1-TURN POTENTIOMETER

(Precision 1-turn, Wirewound & Conductive Plastic Element)

SAKAE 1-turn Potentiometers are fully continuous rotation potentiometers without stopper and are highly reliable in offering an excellent quality as well as a prolonged rotating life. There are 2 kinds of resistive element available in this series: Wirewound **(CP)** and Conductive Plastic **(FCP-A)** elements. You can easily make a best selection between these versions to your versatile application programs ranging from hand-operating use to servo applications.

CP or **FCP-A** is respectively contained in an aluminum housing case processed by electrolytic corrosion-proof plating in silver color **(CP)** and black color **(FCP-A)** with performances and dimensions according to U.S. MIL, and V.R.C.I. Standards. They are light in weight and small in size as well as of rigid construction. Selection of any desired item is possible among a variety of standard models, of which diameters are variable between 12mm and 50mm.

THE NOMENCLATURE OF SAKAE 1-TURN POT. SERIES

S FCP 30 A G - ○○○○

●Special Specifications
S means the potentiometer with special mechanical specifications not applicable to our standard.

●Type
FCP means continuous, 1-turn, linear conductive plastic element type potentiometer. According to the kinds of resistive elements incorporated, there are 2 kinds:
CP .....Wirewound resistive element type (A is not given.)
FCP-A ..... Conductive plastic resistive element type.

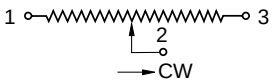
●4 digits branch number
to be used for specific requirements.

●Number of Gangs
G means 2 ganged potentiometer on the same axle. The potentiometer consists of one single section unless G is given. (e.g. G3...3 ganged, G4...4 ganged)

●Characteristics
A means a conductive plastic resistive element type. (A is not given to wirewound type.)

●Diameter
30 means approximate outer diameter of the potentiometer in metric system. The 6 standard diameters are available, namely, 12mm, 22mm, 30mm, 40mm, 45mm and 50mm.

●Terminal Connection Diagram



SELECTION GUIDE

Kind of Element	Diameter (mm)	Model No.	Features
Wirewound	∅22	**CP22C, CP22E**	Bushingmount type low-cost pot. with outer diameter of 22mm.
	∅22～∅50	**CP22, CP30, CP45, CP50**	Servomount type precision pots with outer diameter of 22mm to 50mm and excellent in temperature coefficient.
Conductive Plastic	∅12, ∅22	**FCP12AC, FCP22AC, FCP22E**	Bushingmount type low-cost pots with outer diameter of 12mm and 22mm.
		FCPS22AC	Servomount type low-cost pot. with outer diameter of 22mm.
	∅12～∅50	**FCP12A, FCP22A, FCP30A, FCP40A, FCP50A**	Servomount type precision pots with outer diameter of 12mm to 50mm and with a patented multi-finger contact to make a good contact stability and excellent high speed tracking ability.

●General Performances

Kind of Element	Model No.	Standard Total Resistance Range (Ω)	Special Lower Resistance Values (Ω)	Special Higher Resistance Values (Ω)	Independent linearity Tolerance (%)	Special Specifications					
						With Stopper	Front and Rear Shaft Extension	Extra Taps	Simple Sealing Type	With switch	Multi-ganged
Wirewound	**CP22C**	50～10k	10, 20	20k	±0.5～±0.25	○	○	○	○	—	—
	CP22E	50～10k	10, 20	20k	±0.5～±0.25	○	○	○	○	—	○
	CP22	50～10k	10, 20	20k	±0.5～±0.2	○	○	○	○	—	○
	CP30	50～20k	10, 20	50k	±0.5～±0.15	○	○	○	○	—	○
	CP45	50～20k	10, 20	50k	±0.5～±0.1	○	○	○	○	○	○
	CP50	50～20k	10, 20	50k	±0.5～±0.1	○	○	○	○	○	○
Conductive Plastic	**FCP12AC**	1k～10k	500	20k, 50k, 100k	±2.0～±1.0	○	○	○	○	—	—
	FCP12A	1k～10k	500	20k, 50k, 100k	±2.0～±1.0	○	○	○	○	—	—
	FCP22AC	1k～10k	500	20k, 50k, 100k	±1.5～±1.0	○	○	○	○	—	—
	FCP22E	1k～10k	500	20k, 50k, 100k	±1.5～±1.0	○	○	○	○	—	○
	FCPS22AC	1k～10k	500	20k, 50k, 100k	±1.0～±0.5	○	○	○	○	—	—
	FCP22A	1k～10k	500	20k, 50k, 100k	±1.0～±0.3	○	○	○	○	—	○
	FCP30A	1k～10k	500	20k, 50k, 100k	±1.0～±0.2	○	○	○	○	—	○
	FCP40A	1k～10k	500	20k, 50k, 100k, 200k	±0.5～±0.2	○	○	○	○	○	○
	FCP50A	1k～10k	500	20k, 50k, 100k, 200k, 500k	±0.5～±0.05	○	○	○	○	○	○

Note: 1. For detailed performances, please refer to specifications of each model in this catalog.

