

MSB-SF系列复合自润滑轴承

SF Series Self-Lubricating Bushes

MSB-SF-1(DU) SF-2(DX)的结构

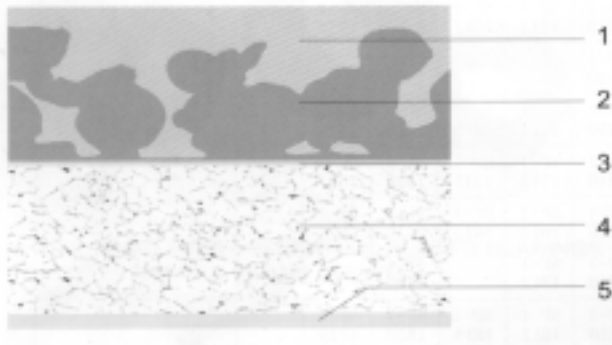
Structure of MSB-SF-1(DU),SF-2(DX) bearing materials

MSB-SF-1是由PTFE材料制成的无油润滑轴承，是将锡青铜球粉烧结到镀铜板上形成多孔屑，然后将PTFE和铅的混合物轧制到烧结层的表面。

SF-1(DU) is a kind of oilless slide Bushing made of the PTFE composite material, which is a copper-plated steel plate on to which a porous layer of tin bronze powder is sintered and also a mixture of PTFE and lead are filled into and covered the porous layer by a rolling process.

MSB-SF-2是由POM材料制成的无边界油润滑轴承，是以镀铜铜板为基体，中间层为烧结锡青铜粉，表面牢固轧制改性聚甲醛（POM）材料，其上有许多微孔为储存润滑剂。

SF-2 (DX) is a boundary lubricating bushes made of the POM composite material, which also has a copper-plated steel plate on to which a tin bronze powder is sintered, modified polyformaldehyde resin (POM) is firmly anchored in the sintered bronze layer. The surface of covering layer has many pockets to retain lubricating grease.



	MSB-SF-1	MSB-SF-2
1	聚四氟乙烯与铅 PTFE and lead	改性聚甲醛 POM
2	锡青铜粉 Tin Bronze Powder	锡青铜粉 Tin Bronze Powder
3	镀铜层 copper layer	镀铜层 copper layer
4	钢背 steel back	钢背 steel back
5	镀铜层 copper layer	镀铜层 copper layer

MSB-SF-1、SF-2的性能

Properties of MSB-SF-1、SF-2 bearing materials

项 目	抗压强度	工作温度	摩擦系数	磨痕宽度	极限PV值	磨损极限	导热系数	热胀系数
Item Material	Compressive strength (Mpa)	Temperature range ()	Coefficient of friction (脂/grease)	Width of wear (mm) (脂/grease)	PV factor limit (Mpa.m/s) (脂/grease)	wear Depth Limit (mm)	Thermal Comductivity Kcal/M.br.C	Coefficient of Linear expansion (per)
SF-1(DU)	280	-195.+270	< 0.20	< 5.5	3.6	0.05	2.41	2.7X10.5
SF-2(DX)	140	-20.+100	< 0.20 (脂/grease)	< 4.5 (脂/grease)	10 (脂/grease)	0.5	2.03	5.1X10-5

标准衬套公差 TOLERANCE FOR STANDARD BUSH

MSB-SF-1、SF-1F衬套壁厚公差按DIN 1494 第二部分

The wallthickness tolerance of MSB-SF-1,SF-1F is according to DIN 1494 part

unit: mm

轴承内径尺寸 Nominal bush bore	壁厚公称尺寸 Nominal Wall thckness	壁厚公差 Tolerance for Wall thickness
5-19	1	+0.005 -0.020
28-44	2	+0.005 -0.030
45-79	2.5	+0.005 -0.040
80-119	2.5	-0.010 -0.060
120-300	2.5	-0.035 -0.085

