

# OIL-FILLED POTENTIOMETER

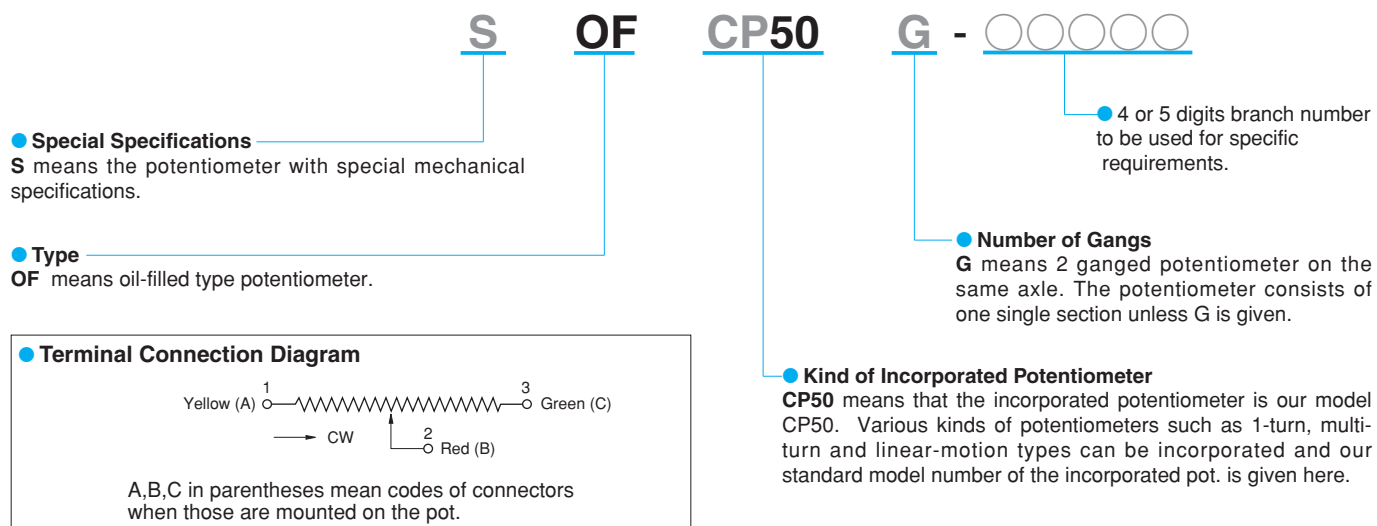
**(Precision 1-turn, Multi-turn & Linear-motion, Wirewound, Hybrid & Conductive Plastic Element)**

**SAKAE Model OF series** oil-filled potentiometers are the products of high reliability and long life expectancy, developed and marketed for the first time in Japan and can be used unaffected even in a special environment where there exist, for example, harmful salt, moisture, organic gas, etc. In addition, our **OF series** retain stable contact resistance for a long period of time and provide a very long life expectancy of shaft revolutions.

Most suitable applications of these potentiometers are for automatic controls in such fields as ship building, coastal electric facilities, pits and mines, iron works, chemical

factories, unmanned underground facilities and numerical control machine tools. There are 3 kinds of resistive element: wirewound type which features good stability, conductive plastic type which offers long life expectancy and excellent high speed tracking ability and hybrid type which features a combination of the merits of wirewound type and conductive plastic type.

## THE NOMENCLATURE OF SAKAE OIL-FILLED POT. SERIES



## SELECTION GUIDE

Type	Applications	Kind of Element	Model No.	Features
1-turn	For general setting	Wirewound	<b>OF30, OF50</b>	Most popular as well as low-cost potentiometer in this series.
	For servo use	Wirewound	<b>OF50PB, OFCP50</b>	Precision version of the above for servo application.
		Conductive Plastic	<b>OF30-MCA</b>	Small size and long life expectancy potentiometer with essentially infinite resolution.
10-turn	For general setting	Wirewound	<b>OF46HD-10</b>	Precision 10-turn potentiometer incorporated.
	For servo use	Wirewound	<b>OF46HDS-10</b>	Precision 10-turn potentiometer incorporated and with servomount.
		Hybrid	<b>OF20HHP-10S</b> <b>OF20HHS-10S</b>	10-turn long life expectancy potentiometer with hybrid resistive element. Bushingmount and servomount are available.
Linear-motion	For general setting and servo use	Wirewound	<b>OF20LP, OF40LP</b>	Precision linear-motion long life expectancy potentiometer incorporated.

