

产品目录

Jiahan CRB Self-Lubricating Bearing

自润滑和免维护滑动轴承



嘉善晋信自润滑轴承有限公司
JIASHAN CRB Self-Lubricating Bearing Co., Ltd.



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Introduction 公司简介

“晋”者，上进。“信”者，诚信。所谓“晋信”，即取“求上进而讲诚信”之意。上进易，而诚信难。今日之世界，更应倡导诚信，呼唤诚信。惟有诚信，才是企业立足之本，是基业常青之妙法。

我们CRB公司是专业制造并销售自润滑轴承生产企业（前身为嘉善晋信自润滑材料厂），其质量性能已和国外产品一样，生产自润滑材料，无油轴承，不加油免维护轴承，复合轴承。所谓自润滑是指无需加油（干式）或少加油（国外称DU，DX，500#SP）。其优点：体积小，重量轻，摩擦系数小，高承载，耐高温，价格低，而且可实现完全不加油。CRB公司一直致力于自润滑轴承和新材料的研究开发与新产品新领域的推广与应用。公司具备完善的系统研发能力、机械加工能力、检测能力，完备高效的服务。我们公司

主要产品有三大系列：（一）复合系列自润滑轴承，有CRB-10(SF-10)，CRB-20(SF-20)，等；（二）金属基自润滑轴承，有CRB650(JDB650，JFB600)，CRB250(JDB200，JDB250)，CRB-SNF粉末冶金轴承，FZ直线轴承等；（三）树脂系列轴承CRB-EP等；勇于开拓的“晋信”人在力求自我发展的同时以超前意识连横合纵的有效手段愿和您一起强强联手，我们可以分别根据不同的工况条件给你推荐不同产品，用我们最优秀的产品、最完善的服务配套你们，使得你们的产品更上一个台阶。

公司一贯坚持“诚信，专业，高效，双赢”的经营理念，以其专业的技术优势，良好细致的服务，竭诚为业内广大客户服务。

The character of “Jin” means entreprenant. “Xin” means faithfulness. The so-called “Jin Xin” means “Be entreprenant and faithful”. It's easy to be entreprenant, but hard faithful. Nowadays, the world is more inclined to advocate and call for faithfulness. Only faithfulness can be the foothold for an enterprise, and provide a solution long-tested for an enterprise built to last.

We CRB is a company specialized in manufacturing and selling self-lubricating bearings (former JiaShan JinXin Self-lubricating Materials Plant), of which the quality and performance have been the same as the foreign counterparts. The products list includes the self-lubricating materials, oilless bearings, non-refueling maintenance-free bearings and composite bearings. What is called self-lubricating means no need for fuel filling (dry type) or less filling (foreign named DU, DX, 500#SP). It has advantages such as small, light, small coefficient of friction, high loading capacity, high temperature resistance and low price, furthermore, it can realize non-refueling completely. CRB is has been engaging in R&D of self-lubricating bearing and P&A(promotion and application) of new products and fields.

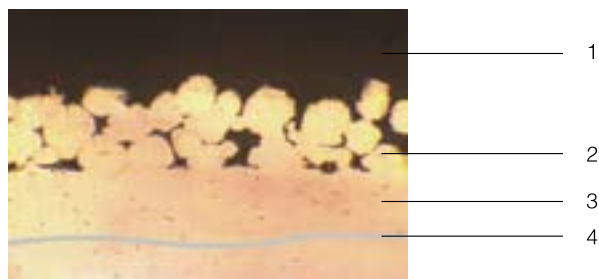
The company possesses complete abilities of systematic research and development ability, machine work, detection and all-round and high-efficient service. Mainly we have three lines of products: (1) Composite self-lubricating bearing, like CRB-10(SF-10), CRB-20(SF-20); (2) Metal-base self-lubricating bearing, like CRB650 (JDB650, JFB600), CRB250 (JDB200, JDB250), CRB-SNF powder metallurgic bearing, FZ linear bearing; (3) Resin-series bearing, like CRB-EP. The pioneering people of “JinXin” are ready to join you for win-win cooperation during itself development by effective instruments and in comprehensive ways with superior consciousness. We'll offer you our best products and perfect supporting services according to different working conditions, boosting your products into a higher stage.

The company always insists on the running concept of “faithfulness, profession, high-efficiency, win-win”, by taking use of its professional technical advantages and fine services, we serve the vast clients in the trade wholeheartedly.

诚信 专业 高效 双赢

faithfulness, profession, high-efficiency, win-win

◎ SF-1材料结构 Material Structure



1. 聚四氟乙烯与铅 PTFE with lead 0.01 ~ 0.03mm
2. 球形青铜粉 Porous bronze 0.25 ~ 0.03mm
3. 钢背 Steel backing 0.7 ~ 2.2mm
4. 镀铜/锡层 Copper/ plating 0.002



◎ SF-1应用特点 Use the characteristic

- ◎无油润滑或少油润滑，适用于无法加油或较难加油场合，可以在使用时不保养或少保养。
- ◎耐磨性好摩擦系数小，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，从而提高轴承的承载能力。
- ◎静动摩擦系数接近，可消除低速下的爬行，从而保证精密机械的工作精度。
- ◎适应性强，可在-195℃ ~ +280℃温度范围内工作。
- ◎走合性能好，装配时不需要刮削。能使机械减少振动、降低噪音，防止环境污染改善劳动条件。
- ◎在运转过程中能形成转移膜，起到保护对磨轴作用无咬轴现象。
- ◎对对磨轴的硬度要求低，未经调质处理的轴都可以使用，从而降低了相关零件的加工难度。
- ◎薄壁结构、质量轻、可缩小机械体积。
- ◎无吸水、吸油性，热胀系数小，散热性好，尺寸稳定。
- ◎基板可采用不锈钢，青铜板，低碳钢板等材料。以适各种工作环境需要。
- ◎Free of oil or less oil lubrication, applicable for conditions such as incapable of adding or difficult to add oil, it can be used without aintenance or less maintenance.
- ◎With good wearing quality, small friction factor and long performance life.
- ◎With certain elasto-plasticity, which can distribute the stress to a wider contact surface, thus the load capacity is promoted.
- ◎Static and kinetic friction coefficient is very near, which can make the bearing crawl at low speed, so as to guarantee the operation precision of precision machinery.
- ◎Extent applicability, it can work in the temperature range from minus -195℃ ~ +280℃.
- ◎Good running-in feature, need no scraping upon assembling. It can reduce vibration of the mechanism so that noise is depressed, which prevents environmental pollution and improves working condition.
- ◎Shifting membrane is formed during the course of running, which can protect the counter-friction shaft from wearing and seizing.
- ◎Low requirement of hardness for the counter-friction shaft. Even you can use ones without quenching and tempering, SO that processing difficulty lowers down
- ◎It is of thin-wall structure and light weight, which can reduce the size of the mechanism.
- ◎On water or oil absorption, low thermal coefficient, good thermal diffusivity and stable dimensions.
- ◎The base plate can adopt stainless steel, the blue and green copper, such materials as the stencil plate of low carbon, etc.. Need with right various kinds of working environment.

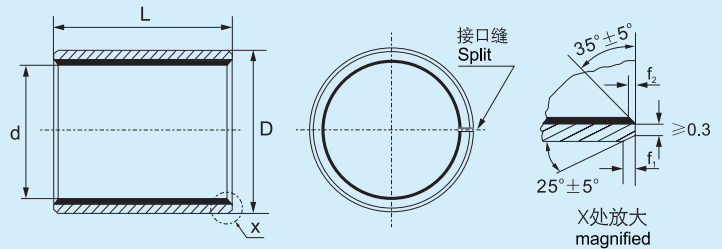
◎ 技术参数 Tech.Data

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	2mm2
	油润滑 Oil	5mm2
导热系数 Thermal conductivity		2.41Kcal/M.br.c
热膨胀系数 Coeff. of linear expansion		27 × 10-6per℃

注：SF-1低碳钢板为基体、SF-1B青铜板为基体、SF-1S不锈钢为基体

◎SF-1 自润滑卷制轴承尺寸 Self-Lubricating Bearings Metric Sizes



单位 Unit: mm

d	D	轴径 Axle	座孔H7 Housing H7	壁厚 Wall Thickness		f ₁	f ₂	L ⁰ _{-0.40} ($\begin{matrix} D \leq \Phi 28 & L - 0.30 \\ d > \Phi 28 & L - 0.40 \end{matrix}$)										
				最小 Min	最大 Max			6	8	10	12	15	20	25	30	40	50	60
6	8	6 ^{-0.013 -0.028}	8 ^{+0.015}	0.980	1.005	0.6	0.3	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}							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		1520					
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}	1.475	1.505	0.6	0.4			2010	2012	2015	2020	2025	2030			
22	25	22 ^{-0.020 -0.041}	25 ^{+0.021}							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}	1.970	2.005	1.2	0.4					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}										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

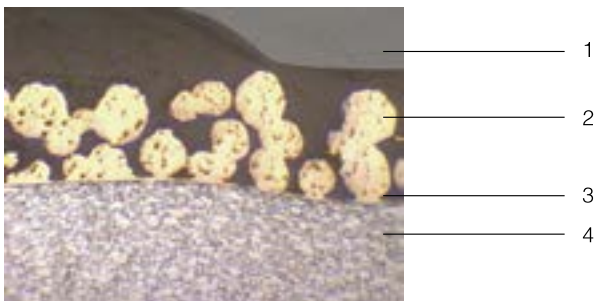
注：孔径壁厚符合样本，宽度尺寸不在样本范围内客户提出要求，制造厂可定制加工。Busning width other than listed may also be supplied to special order.
一般推荐座孔公差为H7，轴径公差为f7或h8。Recommend housing tolerance H7 and the shaft as f7 or h8.)

