LINEAR-MOTION POTENTIOMETER

(Precision Linear-motion, Wirewound, Conductive Plastic & Hybrid Element)

SAKAE Linear-motion Potentiometers are compact in size and light in weight and are capable of transforming mechanical linear movements into corresponding electrical variations. Easy to operate and handy. It is suitable for measurement of linear movements in various machinery and tools and displacements in linearly moving objects such as steering angles, numerical control tooling machines, robots, etc.

Beside wirewound type (LP), there is another kind of resistive element in this series: Conductive Plastic (FLP-A) which features high resolution, long life expectancy and excellent high speed tracking ability. Please select the resistive element appropriately according to your applications.

THE NOMENCLATURE OF SAKAE LINEAR-MOTION POT. SERIES

S 30 FLP 100 A - ○○○○○

● **Special Specifications**
S means the potentiometer with special mechanical specifications.

● **Diameter**
30 means 30mm square in cross sectional outer size of the body of the potentiometer. The 5 standard sizes are available, namely, 8mm, 13mm, 15mm, 18mm and 30mm.

● **Type**
FLP-A means linear-motion, conductive plastic resistive element type potentiometer.
LP..... Wirewound resistive element type. (A is not given.)
FLP-A..... Conductive plastic resistive element type.

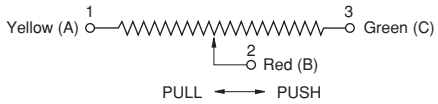
● **Stroke**
100 means effective electrical travel on the resistive element. The 16 standard strokes are available, namely, 10mm, 12mm, 15mm, 20mm, 25mm, 30mm, 50mm, 75mm, 100mm, 120mm, 200mm, 300mm, 400mm, 500mm, 750mm and 1,000mm.

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

● **5 digits branch number**
to be used for specific requirements.

NOTE: The nomenclature of model 18 (F) LP series is mentioned separately in the next page 85 because of its complexity.

● **Terminal Connection Diagram**



Note: In case of connector type, please use indications in the parenthesis.

SELECTION GUIDE

Kind of Element	Size (mm)	Model No.	Stroke (mm)	Features
Wirewound	20×18	**18LP**	15, 30, 50, 100	This model is a substitute model against our old model 20LP series.
Conductive Plastic	8×7	**8FLP**	10, 15	Low-cost and miniature size pot. with a shaft with front and rear extension. Available with spring return device incorporated as special.
	11×13	**13FLP**	12, 25, 50, 100	Popular type pot. with a front extended shaft. Available with spring return device as special version.
	15×24	**15FLP**	10, 15, 20, 30	Popular type pot. with screw-mounting method.
	20×18	**18FLP A, B, C**	15, 30, 50, 75, 100, 150	Rigid housing case and can select the shaft shapes and with connector to your applications.
	32×32	**30FLP**	100, 200, 300, 400, 500, 750, 1,000	Long-life expectancy and low-cost pot. with a front extended shaft, Various strokes are available.
	10×20	**CFL**	200, 300, 400, 500, 1,000	Sub-assembled resistive element unit with a wiper. Low-cost and open frame housing.

General Performances

Kind of Element	Model No.	Stroke (mm)	Standard Total Resistance Range (Ω)	Independent Linearity Tolerance (%)	Special Specifications				
					Spring Return Device	Front and Rear Shaft Extension	Extra Taps	Simple Sealing Type	With Switch
Wirewound	**18LP**	15～100	10～20k	±2.0～±0.25	○	—	—	○	—
Conductive Plastic	**8FLP10A**	10	1k～20k	±2.0～±1.0	○	○	—	○	—
	8FLP15A	15	1k～20k	±2.0～±1.0	○	○	—	—	—
	13FLP-A	12～100	500～20k	±2.0～±0.3	○	—	—	—	—
	15FLP-A	10～30	500～10k	±2.0～±0.5	○	○	—	○	—
	18FLPA	15～100	500～20k	±0.7～±0.2	○	—	—	○	—
	18FLPB	25～150	500～20k	±0.5～±0.05	○	○	○	○	—
	18FLPC	25～50	500～10k	±0.5～±0.1	◎	◎	○	○	—
	30FLP-A	100～1,000	1k～500k	±0.5～±0.1	—	—	○	○	—
	CFL	200～1,000	2k～500k	±0.5～±0.1	—	—	—	—	—

Note: 1. For detailed performances, please refer to the general specifications of each model in this catalog.
2. ◎ means standard specifications and ○ means special specifications available.
3. Standard total resistance values are based on 1, 2 and 5 series (i.e. 100Ω, 200Ω, 500Ω, 1kΩ, 2kΩ, 5kΩ...).

