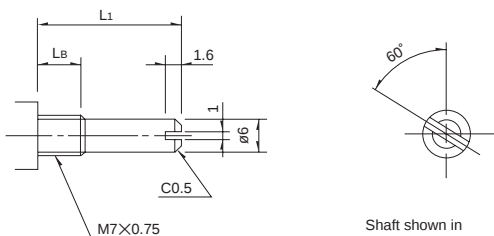
L ₁	L _B	l ₁
15	5	7
20	7	12
25	7	12
30	7	12



Shaft shown in full CCW position

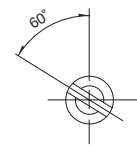
3) Slotted type

Unit:mm



Detail dimensions

L ₁	L _B
15	7
20	7
25	7
30	7



Shaft shown in full CCW position

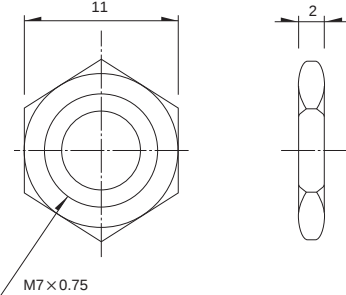
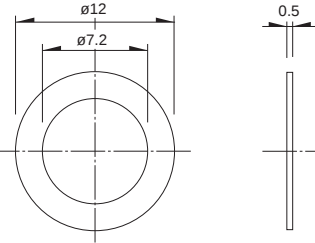
Note

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
	

Rotary
Potentiometers

Slide
Potentiometers

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 L₁ (mm)

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

Detent

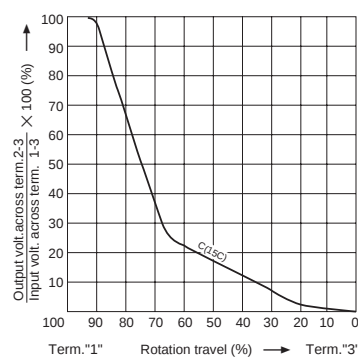
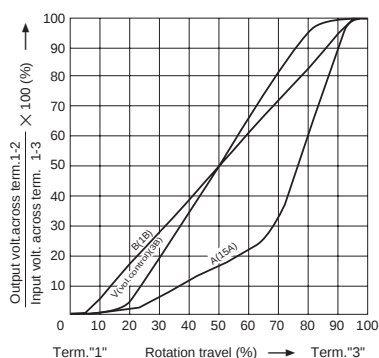
Code	Detent
C0	Without
C1	Center

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 (k Ω)	Code	Total resistance (k Ω)
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℃ to +70℃			
Operating life		15,000 cycles			
Available for automotive use		—	—	—	—
Life cycle (availability)					
Electrical performance	Total resistance (k Ω)	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.	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.	-70dB to -60dB 3dB max. -60dB to 0dB 2dB max.	-100dB to 0dB 3dB max. ※	-60dB to -40dB 5dB max. -40dB 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		—	—	—	—
Page		296	301	305	307

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Potentiometers Cautions	384
Potentiometers Measurement and Test Methods	386
Potentiometers Resistance Taper	388

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)

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