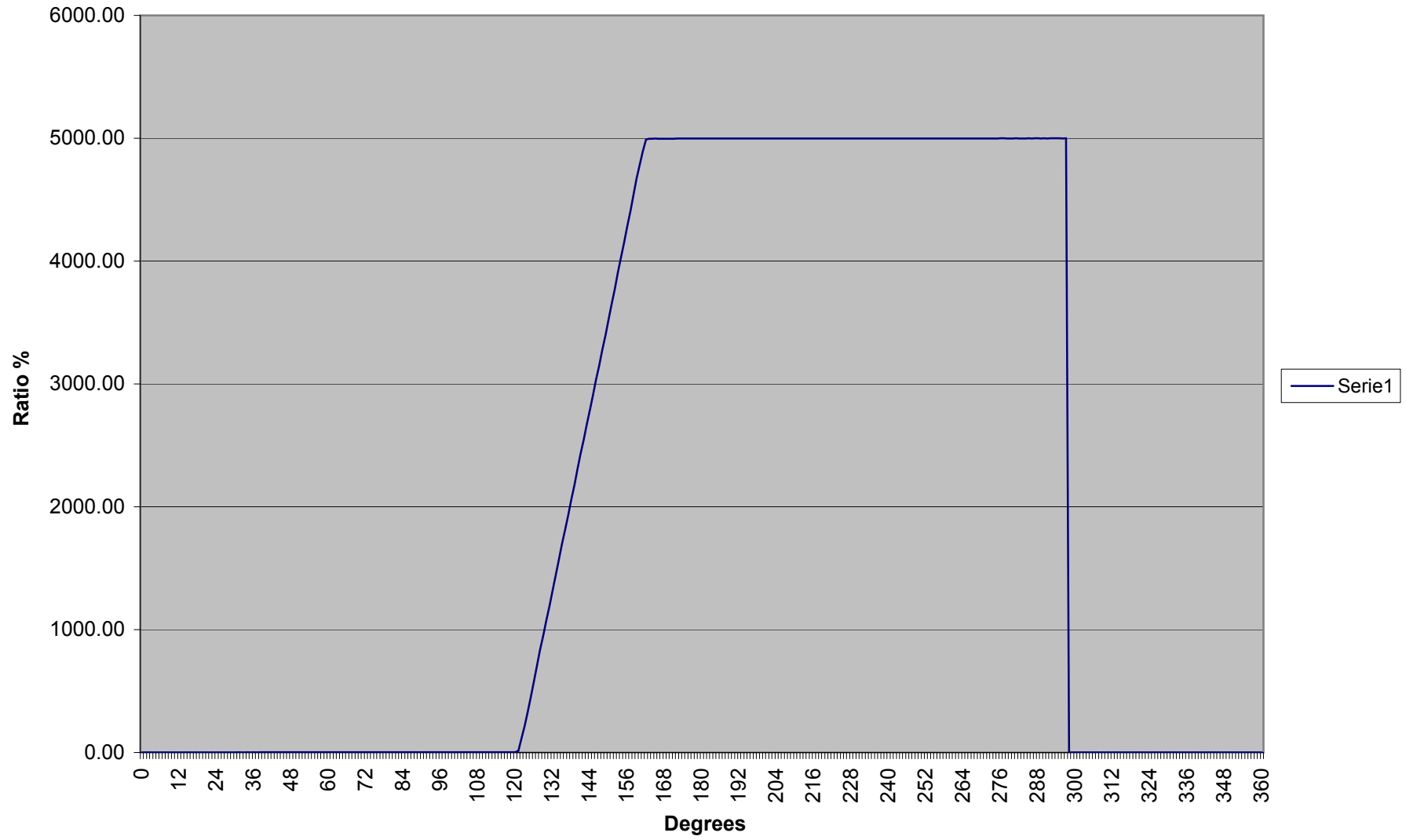


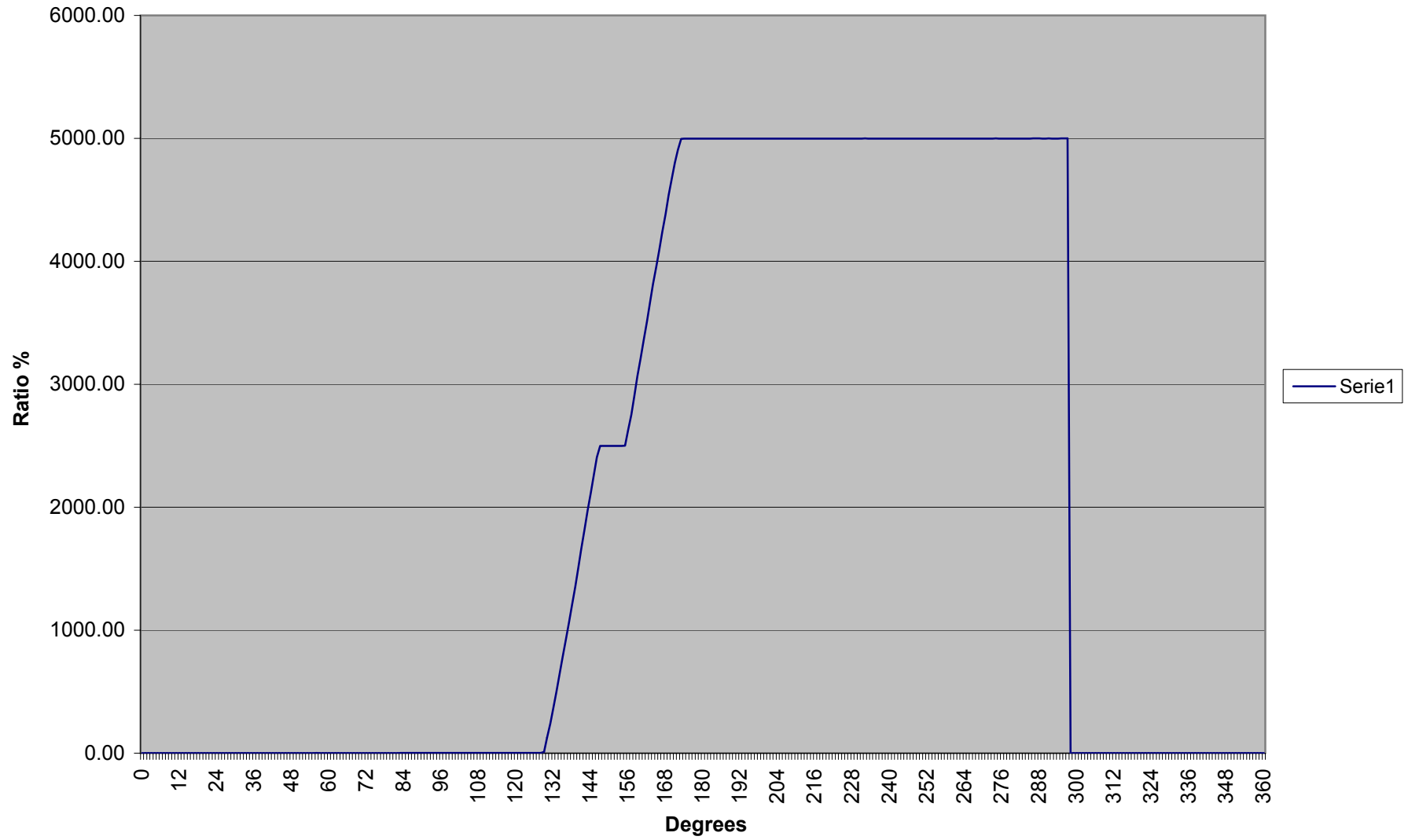


### RVQ24YS08-03 50,8SB502



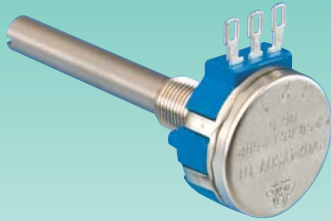


### RVQ24YS07 50,8SB502



# Long Life POTENTIOMETERS

## RVQ24YS series



RVQ24YS07 series



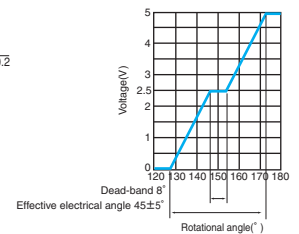
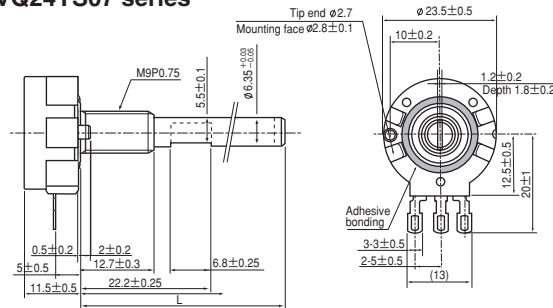
RVQ24YS08 series



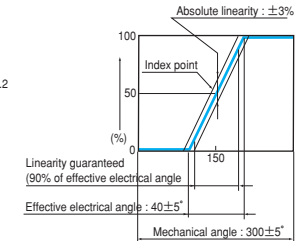
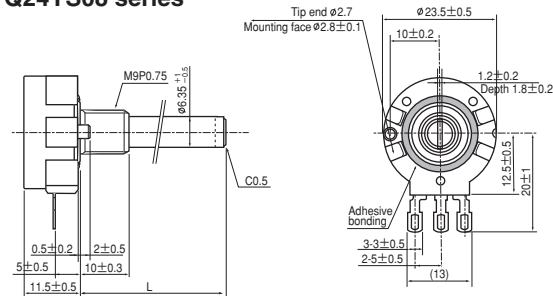
● There are various length of shafts available.

### Dimensions

#### RVQ24YS07 series



#### RVQ24YS08 series



### Key Features

- Long life
- Linearity
- Robust (Stainless shaft)
- Waterproof

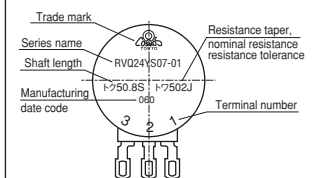
### Potential Applications

- Electric wheelchair
- Manual controls (Throttle, Joystick)
- Electric vehicles
- Personal mobility
- Off road vehicles, Golf cart, ATV's (All Terrain Vehicles)