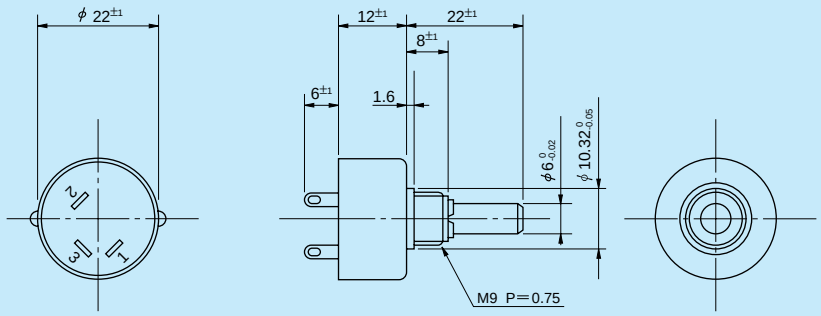
●Environmental Performances

Parameters \ Model Nos.	CP22C, CP22E, CP22, CP30, CP45, CP50 (LNB22 ... Page 76)	FCP12AC, FCP12A, FCP22E, FCP22AC, FCPS22AC	FCP22A, FCP30A, FCP40A, FCP50A
Operating Temperature Range	-55℃～+105℃	-55℃～+105℃	-55℃～+125℃
Temperature Cycle	5 cycles under -55℃～+105℃ Total resistance value variation: below ±5% No mechanical damage	5 cycles under -55℃～+105℃ Total resistance value variation: below ±10% No mechanical damage	5 cycles under -55℃～+125℃ Total resistance value variation: below ±10% No mechanical damage
Exposure at Low Temperature	24 hours at -55℃ Total resistance value variation: below ±5% No mechanical damage	24 hours at -55℃ Total resistance value variation: below ±5% No mechanical damage	24 hours at -55℃ Total resistance value variation: below ±5% Output voltage variation: below 0.5% No mechanical damage
Exposure at High Temperature	1,000 hours at 105℃ Total resistance value variation: below ±5% No mechanical damage	1,000 hours at 105℃ Total resistance value variation: below ±10% No mechanical damage	1,000 hours at 125℃ Total resistance value variation: below ±10% Output voltage variation: below 0.5% No mechanical damage
Vibration	10Hz to 2,000Hz 147m/s² 12 hours Total resistance value variation: below ±5% No mechanical and electrical damage	10Hz to 2,000Hz 147m/s² 12 hours Total resistance value variation: below ±2% No mechanical and electrical damage	10Hz to 2,000Hz 147m/s² Total resistance value variation: below ±2% No mechanical and electrical damage
Shock	490m/s² 11ms 18 times Total resistance value variation: below ±1% No mechanical and electrical damage	490m/s² 11ms 18 times Total resistance value variation: below ±1% No mechanical and electrical damage	490m/s² 11ms 18 times Total resistance value variation: below ±1% No mechanical and electrical damage
Moisture Resistance	40℃ 95%RH 240 hours Total resistance value variation: below ±10% Insulation resistance: over 10MΩ	40℃ 95%RH 120 hours Total resistance value variation: below ±10% Insulation resistance: over 10MΩ	40℃ 95%RH 120 hours Total resistance value variation: below ±10% Insulation resistance: over 10MΩ
Rotational Life Expectancy (at 25℃)	No load at 40 r.p.m. 1,000,000 shaft revolutions 500,000 shaft revolutions for CP22C & CP22E Total resistance value variation: below ±5% against initial value Independent linearity tolerance: below 150% of specified value Noise: below 500Ω E.N.R.	No load at 400 r.p.m., inverting every 15 minutes FCP12AC.....5,000,000 shaft revolutions FCP12A, FCP22E, FCP22AC } 10,000,000 shaft revolutions FCPS22AC ...20,000,000 shaft revolutions Total resistance value variation: below ±10% against initial value Independent linearity tolerance: below 150% of specified value Output smoothness: below 150% of specified value	No load at 400 r.p.m., inverting every 15 minutes 50,000,000 shaft revolutions Total resistance value variation: below ±10% against initial value Independent linearity tolerance: below 150% of specified value Output smoothness: below 150% of specified value

Note: 2. In case of the potentiometer with special resistance values and special specifications, the above performances may change and therefore, please consult us in advance, separately.
3. As for operating temperature range, we can not guarantee that all values of performances can satisfy within this operating temperature range. (Please see page 24 in this catalog for further details.)
4. The above values of performances based on each testings were measured after each testings completed, respectively, under standard conditions. As for the values during testings and other values not mentioning in the above table, please ask us separately.
5. In case of model LNB22, all values mentioned in the above table are reference only.

Model CP22C
(Metal Housing)

●Standard Dimensions



Note: 1. 1 pc. each inner teeth washer and hex nut are attached.
2. Please process the mounting hole on the panel to be mounted with this potentiometer by the diameter of 10.32mm $^{+0.05}_{0}$.

●General Specifications

Standard Resistance Range:	50Ω to 10kΩ
Max. Practical Resistance Value:	20kΩ
Total Resistance Tolerance:	Standard Class ±3% (H) Precision Class ±1% (F)
Independent Linearity Tolerance:	Standard Class ±0.5% Precision Class ±0.25% (±0.35% in case of below 1kΩ)
Power Rating:	0.5W
Noise:	Below 100Ω E.N.R.
Electrical Travel:	355° ±5°
Mechanical Travel:	360° (Endless)
Insulation Resistance:	Over 1,000MΩ at 1,000V.D.C.
Dielectric Strength:	1 minute at 1,000V.A.C.
Starting Torque:	Below 5mN•m (50gf•cm)
Max. Working Voltage:	250V
Resist. Temperature Coefficient of Wire:	±20p.p.m./℃
Mass:	Approx. 30g

●Standard Resistance Values ■No. of Wire Turns ■Resistance Wire Used

Resist. Value (Ω)	50	100	200	500	1k	2k	5k	10k	※ 20k
No, of Wire Turns	300	370	470	450	570	740	1,000	1,270	1,670
Resist. Wire Used	Cu-Ni System			Ni-Cr System					

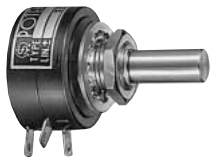
Note: Mark ※shows value at special higher practical resistance.

●Special Specifications Available

Lower resistance values (10Ω, 20Ω), Extra taps (Available up to 1 tap), Shaft with front and rear extension (Rear shaft with 3mm dia. and 20mm length), With stopper (Rotating angle becomes 320° and stopper strength is 0.9N•m [9kgf•cm]), Special electrical travel, Shaft dia. (∅6.35mm)•bushing with inch dimensions, Special machining on the shaft.

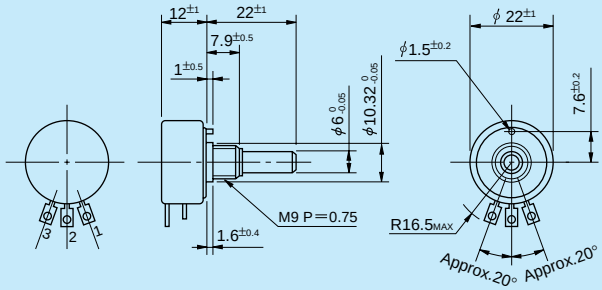
Wirewound

MODEL CP22E (Bushingmount)



Model CP22E
(Plastic Housing)

●Standard Dimensions



Note: 1. 1 pc. each inner teeth washer and hex nut are attached.
2. Please process the mounting hole on the panel to be mounted with this potentiometer by the diameter of 10.32mm $^{+0.05}_{0}$.

