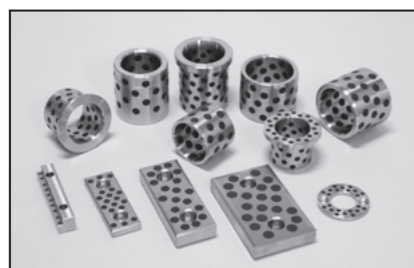


Oiles 500SP1 High-strength brass bearings with embedded solid lubricant



Feature

- Serviceable without the need for lubrication.
- Demonstrates high performance under high-load and low-speed operations.
- Demonstrates superior wear resistance in applications where oil film is seldom produced such as reciprocating motions, oscillation, frequent starts and stops, etc.
- Superior chemical resistance and corrosion resistance.
- Standard products are available in various sizes.

Service range	500SP1 SL1		500SP1 SL4
	Dry	periodic lubrication	Dry
Lubrication condition	Dry	periodic lubrication	Dry
Service temperature range °C	-40~+300	-40~+150	-40~+80
Allowable max. pressure P N/mm ² [kgf/cm ²]	29 (150) {296 (1,530)}		49 (150) {500 (1,530)}
Allowable max. velocity V m/s [m/min]	0.50 {30}	1.00 {60}	0.25 {15}
Allowable max. PV value N/mm ² · m/s [kgf/cm ² · m/min]	1.65 {1,010}	3.25 {1,990}	1.65 {1,010}

The values in parentheses are static bearing pressures, which are the bearing pressures in applications with no motion or very small motion ($\leq 0.0017\text{m/s}$ [0.1m/min]).

Mechanical properties

Density	—	g/cm ³	7.8
Tensile strength	JIS Z 2241	N/mm ² [kgf/mm ²]	755 {77}
Tensile elongation at break	JIS Z 2241	%	12
Compressive strength	—	N/mm ² [kgf/mm ²]	345 {35} (Note)
Impact strength	JIS Z 2242	J/cm ² [kgf/cm ²]	19 {1.9}
Hardness	JIS Z 2243	HBW	210
Modulus of longitudinal elasticity	—	N/mm ² [kgf/mm ²]	105,000 {10,700}
Co-efficient of linear expansion	—	$\times 10^{-5} \text{ } ^\circ\text{C}^{-1}$	2.12
Thermal conductivity	—	W/m ² [cal/sec ² Ccm]	87.8 {0.21}

※ The values shown above are typical values, not the standard values.

(Note) Compressive strength is 0.1%

▲ When you use standard 500SP1 seires in the temperature of 150°C and over, contact us for more information.

▲ Refer to page 36 for the suitable solid lubricant for made-to-order bearings.

▲ Please indicate the type of motion (rotation, reciprocating, rotation & reciprocating) for custom-made products.

▲ Solid lubricant, SL401 and SL403 are not lead-free.

Lathe turning

		carbide tool (JIS)	
Cutting tool	Relief angle	5~10°	
	Rake angle	2~5°	
	Nose radius (mm)	0.40~0.80	
Condition	Speed (m/min)	100~200	
	Cut depth (mm)	0.05~0.30	
	Feed (mm/rev)	0.08~0.30	

Some products require application of solid lubricants on the sliding surface after processing.

※ Contact us for grinding and milling information.

Machining accuracy (bushing)

I.D.	O.D.	Length
class 7 to 8	class 6 to 7	class 8 to 9

Classes here are in JIS standard.

This product demonstrates satisfactory performance at the slide surface roughness of Rz6.3 to 12.5 μm .