### Specifications

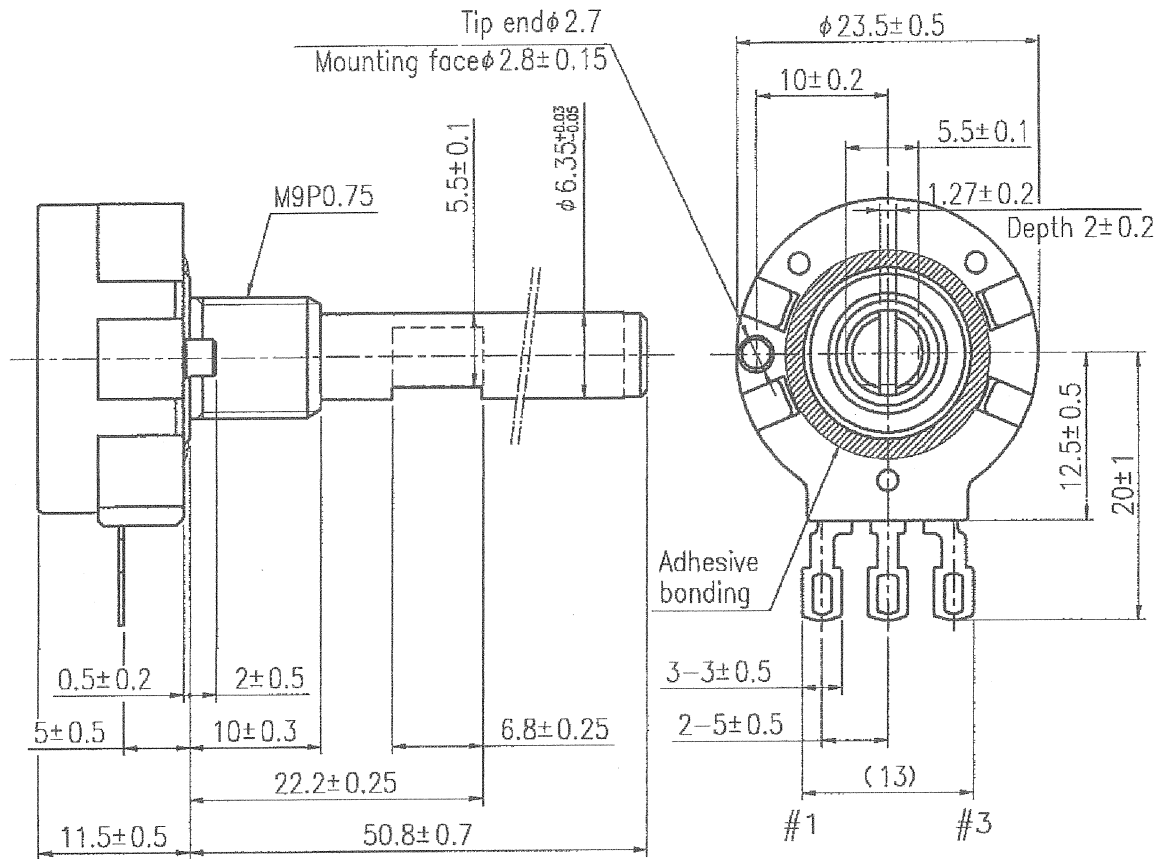
Rotational Life	2 million cycles
Electrical Travel	$45^\circ \pm 5\%$ , $40^\circ \pm 5\%$
Mechanical Adjustment Travel	$300^\circ \pm 5\%$
Size & Construction	$\phi 24$ mm / 10 mm, 12.7 mm $\phi 24$ mm / Bushing 10 mm, 12.7 mm / Waterproof
Resistance Range	5k $\Omega$ Deadband of $8^\circ$ optionally available for $45^\circ$ type
Resistance Tolerance	$\pm 10\%$
Power Rating	0.15 W at $40^\circ\text{C}$ , 0W at $85^\circ\text{C}$
Operating Temp. Range	$-10^\circ\text{C}$ to $+85^\circ\text{C}$
Waterproof	IP64

### Marking on rear side

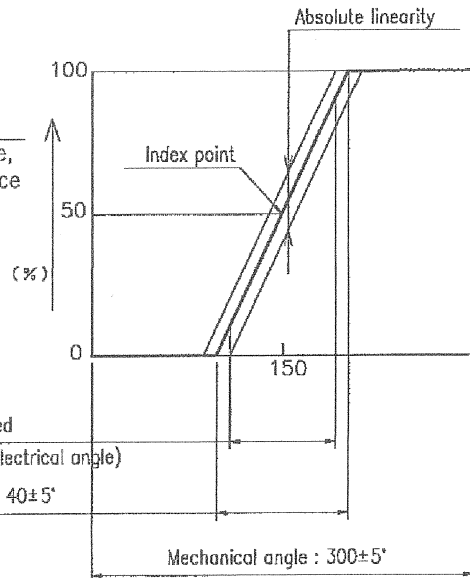
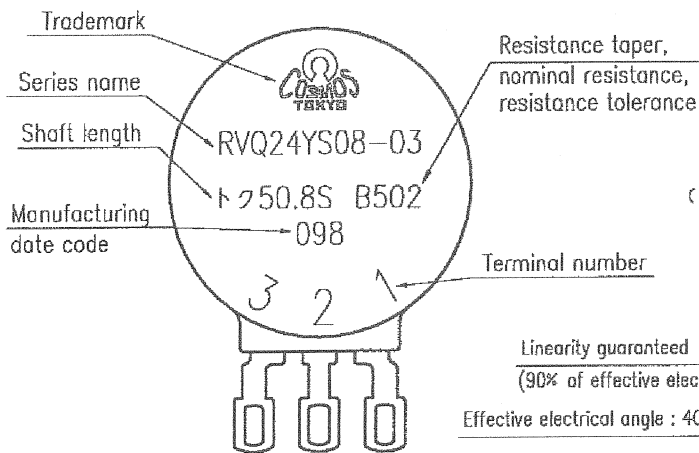