●General Specifications

Standard Resistance Range:	50Ω to 10kΩ
Max. Practical Resistance Value:	20kΩ
Total Resistance Tolerance:	Standard Class ±3% (H) Precision Class ±1% (F)
Independent Linearity Tolerance:	Standard Class ±0.5% Precision Class ±0.25% (±0.35% in case of below 1kΩ)
Power Rating:	0.5W
Noise:	Below 100Ω E.N.R.
Electrical Travel:	355° ±5°
Mechanical Travel:	360° (Endless)
Insulation Resistance:	Over 1,000MΩ at 1,000V.D.C.
Dielectric Strength:	1 minute at 1,000V.A.C.
Starting Torque:	Below 5mN•m (50gf•cm)
Max. Working Voltage:	250V
Resist. Temperature Coefficient of Wire:	±20p.p.m./℃
Mass:	Approx. 20g

●Standard Resistance Values ■No. of Wire Turns ■Resistance Wire Used

Resist. Value (Ω)	50	100	200	500	1k	2k	5k	10k	※ 20k
No, of Wire Turns	300	370	470	450	570	740	1,000	1,270	1,670
Resist. Wire Used	Cu-Ni System			Ni-Cr System					

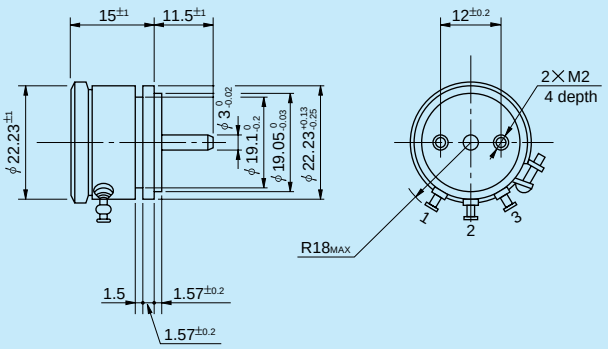
Note: Mark ※shows value at special higher practical resistance.

●Special Specifications Available

Lower resistance values (10Ω, 20Ω), Extra taps (Available up to 1 tap), Shaft with front and rear extension (Rear shaft with 6mm dia. and 20mm length), Multi-ganged (Available up to 10 gangs), With stopper (Rotating angle becomes 320° and stopper strength is 0.6N•m [6kgf•cm]), Special electrical travel, Shaft dia. (∅6.35mm)•bushing with inch dimensions, Special machining on the shaft.

Model CP22

●Standard Dimensions



●General Specifications

Standard Resistance Range:	50Ω to 10kΩ
Max. Practical Resistance Value:	20kΩ
Total Resistance Tolerance:	Standard Class ±3% (H) Precision Class ±1% (F)
Independent Linearity Tolerance:	Standard Class ±0.5% Precision Class ±0.2% (±0.3% in case of below 1kΩ)
Power Rating:	0.5W
Noise:	Below 100Ω E.N.R.
Electrical Travel:	355° ±5°
Mechanical Travel:	360° (Endless)
Insulation Resistance:	Over 1,000MΩ at 1,000V.D.C.
Dielectric Strength:	1 minute at 1,000V.A.C.
Starting Torque:	Below 1.5mN•m (15gf•cm)
Max. Working Voltage:	250V
Resist. Temperature Coefficient of Wire:	±20p.p.m./℃
Mass:	Approx. 15g

●Standard Resistance Values ■No. of Wire Turns ■Resistance Wire Used

Resist. Value (Ω)	50	100	200	500	1k	2k	5k	10k	※ 20k
No, of Wire Turns	300	370	470	450	570	740	1,000	1,270	1,670
Resist. Wire Used	Cu-Ni System			Ni-Cr System					

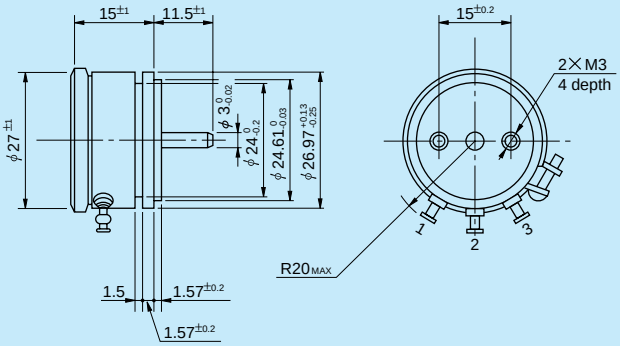
Note: Mark ※ shows value at special higher practical resistance.

●Special Specifications Available

Lower resistance values (10Ω, 20Ω), Extra taps (Available up to 2 taps), Multi-ganged (Available up to 5 gangs. Housing length is extended by 8.5mm per gang), Shaft with front and rear extension (Rear shaft with 3mm dia. and 10mm length), With stopper (Rotating angle becomes 330° and stopper strength is 0.3N•m [3kgf•cm]), Special electrical travel, Shaft dia. (∅3.175mm) with inch dimensions, Special machining on the shaft.

Model CP30

●Standard Dimensions



●General Specifications

Standard Resistance Range:	50Ω to 20kΩ
Max. Practical Resistance Value:	50kΩ
Total Resistance Tolerance:	Standard Class ±3% (H) Precision Class ±1% (F)
Independent Linearity Tolerance:	Standard Class ±0.5% Precision Class ±0.15% (±0.2% in case of below 5kΩ)
Power Rating:	0.75W
Noise:	Below 100Ω E.N.R.
Electrical Travel:	355° ±5°
Mechanical Travel:	360° (Endless)
Insulation Resistance:	Over 1,000MΩ at 1,000V.D.C.
Dielectric Strength:	1 minute at 1,000V.A.C.
Starting Torque:	Below 2mN•m (20gf•cm)
Max. Working Voltage:	250V
Resist. Temperature Coefficient of Wire:	±20p.p.m./℃
Mass:	Approx. 30g

●Standard Resistance Values ■No. of Wire Turns ■Resistance Wire Used

Resist. Value (Ω)	50	100	200	500	1k	2k	5k	10k	20k	※ 50k
No, of Wire Turns	310	390	500	420	600	770	1,090	1,400	1,800	2,670
Resist. Wire Used	Cu-Ni System			Ni-Cr System						

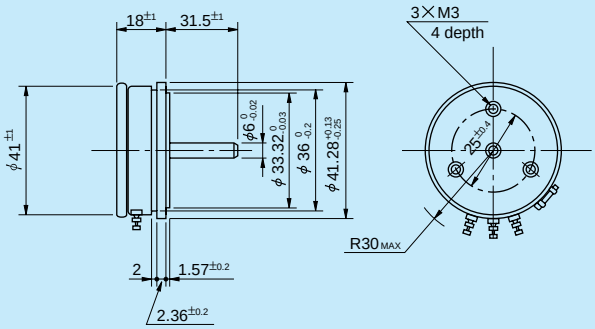
Note: Mark ※ shows value at special higher practical resistance.

