

通过 **ISO9001:2000**
质量管理体系认证



JINTAI SLIDE BEARING

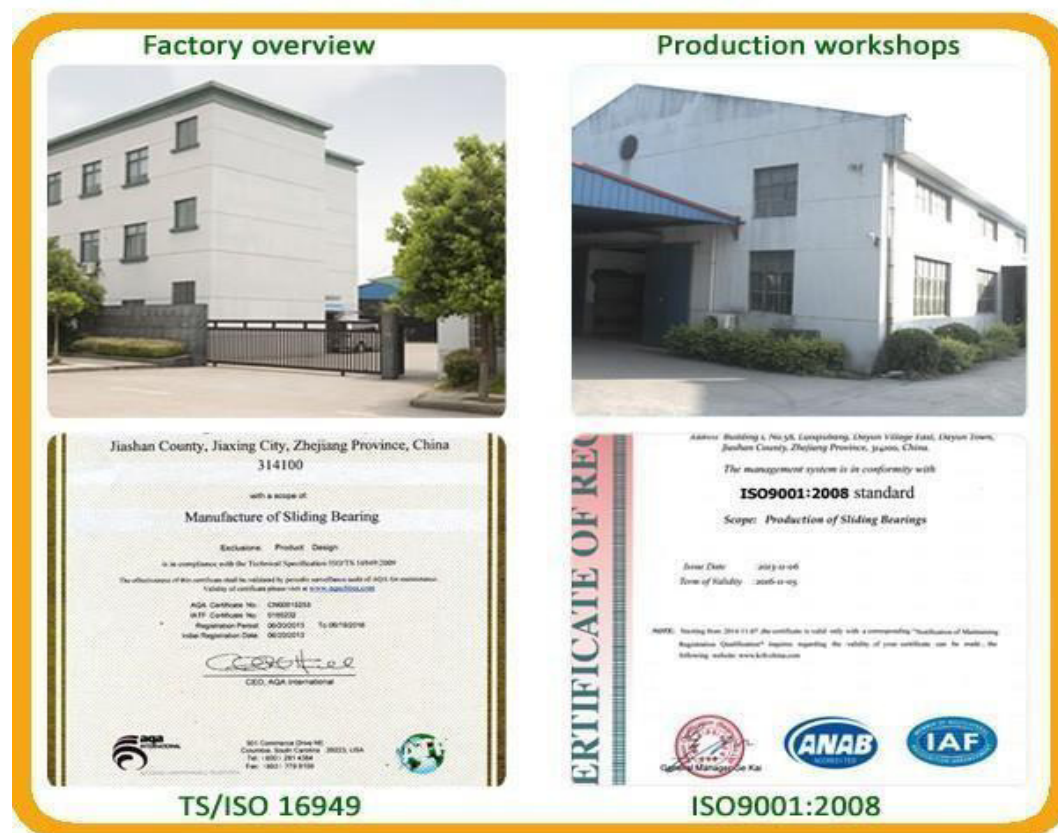
湖南锦泰五金机电有限公司

Hunan Jintai Hardware and Machinery Co., LTD



JINTAI SLIDE BEARING INTRODUCTION

COMPANY & CERTIFICATES



Hunan Jintai Hardware and Machinery Co.,Ltd is a professional manufacturer on various kind of bearings in China for over 15 years.We are making all kinds of slide bearings including DU PTFE composit bushing, DX POM composite bushing,bimetal bushing,wrapped bronze bushing, cast sliding bushings and wear plate bearing pad, sintered bronze bushing and sintering parts, graphite bearing, etc.

The shapes of bearings can be in sleeve, flanged, spherical, plate, washer, pad, ring, square, etc.

Base materials in carbon steel, harden steel, iron, stainless steel, bronze, brass, copper, bronze-steel alloy.Lubricant materials in PTFE, teflon, POM, nylon, plastic, oil, graphite, grease, MoS2,etc.



◇ SF-1



◇ SF-1F



◇ SF-WD



◇ SF-2



◇ JF-800



◇ FB090



◇ FB092



◇ FB08G



◇ FB09G



◇ JDB



◇ FZ

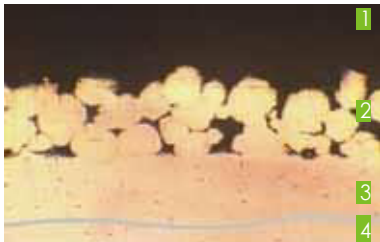


◇ FD

SF-1 自润滑卷制轴承 SF-1 Self-Lubricatin Bearin s



1. 聚四氟乙烯与铅 PTFE with Iead
2. 球形青铜粉 Porous bronze sintere
3. 钢背 Steel backing
4. 镀铜/锡层 Copper-plating/tin-plating



注：SF-1 系列产品还可根据不同工况条件选择不同的基体材料，如：青铜基板

（SF-1B）、不锈钢基板（SF-1S）、以及无铅（SF-1W）等配方产品。

Note: Various materials are suitable for SF-1 Series products according to different working conditions, such as bronze backing (SF-1B), stainless steel backing (SF-1S) and lead-free material (SF-1W)...

技术参数 Tech.Data

最大荷载 Max.Load	静承载 Static	250N/mm ²
	动承载 Dynamic	140N/mm ²
	摇摆运动 Oscillating	60N/mm ²
最大PV值 PV limit	干摩擦 Dry	3.6N/mm ² ·m/s
	油润滑 Oil	50N/mm ² ·m/s
使用温度 Temp.limit		-195℃~+280℃

摩擦系数 Friction Coeff.		0.03~0.20 μ
最大速率 Speed limit	干摩擦 Dry	2mm ²
	油润滑 Oil	5mm ²
导热系数 Thermal conductivity		2.41Kcal/M.br.c
热膨胀系数 Coeff. of linear expansion		27 × 10 ⁻⁶ per℃

SF-1 应用特点 Product characteristics

◎无油润滑或少油润滑，适用于无法加油或很难加油的场所，可在使用时不保养或少保养。

◎耐磨性能好，摩擦系数小，使用寿命长。

◎有适量的弹塑性，能将应力分布在较宽的接触面上，提高轴承的承载能力。

◎静动摩擦系数相近，能消除低速下的爬行，从而保证机械的工作精度。

◎能使机械减少振动、降低噪音，防止污染，改善劳动条件。

◎在运转过程中能形成转移膜，起到保护对磨轴的使用，无咬轴现象。

◎对磨轴的硬度要求低，未经调质处理的轴都可使用，从而降低了相关零件的加工难度。

◎薄壁结构、质量轻，可减小机械体积。

◎钢背面可电镀多种金属，可在腐蚀介质中使用；目前已广泛应用于各种机械的滑动部分，例如：印刷机、纺织机、烟草机械、微电机，汽车、摩托车与农林机械等等。

◎It may be used where no oil can be applied or oil is difficult to be applied.

◎It has the advantage of low wear, low friction and with long life.

Load will spread over a wider area due to the bearing material' s elastic nature.

◎Low stick slip properties ensuring accuracy of machine operation under low sliding speeds.

◎Low vibration, low noise and non-pollution in operation.

◎PTFE and Lead film is transferred to the mating shaft to improve running properties.

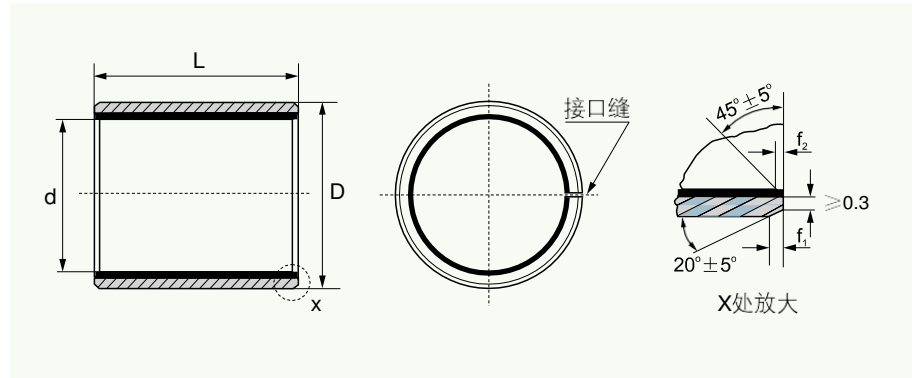
◎It can be used in low harness of mating shaft, so the shafts processing is easy.

◎The machine will be compact because of the thin thickness and low weight of the bush.

◎Electro plating is possible to prevent corrosion. It is widely used in various sliding motions of different kind of machines such as textile machine, tobacco machines, hydraulic vehicles Automobiles, agriculture machines and so on.

SF-1 自润滑卷制轴承标准公制尺寸

SF-1 Self-Lubricating Bearings Standard Metric Size



单位 Unit: mm

d	D	相配轴径 Shaft Dia. f ₇	座孔 Housing H7	壁厚 Wall Thickness		f ₁	f ₂	L ⁰ _{-0.40}									
				最小 Min.	最大 Max.			6	8	10	12	15	20	25	30	40	50
6	8	6 ^{-0.013} _{-0.028}	8 ^{+0.015}					0606	0608	0610							
8	10	8 ^{-0.013} _{-0.028}	10 ^{+0.015}					0806	0808	0810	0812	0815					
10	12	10 ^{-0.016} _{-0.034}	12 ^{+0.018}					1006	1008	1010	1012	1015	1020				
12	14	12 ^{-0.016} _{-0.034}	14 ^{+0.018}					1206	1208	1210	1212	1215	1220	1225			
13	15	13 ^{-0.016} _{-0.034}	15 ^{+0.018}	0.980	1.005	0.6	0.3			1310			1320				
14	16	14 ^{-0.016} _{-0.034}	16 ^{+0.018}							1410	1412	1415	1420	1425			
15	17	15 ^{-0.016} _{-0.034}	17 ^{+0.018}							1510	1512	1515	1520	1525			
16	18	16 ^{-0.016} _{-0.034}	18 ^{+0.018}							1610	1612	1615	1620	1625			
17	19	17 ^{-0.016} _{-0.034}	19 ^{+0.021}							1710	1712		1720				
18	20	18 ^{-0.016} _{-0.034}	20 ^{+0.021}							1810	1812	1815	1820	1825			
20	23	20 ^{-0.020} _{-0.041}	23 ^{+0.021}							2010	2012	2015	2020	2025	2030		
22	25	22 ^{-0.020} _{-0.041}	25 ^{+0.021}	1.475	1.505	0.6	0.4			2210	2212	2215	2220	2225	2230		
24	27	24 ^{-0.020} _{-0.041}	27 ^{+0.021}									2415	2420	2425	2430		
25	28	25 ^{-0.020} _{-0.041}	28 ^{+0.021}							2510	2512	2515	2520	2525	2530	2540	2550
28	32	28 ^{-0.020} _{-0.041}	32 ^{+0.025}									2815	2820	2825	2830	2840	
30	34	30 ^{-0.020} _{-0.041}	34 ^{+0.025}								3012	3015	3020	3025	3030	3040	
32	36	32 ^{-0.025} _{-0.050}	36 ^{+0.025}	1.970	2.005	1.2	0.4						3220		3230	3240	
35	39	35 ^{-0.025} _{-0.050}	39 ^{+0.025}								3512	3515	3520	3525	3530	3540	3550
38	42	38 ^{-0.025} _{-0.050}	42 ^{+0.025}									3815			3830	3840	
40	44	40 ^{-0.025} _{-0.050}	44 ^{+0.025}								4012		4020	4025	4030	4040	4050

注：孔径壁厚符合样本，宽度尺寸不在样本范围内客户提出要求，制造厂可定制加工。

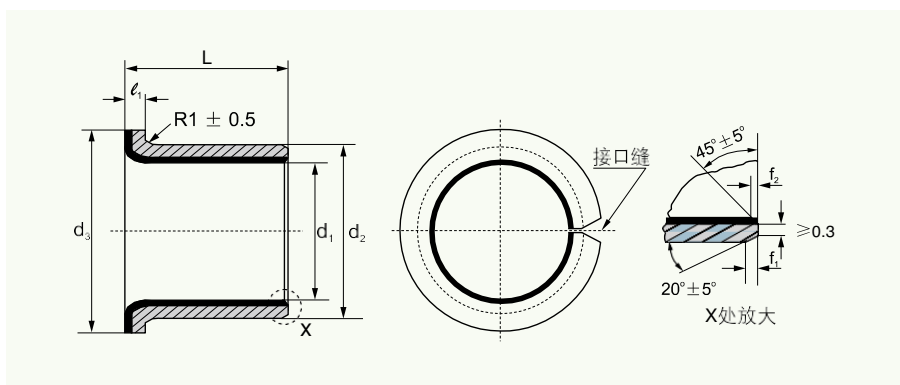
Note: Bearing size besides above mentioned sizes, can be customized and produced. Customer please offer us the dimensions.

单位Unit: mm

[illegible]

SF-1F 自润滑卷制翻边轴承标准公制尺寸

SF-1F Self-Lubricating Flanged Bearings Standard Metric Size



单位 Unit: mm

相配轴径 Shaft Dia. f_7	座孔 Housing H7	代号 Code number	尺寸 Size					f_1	f_2
			d_1	d_2	$d_3 \pm 0.5$	$L \pm 0.25$	$\ell_1 - 0.2$		
6 ^{-0.013 -0.028}	8 ^{+0.015}	06040	6	8	12	4			
		06070				7			
8 ^{-0.013 -0.028}	10 ^{+0.015}	08055	8	10	15	5.5			
		08075				7.5			
10 ^{-0.016 -0.034}	12 ^{+0.018}	10070	10	12	18	7			
		10090				9			
		10120				12			
12 ^{-0.016 -0.034}	14 ^{+0.018}	12070	12	14	20	7			
		12090				9			
		12120				12	1	0.6	0.3
14 ^{-0.016 -0.043}	16 ^{+0.018}	14120	14	16	22	12			
		14170				17			
		15090				9			
15 ^{-0.016 -0.034}	17 ^{+0.018}	15120	15	17	23	12			
		15170				17			
		16120	16	18	24	12			
16 ^{-0.016 -0.034}	18 ^{+0.018}	16170				17			
		18120				12			
18 ^{-0.016 -0.034}	20 ^{+0.021}	18170	18	20	26	17			
		18200				20			
		20115				11.5			
20 ^{-0.020 -0.041}	23 ^{+0.021}	20165	20	23	30	16.5			
		20215				21.5			
		22150	22	25	32	15	1.5	0.6	0.4
22 ^{-0.020 -0.041}	25 ^{+0.021}	22200				20			
		25115				11.5			
25 ^{-0.020 -0.041}	28 ^{+0.021}	25165	25	28	35	16.5			
		25215				21.5			
		30160	30	34	42	16			
30 ^{-0.025 -0.050}	34 ^{+0.025}	30260				26			
		35160	35	39	47	16			
		35260				26	2	1.2	0.4
40 ^{-0.025 -0.050}	44 ^{+0.025}	40260	40	44	53	26			
		40400				40			

JINTAI SLIDE BEARING INTRODUCTION

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JINTAI SF-1 similar as Self-lubricated MU Self-lubricating under dry operation BUSHES dimension according to ISO 3547. We produce washer as MU W, bronze base bushing as MU B, inox stainless steel base bushing as MU 316, in inch size bushing as MU TH,MU FTH,MU WTH.

JINTAI SF-1 Bearing and Self-lubricated MU Bearing Standard Metric Size

单位 Unit: mm

JINTAI CODE	d*D*L(mm)	Self-lubricated MU CODE	JINTAI CODE	d*D*L(mm)	Self-lubricated MU CODE
SF-1 0203	2x3.5x3	MU P 023.503	SF-1 9530	95x100x30	MU P 9510030
SF-1 0205	2x3.5x5	MU P 023.505	SF-1 9540	95x100x40	MU P 9510040
SF-1 0303	3x4.5x3	MU P 034.503	SF-1 9550	95x100x50	MU P 9510050
SF-1 0304	3x4.5x4	MU P 034.504	SF-1 9560	95x100x60	MU P 9510060
SF-1 0305	3x4.5x5	MU P 034.505	SF-1 9570	95x100x70	MU P 9510070
SF-1 0306	3x4.5x6	MU P 034.506	SF-1 9580	95x100x80	MU P 9510080
SF-1 0403	4x5.5x3	MU P 045.503	SF-1 9590	95x100x90	MU P 9510090
SF-1 0404	4x5.5x4	MU P 045.504	SF-1 95100	95x100x100	MU P 95100100
SF-1 0405	4x5.5x5	MU P 045.505	SF-1 10030	100x105x30	MU P 10010530
SF-1 0406	4x5.5x6	MU P 045.506	SF-1 10040	100x105x40	MU P 10010540
SF-1 0410	4x5.5x10	MU P 045.510	SF-1 10050	100x105x50	MU P 10010550
SF-1 0505	5x7x5	MU P 050705	SF-1 10060	100x105x60	MU P 10010560
SF-1 0506	5x7x6	MU P 050706	SF-1 10070	100x105x70	MU P 10010570
SF-1 0507	5x7x7	MU P 050707	SF-1 10080	100x105x80	MU P 10010580
SF-1 0508	5x7x8	MU P 050708	SF-1 10090	100x105x90	MU P 10010590
SF-1 0510	5x7x10	MU P 050710	SF-1 100100	100x105x100	MU P 100105100
SF-1 0604	6x8x4	MU P 060804	SF-1 100115	100x105x115	MU P 100105115
SF-1 0605	6x8x5	MU P 060805	SF-1 10550	105x110x50	MU P 10511050
SF-1 0606	6x8x6	MU P 060806	SF-1 10560	105x110x60	MU P 10511060
SF-1 0608	6x8x8	MU P 060808	SF-1 10570	105x110x70	MU P 10511070
SF-1 0610	6x8x10	MU P 060810	SF-1 10580	105x110x80	MU P 10511080
SF-1 0705	7x9x5	MU P 070905	SF-1 10590	105x110x90	MU P 10511090
SF-1 0706	7x9x6	MU P 070906	SF-1 105100	105x110x100	MU P 105110100
SF-1 0708	7x9x8	MU P 070908	SF-1 105115	105x110x115	MU P 105110115
SF-1 0710	7x9x10	MU P 070910	SF-1 11050	110x115x50	MU P 11011550
SF-1 0715	7x9x15	MU P 070915	SF-1 11060	110x115x60	MU P 11011560
SF-1 0805	8x10x5	MU P 081005	SF-1 11070	110x115x70	MU P 11011570
SF-1 0806	8x10x6	MU P 081006	SF-1 11080	110x115x80	MU P 11011580
SF-1 0808	8x10x8	MU P 081008	SF-1 11090	110x115x90	MU P 11011590
SF-1 0810	8x10x10	MU P 081010	SF-1 110100	110x115x100	MU P 110115100
SF-1 0812	8x10x12	MU P 081012	SF-1 110115	110x115x115	MU P 110115115
SF-1 0815	8x10x15	MU P 081015	SF-1 11550	115x120x50	MU P 11512050
SF-1 0820	8x10x20	MU P 081020	SF-1 11560	115x120x60	MU P 11512060
SF-1 0908	9x11x8	MU P 091108	SF-1 11570	115x120x70	MU P 11512070
SF-1 0909	9x11x9	MU P 091109	SF-1 11580	115x120x80	MU P 11512080
SF-1 0910	9x11x10	MU P 091110	SF-1 11590	115x120x90	MU P 11512090
SF-1 1005	10x12x5	MU P 101205	SF-1 115100	115x120x100	MU P 115120100
SF-1 1006	10x12x6	MU P 101206	SF-1 115115	115x120x115	MU P 115120115
SF-1 1008	10x12x8	MU P 101208	SF-1 12050	120x125x50	MU P 12012550
SF-1 1009	10x12x9	MU P 101209	SF-1 12060	120x125x60	MU P 12012560
SF-1 1010	10x12x10	MU P 101210	SF-1 12070	120x125x70	MU P 12012570
SF-1 1012	10x12x12	MU P 101212	SF-1 12080	120x125x80	MU P 12012580
SF-1 1015	10x12x15	MU P 101215	SF-1 12090	120x125x90	MU P 12012590
SF-1 1020	10x12x20	MU P 101220	SF-1 120100	120x125x100	MU P 120125100
SF-1 1108	11x13x8	MU P 111308	SF-1 120120	120x125x120	MU P 120125120
SF-1 1109	11x13x9	MU P 111309	SF-1 12550	125x130x50	MU P 12513050
SF-1 1110	11x13x10	MU P 111310	SF-1 12560	125x130x60	MU P 12513060
SF-1 1112	11x13x12	MU P 111312	SF-1 12570	125x130x70	MU P 12513070
SF-1 1206	12x14x6	MU P 121406	SF-1 12580	125x130x80	MU P 12513080
SF-1 1208	12x14x8	MU P 121408	SF-1 12590	125x130x90	MU P 12513090
SF-1 1210	12x14x10	MU P 121410	SF-1 125100	125x130x100	MU P 125130100
SF-1 1212	12x14x12	MU P 121412	SF-1 125115	125x130x115	MU P 125130115
SF-1 1214	12x14x14	MU P 121414	SF-1 13060	130x135x60	MU P 13013560
SF-1 1215	12x14x15	MU P 121415	SF-1 13070	130x135x70	MU P 13013570
SF-1 1216	12x14x16	MU P 121416	SF-1 13080	130x135x80	MU P 13013580
SF-1 1220	12x14x20	MU P 121420	SF-1 13090	130x135x90	MU P 13013590
SF-1 1225	12x14x25	MU P 121425	SF-1 130100	130x135x100	MU P 130135100
SF-1 1308	13x15x8	MU P 131508	SF-1 130120	130x135x120	MU P 130135120
SF-1 1309	13x15x9	MU P 131509	SF-1 13560	135x140x60	MU P 13514060
SF-1 1310	13x15x10	MU P 131510	SF-1 13570	135x140x70	MU P 13514070
SF-1 1312	13x15x12	MU P 131512	SF-1 13580	135x140x80	MU P 13514080
SF-1 1315	13x15x15	MU P 131515	SF-1 13590	135x140x90	MU P 13514090
SF-1 1320	13x15x20	MU P 131520	SF-1 135100	135x140x100	MU P 135140100
SF-1 1325	13x15x25	MU P 131525	SF-1 135120	135x140x120	MU P 135140120
SF-1 1408	14x16x08	MU P 141608	SF-1 14060	140x145x60	MU P 14014560