Model : RVQ24YS08-03

Outline dimensions



Marking on rear side

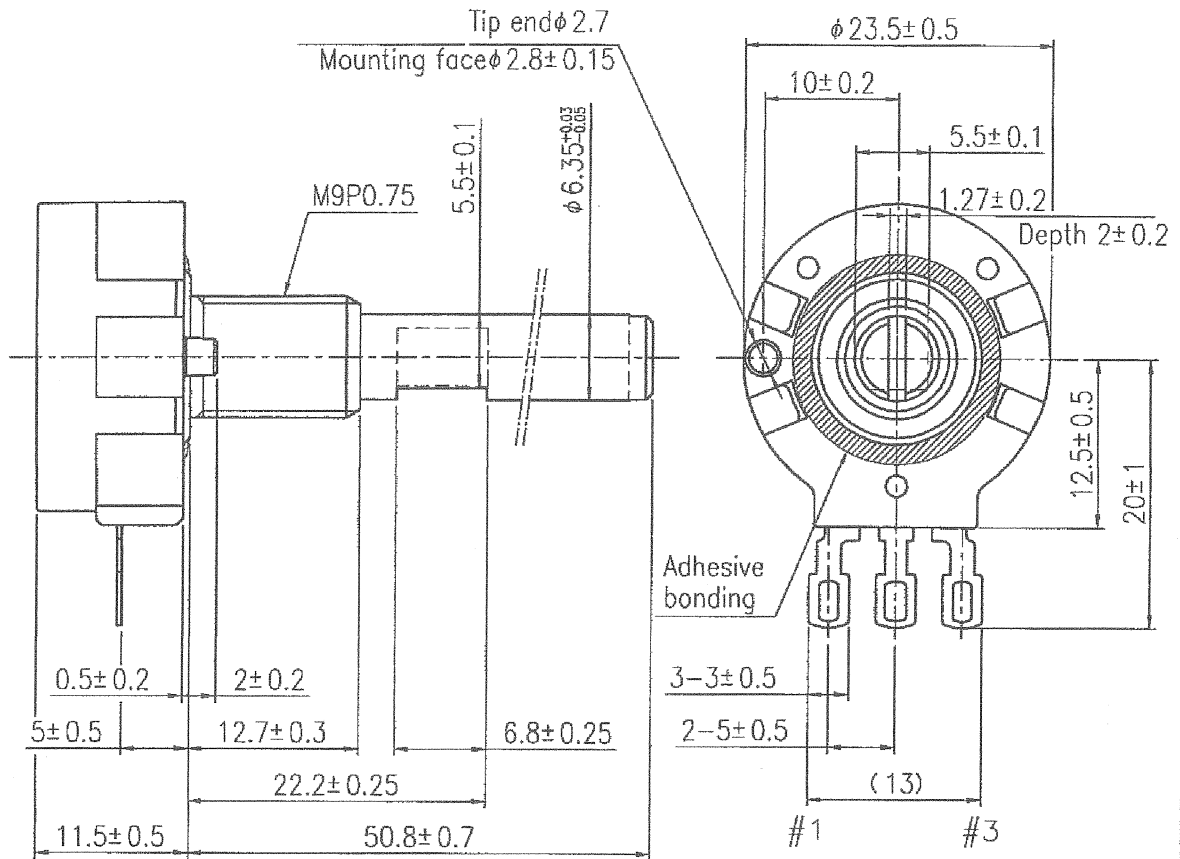


Customer engineering			Date : Aug. 20, 2009	Sheet : 1 of 1
Approved	Checked	Drawing	Scale : 2/1	Unit : mm
<i>T. Kubota</i>	<i>H. Kato</i>	<i>J. Kuroki</i>	Spec. No. A-32837	Rev.

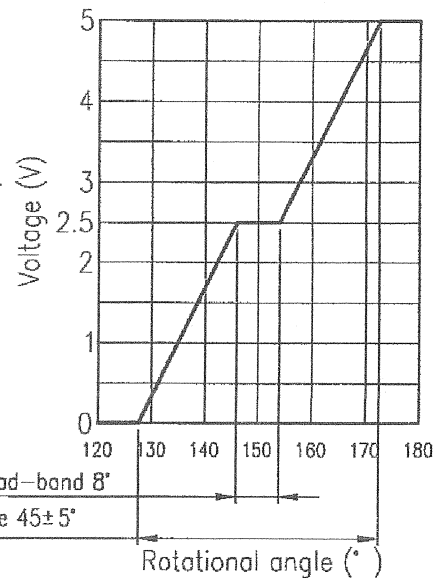
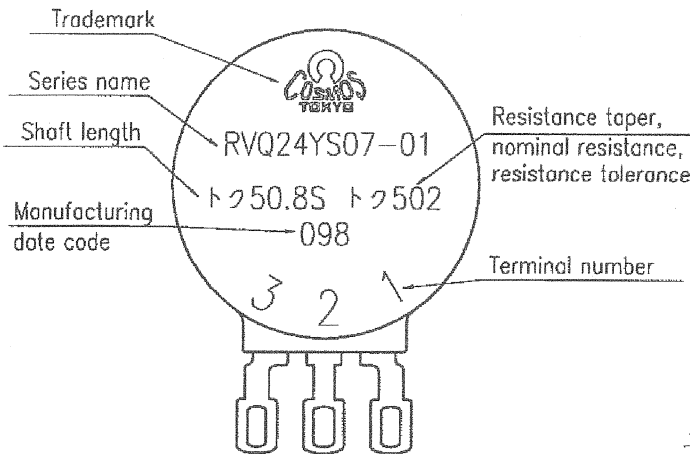
Tokyo Cosmos Electric Co., Ltd.

Model : RVQ24YS07-01

Outline dimensions



Marking on rear side



Customer engineering			Date : Aug. 20, 2009	Sheet : 1 of 1
Approved	Checked	Drawing	Scale : 2/1	Unit : mm
			Spec. No.	Rev.
			A-32836	

Tokyo Cosmos Electric Co., Ltd.