◎SF-1 自润滑卷制轴承尺寸 Self-Lubricating Bearings Metric Sizes

d	D	轴径 Axle	座孔H7 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} _{-0.028}	50 ^{+0.025}	2.460	2.505	1.8	0.6	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}							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} _{-0.060}	80 ^{+0.030}							7530	7540	7550	7560	7570	7580		
80	85	80 ^{-0.030}	85 ^{+0.035}	2.440	2.490	1.8	0.6				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}									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}	2.415	2.465	1.8	0.6						12060		12080	120100	
125	130	125 ^{-0.040}	130 ^{+0.040}										12560			125100	125115
130	135	130 ^{-0.040}	135 ^{+0.040}										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}										20060		20080	200100	
220	225	220 ^{-0.046}	225 ^{+0.046}												22080	220100	
250	255	250 ^{-0.046}	255 ^{+0.055}	2.415	2.465	1.8	0.6								25080	250100	
260	265	260 ^{-0.052}	265 ^{+0.055}												26080	260100	
280	285	280 ^{-0.052}	285 ^{+0.055}												28080	280100	
300	305	300 ^{-0.052}	305 ^{+0.055}												30080	300100	

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 can be chosen for the base of SF-1 Series products according to different working conditions, for example, the formulated products such as bronze base plate (SF-1B), stainless steel base plate (SF-1S) and lead-free (SF-1W).

◎SF-2材料结构 Material Structure



1. 改性聚甲醛 POM with lead 0.3-0.5mm

2. 球形青铜粉 Powder bronze
3. 钢背 Steel backing

4. 镀铜层 Copper plating



◎SF-2应用特点 Use the characteristic

◎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、球座等磨擦零件。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 lithiumbased lubricant grease or silicone grease and so on should be applied when being installed.

◎SF-2 磨损规律

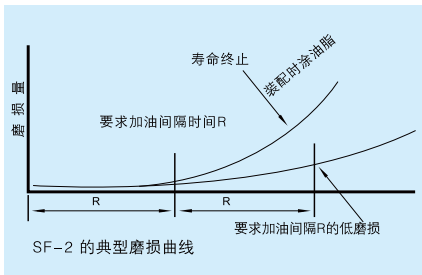
◎SF-2型材料有其特殊的磨损规律，如图4所示在安装时涂油脂的情况下，能在R阶段内极微量的磨损。经过R阶段时间后失去边界油润滑条件，磨损就开始加剧。如果在此时重新加油，可保持无显著磨损，其寿命亦可以大大地延长。所以SF-2材料的优点就在于必须间隔R阶段时间加油一次，其间隔时间R较其它材料特别是金属材料的间隔时间显著地长。约为五倍左右。

◎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 shall 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。

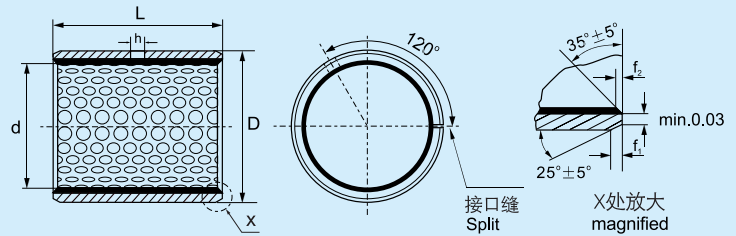
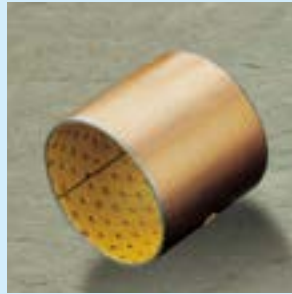
◎When SF-2 bush is installed with application of grease such as lithium-based or silicone grease, its service life varies from the PV value under working condition, for instance, when PV value is about 2.5MPa·m/s, its service life will be about 200hr; when PV value is 0.1MPa·m/s, its service life can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



最大荷载 Max.Load	静承载 Static	250N/mm ²	摩擦系数 Friction Coeff.	0.05~0.25 μ
	动承载 Dynamic	140N/mm ²	最大速率 Speed limit	0.25m/s
	摇摆运动 Oscillating	60N/mm ²	导热系数 Thermal conductivity	2.03Kcal/M.br.c
最大PV值 PV limit	干摩擦 Dry	3.6N/mm ² · m/s	热膨胀系数 Coeff. of linear expansion	51 × 10 ⁻⁶ per°C
	油润滑 Oil	50N/mm ² · m/s	装配时内孔涂润滑油脂 Initial pre-lubrication at assembly required	
使用温度 Temp.limit		-40°C~+130°C		

◎SF-2 边界润滑轴承尺寸 Marginal-Lubrication Bearings Metric Size



单位 Unit: mm

d	D	f7 轴径 Shaft	H7 座孔 Housing bore	壁厚 Wall Thickness		油孔 Hole Dia. 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}						1010	1015	1020									
12	14	12 _{-0.027}	14 ^{+0.018}						1210	1215	1220									
14	16	14 _{-0.027}	16 ^{+0.018}	0.955	0.980	4	0.5	0.3		1415	1420									
15	17	15 _{-0.027}	17 ^{+0.018}							1515	1520	1525								
16	18	16 _{-0.027}	18 ^{+0.018}							1615	1620	1625								
18	20	18 _{-0.027}	20 ^{+0.021}							1815	1820	1825								
20	23	20 _{-0.033}	23 ^{+0.021}							2015	2020	2025	2030							
22	25	22 _{-0.033}	25 ^{+0.021}	1.445	1.475		0.8	0.4		2215		2225								
25	28	25 _{-0.033}	28 ^{+0.021}							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			1.0	0.6			3020	3025	3030		3040				
35	39	35 _{-0.039}	39 ^{+0.025}								3520		3530	3535	3540					
40	44	40 _{-0.039}	44 ^{+0.025}								4020		4030		4040		4050			
45	50	45 _{-0.039}	50 ^{+0.025}								4520		4530		4540	4545	4550			
50	55	50 _{-0.039}	55 ^{+0.030}	2.415	2.460	8	1.2	0.8					5030		5040		5050	5060		
55	60	55 _{-0.046}	60 ^{+0.030}										5530		5540		5550	5560		
60	65	60 _{-0.046}	65 ^{+0.030}										6030		6040		6050	6060		

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

Bushing width other than listed may also be supplied to special order.