●Special Specifications Available

Lower resistance values (10Ω, 20Ω), Extra taps (Available up to 3 taps), Multi-ganged (Available up to 5 gangs. Housing length is extended by 8.5mm per gang), Shaft with front and rear extension (Rear shaft with 3mm dia. and 10mm length), With stopper (Rotating angle becomes 330° and stopper strength is 0.3N•m [3kgf•cm]), Special electrical travel, Shaft dia. (∅3.175mm) with inch dimensions, Special machining on the shaft.

Model CP45

●Standard Dimensions



●General Specifications

Standard Resistance Range:	50Ω to 20kΩ
Max. Practical Resistance Value:	50kΩ
Total Resistance Tolerance:	Standard Class ±3% (H) Precision Class ±1% (F)
Independent Linearity Tolerance:	Standard Class ±0.5% Precision Class ±0.1% (±0.2% in case of below 2kΩ)
Power Rating:	1.0W
Noise:	Below 100Ω E.N.R.
Electrical Travel:	355° ±3°
Mechanical Travel:	360° (Endless)
Insulation Resistance:	Over 1,000MΩ at 1,000V.D.C.
Dielectric Strength:	1 minute at 1,000V.A.C.
Starting Torque:	Below 4mN•m (40gf•cm)
Max. Working Voltage:	250V
Resist. Temperature Coefficient of Wire:	±20p.p.m./℃
Mass:	Approx. 90g

●Standard Resistance Values ■No. of Wire Turns ■Resistance Wire Used

Resist. Value (Ω)	50	100	200	500	1k	2k	5k	10k	20k	※ 50k
No, of Wire Turns	450	570	720	950	820	1,040	1,430	1,790	2,280	3,100
Resist. Wire Used	Cu-Ni System				Ni-Cr System					

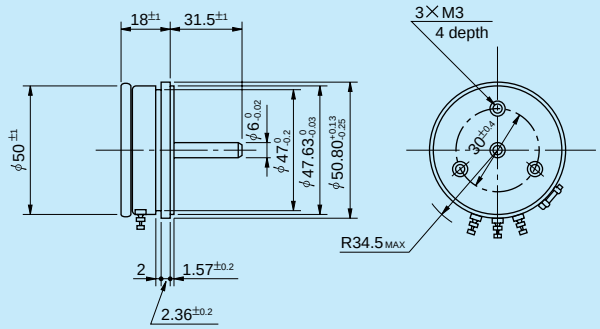
Note: Mark ※ shows value at special higher practical resistance.

●Special Specifications Available

Lower resistance values (10Ω, 20Ω), Extra taps (Available up to 5 taps), Multi-ganged (Available up to 7 gangs. Housing length is extended by 12mm per 1 gang), Shaft with front and rear extension (Rear shaft with 6mm dia. and 15mm length), Bushingmount type, With stopper (Rotating angle becomes 330° and stopper strength is 0.9N•m [9kgf•cm]), Special electrical travel, Shaft dia. (∅6.35mm) with inch dimensions, Special machining on the shaft.

Model CP50

●Standard Dimensions



●General Specifications

Standard Resistance Range:	50Ω to 20kΩ
Max. Practical Resistance Value:	50kΩ
Total Resistance Tolerance:	Standard Class ±3% (H) Precision Class ±1% (F)
Independent Linearity Tolerance:	Standard Class ±0.5% Precision Class ±0.1% (±0.2% in case of below 2kΩ)
Power Rating:	1.5W
Noise:	Below 100Ω E.N.R.
Electrical Travel:	355° ±3°
Mechanical Travel:	360° (Endless)
Insulation Resistance:	Over 1,000MΩ at 1,000V.D.C.
Dielectric Strength:	1 minute at 1,000V.A.C.
Starting Torque:	Below 5mN•m (50gf•cm)
Max. Working Voltage:	250V
Resist. Temperature Coefficient of Wire:	±20p.p.m./℃
Mass:	Approx. 120g

●Standard Resistance Values ■No. of Wire Turns ■Resistance Wire Used

Resist. Value (Ω)	50	100	200	500	1k	2k	5k	10k	20k	※ 50k
No, of Wire Turns	500	650	800	1,100	1,000	1,250	1,810	2,180	2,780	3,500
Resist. Wire Used	Cu-Ni System				Ni-Cr System					

Note: Mark ※ shows value at special higher practical resistance.

●Special Specifications Available

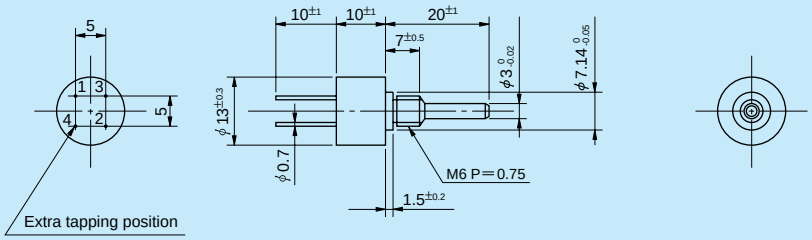
Lower resistance values (10Ω, 20Ω), Extra taps (Available up to 10 taps), Multi-ganged (Available up to 7 gangs. Housing length is extended by 12mm per 1 gang), Bushingmount type, Shaft with front and rear extension (Rear shaft with 6mm dia. and 15mm length), Spring return device incorporated (Automatically returning to the zero position), With stopper (Rotating angle becomes 330° and stopper strength is 0.9N•m [9kgf•cm]), Special electrical travel, Shaft dia. (∅6.35mm) with inch dimensions, Special machining on the shaft.

Conductive Plastic

MODEL FCP12AC (Bushingmount)

Model FCP12AC

●Standard Dimensions



Note: 1. 1 pc. each inner teeth washer and hex nut are attached.
2. Please process the mounting hole on the panel to be mounted with this potentiometer by the diameter of 7.14mm $^{+0.05}_{0}$.