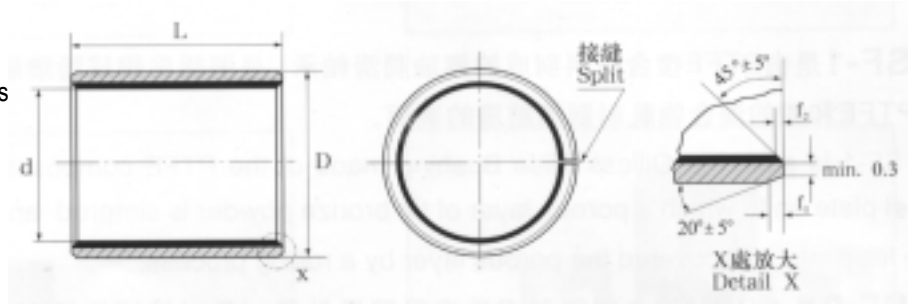
MSB-SF-1、SF-2、SF-1F衬套外径公差按DIN 1494 第二部分

The tolerance for outside diameter of MSB-SF-1,SF-2 and SF-1F bush is according to DIN 1494 part

unit: mm

外径尺寸 nominal outside diameter	壁厚公差 tolerance for outside diamter
10	+0.055 +0.025
10 ~ 18	+0.065 +0.030
18 ~ 30	+0.075 +0.035
30 ~ 40	+0.085 +0.045
40 ~ 50	+0.085 +0.045
50 ~ 80	+0.100 +0.055
80 ~ 105	+0.120 +0.070
105 ~ 180	+0.170 +0.100
180 ~ 250	+0.210 +0.130
250 ~ 305	+0.260 +0.170

MSB-SF-1(DU) 标准轴承
Standard Series of MSB-SF-1 Bushes



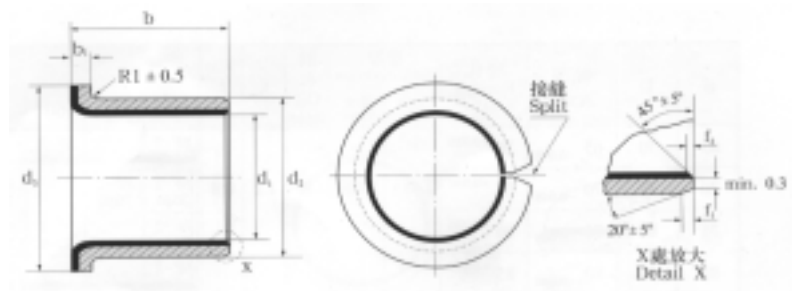
d	D	轴径 Axle	座孔 Housing H17	壁厚		f ₁	f ₂	长度 L ⁰ _{-0.4} (^{<0.28 L-0.3} _{>0.30 L-0.4})																
				Wall thickness				6	8	10	12	15	20	25	30	40	50	60						
				最小 min	最大 max																			
6	8	6 ^{-0.013} _{-0.028}	8 ^{+0.015}	0.98	1.005	0.5	0.3	SF-1 0608	SF-1 0608	SF-1 0610														
8	10	8 ^{-0.013} _{-0.028}	10 ^{+0.015}					SF-1 0806	SF-1 0808	SF-1 0810	SF-1 0812	SF-1 0815												
10	12	10 ^{-0.016} _{-0.034}	12 ^{+0.018}					SF-1 1006	SF-1 1008	SF-1 1010	SF-1 1012	SF-1 1015	SF-1 1020											
12	14	12 ^{-0.016} _{-0.034}	14 ^{+0.018}					SF-1 1206	SF-1 1208	SF-1 1210	SF-1 1212	SF-1 1215	SF-1 1220	SF-1 1225										
13	15	13 ^{-0.016} _{-0.034}	15 ^{+0.018}							SF-1 1310			SF-1 1320											
14	16	14 ^{-0.016} _{-0.034}	16 ^{+0.018}							SF-1 1410	SF-1 1412	SF-1 1415	SF-1 1420	SF-1 1425										
15	17	15 ^{-0.016} _{-0.034}	17 ^{+0.018}							SF-1 1510	SF-1 1512	SF-1 1515	SF-1 1520	SF-1 1525										
