

OILES 500



Standard dimensions

**High-strength brass bearings
with embedded solid lubricant**



First choice in bronze

For high load and low speed

Oiles 500 is a selflubricated bearing using highgrade copper alloys as their base material, with embedded solid lubricant plugs, graphite or PTFE. During operation a very thin, but nevertheless extremely strong, lubrication film is deposited automatically over the complete moving surfaces.

Oiles 500 is used where the demand for maintenance free operation, high load, high temperature, chemicals or corrosion make it impossible to use conventional bearings.

Oiles 500 has been developed by the Oiles Corporation in Japan.

Johnson Metall AB in Sweden has since 1973 being a part of the production and sales network for Oiles 500.

Johnson Metall AB have the license to manufacture and an exclusive sales territory for Oiles 500 products throughout the Nordic countries. Now we also introduce the Oiles 500 SP1 standard dimensions on the Nordic market that you find in this brochure, here we are an licensed distributor.

If you not find any standard dimensions that fits, no problem we can produce Oiles 500 Special custom made, dimensions, shape, base material, type of lubricant plugs, all can be changed, so it matches your application and conditions.

For these custom made Oiles 500 Special, we have an separate brochure. If you still have problem or questions regarding choices of material etc., do not hesitate to contact Johnson Metall.

We will be pleased to help and guide you.



First choice in bronze

The Oiles 500SP1 series are self-lubricating bearings composed of high-strength brass alloy bases made with advanced casting technology and embedded solid lubricants, graphite + additives with lubrication oil.



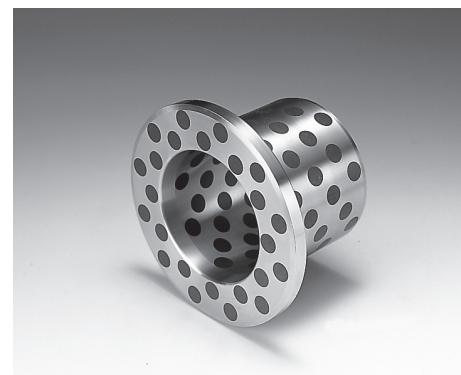
SPB



SPF



SPW



SPFG

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.

Applicable to rotation, oscillation, and reciprocating motion.

Not for use under water.

**First choice in bronze**

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



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

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 {kgfm/cm ² }	19 {1.9}
Hardness	JIS Z 2243	—	HB210
Modulus of longitudinal elasticity	JIS Z 2241	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°C {cal/sec°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 series in the temperature of 150°C and over, contact us for more information.

Test data

Journal rotation test 500SP1-SL1

<Testing conditions>

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

Mating material : S45C high frequency quenched

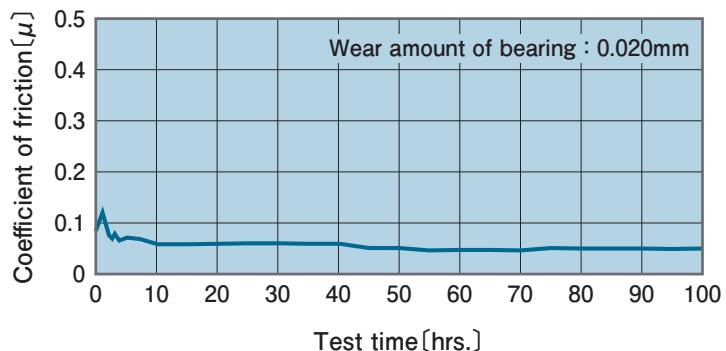
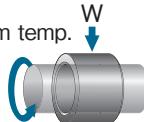
Pressure : 24.5N/mm² [250.0kgf/cm²]

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 : $\phi 40 \times \phi 50 \times \ell 30$

Mating material : S45C

Pressure : 19.6N/mm² [200.0kgf/cm²]

Velocity : 0.025m/s [1.5m/min]

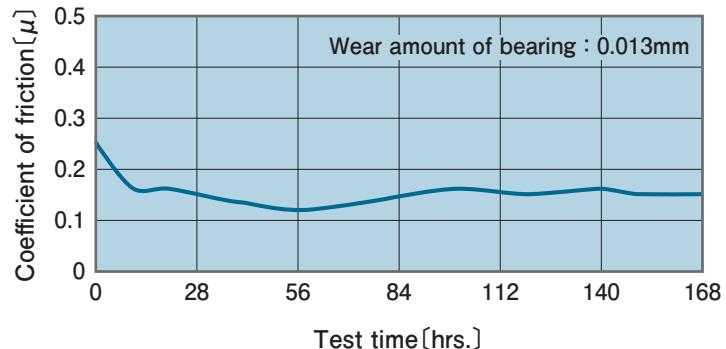
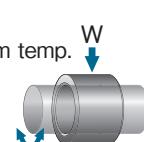
Oscillating cycle : 24cpm

Oscillating angle : $\pm 45^\circ$

Test time : 168hrs.

Ambience : in the atmosphere, room temp.