注：SF-2面色为灰色 SF-2Y无铅橘黄色

◎SF-2 边界润滑轴承尺寸 Marginal-Lubrication Bearings Metric Size

d	D	f7 轴径 Shaft Dia.	H7 座孔 Housing bore	壁厚 Wall Thickness		油孔 Hole Dia. 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}						6540		6560						
70	75	70 ^{-0.046}	75 ^{+0.030}	2.415	2.460	8	1.2	0.8	7040	7050		7080					
75	80	75 ^{-0.046}	80 ^{+0.030}						7540		7560	7580					
80	85	80 ^{-0.046}	85 ^{+0.035}						8040		8060	8080					
85	90	85 ^{-0.054}	90 ^{+0.035}						8540		8560	8580					
90	95	90 ^{-0.054}	95 ^{+0.035}						9040		9060	9080	9090				
100	105	100 ^{-0.054}	105 ^{+0.035}				1.4	0.8		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}								11060	11080		11095		110110	
120	125	120 ^{-0.054}	125 ^{+0.040}								12060	12080				120110	
125	130	125 ^{-0.063}	130 ^{+0.040}								12560					125110	
130	135	130 ^{-0.063}	135 ^{+0.040}							13050	13060	13080			130100		
140	145	140 ^{-0.063}	145 ^{+0.040}							14050	14060	14080			140100		
150	155	150 ^{-0.063}	155 ^{+0.040}							15050	15060	15080			150100		
160	165	160 ^{-0.063}	165 ^{+0.040}	2.385	2.450					16050	16060	16080			160100		
170	175	170 ^{-0.063}	175 ^{+0.040}							17050		17080			170100		
180	185	180 ^{-0.063}	185 ^{+0.046}			9.5	1.4	0.8		18050	18060	18080			180100		
190	195	190 ^{-0.072}	195 ^{+0.046}							19050	19060	19080			190100		190120
200	205	200 ^{-0.072}	205 ^{+0.046}							20050	20060	20080			200100		200120
220	225	220 ^{-0.072}	225 ^{+0.046}							22050	22060	22080			220100		220120
240	245	240 ^{-0.072}	245 ^{+0.046}							24050	24060	24080			240100		240120
250	255	250 ^{-0.072}	255 ^{+0.052}							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}							28050	28060	28080			280100		280120

◎ JF800 系列双金属轴承 Series of Bimetal Bearing

◎ 材料特性 Material Features

◎JF800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 Chharacteristics and Application
JF-800	CuPb10Sn10	铜铅锡锌 Cu Pb Sn Zn 80 10 10	HB60-90	在铜合金中是最强的一种，应用范围广 The strongest type, wide application field.

◎ 技术参数 Tech.Data

最大承载 Max.Load	静承载 Static	250N/mm ²	屈服强度 Yield Point	240N/mm ²
	动承载 Dynamic	140N/mm ²	使用温度 Working temperature	-40℃ ~ +250℃
最高线速度	Max. Speed	2m/s	摩擦系数 Abrasion coefficient	0.08 ~ 0.20
最大PV值	Max. PV	2.8N/mm ² · m/s	导热系数 Heat conducting coefficient	60W(m*k) ⁻¹
抗剪切强度	Breaking Load	750N/mm ²	热膨胀系数 Heat expansion coefficient	14*10 ⁻⁶ K ⁻¹

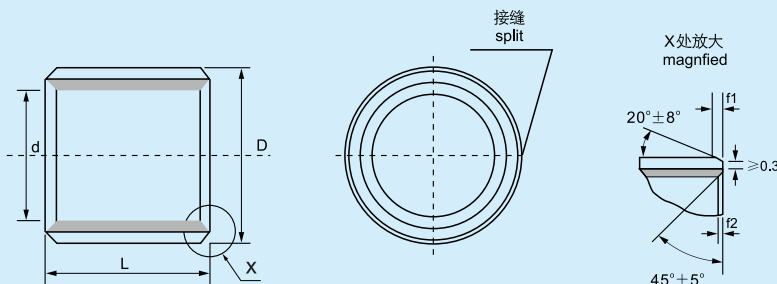
◎ JF800 双金属板材厚度尺寸及公差 Thickness of The Bmb800 Bi-metal And Their Tolerances

材料型号 Types of Material	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0
钢背厚度 Thickness of Steel Backing	0.5	1.0	1.4	1.9	2.3	2.8	3.2	3.6	4.0
铜铅合金厚度 Thickness of Bronze Layer	0.5	0.5	0.6	0.6	0.7	0.7	0.8	0.9	1.0
可供板材长×宽 Length × Width of the Plates	500 × 125	500 × 125	600 × 125	600 × 125	800 × 125	800 × 125	800 × 125	800 × 125	800 × 125

◎ JF800 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 JF800 Bushes 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
1.5	-0.030	+0.25 +0.15
2	-0.035	+0.25 +0.15
2.5	-0.040	+0.30 +0.15
3	-0.045	+0.30 +0.15
3.5	-0.050	+0.30 +0.15

◎ JF800 双金属轴承尺寸 Bimetal Bearing Metric Size



单位 Unit: mm

d	D	壁厚 Wall Thickness	外径公差 O.D. Tolerance	内径公差 I.D.(H8) Tolerance	配合座孔 H7 Housing Bore	轴径f7 Journal Diameter	f1	f2	L -0.4										
									10	15	20	25	30	40	50	60	80	90	100
10	12		12 ^{+0.065} _{+0.030}	10 ^{+0.022} _{+0.000}	12 ^{+0.018}	10 ^{-0.013} _{-0.028}	0.5	0.3	1010	1015	1020								
12	14		14 ^{+0.065} _{+0.030}	12 ^{+0.027} _{+0.000}	14 ^{+0.018}	12 ^{-0.016} _{-0.034}	0.5	0.3	1210	1215	1220								
14	16	1 ^{-0.025}	16 ^{+0.065} _{+0.030}	14 ^{+0.027} _{+0.000}	16 ^{+0.018}	14 ^{-0.016} _{-0.034}	0.5	0.3	1410	1415	1420								
15	17		17 ^{+0.065} _{+0.030}	15 ^{+0.027} _{+0.000}	17 ^{+0.018}	15 ^{-0.016} _{-0.034}	0.5	0.3	1510	1515	1520								
16	18		18 ^{+0.075} _{+0.035}	16 ^{+0.027} _{+0.000}	18 ^{+0.018}	16 ^{-0.016} _{-0.034}	0.8	0.4	1610	1615	1620								
18	20		20 ^{+0.075} _{+0.035}	18 ^{+0.033} _{+0.000}	20 ^{+0.021}	18 ^{-0.016} _{-0.034}	0.8	0.4	1810	1815	1820	1825							
20	23	1.5 ^{-0.030}	23 ^{+0.075} _{+0.035}	20 ^{+0.033} _{+0.000}	23 ^{+0.021}	20 ^{-0.020} _{-0.041}	0.8	0.4	1210	1215	1220	1225							
22	25		25 ^{+0.075} _{+0.035}	22 ^{+0.033} _{+0.000}	25 ^{+0.021}	22 ^{-0.020} _{-0.041}	0.8	0.4	2210	2215	2220	2225							
24	27		27 ^{+0.075} _{+0.035}	24 ^{+0.033} _{+0.000}	27 ^{+0.021}	24 ^{-0.020} _{-0.041}	1.0	0.5	2410	2415	2420	2425	2430						
25	28		28 ^{+0.075} _{+0.035}	25 ^{+0.033} _{+0.000}	28 ^{+0.021}	25 ^{-0.020} _{-0.041}	1.0	0.5		2515	2520	2525	2530						
26	30		30 ^{+0.075} _{+0.035}	26 ^{+0.033} _{+0.000}	30 ^{+0.021}	26 ^{-0.020} _{-0.041}	1.0	0.5		2615	2620	2625	2630						
28	32		32 ^{+0.085} _{+0.045}	28 ^{+0.033} _{+0.000}	32 ^{+0.025}	28 ^{-0.020} _{-0.041}	1.0	0.5		2815	2820	2825	2830	2840					
30	34		34 ^{+0.085} _{+0.045}	30 ^{+0.039} _{+0.000}	34 ^{+0.025}	30 ^{-0.020} _{-0.041}	1.2	0.6		3015	3020	3025	3030	3040					
32	36	2 ^{-0.035}	36 ^{+0.085} _{-0.045}	32 ^{+0.039} _{+0.000}	36 ^{+0.025}	32 ^{-0.025} _{-0.050}	1.2	0.6		3215	3220	3225	3230	3240					
35	39		39 ^{+0.085} _{+0.045}	35 ^{+0.039} _{+0.000}	39 ^{+0.025}	35 ^{-0.025} _{-0.050}	1.2	0.6			3520	3525	3530	3540	3550				
38	42		42 ^{+0.085} _{+0.045}	38 ^{+0.039} _{+0.000}	42 ^{+0.025}	38 ^{-0.025} _{-0.050}	1.2	0.6			3820	3825	3830	3840	3850				
40	44		44 ^{+0.085} _{+0.045}	40 ^{+0.039} _{+0.000}	44 ^{+0.025}	40 ^{-0.025} _{-0.050}	1.2	0.6			4020	4025	4030	4040	4050				