Test data

Journal rotation test 500SP1-SL1

<Testing conditions>

Bearing dimension : $\phi 40 \times \phi 50 \times l 30$

Mating material : S45C high frequency quenched

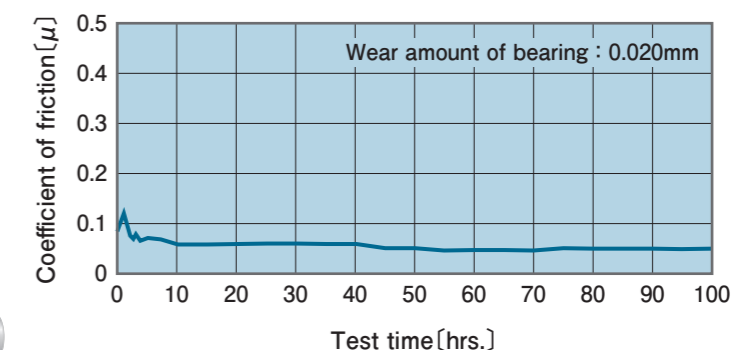
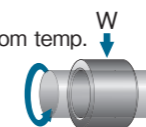
Pressure : 24.5N/mm² {250.0kgf/cm²}

Velocity : 0.033m/s {2.0m/min}

Test time : 100hrs.

Ambience : in the atmosphere, room temp.

Lubrication : dry



Journal oscillation test 500SP1-SL1

<Testing conditions>

Bearing dimension : $\phi 40 \times \phi 50 \times l 30$

Mating material : S45C

Pressure : 19.6N/mm² {200.0kgf/cm²}

Velocity : 0.025m/s {1.5m/min}

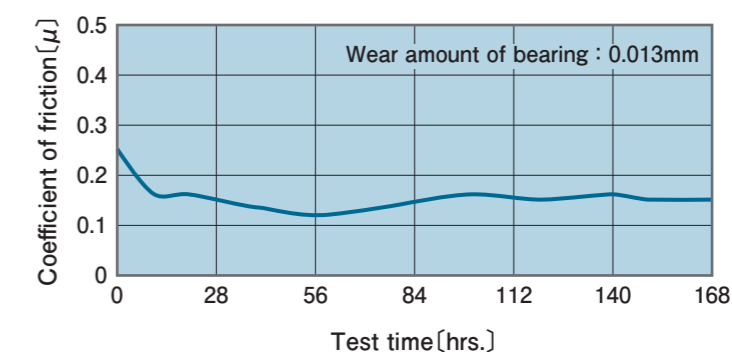
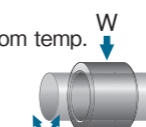
Oscillating cycle : 24cpm

Oscillating angle : $\pm 45^\circ$

Test time : 168hrs.

Ambience : in the atmosphere, room temp.

Lubrication : dry



Journal oscillation test 500SP1-SL4

<Testing conditions>

Bearing dimension : $\phi 40 \times \phi 50 \times l 30$

Mating material : SUS304

Pressure : 29.4N/mm² {300kgf/cm²}

Velocity : 0.012m/s {0.75m/min}

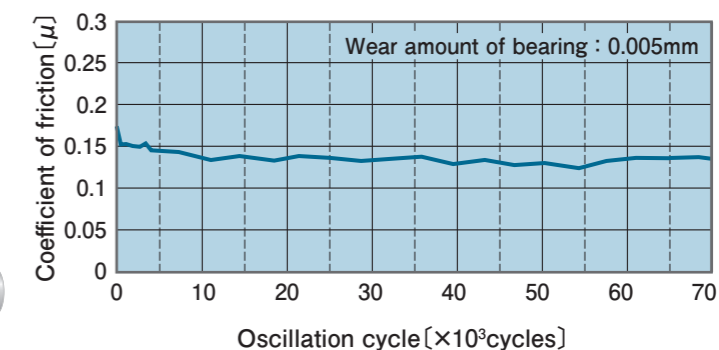
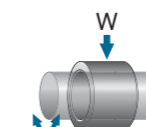
Oscillating cycle : 12cpm

Oscillating angle : $\pm 45^\circ$

Test cycle : 70,000cycle (97.2h)

Ambience : in the atmosphere, room temp.