Lubrication : dry

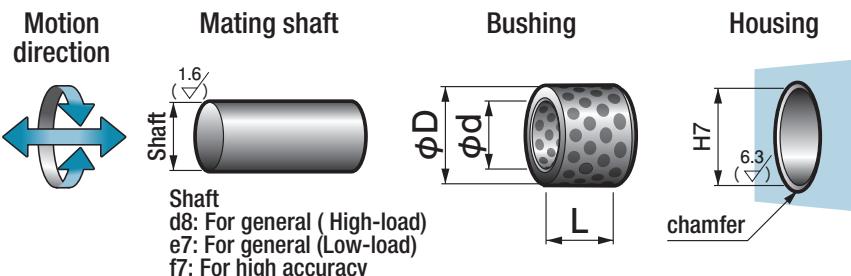




Specify Part No. by required I.D., O.D. and Length.
(e.g.) I.D. is 25mm, O.D. is 33mm, and length is 20mm.

SPB - 253320

Part No.



All SPB bushings have engraved **OILES** mark.

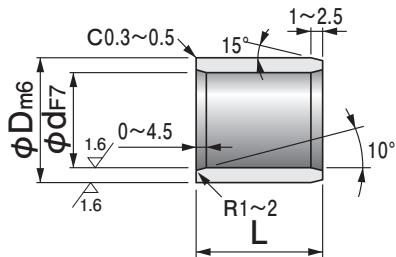
I.D.		O.D.		Length L		Tolerance ${}^{+0.1}_{-0.3}$					
ϕd	Tolerance	ϕD	Tolerance	8	10	12	15	16	19	20	25
6	$+0.022$ $+0.010$	10	$+0.015$ $+0.006$	061008	061010	061012					
8	$+0.028$ $+0.013$	12	$+0.018$ $+0.007$	081208	081210	081212	081215				
10	$+0.028$ $+0.013$	14	$+0.018$ $+0.007$	101408	101410	101412	101415			101420	
12	$+0.034$ $+0.016$	18	$+0.018$ $+0.007$	121808	121810	121812	121815	121816	121819	121820	121825
13	$+0.034$ $+0.016$	19	$+0.021$ $+0.008$		131910	131912	131915			131920	131925
14	$+0.034$ $+0.016$	20	$+0.021$ $+0.008$		142010	142012	142015			142020	142025
15	$+0.034$ $+0.016$	21	$+0.021$ $+0.008$		152110	152112	152115	152116		152120	152125
16	$+0.034$ $+0.016$	22	$+0.021$ $+0.008$		162210	162212	162215	162216	162219	162220	162225
17	$+0.034$ $+0.016$	23	$+0.021$ $+0.008$			172315					
18	$+0.034$ $+0.016$	24	$+0.021$ $+0.008$		182410	182412	182415	182416		182420	182425
19	$+0.041$ $+0.020$	26	$+0.021$ $+0.008$			192615				192620	
20	$+0.041$ $+0.020$	28	$+0.021$ $+0.008$		202810	202812	202815	202816	202819	202820	202825
20	$+0.041$ $+0.020$	30	$+0.021$ $+0.008$		203010	203012	203015	203016		203020	203025
22	$+0.041$ $+0.020$	32	$+0.025$ $+0.009$			223212	223215			223220	223225
25	$+0.041$ $+0.020$	33	$+0.025$ $+0.009$			253312	253315	253316		253320	253325
25	$+0.041$ $+0.020$	35	$+0.025$ $+0.009$			253512	253515	253516		253520	253525
28	$+0.041$ $+0.020$	38	$+0.025$ $+0.009$							283820	283825
30	$+0.041$ $+0.020$	38	$+0.025$ $+0.009$			303812	303815			303820	303825
30	$+0.041$ $+0.020$	40	$+0.025$ $+0.009$			304012	304015			304020	304025
31.5	$+0.050$ $+0.025$	40	$+0.025$ $+0.009$								
32	$+0.050$ $+0.025$	42	$+0.025$ $+0.009$							324220	
35	$+0.050$ $+0.025$	44	$+0.025$ $+0.009$							354420	354425
35	$+0.050$ $+0.025$	45	$+0.025$ $+0.009$							354520	354525
38	$+0.050$ $+0.025$	48	$+0.025$ $+0.009$								
40	$+0.050$ $+0.025$	50	$+0.025$ $+0.009$				405015			405020	405025
40	$+0.050$ $+0.025$	55	$+0.030$ $+0.011$				405515				
45	$+0.050$ $+0.025$	55	$+0.030$ $+0.011$								
45	$+0.050$ $+0.025$	56	$+0.030$ $+0.011$								
45	$+0.050$ $+0.025$	60	$+0.030$ $+0.011$								

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

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

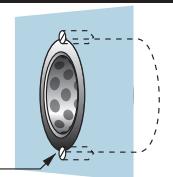


First choice in bronze



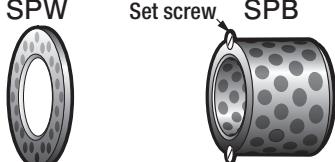
It is recommended to use a set screw to prevent dislocation.