◎ JF800 双金属轴承尺寸 Bimetal Bearing Metric Size

d	D	壁厚 Wall Thickness	外径公差 O.D. Tolerance	内径公差 I.D.(H8) Tolerance	配合座孔 H7 Housing Bore	轴径f7 Journal Diameter	f1	f2	L -0.4										
									10	15	20	25	30	40	50	60	80	90	100
45	50		50 ^{+0.085 +0.045}	45 ^{+0.039 +0.000}	50 ^{+0.025}	45 ^{-0.025 -0.050}	1.5	1.0			4520	4525	4530	4540	4550				
50	55		55 ^{+0.100 +0.050}	50 ^{+0.039 +0.000}	55 ^{+0.030}	50 ^{-0.030 -0.050}	1.5	1.0					5030	5040	5050				
55	60		60 ^{+0.100 +0.050}	55 ^{+0.046 +0.000}	60 ^{+0.030}	55 ^{-0.030 -0.050}	1.5	1.0					5530	5540	5550	5560			
60	65	2.5 -0.040	65 ^{+0.100 +0.050}	60 ^{+0.046 +0.000}	65 ^{+0.030}	60 ^{-0.030 -0.050}	1.5	1.0					6030	6040	6050	6060			
65	70		70 ^{+0.100 +0.050}	65 ^{+0.046 +0.000}	70 ^{+0.030}	65 ^{-0.030 -0.060}	1.5	1.0					6530	6540	6550	6560			
70	75		75 ^{+0.100 +0.050}	70 ^{+0.046 +0.000}	75 ^{+0.030}	70 ^{-0.030 -0.060}	1.5	1.0					7030	7040	7050	7060	7080		
75	80		80 ^{+0.100 +0.050}	75 ^{+0.046 +0.000}	80 ^{+0.035}	75 ^{-0.030 -0.060}	1.5	1.0					7530	7540	7550	7560			
80	85		85 ^{+0.120 +0.070}	80 ^{+0.054 +0.000}	85 ^{+0.035}	80 ^{-0.030 -0.060}	1.5	1.0						8040	8050	8060	8080		
84	90		90 ^{+0.120 +0.070}	84 ^{+0.054 +0.000}	90 ^{+0.035}	84 ^{-0.036 -0.071}	1.8	1.2						8440	8450	8460	8480		
89	95		95 ^{+0.120 +0.070}	89 ^{+0.054 +0.000}	95 ^{+0.035}	89 ^{-0.036 -0.071}	1.8	1.2						8940	8950	8960	8980		
94	100		100 ^{+0.120 +0.070}	94 ^{+0.054 +0.000}	100 ^{+0.035}	94 ^{-0.036 -0.071}	1.8	1.2							9450	9460	9480	9490	
99	105	3 -0.045	105 ^{+0.120 +0.070}	99 ^{+0.054 +0.000}	105 ^{+0.035}	99 ^{-0.036 -0.071}	1.8	1.2							9950	9960	9980	9990	
104	110		110 ^{+0.120 +0.070}	104 ^{+0.054 +0.000}	110 ^{+0.035}	104 ^{-0.036 -0.071}	1.8	1.2							10450	10460	10480		
109	115		115 ^{+0.120 +0.070}	109 ^{+0.054 +0.000}	115 ^{+0.035}	109 ^{-0.036 -0.071}	1.8	1.2							10950	10960	10980		
114	120		120 ^{+0.120 +0.070}	114 ^{+0.054 +0.000}	120 ^{+0.040}	114 ^{-0.036 -0.083}	1.8	1.2							11450	11460	11480		
119	125		125 ^{+0.170 +0.100}	119 ^{+0.054 +0.000}	125 ^{+0.040}	119 ^{-0.036 -0.083}	1.8	1.2							11950	11960	11980		
123	130		130 ^{+0.170 +0.100}	123 ^{+0.054 +0.000}	130 ^{+0.040}	123 ^{-0.043 -0.083}	2	1.5							12350	12360	12380		123100
128	135		135 ^{+0.170 +0.100}	128 ^{+0.063 +0.000}	135 ^{+0.040}	128 ^{-0.043 -0.083}	2	1.5							12850	12860	12880		128100
133	140		140 ^{+0.170 +0.100}	133 ^{+0.063 +0.000}	140 ^{+0.040}	133 ^{-0.043 -0.083}	2	1.5							13350	13360	13380		133100
138	145		145 ^{+0.170 +0.100}	138 ^{+0.063 +0.000}	145 ^{+0.040}	138 ^{-0.043 -0.083}	2	1.5								13860	13880		138100
143	150		150 ^{+0.170 +0.100}	143 ^{+0.063 +0.000}	150 ^{+0.040}	143 ^{-0.043 -0.083}	2	1.5								14360	14380		143100
148	155	3.5 -0.050	155 ^{+0.170 +0.100}	148 ^{+0.063 +0.000}	155 ^{+0.040}	148 ^{-0.043 -0.083}	2	1.5								14860	14880	14890	
153	160		160 ^{+0.170 +0.100}	153 ^{+0.063 +0.000}	160 ^{+0.040}	153 ^{-0.043 -0.083}	2	1.5								15360	15380	15390	
158	165		165 ^{+0.170 +0.100}	158 ^{+0.063 +0.000}	165 ^{+0.040}	158 ^{-0.043 -0.083}	2	1.5								15860	15880		158100
163	170		170 ^{+0.170 +0.100}	163 ^{+0.063 +0.000}	170 ^{+0.040}	163 ^{-0.043 -0.083}	2	1.5								16360	16380		163100
168	175		175 ^{+0.170 +0.100}	168 ^{+0.063 +0.000}	175 ^{+0.046}	168 ^{-0.043 -0.083}	2	1.5								16860	16880		168100
173	180		180 ^{+0.170 +0.100}	173 ^{+0.063 +0.000}	180 ^{+0.046}	173 ^{-0.043 -0.083}	2	1.5								17360	17380		173100

◎FB090 系列青铜轴承 Series of Wrapped Bronze Bearing



◎材料特性 Material Features

◎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 frication 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，设计师们读新颖摩擦材料、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宽广应用领域和实用价值。

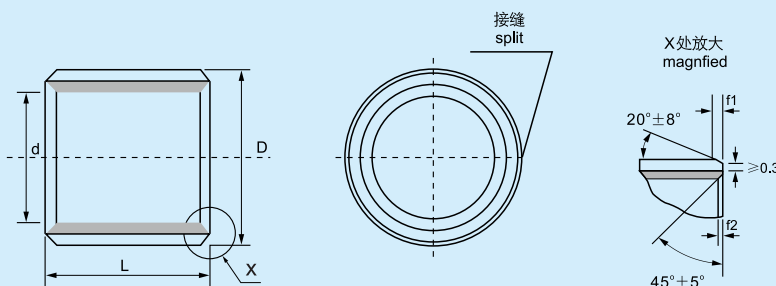
◎FB090系列轴套最大特点是薄壁结构，不占据很大的装配空间。轴套材料采用特殊配方高密度铜合金带材。它传统的铺型铜套相比，具有密度高，无气缩孔、承载能力大，又有耐磨耐疲劳等优点。轴套制造采用先进的工装模具，可在带材摩擦面上加工出适用各种工程条件的油穴、油坑、油槽，从而使轴套在使用可储存大量润滑油脂，延长加油间隔时间，有效的提高了使用寿命。

◎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。

◎技术参数 Tech.Data

最大荷载 Max.Load	静承载 Static	120N/mm ²	使用温度 Working temperature	-100℃ ~ +200℃
	动承载 Dynamic	40N/mm ²	摩擦系数 Abrasion coefficient	0.08 ~ 0.25
最高线速度	干摩擦 Dry	2m/s	导热系数 Heat conducting coefficient	60W(m*k) ⁻¹⁰
屈服强度	Yield point	250N/mm ²	热膨胀系数 Heat expansion coefficient	15*10 ⁻⁶ K ⁻¹
最大PV值	Max. PV	2.8N/mm ² · m/s	延伸率 Extensile rate	40%
抗拉强度	Tensile strength	450N/mm ²	硬度 Hardness	HB 110-150