16	18	16 ^{-0.016} _{-0.034}	18 ^{+0.018}							SF-1 1610	SF-1 1612	SF-1 1615	SF-1 1620	SF-1 1625										
17	19	17 ^{-0.016} _{-0.034}	19 ^{+0.021}							SF-1 1710	SF-1 1712		SF-1 1720											
18	20	18 ^{-0.016} _{-0.034}	20 ^{+0.021}							SF-1 1810	SF-1 1812	SF-1 1815	SF-1 1820	SF-1 1825										
20	23	20 ^{-0.020} _{-0.041}	23 ^{+0.021}	1.475	1.505	0.8	0.4			SF-1 2010	SF-1 2012	SF-1 2015	SF-1 2020	SF-1 2025	SF-1 2030									
22	25	22 ^{-0.020} _{-0.041}	25 ^{+0.021}							SF-1 2210	SF-1 2212	SF-1 2215	SF-1 2220	SF-1 2225	SF-1 2230									
24	27	24 ^{-0.020} _{-0.041}	27 ^{+0.021}									SF-1 2415	SF-1 2420	SF-1 2425	SF-1 2430									
25	28	25 ^{-0.020} _{-0.041}	28 ^{+0.021}							SF-1 2510	SF-1 2512	SF-1 2515	SF-1 2520	SF-1 2525	SF-1 2530	SF-1 2540	SF-1 2550							
28	32	28 ^{-0.020} _{-0.041}	32 ^{+0.025}	1.970	2.005	1.0	0.6				SF-1 2815	SF-1 2820	SF-1 2825	SF-1 2830	SF-1 2840									
30	34	30 ^{-0.020} _{-0.041}	34 ^{+0.025}							SF-1 3012	SF-1 3015	SF-1 3020	SF-1 3025	SF-1 3030	SF-1 3040									
32	36	32 ^{-0.025} _{-0.050}	36 ^{+0.025}									SF-1 3220		SF-1 3230	SF-1 3240									
35	39	35 ^{-0.025} _{-0.050}	39 ^{+0.025}							SF-1 3512	SF-1 3515	SF-1 3520	SF-1 3525	SF-1 3530	SF-1 3540	SF-1 3550								
38	42	38 ^{-0.025} _{-0.050}	42 ^{+0.025}									SF-1 3815			SF-1 3830	SF-1 3840								
40	44	40 ^{-0.025} _{-0.050}	44 ^{+0.025}								SF-1 4012		SF-1 4020	SF-1 4025	SF-1 4030	SF-1 4040	SF-1 4050							