Set screw



Use this product together with the Oiles #500SP washer SPW in a position where thrust loads are applied.

SPW



Set screw



※Be sure to determine the position with a countersunk head screw and fix when the SPW with ★ shown in the table below is used, since the inner diameter is larger than the shaft diameter.

Length L	Tolerance $\begin{array}{l} -0.1 \\ -0.3 \end{array}$						I.D. tolerance after press fitting (reference)	Washer	I.D. ϕd
	30	35	40	50	60	70			
							+0.019 +0.007	0603	6
							+0.025 +0.010	0803	8
							+0.025 +0.010	1003	10
121830							+0.031 +0.013	1203	12
131930							+0.030 +0.012	1303	13
142030							+0.030 +0.012	1403	14
152130	152135	152140					+0.030 +0.012	1503	15
162230	162235	162240					+0.030 +0.012	1603	16
							+0.030 +0.012	1803★	17
182430	182435	182440					+0.030 +0.012	1803	18
							+0.037 +0.016	2005★	19
202830	202835	202840	202850				+0.037 +0.016	2005	20
203030	203035	203040	203050				+0.037 +0.016	2505★	20
							+0.037 +0.016	2505★	22
253330	253335	253340	253350	253360			+0.037 +0.016	2505	25
253530	253535	253540	253550	253560			+0.037 +0.016	3005★	25
283830		283840					+0.037 +0.016	3005★	28
303830	303835	303840	303850	303860			+0.037 +0.016	3005	30
304030	304035	304040	304050	304060			+0.037 +0.016	3505★	30
314030		314040					+0.046 +0.021	3505★	31.5
324230		324240					+0.046 +0.021	3505★	32
354430	354435	354440	354450	354460			+0.046 +0.021	3505	35
354530	354535	354540	354550	354560			+0.046 +0.021	4007★	35
		384840					+0.046 +0.021	4007★	38
405030	405035	405040	405050	405060	405070	405080	+0.046 +0.021	4007	40
405530	405535	405540	405550	405560			+0.045 +0.020	4507★	40
455530	455535	455540	455550	455560			+0.045 +0.020	4507	45
455630	455635	455640	455650	455660			+0.045 +0.020	4507	45
456030	456035	456040	456050	456060	456070	456080	+0.045 +0.020	4507	45



First choice in bronze



Specify Part No. by required I.D., O.D. and Length.
(e.g.) I.D. is 80mm, O.D. is 96mm, and length is 70mm.

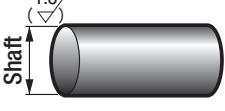
SPB - 809670

Part No.

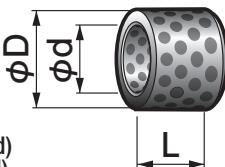
Motion direction



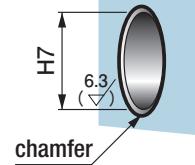
Mating shaft



Bushing



Housing



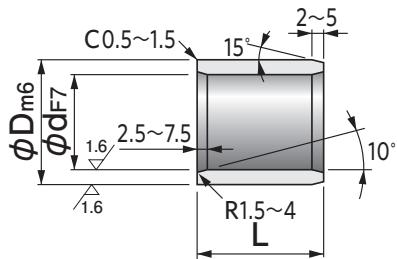
All SPB bushings have engraved **OILES** mark.

I.D.		O.D.		Length L		Tolerance ± 0.1					
ϕd	Tolerance	ϕD	Tolerance	20	30	35	40	50	60	70	80
50	+0.050 +0.025	60	+0.030 +0.011	506020	506030	506035	506040	506050	506060	506070	506080
50	+0.050 +0.025	62	+0.030 +0.011		506230	506235	506240	506250	506260	506270	506280
50	+0.050 +0.025	65	+0.030 +0.011		506530		506540	506550	506560	506570	506580
55	+0.060 +0.030	70	+0.030 +0.011		557030	557035	557040	557050	557060	557070	
60	+0.060 +0.030	74	+0.030 +0.011		607430	607435	607440	607450	607460	607470	607480
60	+0.060 +0.030	75	+0.030 +0.011		607530	607535	607540	607550	607560	607570	607580
63	+0.060 +0.030	75	+0.030 +0.011						637560	637570	637580
65	+0.060 +0.030	80	+0.030 +0.011				658040	658050	658060	658070	658080
70	+0.060 +0.030	85	+0.035 +0.013		708530	708535	708540	708550	708560	708570	708580
70	+0.060 +0.030	90	+0.035 +0.013					709050	709060	709070	709080
75	+0.060 +0.030	90	+0.035 +0.013					759050	759060	759070	759080
75	+0.060 +0.030	95	+0.035 +0.013						759560	759570	759580
80	+0.060 +0.030	96	+0.035 +0.013				809640	809650	809660	809670	809680
80	+0.060 +0.030	100	+0.035 +0.013				8010040	8010050	8010060	8010070	8010080
85	+0.071 +0.036	100	+0.035 +0.013						8510060		8510080
90	+0.071 +0.036	110	+0.035 +0.013					9011050	9011060		9011080
100	+0.071 +0.036	120	+0.035 +0.013					10012050	10012060	10012070	10012080
110	+0.071 +0.036	130	+0.040 +0.015					11013050		11013070	11013080
120	+0.071 +0.036	140	+0.040 +0.015							12014070	12014080
125	+0.083 +0.043	145	+0.040 +0.015								
130	+0.083 +0.043	150	+0.040 +0.015								13015080
140	+0.083 +0.043	160	+0.040 +0.015								
150	+0.083 +0.043	170	+0.040 +0.015								15017080
160	+0.083 +0.043	180	+0.040 +0.015								16018080
170	+0.083 +0.043	190	+0.046 +0.017								
180	+0.083 +0.043	200	+0.046 +0.017								
190	+0.096 +0.050	210	+0.046 +0.017								
200	+0.096 +0.050	230	+0.046 +0.017								