◎FB090系列青铜轴承尺寸 Series of Wrapped Bronze Bearing Metric Size



单位 Unit: mm

d	D	轴径 Axle	座孔H7 Housing H7	f ₁	f ₂	L ⁰ _{-0.40}												
						10	15	20	25	30	35	40	50	60	70	80	90	100
10	12	10 ^{-0.016} _{-0.034}	12 ^{-0.018}	0.5	0.3	1010	1015	1020										
12	14	12 ^{-0.016} _{-0.034}	14 ^{-0.018}			1210	1215	1220										
14	16	14 ^{-0.016} _{-0.034}	16 ^{-0.018}			1410	1415	1420	1425									
15	17	15 ^{-0.016} _{-0.034}	17 ^{-0.018}			1510	1515	1520	1525									
16	18	16 ^{-0.016} _{-0.034}	18 ^{-0.018}			1610	1615	1620	1625									
18	20	18 ^{-0.016} _{-0.034}	20 ^{-0.021}			1810	1815	1820	1825									
20	23	20 ^{-0.020} _{-0.041}	23 ^{-0.021}	0.8	0.4	2010	2015	2020	2025									
22	25	22 ^{-0.020} _{-0.041}	25 ^{-0.021}			2210	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}				2515	2520	2525	2530								
28	31	28 ^{-0.020} _{-0.041}	31 ^{-0.025}				2815	2820	2825	2830								
30	34	30 ^{-0.020} _{-0.041}	34 ^{-0.025}				3015	3020	3025	3030	3035	3040						
32	36	32 ^{-0.025} _{-0.050}	36 ^{-0.025}	1.0	0.6		3215	3220	3225	3230	3235	3240						
35	39	35 ^{-0.025} _{-0.050}	39 ^{-0.025}				3515	3520	3525	3530	3535	3540						
40	44	40 ^{-0.025} _{-0.050}	44 ^{-0.025}					4020	4025	4030	4035	4040	4050					
45	50	45 ^{-0.025} _{-0.050}	50 ^{-0.025}					4520	4525	4530	4535	4540	4550					
50	55	50 ^{-0.025} _{-0.050}	55 ^{-0.025}	1.2	0.8			5020	5025	5030	5035	5040	5050	5060				
55	60	55 ^{-0.030} _{-0.060}	60 ^{-0.025}					5520	5525	5530	5535	5540	5550	5560				
60	65	60 ^{-0.030} _{-0.060}	65 ^{-0.025}						6025	6030	6035	6040	6050	6060	6070			
65	70	65 ^{-0.030} _{-0.060}	70 ^{-0.030}							6530	6535	6540	6550	6560	6570			
70	75	70 ^{-0.030} _{-0.060}	75 ^{-0.030}							7030	7035	7040	7050	7060	7070	7080		
75	80	75 ^{-0.030} _{-0.060}	80 ^{-0.030}							7530	7535	7540	7550	7560	7570	7580		
80	85	80 ^{-0.030}	85 ^{-0.035}	1.4	0.8					8030	8035	8040	8050	8060	8070	8080		
85	90	85 ^{-0.035}	90 ^{-0.035}							8530	8535	8540	8550	8560	8570	8580	8590	
90	95	90 ^{-0.035}	95 ^{-0.035}							9030	9035	9040	9050	9060	9070	9080	9090	
95	100	95 ^{-0.035}	100 ^{-0.035}									9540	9550	9560	9570	9580	9590	95100
100	105	100 ^{-0.035}	105 ^{-0.035}										10050	10060	10070	10080	10090	100100
105	110	105 ^{-0.035}	110 ^{-0.035}										10550	10560	10570	10580	10590	105100
110	115	110 ^{-0.035}	115 ^{-0.035}										11050	11060	11070	11080	11090	110100

◎FB08G青铜轴承 Wrapped Bronze Bearing

◎材料特性 Material Features

◎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。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°C~+200°C
最高滑动速度	Speed limit	1.5M/s
摩擦系数	Friction coef	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

◎FB09G青铜轴承 Wrapped Bronze Bearing

◎材料特性 Material Features

铸铁基镶嵌式固体润滑剂自润滑轴承，结合了铸铁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或少加油维护。产品被广泛用于高间歇性或摇摆运动，如汽车生产流水线、模具、塑胶机械等。

This material provides a maintenance-free bearing solution, particularly for high load, intermittent or oscillating motion. Solid lubricants within cast iron combines the high load with the wear resistance and low friction. The application including automotive products line, mold & die, plastic industries 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°C~+250°C
最高滑动速度	Speed limit	1.5M/s
摩擦系数	Friction coef	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

◎可供衬套尺寸参考FB090

◎JDB650固体镶嵌轴承 Solid-lubricant-Inlaid Bearing

◎材料特性 Material Features

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。根据使用的工作，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 or 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

最大荷载 Max.Load	静承载 Static	250N/mm ²
	动承载 Dynamic	100N/mm ²
最大PV值 PV limit	干摩擦 Dry	0.3m/s
	流体 Lubrication	1.0m/s
最大PV值	Max. PV	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) ⁻¹⁰
热膨胀系数 Heat expansion coefficient	19·10 ⁻⁶ K ⁻¹
延伸率 Extensile rate	12%
硬度 Hardness	HB > 210

◎GB250固体镶嵌轴承 Solid-lubricant-Inlaid Bearing

◎材料特性 Material Features

铸铁基镶嵌式固体润滑剂自润滑轴承，结合了铸铁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或少加油维护。产品被广泛用于高间歇性或摇摆运动，如汽车生产流水线、模具、塑胶机械等。

This material provides a maintenance-free bearing solution, particularly for high load, intermittent or oscillating motion. Solid lubricants within cast iron combines the high load with the wear resistance and low friction. The application including automotive products line, mold & die, plastic industries etc.



◎技术参数 Tech.Data

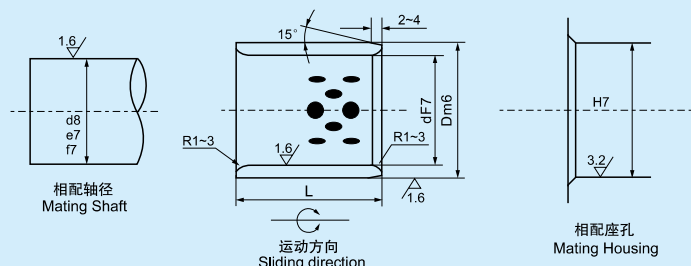
最大荷载 Max.Load	静承载 Static	70N/mm ²
	动承载 Dynamic	10N/mm ²
最大PV值 PV limit	干摩擦 Dry	0.15m/s
	流体润滑 Hydrodynamic	0.25m/s
最大PV值	Max. PV	0.8N/mm ² · m/s

抗拉强度 Tensile strength	150N/mm ²
使用温度 Working temperature	-40℃ ~ +400℃
摩擦系数 Abrasion coefficient	0.08 ~ 0.20
硬度 Hardness	HB > 160

◎材料对照表

材料型号	中国牌号 GB1776-87	相当国外牌号				适用情况
		国际 ISO1338	日本 JIS	美国 ASTM(UNS)	德国 DIN	
JDB650	CuZn25Al6Fe3Mn3	CuZn25Al6Fe3Mn3	H5102 CAC304	B30-92 C86300	DIN1709 G-CuZn24Al15/2.0598	高载荷，低速，一般用
JDB650S5	CuZn25Al6Fe3Mn3	CuZn25Al6Fe3Mn3	H5102 CAC304	B30-92 C86300	DIN1709 G-CuZn24Al15/2.0598	超高载荷，低速，高承载用
JDB650S1	CuAl10Fe3	CuAl10Fe3	H5114 CAC703	B30-92 C95800	DIN17656 G-CuAl10Ni/2.1096	中载荷，中速，一般用
JDB650S3	CuSn5Pb5Zn5	QSn5-5-5	H5111 CAC406	B30-92 C86300	DIN1705 G-CuSn5ZnPb/2.1096	中载荷，低速
GB250	GB5675-85 HT250		Fc250	ASTM class40		低载荷，低速