SF-1 1410	14x16x10	MU P 141610	SF-1 14070	140x145x70	MU P 14014570
SF-1 1412	14x16x12	MU P 141612	SF-1 14080	140x145x80	MU P 14014580
SF-1 1415	14x16x15	MU P 141615	SF-1 14090	140x145x90	MU P 14014590
SF-1 1420	14x16x20	MU P 141620	SF-1 140100	140x145x100	MU P 140145100
SF-1 1422	14x16x22	MU P 141622	SF-1 14560	145x150x60	MU P 14515060
SF-1 1425	14x16x25	MU P 141625	SF-1 14570	145x150x70	MU P 14515070
SF-1 1508	15x17x8	MU P 151708	SF-1 14580	145x150x80	MU P 14515080
SF-1 1510	15x17x10	MU P 151710	SF-1 14590	145x150x90	MU P 14515090
SF-1 1512	15x17x12	MU P 151712	SF-1 145100	145x150x100	MU P 145150100
SF-1 1515	15x17x15	MU P 151715	SF-1 145120	145x150x120	MU P 145150120
SF-1 1518	15x17x18	MU P 151718	SF-1 15060	150x155x60	MU P 15015560
SF-1 1520	15x17x20	MU P 151720	SF-1 15070	150x155x70	MU P 15015570
SF-1 1525	15x17x25	MU P 151725	SF-1 15080	150x155x80	MU P 15015580
SF-1 1608	16x18x8	MU P 161808	SF-1 15090	150x155x90	MU P 15015590
SF-1 1610	16x18x10	MU P 161810	SF-1 150100	150x155x100	MU P 150155100
SF-1 1612	16x18x12	MU P 161812	SF-1 15550	155x160x50	MU P 15516050
SF-1 1615	16x18x15	MU P 161815	SF-1 15560	155x160x60	MU P 15516060
SF-1 1618	16x18x18	MU P 161818	SF-1 15570	155x160x70	MU P 15516070
SF-1 1620	16x18x20	MU P 161820	SF-1 15580	155x160x80	MU P 15516080
SF-1 1625	16x18x25	MU P 161825	SF-1 15590	155x160x90	MU P 15516090
SF-1 1630	16x18x30	MU P 161830	SF-1 155100	155x160x100	MU P 155160100
SF-1 1708	17x19x8	MU P 171908	SF-1 16050	160x165x50	MU P 16016550
SF-1 1710	17x19x10	MU P 171910	SF-1 16060	160x165x60	MU P 16016560
SF-1 1712	17x19x12	MU P 171912	SF-1 16070	160x165x70	MU P 16016570
SF-1 1715	17x19x15	MU P 171915	SF-1 16080	160x165x80	MU P 16016580
SF-1 1718	17x19x18	MU P 171918	SF-1 16090	160x165x90	MU P 16016590
SF-1 1720	17x19x20	MU P 171920	SF-1 160100	160x165x100	MU P 160165100
SF-1 1725	17x19x25	MU P 171925	SF-1 160110	160x165x110	MU P 160165110
SF-1 1808	18x20x8	MU P 182008	SF-1 160120	160x165x120	MU P 160165120
SF-1 1810	18x20x10	MU P 182010	SF-1 160130	160x165x130	MU P 160165130
SF-1 1812	18x20x12	MU P 182012	SF-1 160140	160x165x140	MU P 160165140
SF-1 1815	18x20x15	MU P 182015	SF-1 160150	160x165x150	MU P 160165150
SF-1 1820	18x20x20	MU P 182020	SF-1 16560	165x170x60	MU P 16517060
SF-1 1825	18x20x25	MU P 182025	SF-1 16570	165x170x70	MU P 16517070
SF-1 1830	18x20x30	MU P 182030	SF-1 16580	165x170x80	MU P 16517080
SF-1 2010a	20x22x10	MU P 202210	SF-1 16590	165x170x90	MU P 16517090
SF-1 2012a	20x22x12	MU P 202212	SF-1 165100	165x170x100	MU P 165170100
SF-1 2015a	20x22x15	MU P 202215	SF-1 165110	165x170x110	MU P 165170110
SF-1 2020a	20x22x20	MU P 202220	SF-1 165120	165x170x120	MU P 165170120
SF-1 2025a	20x22x25	MU P 202225	SF-1 165130	165x170x130	MU P 165170130
SF-1 2030a	20x22x30	MU P 202230	SF-1 165140	165x170x140	MU P 165170140
SF-1 2035a	20x22x35	MU P 202235	SF-1 165150	165x170x150	MU P 165170150
SF-1 2040a	20x22x40	MU P 202240	SF-1 17060	170x175x60	MU P 17017560
SF-1 2008	20x23x8	MU P 202308	SF-1 17070	170x175x70	MU P 17017570
SF-1 2010	20x23x10	MU P 202310	SF-1 17080	170x175x80	MU P 17017580
SF-1 2012	20x23x12	MU P 202312	SF-1 17090	170x175x90	MU P 17017590
SF-1 2015	20x23x15	MU P 202315	SF-1 170100	170x175x100	MU P 170175100
SF-1 2020	20x23x20	MU P 202320	SF-1 170110	170x175x110	MU P 170175110
SF-1 2025	20x23x25	MU P 202325	SF-1 170120	170x175x120	MU P 170175120
SF-1 2030	20x23x30	MU P 202330	SF-1 170130	170x175x130	MU P 170175130
SF-1 2035	20x23x35	MU P 202335	SF-1 170140	170x175x140	MU P 170175140
SF-1 2040	20x23x40	MU P 202340	SF-1 170150	170x175x150	MU P 170175150
SF-1 2210	22x25x10	MU P 222510	SF-1 17560	175x180x60	MU P 17518060
SF-1 2212	22x25x12	MU P 222512	SF-1 17570	175x180x70	MU P 17518070
SF-1 2215	22x25x15	MU P 222515	SF-1 17580	175x180x80	MU P 17518080
SF-1 2220	22x25x20	MU P 222520	SF-1 17590	175x180x90	MU P 17518090
SF-1 2225	22x25x25	MU P 222525	SF-1 175100	175x180x100	MU P 175180100
SF-1 2230	22x25x30	MU P 222530	SF-1 175110	175x180x110	MU P 175180110
SF-1 2235	22x25x35	MU P 222535	SF-1 175120	175x180x120	MU P 175180120
SF-1 2238	22x25x38	MU P 222538	SF-1 175130	175x180x130	MU P 175180130
SF-1 2240	22x25x40	MU P 222540	SF-1 175140	175x180x140	MU P 175180140
SF-1 2245	22x25x45	MU P 222545	SF-1 175150	175x180x150	MU P 175180150
SF-1 2250	22x25x50	MU P 222550	SF-1 18060	180x185x60	MU P 18018560
SF-1 2410	24x27x10	MU P 242710	SF-1 18070	180x185x70	MU P 18018570
SF-1 2412	24x27x12	MU P 242712	SF-1 18080	180x185x80	MU P 18018580
SF-1 2415	24x27x15	MU P 242715	SF-1 18090	180x185x90	MU P 18018590
SF-1 2420	24x27x20	MU P 242720	SF-1 180100	180x185x100	MU P 180185100
SF-1 2425	24x27x25	MU P 242725	SF-1 180110	180x185x110	MU P 180185110
SF-1 2428	24x27x28	MU P 242728	SF-1 180120	180x185x120	MU P 180185120
SF-1 2430	24x27x30	MU P 242730	SF-1 180130	180x185x130	MU P 180185130
SF-1 2432	24x27x32	MU P 242732	SF-1 180140	180x185x140	MU P 180185140
SF-1 2435	24x27x35	MU P 242735	SF-1 180150	180x185x150	MU P 180185150
SF-1 2438	24x27x38	MU P 242738	SF-1 18560	185x190x60	MU P 18519060
SF-1 2440	24x27x40	MU P 242740	SF-1 18570	185x190x70	MU P 18519070
SF-1 2450	24x27x50	MU P 242750	SF-1 18580	185x190x80	MU P 18519080
SF-1 2410b	24x28x10	MU P 242810	SF-1 18590	185x190x90	MU P 18519090
SF-1 2412b	24x28x12	MU P 242812	SF-1 185100	185x190x100	MU P 185190100
SF-1 2415b	24x28x15	MU P 242815	SF-1 185110	185x190x110	MU P 185190110
SF-1 2420b	24x28x20	MU P 242820	SF-1 185120	185x190x120	MU P 185190120
SF-1 2425b	24x28x25	MU P 242825	SF-1 185130	185x190x130	MU P 185190130
SF-1 2428b	24x28x28	MU P 242828	SF-1 185140	185x190x140	MU P 185190140
SF-1 2430b	24x28x30	MU P 242830	SF-1 185150	185x190x150	MU P 185190150
SF-1 2432b	24x28x32	MU P 242832	SF-1 19060	190x195x60	MU P 19019560
SF-1 2435b	24x28x35	MU P 242835	SF-1 19070	190x195x70	MU P 19019570
SF-1 2438b	24x28x38	MU P 242838	SF-1 19080	190x195x80	MU P 19019580
SF-1 2440b	24x28x40	MU P 242840	SF-1 19090	190x195x90	MU P 19019590

SF-1 2450b	24x28x50	MU P 242850	SF-1 190100	190x195x100	MU P 190195100
SF-1 2510	25x28x10	MU P 252810	SF-1 190110	190x195x110	MU P 190195110
SF-1 2512	25x28x12	MU P 252812	SF-1 190120	190x195x120	MU P 190195120
SF-1 2515	25x28x15	MU P 252815	SF-1 190130	190x195x130	MU P 190195130
SF-1 2520	25x28x20	MU P 252820	SF-1 190140	190x195x140	MU P 190195140
SF-1 2525	25x28x25	MU P 252825	SF-1 190150	190x195x150	MU P 190195150
SF-1 2528	25x28x28	MU P 252828	SF-1 19560	195x200x60	MU P 19520060
SF-1 2530	25x28x30	MU P 252830	SF-1 19570	195x200x70	MU P 19520070
SF-1 2532	25x28x32	MU P 252832	SF-1 19580	195x200x80	MU P 19520080
SF-1 2535	25x28x35	MU P 252835	SF-1 19590	195x200x90	MU P 19520090
SF-1 2540	25x28x40	MU P 252840	SF-1 195100	195x200x100	MU P 195200100
SF-1 2550	25x28x50	MU P 252850	SF-1 195110	195x200x110	MU P 195200110
SF-1 2560	25x28x60	MU P 252860	SF-1 195120	195x200x120	MU P 195200120
SF-1 2610	26x30x10	MU P 263010	SF-1 195130	195x200x130	MU P 195200130
SF-1 2612	26x30x12	MU P 263012	SF-1 195140	195x200x140	MU P 195200140
SF-1 2615	26x30x15	MU P 263015	SF-1 195150	195x200x150	MU P 195200150
SF-1 2620	26x30x20	MU P 263020	SF-1 20060	200x205x60	MU P 20020560
SF-1 2625	26x30x25	MU P 263025	SF-1 20070	200x205x70	MU P 20020570
SF-1 2630	26x30x30	MU P 263030	SF-1 20080	200x205x80	MU P 20020580
SF-1 2635	26x30x35	MU P 263035	SF-1 20090	200x205x90	MU P 20020590
SF-1 2640	26x30x40	MU P 263040	SF-1 200100	200x205x100	MU P 200205100
SF-1 2650	26x30x50	MU P 263050	SF-1 200110	200x205x110	MU P 200205110
SF-1 2810	28x32x10	MU P 283210	SF-1 200120	200x205x120	MU P 200205120
SF-1 2812	28x32x12	MU P 283212	SF-1 200130	200x205x130	MU P 200205130
SF-1 2815	28x32x15	MU P 283215	SF-1 200140	200x205x140	MU P 200205140
SF-1 2820	28x32x20	MU P 283220	SF-1 200150	200x205x150	MU P 200205150
SF-1 2825	28x32x25	MU P 283225	SF-1 20560	205x210x60	MU P 20521060
SF-1 2830	28x32x30	MU P 283230	SF-1 20570	205x210x70	MU P 20521070
SF-1 2832	28x32x32	MU P 283232	SF-1 20580	205x210x80	MU P 20521080
SF-1 2835	28x32x35	MU P 283235	SF-1 20590	205x210x90	MU P 20521090
SF-1 2840	28x32x40	MU P 283240	SF-1 205100	205x210x100	MU P 205210100
SF-1 3010	30x34x10	MU P 303410	SF-1 205110	205x210x110	MU P 205210110
SF-1 3012	30x34x12	MU P 303412	SF-1 205120	205x210x120	MU P 205210120
SF-1 3015	30x34x15	MU P 303415	SF-1 205130	205x210x130	MU P 205210130
SF-1 3020	30x34x20	MU P 303420	SF-1 205140	205x210x140	MU P 205210140
SF-1 3025	30x34x25	MU P 303425	SF-1 205150	205x210x150	MU P 205210150
SF-1 3028	30x34x28	MU P 303428	SF-1 21060	210x215x60	MU P 21021560
SF-1 3030	30x34x30	MU P 303430	SF-1 21070	210x215x70	MU P 21021570
SF-1 3032	30x34x32	MU P 303432	SF-1 21080	210x215x80	MU P 21021580
SF-1 3035	30x34x35	MU P 303435	SF-1 21090	210x215x90	MU P 21021590
SF-1 3038	30x34x38	MU P 303438	SF-1 210100	210x215x100	MU P 210215100
SF-1 3040	30x34x40	MU P 303440	SF-1 210110	210x215x110	MU P 210215110
SF-1 3045	30x34x45	MU P 303445	SF-1 210120	210x215x120	MU P 210215120
SF-1 3050	30x34x50	MU P 303450	SF-1 210130	210x215x130	MU P 210215130
SF-1 3210	32x36x10	MU P 323610	SF-1 210140	210x215x140	MU P 210215140
SF-1 3212	32x36x12	MU P 323612	SF-1 210150	210x215x150	MU P 210215150
SF-1 3215	32x36x15	MU P 323615	SF-1 21560	215x220x60	MU P 21522060
SF-1 3218	32x36x18	MU P 323618	SF-1 21570	215x220x70	MU P 21522070
SF-1 3220	32x36x20	MU P 323620	SF-1 21580	215x220x80	MU P 21522080
SF-1 3225	32x36x25	MU P 323625	SF-1 21590	215x220x90	MU P 21522090
SF-1 3230	32x36x30	MU P 323630	SF-1 215100	215x220x100	MU P 215220100
SF-1 3235	32x36x35	MU P 323635	SF-1 215110	215x220x110	MU P 215220110
SF-1 3240	32x36x40	MU P 323640	SF-1 215120	215x220x120	MU P 215220120
SF-1 3245	32x36x45	MU P 323645	SF-1 215130	215x220x130	MU P 215220130
SF-1 3250	32x36x50	MU P 323650	SF-1 215140	215x220x140	MU P 215220140
SF-1 3410	34x38x10	MU P 343810	SF-1 215150	215x220x150	MU P 215220150
SF-1 3412	34x38x12	MU P 343812	SF-1 22060	220x225x60	MU P 22022560
SF-1 3415	34x38x15	MU P 343815	SF-1 22070	220x225x70	MU P 22022570
SF-1 3420	34x38x20	MU P 343820	SF-1 22080	220x225x80	MU P 22022580
SF-1 3425	34x38x25	MU P 343825	SF-1 22090	220x225x90	MU P 22022590
SF-1 3430	34x38x30	MU P 343830	SF-1 220100	220x225x100	MU P 220225100
SF-1 3435	34x38x35	MU P 343835	SF-1 220110	220x225x110	MU P 220225110
SF-1 3440	34x38x40	MU P 343840	SF-1 220120	220x225x120	MU P 220225120
SF-1 3445	34x38x45	MU P 343845	SF-1 220130	220x225x130	MU P 220225130
SF-1 3510	35x39x10	MU P 353910	SF-1 220140	220x225x140	MU P 220225140
SF-1 3512	35x39x12	MU P 353912	SF-1 220150	220x225x150	MU P 220225150
SF-1 3515	35x39x15	MU P 353915	SF-1 22560	225x230x60	MU P 22523060
SF-1 3520	35x39x20	MU P 353920	SF-1 22570	225x230x70	MU P 22523070
SF-1 3525	35x39x25	MU P 353925	SF-1 22580	225x230x80	MU P 22523080
SF-1 3530	35x39x30	MU P 353930	SF-1 22590	225x230x90	MU P 22523090
SF-1 3535	35x39x35	MU P 353935	SF-1 225100	225x230x100	MU P 225230100
SF-1 3540	35x39x40	MU P 353940	SF-1 225110	225x230x110	MU P 225230110
SF-1 3545	35x39x45	MU P 353945	SF-1 225120	225x230x120	MU P 225230120
SF-1 3550	35x39x50	MU P 353950	SF-1 225130	225x230x130	MU P 225230130
SF-1 3610	36x40x10	MU P 364010	SF-1 225140	225x230x140	MU P 225230140
SF-1 3612	36x40x12	MU P 364012	SF-1 23060	230x235x60	MU P 23023560
SF-1 3615	36x40x15	MU P 364015	SF-1 23070	230x235x70	MU P 23023570
SF-1 3620	36x40x20	MU P 364020	SF-1 23080	230x235x80	MU P 23023580
SF-1 3625	36x40x25	MU P 364025	SF-1 23090	230x235x90	MU P 23023590
SF-1 3630	36x40x30	MU P 364030	SF-1 230100	230x235x100	MU P 230235100
SF-1 3635	36x40x35	MU P 364035	SF-1 230110	230x235x110	MU P 230235110
SF-1 3640	36x40x40	MU P 364040	SF-1 230120	230x235x120	MU P 230235120
SF-1 3645	36x40x45	MU P 364045	SF-1 230130	230x235x130	MU P 230235130
SF-1 3650	36x40x50	MU P 364050	SF-1 230140	230x235x140	MU P 230235140
SF-1 3812	38x42x12	MU P 384212	SF-1 230150	230x235x150	MU P 230235150
SF-1 3815	38x42x15	MU P 384215	SF-1 23560	235x240x60	MU P 23524060