*Part No. with * are custom-made.

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

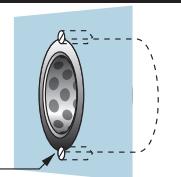
⚠ The dimensional tolerances are the values measured at +25°C.



- Applicable to rotation, oscillation, and reciprocating motion.
- Do not use this under water.
- 63mm I.D. bushing can be used as an intermediate trunnion bushing for hydraulic cylinders.

It is recommended to use a set screw to prevent dislocation.

Set screw



Use this product together with the Oiles #500SP washer SPW in a position where thrust loads are applied.

SPW



Set screw

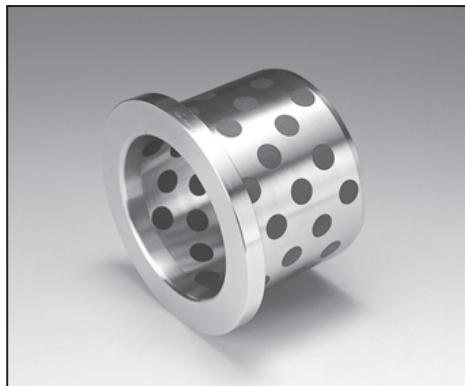


※ Be sure to determine the position with a countersunk head screw and fix when the SPW with ★ shown in the table below is used, since the inner diameter is larger than the shaft diameter.

Length L	Tolerance ± 0.1							I.D. tolerance after press fitting (reference)	Washer	I.D. ϕd
	90	100	120	130	140	150	200			
								+0.045 +0.020	5008	50
								+0.045 +0.020	5008	50
5065100								+0.045 +0.020	5008	50
								+0.055 +0.025	5508	55
								+0.055 +0.025	6008	60
6075100								+0.055 +0.025	6008	60
								+0.055 +0.025	6508★	63
								+0.055 +0.025	6508	65
7085100								+0.054 +0.024	7010	70
								+0.054 +0.024	7010	70
7590100								+0.054 +0.024	7510	75
7595100								+0.054 +0.024	7510	75
8096100	8096120							+0.054 +0.024	8010	80
80100100	80100120			80100140				+0.054 +0.024	8010	80
								+0.065 +0.030	9010★	85
9011090	90110100	90110120						+0.065 +0.030	9010	90
10012090	100120100	100120120		100120140				+0.065 +0.030	10010	100
	110130100	110130120						+0.064 +0.029	12010★	110
12014090	120140100	120140120		120140140				+0.064 +0.029	12010	120
	125145100	125145120						+0.076 +0.036	—	125
	130150100		130150130					+0.076 +0.036	—	130
	140160100			140160140				+0.076 +0.036	—	140
	150170100				150170150			+0.076 +0.036	—	150
	160180100				160180150			+0.076 +0.036	—	160
	*170190100				*170190150			+0.076 +0.036	—	170
	*180200100				*180200150			+0.076 +0.036	—	180
	*190210100				*190210150			+0.088 +0.042	—	190
					*200230150	*200230200		+0.088 +0.042	—	200

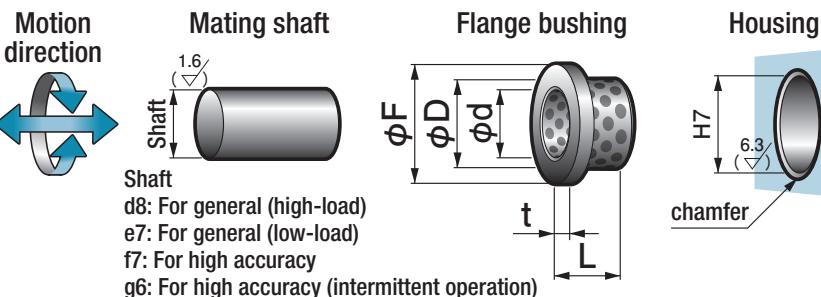


First choice in bronze

SPF**Oiles 500SP1 SL1 Flange Bushings**

Specify Part No. by required I.D. and Length.

