

# 27mm Size Metal Shaft Potentiometer

## RK27 Series

High-grade potentiometer featuring good control feel and superior features.

Rotary  
Potentiometers

Slide  
Potentiometers

Trimmer  
Potentiometers

Multi Control  
Devices

Position Sensors

Metal  
Shaft

Insulated  
Shaft

Knob  
Operating



### Features

- These highgrade potentiometers offer comfortable operation and possess high, precise features (gang error, resistance taper, etc.), ideal for audio applications.

### Applications

- Level controls for high grade audio sets
- Controls for audio mixing console

### Typical Specifications

Items	Specifications
Total resistance tolerance	$\pm 20\%$
Maximum operating voltage	30V AC
Total rotational angle	$300 \pm 3^\circ$
Rotational torque	5 to 35 mN·m
Operating life	15,000 cycles
Operating temperature range	-10°C to +70°C

### Recommended Products List

Number of resistor elements	Mounting direction	Products No.	Shaft type	Length of the shaft (mm)	Center detent	Total resistance (kΩ)	Resistance taper	Minimum packing unit (pcs.)	Drawing No.				
Single-unit	Horizontal type	RK2711120026	Slotted	25	31	100	15A	100	1				
		RK271111001T							2				
Dual-unit		RK27112A00AK		20	Without				3				
		RK27112A00CC		25									
		RK27112A0A16	Flat	20									
		RK27112A00B9		25									

### Note

Additional product specifications in response to those not included in the above recommended products are also available. For inquiries, contact our sales department.

For product specifications, see P.39  
For other detailed specifications, see P.48, 49

## Product Varieties

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

### Products Specification

Type	Model	Mounting height (mm)	Detent variety	Gang error
Single-shaft, single-unit	RK27111	12.5	Center 21 31 41	— —60dB to 0dB within 3dB —80dB to —60dB within 5dB possible depending on total resistance and taper.
Single-shaft, dual-unit	RK27112			
Single-shaft, quad-unit	RK27114			

Rotary Potentiometers

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### Total Resistance Variety

Total resistance (kΩ)	10	20	50	100	250
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Metal Shaft

Insulated Shaft

Knob Operating

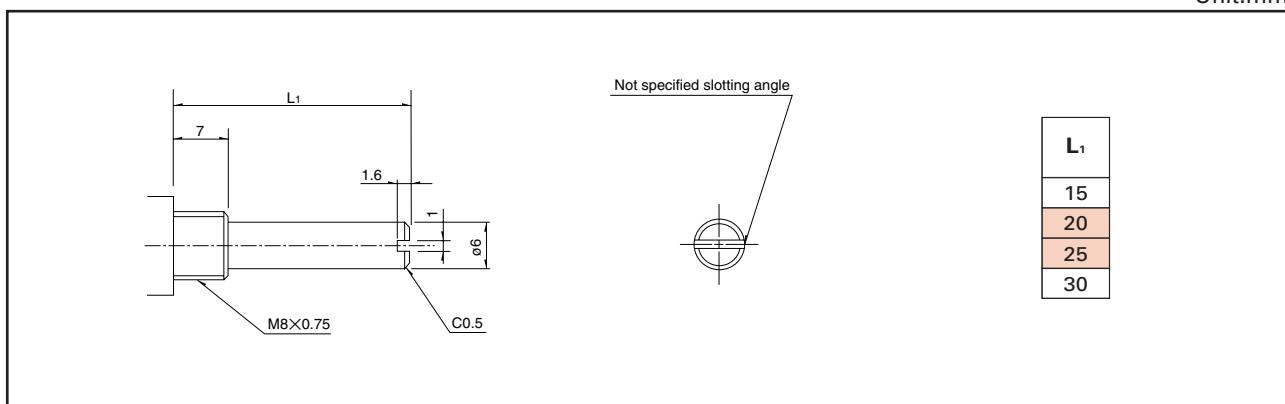
### Resistance Taper

Resistance taper	15A	3B
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### Dimensions of Shaft