SF-1 3820	38x42x20	MU P 384220	SF-1 23570	235x240x70	MU P 23524070
SF-1 3825	38x42x25	MU P 384225	SF-1 23580	235x240x80	MU P 23524080
SF-1 3830	38x42x30	MU P 384230	SF-1 23590	235x240x90	MU P 23524090
SF-1 3835	38x42x35	MU P 384235	SF-1 235100	235x240x100	MU P 235240100
SF-1 3840	38x42x40	MU P 384240	SF-1 235110	235x240x110	MU P 235240110
SF-1 3845	38x42x45	MU P 384245	SF-1 235120	235x240x120	MU P 235240120
SF-1 3850	38x42x50	MU P 384250	SF-1 235130	235x240x130	MU P 235240130
SF-1 3855	38x42x55	MU P 384255	SF-1 235140	235x240x140	MU P 235240140
SF-1 3860	38x42x60	MU P 384260	SF-1 235150	235x240x150	MU P 235240150
SF-1 4012	40x44x12	MU P 404412	SF-1 24060	240x245x60	MU P 24024560
SF-1 4015	40x44x15	MU P 404415	SF-1 24070	240x245x70	MU P 24024570
SF-1 4020	40x44x20	MU P 404420	SF-1 24080	240x245x80	MU P 24024580
SF-1 4025	40x44x25	MU P 404425	SF-1 24090	240x245x90	MU P 24024590
SF-1 4030	40x44x30	MU P 404430	SF-1 240100	240x245x100	MU P 240245100
SF-1 4035	40x44x35	MU P 404435	SF-1 240110	240x245x110	MU P 240245110
SF-1 4040	40x44x40	MU P 404440	SF-1 240120	240x245x120	MU P 240245120
SF-1 4045	40x44x45	MU P 404445	SF-1 240130	240x245x130	MU P 240245130
SF-1 4050	40x44x50	MU P 404450	SF-1 240140	240x245x140	MU P 240245140
SF-1 4055	40x44x55	MU P 404455	SF-1 240150	240x245x150	MU P 240245150
SF-1 4060	40x44x60	MU P 404460	SF-1 24560	245x250x60	MU P 24525060
SF-1 4212	42x46x12	MU P 424612	SF-1 24570	245x250x70	MU P 24525070
SF-1 4215	42x46x15	MU P 424615	SF-1 24580	245x250x80	MU P 24525080
SF-1 4220	42x46x20	MU P 424620	SF-1 24590	245x250x90	MU P 24525090
SF-1 4225	42x46x25	MU P 424625	SF-1 245100	245x250x100	MU P 245250100
SF-1 4230	42x46x30	MU P 424630	SF-1 245110	245x250x110	MU P 245250110
SF-1 4235	42x46x35	MU P 424635	SF-1 245120	245x250x120	MU P 245250120
SF-1 4240	42x46x40	MU P 424640	SF-1 245130	245x250x130	MU P 245250130
SF-1 4245	42x46x45	MU P 424645	SF-1 245140	245x250x140	MU P 245250140
SF-1 4250	42x46x50	MU P 424650	SF-1 245150	245x250x150	MU P 245250150
SF-1 4255	42x46x55	MU P 424655	SF-1 25060	250x255x60	MU P 25025560
SF-1 4260	42x46x60	MU P 424660	SF-1 25070	250x255x70	MU P 25025570
SF-1 4412	44x48x12	MU P 444812	SF-1 25080	250x255x80	MU P 25025580
SF-1 4415	44x48x15	MU P 444815	SF-1 25090	250x255x90	MU P 25025590
SF-1 4420	44x48x20	MU P 444820	SF-1 250100	250x255x100	MU P 250255100
SF-1 4425	44x48x25	MU P 444825	SF-1 250110	250x255x110	MU P 250255110
SF-1 4430	44x48x30	MU P 444830	SF-1 250120	250x255x120	MU P 250255120
SF-1 4435	44x48x35	MU P 444835	SF-1 250130	250x255x130	MU P 250255130
SF-1 4440	44x48x40	MU P 444840	SF-1 250140	250x255x140	MU P 250255140
SF-1 4445	44x48x45	MU P 444845	SF-1 250150	250x255x150	MU P 250255150
SF-1 4450	44x48x50	MU P 444850	SF-1 25560	255x260x60	MU P 25526060
SF-1 4455	44x48x55	MU P 444855	SF-1 25570	255x260x70	MU P 25526070
SF-1 4460	44x48x60	MU P 444860	SF-1 25580	255x260x80	MU P 25526080
SF-1 4515	45x50x15	MU P 455015	SF-1 25590	255x260x90	MU P 25526090
SF-1 4520	45x50x20	MU P 455020	SF-1 255100	255x260x100	MU P 255260100
SF-1 4525	45x50x25	MU P 455025	SF-1 255110	255x260x110	MU P 255260110
SF-1 4530	45x50x30	MU P 455030	SF-1 255120	255x260x120	MU P 255260120
SF-1 4535	45x50x35	MU P 455035	SF-1 255130	255x260x130	MU P 255260130
SF-1 4540	45x50x40	MU P 455040	SF-1 255140	255x260x140	MU P 255260140
SF-1 4545	45x50x45	MU P 455045	SF-1 255150	255x260x150	MU P 255260150
SF-1 4550	45x50x50	MU P 455050	SF-1 26060	260x265x60	MU P 26026560
SF-1 4555	45x50x55	MU P 455055	SF-1 26070	260x265x70	MU P 26026570
SF-1 4560	45x50x60	MU P 455060	SF-1 26080	260x265x80	MU P 26026580
SF-1 5015	50x55x15	MU P 505515	SF-1 26090	260x265x90	MU P 26026590
SF-1 5020	50x55x20	MU P 505520	SF-1 260100	260x265x100	MU P 260265100
SF-1 5025	50x55x25	MU P 505525	SF-1 260110	260x265x110	MU P 260265110
SF-1 5030	50x55x30	MU P 505530	SF-1 260120	260x265x120	MU P 260265120
SF-1 5035	50x55x35	MU P 505535	SF-1 260130	260x265x130	MU P 260265130
SF-1 5040	50x55x40	MU P 505540	SF-1 260140	260x265x140	MU P 260265140
SF-1 5045	50x55x45	MU P 505545	SF-1 260150	260x265x150	MU P 260265150
SF-1 5050	50x55x50	MU P 505550	SF-1 26560	265x270x60	MU P 26527060
SF-1 5055	50x55x55	MU P 505555	SF-1 26570	265x270x70	MU P 26527070
SF-1 5060	50x55x60	MU P 505560	SF-1 26580	265x270x80	MU P 26527080
SF-1 5065	50x55x65	MU P 505565	SF-1 26590	265x270x90	MU P 26527090
SF-1 5070	50x55x70	MU P 505570	SF-1 265100	265x270x100	MU P 265270100
SF-1 5515	55x60x15	MU P 556015	SF-1 265110	265x270x110	MU P 265270110
SF-1 5520	55x60x20	MU P 556020	SF-1 265120	265x270x120	MU P 265270120
SF-1 5525	55x60x25	MU P 556025	SF-1 265130	265x270x130	MU P 265270130
SF-1 5530	55x60x30	MU P 556030	SF-1 265140	265x270x140	MU P 265270140
SF-1 5535	55x60x35	MU P 556035	SF-1 265150	265x270x150	MU P 265270150
SF-1 5540	55x60x40	MU P 556040	SF-1 27060	270x275x60	MU P 27027560
SF-1 5545	55x60x45	MU P 556045	SF-1 27070	270x275x70	MU P 27027570
SF-1 5550	55x60x50	MU P 556050	SF-1 27080	270x275x80	MU P 27027580
SF-1 5555	55x60x55	MU P 556055	SF-1 27090	270x275x90	MU P 27027590
SF-1 5560	55x60x60	MU P 556060	SF-1 270100	270x275x100	MU P 270275100
SF-1 5565	55x60x65	MU P 556065	SF-1 270110	270x275x110	MU P 270275110
SF-1 5570	55x60x70	MU P 556070	SF-1 270120	270x275x120	MU P 270275120
SF-1 6015	60x65x15	MU P 606515	SF-1 270130	270x275x130	MU P 270275130
SF-1 6020	60x65x20	MU P 606520	SF-1 270140	270x275x140	MU P 270275140
SF-1 6025	60x65x25	MU P 606525	SF-1 270150	270x275x150	MU P 270275150
SF-1 6030	60x65x30	MU P 606530	SF-1 27560	275x280x60	MU P 27528060
SF-1 6035	60x65x35	MU P 606535	SF-1 27570	275x280x70	MU P 27528070
SF-1 6040	60x65x40	MU P 606540	SF-1 27580	275x280x80	MU P 27528080
SF-1 6045	60x65x45	MU P 606545	SF-1 27590	275x280x90	MU P 27528090
SF-1 6050	60x65x50	MU P 606550	SF-1 275100	275x280x100	MU P 275280100
SF-1 6055	60x65x55	MU P 606555	SF-1 275110	275x280x110	MU P 275280110
SF-1 6060	60x65x60	MU P 606560	SF-1 275120	275x280x120	MU P 275280120

SF-1 6065	60x65x65	MU P 606565	SF-1 275130	275x280x130	MU P 275280130
SF-1 6070	60x65x70	MU P 606570	SF-1 275140	275x280x140	MU P 275280140
SF-1 6075	60x65x75	MU P 606575	SF-1 275150	275x280x150	MU P 275280150
SF-1 6080	60x65x80	MU P 606580	SF-1 28060	280x285x60	MU P 28028560
SF-1 6085	60x65x85	MU P 606585	SF-1 28070	280x285x70	MU P 28028570
SF-1 6090	60x65x90	MU P 606590	SF-1 28080	280x285x80	MU P 28028580
SF-1 6515	65x70x15	MU P 657015	SF-1 28090	280x285x90	MU P 28028590
SF-1 6520	65x70x20	MU P 657020	SF-1 280100	280x285x100	MU P 280285100
SF-1 6530	65x70x30	MU P 657030	SF-1 280110	280x285x110	MU P 280285110
SF-1 6535	65x70x35	MU P 657035	SF-1 280120	280x285x120	MU P 280285120
SF-1 6540	65x70x40	MU P 657040	SF-1 280130	280x285x130	MU P 280285130
SF-1 6550	65x70x50	MU P 657050	SF-1 280140	280x285x140	MU P 280285140
SF-1 6560	65x70x60	MU P 657060	SF-1 280150	280x285x150	MU P 280285150
SF-1 6570	65x70x70	MU P 657070	SF-1 28560	285x290x60	MU P 28529060
SF-1 6580	65x70x80	MU P 657080	SF-1 28570	285x290x70	MU P 28529070
SF-1 6590	65x70x90	MU P 657090	SF-1 28580	285x290x80	MU P 28529080
SF-1 7020	70x75x20	MU P 707520	SF-1 28590	285x290x90	MU P 28529090
SF-1 7030	70x75x30	MU P 707530	SF-1 285100	285x290x100	MU P 285290100
SF-1 7040	70x75x40	MU P 707540	SF-1 285110	285x290x110	MU P 285290110
SF-1 7050	70x75x50	MU P 707550	SF-1 285120	285x290x120	MU P 285290120
SF-1 7060	70x75x60	MU P 707560	SF-1 285130	285x290x130	MU P 285290130
SF-1 7070	70x75x70	MU P 707570	SF-1 285140	285x290x140	MU P 285290140
SF-1 7080	70x75x80	MU P 707580	SF-1 285150	285x290x150	MU P 285290150
SF-1 7090	70x75x90	MU P 707590	SF-1 29060	290x295x60	MU P 29029560
SF-1 7530	75x80x30	MU P 758030	SF-1 29070	290x295x70	MU P 29029570
SF-1 7540	75x80x40	MU P 758040	SF-1 29080	290x295x80	MU P 29029580
SF-1 7550	75x80x50	MU P 758050	SF-1 29090	290x295x90	MU P 29029590
SF-1 7560	75x80x60	MU P 758060	SF-1 290100	290x295x100	MU P 290295100
SF-1 7570	75x80x70	MU P 758070	SF-1 290110	290x295x110	MU P 290295110
SF-1 7580	75x80x80	MU P 758080	SF-1 290120	290x295x120	MU P 290295120
SF-1 7590	75x80x90	MU P 758090	SF-1 290130	290x295x130	MU P 290295130
SF-1 8030	80x85x30	MU P 808530	SF-1 290140	290x295x140	MU P 290295140
SF-1 8040	80x85x40	MU P 808540	SF-1 290150	290x295x150	MU P 290295150
SF-1 8050	80x85x50	MU P 808550	SF-1 29560	295x300x60	MU P 29530060
SF-1 8060	80x85x60	MU P 808560	SF-1 29570	295x300x70	MU P 29530070
SF-1 8070	80x85x70	MU P 808570	SF-1 29580	295x300x80	MU P 29530080
SF-1 8080	80x85x80	MU P 808580	SF-1 29590	295x300x90	MU P 29530090
SF-1 8090	80x85x90	MU P 808590	SF-1 295100	295x300x100	MU P 295300100
SF-1 80100	80x85x100	MU P 8085100	SF-1 295110	295x300x110	MU P 295300110
SF-1 8530	85x90x30	MU P 859030	SF-1 295120	295x300x120	MU P 295300120
SF-1 8540	85x90x40	MU P 859040	SF-1 295130	295x300x130	MU P 295300130
SF-1 8550	85x90x50	MU P 859050	SF-1 295140	295x300x140	MU P 295300140
SF-1 8560	85x90x60	MU P 859060	SF-1 295150	295x300x150	MU P 295300150
SF-1 8570	85x90x70	MU P 859070	SF-1 30060	300x305x60	MU P 30030560
SF-1 8580	85x90x80	MU P 859080	SF-1 30070	300x305x70	MU P 30030570
SF-1 8590	85x90x90	MU P 859090	SF-1 30080	300x305x80	MU P 30030580
SF-1 85100	85x90x100	MU P 8590100	SF-1 30090	300x305x90	MU P 30030590
SF-1 9030	90x95x30	MU P 909530	SF-1 300100	300x305x100	MU P 300305100
SF-1 9040	90x95x40	MU P 909540	SF-1 300110	300x305x110	MU P 300305110
SF-1 9050	90x95x50	MU P 909550	SF-1 300120	300x305x120	MU P 300305120
SF-1 9060	90x95x60	MU P 909560	SF-1 300130	300x305x130	MU P 300305130
SF-1 9070	90x95x70	MU P 909570	SF-1 300140	300x305x140	MU P 300305140
SF-1 9080	90x95x80	MU P 909580	SF-1 300150	300x305x150	MU P 300305150
SF-1 9090	90x95x90	MU P 909590			
SF-1 90100	90x95x100	MU P 9095100			

JINTAI SLIDE BEARING INTRODUCTION

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JINTAI SF-1F similar as MU Self-Lubricated Bearings Flanged Plain Bearings dimension according to ISO 3547

JINTAI SF-1F Bearing and Self-lubricated MU Bearing Standard Metric Size

単位 Unit: mm

JINTAI CODE	d1*d2/d3*L(mm)	Self-lubricated MU CODE	JINTAI CODE	d1*d2/d3*L(mm)	Self-lubricated MU CODE
SF-1F 0304	3x4.5x7x4	MU F 034.50704	SF-1F 2026.5	20x23x30x26.5	MU F 20233026.5
SF-1F 0404	4x5.5x9x4	MU F 045.50904	SF-1F 2211.5	22x25x33x11.5	MU F 22253311.5
SF-1F 0505	5x7x10x5	MU F 05071005	SF-1F 2213.5	22x25x33x13.5	MU F 22253313.5
SF-1F 0506	5x7x10x6	MU F 05071006	SF-1F 2216.5	22x25x33x16.5	MU F 22253316.5
SF-1F 0604	6x8x12x4	MU F 06081204	SF-1F 2221.5	22x25x33x21.5	MU F 22253321.5
SF-1F 0606	6x8x12x6	MU F 06081206	SF-1F 2416.5	24x27x35x16.5	MU F 24273516.5
SF-1F 0607	6x8x12x7	MU F 06081207	SF-1F 2421.5	24x27x35x21.5	MU F 24273521.5
SF-1F 0608	6x8x12x8	MU F 06081208	SF-1F 2426.5	24x27x35x26.5	MU F 24273526.5
SF-1F 0706	7x9x13x6	MU F 07091306	SF-1F 2511.5	25x28x35x11.5	MU F 25283511.5
SF-1F 0708	7x9x13x8	MU F 07091308	SF-1F 2513.5	25x28x35x13.5	MU F 25283513.5
SF-1F 0805.5	8x10x15x5.5	MU F 0810155.5	SF-1F 2516.5	25x28x35x16.5	MU F 25283516.5
SF-1F 0807.5	8x10x15x7.5	MU F 0810157.5	SF-1F 2521.5	25x28x35x21.5	MU F 25283521.5
SF-1F 0809.5	8x10x15x9.5	MU F 0810159.5	SF-1F 2526.5	25x28x35x26.5	MU F 25283526.5
SF-1F 1007	10x12x18x7	MU F 10121807	SF-1F 3014	30x34x42x14	MU F 30344214
SF-1F 1008	10x12x18x8	MU F 10121808	SF-1F 3016	30x34x42x16	MU F 30344216
SF-1F 1009	10x12x18x9	MU F 10121809	SF-1F 3022	30x34x42x22	MU F 30344222
SF-1F 1011	10x12x18x11	MU F 10121811	SF-1F 3026	30x34x42x26	MU F 30344226
SF-1F 1012	10x12x18x12	MU F 10121812	SF-1F 3032	30x34x42x32	MU F 30344232
SF-1F 1015	10x12x18x15	MU F 10121815	SF-1F 3222	32x36x46x22	MU F 32364622
SF-1F 1017	10x12x18x17	MU F 10121817	SF-1F 3227	32x36x46x27	MU F 32364627
SF-1F 1207	12x14x20x7	MU F 12142007	SF-1F 3232	32x36x46x32	MU F 32364632
SF-1F 1209	12x14x20x9	MU F 12142009	SF-1F 3514	35x39x47x14	MU F 35394714
SF-1F 1212	12x14x20x12	MU F 12142012	SF-1F 3516	35x39x47x16	MU F 35394716
SF-1F 1215	12x14x20x15	MU F 12142015	SF-1F 3522	35x39x47x22	MU F 35394722
SF-1F 1217	12x14x20x17	MU F 12142017	SF-1F 3526	35x39x47x26	MU F 35394726
SF-1F 1410	14x16x22x10	MU F 14162210	SF-1F 3532	35x39x47x32	MU F 35394732
SF-1F 1412	14x16x22x12	MU F 14162212	SF-1F 3542	35x39x47x42	MU F 35394742
SF-1F 1415	14x16x22x15	MU F 14162215	SF-1F 4014	40x44x53x14	MU F 40445314
SF-1F 1417	14x16x22x17	MU F 14162217	SF-1F 4016	40x44x53x16	MU F 40445316
SF-1F 1509	15x17x23x9	MU F 15172309	SF-1F 4022	40x44x53x22	MU F 40445322
SF-1F 1512	15x17x23x12	MU F 15172312	SF-1F 4026	40x44x53x26	MU F 40445326
SF-1F 1515	15x17x23x15	MU F 15172315	SF-1F 4032	40x44x53x32	MU F 40445332
SF-1F 1517	15x17x23x17	MU F 15172317	SF-1F 4042	40x44x53x42	MU F 40445342
SF-1F 1521	15x17x23x21	MU F 15172321	SF-1F 4516	45x50x58x16	MU F 45505816
SF-1F 1612	16x18x24x12	MU F 16182412	SF-1F 4522	45x50x58x22	MU F 45505822
SF-1F 1617	16x18x24x17	MU F 16182417	SF-1F 4526	45x50x58x26	MU F 45505826
SF-1F 1621	16x18x24x21	MU F 16182421	SF-1F 4532	45x50x58x32	MU F 45505832
SF-1F 1812	18x20x26x12	MU F 18202612	SF-1F 4542	45x50x58x42	MU F 45505842
SF-1F 1815	18x20x26x15	MU F 18202615	SF-1F 5016	50x55x65x16	MU F 50556516
SF-1F 1817	18x20x26x17	MU F 18202617	SF-1F 5022	50x55x65x22	MU F 50556522
SF-1F 1822	18x20x26x22	MU F 18202622	SF-1F 5026	50x55x65x26	MU F 50556526
SF-1F 2011.5	20x23x30x11.5	MU F 20233011.5	SF-1F 5532	55x60x70x32	MU F 55607032
SF-1F 2013.5	20x23x30x13.5	MU F 20233013.5	SF-1F 5542	55x60x70x42	MU F 55607042
SF-1F 2015	20x23x30x15	MU F 20233015	SF-1F 6032	60x65x75x32	MU F 60657532
SF-1F 2016.5	20x23x30x16.5	MU F 20233016.5	SF-1F 6042	60x65x75x42	MU F 60657542
SF-1F 2021.5	20x23x30x21.5	MU F 20233021.5			

SF-2 边界润滑轴承 SF-2 Marginal-Lubrication Bearings

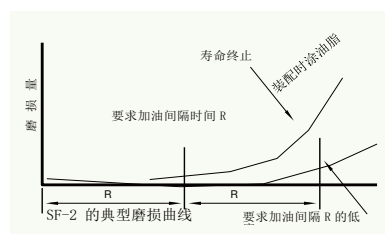


1. 改性聚甲醛 POM with lead 0.3-0.5mm
2. 球形青铜粉 Porous bronze sintere
3. 钢背 Steel backaking
4. 镀铜层 Copper plating



注：SF-2 系列产品还可根据
不同工况条件选择不同的基
体材料，如：青铜基板、不
锈钢基板、以及“无铅”等
配方产品。SF-2Y 属环保无
铅产品，颜色为桔黄色。

Note: Various materials
are suitable for SF- 2
series products
according to different
working conditions,
such as bronze-
backing, stainless steel
backing and lead-free
material. SF-2Y is an
environmental friendly
lead-free product and its
color is orange.



技术参数 Tech.Data

最大何载 Max load	静承载 Static	250N/mm ²
	动承载 Dynamic	140N/mm ²
	摇摆运动 Oscillating	60N/mm ²
最大 PV 值 PV limit	干摩擦 Dry	2.8N/mm ² ·m/s
	润滑油 Oil	22N/mm ² ·m/s
使用温度 Temp.limit		-40℃~+130℃
摩擦系数 Friction Coeff.		0.05~0.25 μ
最大速率 Speed limit		0.25m/s
导热系数 Thermal conductivity		2.03Kcal/M.br.C
热膨胀系数 Coeff. of linear expansion		51×10 ⁻⁶ per℃
装配时内孔涂润滑油 Initial pre-lubrication at assembly required		

SF-2 应用特点 Characteristic of preformance

◎SF-2 型材料是以填充四氟改性的聚甲醛塑料为表面层三层复合自润滑材料，它是一种良性的边界润滑材料，因此特别适用与高载低速下的旋转运动，摇摆运动以及经常在载荷下启闭而不易形成流体动力润滑的轴承，止推垫片、滑块、球座等摩擦零件。SF-2 能够充分地利用微量润滑脂，在边界润滑条件下可以长期的不用加油保养。在完全无油润滑条件下，SF-2 磨擦性能及允许 PV 值较低，因此通常在塑料表面轧出储油坑，装配时涂上锂基润滑油脂或硅脂等。

◎SF-2 is triple-layer self lubricating material that can fill modified POM plastic as surface layer; it is benignant boundary lubrication material, therefore, it is particularly applicable high-load low-speed rotating and wing movement, as well as in the condition that frequent loaded start-stop is the requirement while hydrodynamic lubrication membrane is difficult to form, in the parts such as bearing, thrust washer, sliding block, ball socket and so on. SF-2 can take full advantage of less grease to work long time without lubrication maintenance under boundary lubrication condition. But under oil-free condition, SF-2 the frictional behavior and permissible PV value is relatively low, so generally storage pit can be formed on the plastic surface, where lithium-based lubricant grease or silicone grease and so on should be applied when being installed.