(e.g.) I.D. is 50mm and length is 30mm.

SPF - 5030**Part No.**

Shaft

d8: For general (high-load)

e7: For general (low-load)

f7: For high accuracy

g6: For high accuracy (intermittent operation)

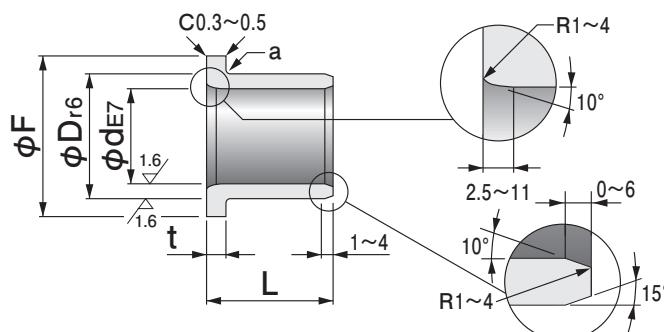
I.D.		O.D.		Flange			Length L	Tolerance $\begin{array}{l} -0.1 \\[-4pt] -0.3 \end{array}$	10	12	15	17	18	20	23	25
ϕd	Tolerance	ϕD	Tolerance	ϕF	Tolerance	t	Tolerance									
6	+0.032 +0.020	10	+0.028 +0.019	16	0 -0.3	2	0 -0.1	0610	0612							
8	+0.040 +0.025	12	+0.034 +0.023	20	0 -0.3	2	0 -0.1	0810	0812	0815						
10	+0.040 +0.025	14	+0.034 +0.023	22	0 -0.3	2	0 -0.1	1010	1012	1015	1017			1020		
12	+0.050 +0.032	18	+0.034 +0.023	25	0 -0.3	3	0 -0.1	1210	1212	1215				1220		1225
13	+0.050 +0.032	19	+0.041 +0.028	26	0 -0.3	3	0 -0.1	1310	1312	1315				1320		1325
14	+0.050 +0.032	20	+0.041 +0.028	27	0 -0.3	3	0 -0.1			1415				1420		1425
15	+0.050 +0.032	21	+0.041 +0.028	28	0 -0.3	3	0 -0.1	1510	1512	1515				1520		1525
16	+0.050 +0.032	22	+0.041 +0.028	29	0 -0.3	3	0 -0.1	1612	1615		1618	1620	1623	1625		
18	+0.050 +0.032	24	+0.041 +0.028	32	0 -0.3	3	0 -0.1			1815				1820		1825
20	+0.061 +0.040	30	+0.041 +0.028	40	0 -0.3	5	0 -0.1			2015				2020		2025
25	+0.061 +0.040	35	+0.050 +0.034	45	0 -0.3	5	0 -0.1			2515				2520		2525
30	+0.061 +0.040	40	+0.050 +0.034	50	0 -0.3	5	0 -0.1							3020		3025
31.5	+0.075 +0.050	40	+0.050 +0.034	50	0 -0.3	5	0 -0.1							3120		
35	+0.075 +0.050	45	+0.050 +0.034	60	0 -0.3	5	0 -0.1							3520		3525
40	+0.075 +0.050	50	+0.050 +0.034	65	0 -0.3	5	0 -0.1							4020		4025
45	+0.075 +0.050	55	+0.060 +0.041	70	0 -0.3	5	0 -0.1									
50	+0.075 +0.050	60	+0.060 +0.041	75	0 -0.3	5	0 -0.1									
55	+0.090 +0.060	65	+0.060 +0.041	80	0 -0.3	5	0 -0.1									
60	+0.090 +0.060	75	+0.062 +0.043	90	0 -0.3	7.5	0 -0.1									
63	+0.090 +0.060	75	+0.062 +0.043	85	0 -0.3	7.5	0 -0.1									
65	+0.090 +0.060	80	+0.062 +0.043	95	0 -0.3	7.5	0 -0.1									
70	+0.090 +0.060	85	+0.073 +0.051	105	0 -0.3	7.5	0 -0.1									
75	+0.090 +0.060	90	+0.073 +0.051	110	0 -0.3	7.5	0 -0.1									
80	+0.090 +0.060	100	+0.073 +0.051	120	0 -0.3	10	0 -0.1									
90	+0.107 +0.072	110	+0.076 +0.054	130	0 -0.3	10	0 -0.1									
100	+0.107 +0.072	120	+0.076 +0.054	150	0 -0.3	10	0 -0.1									
120	+0.107 +0.072	140	+0.088 +0.063	170	0 -0.3	10	0 -0.1									
130	+0.125 +0.085	150	+0.090 +0.065	180	0 -0.3	10	0 -0.1									
140	+0.125 +0.085	160	+0.090 +0.065	190	0 -0.3	10	0 -0.1									
150	+0.125 +0.085	170	+0.093 +0.068	200	0 -0.3	10	0 -0.1									
160	+0.125 +0.085	180	+0.093 +0.068	210	0 -0.3	10	0 -0.1									

※ 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.