Lubrication : initial grease SL464g coating



Journal oscillation test 500SP1-SL4

<Testing conditions>

Bearing dimension : $\phi 60 \times \phi 75 \times l 50$

Mating material : SUS403

Pressure : 24.5N/mm² {250kgf/cm²}

Velocity : 0.018m/s {1.13m/min}

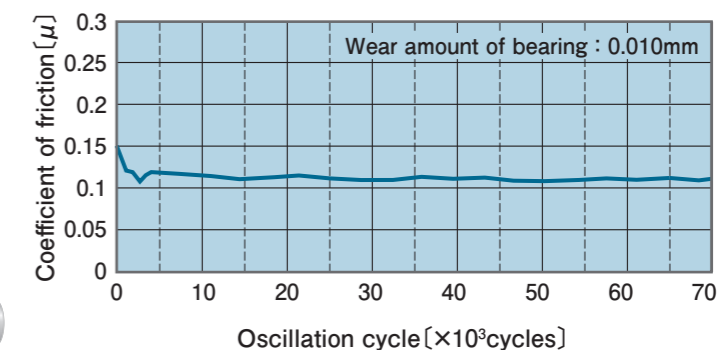
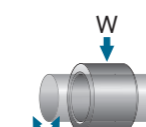
Oscillating cycle : 12cpm

Oscillating angle : $\pm 45^\circ$

Test cycle : 70,000cycle (97.2h)

Ambience : in the purified water

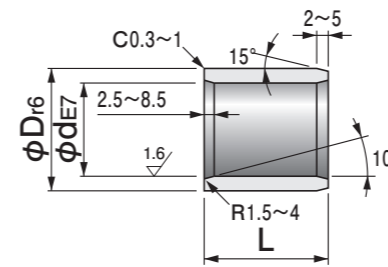
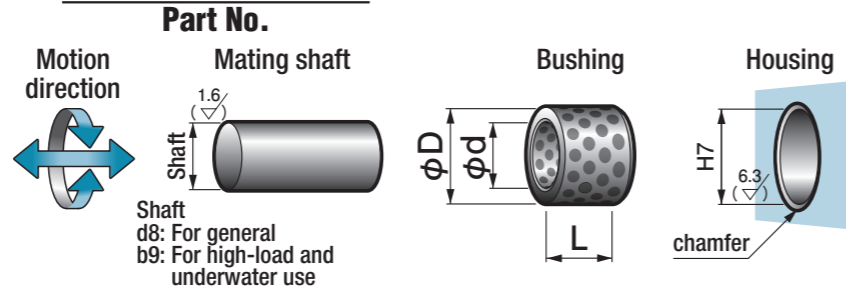
Lubrication : initial grease SL464g coating





Specify Part No. by required I.D., O.D. and Length.
(e.g.) I.D. is 60mm, O.D. is 75mm, and length is 80mm.

SPBL - 607580



- Applicable to rotational, oscillating, and reciprocating motion.
- Be sure to apply grease supplied with the product to the inner sliding surface before assembling the bearing. Run in the bearing.
- May be used over the maximum allowable speed or maximum allowable PV value in short-time intermittent operations. Inquire us in such a case.
- Use a stainless steel or chrome-plated (30μm or more) mating shaft when using the product in water, in a water-splashed place, etc.
- Use a mating shaft made of high-grade stainless steel with higher corrosion resistance or plated with thicker chrome when using the product in severe corrosive conditions. Supply grease for rust prevention.
- Provide the bushing with a set screw when using the product for high loads.
- Usable without the need for lubrication in the air and water. Use lithium grease with extreme pressure additive if greasing is required.

※Operating Temperature Range: -40~ +80°C (-40~ +176°F) Solid Lubricant : SL464 (refer to page 36)