SF-2 磨损规律 Wear and tear a law

◎SF-2 型材料有其特殊的磨损规律，如图 4 所示在安装时涂油脂的情况下，能在 R 阶段内极微量的磨损。经过 R 阶段时间后失去边界油润滑条件，磨损就开始加剧。如果在此时重新加油，可保持无显著磨损，其寿命亦可以大大地延长。所以 SF-2 材料的优点就在于需要间融 R 阶段时间加油一次，其间隔时间 R 较其它材料特别是金属材料的间隔时间显著地长。约为五倍左右。

◎SF-2 material follows special wearing rule as shown in Fig. 4, infinitesimal abrasion can occur in R phase when being applied with grease and then being installed. But after the R phase, the boundary lubrication condition will disappear and wearing will be exaggerated. If you do refill with oil, the product can be drastically held by non-remarkable wearing and its life will also be greatly extended. Therefore the advantage of SF-2 material is that oil should be added with an interval of R, which is remarkably longer than that of other metal materials. It is approximately five times as long.

◎当装配时涂以润滑脂(如锂基脂或硅脂等)，SF-2 衬套的使用寿命，随工作时所处的 PV 值而上下，如当 PV 值在 2.5MPa·m/s 左右时，其使用寿命约为 200 小时，而当 PV 值在 0.1MPa·m/s 时，其使用寿命可在 10000 小时以上(详见表)

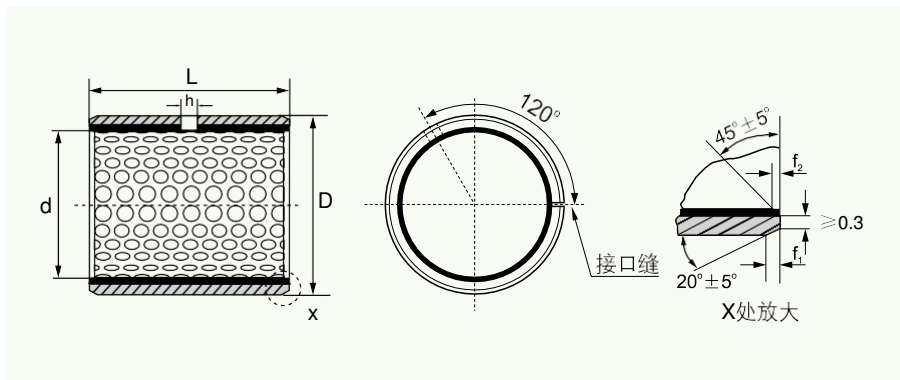
SF-2 衬套的加油保养周期 R 约为寿命的一半左右。例如当 PV=2.5MPa·m/s 时，要求每隔 100 小时必须加油保养一次。

◎When SF-2 bush is installed with application of grease such as lithium-based or silicone grease, its service life varies from the PV value under working condition, for instance, when PV value is about 2.5MPa·m/s, its service life will be about 200hr; when PV value is 0.1MPa·m/s, its service life can be above 10,000hr (see the table for details)

The cycle R of lubrication maintenance of SF-2 bush is about the half of its service life. For instance, when PV=25MPa·m/s, it is required to be oil-lubricated every 100hr.

SF-2 边界润滑轴承标准公制尺寸

SF-2 Marginal-Lubrication Bearings Standard Metric Size



单位 Unit: mm

d	D	相配轴径 Shaft Dia. f ₇	座孔 Housing H7	壁厚 Wall Thickness		油孔 Oil bore H	f ₁	f ₂	L ⁰ _{-0.40}									
				最小 Min.	最大 Max.				10	15	20	25	30	35	40	45	50	60
10	12	10 _{-0.022}	12 ^{+0.018}			4			1010	1015	1020							
12	14	12 _{-0.027}	14 ^{+0.018}			4			1210	1215	1220							
14	16	14 _{-0.027}	16 ^{+0.018}	0.955	0.980	4	0.6	0.3		1415	1420							
15	17	15 _{-0.027}	17 ^{+0.018}			4				1515	1520	1525						
16	18	16 _{-0.027}	18 ^{+0.018}			4				1615	1620	1625						
18	20	18 _{-0.027}	20 ^{+0.021}			4				1815	1820	1825						
20	23	20 _{-0.033}	23 ^{+0.021}			4				2015	2020	2025	2030					
22	25	22 _{-0.033}	25 ^{+0.021}	1.445	1.475	6	0.6	0.4		2215		2225						
25	28	25 _{-0.033}	28 ^{+0.021}			6				2515	2520	2525	2530					
28	32	28 _{-0.033}	32 ^{+0.025}			6					2820		2830					
30	34	30 _{-0.033}	34 ^{+0.025}	1.935	1.970	6	1.2	0.4			3020	3025	3030		3040			
35	39	35 _{-0.039}	39 ^{+0.025}			6					3520		3530	3535	3540			
40	44	40 _{-0.039}	44 ^{+0.025}			8					4020		4030		4040		4050	
45	50	45 _{-0.039}	50 ^{+0.025}			8					4520		4530		4540	4545	4550	
50	55	50 _{-0.039}	55 ^{+0.030}	2.415	2.460	8	1.8	0.6					5030		5040		5050	5060
55	60	55 _{-0.046}	60 ^{+0.030}			8						5530		5540		5550	5560	
60	65	60 _{-0.046}	65 ^{+0.030}			8							6030		6040		6050	6060



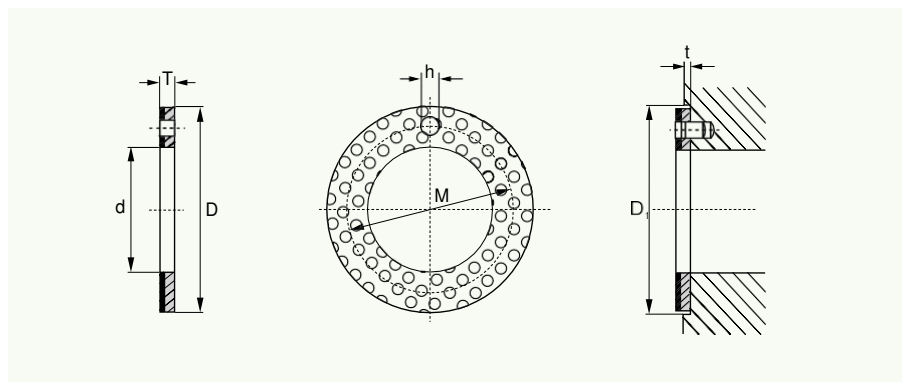
SF-2 边界润滑轴承标准公制尺寸

SF-2 Marginal-Lubrication Bearing Standard Metric Size

单位Unit: mm

d	D	相配轴径 Shaft Dia. f ₇	座孔 Housing H7	壁厚 Wall Thickness		油孔 Oil bore H	f ₁	f ₂	L ⁰ _{-0.40}								
				最小 Min.	最大 Max.				40	50	60	80	90	95	100	110	120
65	70	65 ^{-0.046}	70 ^{+0.030}			8			6540		6560						
70	75	70 ^{-0.046}	75 ^{+0.030}	2.415	2.460	8	1.8	0.6	7040	7050		7080					
75	80	75 ^{-0.046}	80 ^{+0.030}			8			7540		7560	7580					
80	85	80 ^{-0.046}	85 ^{+0.035}			9.5			8040		8060	8080					
85	90	85 ^{-0.054}	90 ^{+0.035}			9.5			8540		8560	8580					
90	95	90 ^{-0.054}	95 ^{+0.035}			9.5			9040		9060	9080	9090				
100	105	100 ^{-0.054}	105 ^{+0.035}			9.5	1.8	0.6		10050		10080		10095			
105	110	105 ^{-0.054}	110 ^{+0.035}			9.5					10560	10580		10595		105110	
110	115	110 ^{-0.054}	115 ^{+0.035}			9.5					11060	11080		11095		110110	
120	125	120 ^{-0.054}	125 ^{+0.040}			9.5					12060	12080				120110	
125	130	125 ^{-0.063}	130 ^{+0.040}			9.5					12560					125110	
130	135	130 ^{-0.063}	135 ^{+0.040}			9.5				13050	13060	13080			130100		
140	145	140 ^{-0.063}	145 ^{+0.040}			9.5				14050	14060	14080			140100		
150	155	150 ^{-0.063}	155 ^{+0.040}			9.5				15050	15060	15080			150100		
160	165	160 ^{-0.063}	165 ^{+0.040}	2.385	2.450	9.5				16050	16060	16080			160100		
170	175	170 ^{-0.063}	175 ^{+0.040}			9.5				17050		17080			170100		
180	185	180 ^{-0.063}	185 ^{+0.046}			9.5				18050	18060	18080			180100		
190	195	190 ^{-0.072}	195 ^{+0.046}			9.5	1.8	0.6		19050	19060	19080			190100		190120
200	205	200 ^{-0.072}	205 ^{+0.046}			9.5				20050	20060	20080			200100		200120
220	225	220 ^{-0.072}	225 ^{+0.046}			9.5				22050	22060	22080			220100		220120
240	245	240 ^{-0.072}	245 ^{+0.046}			9.5				24050	24060	24080			240100		240120
250	255	250 ^{-0.072}	255 ^{+0.052}			9.5				25050	25060	25080			250100		250120
260	265	260 ^{-0.081}	265 ^{+0.052}			9.5				26050	26060	26080			260100		260120
280	285	280 ^{-0.081}	285 ^{+0.052}			9.5				28050	28060	28080			280100		280120
300	305	300 ^{-0.081}	305 ^{+0.052}			9.5				30050	30060	30080			300100		300120

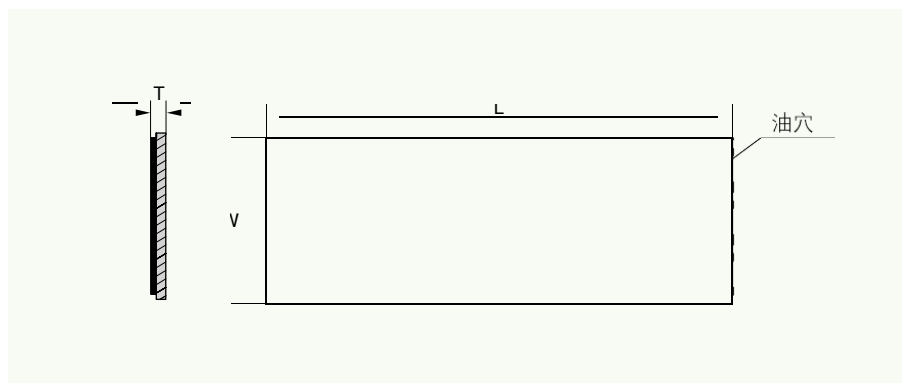
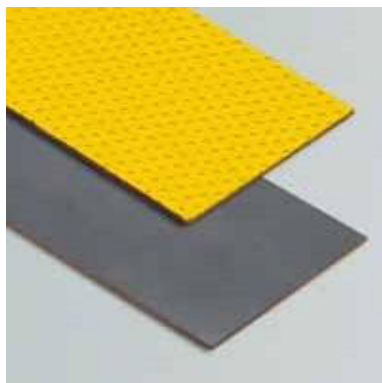
SF-1WD/SF-2WD 止推垫片标准公制尺寸 SF-1WD/SF-2WD Thrust Washer Standard Metric Size



单位 Unit: mm

轴径 Axle	型号规格 Designation	垫片尺寸 Washer Dimension				安装尺寸 Installation Size		
		d +0.25	D -0.25	T -0.05	M ± 0.125	h ^{+0.40} _{+0.10}	t ± 0.20	D ₁ +0.12
8	WD 10	10	20	1.5	15	1.5	1.0	20
10	WD 12	12	24		18			24
12	WD 14	14	26		20			26
14	WD 16	16	30		23	2.0		30
16	WD 18	18	32	25	32			
18	WD 20	20	36	2.0	28	3.0		36
20	WD 22	22	38		30			38
22	WD 24	24	42		33			42
24	WD 26	26	44		35			44
26	WD 28	28	48		38			48
30	WD 32	32	54	2.0	43	4.0	54	
36	WD 38	38	62		50		62	
40	WD 42	42	66		54		66	
46	WD 48	48	74		61		74	
50	WD 52	52	78	2.0	65		1.5	78
60	WD 62	62	90		76	90		

SF-1/SF-2 板材标准公制尺寸 SF-1/SF-2 Strip Standard Metric Size



单位 Unit: mm

代号 Code number	长度(L) ± 1	宽度(W) ± 1	壁厚(T)-0.05
SF-1/SF-2	500	150	1.0
SF-1/SF-2	500	150	1.5
SF-1/SF-2	500	150	2.0
SF-1/SF-2	500	150	2.5

JF-800 系列双金属轴承 JF-800 Bimetal Bearings



◎JF-800 以碳钢为基体，表面烧结铜粉，适用于高载低速下的旋 转、摇摆运动，铜粉面可根据要求加工出各种油孔、油槽。目前已 广泛使用于矿山机械、汽车、摩托车、建筑机械、农用机械、轧钢 机械等。

◎Steel backed Lead bronze lined bearing material for lubricated applications, high load capacity and good fatigue properties, have been widely used in automotive, common industrial like steering gear, power steering, pedal bushes, king-pin bushes, tailgate pivots, mechanical handling, lifting equipment, hydraulic motors, agricultural machines etc.

成分、特性、用途

Chemical Compositions, Characteristics and Application

材料型号 Types of Material	铜合金牌号 Specifications of Bronze alloy	化学成分% Chemical Compositions	合金层硬度 Alloy Hrdness	特性与用途 Characteristics and Application
JF-930	CuSn6.5P0.1	铜锡磷 Cu Sn P 93 6.0~7.0 0.1~0.25	HB(60-90)	无铅 Lead Free
JF-850	CuSn6Zn6Pb3	铜锡锌铅 Cu Sn Zn Pb 85 6 6 3	HB(40-80)	启动电机 Starting Motor
JF-800	CuPb10Sn10	铜铅锡 Cu Pb Sn Zn 80 10 10	HB(60-90)	在铜合金中最强的一种，应用范围广 The strongest material type, wide application scope.
JF-750	CuPb24Sn1	铜铅锡 Cu Pb Sn 75 24 1	HB(45-70)	连杆摇臂 Link Arm
JF-720	CuPb24Sn4	铜铅锡 Cu Pb Sn 72 24 4	HB(45-70)	连杆摇臂 Link Arm

技术参数 Tech.Data

最大荷载 Max.Load	静承载 Static	250N/mm ²	屈服强度 Yield strength	240N/mm ²
	动承载 Dynamic	140N/mm ²	使用温度 Temp.limit	-40℃~+250℃
最高线速度 Max. linear speed		2m/s	摩擦系数 Friction Coeff.	0.08~0.20
最大PV值 PV limit		2.8N/mm ² ·m/s	导热系数 Thermal conductivity	60W(m·k)-1
抗剪切强度 Shear resistance strength		350N/mm ²	导热系数 Thermal conductivity	14·10 ⁻⁶ K ⁻¹

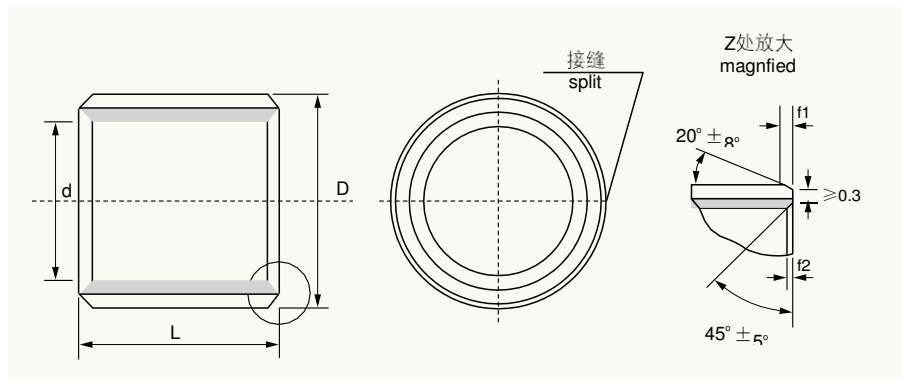
JF-800 双金属内孔加工与不可加工厚度公差

Wall Thickness of The Machinable and Non-machinable Bore of JF-800 Bearings and Their Tolerances

公称厚度 Nominal Thickness	内孔不可加工厚度公差 Tolerances of Series B (non-machinable)	内孔可加工厚度公差 Tolerances of Series C (non-machinable)
1	-0.025	+0.25 +0.15 +0.25
1.5	-0.030	+0.15 +0.25 +0.15
2	-0.035	+0.25 +0.15 +0.30
2.5	-0.040	+0.15 +0.30 +0.15
3	-0.045	+0.30 +0.15 +0.30
3.5	-0.050	+0.30 +0.15

JF-800 双金属轴承标准公制尺寸

JF-800 Bimetal Bearings Standard Metric Size



单位 unit:mm

d	D	壁厚 Wall Thickness	外径 O.D Tolerance	内径公差 I.D.(H8) Tolerance	配合座孔 H7 Housing Bore	轴径 f ₇ Journal Diameter	f ₁	f ₂	L -0.40											
									10	15	20	25	30	40	50	60	80	90	100	
10	12	1 -0.025	12 ^{+0.065} _{+0.030}	10 ^{+0.022} _{+0.000}	10 ^{-0.013} _{-0.028}	12 ^{+0.018}	0.5	0.3	1010	1015	1020									
12	14		14 ^{+0.065} _{+0.030}	12 ^{+0.027} _{+0.000}	12 ^{-0.016} _{-0.034}	14 ^{+0.018}	0.5	0.3	1210	1215	1220									
14	16		16 ^{+0.065} _{+0.030}	14 ^{+0.027} _{+0.000}	14 ^{-0.016} _{-0.034}	16 ^{+0.018}	0.5	0.3	1410	1415	1420									
15	17		17 ^{+0.065} _{+0.030}	15 ^{+0.027} _{+0.000}	15 ^{-0.016} _{-0.034}	17 ^{+0.018}	0.5	0.3	1510	1515	1520									
16	18		18 ^{+0.075} _{+0.035}	16 ^{+0.027} _{+0.000}	16 ^{-0.016} _{-0.034}	18 ^{+0.018}	0.8	0.4	1610	1615	1620									
18	20	1.5 -0.030	20 ^{+0.075} _{+0.035}	18 ^{+0.033} _{+0.000}	18 ^{-0.016} _{-0.034}	20 ^{+0.021}	0.8	0.4	1810	1815	1820	1825								
20	23		23 ^{+0.075} _{+0.035}	20 ^{+0.033} _{+0.000}	20 ^{-0.020} _{-0.041}	23 ^{+0.021}	0.8	0.4	2010	2015	2020	2025								
22	25		25 ^{+0.075} _{+0.035}	22 ^{+0.033} _{+0.000}	22 ^{-0.020} _{-0.041}	25 ^{+0.021}	0.8	0.4	2210	2215	2220	2225								
24	27		27 ^{+0.075} _{+0.035}	24 ^{+0.033} _{+0.000}	24 ^{-0.020} _{-0.041}	27 ^{+0.021}	1.0	0.5	2410	2415	2420		2430							
25	28		28 ^{+0.075} _{+0.035}	25 ^{+0.033} _{+0.000}	25 ^{-0.020} _{-0.041}	28 ^{+0.021}	1.0	0.5		2515	2520	2525	2530							
26	30	2 -0.035	30 ^{+0.075} _{+0.035}	26 ^{+0.033} _{+0.000}	26 ^{-0.020} _{-0.041}	30 ^{+0.021}	1.0	0.5		2615	2620	2625	2630							
28	32		32 ^{+0.085} _{+0.045}	28 ^{+0.033} _{+0.000}	28 ^{-0.020} _{-0.041}	32 ^{+0.025}	1.0	0.5		2815	2820	2825	2830	2840						
30	34		34 ^{+0.085} _{+0.045}	30 ^{+0.039} _{+0.000}	30 ^{-0.020} _{-0.041}	34 ^{+0.025}	1.2	0.6		3015	3020	3025	3030	3040						
32	36		36 ^{+0.085} _{+0.045}	32 ^{+0.039} _{+0.000}	32 ^{-0.025} _{-0.050}	36 ^{+0.025}	1.2	0.6		3215	3220	3225	3230	3240						
35	39		39 ^{+0.085} _{+0.045}	35 ^{+0.039} _{+0.000}	35 ^{-0.025} _{-0.050}	39 ^{+0.025}	1.2	0.6			3520	3525	3530	3540	3550					
38	42	2.5 -0.040	42 ^{+0.085} _{+0.045}	38 ^{+0.039} _{+0.000}	38 ^{-0.025} _{-0.050}	42 ^{+0.025}	1.2	0.6			3825	3825	3830	3840	3850					
40	44		44 ^{+0.085} _{+0.045}	40 ^{+0.039} _{+0.000}	40 ^{-0.025} _{-0.050}	44 ^{+0.025}	1.2	0.6			4020	4025	4030	4040	4050					
45	50		50 ^{+0.085} _{+0.045}	45 ^{+0.039} _{+0.000}	45 ^{-0.025} _{-0.050}	50 ^{+0.025}	1.5	1.0			4520	4525	4530	4540	4550					
50	55		55 ^{+0.100} _{+0.050}	50 ^{+0.039} _{+0.000}	50 ^{-0.025} _{-0.050}	55 ^{+0.030}	1.5	1.0					5030	5040	5050	5060				
55	60		60 ^{+0.100} _{+0.050}	55 ^{+0.046} _{+0.000}	55 ^{-0.030} _{-0.060}	60 ^{+0.030}	1.5	1.0					5530	5540	5550	5560				
60	65	2.5 -0.040	65 ^{+0.100} _{+0.050}	60 ^{+0.046} _{+0.000}	60 ^{-0.030} _{-0.060}	65 ^{+0.030}	1.5	1.0					6030	6040	6050	6060				
65	70		70 ^{+0.100} _{+0.050}	65 ^{+0.046} _{+0.000}	65 ^{-0.030} _{-0.060}	70 ^{+0.030}	1.5	1.0					6530	6540	6550	6560				
70	75		75 ^{+0.100} _{+0.050}	70 ^{+0.046} _{+0.000}	70 ^{-0.030} _{-0.060}	75 ^{+0.030}	1.5	1.0					7030	7040	7050	7060	7080			
75	80		80 ^{+0.100} _{+0.050}	75 ^{+0.046} _{+0.000}	75 ^{-0.030} _{-0.060}	80 ^{+0.035}	1.5	1.0					7530	7540	7550	7560				
80	85		85 ^{+0.120} _{+0.070}	80 ^{+0.054} _{+0.000}	80 ^{-0.030} _{-0.060}	85 ^{+0.035}	1.5	1.0						8040	8050	8060	8080			

FB090 系列青铜卷制轴承 **FB090 Bronze-Wrapped Bearings**



产品概述

◎FB090 系列青铜卷制轴承套是我公司在钢-铜铅双金属轴套产品基础上开发设计的新一代轴套。该产品在国外应用十分普遍，随着我国引进机械的设备新机种的日益增多，设计师们寻找新型摩擦材料、轴套的要求也日益需要，因此该产品在我们机械制造中有着广泛应用领域和实用价值。

◎FB090 系列轴套最大特点是薄壁结构，不占据很大的装配空间。轴套材料采用特殊配方高密度铜合金带材。它与传统的铺型铜套相比，具有密度高、无气缩孔、承载能力大，又有耐磨耐疲劳等优点。轴套制造采用先进的工装模具，可在带材摩擦面上加工出适用各种工程条件的油穴、油坑、油槽，从而使轴套在使用可储存大量润滑油脂，延长加油间隔时间，有效的提高了使用寿命。

◎FB090 系列轴承广泛应用与农业机械、建筑机械、工程机械、汽车行业等。

Product Overview

◎FB090 series bronze rolled bushing is our new generation bushing based upon steel-bronze lead double metal bushings. This product is widely applied overseas. With the increase of our country's introduction of foreign machineries, designer's requirements on new abrasive materials and bushings are accordingly increasing. Therefore, our products see a wide application scope and practical value in machinery production.