## Long Life 24mm Diameter, Single-Turn, Carbon Panel Controls



### Features

- Long life 24mm diameter, single-turn industrial panel controls
- Carbon film element
- Single unit, single shaft
- High quality, 2,000,000 cycle rotational life
- Low cost
- Independent linearity,  $\pm 3\%$  max.
- Metal shaft and bushing
- Linear taper
- 6mm diameter shafts in slot, flat or round end styles
- Standard 15mm or 20mm shaft length
- Panel mount style
- Right angle ear-lug terminals
- Continuous rotation units available as special order

### Specifications

#### Electrical

<b>Standard Resistance Range</b> .....	1k $\Omega$ to 100k $\Omega$
<b>Resistance Tolerance</b> .....	$\pm 10\%$ standard
<b>End Resistance</b> .....	3 $\Omega$ max.
<b>Resistance Taper</b> .....	B = linear
<b>Independent Linearity</b> .....	$\pm 3\%$ max.
<b>Peak Noise (C.R.V.)</b> .....	3% max.
<b>Power Rating</b> .....	0.5 watt at +40°C, 0 watt at +85°C
<b>Maximum Input Voltage</b> .....	200VDC or power rating, whichever is smaller
<b>Insulation Resistance</b> .....	100M $\Omega$ minimum at 1,000VDC
<b>Dielectric Strength</b> .....	1,000VAC, 1 minute
<b>Adjustment Travel</b> .....	280°

#### Mechanical

<b>Mechanical Travel</b> .....	300° $\pm$ 5°
<b>Shaft Torque</b> .....	100 gf·cm (1.386 oz·in) max.
<b>Stop Strength</b> .....	9 kgf·cm (124.76 oz·in) min.
<b>Shaft Strength (push)</b> .....	125 N (12.75 kgf) min.
<b>Shaft Strength (tensile)</b> .....	125 N (12.75 kgf) min.
<b>Shaft End Play</b> .....	$\pm 0.4 \times$ (shaft length/30) mm max.
<b>Mounting Nut Torque</b> .....	15 kgf·cm (207.94 oz·in) min.
<b>Marking</b> .....	Model type, taper, resistance code, shaft type, terminal identification, date code

#### Environmental

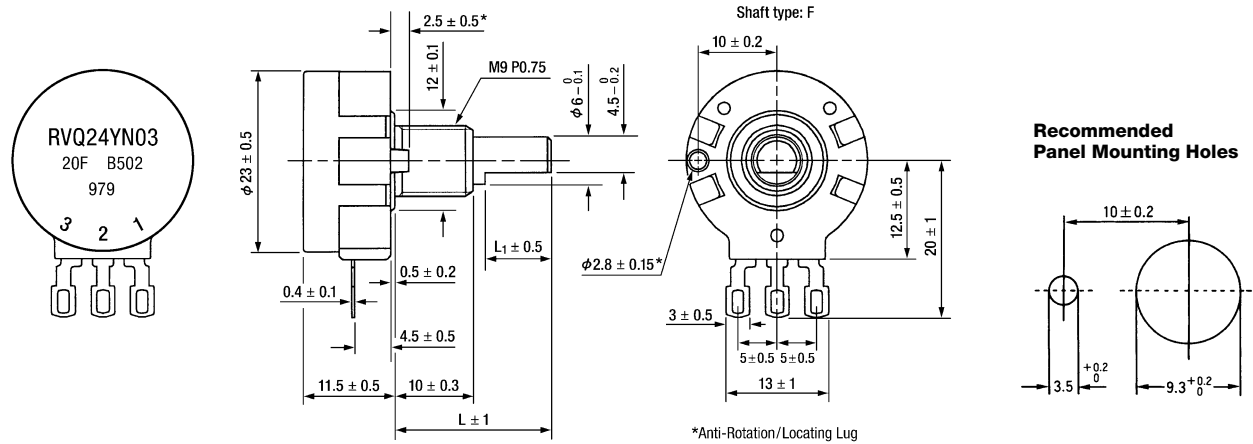
<b>Temperature Range</b> .....	-10°C to +85°C
<b>Temperature Characteristics</b> .....	+80°C, 5 hours $\Delta T/R \leq \pm 5\%$
<b>Temperature Cycle</b> .....	-10°C, +80°C, 30 minutes each, 5 cycles $\Delta T/R \leq \pm 10\%$
<b>Load Life</b> .....	+40°C, 0.5 watt, 1,000 hours $\Delta T/R \leq \pm 10\%$
<b>Moisture and Load Life</b> .....	+40°C, 90-95% RH, 0.5 watt, 500 hours $\Delta T/R \leq \pm 20\%$
<b>Vibration</b> .....	10-55Hz, 1.5mm amplitude, 3 directions $\Delta T/R \leq \pm 5\%$
<b>Soldering Heat Resistance</b> .....	350°C $\pm$ 5°C, 3 seconds $\Delta T/R \leq \pm 2\%$
<b>Rotational Life</b> .....	2,000,000 cycles without load $\Delta T/R \leq \pm 15\%$

$\Delta T/R$  = Total Resistance Change

Note: A long life panel control should only be used in a circuit as a potentiometer (3-terminal voltage divider).

Unit: mm

**RVQ24YN03**  
**Panel Mount, Single Unit, Single Shaft**  
**Right Angle Ear-Lug Terminals**



**Part Numbering System**

**RV Q 24 Y N 03 15 S B 104 K**

NOTE: FMS = From Mounting Surface

- **Resistance Tolerance: K** =  $\pm 10\%$  (standard).
- **Resistance Code:** Expressed in ohms. A three digit code where the first two digits are significant figures, and the third digit indicates the number of zeros that follow these figures (i.e., 100 = 10 $\Omega$ ; 101 = 100 $\Omega$ ; 102 = 1,000 $\Omega$ ; 103 = 10,000 $\Omega$ ; 104 = 100,000 $\Omega$ ). See table for standard resistance values.
- **Resistance Taper: B** = Linear.
- **Shaft End Style: S** = Slotted.  
**F** = Flatted.  
**R** = Round.
- **Standard Shaft Length: 15** = 15mm FMS.  
**20** = 20mm FMS.  
 Up to 50mm shaft length available (special order).
- **Design Type: 03** = Design Variation of 24mm Size.
- **Style: N** = Panel Mount, Single Unit, Single Shaft, Right Angle Ear-Lug Terminals.
- **Operating Temperature Range: Y** =  $-10^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$ .
- **Size: 24** = 24mm Diameter.
- **Rotational Life: Q** = Long Life, 2,000,000 cycles.
- **TOCOS Series Name: RV** = Carbon Film Element.