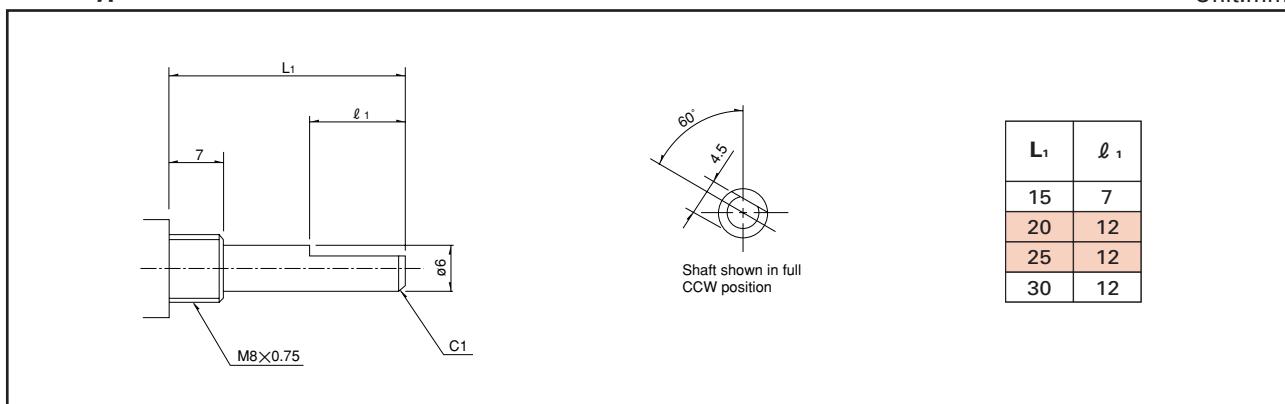
#### 1 Slotted type

Unit:mm



#### 2 Flat type

Unit:mm



For resistance taper, see P.40, 224  
For attached parts, see P.50

## Orders Other Than Recommended Products

Specify orders for varieties that are not listed in the Recommended Product List, referring to the following example.

### Sample part number

R K 2 7 1 1 2 A — S 2 5 — C 0 — A 1 0 4

#### Model type

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

#### Shaft type

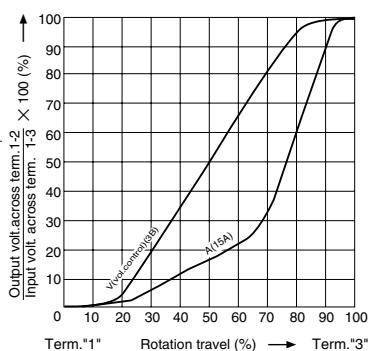
Code	Shaft type
F	Flat
S	Slotted

#### 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	Code	Detent
C0	Without	31	31
C1	Center	41	41
21	21		



#### Resistance taper

Code	Resistance taper
A	15A
V	3B

#### Total resistance

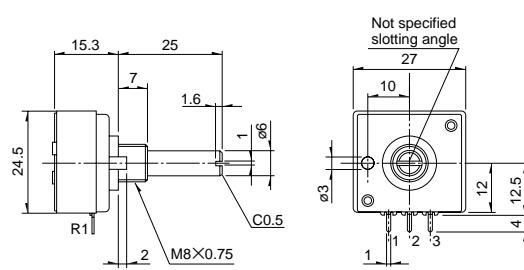
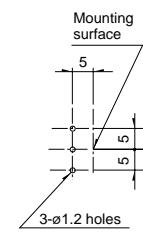
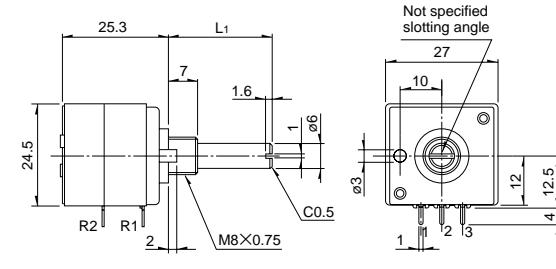
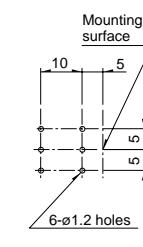
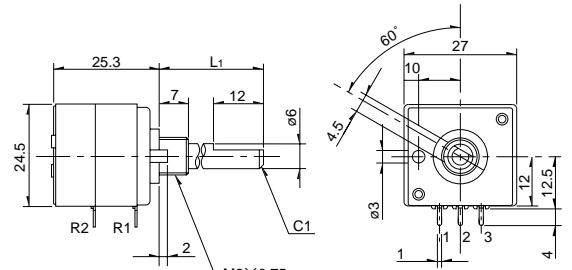
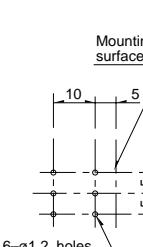
Code	Total resistance (kΩ)	Code	Total resistance (kΩ)
502	5	503	50
103	10	104	100
203	20	254	250