◎The major feature of FB090 series bushing is their thin-wall structure, which doesn't take up too large assembly space. Specially formulated high-density bronze alloy bands are used for the building of the bushing, which, compared with traditional bushings, is featured in the high

density, no shrinkage blowholes, high load sustainability and anti-wearing and anti-fatigue. The production of the bushing is by means of advanced fixture and molds, able to make oil holes, hole dents and grooves on the friction surfaces of the bands to suit various engineering applications, making it possible for the bushing to store large amount of lubricating grease when working. Therefore, the lubrication interval is prolonged and the service hours are effectively lengthened.

◎FB090 series bearings are widely used in applications such as agricultural machineries, construction machineries, engineering machineries and automobile industry.

FB090 系列产品的优点

1. 节约大量铜材、节省车制铜套工时；
2. 与车制轴套、滚动轴承相比其重量轻、成本低；
3. 可在摩擦面加工出各种有穴、有坑、储存一定油脂，延长加油的时间是铜套的 5 倍
4. 极高的承载能力，特别是适用于粗糙的摩擦面： 可供产品：直套、止推垫片、翻边衬套、轴瓦、滑板、钢套组合件。

FB090 Product Benefits

1. Saving large amount of bronze material and save the working hours normally spent for lathing the bronze bushing.
2. Compared with lathed bushings and roller bearings, it is lights and more cost-effective.
3. Various holes and dents can be made on the friction surface for grease storage, prolonging the lubrication interval to 5 times as long as required by the bronze bushing.

4. Extremely high load sustainability, especially suitable for coarse abrasion surfaces.

Standard products available: straight bushings, thrust plates and pressure bearings.

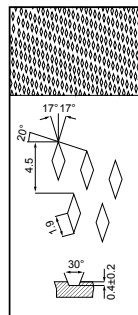
Non-standard products available: straight bushings, thrust plates, planks, bearing bushings, slide plates and steel bushing assembly.

FB090 轴承简介 FB090 Bearing Introduction

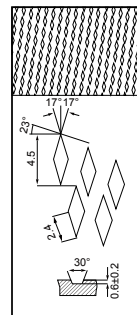
材料结构 Material Structure

◎采用高密度青铜卷制成形或球形油袋、油穴特殊合成内部表面以减少磨损延长使用时间并且很好的做到防腐功能。

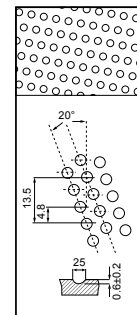
◎High-density bronze is rolled into shape or oil bags and oil holes are specially integrated into the inner surface to reduce the wearing and prolong the service hours. Besides, it has excellent anti-corrosion functions.



轴衬套内
Inside the bush of the shaft
菱形油穴 $r \leq \phi 22$
Rhomb oil holes $r \leq \phi 22$



轴衬套内
Inside the bush of the shaft
菱形油穴 $r > \phi 22$
Rhomb oil holes $r > \phi 22$



形成菱形
Forming a rhomb

化学成分 Chemical Composition

材料Material	铜 Cu	锡 Sn	磷 P	铅 Pb	锌 Zn
CuSn8	91.3%	8.5%	0.2%	-	-

物理特性 Physical Property

型号Type	密度Density	散热热胀Heat Emission and Expansion	热传导Heat Conducting	硬度Hardness	抗压强度Extensile	延伸率Extensile
FB090	8.8g/cm ³	$18.5 \times 10^{-2} \times K^{-1}$	58W(m·k)	90~120HB	470N/mm ²	40%

应用范围 Application scope

此系列轴承广泛应用与农用、建设机械以及工程机械等。

This series of bearing is widely applied to agricultural, construction and engineering machineries, etc.

油穴类别(依据 DIW1494/ISO3457)。

Categories of oil holes (As per to DIW1494/ISO3457)。

标准衬套公差 (依据 DIW W91/1503547) Standard tolerance for bushes (As per to DIW W91/1503547)

标准直径Standard Dia.	衬套外径尺寸O.D.Size	相配座孔Housing Bore	衬套内径尺寸I.D.Size	相配轴径Matching Shaft Diameter
10~18	+0.065 +0.030	+0.018 0	+0.046 0	- 0.016 - 0.043
18~30	+0.075 +0.035	+0.021 0	+0.052 0	- 0.020 - 0.020
30~50	+0.085 +0.045	+0.025 0	+0.062 0	- 0.025 - 0.064
50~80	+0.100 +0.055	+0.030 0	+0.074 0	- 0.030 - 0.076
80~120	+0.120 +0.070	+0.035 0	+0.087 0	- 0.036 - 0.090
120~180	+0.170 +0.100	+0.400 0	+0.100 0	- 0.043 - 0.106
180~250	+0.210 +0.130	+0.046 0	+0.115 0	- 0.050 - 0.122
250~315	+0.260 +0.170	+0.052 0	+0.130 0	- 0.056 - 0.137



FB092 系列青铜卷制轴承 FB092 Bronze-Wrapped Bearings

产品概述

◎FB092系列青铜卷制轴承是与FB090材料结构相同，我单位根据国外同类产品基础上开发出的新一代产品轴套，能改良产品设计、替代原有铜套，能降低采购成本，因此产品在我们机械制造中有着广泛实用价值和应用领域。

◎FB092系列轴套最大特点是薄壁结构，不占据很大的装配空间。轴套材料采用特殊配方高密度铜合金带材。它与传统的铺型铜套相

比，可在带材摩擦面上加工出适用各种工程条件的油穴、油坑、油槽，排列润滑通孔，从而使轴套在使用可储存大量润滑油脂，延长加油间隔时间，有效的提高了使用寿命。

◎FB092系列轴承广泛应用与农业机械、建筑机械、工程机械、高载低速场合等。

Product Overview

◎FB092 series bronze rolled bushing is our new generation bushing based upon steel-bronze lead double metal bushings. This product is widely applied overseas. With the increase of our country's introduction of foreign machineries, designer's requirements on new abrasive materials and bushings are accordingly increasing. Therefore, our products see a wide application scope and practical value in machinery production.

◎The major feature of FB092 series bushing is their thin-wall structure, which doesn't take up too large assembly space. Specially formulated high-density bronze alloy bands are used for the building of the bushing, which, compared with traditional bushings, is featured in the high

density, no shrinkage blowholes, high load sustainability and anti-wearing and anti-fatigue. The production of the bushing is by means of advanced fixture and molds, able to make oil holes, hole dents and grooves on the friction surfaces of the bands to suit various engineering applications, making it possible for the bushing to store large amount of lubricating grease when working. Therefore, the lubrication interval is prolonged and the service hours are effectively lengthened.

◎FB092 series bearings are widely used in applications such as agricultural machineries, construction machineries, engineering machineries and automobile industry.

FB092 系列产品的优点

1. 节约大量铜材、节省车制铜套工时；
 2. 与车制轴套、滚动轴承相比其重量轻、成本低；
 3. 可在摩擦面加工出各种有穴、有坑、储存一定油脂，延长加油的时间是铜套的5倍
 4. 极高的承载能力，特别是适用于粗糙的摩擦面；
- 可供标准产品：直套、翻边衬套、组合钢套。

FB092 Product Benefits

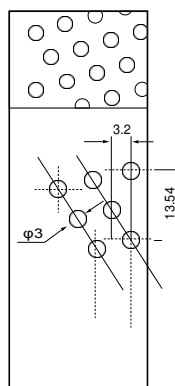
1. Saving large amount of bronze material and save the working hours normally spent for lathing the bronze bushing.
2. Compared with lathed bushings and roller bearings, it is lights and more cost-effective.
3. Various holes and dents can be made on the friction surface for grease storage, prolonging the lubrication interval to 5 times as long as required by the bronze bushing.

4. Extremely high load sustainability, especially suitable for coarse abrasion surfaces.

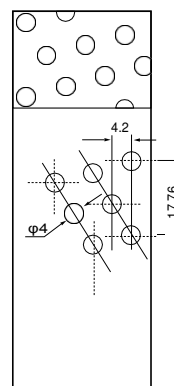
Standard products available: straight bushings, thrust plates and pressure bearings.

Non-standard products available: straight bushings, thrust plates, planks, bearing bushings, slide plates and steel bushing assembly.

FB092 轴承简介 FB092 Bearing Introduction



轴承内部 球形
内径 $r \leq \phi 25$



轴承球形 内径
 $r > \phi 25$

化学成分 Chemical Composition

材料Material	铜 Cu	锡 Sn	磷 P	铅 Pb	锌 Zn
CuSn8	91.3%	8.5%	0.2%	-	-

物理特性 Physical Property

型号 Type	密度 Density	散热热胀 Heat Emission and Expansion	热传导 Heat Conducting	硬度 Hardness	抗压强度 Extensile	延伸率 Extensile
FB092	8.8g/cm ³	$18.5 \times 10^{-2} \times K^1$	58W(m·k)	90~120HB	470N/mm ²	40%

应用范围 Application scope

此系列轴承广泛应用与农用、建设机械以及工程机械等。

This series of bearing is widely applied to agricultural, construction and engineering machineries, etc.

标准衬套公差 (依据 DIW W91/1503547) Standard tolerance for bushes (As per to DIW W91/1503547)

标准直径 Standard Dia.	衬套外径尺寸 O.D.Size	相配座孔 Housing Bore	衬套内径尺寸 I.D.Size	相配轴径 Matching Shaft Diameter
10~18	+0.065 +0.030	+0.018 0	+0.046 0	- 0.016 - 0.043
18~30	+0.075 +0.035	+0.021 0	+0.052 0	- 0.020 - 0.020
30~50	+0.085 +0.045	+0.025 0	+0.062 0	- 0.025 - 0.064
50~80	+0.100 +0.055	+0.030 0	+0.074 0	- 0.030 - 0.076
80~120	+0.120 +0.070	+0.035 0	+0.087 0	- 0.036 - 0.090
120~180	+0.170 +0.100	+0.400 0	+0.100 0	- 0.043 - 0.106
180~250	+0.210 +0.130	+0.046 0	+0.115 0	- 0.050 - 0.122
250~315	+0.260 +0.170	+0.052 0	+0.130 0	- 0.056 - 0.137

FB09G 系列青铜卷制轴承 **FB09G Bronze-Wrapped Bearings**



材料结构 Material Structure

◎与FB090具有相同的生产工艺及使用场合，其基体为青铜基板，在其菱形油穴内填充了以石墨为主的固体润滑剂，使产品在起始运用阶段及过程中能有更低的摩擦系数，在短时间断油的情况下仍能保持良好的工作状态。因此被广泛使用在工程机械、齿轮箱传动部件、汽机车离合器等高载中速部位、户外高空设备的转动部位。

◎The same produce process and application except overlay the solid lubricants into the diamond shaped lubrication indents on the bearing surface, which will offer good friction at the start and process works and keep good condition even no oil giving at short time. So can be used in construction machines, gears, automotive clutch pads etc.

技术参数 Tech.Data

最大承载压力	Load capacity	140N/mm ²
适应温度范围	Temperature limit	-100℃~+250℃
最高滑动速度	Speed limit	1.5M/s
摩擦系数	Friction clef	0.06~0.25
允许最高PV值(干)	PV limit (dry)	2.6N/mm ² ·m/s
允许最高PV值(油)	PV limit (oil)	15N/mm ² ·m/s

可供形式 Availability

直套、止推垫片、滑板及其它非标品部件等。

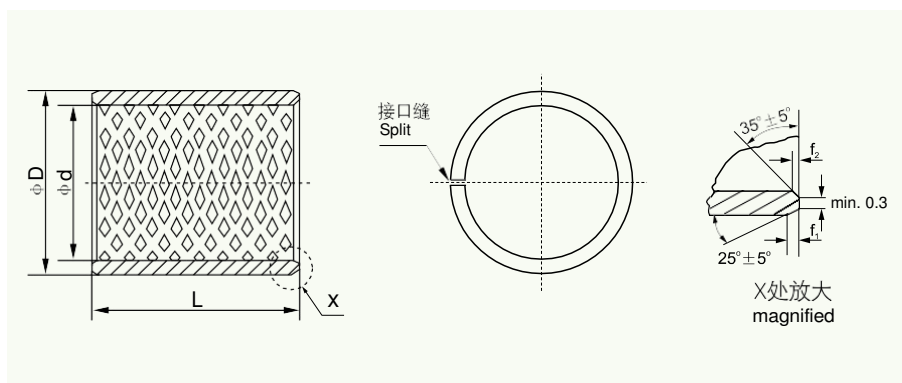
Cylindrical bushes, thrust washers, strip and non-standard parts as the clients supplied drawing etc.

公差 Tolerance

一般推荐座孔公差为H7，轴径公差为f7。

Recommend housing tolerance H7 and the shaft as f7.

FB090/FB092/FB09G 青铜卷制轴承标准公制尺寸 FB090/FB092/FB09G Bronze-Wrapped Bearings Standard Metric Size



单位 Unit: mm

d	D	相配轴径 Shaft Dia. f ₇	座孔 Housing H7	壁厚 Wall Thickness		f ₁	f ₂	L ⁰ / _{-0.40}									
				最小 Min.	最大 Max.			6	8	10	12	15	20	25	30	40	50
6	8	6 ^{-0.013} / _{-0.028}	8 +0.015					0606	0608	0610							
8	10	8 ^{-0.013} / _{-0.028}	10 +0.015					0806	0808	0810	0812	0815					
10	12	10 ^{-0.016} / _{-0.034}	12 +0.018					1006	1008	1010	1012	1015	1020				
12	14	12 ^{-0.016} / _{-0.034}	14 +0.018					1206	1208	1210	1212	1215	1220	1225			
13	15	13 ^{-0.016} / _{-0.034}	15 +0.018	0.980	1.005	0.6	0.3			1310			1320				
14	16	14 ^{-0.016} / _{-0.034}	16 +0.018							1410	1412	1415	1420	1425			
15	17	15 ^{-0.016} / _{-0.034}	17 +0.018							1510	1512	1515	1520	1525			
16	18	16 ^{-0.016} / _{-0.034}	18 +0.018							1610	1612	1615	1620	1625			
17	19	17 ^{-0.016} / _{-0.034}	19 +0.021							1710	1712		1720				
18	20	18 ^{-0.016} / _{-0.034}	20 +0.021							1810	1812	1815	1820	1825			
20	23	20 ^{-0.020} / _{-0.041}	23 +0.021							2010	2012	2015	2020	2025	2030		
22	25	22 ^{-0.020} / _{-0.041}	25 +0.021	1.475	1.505	0.6	0.4			2210	2212	2215	2220	2225	2230		
24	27	24 ^{-0.020} / _{-0.041}	27 +0.021									2415	2420	2425	2430		
25	28	25 ^{-0.020} / _{-0.041}	28 +0.021							2510	2512	2515	2520	2525	2530	2540	2550
28	32	28 ^{-0.020} / _{-0.041}	32 +0.025									2815	2820	2825	2830	2840	
30	34	30 ^{-0.020} / _{-0.041}	34 +0.025								3012	3015	3020	3025	3030	3040	
32	36	32 ^{-0.025} / _{-0.050}	36 +0.025	1.970	2.005	1.2	0.4						3220		3230	3240	
35	39	35 ^{-0.025} / _{-0.050}	39 +0.025								3512	3515	3520	3525	3530	3540	3550
38	42	38 ^{-0.025} / _{-0.050}	42 +0.025									3815			3830	3840	
40	44	40 ^{-0.025} / _{-0.050}	44 +0.025								4012		4020	4025	4030	4040	4050



FB090/FB092/FB09G 青铜卷制轴承标准公制尺寸

FB090/FB092/FB09G Bronze-Wrapped Bearings Standard Metric Size

单位Unit: mm

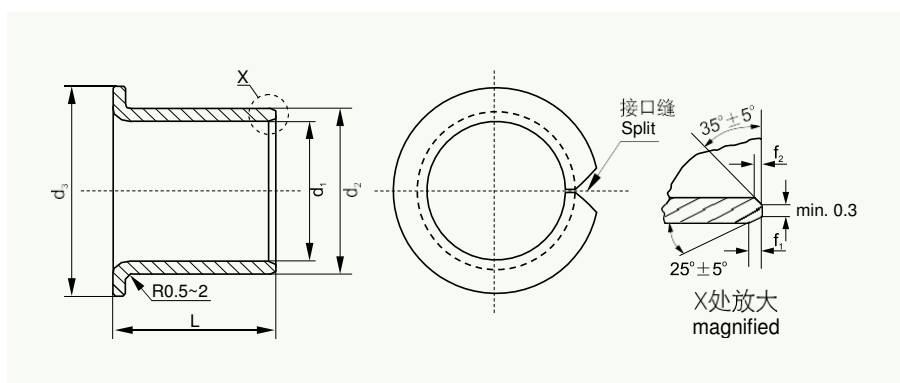
d	D	相配轴径 Shaft Dia. f ₇	座孔 Housing H7	壁厚 Wall Thickness		f ₁	f ₂	L ⁰ _{-0.40}											
				最小 Min.	最大 Max.			20	25	30	40	50	60	70	80	100	115		
45	50	45 ^{-0.025} _{-0.050}	50 ^{+0.025}					4520	4525	4530	4540	4550							
50	55	50 ^{-0.025} _{-0.050}	55 ^{+0.030}					5020		5030	5040	5050	5060						
55	60	55 ^{-0.030} _{-0.060}	60 ^{+0.030}							5530	5540	5550	5560						
60	65	60 ^{-0.030} _{-0.060}	65 ^{+0.030}	2.460	2.505	1.8	0.6			6030	6040	6050	6060	6070					
65	70	65 ^{-0.030} _{-0.060}	70 ^{+0.030}							6530	6540	6550	6560	6570					
70	75	70 ^{-0.030} _{-0.060}	75 ^{+0.030}								7040	7050	7060	7070	7080				
75	80	75 ^{-0.030}	80 ^{+0.030}							7530	7540	7550	7560	7570	7580				
80	85	80 ^{-0.035}	85 ^{+0.035}								8040	8050	8060	8070	8080	80100			
85	90	85 ^{-0.035}	90 ^{+0.035}								8540		8560		8580	85100			
90	95	90 ^{-0.035}	95 ^{+0.035}								9040	9050	9060		9080	90100			
95	100	95 ^{-0.035}	100 ^{+0.035}	2.440	2.490	1.8	0.6					9550	9560		9580	95100			
100	105	100 ^{-0.035}	105 ^{+0.035}									10050	10060		10080		100115		
105	110	105 ^{-0.035}	110 ^{+0.035}										10560		10580		105115		
110	115	110 ^{-0.035}	115 ^{+0.035}										11060		11080		110115		
120	125	120 ^{-0.035}	125 ^{+0.040}										12060		12080	120100			
125	130	125 ^{-0.040}	130 ^{+0.040}										12560			125100	125115		
130	135	130 ^{-0.040}	135 ^{+0.040}	2.415	2.465	1.8	0.6						13060		13080	130100			
140	145	140 ^{-0.040}	145 ^{+0.040}											14060		14080	140100		
150	155	150 ^{-0.040}	155 ^{+0.040}										15060		15080	150100			
160	165	160 ^{-0.040}	165 ^{+0.040}										16060		16080	160100	160115		
180	185	180 ^{-0.040}	185 ^{+0.046}	2.415	2.465	1.8	0.6								18080	180100			
190	195	190 ^{-0.046}	195 ^{+0.046}														19080	190100	
200	205	200 ^{-0.046}	205 ^{+0.046}														20080	200100	
220	225	220 ^{-0.046}	225 ^{+0.046}													20060		22080	220100
250	255	250 ^{-0.046}	255 ^{+0.052}												25080	250100			
260	265	260 ^{-0.052}	265 ^{+0.052}	2.415	2.465	1.8	0.6								26080	260100			
280	285	280 ^{-0.052}	285 ^{+0.052}														28080	280100	
300	305	300 ^{-0.052}	305 ^{+0.052}																

注：要求相配轴孔H7，轴径f7，衬套压入座孔后内孔值为H8。

Note: Shaft hole is required to be H7. Shaft diameter is f7. After bearing is installed, the inner hole should be H8.