I.D.	O.D.	Length L										I.D. tolerance after press fitting (reference)	I.D.
φd	φD	Tolerance $_{-0.3}^{-0.1}$										φd	
Tolerance	Tolerance	20	25	30	35	40	50	60	70	80			
+0.050/+0.032	18 +0.034/+0.023	121820										+0.031/+0.013	12
+0.050/+0.032	21 +0.041/+0.028	152120										+0.026/+0.008	15
+0.050/+0.032	22 +0.041/+0.028	162220		162230								+0.026/+0.008	16
+0.050/+0.032	24 +0.041/+0.028	182420										+0.026/+0.008	18
+0.061/+0.040	30 +0.041/+0.028	203020			203030		203040					+0.037/+0.016	20
+0.061/+0.040	35 +0.050/+0.034	253520	253525	253530		253540	253550					+0.032/+0.011	25
+0.061/+0.040	40 +0.050/+0.034	304020	304025	304030		304040	304050					+0.032/+0.011	30
+0.075/+0.050	45 +0.050/+0.034	354520		354530	354535	354540	354550	354560				+0.046/+0.021	35
+0.075/+0.050	50 +0.050/+0.034			405030		405040	405050	405060				+0.046/+0.021	40
+0.075/+0.050	55 +0.060/+0.041					405540	405550	405560				+0.040/+0.015	40
+0.075/+0.050	60 +0.060/+0.041			456030			456050	456060				+0.040/+0.015	45
+0.075/+0.050	60 +0.060/+0.041					506040	506050	506060				+0.040/+0.015	50
+0.075/+0.050	65 +0.060/+0.041					506540	506550	506560	506570			+0.040/+0.015	50
+0.090/+0.060	70 +0.062/+0.043					557040		557060	557070			+0.053/+0.023	55
+0.090/+0.060	75 +0.062/+0.043						607550	607560	607570	607580		+0.053/+0.023	60
+0.090/+0.060	80 +0.062/+0.043							658060	658070	658080		+0.053/+0.023	65
+0.090/+0.060	90 +0.073/+0.051							709060	709070	709080		+0.046/+0.016	70
+0.090/+0.060	95 +0.073/+0.051								759570			+0.046/+0.016	75
+0.090/+0.060	100 +0.073/+0.051							801060		801080		+0.046/+0.016	80
+0.107/+0.072	110 +0.076/+0.054							9011060		9011080		+0.060/+0.025	90
+0.107/+0.072	120 +0.076/+0.054							10012060		10012080		+0.060/+0.025	100
+0.107/+0.072	130 +0.088/+0.063											+0.052/+0.017	110
+0.107/+0.072	140 +0.088/+0.063									12014080		+0.052/+0.017	120
+0.125/+0.085	150 +0.090/+0.065											+0.068/+0.028	130
+0.125/+0.085	160 +0.090/+0.065											+0.068/+0.028	140
+0.125/+0.085	170 +0.093/+0.068											+0.065/+0.025	150
+0.125/+0.085	180 +0.093/+0.068											+0.065/+0.025	160
+0.125/+0.085	190 +0.106/+0.077											+0.065/+0.025	170
+0.125/+0.085	200 +0.106/+0.077											+0.065/+0.025	180
+0.146/+0.100	210 +0.109/+0.080											+0.078/+0.032	190
+0.146/+0.100	230 +0.113/+0.084											+0.078/+0.032	200

Length L								Tolerance $_{-0.3}^{-0.1}$		I.D. tolerance after press fitting (reference)	I.D.
90	100	110	120	130	140	150	200			φd	
										+0.031/+0.013	12
										+0.026/+0.008	15
										+0.026/+0.008	16
										+0.026/+0.008	18
										+0.037/+0.016	20
										+0.032/+0.011	25
										+0.032/+0.011	30
										+0.046/+0.021	35
										+0.046/+0.021	40
										+0.040/+0.015	40
										+0.040/+0.015	45
										+0.040/+0.015	50
										+0.040/+0.015	50
										+0.053/+0.023	55
										+0.053/+0.023	60
										+0.053/+0.023	65
709090	7090100									+0.046/+0.016	70
	7595100									+0.046/+0.016	75
8010090	80100100	80100110								+0.046/+0.016	80
9011090	90110100									+0.060/+0.025	90
	100120100		100120120							+0.060/+0.025	100
	110130100	110130110								+0.052/+0.017	110
	120140100		120140120							+0.052/+0.017	120
	130150100			130150130		130150150				+0.068/+0.028	130
	140160100				140160140					+0.068/+0.028	140
	150170100					150170150				+0.065/+0.025	150
	160180100					160180150				+0.065/+0.025	160
	*170190100					*170190150				+0.065/+0.025	170
	*180200100					*180200150				+0.065/+0.025	180
	*190210100					*190210150				+0.078/+0.032	190
						*200230150	*200230200			+0.078/+0.032	200

※Part No. with * are made-to-order.

※The I.D. tolerance after press fitting is for reference only.

▲ The dimensional tolerances are the values measured at +25°C.