#### Note

Shows the specification recommended by us.

## Dimensions

Unit:mm

No.	Model	Style	PC board mounting hole dimensions (Viewed from mounting side)
1	Single-shaft, single-unit RK27111		
2	Single-shaft, dual-unit RK27112		
3	Single-shaft, dual-unit RK27112		

Rotary  
PotentiometersSlide  
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Devices

Position Sensors

Metal  
ShaftInsulated  
ShaftKnob  
Operating

## Products Specifications

Items	Model	RK20B	RK25T	RK271	RK501	
<b>Operating temperature range</b>	−10°C to +105°C		−10°C to +60°C		−10°C to +70°C	
<b>Electrical performance</b>	<b>Total resistance tolerance</b>	±20%				
	<b>Rated power</b>	0.06W	0.05W		0.1W	
	<b>Maximum operating voltage</b>	20V DC	5V DC	30V AC	150V AC	
	<b>Residual resistance</b>			$R \leq 10k\Omega$ 20Ω max. $10k\Omega < R \leq 50k\Omega$ 30Ω max. $50k\Omega < R$ 0.1% or less of nominal total resistance		
	<b>Maximum attenuation (Volume control)</b>			$5k\Omega \leq R < 10k\Omega$ 70dB min. $10k\Omega \leq R < 50k\Omega$ 80dB min. $50k\Omega \leq R < 100k\Omega$ 90dB min. $100k\Omega \leq R$ 100dB min.	120dB min.	
	<b>Insulation resistance</b>	100MΩ min. 250V DC		100MΩ min. 500V DC		
<b>Mechanical performance</b>	<b>Voltage proof</b>	1 minute 300V AC		1 minute 500V AC		
	<b>Total rotational angle</b>	360°	300±5°	$300\pm 3^\circ$ Motor-driven 300±5°	300±3°	
	<b>Rotational torque (mN·m)</b>	20 to 80	0.5 to 7.5	5 to 35 Motor-driven 15 to 45	13 to 43	
	<b>Stopper strength (N·m)</b>	—	0.5	0.9	1.5	
	<b>Push-pull strength</b>	100N max.			150N max.	
	<b>Vibration</b>	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				
<b>Endurance</b>	<b>Operating life</b>	350°C max. 3s max.				
		260±5°C 4±1s				
<b>Environmental test</b>	<b>Cold</b>	−10°C for 96h				
	<b>Long-term heat resistance</b>	+105°C for 96h	+70°C for 96h			
	<b>Moisture resistance</b>	+40±2°C, 90 to 95%RH for 96h				

Rotary Potentiometers

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Metal Shaft

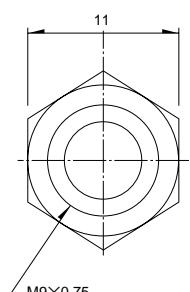
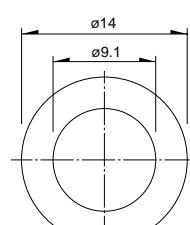
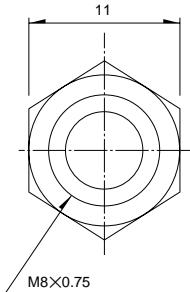
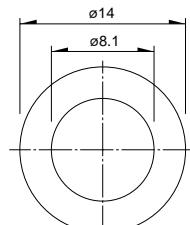
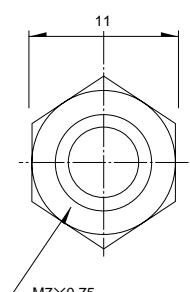
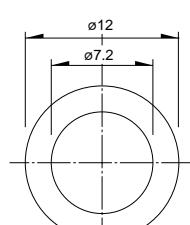
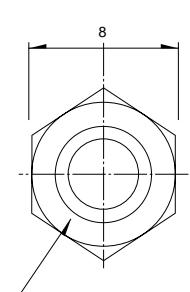
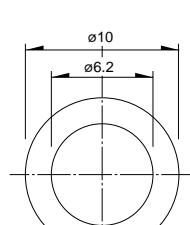
Insulated Shaft