◎ JDB650 固体镶嵌轴承 Solid-lubricant-Inlaid Bearing Metric Size

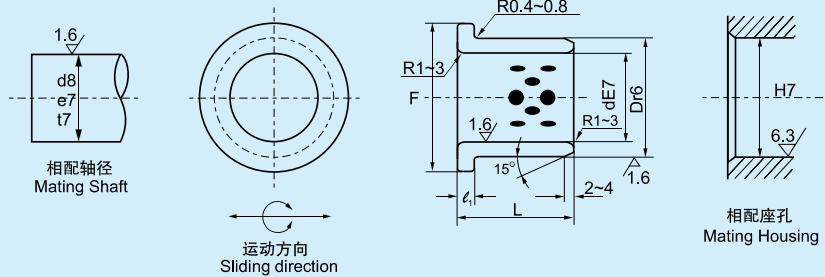


单位 Unit: mm

d	D	内径 IdF7	外径 ODm6	L ^{-0.10 -0.30}																		
				10	12	15	16	20	25	30	35	40	50	60	70	80	100	120	130	140	150	
14	20	14		20		1410	1412	1415		1420	1425	1430										
15	21	15	+0.034 +0.016	21		1510	1512	1515	1516	1520	1525	1530										
16	22	16		22	+0.021 +0.008	1610	1612	1615	1616	1620	1625	1630	1635	1640								
18	24	18	24				1812	1815	1816	1820	1825	1830	1835	1840								
20	28	20		28		2010	2012	2015	2016	2020	2025	2030	2035	2040	2050							
22	32	22	+0.041 +0.020	32		2212	2215		2220	2225												
25	33	25		33		2512	2515	2516	2520	2525	2530	2535	2540	2550	2560							
30	38	30		38	+0.025 +0.009		3012	3015		3020	3025	3030	3035	3040	3050	3060						
35	45	35	45						3520	3525	3530	3535	3540	3550	3560							
40	50	40		50					4020	4025	4030	4035	4040	4050	4060	4070	4080					
45	55	45	+0.050 +0.025	55							4530	4535	4540	4550	4560							
50	60	50		60							5030	5035	5040	5050	5060	5070	5080					
50	62	50		62							5030	5035	5040	5050	5060	5070						
50	65	50		65							5030		5040	5050	5060	5070	5080	50100				
55	70	55		70	+0.030 +0.011								5540	5550	5560	5570						
60	74	60	74								6030	6035	6040	6050	6060	6070	6080					
60	75	60		75							6030	6035	6040	6050	6060	6070	6080	60100				
63	75	63		75											6360	6370	6380					
65	80	65		80										6550	6560	6570	6580					
70	85	70	+0.060 +0.030	85								7035	7040	7050	7060	7070	7080	70100				
70	90	70		90											709050	709060	709070	709080				
75	90	75		90											7560	7570	7580	75100				
75	95	75		95	+0.035 +0.013										7560	7570	7580	75100				
80	96	80	96											8040	8050	8060	8070	8080	80100	80120		
80	100	80		100									8040	8050	8060	8070	8080	80100	80120		80140	
90	110	90		110							9030			9050	9060	9070	9080	90100	90120			
100	120	100	+0.071 +0.036	120											10060	10070	10080	100100	100120		100140	
110	130	110		130														11080	110100	110120		
120	140	120		140													12080	120100	120120		120140	
125	145	125		145														125100	125120			
130	150	130		150	+0.040 +0.015													130100		130130		
140	160	140	160															140100			140140	
150	170	150	+0.083 +0.043	170														150100				150150
160	180	160		180														160100				160150

注：500 # 系列产品还可以根据用户不同的要求，按来图加工不同的几何形状产品，但要注明摩擦面及摩擦运动方向。500# series products can according to user different request, according to drawing process different geometry form products, but should indicate that the surface and the movement diction of friction.

◎ JFB650 固体镶嵌轴承 Solid-lubricant-Inlaid Bearing Metric Size



单位 Unit: mm

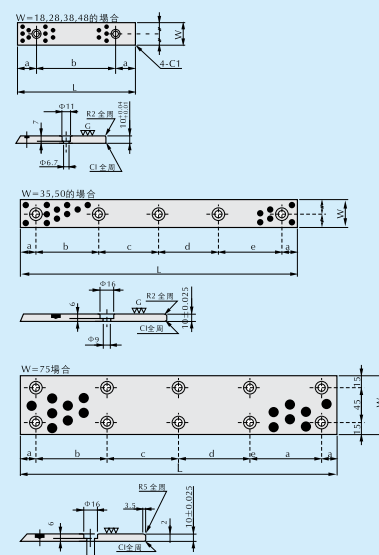
d	D	内径 IdF7		外径 ODm6		F	ℓ_1 -0.10	L ^{-0.10 -0.30}									
								15	20	25	30	35	40	50	60	80	100
10	14	10	+0.040 +0.025	14	+0.034 +0.023	22	2	1015	1020								
12	18	12		18		25		1215	1220								
13	19	13		19		26		1315	1320								
14	20	14	+0.050 +0.032	20		27	3	1415	1420								
15	21	15		21	+0.041 +0.028	28		1515	1520	1525	1530						
16	22	16		22		29		1615	1620	1625	1630						
20	30	20		30		40		2015	2020	2025	2030		2040				
25	35	25	+0.061 +0.040	35		45		2515	2520	2525	2530		2540				
30	40	30		40		50			3020	3025	3030	3035	3040	3050			
31.5	40	31.5		40	+0.050 +0.034				3120			3135					
35	45	35		45		60	5		3520		3530		3540	3550			
40	50	40	+0.075 +0.050	50		65			4020		4030		4040	4050			
45	55	45		55		70					4530		4540	4550	4560		
50	60	50		60	+0.060 +0.041	75					5030		5040	5050	5060		
55	65	55		65		80							5540		5560		
60	75	60		75	+0.062 +0.043	90							6040	6050		6080	
63	75	63	+0.090 +0.060	75		85	7.5									6367	
70	85	70		85		105								7050		7080	
75	90	75		90	+0.073 +0.051	110									7560		
80	100	80		100		120									8060	8080	80100
90	110	90		110	+0.076 +0.054	130	10								9060	9080	
100	120	100	+0.107 +0.072	120		150										10080	100100
120	140	120		140	+0.088 +0.063	170										12080	120100

注：非标尺寸可按要求定制 other lengths to order

◎ JSP 自润滑板 Oilless Wear Plate

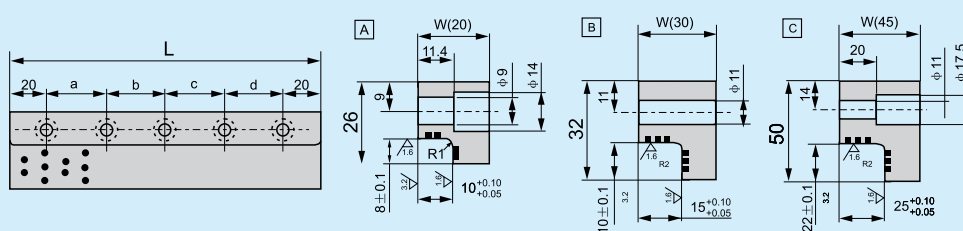
单位 Unit: mm

规格标志 Designations	宽度 W	长度 L	装配孔之距离					平头螺钉	孔数 No. of Holes
			A	B	C	D	E		
JSP 1875	18	75	15	45					2
JSP 18100	18	100	25	50					2
JSP 18125	18	125	25	75					2
JSP 18150	18	150	25	100					2
JSP 2875	28	75	15	45				M6	2
JSP 28100	28	100	25	50					2
JSP 28125	28	125	25	75					2
JSP 28150	28	150	25	100					2
JSP 35100	35	100	20	60					2
JSP 35150	35	150	20	55	55				3
JSP 35200	35	200	20	55	50	55		M8	4
JSP 35250	35	250	20	70	70	70			4
JSP 35300	35	300	20	65	65	65	65		5
JSP 35350	35	350	20	80	75	75	80		5
JSP 3875	38	75	15	45					2
JSP 38100	38	100	25	50					2
JSP 38125	38	125	25	75					2
JSP 38150	38	150	25	100				M6	2
JSP 4875	48	75	15	45					2
JSP 48100	48	100	25	50					2
JSP 48125	48	125	25	75					2
JSP 48150	48	150	25	100					2
JSP 50100	50	100	20	60					2
JSP 50150	50	150	20	55	55				3
JSP 50200	50	200	20	55	50	55			4
JSP 50250	50	250	20	70	70	70			4
JSP 50300	50	300	20	65	65	65	65		5
JSP 50400	50	400	20	90	75	75	90	M8	5
JSP 75150	75	150	20	110					4
JSP 75200	75	200	20	80	80				6
JSP 75250	75	250	20	105	105				6
JSP 75300	75	300	20	85	90	85			8
JSP 75400	75	400	20	120	120	120			8
JSP 75500	75	500	20	115	115	115	115		10



注：非标尺寸可按要求定制 other lengths to order

◎ JSL 自润滑板 Oilless Wear Plate



单位 Unit: mm

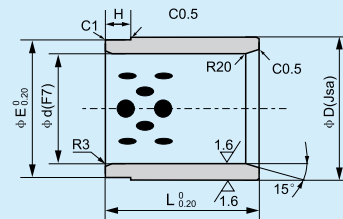
Standard No. 规格	W	L	Bolt Location 螺栓位置				Bolt 螺栓		Sketch 图示
			a	b	c	d	Taye规格	Qty数量	
JSL 20×100		100	60	-	-	-		2	
JSL 20×150	26	150	55	55	-	-	M8	3	A
JSL 30×200		200	55	50	55	-		4	
JSL 30×100		100	60	-	-	-		2	
JSL 30×150	32	150	55	55	-	-		3	
JSL 30×200		200	55	50	55	-		4	B
JSL 30×250		250	70	70	70	-	M10	4	
JSL 45×200		200	55	50	55	-		4	
JSL 45×250	50	250	70	70	70	-		4	
JSL 45×300		300	65	65	65	65		5	C
JSL 45×350		350	80	75	75	80		5	

◎ GB650,GB250自润导向套 Oilless Guide Bushes

单位 Unit: mm

项目	代号	尺寸	ΦD	Φd	L	ΦE	H	Φe ₁
1	GB650-30	50×30×50	50	30	50	49	10	
2	GB650-40	60×40×60	60	40	60	59	10	
3	GB650-50	70×50×75	70	50	75	69	15	
4	GB650-60	80×60×90	80	60	90	79	20	10
5	GB650-80	100×80×120	100	80	120	99	25	
6	GB650-100	120×100×150	120	100	150	119	25	
7	GB650-120	140×120×180	140	120	180	139	25	