●General Specifications

Standard Resistance Values:	1k, 2k, 5k, 10k (Ω)
Special Practical Resistance Values:	500, 20k, 50k, 100k (Ω)
Total Resistance Tolerance:	Standard Class ±15% (L) Precision Class ±10% (K)
Independent Linearity Tolerance:	Standard Class ±2.0% Precision Class ±1.0%
Resolution:	Essentially infinite
Output Smoothness:	Below 0.1% against input voltage
Contact Resistance Variation:	Below 3% C.R.V.
Power Rating:	0.2W
Electrical Travel:	300° ±5°
Mechanical Travel:	360° (Endless)
Insulation Resistance:	Over 1,000MΩ at 500V.D.C.
Dielectric Strength:	1 minute at 500V.A.C.
Starting Torque:	Below 2mN•m (20gf•cm)
Resistance Temperature Coefficient:	±400p.p.m./℃
Mass:	Approx. 8g

●Special Specifications Available

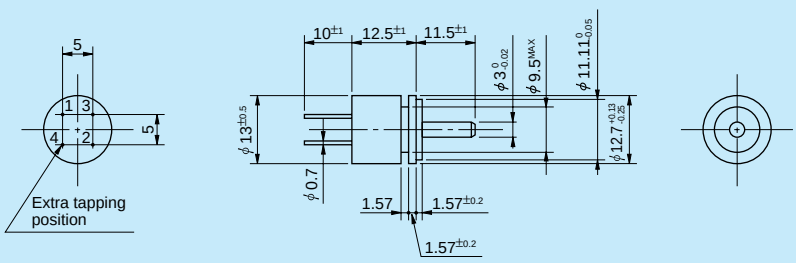
Extra taps (Available up to 1 tap), Shaft with front and rear extension (Rear shaft with 1mm dia. and 10mm length), With stopper (Rotating angle becomes 310° and stopper strength is 0.3N•m [3kgf•cm]), Special electrical travel, Shaft dia. (∅3.175mm)•bushing with inch dimensions, Special machining on the shaft.

Conductive Plastic

MODEL FCP12A (Servomount)

Model FCP12A

●Standard Dimensions



●General Specifications

Standard Resistance Values:	1k, 2k, 5k, 10k (Ω)
Special Practical Resistance Values:	500, 20k, 50k, 100k (Ω)
Total Resistance Tolerance:	Standard Class ±15% (L) Precision Class ±10% (K)
Independent Linearity Tolerance:	Standard Class ±2.0% Precision Class ±1.0%
Resolution:	Essentially infinite
Output Smoothness:	Below 0.1% against input voltage
Contact Resistance Variation:	Below 3% C.R.V.
Power Rating:	0.2W
Electrical Travel:	300° ±5°
Mechanical Travel:	360° (Endless)
Insulation Resistance:	Over 1,000MΩ at 500V.D.C.
Dielectric Strength:	1 minute at 500V.A.C.
Starting Torque:	Below 1mN•m (10gf•cm)
Resistance Temperature Coefficient:	±400p.p.m./ ℃
Mass:	Approx. 5g

●Special Specifications Available

Extra taps (Available up to 1 tap), Shaft with front and rear extension (Rear shaft with 1mm dia. and 10mm length), With stopper (Rotating angle becomes 310° and stopper strength is 0.3N•m [3kgf•cm]), Special electrical travel, Shaft dia. (∅3.175mm)•with inch dimensions, Special machining on the shaft.

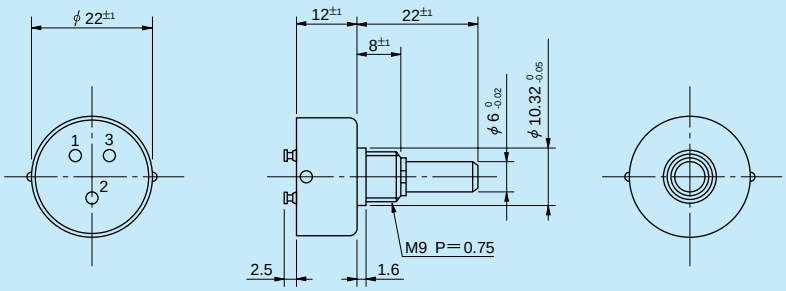
LOW-COST ITEM

Conductive Plastic

MODEL FCP22AC (Bushingmount)

Model FCP22AC (Metal Housing)

●Standard Dimensions



Note: 1. 1 pc. each inner teeth washer and hex nut are attached.
2. Please process the mounting hole on the panel to be mounted with this potentiometer by the diameter of 10.32mm $^{+0.05}_{0}$.

●General Specifications

Standard Resistance Values:	1k, 2k, 5k, 10k (Ω)
Special Practical Resistance Values:	500, 20k, 50k, 100k (Ω)
Total Resistance Tolerance:	Standard Class ±15% (L) Precision Class ±10% (K)
Independent Linearity Tolerance:	Standard Class ±1.5% Precision Class ±1.0%
Resolution:	Essentially infinite
Output Smoothness:	Below 0.1% against input voltage
Contact Resistance Variation:	Below 2% C.R.V.
Power Rating:	1.0W
Electrical Travel:	320° ±5°
Mechanical Travel:	360° (Endless)
Insulation Resistance:	Over 1,000MΩ at 500V.D.C.
Dielectric Strength:	1 minute at 500V.A.C.
Starting Torque:	Below 5mN•m (50gf•cm)
Resistance Temperature Coefficient:	±400p.p.m./ ℃
Mass:	Approx. 30g

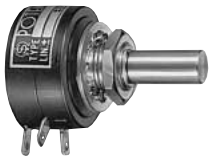
●Special Specifications Available

Extra taps (Available up to 1 tap), Shaft with front and rear extension (Rear shaft with 3mm dia. and 20mm length), With stopper (Rotating angle becomes 320° and stopper strength is 0.9N•m [9kgf•cm]), Special electrical travel, Shaft dia. (∅6.35mm)•bushing with inch dimensions, Special machining on the shaft.

Conductive Plastic

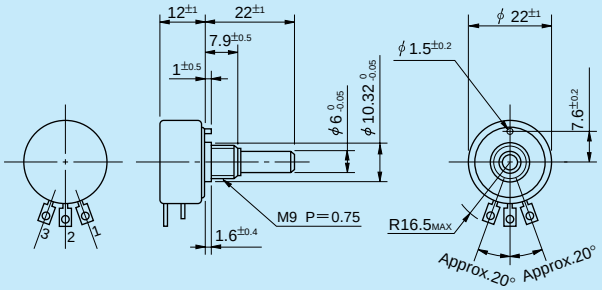
MODEL FCP22E

(Bushingmount)



Model FCP22E
(Plastic Housing)

●Standard Dimensions



Note: 1. 1 pc. each inner teeth washer and hex nut are attached.
2. Please process the mounting hole on the panel to be mounted with this potentiometer by the diameter of 10.32mm $^{+0.05}_{0}$.