**Standard Resistance Values and Part Numbering Codes**

**Standard Nominal Total Resistance Values and Part Numbering Codes**

Resistance ( $\Omega$ )	Code	Resistance ( $\Omega$ )	Code	Resistance ( $\Omega$ )	Code
1,000	102	10,000	103	100,000	104
2,000	202	20,000	203		
5,000	502	50,000	503		

Refer to Shaft End Styles Specifications and Hardware Specifications for details and availability.  
 For additional information, refer to Guidelines and Precautions for Using Panel Controls.

## 【高回転寿命形ポテンシオメータ】

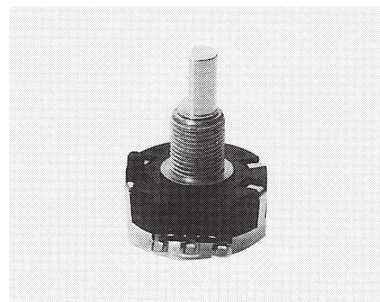
# 200万回転

# LIFE : 2,000,000 CYCLES TYPE RVQ24YN03

### ■特徴

#### FEATURES

- 高性能（回転寿命：200万回、直線性：±3%）でローコスト対応。
- 計測器等、機器のサーボコントロール用の位置、角度検出に最適です。
- 回転角：エンドレス対応可能。
- High quality type（Rotation life：2 million cycles, Independent linearity：±3%Max.） and low-cost type.
- The product will serve as a part most suited to the detection of position and angle of robot and servocontrol of instruments and other equipment.
- The product with endless type rotational angle may be manufactured.



RoHS 指令対応 RoHS compliant

### ■品名構成

#### PART NUMBER COMPOSITION

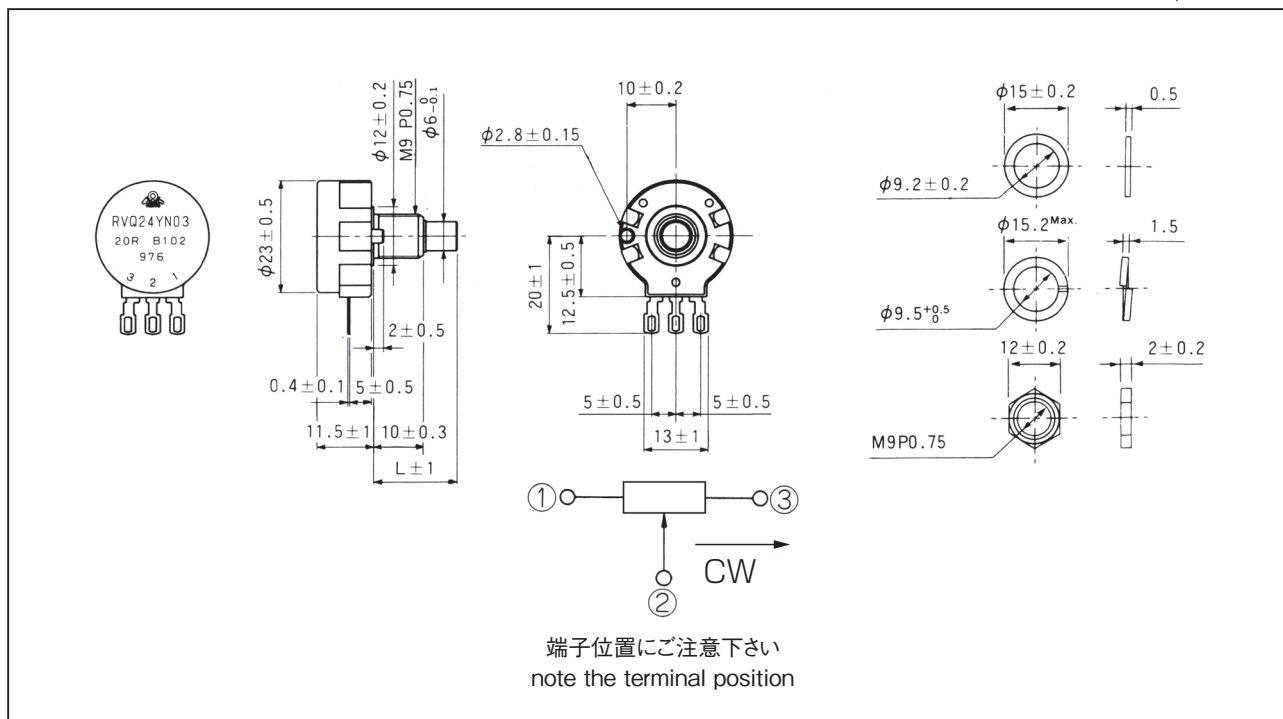
RV    Q    24    Y    N    03    15    S    B    103

- |   |  |
|---|--|
| ①種別（炭素系混合体可変抵抗器）<br>Type：Carbon film type | ⑧シャフト形状Shaft Type<br>S：溝形 Slot<br>F：平形 Flat<br>R：丸形 Round                    |
| ②高寿命記号<br>Long Life Type Code             | ⑨抵抗変化特性 Resistance Taper<br>B：直線形 Linear                                     |
| ③大きさ Size φ24mm                           | ⑩公称全抵抗値（3桁表示）<br>Nominal total resistance Value Code（3 digits）<br>103：10000Ω |
| ④使用温度範囲 Operating Temperature range       |  |
| ⑤標準形（1軸1連） Normal Type                    |  |
| ⑥品名番号 Type name                           |  |
| ⑦シャフト長 Shaft Length<br>15：15mm            |  |