FB090/FB092 青铜卷制翻边轴承标准公制尺寸

FB090/FB092 Bronze-Wrapped Flange Bearing Standard Metric Size



单位Unit: mm

d ₁	d ₂	d ₃	f ₁	f ₂	L ⁰ _{-0.40}										
					15	20	25	30	35	40	50	60	70	80	90
25	28	35	0.8	0.4	2515	2520	2525								
30	34	45				3020	3025	3030							
35	39	50	1.0	0.6		3520	3525	3530	3535						
40	44	55					4025	4030	4035	4040					
45	50	60						4530	4535	4540	4550				
50	55	65						5030	5035	5040	5050				
55	60	70						5530	5535	5540	5550				
60	65	75	1.2	0.8				6030	6035	6040	6050	6060			
65	70	80						6530	6535	6540	6550	6560			
70	75	85							7035	7040	7050	7060	7070		
75	80	90							7535	7540	7550	7560	7570		
80	85	100							8035	8040	8050	8060	8070	8080	
90	95	110									9050	9060	9070	9080	9090
100	105	120									10050	10060	10070	10080	10090
110	115	130									11050	11060	11070	11080	11090
120	125	140									12050	12060	12070	12080	12090
130	135	155										13060	13070	13080	13090
140	145	165										14060	14070	14080	14090
150	155	180										15060	15070	15080	15090
160	165	190										16060	16070	16080	16090
170	175	200	1.4	0.8								17060	17070	17080	17090
180	185	215										18060	18070	18080	18090
190	195	225										19060	19070	19080	19090
200	205	235										20060	20070	20080	20090
225	230	260										22560	22570	22580	22590
250	255	290										25060	25070	25080	25090
265	270	305										26560	26570	26580	26590
285	290	325										28560	28570	28580	28590
300	305	340										30060	30070	30080	30090

FB08G 固体润滑卷制轴承

FB08G Solid-Lubricant-Embedded Wrapped Bearings



材料结构 Material Structure

◎FB08G固体润滑轴承是以JF-800双金属材料为基体，再埋入特殊固体润滑剂制作成的新型滑动轴承。由于高强度承载的合金材料作基体，并经过严格选择的高分子填充材料为耐磨剂，合理的螺旋角度菱形块状均布的润滑面，润滑面积达25%，因此，能发挥超群的低摩擦，良好的润滑性和抗磨损性免除加油。该产品已广泛应用于起重起、微型电机、升降机、吊车及冶金机械等行业。

◎FB08G is a kind of steel-lead bronze alloys based bearing, which is embedded with particular formulation of solid lubricants. Owing to the high strength, high load capacity and the spirally distributed diamond type of the embedded solid lubricant, the high temperature

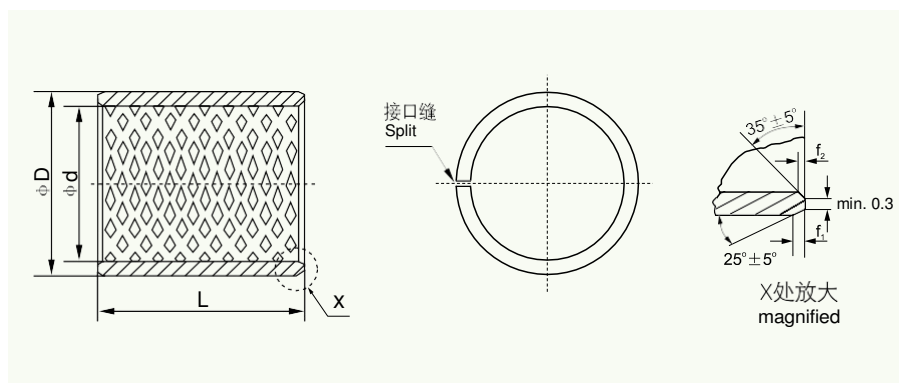
resistant action as extraordinary exploited. The lubrication area of the bearing surface is being about 25%. This type of bearing is particularly applied in starting motor for automobiles, generators cranes and those machines in metallurgical industry.

技术参数 Tech.Data

最大承载压力	Load capacity	150N/mm ²
适应温度范围	Temperature limit	-100℃~+200℃
最高滑动速度	Speed limit	1.5M/s
摩擦系数	Friction clef	0.06~0.25
允许最高PV值(干)	PV limit (dry)	2.5N/mm ² ·m/s
允许最高PV值(油)	PV limit (oil)	15N/mm ² ·m/s

FB08G 固体润滑卷制轴承标准公制尺寸

FB08G Solid-Lubricant-Embedded Wrapped Bearings Standard Metric Size



单位 Unit: mm

d	D	f ₁	f ₂	L ⁰ _{-0.40}													
				10	15	20	25	30	35	40	50	60	70	80	90	100	
10	12	0.3	0.5	1010	1015	1020											
12	14			1210	1215	1220											
14	16			1410	1415	1420	1425										
15	17			1510	1515	1520	1525										
16	18			1610	1615	1620	1625										
18	20			1810	1815	1820	1825										
20	23	0.8	0.4	2210	2015	2020	2025										
22	25			2010	2215	2220	2225	2230									
24	27				2415	2420	2425	2430									
25	28				2515	2520	2525	2530									
28	32				2815	2820	2825	2830									
30	34	1.0	0.6		3015	3020	3025	3030	3035	3040							
32	36				3215	3220	3225	3230	3235	3240							
35	39				3515	3520	3525	3530	3535	3540							
40	44					4020	4025	4030	4035	4040	4050						
45	50					4520	4525	4530	4535	4540	4550						
50	55					5020	5025	5030	5035	5040	5050	5060					
55	60	1.2				5520	5525	5530	5535	5540	5550	5560					
60	65						6025	6030	6035	6040	6050	6060	6070				
65	70							6530	6535	6540	6560	6560	6570				
70	75							7030	7035	7040	7050	7060	7070	7080			
75	80							7530	7535	7540	7550	7560	7570	7580			
80	85							8030	8035	8040	8050	8060	8070	8080			
85	90										7550	8560	8570	8580	9590		
90	95										9050	9060	9070	9080	9090		
95	100	0.8									9550	9560	9570	9580	9590	951000	
100	105											10050	10060	10070	10080	10090	100100
105	110											10550	10560	10570	10580	10590	105100
110	115										11050	11060	11070	11080	11090	110100	
115	120	1.4									11550	11560	11570	11580	11590	115100	
120	125											12060	12070	12080	12090	120100	
125	130											12560	12570	12580	12590	125100	
130	135											13060	13070	13080	13090	130100	
135	140										13560	13570	13580	13590	135100		
140	145										14060	14070	14080	14090	140100		
145	150										14560	14570	14580	14590	145100		
150	155										15060	15070	15080	15090	150100		
155	160										15560	15570	15580	15590	155100		
160	165										16060	16070	16080	16090	160100		

JDB 固体镶嵌轴承 JDB Solid-lubricant-Inlaid Bearings



材料结构 Material Structure

铜合金镶嵌式固体润滑剂自润滑轴承，结合了铜合金的耐磨性及固体润滑剂的自润滑性能，使其在使用过程中无需加油维护。产品被广泛应用于高载、间歇性或摇摆运动，如汽机车生产流水线、水轮机、水库工作/事故门、塑胶机械、冲床周边设备等。根据使用的工况，可以提供各种类型的铜合金。

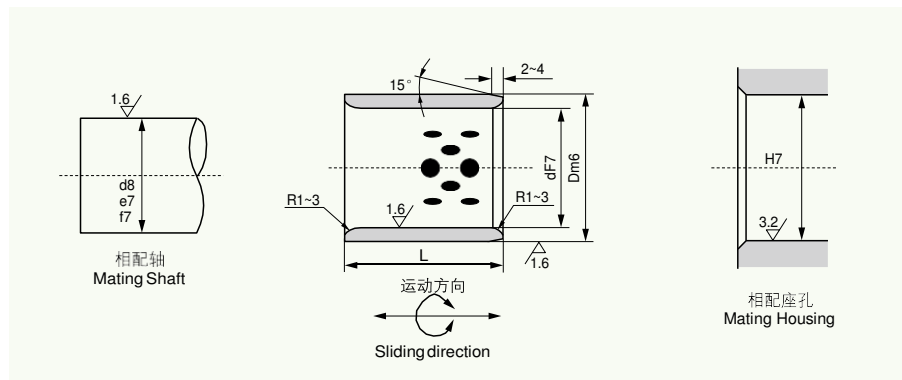
This material provides a maintenance-free bearing solution, particularly for high load, intermittent of oscillating motion. Solid lubricants within a bronze combines the strength of the bronze with the wear resistance and low friction. The application including automotive products line, water engineering, dam gate, plastic industries etc. Different bronze alloy type can be available according to the work condition.

技术参数 Tech.Data

最大承载	静承载 Static Load	250N/mm ²
Max. Load	动承载 Dynamic Load	100N/mm ²
最高线速度	干摩擦 Dry Friction	0.3m/s
Max linear speed	油摩擦 Oil Friction	1.0m/s
最大PV值 PV limit		1.65N/mm ² ·m/s
抗拉强度 Tensile strength		750N/mm ²

使用温度 Working temperature	-100℃~+300℃
摩擦系数 Abrasion coefficient	0.03~0.20
导热系数 Heat conducting coefficient	60W/(m·K) ⁻¹
热膨胀系数 Heat expansion coefficient	19·10 ⁻⁶ K ⁻¹
延伸率 Extensile rate	12%
硬度 Hardness	HB < 210

JDB 直固体镶嵌轴承标准公制尺寸 JDB Solid-lubricant-Inlaid Bearings Standard Metric Size



单位Unit: mm

d	D	内径 I.D. F7		外径 O.D. m6		L ^{-0.10} / _{-0.30}													
						8	10	12	15	16	20	25	30	35	40	50	60	70	80
8	12	8	+0.028 +0.013	12	+0.018 +0.007	081208	081210	081212	081215										
10	14	10		14		101408	101410	101412	101415		101420								
12	18	12		18			121810	121812	121815	121816	121820	121825	121830						
13	19	13		19			131910		131915	131916									
14	20	14	+0.034 +0.016	20	+0.021 +0.008		142010	142012	142015		142020	142025	142030						
15	21	15		21			152110	152112	152115	152116	152120	152125	152130						
16	22	16		22			162210	162212	162215	162216	162220	162225	162230	162235	162240				
18	24	18		24				182412	182415	182416	182420	182425	182430	182435	182440				
20	28	20		28			202810	202812	202815	202816	202820	202825	202830	202835	202840	202850			
22	32	22		32				223212	223215		223220	223225							
25	33	25		33				253312	253315	253316	253320	253325	253330	253335	253340	253350	253360		
30	38	30	+0.041 +0.020	38	+0.025 +0.009			303812	303815		303820	303825	303830	303835	303840	303850	303860		
35	45	35		45							354520	354525	354530	354535	354540	354550	354560		
40	50	40		50							405020	405025	405030	405035	405040	405050	405060	405070	405080
45	55	45		55									455530	455535	455540	455550	455560		
50	60	50		60									506030	506035	506040	506050	506060	506070	506080



JDB 直固体镶嵌轴承标准公制尺寸

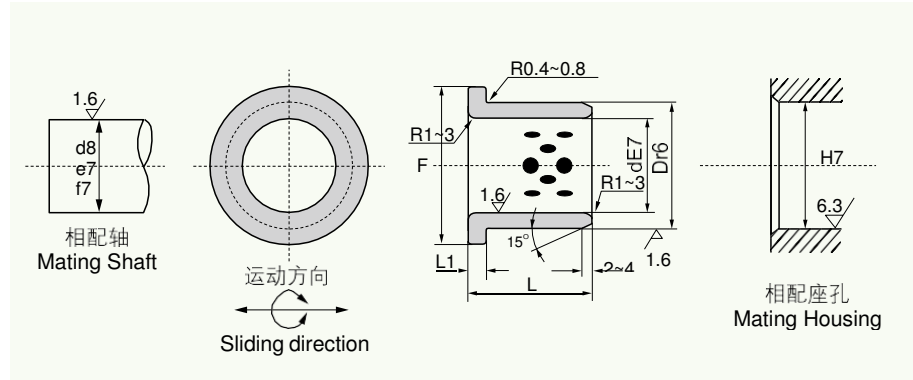
JDB Solid-lubricant-Inlaid Bearings Standard Metric Size

单位Unit: mm

d	D	内径 I.D. F7		外径 O.D. m6		L ^{-0.10 -0.30}												
						30	35	40	50	60	70	80	100	120	130	140	150	
50	62	50	+0.050 +0.025	62		506230	506235	506240	506250	506260	506270							
50	65	50		65		506530		506540	506550	506560	506570	506580	5065100					
55	70	55		70				557040	557050	557060	557070							
60	75	60		75	+0.030 +0.011	607430	607435	607440	607540	607460	607470	607480						
60	75	60		75		607530	607535	607540	607550	607560	607570	607580	6075100					
63	75	63		75						637560	637570	637580						
65	80	65		80					658050	658060	658070	658080						
70	85	70	+0.060 +0.030	85			708535	708540	708550	708560	708570	708580	7085100					
70	90	70		90					709050	709060	709070	709080						
75	90	75		90						759060	759070	759080	7590100					
75	95	75		95	+0.035 +0.013					759560	759570	759580	7595100					
80	96	80		96				809640	809560	809660	809670	809680	8096100	8096120				
80	100	80		100				8010040	8010050	8010060	8010070	8010080	80100100	80100120		80100140		
90	110	90		110		9011030			9011050	9011060	9011070	9011080	90110100	90110120				
100	120	100	+0.071 +0.036	120						10012060	10012070	10012080	100120100	100120120		100120140		
110	130	110		130									11013080	110130100	110130120			
120	140	120		140									12014080	120140100	120140120		120140140	
125	145	125		145									125145100	125145120				
130	150	130		150	+0.040 +0.015								130150100		130150130			
140	160	140	+0.083 +0.043	160									140160100			140160140		
150	170	150		170									150170100				150170150	
160	180	160		180									160180100				160180150	

JFB 翻边轴承标准公制尺寸

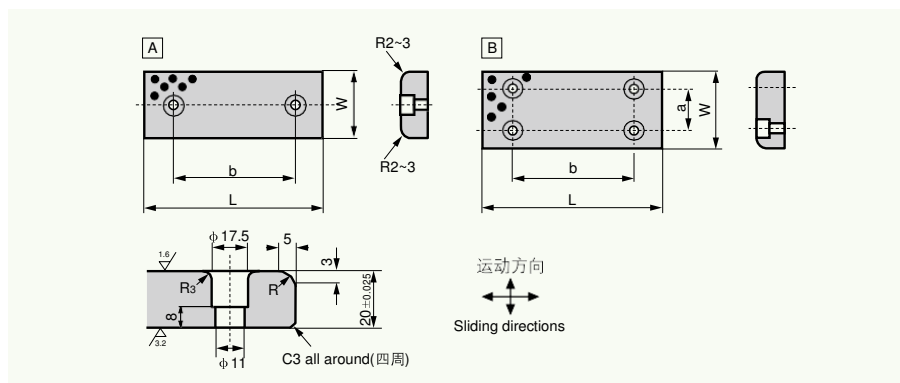
JFB Flange Bearings Standard Metric Size



单位Unit: mm

d	D	内径 I.D. F7		外径 O.D. m6		F	L ₁	L ^{-0.10 -0.30}									
		10	12	14	16			15	20	25	30	35	40	50	60	80	100
10	14	10	^{+0.040} _{+0.025}	14	^{+0.034} _{+0.023}	22	2	1015	1020								
12	18	12		18		25		1215	1220								
13	19	13		19		26		1315	1320								
14	20	14	^{+0.050} _{+0.032}	20		27	3	1415	1420								
15	21	15		21	^{+0.041} _{+0.028}	28		1515	1520	1525	1530						
16	22	16		22		29		1615	1620	1625	1630						
20	30	20		30		40			2020	2025	2030	2035					
25	35	25	^{+0.061} _{+0.040}	35		45			2520	2525	2530	2535					
30	40	30		40	^{+0.050} _{+0.034}	50			3020	3025	3030	3035	3040	3050			
35	45	35		45		60	5			3525	3530	3535	3540	3550			
40	50	40		50		65					4030	4035	4040	4050			
45	55	45	^{+0.075} _{+0.050}	55		70					4530	4535	4540	4550	4560		
50	60	50		60	^{+0.060} _{+0.041}	75							5050	5050	5060		
55	65	55		65		80							5540	5550	5560		
60	75	60		75	^{+0.062} _{+0.043}	90							6040	6050	6060	6080	
70	85	70	^{+0.090} _{+0.060}	85		105	7.5							7050	7060	7080	
75	90	75		90	^{+0.073} _{+0.051}	110								7550	7560		
80	100	80		100		120									8060	8080	80100
100	120	100		120	^{+0.076} _{+0.054}	150	10								10060	10080	100100
120	140	120	^{+0.107} _{+0.072}	140	^{+0.088} _{+0.063}	170									12060	12080	120100

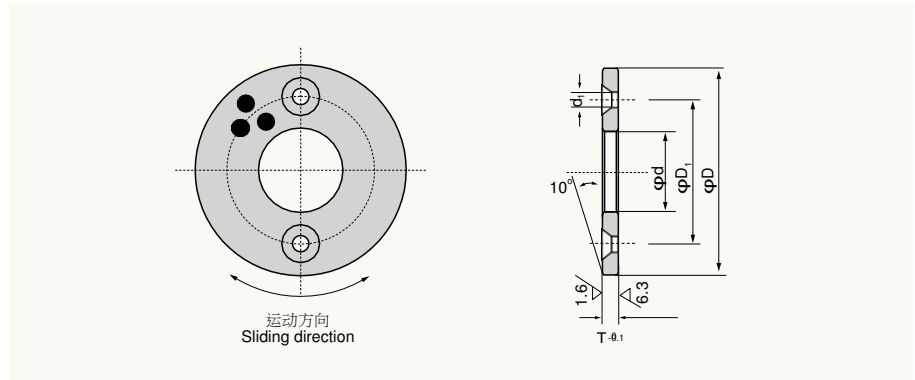
JSP 滑块标准公制尺寸 JSP Sliding Plate Standard Metric Size



单位Unit: mm

型号规格 Designation	W	L	a	b	Sketch 图示
JSP 28 × 75	28	75	-	45	A
JSP 28 × 100		100		50	
JSP 28 × 150		150		100	
JSP 38 × 75	38	75	-	45	A
JSP 38 × 100		100		50	
JSP 38 × 150		150		100	
JSP 48 × 75	48	75	-	45	A
JSP 48 × 100		100		50	
JSP 48 × 125		125		75	
JSP 48 × 150	58	150	-	100	A
JSP 48 × 200		200		150	
JSP 58 × 75		75		45	
JSP 58 × 100	58	100	-	50	A
JSP 58 × 150		150		100	
JSP 75 × 75		75	-	25	A
JSP 75 × 100	75	100		50	
JSP 75 × 125		125		75	
JSP 75 × 150	100	150	50	100	A
JSP 75 × 200		200		150	
JSP 100 × 100		100		50	
JSP 100 × 125	100	125	50	75	A
JSP 100 × 150		150		100	
JSP 100 × 200		200		150	
JSP 100 × 250	125	250	50	200	B
JSP 100 × 300		300		200	
JSP 125 × 125		125		75	
JSP 125 × 150	125	150	50	100	B
JSP 125 × 200		200		150	
JSP 125 × 250		250		200	
JSP 125 × 300	150	300	100	200	B
JSP 125 × 350		350		200	
JSP 150 × 150		150		100	
JSP 150 × 200	150	200	100	150	B
JSP 150 × 250		250		200	

JTW 止推垫片标准公制尺寸 JTW Thrust Washer Standard Metric Size



单位Unit: mm

型号规格 Designation	ϕd	ϕD	$T_{-0.10}^0$	螺孔 Bolt Hole			
				ϕD_1	平头螺钉 Crop Bolt	ϕd_1	孔数 Bore Number
JTW 10	10.2	30		20			
JTW 12	12.2						
JTW 13	13.2	40		28			
JTW 14	14.2		3		M3	3.5	
JTW 15	15.2						
JTW 16	16.2	50		35			
JTW 18	18.2						2
JTW 20	20.2						
JTW 25	25.2	55	5	40	M5	6	
JTW 30	30.2	60		45			
JTW 35	35.2	70		50			
JTW 40	40.2	80	7	60			
JTW 45	45.3	90		70	M6	7	
JTW 50	50.3	100		75			
JTW 55	55.3	110	8	85			
JTW 60	60.3	120		90			
JTW 70	70.3	130		100			
JTW 75	75.3	140		110	M8	9	4
JTW 80	80.3	150		120			
JTW 90	90.5	170	10	140			
JTW 100	100.5	190		160	M10	11	
JTW 120	120.5	200		175			

FZ 直线轴承 FZ Ball Retainer Bearings



产品简介 Intruduction

◎FZH (铜基)、FZL (铝基)、FZP (树脂基) 钢球保持圈, 分别以铜合金、硬铝合金、POM 树脂为基体, 并在其外圆表面上, 加工出排列有序、大小适当, 形状特殊的孔穴, 在其孔穴中镶入滚动轴承钢球。口采用最新的沟槽圆周锁球工艺, 有效地解决了传统式锁球和压痕式锁球不能完全防止钢球脱落的难题。孔底加工出 90° 止口使钢球在孔内自由转动而不脱落。由于钢球的直径大于保持圈的壁厚, 所以在使用时钢球高出保持圈内、外圆表面, 直接与相配的孔与轴接触, 使基体(保持圈)浮于中间, 并且相配的孔与轴半径之差小于钢球直径, 即钢球与之配合为过盈配合, 配合精度高, 轴与孔相对运动灵活。是保持圈的更新换代产品。

◎FZH. FZL. FZP. ball retainer are as copper, aluminium, POM base. they are machined some regular holes and embedded the steel-ball into. The new work-craft will prevent the ball getting out of as old. as the ball diameter is larger than the retainer s thickness, so it will face to face directly with 90° guide bushing, that will bring high precision match now the ball retainer series items are designed to rotate on the post, as well as maintainits vertical motion. we believe this will give you the benefit of increasing accijracy.