●General Specifications

Standard Resistance Values:	1k, 2k, 5k, 10k (Ω)
Special Practical Resistance Values:	500, 20k, 50k, 100k (Ω)
Total Resistance Tolerance:	Standard Class ±15% (L) Precision Class ±10% (K)
Independent Linearity Tolerance:	Standard Class ±1.5% Precision Class ±1.0%
Resolution:	Essentially infinite
Output Smoothness:	Below 0.1% against input voltage
Contact Resistance Variation:	Below 2% C.R.V.
Power Rating:	1.0W
Electrical Travel:	320° ±5°
Mechanical Travel:	360° (Endless)
Insulation Resistance:	Over 1,000MΩ at 500V.D.C.
Dielectric Strength:	1 minute at 500V.A.C.
Starting Torque:	Below 5mN•m (50gf•cm)
Resistance Temperature Coefficient:	±400p.p.m./℃
Mass:	Approx. 20g

●Special Specifications Available

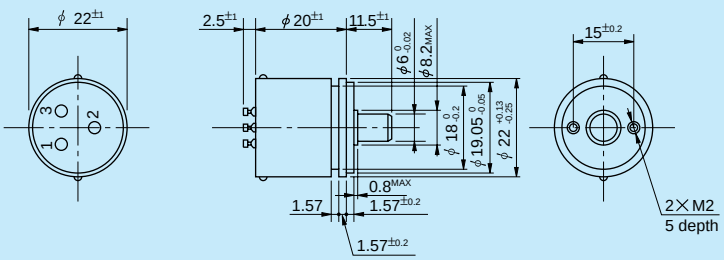
Extra taps (Available up to 1 tap), Shaft with front and rear extension (Rear shaft with 6mm dia. and 20mm length), Multi-ganged (Available up to 10 gangs), With stopper (Rotating angle becomes 320° and stopper strength is 0.6N•m [6kgf•cm]), Special electrical travel, Shaft dia. (∅6.35mm)•bushing with inch dimensions, Special machining on the shaft.

Conductive Plastic

MODEL FCPS22AC (Servomount Oilless Metal Bearings Incorporated)

Model FCPS22AC

●Standard Dimensions



●General Specifications

Standard Resistance Values:	1k, 2k, 5k, 10k (Ω)
Special Practical Resistance Values:	500, 20k, 50k, 100k (Ω)
Total Resistance Tolerance:	Standard Class ±15% (L) Precision Class ±10% (K)
Independent Linearity Tolerance:	Standard Class ±1.0% Precision Class ±0.5%
Resolution:	Essentially infinite
Output Smoothness:	Below 0.1% against input voltage
Contact Resistance Variation:	Below 2% C.R.V.
Power Rating:	1.0W
Electrical Travel:	320° ±5°
Mechanical Travel:	360° (Endless)
Insulation Resistance:	Over 1,000MΩ at 500V.D.C.
Dielectric Strength:	1 minute at 500V.A.C.
Starting Torque:	Below 5mN•m (50gf•cm)
Resistance Temperature Coefficient:	±400p.p.m./ ℃
Mass:	Approx. 30g

●Special Specifications Available

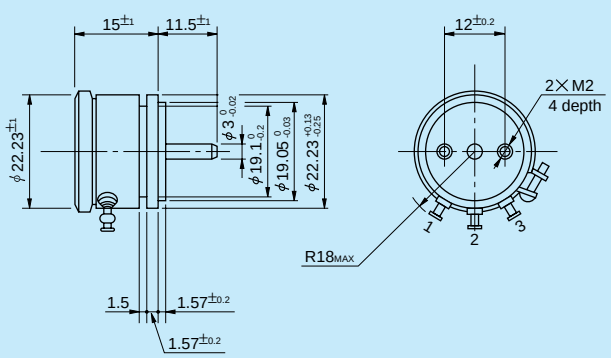
Extra taps (Available up to 1 tap), Shaft with front and rear extension (Rear shaft with 3mm dia. and 20mm length), With stopper (Rotating angle becomes 320° and stopper strength is 0.9N•m [9kgf•cm]), Special electrical travel, Shaft dia. (∅6.35mm), Special machining on the shaft, With ball bearings incorporated.

Conductive Plastic

MODEL FCP22A (Servomount)

Model FCP22A

●Standard Dimensions



●General Specifications

Standard Resistance Values:	1k, 2k, 5k, 10k (Ω)	
Special Practical Resistance Values:	500, 20k, 50k, 100k (Ω)	
Total Resistance Tolerance:	Standard Class ±10% (K)	
Independent Linearity Tolerance:	Standard Class	±1.0%
	Precision Class	±0.5%
	Super Precision Class	±0.25%
Resolution:	Essentially infinite	
Output Smoothness:	Below 0.1% against input voltage	

Contact Resistance Variation:	Below 2% C.R.V.
Power Rating:	1.0W
Electrical Travel:	320° ±5°
Mechanical Travel:	360° (Endless)
Insulation Resistance:	Over 1,000MΩ at 1,000V.D.C.
Dielectric Strength:	1 minute at 1,000V.A.C.
Starting Torque:	Below 1.5mN•m (15gf•cm)
Resistance Temperature Coefficient:	±400p.p.m./℃
Mass:	Approx. 20g

●Special Specifications Available

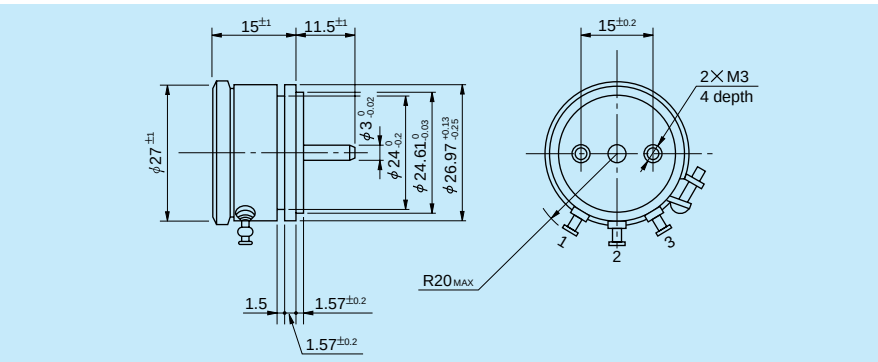
Extra taps (Available up to 1 tap), Multi-ganged (Available up to 5 gangs, Housing length is extended by 8.5mm per 1 gang), Shaft with front and rear extension (Rear shaft with 3mm dia. and 10mm length), With stopper (Rotating angle becomes 320° and stopper strength is 0.3N•m [3kgf•cm]), Special electrical travel, Shaft dia. (∅3.175mm) with inch dimensions, Special machining on the shaft.