**First choice in bronze**



a: Chamfering for under flange

ϕd	~18	~65	~160
a	R0.3	R0.5	R1 (mm)

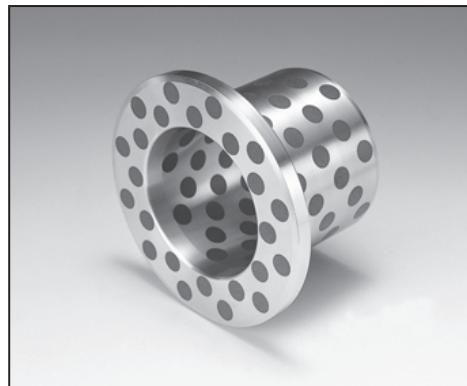
★ 4 model number of SPF-6040/6050/6080/6367 is R1.

- Applicable to rotational, oscillating, and reciprocating motion.
 - Flange surface is not subject to a thrust load as no lubricant is embedded.
 - Do not use this under water.
 - 31.5mm I.D. and 63mm I.D bushing can be used as an intermediate trunnion bushing for hydraulic cylinders.

Length L Tolerance ${}^{+0.1}_{-0.3}$									I.D. tolerance after press fitting (reference)	I.D. ϕd
30	35	40	50	60	67.5	80	100	120		
									+0.016 +0.004	6
									+0.021 +0.006	8
									+0.021 +0.006	10
1230									+0.031 +0.013	12
1330									+0.026 +0.008	13
									+0.026 +0.008	14
1530									+0.026 +0.008	15
1630	1635	1640							+0.026 +0.008	16
1830	1835	1840							+0.026 +0.008	18
2030	2035	2040							+0.037 +0.016	20
2530	2535	2540	2550						+0.032 +0.011	25
3030	3035	3040	3050						+0.032 +0.011	30
3130	3135	3140							+0.046 +0.021	31.5
3530	3535	3540	3550						+0.046 +0.021	35
4030	4035	4040	4050						+0.046 +0.021	40
4530	4535	4540	4550	4560					+0.040 +0.015	45
5030	5035	5040	5050	5060					+0.040 +0.015	50
		5540		5560					+0.055 +0.025	55
		★ 6040	★ 6050	6060		★ 6080			+0.053 +0.023	60
					★ 6367				+0.053 +0.023	63
				6560					+0.053 +0.023	65
			7050			7080			+0.046 +0.016	70
				7560					+0.046 +0.016	75
				8060		8080	80100		+0.046 +0.016	80
				9060		9080			+0.060 +0.025	90
						10080	100100		+0.060 +0.025	100
						12080	120100		+0.052 +0.017	120
						*13080	*130100		+0.068 +0.028	130
						*14080	*140100		+0.068 +0.028	140
							*150100	*150120	+0.065 +0.025	150
							*160100	*160120	+0.065 +0.025	160



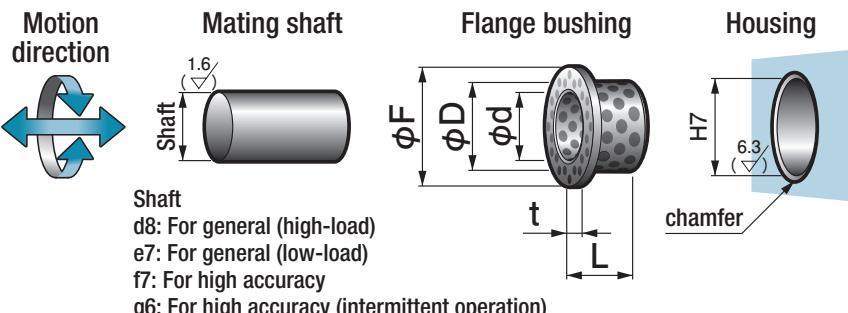
SPFG Oiles 500SP1 SL1 Thrust Bushings



Specify Part No. by required I.D. and Length.
(e.g.) I.D. is 35mm and length is 25mm.

SPFG - 3525

Part No.