### ■外形寸法

#### OUTLINE DIMENSIONS

(Unit : mm)





## 電気的特性

### ELECTRICAL CHARACTERISTICS

全抵抗値範囲 Total resistance range	5k $\Omega$ , 10k $\Omega$ (標準)
全抵抗値許容差 Total resistance tolerance	$\pm 10\%$
残留抵抗値 End resistance	3 $\Omega$ 以下 3 $\Omega$ Max.
抵抗変化特性 Resistance taper	B (直線型) B (Linear)
摺動雑音 (接触抵抗変化) Contact resistance variation	公称全抵抗値の3%以下 3% Max.
定格電力 Power rating	0.5W/40 $^{\circ}$ C 0W/85 $^{\circ}$ C
最高使用電圧 Max. input voltage	DC200V又は定格電力の小なる方以下 200VDC or power rating, whichever is smaller
電気的有効回転角 Electrical angle	280 $^{\circ}$
絶縁抵抗 Insulation resistance	100M $\Omega$ Min./DC 1000V
耐電圧 Dielectric strength	AC 1000V/1 Minute
使用温度範囲 Operating temp. range	-10 $^{\circ}$ C~+85 $^{\circ}$ C
単独直線性 Independent linearity	$\pm 3\%$ Max.

## 機械的特性

### MECHANICAL CHARACTERISTICS

機械的回転角度 Mechanical angle	300 $^{\circ}$ $\pm$ 5 $^{\circ}$
回転トルク Shaft torque	4.9mN $\cdot$ m Max (50gf $\cdot$ cm)
ストップ強度 Stop strength	0.9N $\cdot$ m Min (9kgf $\cdot$ cm Min.)
シャフト強度 (押し強度) Shaft strength (push)	125N Min. (12.75kgf)
シャフト強度 (引っ張り強度) Shaft strength (tensile)	125N Min. (12.75kgf)
シャフト先端の横ガタ Shaft wobble	$\pm 0.4 \times$ (shaft length/30) mm Max.
取付ナット締め付け強度 Bushing nut tightening torque	1.47 N $\cdot$ m Max. (15kgf $\cdot$ cm)

## 環境特性

### ENVIRONMENTAL CHARACTERISTICS

試験項目 Test item	試験条件 Test condition	規格 Standard
はんだ耐熱性 Soldering heat	350 $^{\circ}$ C $\pm$ 5 $^{\circ}$ C, 3 sec.	$\Delta R/R \leq \pm 2\%$
温度特性 Temperature characteristic	+80 $^{\circ}$ C, 5 hours	$\Delta R/R \leq \pm 5\%$
負荷寿命 Load life	+40 $^{\circ}$ C, 0.5W 1,000 hours	$\Delta R/R \leq \pm 10\%$
耐湿負荷寿命 Moisture and load life	+40 $^{\circ}$ C, 90~95%RH 0.5W, 500 hours	$\Delta R/R \leq \pm 20\%$
温度サイクル Temperature cycle	-10 $^{\circ}$ C, +80 $^{\circ}$ C ea. 30 minutes 5 cycles	$\Delta R/R \leq \pm 10\%$
耐振性 Vibration	10~55Hz, 振幅幅 (amplitude) 1.5mm 3 directions	$\Delta R/R \leq \pm 5\%$
回転寿命 Rotation life	2,000,000 cycles, without rating load	$\Delta R/R \leq \pm 15\%$

## 【高回転寿命形ポテンシオメータ】

50万回転

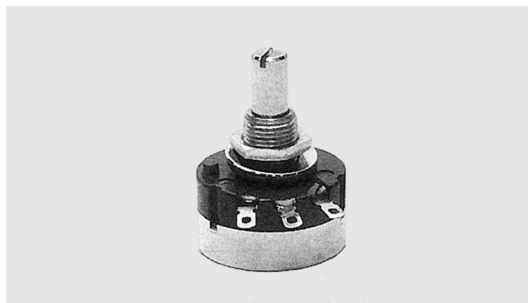
LIFE : 500,000 CYCLES TYPE

# RVQ24YN

### ■特徴

#### FEATURES

- 自動車、電子制御機器用の位置、角度検出に最適です。
- The product will serve as a part most suited to the detection of position and angle for electronic automobile controller.