Environmental Performances

Parameters \ Model Nos.	18LP	8FLP, 13FLP, 15FLP, 18FLPA, 18FLPB, 18FLPC, 30FLP, CFL
Operating Temperature Range	−30℃～+105℃	−30℃～+105℃※
Temperature Cycle	5 cycles under −30℃～+105℃ Total resistance value variation: within ±5% No mechanical damage	5 cycles under −30℃～+105℃ Total resistance value variation: within ±10% No mechanical damage
Exposure at Low Temperature	24 hours at −30℃ Total resistance value variation: within ±5% No mechanical damage	24 hours at −30℃ Total resistance value variation: within ±5% No mechanical damage
Exposure at High Temperature	1,000 hours at 105℃ Total resistance value variation: within ±5% No mechanical damage	1,000 hours at 105℃ Total resistance value variation: within ±10% No mechanical damage
Vibration	10Hz to 2,000Hz 147m/s² 12 hours Total resistance value variation: within ±5% No mechanical and electrical damage	10Hz to 2,000Hz 147m/s² 12 hours Total resistance value variation: within ±5% No mechanical and electrical damage
Shock	490m/s² 11ms 18 times Total resistance value variation: within ±1% No mechanical and electrical damage	490m/s² 11ms 18 times Total resistance value variation: within ±10% No mechanical and electrical damage
Moisture Resistance	40℃ 95%RH 120 hours Total resistance value variation: within ±10% Insulation resistance: over 10MΩ	40℃ 95%RH 120 hours Total resistance value variation: within ±10% Insulation resistance: over 10MΩ
Life Expectancy, Shaft Reciprocating Motions	No load at 60 c.p.m. 100,000 reciprocating motions Total resistance value variation: within ±5% against initial value Independent linearity tolerance: within 150% of specified value Noise: within 500Ω E.N.R.	No load at 120 c.p.m. 20,000,000 reciprocating motions (except stroke 500mm or longer, and CFL) CFL...10,000,000 reciprocating motions (except stroke 500mm or longer) Total resistance value variation: within ±10% against initial value Independent linearity tolerance: within 150% of specified value Output smoothness: within 150% of specified value

Note: 4. In case of the potentiometer with special resistance values and special specifications, the above performances may vary and therefore, please consult us in advance, separately.
5. As for operating temperature range, we can't always guarantee exactly the same performances and values in actual industrial applications even if the temperature out there is within standard range. (Please see page 23 in this catalog for further details.)
6. All values of each parameter were measured under standard temperature and standard testing conditions. For the values during the tests and other characteristics, please ask us separately.

※N.B:Model 18 FLP series with spring return device and sealed version under IP54 have the operating temperature range of 0℃ to + 60℃.

THE NOMENCLATURE OF MODEL 18 (F) LP SERIES

S 18 FLP B C 100 R E I - ○○○○○

● Special Specifications
S means with special mechanical specifications.

● Diameter
18 means 18mm square in cross sectional outer size of the housing.

● Type
FLP means linear-motion, conductive plastic resistive element type potentiometer. If the resistive element is a wirewound, F is not given and only LP is indicated.

● Mounting Method and Shaft Shape
A : Screw mounting, plain shaft
B : Fixing nail mounting to the body, shaft with a cardan joint
C : Fixing nail mounting to the body, shaft with a ball tip

● Terminal Shape
C : Connector type
W : Leadwire type
1=Brown
2=Yellow
3=Blue
- : Lug type

● Stroke
100 means effective electrical travel of 100mm on the resistive element. 15mm to 200mm are available depending on the models.

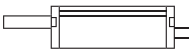
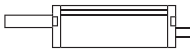
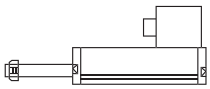
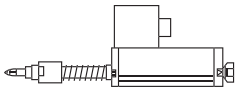
● With Spring Return Device
R : With spring return device
- : Without spring return device

● Shaft Extension
E : With front and rear extended shaft
- : With front extended shaft

● Sealing
I : With simple sealing (Abt. IP54)
- : Without sealing

● 4 or 5 digits branch number
to be used for specific requirements.

SELECTION GUIDE

Model	Outer Shape	Kind of Resistive Element	Mounting Method and Shaft Shape	Stroke (mm)
18LP		Wirewound	Screw mounting to the body. Plain shaft.	15, 30, 50, 100
18FLPA		Conductive Plastic	Screw mounting to the body. Plain shaft.	15, 30, 50, 100
18FLPB		Conductive Plastic	Fixing nail mounting to the body. Shaft with a cardan joint.	25, 50, 75, 100, 150
18FLPC		Conductive Plastic	Fixing nail mounting to the body. Shaft with a ball tip.	25, 50