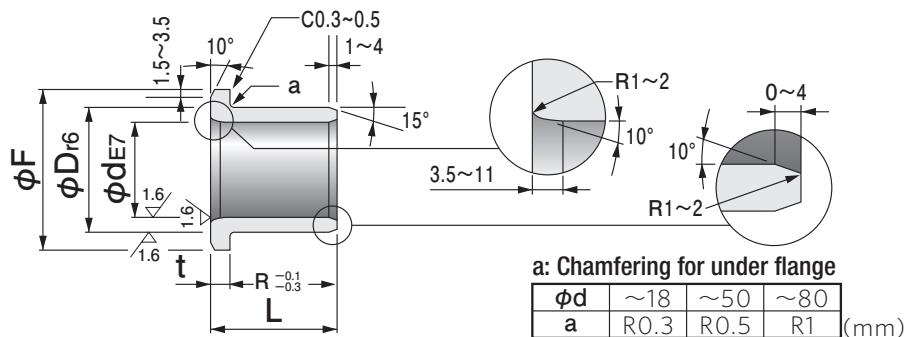
I.D.		O.D.		Flange			Length L						
ϕd	Tolerance	ϕD	Tolerance	ϕF	Tolerance	t	Tolerance	11	13	18	20	23	25
6	+0.032 +0.020	10	+0.028 +0.019	20	0 -0.3	3	0 -0.03	0611					
8	+0.040 +0.025	12	+0.034 +0.023	25	0 -0.3	3	0 -0.03		0813				
10	+0.040 +0.025	14	+0.034 +0.023	25	0 -0.3	3	0 -0.03		1013	1018			
12	+0.050 +0.032	18	+0.034 +0.023	30	0 -0.3	3	0 -0.03	1211		1218		1223	
13	+0.050 +0.032	19	+0.041 +0.028	30	0 -0.3	3	0 -0.03		1313	1318		1323	
15	+0.050 +0.032	21	+0.041 +0.028	35	0 -0.3	3	0 -0.03		1513	1518		1523	
16	+0.050 +0.032	22	+0.041 +0.028	35	0 -0.3	3	0 -0.03		1613	1618		1623	
18	+0.050 +0.032	24	+0.041 +0.028	40	0 -0.3	3	0 -0.03			1818		1823	
20	+0.061 +0.040	28	+0.041 +0.028	45	0 -0.3	5	0 -0.03				2020		2025
25	+0.061 +0.040	33	+0.050 +0.034	50	0 -0.3	5	0 -0.03				2520		2525
30	+0.061 +0.040	38	+0.050 +0.034	55	0 -0.3	5	0 -0.03				3020		3025
35	+0.075 +0.050	44	+0.050 +0.034	65	0 -0.3	5	0 -0.03				3520		3525
40	+0.075 +0.050	50	+0.050 +0.034	70	0 -0.3	7	0 -0.03						
50	+0.075 +0.050	62	+0.060 +0.041	90	0 -0.3	8	0 -0.04						
60	+0.090 +0.060	74	+0.062 +0.043	110	0 -0.3	8	0 -0.04						
70	+0.090 +0.060	85	+0.073 +0.051	120	0 -0.3	10	0 -0.04						
80	+0.090 +0.060	96	+0.073 +0.051	140	0 -0.3	10	0 -0.04						

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

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



First choice in bronze



- Applicable to rotational, oscillating, and reciprocating motion.
- This bushing can be subject to both radial-journal and thrust load.
- Improve machining by more accurate flange thickness.

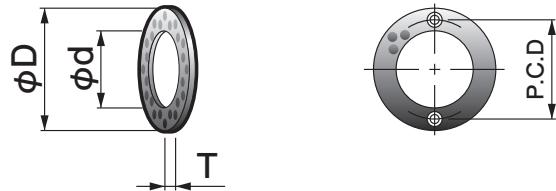
Length L												I.D. tolerance after press fitting (reference)	I.D. ϕd
27	35	37	38	47	48	50	58	60	68	80	90		
												+0.016 +0.004	6
												+0.021 +0.006	8
												+0.021 +0.006	10
												+0.031 +0.013	12
												+0.026 +0.008	13
												+0.026 +0.008	15
												+0.026 +0.008	16
												+0.026 +0.008	18
												+0.037 +0.016	20
												+0.032 +0.011	25
3035												+0.032 +0.011	30
3535												+0.046 +0.021	35
4027		4037		4047								+0.046 +0.021	40
			5038		5048		5058					+0.040 +0.015	50
			6038		6048		6058		6068			+0.053 +0.023	60
					7050					7080		+0.046 +0.016	70
								8060			8090	+0.046 +0.016	80

SPW Oiles 500SP1 SL1 Thrust Washers



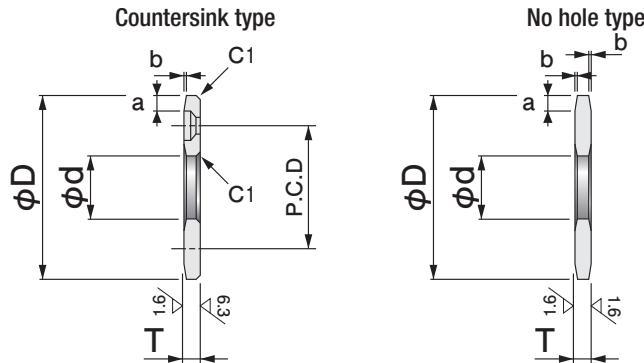
Specify Part No. by required I.D. and thickness.
(e.g.) I.D. is 30.2mm and thickness is 5mm.

SPW - 3005
Part No.



- May be combined with the SPB.
- The products with the N marks at the end of the part numbers have no mounting holes.