Conductive Plastic

MODEL FCP30A (Servomount)

Model FCP30A

●Standard Dimensions



●General Specifications

Standard Resistance Values:	1k, 2k, 5k, 10k (Ω)	
Special Practical Resistance Values:	500, 20k, 50k, 100k (Ω)	
Total Resistance Tolerance:	Standard Class ±10% (K)	
Independent Linearity Tolerance:	Standard Class	±1.0%
	Precision Class	±0.5%
	Super Precision Class	±0.2%
Resolution:	Essentially infinite	
Output Smoothness:	Below 0.1% against input voltage	

Contact Resistance Variation:	Below 2% C.R.V.
Power Rating:	1.5W
Electrical Travel:	340° ±5°
Mechanical Travel:	360° (Endless)
Insulation Resistance:	Over 1,000MΩ at 1,000V.D.C.
Dielectric Strength:	1 minute at 1,000V.A.C.
Starting Torque:	Below 2mN•m (20gf•cm)
Resistance Temperature Coefficient:	±400p.p.m./℃
Mass:	Approx. 25g

●Special Specifications Available

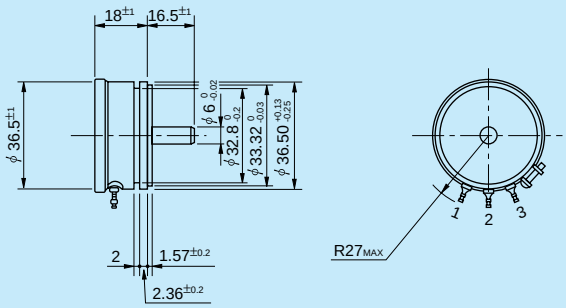
Extra taps (Available up to 1 tap), Multi-ganged (Available up to 5 gangs, Housing length is extended by 8.5mm per 1 gang), Shaft with front and rear extension (Rear shaft with 3mm dia. and 10mm length), With stopper (Rotating angle becomes 320° and stopper strength is 0.3N•m [3kgf•cm]), Special electrical travel, Shaft dia. (∅3.175mm) with inch dimensions, Special machining on the shaft.

Conductive Plastic

MODEL FCP40A (Servomount)

Model FCP40A

●Standard Dimensions



●General Specifications

Standard Resistance Values:	1k, 2k, 5k, 10k (Ω)	
Special Practical Resistance Values:	500, 20k, 50k, 100k, 200k (Ω)	
Total Resistance Tolerance:	Standard Class ±10% (K)	
Independent Linearity Tolerance:	Standard Class	±0.5%
	Precision Class	±0.25%
	Super Precision Class	±0.1%
Resolution:	Essentially infinite	
Output Smoothness:	Below 0.1% against input voltage	

Contact Resistance Variation:	Below 2% C.R.V.
Power Rating:	2.0W
Electrical Travel:	340° ±5°
Mechanical Travel:	360° (Endless)
Insulation Resistance:	Over 1,000MΩ at 1,000V.D.C.
Dielectric Strength:	1 minute at 1,000V.A.C.
Starting Torque:	Below 3mN•m (30gf•cm)
Resistance Temperature Coefficient:	±400p.p.m./℃
Mass:	Approx. 60g

●Special Specifications Available

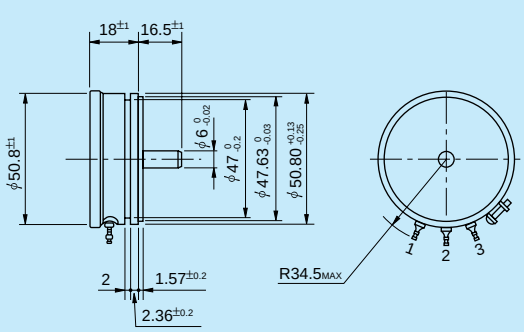
Extra taps (Available up to 3 taps), Multi-ganged (Available up to 7 gangs, Housing length is extended by 12mm per 1 gang), Shaft with front and rear extension (Rear shaft with 6mm dia. and 15mm length), With stopper (Rotating angle becomes 320° and stopper strength is 0.9N•m [9kgf•cm]), Special electrical travel, Shaft dia. (∅6.35mm) with inch dimensions, Special machining on the shaft.

Conductive Plastic

MODEL FCP50A (Servomount)

Model FCP50A

●Standard Dimensions



●General Specifications

Standard Resistance Values:	1k, 2k, 5k, 10k (Ω)	
Special Practical Resistance Values:	500, 20k, 50k, 100k, 200k, 500k (Ω)	
Total Resistance Tolerance:	Standard Class ±10% (K)	
Independent Linearity Tolerance:	Standard Class	±0.5%
	Precision Class	±0.2%Super Precision Class ±0.05%
Resolution:	Essentially infinite	
Output Smoothness:	Below 0.1% against input voltage	

Contact Resistance Variation:	Below 2% C.R.V.
Power Rating:	3.0W
Electrical Travel:	350° ±5°
Mechanical Travel:	360° (Endless)
Insulation Resistance:	Over 1,000MΩ at 1,000V.D.C.
Dielectric Strength:	1 minute at 1,000V.A.C.
Starting Torque:	Below 4mN•m (40gf•cm)
Resistance Temperature Coefficient:	±400p.p.m./℃
Mass:	Approx. 80g

●Special Specifications Available

Extra taps (Available up to 3 taps), Multi-ganged (Available up to 7 gangs, Housing length is extended by 12mm per 1 gang), Shaft with front and rear extension (Rear shaft with 6mm dia. and 15mm length), With stopper (Rotating angle becomes 320° and stopper strength is 0.9N•m [9kgf•cm]), Special electrical travel, Shaft dia. (∅6.35mm) with inch dimensions, Special machining on the shaft.

SPECIALLY ORDERED ITEM

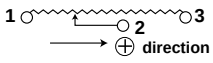
This is a see-saw-motion potentiometer incorporating conductive plastic resistive element.