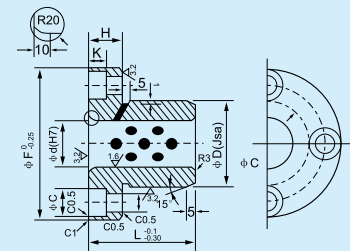
GB650	材质	高力黄铜 + 石墨
	Material	CuZn25Al6mn4 + Graphite
GB250	材质	FC250铸铁 + 石墨
	Material	HT-250# + Graphite



◎HGB250自潤导向套 Oilless Guide Bushes

项目	代号	尺寸	ΦF	ΦD	Φd	H	L	ΦC	ΦE	ΦG	K
1	HGB250-30	90/50×30×65	90	50	30	20	50	70	11	17.5	10.8
2	HGB250-40	100/60×40×65	100	60	40	20	65	80	11	17.5	10.8
3	HGB250-50	125/75×50×80	125	75	50	20	80	100	11	17.5	10.8
4	HGB250-60	135/85×60×100	135	85	60	20	100	110	11	17.5	10.8
5	HGB250-80	170/110×80×130	170	110	80	25	130	140	14	20	13
6	HGB250-100	190/130×100×160	190	130	100	25	160	160	14	20	13

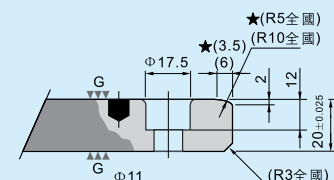
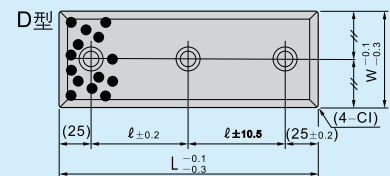
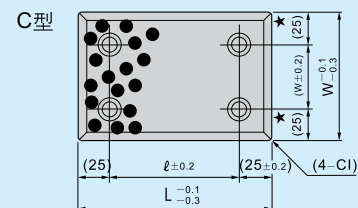
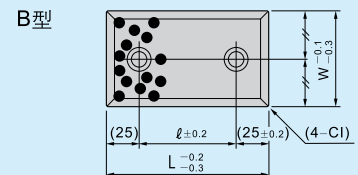
单位 Unit: mm



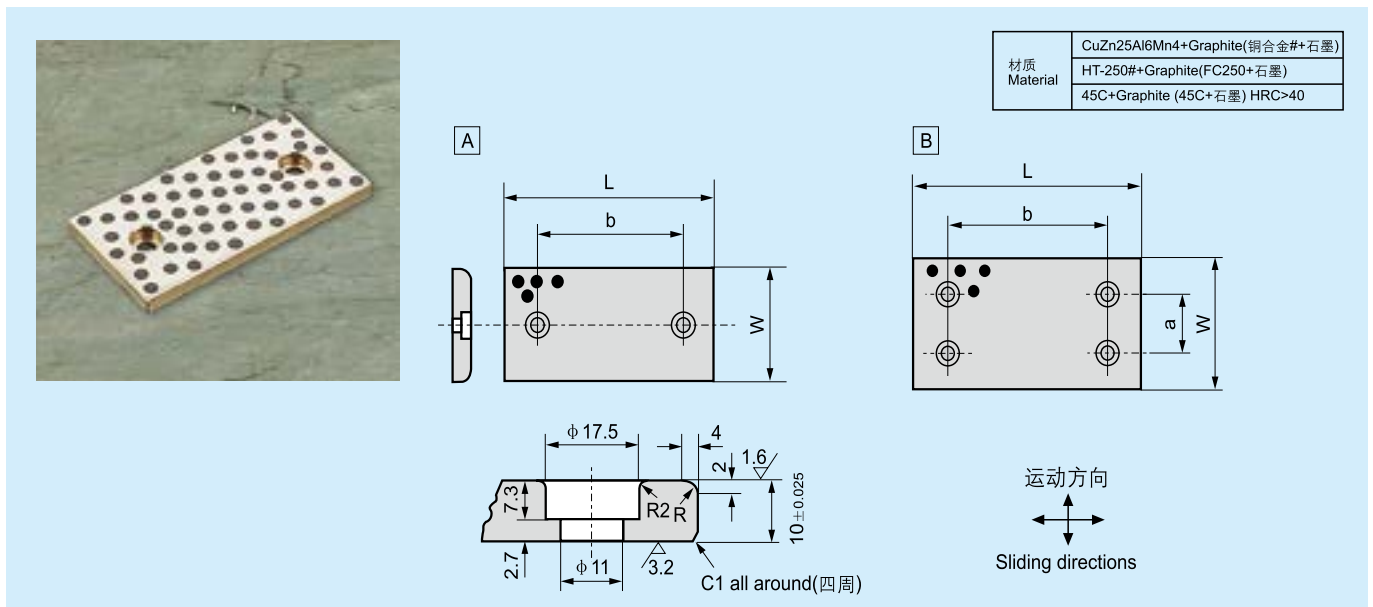
◎JESW自润滑板 Oilless Wear Plate

单位 Unit: mm

产品代号	形状形式	装配孔的孔距		宽度W	长度L
		W	L		
JESW-28×75	B	50	45		75
JESW-28×100	B	50	50	28	100
JESW-28×150	B	50	100		150
JESW-38×70	B	50	45		75
JESW-38×100	B	50	50	28	100
JESW-38×150	B	50	100		150
JESW-48×75	B	50	45		75
JESW-48×100	B	50	50		100
JESW-48×125	B	50	75		125
JESW-48×150	B	50	100	48	150
JESW-48×200	B	50	100		200
JESW-48×200A	B	50	150		200
JESW-48×250	D	50	100		250
JESW-58×75	B	50	45		75
JESW-58×100	B	50	50	58	100
JESW-58×150	B	50	100		150
JESW-75×75	B	50	25		75
JESW-75×100B	B	50	50		100
JESW-75×125	B	50	75	75	125
JESW-75×150	B	50	100		150
JESW-75×200	B	50	150		200
JESW-100×100	C	50	50		100
JESW-100×125	C	50	75		125
JESW-100×150	C	50	100	100	150
JESW-100×200	C	50	150		200
JESW-100×250	C	50	200		250
JESW-125×125	C	75	75		125
JESW-125×125A	C	50	75		125
JESW-125×150	C	50	100	125	150
JESW-125×200	C	50	150		200
JESW-125×250	C	50	200		250
JESW-150×150	C	100	100		150
JESW-150×200	C	100	150	150	200
JESW-150×250	C	100	200		250



◎ JTWP自润滑板 Oilless Thin Wear Plate



单位 Unit: mm

Stanard No. 规格	W	L	a	b	Sketch 图示
JTWP-28×75	28	75	—	45	A
JTWP-28×100		100		50	
JTWP-28×125		125		75	
JTWP-28×150		150		100	
JTWP-38×75	38	75	—	45	A
JTWP-38×100		100		50	
JTWP-38×125		125		75	
JTWP-38×150		150		100	
JTWP-48×75	48	75	—	45	A
JTWP-48×100		100		50	
JTWP-48×125		125		75	
JTWP-48×150		150		100	
JTWP-48×200	100	200	50	150	B
JTWP-75×75		75		25	
JTWP-75×100		100		50	
JTWP-75×125		125		75	
JTWP-75×150	125	150	50	100	B
JTWP-75×200		200		150	
JTWP-100×100		100		50	
JTWP-100×125		125		75	
JTWP-100×150	150	150	100	100	B
JTWP-100×200		200		150	
JTWP-100×250		250		200	
JTWP-125×150		150		100	
JTWP-125×200	150	200	100	150	B
JTWP-125×250		250		200	
JTWP-150×150		150		100	
JTWP-150×200		200		150	

◎ 钢基系列高承载轴承 Higher load harden steel bushes

◎ 材料特性 Material Features



JDB200以优质碳素钢为基体，通过合理的油路设计，在装配时涂上油脂使得其在工作时能较长时间的储存所需要的足够油脂，并且能均匀分布在轴承及轴的表面上，从而达到了延长使用寿命缩短加油频率的目的；同时由于特殊的油路系统能够存入工作时侵入轴承的灰尘和其它异物，从而最大限度的降低对轴承使用过程中的影响。JDB200另外一个特性是在轴承的工作表面经过一种特殊工艺的处理，使其表面覆盖了一层特殊的固体润滑剂，这层特殊的润滑剂在起始动作时能很快的转移到对磨轴的表面上，从而较快的降低了起始摩擦系数，提高了轴承的耐磨性。

JDB200 is produced by carbon steel with oil groove, the initial grease given can be deposited the mass lubrication for long time working. The work surface has been sprayed a special solid lubricant, this solid lubricant can be transfer to the mating material during the operation and forming a solid lubrication film between the bearing and shaft which make the bearing material have high load capacity with lower friction and excellent wear resistance.