Part No.	I.D.		O.D.	Thickness		Mounting hole		
	φd	Tolerance		T	Tolerance	P.C.D	No. of holes	Countersink screw size
SPW-0603	6.2	^{+0.2} _{+0.1}	25	3	⁰ _{-0.1}	15	2	M3
SPW-0803	8.2	^{+0.2} _{+0.1}	28	3	⁰ _{-0.1}	18	2	M3
SPW-1003	10.2	^{+0.2} _{+0.1}	30	3	⁰ _{-0.1}	20	2	M3
SPW-1203	12.2	^{+0.2} _{+0.1}	40	3	⁰ _{-0.1}	28	2	M3
SPW-1203N	12.2	^{+0.2} _{+0.1}	40	3	⁰ _{-0.1}	no hole		
SPW-1303	13.2	^{+0.2} _{+0.1}	40	3	⁰ _{-0.1}	28	2	M3
SPW-1403	14.2	^{+0.2} _{+0.1}	40	3	⁰ _{-0.1}	28	2	M3
SPW-1503	15.2	^{+0.2} _{+0.1}	50	3	⁰ _{-0.1}	35	2	M3
SPW-1603	16.2	^{+0.2} _{+0.1}	50	3	⁰ _{-0.1}	35	2	M3
SPW-1603N	16.2	^{+0.2} _{+0.1}	50	3	⁰ _{-0.1}	no hole		
SPW-1803	18.2	^{+0.2} _{+0.1}	50	3	⁰ _{-0.1}	35	2	M3
SPW-2005	20.2	^{+0.2} _{+0.1}	50	5	⁰ _{-0.1}	35	2	M5
SPW-2505	25.2	^{+0.2} _{+0.1}	55	5	⁰ _{-0.1}	40	2	M5
SPW-2505N	25.2	^{+0.2} _{+0.1}	55	5	⁰ _{-0.1}	no hole		
SPW-3005	30.2	^{+0.2} _{+0.1}	60	5	⁰ _{-0.1}	45	2	M5
SPW-3005N	30.2	^{+0.2} _{+0.1}	60	5	⁰ _{-0.1}	no hole		
SPW-3505	35.2	^{+0.2} _{+0.1}	70	5	⁰ _{-0.1}	50	2	M5



a b: Chamfering for I.D. and O.D.

ϕd	~10.2	~18.2	~35.2	~45.2	~55.3	~100.5	120.5
a	1.5	2	2.5	3	4	5	4
b	0.3	0.4	0.4	0.5	0.6	0.8	0.8

(mm)

Part No.	I.D.		O.D.	Thickness		Mounting hole		
	ϕd	Tolerance	ϕD	T	Tolerance	P.C.D	No. of holes	Countersink screw size
SPW-4007	40.2	$^{+0.2}_{+0.1}$	80	7	$^0_{-0.1}$	60	2	M6
SPW-4507	45.2	$^{+0.2}_{+0.1}$	90	7	$^0_{-0.1}$	70	2	M6
SPW-5008	50.3	$^{+0.3}_{+0.1}$	100	8	$^0_{-0.1}$	75	4	M6
SPW-5508	55.3	$^{+0.3}_{+0.1}$	110	8	$^0_{-0.1}$	85	4	M6
SPW-6008	60.3	$^{+0.3}_{+0.1}$	120	8	$^0_{-0.1}$	90	4	M8
SPW-6508	65.3	$^{+0.3}_{+0.1}$	125	8	$^0_{-0.1}$	95	4	M8
SPW-7010	70.3	$^{+0.3}_{+0.1}$	130	10	$^0_{-0.1}$	100	4	M8
SPW-7510	75.3	$^{+0.3}_{+0.1}$	140	10	$^0_{-0.1}$	110	4	M8
SPW-8010	80.3	$^{+0.3}_{+0.1}$	150	10	$^0_{-0.1}$	120	4	M8
SPW-9010	90.5	$^{+0.3}_{+0.1}$	170	10	$^0_{-0.1}$	140	4	M10
SPW-10010	100.5	$^{+0.3}_{+0.1}$	190	10	$^0_{-0.1}$	160	4	M10
SPW-12010	120.5	$^{+0.3}_{+0.1}$	200	10	$^0_{-0.1}$	175	4	M10



Johnson Metall AB is the Nordic countries biggest manufacturer of castings and machined components made of bronze. Manufacturing units are located in Sweden, and sales companies in Denmark and Norway. The head office is in Örebro.

SWEDEN

Johnson Metall AB

Visiting address: Stålgatan 15, 703 63 Örebro

Postal address: Box 1513, 701 15 Örebro

Delivery address: Slöjdgatan 2-4, 703 63 Örebro

Phone: +46 (0)19 17 51 00

Mail: info@johnson-metall.com

Internet: www.johnson-metall.com

DENMARK

Johnson Metal A/S

Dybendalsvænget 2

DK-2630 Taastrup

Phone: +45 36-70 00 44

Mail: j-m@johnson-metal.dk

NORWAY

Johnson Metall AS

Apalveien 1

NO-3360 GEITHUS

Phone: +47 32 78 32 00

Mail: sales.geithus@johnson-metall.com