优点与用途 Advantage And Use

◎传统的具有相对运动的孔与轴是有一定间隙的, 并孔与轴之间运动摩擦系数较大, 使用钢球保持圈后, 使轴与孔不直接接触, 而是通过中间微量过盈的钢球, 因而运动精度高, 滚动摩擦代替滑动摩擦, 滚动灵活, 摩擦系数小, 使用寿命长, 在既有转动、又有移动场合, 用无油或加油的轴套与轴相配合, 虽然能满足, 但运动精度较低, 用滚动轴承, 只能满足轴相对转动的场合, 而钢球保持圈, 则上述二个条件均得到满足, 目前已广泛应用于冷冲模滚动模架、高精度机床、机床附件以及要求高精度轴向或轴径向同时运动场合。

◎As the traditional work-craft has some grudge between bushing with posts, and the coefficient of friction is larger. now we have changed the work-ways to steel-ball directly face to face guide bushing, so the precision is improved. it composes of both active roll and lower friction coefficient, now they have been widely used in punching machine, die machine, high precision machine which need rotation and vertical motion.

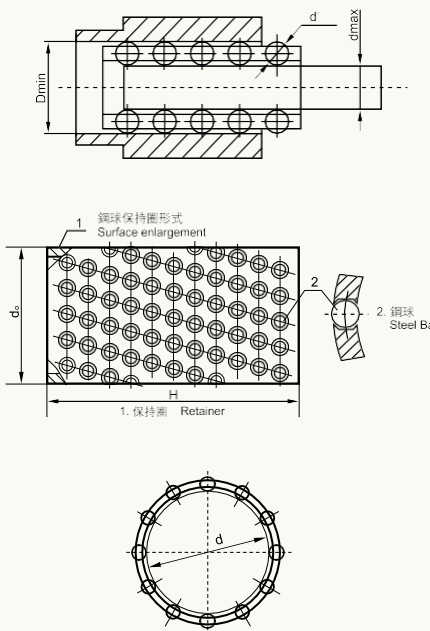
相配零件的要求 Installed Spares Requested

1. 导套: 材料 GCr15、YB9, 热处理, 硬度 HRC62~66, 技术条件按 GB/T12446 与轴配合应具有 $0.01-0.02$ 径向过盈量, 表面粗糙度为 $R_{0.05}$
2. 轴: 材料 GCr15、YB9, 热处理, 硬度 HRC62~66, 技术条件按 GB/T12446, 轴的公差采用 h5, 表面粗糙度为 $R_{0.05}$
3. 测量: 用通用的测量手段 (气动量仪、外径千分尺、内径千分表等) 测量轴套和钢球的尺寸偏差值, 即可求出配合后的过盈量, 即 $Y_{max}=d_{max}+2d'-D_{min}$, 要求过盈量为 $0.01-0.02mm$

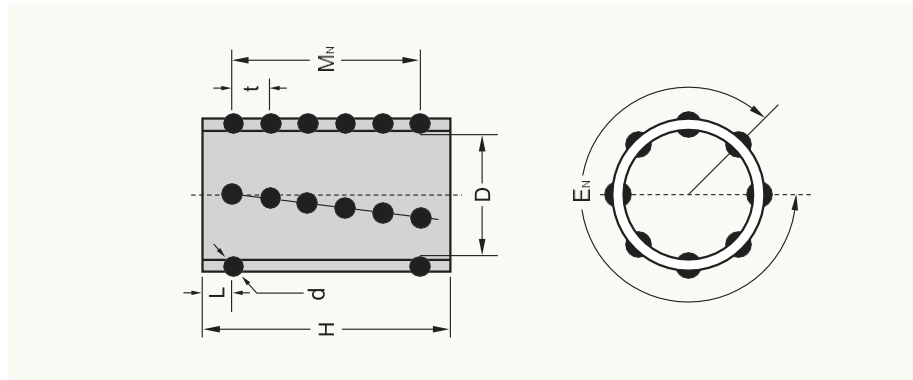
1. GUIDE BUSHING: MATERIAL GCr15, YB9, HEAT TREATMENT HRC62-66, TECHNIQUE CONDITION ACCORDING TO GB/T1 2446. REQUEST $0.01-0.02mm$ THE SURFACE ROUGHNESS IS $R_{0.05}$

2. GUIDIE POSTS: MATRIAL GCr15, YB9, HEAT TREATMENT HRC62-66, THE TOLERANCE OF SHAFT IS h5, THE SURFACE ROUGHNESS IS $R_{0.05}$

3. SIZE TEST: IT IS TESTED BY OUTSIDE MICROMETER & DIAL GAUGE AS USUAL. THE Y_{max} ($Y_{max}+2d'-D_{min}$) REQUEST $0.01-0.02mm$



FZ 钢球保持圈标准公制尺寸 FZ Ball Retainers Standard Metric Size



单位unit:mm

型号规格 Designation	D	H	d	E _N	M _N	球 BALLS	t	L
FZ(*)1950	19	50		12	8	96		5.75
FZ(*)1960		60			10	120		5.25
FZ(*)2050	20	50			8	96		5.75
FZ(*)2060		60			10	120		5.25
FZ(*) 2250	22	50		14	8	112	5.5	5.75
FZ(*) 2260		60			10	140		5.25
FZ(*)2360	23	60	3		10	208		5.25
FZ(*)2475	24	75			13	128		4.50
FZ(*)2550	25	50		16	8	112		5.75
FZ(*)2560		60			10	160		5.25
FZ(*)2575		75			13	208		4.50
FZ(*)2775	27	75			13	208		4.50
FZ(*)2860	28	60		14	8	112		7.25
FZ(*)2875		75			11	154		5.00
FZ(*)3060	30	60	4		8	112	6.5	7.25
FZ(*)3075		75			11	154		5.00
FZ(*)3260	32	60			8	128		7.25
FZ(*)3275		75			11	192		5.00
FZ(*)3390		90			13	208		6.00
FZ(*)3685	36	85		16	12	192		6.75
FZ(*)3690		90			13	208		6.00
FZ(*)3870	38	70			8	128		7.00
FZ(*)3890		90			11	176		5.00
FZ(*)4090	40	90			11	176		5.00
FZ(*)4590	45	90	5	18	11	198	8.0	5.00
FZ(*)45110		110			13	234		7.00
FZ(*)5090	50	90		20	11	220		5.00
FZ(*)50110		110			13	260		7.00
FZ(*)6090	60	90		22	11	242		5.00
FZ(*)60110		110			13	286		7.00
FZ(*)80130	80	130		28	15	420		9.00

注：FZ(*)为：FZH(铜基)、FZL(铝基)、FZP(树脂基)

Notes: FZ(*)： FZH (Bronze based) FZL (Aluminum based) FZP (Resin based)

FD 四氟软带 **FD PTFE Soft Strips**



材料结构 Material Structure

◎FD以PTFE为主材，以铜粉及其它高分子添加剂为辅的耐磨性材料。产品广泛运用化工行业、油压、油缸、汽摩减振器、机床导轨、印刷机械、纺织机械等轻载但需要自润滑的场合。产品如经过特殊处理，可粘帖于钢质或者橡胶面上，产品在使用过程中无爬行现象。

◎FD consist of PTFE with bronze powder and additive material, This material structure enables the final goods have more light and easy for install. It is widely been used in chemica lindustries, medicalindustries, fluid hydraulic industries, textile machines, OA machines, Door/window hinges etc.

技术参数 Tech.Data

最大承载	静承载 Static Load	30N/mm ²
Max. Load	动承载 Dynamic Load	20N/mm ²
使用温度 Temp. Limit		-40℃~+250℃
最高滑动速度	干摩擦 Dry Friction	0.5m/s
Tiptop Sliding Velocity	油摩擦 Oil Friction	2m/s
摩擦系数 Friction Coeff.		0.10-0.20
允许最高PV值 PV limit	干摩擦 Dry Friction	1.65N/mm ² ·m/s

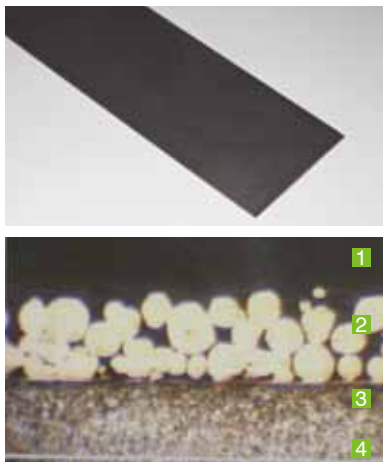
FD 产品活塞环尺寸 Size of The Products

20×18×2	25×23.2×8	30×38.2×8
20×18×3	25×23×8	30×28×8
5×22.2×2.5	27×25×8	30×38.2×11.4
25×22×2.5	30×28×9	32×30.2×8

FD 产品带材尺寸 **Strip Measurement of The Products**

100×1.5	100×1	200×0.5
8×2.5	12×2.5	25×2.5
6.1×2.5	7.9×2.5	14.8×2.5
19.5×2.5	24.5×2.5	29.5×2.5

SF-1X 无油润滑材料



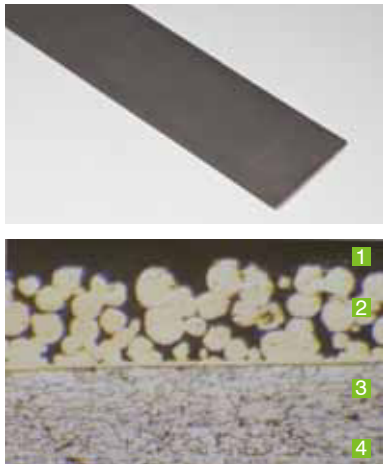
材料组织结构:

- | | |
|-----------------------------------|--|
| 1、聚四氟乙烯与铅的混合物 0.01~0.03mm | ■ 摩擦系数: 0.04~0.20 |
| 2、球形青铜粉: 0.2~0.3mm | ■ 导热系数: 13W/MK |
| 3、钢背: 0.5~3.03mm | ■ 使用温度范围: -195℃~270℃ |
| 4、电镀层: 镀锡层厚 0.005mm 或镀铜层厚 0.008mm | ■ 线膨胀系数: $11 \times 10^{-6} \text{K}^{-1}$ |

应用特点:

- 1、无油润滑或少油润滑场合, 耐磨性能好, 摩擦系数小, 使用寿命长。
- 2、有适量的弹塑性, 能将应力分布在较宽的接触面上。
- 3、静动摩擦系数相近, 能消除低速下的爬行。
- 4、对于对磨轴的硬度要求低, 未经调质处理的轴都可使用, 在运转构成中能形成转移膜, 起到保护对磨轴的作用, 无咬轴现象。
- 5、钢背可电镀多种金属, 可在腐蚀介质中使用, 目前已广泛应用于各种机械的滑动部位, 例如: 印刷机、纺织机、烟草机械、微电机、汽车、摩托车与农林机械等等。

SF-1T 齿轮石泵专用材料



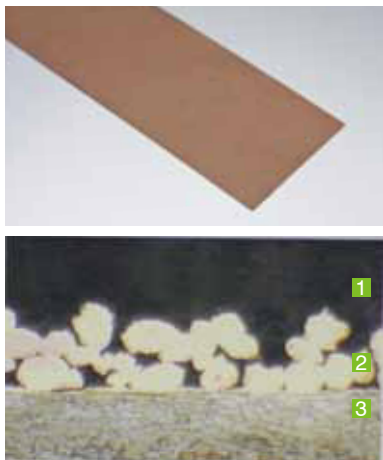
材料组织结构:

- | | |
|-----------------------------------|--|
| 1、聚四氟乙烯与铅及其他填充混合物 0.01~0.03mm | ■ 摩擦系数: 0.03~0.18 |
| 2、球形青铜粉: 0.2~0.3mm | ■ 导热系数: 13W/MK |
| 3、钢背: 0.5~3.3mm | ■ 使用温度范围: -195℃~260℃ |
| 4、电镀层: 镀锡层厚 0.005mm 或镀铜层厚 0.008mm | ■ 线膨胀系数: $11 \times 10^{-6} \text{K}^{-1}$ |

应用特点:

- 1、在有油润滑条件下摩擦系数小而稳定。
- 2、耐磨性能好, 抗冲击性能好。
- 3、由此材料制作的衬套, 在流体润滑条件下 PV 值可达到 120N/mm²*m/s
- 4、目前已广泛运用于各种齿轮油泵、柱塞泵、叶片泵等场合, 对流体润滑或境界润滑条件下的中高压齿轮泵尤其使用。

SF-1P 往复运动材料



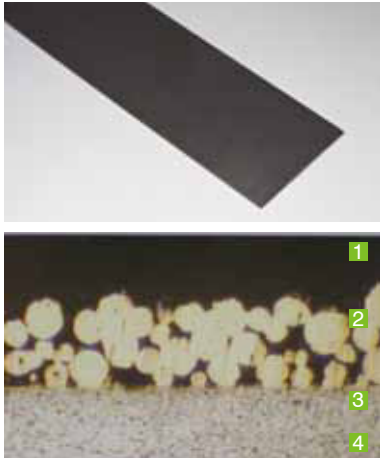
材料组织结构:

- | | |
|-----------------------------------|--|
| 1、聚四氟乙烯与铜混合物 0.02~0.04mm | ■ 摩擦系数: 0.04~0.20 |
| 2、球形青铜粉: 0.2~0.3mm | ■ 导热系数: 13W/MK |
| 3、钢背: 0.5~3.3mm | ■ 使用温度范围: -195℃~270℃ |
| 4、电镀层: 镀锡层厚 0.005mm 或镀铜层厚 0.008mm | ■ 线膨胀系数: $11 \times 10^{-6} \text{K}^{-1}$ |

应用特点:

- 1、具有在沾油情况下润滑能力强、耐磨性能好、保护油膜清晰的特点。
- 2、能较好的保护对轴表面不受磨损, 对往复运动场合较能适用。
- 3、应其含铅量很少, 故迎合了环保要求。
- 4、适用于摩托车减震器、各种液压油缸、液压马达、气动元件等领域。

SF-1W 无铅材料



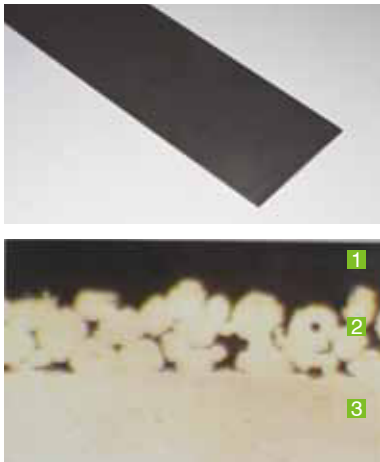
材料组织结构:

- | | |
|-----------------------------------|-------------------------------------|
| 1、聚四氟乙烯与纤维混合物 0.01~0.03mm | ■ 摩擦系数: 0.04~0.20 |
| 2、球形青铜粉: 0.2~0.3mm | ■ 导热系数: 13W/MK |
| 3、钢背: 0.5~3.3mm | ■ 使用温度范围: -195℃ ~270℃ |
| 4、电镀层: 镀锡层厚 0.005mm 或镀铜层厚 0.008mm | ■ 线膨胀系数: $11 \times 10^{-6} K^{-1}$ |

应用特点:

- 1、PTFE、纤维的混合物在运动时可形成很好的转移膜保护对磨轴。
- 2、因其不含铅, 故对于人体无害。铜和钢板具有良好的导热性能, 表面的电镀层具有较好的耐腐蚀性。
- 3、已广泛运用于食品机械、医疗机械、烟草机械、饮料机械及其他绿色机械上。随着国际环保的逐步发展, SF-1W 将是 SF-1 产品的替代品。

SF-1B 青铜基材料



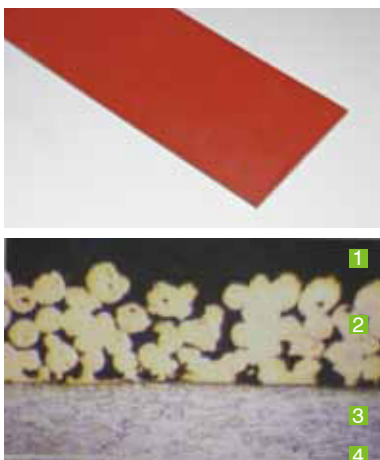
材料组织结构:

- | | |
|---------------------------|-------------------------------------|
| 1、聚四氟乙烯与铅的混合物 0.01~0.03mm | ■ 摩擦系数: 0.04~0.18 |
| 2、球形青铜粉: 0.2~0.3mm | ■ 导热系数: 18W/MK |
| 3、钢背: 0.5~3.3mm | ■ 使用温度范围: -195℃ ~300℃ |
| | ■ 线膨胀系数: $21 \times 10^{-6} K^{-1}$ |

应用特点:

- 1、PTFE、铅的混合物在运动时可形成很好的转移膜保护对磨轴。
- 2、烧结层和铜基板具有良好的导热性, 可迅速转移运作过程中产生的热量。
- 3、铜具有自润滑性能, 可运用于长期运作而无法停机检修的部位。
- 4、基体铜具有良好的抗腐蚀能力, 可运用于弱酸、强碱场合。
- 5、已广泛运用于冶金钢铁工业、高温炉钢环部位、水泥灌浆泵、螺旋式输送机、港口机械及船舶机械上等。
- 6、可在外部组合钢套, 或制成翻边, 达到内孔、端面同时使用的效果。

SF-1D 液压专用材料



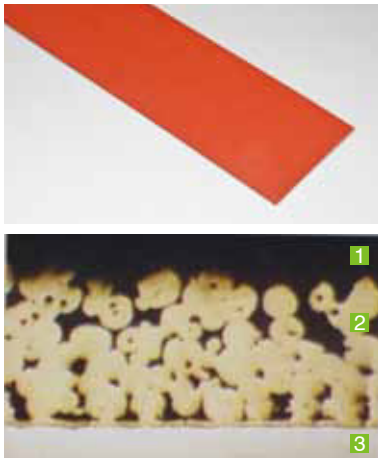
材料组织结构:

- | | |
|-----------------------------------|-------------------------------------|
| 1、聚四氟乙烯与亲油性纤维混合物 0.01~0.03mm | ■ 摩擦系数: 0.04~0.18 |
| 2、球形青铜粉: 0.2~0.3mm | ■ 导热系数: 16W/MK |
| 3、钢背: 0.5~3.3mm | ■ 使用温度范围: -195℃ ~270℃ |
| 4、电镀层: 镀锡层厚 0.005mm 或镀铜层厚 0.008mm | ■ 线膨胀系数: $15 \times 10^{-6} K^{-1}$ |

应用特点:

- 1、PTFE、亲油性纤维的混合物在运动时可形成很好的转移膜保护对磨轴。
- 2、抗冲击能力强, 耐磨性能好, 摩擦系数低, 走合性能好, 无咬轴现象。
- 3、可用于旋转、摇摆、往复运动之中。
- 4、由于不含铅, 故可用于食品机械、医疗机械等绿色环保设备。
- 5、除具有 SF-1P 的特点小, 特别适合于往复运动频繁、大侧向力的场合, 适用于液压马达、汽车、摩托车减震器及各类液压油缸等领域。