Knob Operating

## Attached Parts

These parts are attached to the following products.

Unit:mm

Applicable products	Bearing screw diameter	Hexagonal nut	Flat washer
RK09L RK168 RK097	M9	 M9x0.75	 0.5
RK271	M8	 M8x0.75	 0.5
RK097 RK098 RK163	M7	 M7x0.75	 0.5
RK097 RK098	M6	 M6x0.75	 0.5

Customer: ALGE GERMAN DISTRIBUTER

No. KK-2005-9459

Date: Jun. 23, 2005

Attention:

Your ref. No.:

Your Part No.: 401618

## SPECIFICATIONS

ALPS' ;

MODEL: RK2711210A03  
( 10kMN )

Spec. No.:

Sample No.: E 3 8 7 0 3 5 2 0

### RECEIPT STATUS

RECEIVED

By Date

Signature

Name

Title

**ALPS**  
ALPS ELECTRIC CO., LTD.

Head Office

1-7, Yukigaya-otsuka-cho, Ota-ku, Tokyo, 145-8501 Japan  
Phone, +81(3)3726-1211

DSG'D

*J. Ohya*

APP'D

*S. Aizawa*

ENG. DEPT. DIVISION

Sales

24678

Q1003#03A (EA)

## S P E C I F I C A T I O N S

1. THIS SPECIFICATIONS APPLY TO RK2711210A03 POTENTIOMETER.

2. CONTENTS OF THIS SPECIFICATIONS.

W38703520

K272A004D

3. MARKING

• MARKING ON ALL UNITS

DATE CODE, RESIST. VALUE, TAPER

4. REMARKS

• FURNUSH PACKAGE

NUT:1 WASHER:1

• NOTES

• Silver printed patterns are coated with carbon as a protection against sulphurization.

• CAUTION

Regardless of the suggested applications of these products being introduced in the specifications, when using them for equipment and devices requiring a high degree of safety, respective manufacturers will please preserve safety of the planned equipment and devices by providing necessary protective circuits and redundancy circuits and reconfirm if safety is being duly preserved.

Products being introduced in the specifications have been designed and manufactured for applications to ordinary electronic equipment and devices such as the AV equipment, electric home appliances, office machines and communications equipment. Consequently, when employing these products for applications requiring a high degree of safety and reliability such as the medical equipment, aviation and aircraft equipment, space equipment and burglar alarm equipment, the using manufacturers will please thoroughly study the proprieties of these products for the planned applications.

Although we are exerting our best efforts to maintain the quality of these products, we cannot guarantee that they will never cause short circuiting and open circuitry.

Therefore, when designing an equipment or device with which the priority is given to the safety, you will please carefully study the influences to the whole equipment of a single function failure of Potentiometers and Encoders in advance to make out a fail-safe design providing.

## SPECIFICATIONS

## ELECTRICAL

1. Total resistance : 10k $\Omega$ (nominal)  $\pm$  20%

2. Rated voltage :  
The rated voltage shall be the voltage of A.C. (commercial freq-  
ency, effective value)  
Maximum working voltage : 30V A.C. (A.C. Use only )

3. Resistance taper : MN

4. Residual resistance between terminals  
between terminal 1 & 2 : 200 max.  
between terminal 2 & 3 : 200 max.

5. Sliding noise : Less than 47mV ( Measured by JIS C 6443. )  
(Neglected a impulsive noise at the c.w. and  
c.c.w. ends of position)

6. Insuration resistance : More than 100M $\Omega$  at 500V D.C.

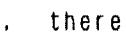
7. Withstand voltage : 500V A.C. for 1 minute.