● 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			
						Front and Rear Shaft Extension	Extra Taps	With Switch	Multi-ganged
Wirewound (1-turn type)	OF30	500, 1k, 2k, 5k, 10kΩ	50~200	20k	±2.0~±0.5	—	○	—	—
	OF50	100, 200, 500, 1k, 2k, 5k, 10k, 20kΩ	5~50	50k	±1.0~±0.5	○	○	—	○
	OF50PB	100, 200, 500, 1k, 2k, 5k, 10k, 20kΩ	5~50	50k	±1.0~±0.5	○	○	—	○
	OF50MCA	1k, 2k, 5k, 10k, 20k, 50kΩ	50~500	—	±0.5~±0.1	○	○	—	○
Conductive Plastic (1-turn type)	OF30-MCA	1k, 2k, 5k, 10kΩ	—	20k, 50k, 100k	±1.0~±0.5	—	○	—	—
Wirewound (10-turn type)	OF46HD-10	100,200,500,1k,2k,5k,10k,20k,50k,100kΩ	50	200k	±0.3~±0.1	○	—	○	○
	OF46HDS-10	100,200,500,1k,2k,5k,10k,20k,50k,100kΩ							
Hybrid (10-turn type)	OF20HHP-10S	2k, 5k, 10k, 20k, 50k, 100kΩ	—	—	±0.25~±0.1	—	○	—	—
	OF20HPS-10S	2k, 5k, 10k, 20k, 50k, 100kΩ							
Wirewound (Linear-motion type)	OF20LP	100, 200, 500, 1k, 2k, 5k, 10k, 20k, 50kΩ	50	80k	±0.7~±0.25	—	○	—	—
	OF40LP	100, 200, 500, 1k, 2k, 5k, 10k, 20k, 50kΩ	50	100k	±0.5~±0.1	—	○	—	—

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

● Environmental Performances

Model Nos.	OF30, OF50, OF50PB, OF50MCA, OF46HD, OF46HDS	OF30-MCA, OF20HHP, OF20HPS	OF20LP, OF40LP
Operating Temperature Range	— 30°C ~ + 60°C	— 30°C ~ + 60°C	— 30°C ~ + 60°C
Temperature Cycle	5 cycles under — 30°C ~ + 60°C Total resistance value variation: within ± 5% No mechanical damage	5 cycles under — 30°C ~ + 60°C Total resistance value variation: within ± 5% No mechanical damage	5 cycles under — 30°C ~ + 60°C Total resistance value variation: within ± 5% No mechanical damage
Exposure at Low Temperature	24 hours at — 30°C Total resistance value variation: within ± 5% No mechanical damage	24 hours at — 30°C Total resistance value variation: within ± 5% No mechanical damage	24 hours at — 30°C Total resistance value variation: within ± 5% No mechanical damage
Exposure at High Temperature	1,000 hours at 60°C Total resistance value variation: within ± 5% No mechanical damage	1,000 hours at 60°C Total resistance value variation: within ± 5% No mechanical damage	1,000 hours at 60°C Total resistance value variation: within ± 5% No mechanical damage
Vibration	10Hz to 2,000Hz 98m/s <sup>2</sup> 12 hours Total resistance value variation: within ± 5% No mechanical and electrical damage	10Hz to 2,000Hz 98m/s <sup>2</sup> 12 hours Total resistance value variation: within ± 5% No mechanical and electrical damage	10Hz to 2,000Hz 98m/s <sup>2</sup> 12 hours Total resistance value variation: within ± 5% No mechanical and electrical damage
Shock	294m/s <sup>2</sup> 11ms 18 times Total resistance value variation: within ± 1% No mechanical and electrical damage	294m/s <sup>2</sup> 11ms 18 times Total resistance value variation: within ± 1% No mechanical and electrical damage	294m/s <sup>2</sup> 11ms 18 times Total resistance value variation: within ± 1% No mechanical and electrical damage
Moisture Resistance	40°C 95% RH 2,000 hours Total resistance value variation: within ± 10% Insulation resistance: over 100MΩ	40°C 95% RH 2,000 hours Total resistance value variation: within ± 10% Insulation resistance: over 100MΩ	40°C 95% RH 2,000 hours Total resistance value variation: within ± 10% Insulation resistance: over 100MΩ
Rotational Life Expectancy (at 25°C)	No load at 40 r.p.m. OF30, OF50.....200,000 shaft revolutions OF46HD-10 } ...2,000,000 shaft revolutions OF50PB } .....revolutions OF50MCA } .....revolutions OF50PB } .....revolutions OF50MCA } .....revolutions OF50MCA } .....revolutions 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 r.p.m. OF30-MCA.....10,000,000 shaft revolutions No load at 40 r.p.m. OF20HHP-10.....5,000,000 shaft revolutions Total resistance value variation: within ± 10% against initial value Independent linearity tolerance: within 150% of specified value Output smoothness: within 150% of specified value	No load at 60 c.p.m. OF20LP.....2,000,000 shaft reciprocating motions OF40LP.....5,000,000 shaft 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.

Note: 2. In the case of the potentiometer with special resistance values and special specifications, the above performances may vary and therefore, please consult us in advance, separately.

3. 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.)

4. 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.