SF-1S 不锈钢耐蚀材料



材料组织结构:

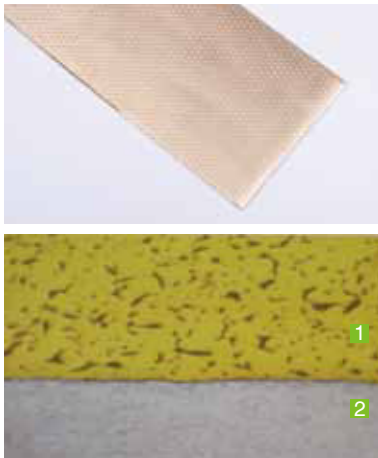
- 1、聚四氟乙烯与亲油性纤维混合物 0.01~0.03mm
- 2、球形青铜粉 :0.2~0.3mm
- 3、钢背: 0.5~3.3mm

- 摩擦系数: 0.04~0.20
- 导热系数: 16W/MK
- 使用温度范围: -195℃ ~270℃
- 线膨胀系数: $15 \times 10^{-6} \text{K}^{-1}$

应用特点:

- 1、PTFE、亲油性纤维的混合物在运动时可形成很好的转移膜保护对磨轴。
- 2、耐磨性能好, 摩擦系数低, 走合性能好, 无咬轴现象。
- 3、可用于旋转、摇摆、往复运动之中。
- 4、耐腐蚀性能好。
- 5、由于不含铅, 故适用于食品饮料机械、医疗机械等绿色环保设备。
- 6、典型用途: 主要运用于中酸、强碱场合、例如: 化工中酸碱流量计、泵、阀、印染机械、海洋工业耐腐蚀滑动部位。

JF-800 双金属材料



材料组织结构:

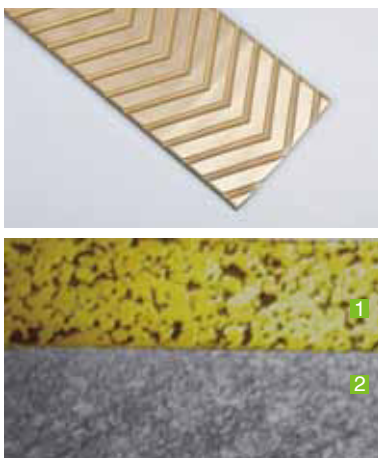
- 1、合金层: CuPb10Sn10
- 2、钢背: 0.6~5mm

- 合金层材质: CuPb10Sn10
- 摩擦系数: ≤ 0.12
- 最高使用温度: 260℃
- 合金层硬度: (60~90) HB

应用特点:

- 1、双金属合金材料中承载能力最强的一种。
- 2、适用于低速高载场合。
- 3、可在摩擦面加工各种油槽、油穴及油孔, 满足不同工况条件的需要。
- 4、产品性能稳定, 已通过“蓝宝石实验”, 疲劳强度达 125MPa 以上。
- 5、广泛运用于重型车的平衡桥衬套、垫片; 推土机的重动轮、支动轮、汽车钢板衬套等。

JF-850 双金属材料



材料组织结构:

- 1、合金层: CuSn6Zn6Pb3
- 2、钢背: 0.6~5mm

- 合金层材质: CuSn6Zn6Pb3
- 摩擦系数: ≤ 0.13
- 最高使用温度: 170℃
- 合金层硬度: (40~80) HB

应用特点:

- 1、双金属合金材料中承载能力较强的一种。
- 2、适用于低速高载场合。
- 3、可在摩擦面加工各种油槽、油穴及油孔。
- 4、广泛运用于汽车发动机、底盘、摩托车离合器、齿轮摩擦板和起重设备领域。

JF-930 双金属材料



材料组织结构:

- 1、合金层: CuSn6.5P0.1
- 2、钢背: 0.6~5mm

- 合金层材质: CuSn6.5P0.1
- 摩擦系数: ≤ 0.13
- 最高使用温度: 260℃
- 合金层硬度: (60~90) HB

应用特点:

- 1、结合强度高, 承载能力大, 耐磨性能好。
- 2、适用于低速高载场合。
- 3、可在摩擦面加工各种油槽、油穴及油孔。
- 4、具有无铅特点, 可以是其他有铅产品的替代产品。
- 5、广泛运用于矿山机械、汽机车、建筑机械、农用机械、轧钢机械等。



SF-2X 边界润滑材料



材料组织结构:

- 1、聚四氟乙烯与铅混合物 0.3~0.5mm
- 2、球形青铜粉: 0.2~0.3mm
- 3、钢背: 0.4~2.7mm
- 4、电镀层: 镀铜层 0.008mm

- 摩擦系数: 0.05~0.25
- 导热系数: 13W/MK
- 使用温度范围: -40℃ ~130℃
- 线膨胀系数: 11*10-6K-1

应用特点:

- 1、承载好, 耐磨性能好。
- 2、适用于高载低速下的旋转运动, 摇摆运动及经常在载荷下启闭频繁而不易形成流体动力润滑的场合。
- 3、表面的塑料层在加工成型时可留一定的余量, 装配压入座孔后可自行加工, 以达到更好的装配尺寸。
- 4、主要运用于汽车底盘、冶金机械、矿山机械、水利机械、建筑机械、农用机械、轧钢设备等。



SF-2Y 边界润滑材料



材料组织结构:

- 1、缩醛树脂与亲油性纤维混合物 0.3~0.5mm
- 2、球形青铜粉: 0.2~0.3mm
- 3、钢背: 0.4~2.7mm
- 4、电镀层: 镀锡层厚 0.005mm 或镀铜层厚 0.008mm

- 摩擦系数: 0.05~0.25
- 导热系数: 13W/MK
- 使用温度范围: -40℃ ~130℃
- 线膨胀系数: 11*10-6K-1

应用特点:

- 1、承载好, 耐磨性能好。
- 2、适用于高载低速下的旋转运动, 摇摆运动及经常在载荷下启闭频繁而不易形成流体动力润滑的场合。
- 3、表面的塑料层在加工成型时可留一定的余量, 装配压入座孔后可自行加工, 以达到更好的装配尺寸。
- 4、主要运用于进口纺织设备、柱塞泵摆动部位、汽车操纵杆部位等。
- 5、因其不含铅, 故可广泛运用于无铅领域。



SF-2S 边界润滑材料



材料组织结构:

- 1、缩醛树脂与亲油性纤维混合物 0.3~0.5mm
- 2、球形青铜粉: 0.2~0.3mm
- 3、钢背: 0.4~2.7mm
- 4、电镀层: 镀锡层厚 0.005mm 或镀铜层厚 0.008mm

- 摩擦系数: 0.05~0.20
- 导热系数: 13W/MK
- 使用温度范围: -40℃ ~130℃
- 线膨胀系数: 11*10-6K-1

应用特点:

- 1、承载好, 耐磨性能好。
- 2、适用于干摩擦和少油润滑的场合。
- 3、目前产品已应用在摇摆运动、易磨损、易腐蚀的场合, 如卷扬机、推土机、印染机、采煤机及吊车、行车高空作业机等场合。



FB090 无油润滑材料



FB090 无油润滑材料是采用高密度铜合金带材为基体, 表面轧制菱形或半球形油穴。具有密度高、承载能力大、耐磨性能好、使用寿命长等优点, 该材料已广泛应用于起重机械、建筑机械、汽车拖拉机底盘、机床工业及采矿机械中, 还可以制成轴瓦、翻边轴套、止推垫片和球碗等。

- 基体材质: CuSn8P0.3 或 CuSn6.5P0.1
- 硬度: HB110~140
- 使用温度范围: -80℃ ~200℃
- 摩擦系数: ≤ 0.15
- 磨损量: ≤ 0.008

FB092 无油润滑材料



FB092 无油润滑材料是以青铜材料为基体。具有耐磨性能好, 使用寿命长等优点, 该产品在卷制成轴承前, 应布置 $\phi 4\text{mm} \sim \phi 6\text{mm}$ 的油孔, 面积达到 25%, 使油脂润滑充足。目前该产品已应用于输送机、升降机、卷扬机、校平机等中载、低速的场合。

- 基体材质: CuSn8P0.3 或 CuSn6.5P0.1
- 硬度: HB90~120
- 使用温度范围: -100℃ ~200℃
- 摩擦系数: ≤ 0.12
- 磨损量: ≤ 0.008

FB09G 青铜固体润滑材料



FB09G 青铜固体润滑材料是以青铜材料为基体，表面埋入固体润滑剂制作而成。由于此材料是以延伸率较高的铜合金材料为基体，所以可以制作特薄的卷制轴套，再加上理想的填充材料为耐磨剂，因此适用于汽车传动轴内作为耐磨的轴套使用，也可在无油润滑的场合使用。

- 基体材质: CuSn10P10+ 石墨
- 硬度: HB80~110
- 使用温度范围: -100℃ ~260℃
- 摩擦系数: ≤ 0.12
- 磨损量: ≤ 0.008

FB08G 固体润滑材料



FB08G 固体润滑材料是以 JF-800 双金属材料为基体，合金层埋入特殊固体润滑剂制作而成的新颖薄壁固体润滑材料。由于高强度承载的合金材料作基体，理想的填充材料为耐磨剂，合理的菱形块状润滑设计，使润滑面积达 25% 以上，因此，能发挥良好的润滑性和抗磨损性能。该材料主要应用于汽车变速齿轮箱、发电机、升降机、起重机械及冶金机械行业。

- 基体材质: CuSn10P10+ 石墨
- 硬度: HB60~90
- 使用温度范围: -100℃ ~260℃
- 摩擦系数: ≤ 0.15
- 磨损量: ≤ 0.01

FR 四氟软带材料



FR 四氟软带材料是以青铜丝网为基体，通过特殊烧结工艺，表面轧制聚四氟乙烯（PTFE）和其他填充减摩材料的混合物。它具有较低的摩擦系数，较好的耐磨特性。由于它的柔软性能好，所以可作为钢与钢对磨的隔离膜，实现无间隙、无噪音、无油润滑、无需保养、无污染的理想目的。目前该材料广泛用于纺织机械、关节轴承、汽车门铰链等场合。

- 使用温度范围: -40℃ ~280℃
- 摩擦系数: 0.05~0.20

SF-2S 边界润滑材料



材料组织结构:

- | | |
|-----------------------------------|----------------------|
| 1、缩醛树脂与亲油性纤维混合物 0.3~0.5mm | ■ 摩擦系数: 0.05~0.20 |
| 2、球形青铜粉: 0.2~0.3mm | ■ 导热系数: 13W/MK |
| 3、钢背: 0.4~2.7mm | ■ 使用温度范围: -40℃ ~130℃ |
| 4、电镀层: 镀锡层厚 0.005mm 或镀铜层厚 0.008mm | ■ 线膨胀系数: 11*10-6K-1 |

应用特点:

- 1、承载好, 耐磨性能好。
- 2、适用于干摩擦和少油润滑的场合。
- 3、目前产品已应用在摇摆运动、易磨损、易腐蚀的场合, 如卷扬机、推土机、印染机、采煤机及吊车、行车高空作业机等场合。



FB090 无油润滑材料



FB090 无油润滑材料是采用高密度铜合金带材为基体, 表面轧制菱形或半球形油穴。具有密度高、承载能力大、耐磨性能好、使用寿命长等优点, 该材料已广泛应用于起重机械、建筑机械、汽车拖拉机底盘、机床工业及采矿机械中, 还可以制成轴瓦、翻边轴套、止推垫片和球碗等。

- 基体材质: CuSn8P0.3 或 CuSn6.5P0.1
- 硬度: HB110~140
- 使用温度范围: -80℃ ~200℃
- 摩擦系数: ≤ 0.15
- 磨损量: ≤ 0.008

FB092 无油润滑材料



FB092 无油润滑材料是以青铜材料为基体。具有耐磨性能好, 使用寿命长等优点, 该产品在卷制成轴承前, 应布置 $\phi 4\text{mm} \sim \phi 6\text{mm}$ 的油孔, 面积达到 25%, 使油脂润滑充足。目前该产品已应用于输送机、升降机、卷扬机、校平等中载、低速的场合。

- 基体材质: CuSn8P0.3 或 CuSn6.5P0.1
- 硬度: HB90~120
- 使用温度范围: -100℃ ~200℃
- 摩擦系数: ≤ 0.12
- 磨损量: ≤ 0.008

轴承的选择与计算

轴承的选型 Bearing Selection

杰盛无油轴承根据不同的工况条件设计了不少的轴承材料。用户在使用和设计时应当根据轴承的使用温度、轴承的承载面压、线速度、耐磨性能要求、运动类型、安装情况、轴承成本等各方面因素综合考虑。

SF bush have developed kinds of bearing material according to difference work condition, the user can select the material base on bearing work environment, load, speed, wear, resistance request, moving method, installation, the cost of the material etc.

面压计算 Bearing Load

直套、翻边轴承 Cylindrical bushes, flange bushes

$$P = \frac{F}{dL} \quad (\text{N/mm}^2)$$

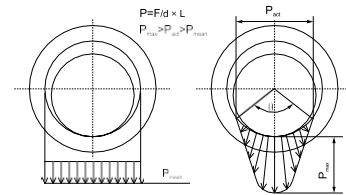
F = 轴承载值 Load (N)
d = 轴径 Shaft (mm)
L = 轴承长度 Bearing Length (mm)

止推垫片 Thrust Washer

$$P = \frac{4F}{(D^2 - d^2)\pi} \quad (\text{N/mm}^2)$$

F = 垫片承载值 Load (N)
d = 垫片外径 Washer OD (mm)
L = 垫片内径 Washer ID (mm)

由于受配合间隙、材料强度、轴承倒角、内部油槽等原因的影响，轴承的真正承载面压 (P_{act}) 会大于理论计算值 (P_{mean})。
As the factor of clearance, bushes chamfer, oil groove etc. The actually load (P_{act}) is higher than theory of calculation (P_{mean}).



线速度计算 Velocity

旋转运动 Rotating motion

$$V = \frac{dn\pi}{1000 \times 60} \quad (\text{m/s})$$

D = 轴径 Shaft (mm)
n = 转速/分 Rpm

摇摆运动 Oscillating motion

$$V = \frac{Dc\theta\pi}{1000 \times 360 \times 60} \quad (\text{m/s})$$

d = 轴径 Shaft (mm)
c = 摇摆频率 Frequency (次数/分) θ
= 摇摆角度 Oscillating angle

往复运动 Reciprocating motion

$$V = \frac{2sc}{60} \quad (\text{m/s})$$

s = 行程长度 (mm)
c = 往复频率 Frequency (次数/分)

PV 值计算 $PV = PXV \quad (\text{N/mm}^2 \times \text{m/s})$

PV 是指轴承在一定的承载和线速度条件下的乘积之和。设备的 PV 值与轴承的使用寿命成反比关系，因此建议设计时设备的 PV 取值尽量使用比较低的安全 PV 值，以确保轴承会有更长的使用寿命。同时也要考虑设备上轴承实际的承载、线速度、使用温度等不能超过所选择材料的极限值，并尽可能地小。

PV is the product of the specific bearing load P and the sliding speed V which is very important design data. We recommend design lower PV value will lead to longer service life. Also don't exceed the max. Of material load, speed, temp. And lower if possible.

滑动轴承与座孔的装配 The Installation of The Sliding Bushing And The Housing

◎SF 系列轴承在装配前宜先用煤油或柴油清洗干净，然后在机油内浸油、沥干。轴承与座孔装配时，即要保证轴承在座孔中不发生转动和轴向移动，要使轴承外表面与座孔充分接触，一般应保证接触面积大于 70% 以上，以利于承受载荷和传导摩擦热，SF 系列轴承内表面是自润滑塑料，外表面是铜背，钢对钢的摩擦系数比钢对塑料的摩擦系数大，因此采用较轻盈配合，既保证使用时衬套不会在座孔内发生相对移动，又不会使衬套外径过大致使衬套内孔变形较大。

◎对于工作压力较高的场合为避免轴套走外圆，推荐用以下二方法：

1、加大轴套外径尺寸，内孔变形用较正棒校正。

2、安装时，座孔涂 ZY801 厌氧胶，增强轴套与座孔的结合强度。

◎对于外 < 55mm 的轴承可按图 A 所示，利用一个带有手柄的压头轴芯，小心操作，轻轻压力座孔中。

◎当轴承外径 > 55mm 时可按图 B 所示，利用带台肩的手柄以及一个“O”形圈和一个辅助圈小心操作，将轴承压入座孔中。

◎The Installation of SF Bush

◎SF bushes should be cleaned in kerosene or diesel oil first, immersed in engine oil and then dried up. When the bush is installed into housing, make sure the bush not rotating in the housing or moving in the axial direction and at the same time make the outer surface surface fully contact to the base hole, generally

guarantee the contact area over 70%, thus to improve load capacity and transmission of friction heat. The inner surface of SF bush is made of self-lubricating plastic, the outer surface steel backing, The friction coefficient of steel to steel is bigger than that of steel to plastic, So we should choose the light-graded tight fit, preventing the axle sleeve from moving in the base when working, and also preventing the inner holes from getting deformed and too big because of the large tight fit of the outer diameter.

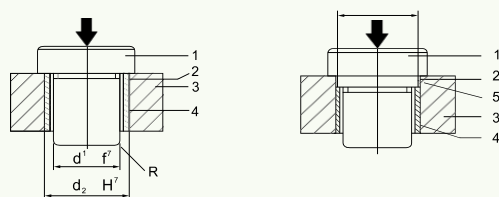
◎Out circle of the axle sleeve should be avoided in the high-pressure working conditions. Two methods are recommended here:

1. Increase the outer diameter of the axle sleeve, and the deformation of inner holes can be calibrated with calibrating core stick.

2. When installing, apply ZY 801 Oxygen-hatred glue in the housing to streng then the combination strength between the axle sleeve and base hole.

◎For bush (outer diameter < 55mm), press the bush into the housing gently and carefully using an core axle with a handle. Fig A.

◎For bush (outer diameter > 55mm), press the bush into the housing gently and carefully using a handle with a shoulder, an “O” ring and an assisting circle. Fig B.

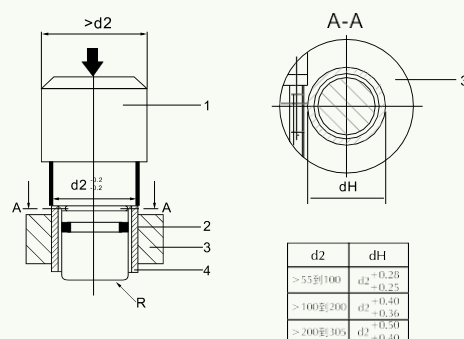


(图A a) 平面式安装
(Fig A a) Plane Installation

- 1、压入芯轴
- 2、轴承座孔倒角 $0.8 \times 15^\circ$
- 3、轴承座
- 4、JS-F 轴承
- 5、嵌入肩直径
- R、芯轴端圆角半径

(b) 嵌入式安装
(B) Inset Installation

- 1、Press the core axle into bushing
- 2、Housing chamfer at end: $0.8 \times 15^\circ$
- 3、Housing
- 4、JS-F bush
- 5、Diameter of inset shoulder
- R、Radius of the round angle of the core axle end

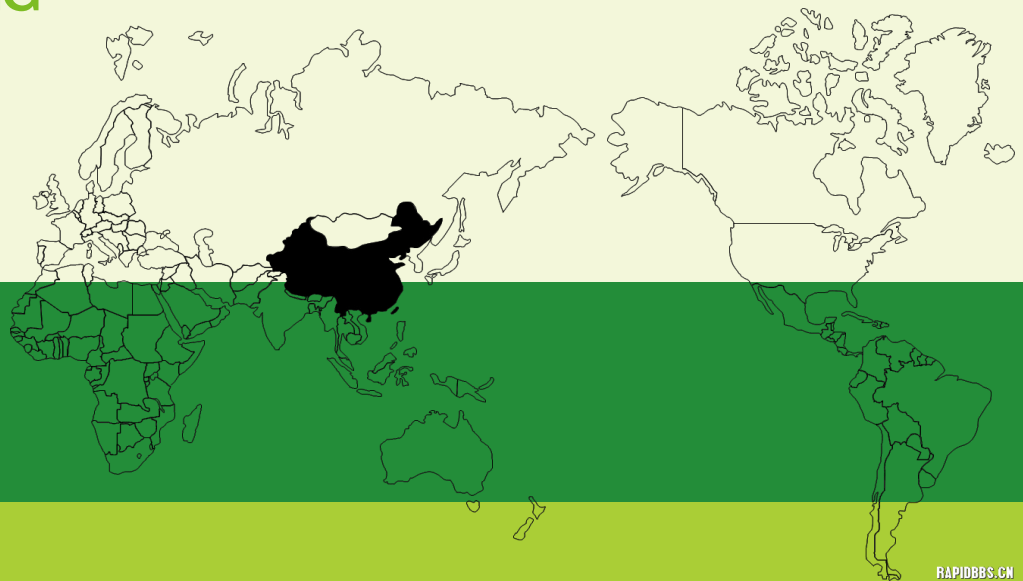


d2	dH
> 55 到 100	d2 + 0.25
> 100 到 200	d2 + 0.40
> 200 到 300	d2 + 0.50
> 300 到 400	d2 + 0.60



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