8. Gang error : Not specified.

## MECHANICAL

**MECHANICAL**

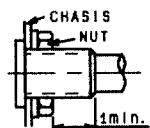
1. Total rotational angle :  $300^\circ \pm 3^\circ$
2. Rotational torque :  $8\sim35\text{mN}\cdot\text{m}$  ( Rotational speed :  $60^\circ/\text{sec}$  )
3. Stopper strength : No damage with an application of  $0.9\text{N}\cdot\text{m}$ .
4. Resistance to soldering heat :  
After soldering ( Less than  $350^\circ\text{C}$  and within 5sec ), there shall be no evidence of poor contact between resistance element and terminal, or any physical damages as a result of the test.
5. Bushing nut tightening strength : Tightening torque to be no greater than  $1.5\text{N}\cdot\text{m}$ .  
Pay attention to tighten as shown right.  
Otherwise, the strength may not be assured.
6. Push / pull strength :  
No damages with an application of push or pull force  $100\text{N}$  for 10 sec.



CHASIS

NUT

1mm



## ENDURANCE

1. Rotational life : 15,000 cycles min.

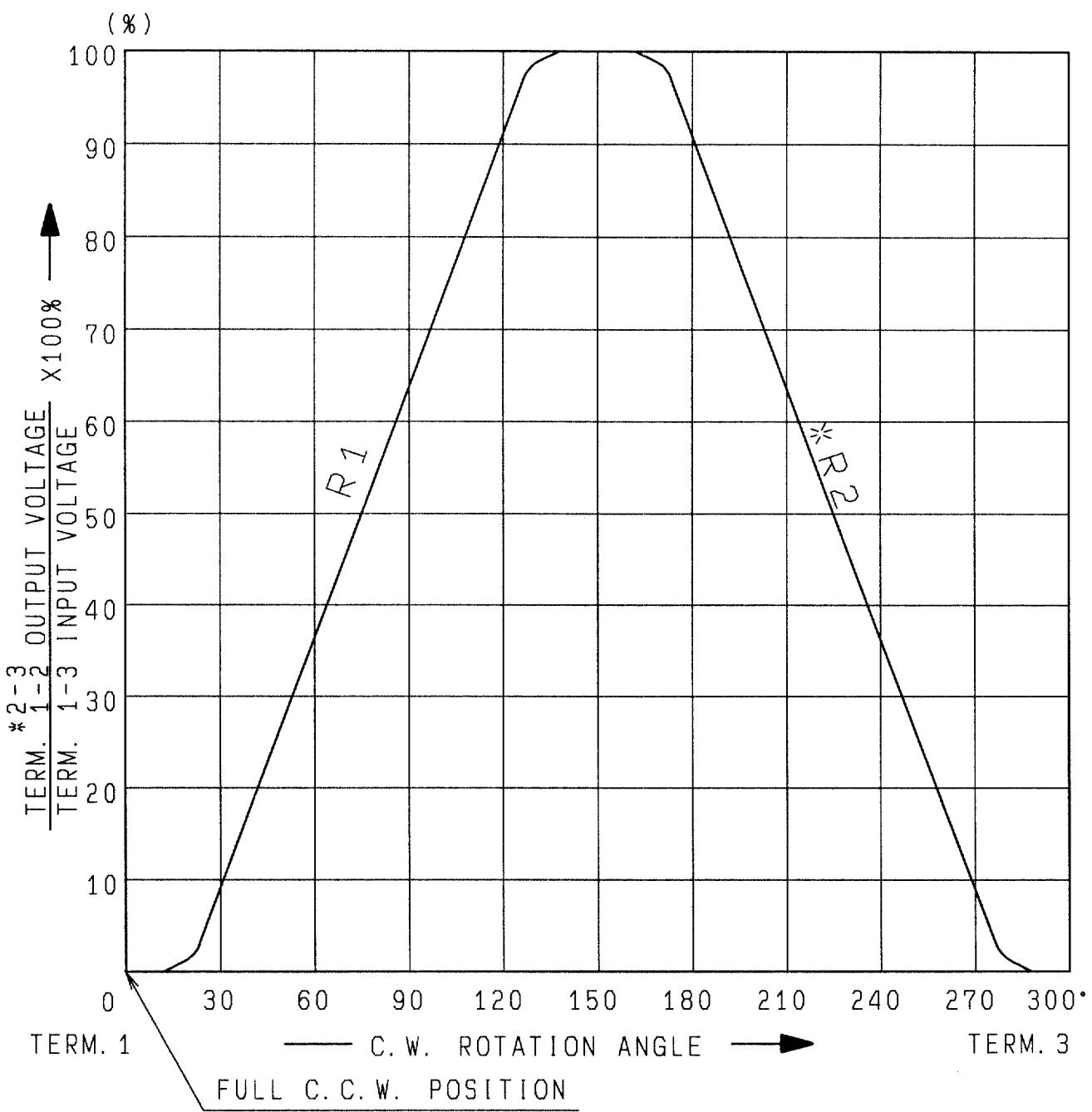
## NOTE

NOTE  
1. The items except above mentioned items shall meet or exceed JIS C 6443.  
2. This type is protected against sulfides.

					 <b>ALPS ELECTRIC CO., LTD.</b>			
					APPD.	CHKD.	DSGD.	TITLE
					NOV. 22, '96	NOV. 22, '96	NOV. 22, '96	W 38703520
					Y. Yoshioka	M. Satoh	Y. Saitoh	DOCUMENT NO.
SYMB	DATE	APPD	CHKD	DSGD				



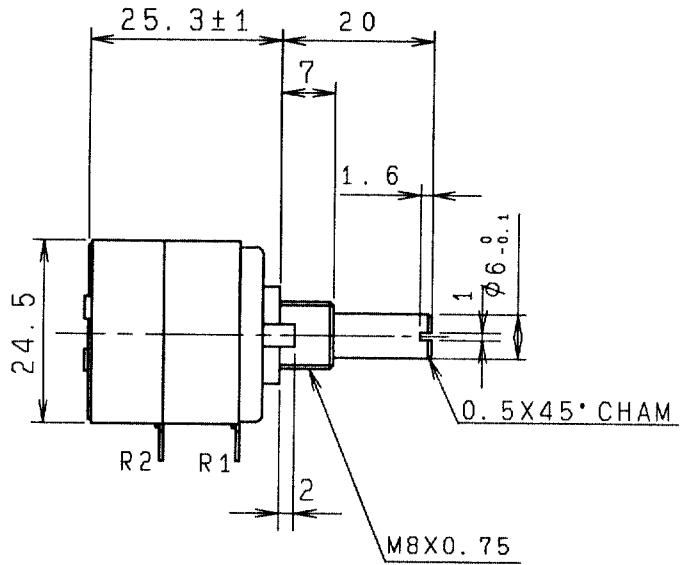
ALPS ELECTRIC CO., LTD  
1-7 YUKIGAYA OTSUKA-CHO OTA-KU TOKYO JAPAN



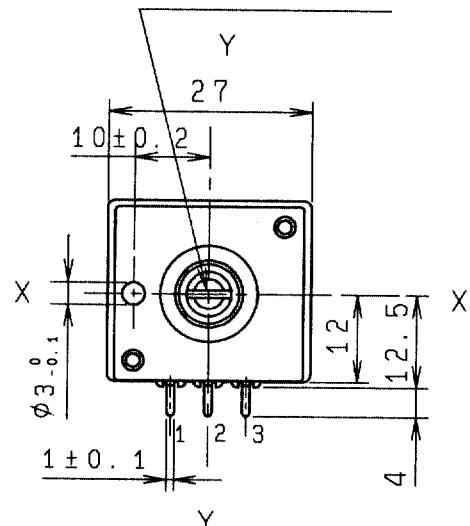
(R1)  
AT  $75 \pm 3^\circ$  C. W. SHAFT ROTATION FROM FULL C. C. W. POSITION VOLTAGE  
PERCENT SHALL FALL WITHIN THE LIMITS OF 40-60 PERCENT.  
AT  $150^\circ$  ----- 98-100%