MSB-SF-1(DU) 标准轴承
Standard Series of MSB-SF-1 Bushes

d	D	轴径 Axle	座孔 Housing H17	壁厚		f ₁	f ₂	长度 L ⁰ _{-0.4} (<Φ28 L-0.3 >Φ30 L-0.4)													
				Wall thickness				20	25	30	40	50	60	70	80	100	115				
				最小 min	最大 max																
45	50	45 ^{-0.025} _{-0.050}	50 ^{+0.025}	2.460	2.505	1.2	0.8	SF-1 4520	SF-1 4525	SF-1 4530	SF-1 4540	SF-1 4550									
50	55	50 ^{-0.025} _{-0.050}	55 ^{+0.030}					SF-1 5020		SF-1 5030	SF-1 5040	SF-1 5050	SF-1 5060								
55	60	55 ^{-0.030} _{-0.060}	60 ^{+0.030}							SF-1 5530	SF-1 5540	SF-1 5550	SF-1 5560								
60	65	60 ^{-0.030} _{-0.060}	65 ^{+0.030}							SF-1 6030	SF-1 6040	SF-1 6050	SF-1 6660	SF-1 6670							
65	70	65 ^{-0.030} _{-0.060}	70 ^{+0.030}							SF-1 6530	SF-1 6540	SF-1 6550	SF-1 6560	SF-1 6570							
70	75	70 ^{-0.030} _{-0.060}	75 ^{+0.030}								SF-1 7040	SF-1 7050	SF-1 7060	SF-1 7070	SF-1 7080						
75	80	75 ^{-0.030} _{-0.060}	80 ^{+0.030}								SF-1 7530	SF-1 7540	SF-1 7550	SF-1 7560	SF-1 7570	SF-1 7580					
80	85	80 ^{-0.030}	85 ^{+0.035}	2.440	2.490	1.4	0.8			SF-1 8040	SF-1 8050	SF-1 8060	SF-1 8070	SF-1 8080	SF-1 80100						
85	90	85 ^{-0.035}	90 ^{+0.035}							SF-1 8540		SF-1 8560		SF-1 8580	SF-1 85100						
90	95	90 ^{-0.035}	95 ^{+0.035}							SF-1 9040	SF-1 9050	SF-1 9060		SF-1 9080	SF-1 90100						
95	100	95 ^{-0.035}	100 ^{+0.035}								SF-1 9550	SF-1 9560		SF-1 9580	SF-1 95100						
100	105	100 ^{-0.035}	105 ^{+0.035}								SF-1 10050	SF-1 10060		SF-1 10080		SF-1 100115					
105	110	105 ^{-0.035}	110 ^{+0.035}									SF-1 10560		SF-1 10580		SF-1 105115					
110	115	110 ^{-0.035}	115 ^{+0.035}									SF-1 11060		SF-1 11080		SF-1 110115					
120	125	120 ^{-0.035}	125 ^{+0.040}	2.415	2.465	1.4	0.8			SF-1 12060		SF-1 12080	SF-1 120100								
125	130	125 ^{-0.040}	130 ^{+0.040}							SF-1 12560				SF-1 125100	SF-1 125115						
130	135	130 ^{-0.040}	135 ^{+0.040}							SF-1 13060		SF-1 13080	SF-1 130100								
140	145	140 ^{-0.040}	145 ^{+0.040}							SF-1 14060		SF-1 14080	SF-1 140100								
150	155	150 ^{-0.040}	155 ^{+0.040}							SF-1 15060		SF-1 15080	SF-1 150100								
160	165	160 ^{-0.040}	165 ^{+0.040}							SF-1 16060		SF-1 16080	SF-1 160100								
180	185	180 ^{-0.040}	185 ^{+0.046}					2.415	2.465	1.4	0.8					SF-1 18080	SF-1 180100				
190	195	190 ^{-0.046}	195 ^{+0.046}									SF-1 19080	SF-1 190100								
200	205	200 ^{-0.046}	205 ^{+0.046}									SF-1 20060	SF-1 20080	SF-1 200100							
220	225	220 ^{-0.046}	225 ^{+0.046}										SF-1 22080	SF-1 220100							
250	255	250 ^{-0.046}	255 ^{+0.052}	2.415	2.465	1.4	0.8					SF-1 25080	SF-1 250100								
260	265	260 ^{-0.052}	265 ^{+0.052}										SF-1 26080	SF-1 260100							
280	285	280 ^{-0.052}	285 ^{+0.052}										SF-1 28080	SF-1 280100							
300	305	300 ^{-0.052}	305 ^{+0.052}										SF-1 30080	SF-1 300100							