Model SFCP30A

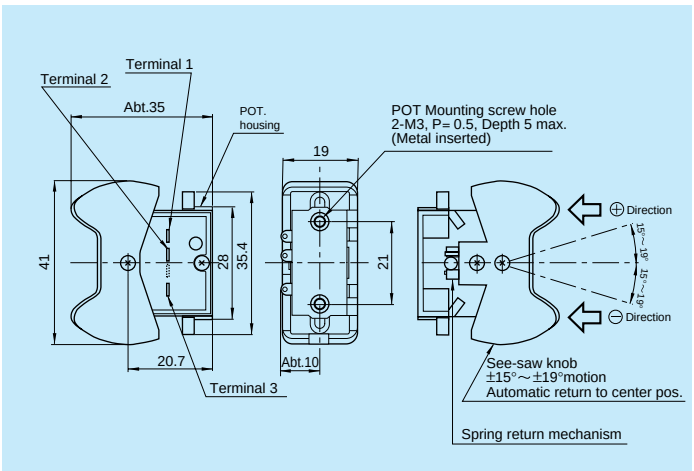
●Specifications

Total Resistance Value	: 10KΩ±15%
Independent Linearity Tolerance	: ±3%
Electrical Travel	: 30°±5°
Power Rating	: 0.1W
Center Returning Accuracy	: 50%±3%
Output Smoothness	: Below 0.2% against input voltage
Resolution	: Essentially infinite
Dielectric Strength	: 1 minute at 500V.A.C.
Insulation Resistance	: Below 1,000MΩ at 500V.D.C.
Operating Force	: Approx. 24mN•m～Approx. 30mN•m

●Terminal Connection Diagram



●Dimensions



"Sakae"

LOW-TORQUE POTENTIOMETER

(Precision 1-turn, Low-torque, Wirewound Element)

SAKAE Low-torque Potentiometers with a wirewound resistive element are very small in size and light in weight, It offers a very low starting torque of below 0.1mN•m (1gf•cm) in Model LNB22. Electrical detection of inclination, vibration, etc. is easily possible by installing these potentiometers on float, bellows, etc. These models are only available with wirewound resistive element as standard version.

THE NOMENCLATURE OF SAKAE LOW TORQUE POT.

S LNB 22 G - ○○○○

●Special Specifications
S means the potentiometer with special mechanical specifications not applicable to our standard.

●Type
LNB means 1-turn, low-torque, wirewound and linear potentiometer incorporated with precision miniature ball bearings.

●Diameter
22 means approximate outer diameter of the potentiometer in metric system.

●Number of Gangs
G means 2 ganged potentiometer on same axle. The potentiometer consists of one single section unless G is given.

●4 digits branch number
to be used for specific requirements.

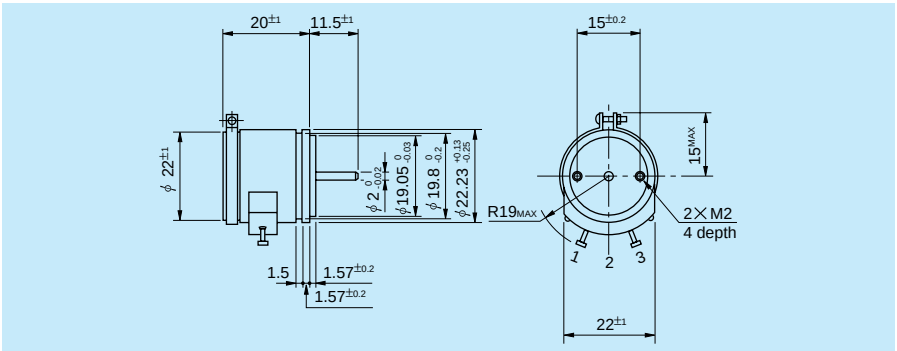
Wirewound

MODEL LNB22

(Servomount)

Model LNB22

●Standard Dimensions



●General Specifications

Standard Resistance Range:	100Ω to 20kΩ
Total Resistance Tolerance:	Standard Class ±3% (H) Precision Class ±1% (F)
Independent Linearity Tolerance:	Standard Class ±0.5% Precision Class ±0.25%
Power Rating:	0.3W
Noise:	Below 100Ω E.N.R.
Electrical Travel:	355° ±5°
Mechanical Travel:	360° (Endless)
Insulation Resistance:	Over 100MΩ at 1,000V.D.C.
Dielectric Strength:	1 minute at 1,000V.A.C.
Starting Torque:	<2kΩ Below 0.15mN•m (1.5gf•cm) (within electrical travel)
	≧2kΩ Below 0.1mN•m (1.0gf•cm) (within electrical travel)
Max. Working Voltage:	80V
Resist. Temperature Coefficient of Wire:	±20p.p.m./℃
Operating Temperature Range:	-30℃ ~ +85℃
Life Expectancy, Shaft Revolutions:	100,000
Mass:	Approx. 20g

●Environmental Performances:

Please see the table on page 62.

●Standard Resistance Values ■No. of Wire Turns ■Resistance Wire Used

Resist. Value (Ω)	100	200	500	1k	2k	5k	10k	20k
No. of Wire Turns	370	470	450	570	740	1,000	1,270	1,670
Resist. Wire Used	Cu-Ni System		Ni-Cr System					

●Special Specifications Available

Extra taps (Available up to 1 tap), 2 ganged, Shaft with front and rear extension (Rear shaft with 2mm dia. and 10mm length), Special electrical travel, Special machining on the shaft.

SPECIALLY ORDERED ITEMS

Model SFCP18A-2172F

(1-turn Pot. with special housing case and completely sealed -IP65-.)

Model SLNB30-2546B

(1-turn Pot. with low-torque and special housing case.)

The following items discontinue to manufacture as our standard items and however, we can manufacture them as specially ordered items.

Model CP33 (Wirewound)

(1-turn Pot.)

Standard Resistance Range	:	500Ω～20kΩ
Total Resistance Tolerance	:	±3% (H)
Independent Linearity Tolerance	:	±0.5%
Power Rating	:	1W
Noise	:	Below 100Ω E.N.R.
Electrical Travel	:	355° ±5°
Mechanical Travel	:	360° (Endless)
Mass	:	Approx. 60g

Model CP70 (Wirewound)

(1-turn Pot.)

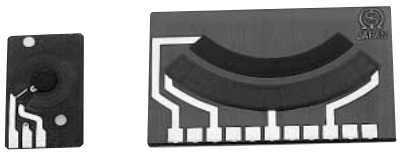
Standard Resistance Range	:	50Ω～100kΩ
Total Resistance Tolerance	:	±3% (H)
Independent Linearity Tolerance	:	±0.4%
Power Rating	:	2W
Noise	:	Below 100Ω E.N.R.
Electrical travel	:	355° ±3°
Mechanical travel	:	360° (Endless)
Mass	:	Approx. 170g

SPECIALLY ORDERED ITEMS

Model SENP50-3081

(1-turn Pot. with an encoder.)

Special Film Resistive Elements



(Direct coating of conductive plastic paste was made on the flexible sheet.)

Model SFCP50A

(1-turn Pot. with a winder of a wire.)

Model SFCP12A-1780A

(1-turn Pot. with a switch and leadwire terminals.)

Model SCP45

(1-turn Pot. with a reduction gear.)

Model SCP50A

(1-turn Pot. with sealed housing -IP54- , a connector terminal and cable.)