RoHS 指令対応 RoHS compliant

### ■品名構成

#### PART NUMBER COMPOSITION

RV   Q   24   Y   N   15   S   B   103  
 ①   ②   ③   ④   ⑤   ⑥   ⑦   ⑧   ⑨

①種別（炭素系混合体可変抵抗器）

Type : Carbon film Type

②高寿命記号

Long Life Type Code

③大きさ Size φ24mm

④使用温度範囲 Operating Temperature range

⑤標準形（1軸1連） Normal Type

⑥シャフト長 Shaft length

15 : 15mm

⑦シャフト形状 Shaft Type

S : 溝形 Slot

F : 平形 Flat

R : 丸形 Round

⑧抵抗変化特性 Resistance Taper

B : 直線形 Linear

⑨公称全抵抗値（3桁表示）

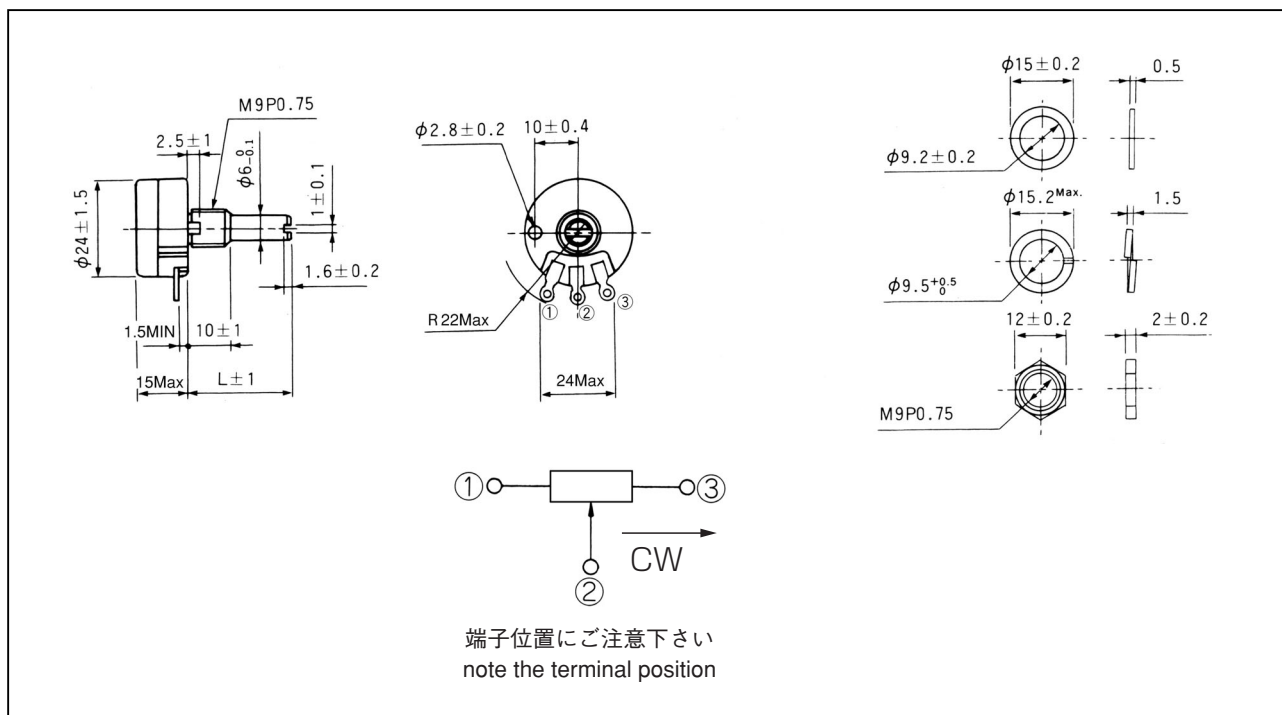
Nominal total resistance Value Code（3 digits）

103 : 10000Ω

### ■外形寸法

#### OUTLINE DIMENSIONS

(Unit : mm)



## ■電気的特性

### ELECTRICAL CHARACTERISTICS

全抵抗値範囲 Total resistance range	1k $\Omega$ ~100k $\Omega$
全抵抗値許容差 Total resistance tolerance	$\pm 10\%$
残留抵抗値 End resistance	3 $\Omega$ 以下 3 $\Omega$ Max.
抵抗変化特性 Resistance taper	B (直線型) B (Linear)
摺動雑音 (接触抵抗変化) Contact resistance variation	公称全抵抗値の3%以下 3%Max.
定格電力 Power rating	0.25W/40 $^{\circ}$ C 0W/80 $^{\circ}$ C
最高使用電圧 Max. input voltage	DC158V又は定格電力の小なる方以下 158VDC or power rating, whichever is smaller
電気的有効回転角 Electrical angle	280 $^{\circ}$
絶縁抵抗 Insulation resistance	100M $\Omega$ MIN./DC 1000V
耐電圧 Dielectric strength	AC 1000V/ 1 Minute
使用温度範囲 Operating temp. range	-10 $^{\circ}$ C~+85 $^{\circ}$ C
単独直線性 Independent linearity	$\pm 3\%$ Max.

## ■機械的特性

### MECHANICAL CHARACTERISTICS

機械的回転角度 Mechanical angle	300 $^{\circ}$ $\pm 5^{\circ}$
回転トルク Shaft torque	9.8mN $\cdot$ m Max. (100gf $\cdot$ cm)
ストップ強度 Stop strength	0.9N $\cdot$ m Min. (9kgf $\cdot$ cm Min.)
シャフト強度 (押し強度) Shaft strength (push)	125N Min. (12.75kgf)
シャフト強度 (引っ張り強度) Shaft strength (tensile)	125N Min. (12.75kgf)
シャフト先端の横ガタ Shaft wobble	$\pm 0.4 \times$ (shaft length/30) mm Max.
取付ナット締め付け強度 Bushing nut tightening torque	1.47N $\cdot$ m Max. (15kgf $\cdot$ cm)

## ■環境特性

### ENVIRONMENTAL CHARACTERISTICS

試験項目 Test item	試験条件 Test condition	規格 Standard
はんだ耐熱性 Soldering heat	350 $^{\circ}$ C $\pm 5^{\circ}$ C, 3 sec.	$\Delta R/R \leq \pm 2\%$
温度特性 Temperature characteristic	+80 $^{\circ}$ C, 5 hours	$\Delta R/R \leq \pm 10\%$
負荷寿命 Load life	+40 $^{\circ}$ C, 0.5W 1,000 hours	$\Delta R/R \leq \pm 10\%$
耐湿負荷寿命 Moisture and load life	+40 $^{\circ}$ C, 90~95%RH 0.5W, 500 hours	$\Delta R/R \leq \pm 20\%$
温度サイクル Temperature cycle	-10 $^{\circ}$ C, +80 $^{\circ}$ C ea. 30 minutes 5 cycles	$\Delta R/R \leq \pm 10\%$
耐振性 Vibration	10~55Hz, 振幅幅 (amplitude) 1.5 mm 3 directions	$\Delta R/R \leq \pm 5\%$
回転寿命 Rotation life	500,000 cycles, without rating load	$\Delta R/R \leq \pm 15\%$