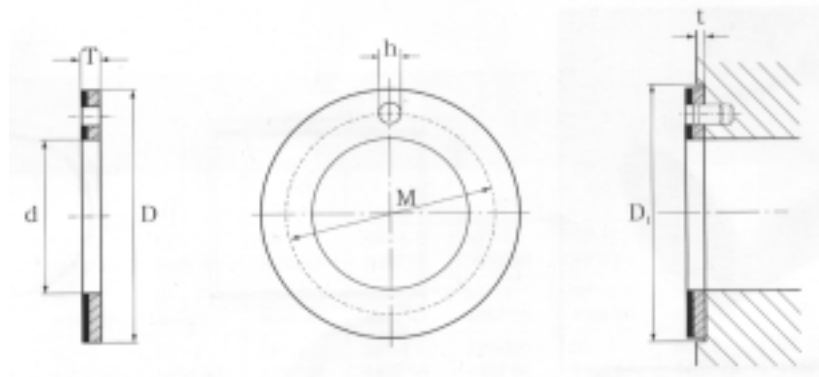
MSB-SF-1F 翻边标准轴承

Standard Series of MSB-SF-1F Flanged Bushes



轴径 Axle	座孔 Housing H7	规格标记 Designation	尺寸Size					f ₁	f ₂
			d ₁	d ₂	d ₃ ±0.5	b±0.25	b ₁ -0.2		
6 ^{-0.013 -0.028}	8 ^{+0.015}	SF-1F06040	6	8	12	4	1	0.5	0.3
		SF-1F06070				7			
8 ^{-0.013 -0.028}	10 ^{+0.015}	SF-1F08055	8	10	15	5.5			
		SF-1F08075				7.5			
10 ^{-0.016 -0.034}	12 ^{+0.018}	SF-1F10070	10	12	18	7			
		SF-1F10090				9			
		SF-1F10120				12			
12 ^{-0.016 -0.034}	14 ^{+0.018}	SF-1F12070	12	14	20	7			
		SF-1F12090				9			
		SF-1F10120				12			
14 ^{-0.016 -0.034}	16 ^{+0.018}	SF-1F14120	14	16	22	12			
		SF-1F14170				17			
15 ^{-0.016 -0.034}	17 ^{+0.018}	SF-1F15090	15	17	23	9			
		SF-1F15120				12			
		SF-1F15170				17			
16 ^{-0.016 -0.034}	18 ^{+0.018}	SF-1F16120	16	18	24	12			
		SF-1F16170				17			
18 ^{-0.016 -0.034}	20 ^{+0.021}	SF-1F18120	18	20	26	12			
		SF-1F18170				17			
		SF-1F18200				20			
20 ^{-0.020 -0.041}	23 ^{+0.021}	SF-1F20115	20	23	30	11.5			
		SF-1F20165				16.5			
		SF-1F20215				21.5			
22 ^{-0.020 -0.041}	25 ^{+0.021}	SF-1F22150	22	25	32	15			
		SF-1F22200				20			
25 ^{-0.020 -0.041}	28 ^{+0.021}	SF-1F25115	25	28	35	11.5			
		SF-1F25165				16.5			
		SF-1F25215				21.5			
30 ^{-0.025 -0.050}	34 ^{+0.025}	SF-1F30160	30	34	42	16			
		SF-1F30260				26			
35 ^{-0.025 -0.050}	34 ^{+0.025}	SF-1F35160	35	39	47	16			
		SF-1F35260				26			
40 ^{-0.025 -0.050}	34 ^{+0.025}	SF-1F40260	40	44	53	26			
		SF-1F40400				40			

MSB-SF 标准止推垫片
MSB-SF Metric Thrust Washer



轴径 Axle	规格标志 Designation	垫片尺寸Size of Washer				安装尺寸Installation size		
		d+0.25	D-0.25	T-0.05	M±0.125	h ^{+0.4} _{-0.1}	t ±0.2	D ₁ +0.12
8	SFWC10	10	20	1.5	15	1.5	1	20
10	SFWC12	12	24		18			24
12	SFWC14	14	26		20	2		26
14	SFWC16	16	30		23			30
16	SFWC18	18	32		25	3		32
18	SFWC20	20	36		28			36
20	SFWC22	22	38		30	4		38
22	SFWC24	24	42		33			42
24	SFWC26	26	44		35	1.5		44
26	SFWC28	28	48		38			48
30	SFWC32	32	54		43	2		54
36	SFWC38	38	62		50			62
40	SFWC42	42	66		54			66
46	SFWC48	48	74		61			74
50	SFWC52	52	78	65	1.5	78		
60	SFWC62	62	90	76		90		

说明：MSB-SF 止推垫片，安装时必须钻孔，用定位销钉固定于基础上。

A dowel or counter sunk screw should be used to prevent rotation, but the head must be recessed at least 0.25mm below the thrust bearing surface.

MSB-SF 标准板材尺寸
Standard Series of MSB-SF Strips

unit: mm

型号Type	长度Lenget	宽度Width±1	厚度Thickness-0.04
SF-1 SF-2	500	125	1.0
SF-1 SF-2	500	125	1.5
SF-1 SF-2	500	125	2.0
SF-1 SF-2	500	125	2.5
SF-2	500	125	3.0