\* (R2)  
AT  $75 \pm 3^\circ$  C. C. W. SHAFT ROTATION FROM FULL C. W. POSITION VOLTAGE  
PERCENT SHALL FALL WITHIN THE LIMITS OF 40-60 PERCENT.  
AT  $150^\circ$  ----- 98-100%

				APPD.	CHKD.	DSGD.	NAME
				NOV. 15, '96		NOV. 15, '96	RESISTANCE TAPER ( MN )
				S. Sasaki		K. Tuunanen	DOCUMENT NO.
SYMB	DATE	APPD	CHKD	DSGD			W 38703520

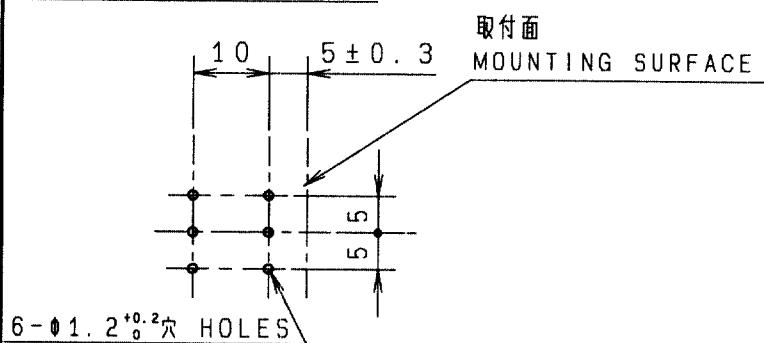


スリット角度は任意とする  
SHAFT SLOT IS  
OPTIONAL ANGLE

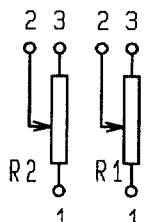


取付穴寸法図 許容差±0.1  
(挿入側から見た図)

P. W. B. MOUNTING DETAIL  
TOLERANCE  $\pm 0.1$   
VIEWED FROM MOUNTING SIDE



## (回路図) CIRCUIT



指定なき部分の許容差 TOLERANCES UNLESS OTHERWISE SPEC	
$L \leq 10$	$\pm 0.3$
$10 < L < 100$	$\pm 0.5$
$100 \leq L$	$\pm 0.8$
角度 ANGULAR DIMENSION	$\pm 5^\circ$

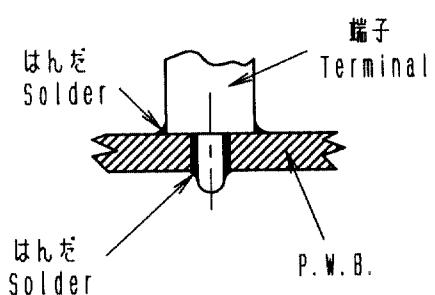
				ANGULAR DIMENSION	
PART NO.	NAME	MATERIAL NAME / CODE		FINISH	
<b>ALPS ELECTRIC CO., LTD.</b>					
		DSGD. セッケイ Y. SAITO 96-12-10	SCALE 1:1	NO. W38703520	
		CHKD. Y. OHYA 96-12-10		TITLE 27形1軸2連VR組立図	
		APPD. M. SATOH 96-12-10	UNIT mm	DOCUMENT NO. K272A004D	
SYMB	DATE	APPD	CHKD	DSGD	

< はんだ付け時のご注意事項 >

図のようにP. W. B.の上面に はんだ付けをする配線は、  
お避け下さい。

Caution for soldering

Please avoid soldering on upper surface of P.W.B. as shown



					<b>ALPS ELECTRIC CO., LTD.</b>			
					APPD.	CHKD.	DSGD.	TITLE
					Apr. 14, '93	Apr. 14, '93	Apr. 14, '93	W 38703520
					S. Aizawa	M. Satoh	Y. Satoh	DOCUMENT NO.
SYMB	DATE	APPD	CHKD	DSGD				