JDB250则在JDB200的基础上进行了改良，以固体润滑剂嵌入替代了原有的披覆方式，使得产品在使用过程中提供了源源不断的润滑源，从而达到免维护的目的。

The JDB250 bearing material is developed from the JDB200, the solid lubricant have been embedded instead of covering on surface which can provide the solid lubricant for much long time during the operation even without any oil given This material provides a maintenance-free design solution, particularly for high load, intermittent of oscillating motion with lower speed and excellent wear resistance required.

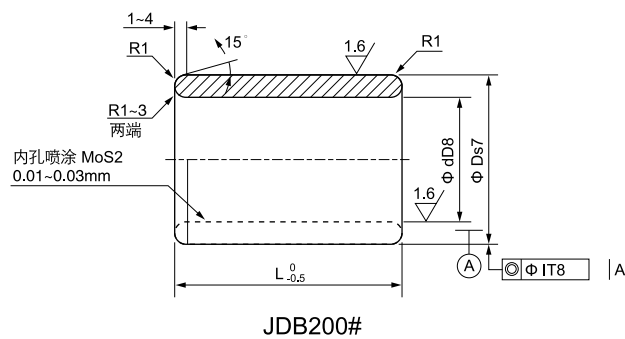


钢基系列高承载轴承 High loading series harden steel bushes

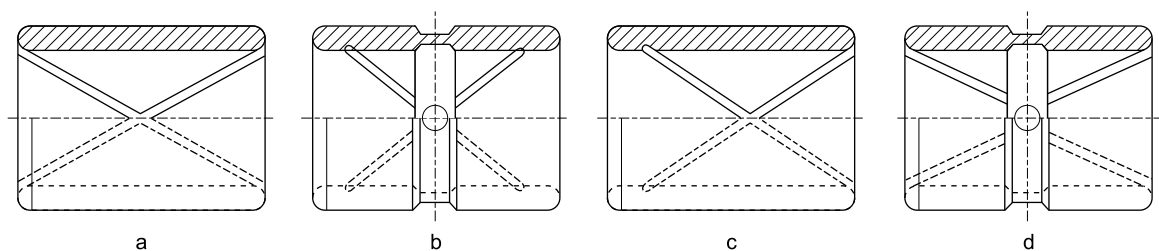
材料特性 Material Features

CRB标准 Standard	JDB200C	JDB200G	JDB250C	JDB250G
基材 Base material	S45C	Gcr15	S45C	Gcr15
线胀系数 Coe. of linear expansion	1.1 × 10 ⁻⁵ /℃	1.1 × 10 ⁻⁵ /℃	1.1 × 10 ⁻⁵ /℃	1.1 × 10 ⁻⁵ /℃
使用温度 Temp. ℃	−100 ~ +300	−100 ~ +300	−100 ~ +300	−100 ~ +300
硬度 Hardness	HRC≥40	HRC≥50	HRC≥40	HRC≥50
最大承载 Max. Load (Mpa)	150Mpa	200Mpa	150Mpa	200Mpa
最大线速度 Max. Speed (m/min)	10	10	15	15
润滑剂形式 Solid Lubricant	表面覆盖 With film		镶嵌于基体 Solid embed	
	0.01–0.03mm			
公差配合 Mating tolerance	装配座孔 Mating Housing: H7 相配轴 Mating shaft: ef/f7			

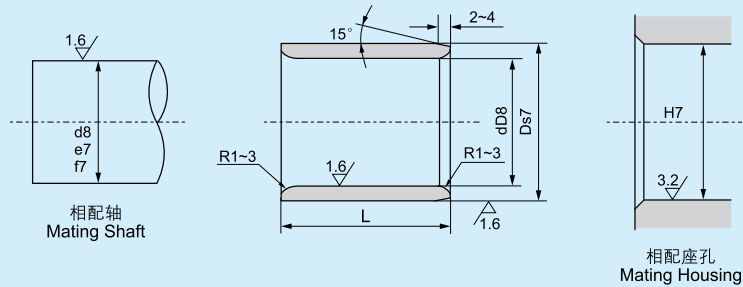
轴套示意图 Bushes sketch



典型油槽形式 Typical oil groove type



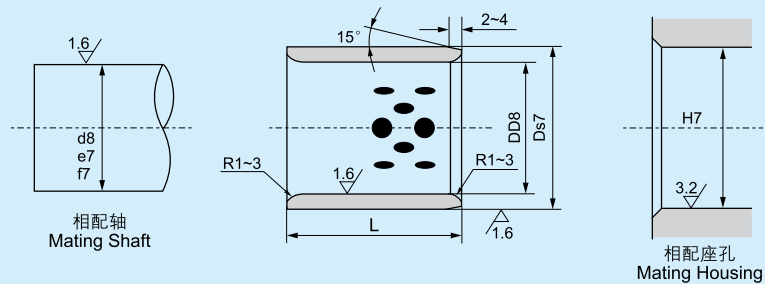
◎ JDB200C(G) 自润轴承 Oilless Bushes



单位 Unit: mm

d	D8	D	s7	L 0/-0.5										
				20	25	30	35	40	50	60	70	80	100	120
30	+0.098 +0.065	38	+0.068 +0.043	■	■	■	■	■	■					
30		40		■	■	■	■	■	■					
32	+0.119 +0.080	42		■		■		■						
35		45		■	■	■	■	■	■	■				
38		48		■		■		■						
40		50		■	■	■	■	■	■	■	■			
40	+0.119 +0.080	55	+0.083 +0.053	■		■	■	■	■	■				
45		60				■	■	■	■	■	■			
50		60				■	■	■	■	■	■			
50		62				■		■	■	■	■			
50		65				■		■	■	■	■	■	■	
55	+0.146 +0.100	70	+0.089 +0.059			■	■	■	■	■	■			
60		75				■	■	■	■	■	■	■	■	
65		80						■	■	■	■	■	■	
70		85	+0.106 +0.071			■	■	■	■	■	■	■	■	
75		90							■	■	■	■	■	
75	+0.174 +0.120	95							■	■	■	■	■	
80		95						■	■	■	■	■	■	
80		100						■	■	■	■	■	■	
85	+0.208 +0.145	100								■		■		
90		110	+0.114 +0.079					■	■	■		■	■	
100		120						■	■	■	■	■	■	
110		130	+0.132 +0.092					■	■		■	■	■	■
120		140									■	■	■	■
130	+0.208 +0.145	150	+0.140 +0.100									■	■	■
140		160											■	■
150		170	+0.148 +0.108									■	■	■

◎ JDB250C(G) 自润导向套 Oilless Guide Bushes



单位 Unit: mm

d	D8	D	s7	L 0/-0.5										
				20	25	30	35	40	50	60	70	80	100	120
30	+0.098 +0.065	38	+0.068 +0.043	■	■	■	■	■	■					
30		40		■	■	■	■	■	■					
32	+0.119 +0.080	42		■		■		■						
35		45		■	■	■	■	■	■	■				
38		48		■		■		■						
40		50		■	■	■	■	■	■	■	■			
40		55	■		■	■	■	■	■					
45		60			■	■	■	■	■	■				
50		60			■	■	■	■	■	■				
50		62			■		■	■	■	■				
50		65			■		■	■	■	■	■	■		
55	+0.146 +0.100	70	+0.089 +0.059			■	■	■	■	■	■			
60		75				■	■	■	■	■	■	■	■	
65		80						■	■	■	■	■	■	
70		85	+0.106 +0.071			■	■	■	■	■	■	■	■	
75		90						■	■	■	■	■	■	
75		95							■	■	■	■	■	
80		95						■	■	■	■	■	■	
80		100						■	■	■	■	■	■	
85	+0.174 +0.120	100						■		■				
90		110	+0.114 +0.079					■	■	■		■	■	
100		120						■	■	■	■	■	■	
110		130	+0.132 +0.092					■	■		■	■	■	■
120		140								■	■	■	■	■
130		+0.208 +0.145	150	+0.140 +0.100								■	■	■
140	160										■	■	■	
150			170	+0.148 +0.108								■	■	■

◎ 轴承的选择与计算

◎ 轴承选型 Bearing Selection

晋信轴承根据不同的工况条件设计了不同的轴承材料。一般来说，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。

CRB bearing 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、翻边产品 Cylindrical bushes, flange bushes

○ 止推垫片 Thrust washer

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

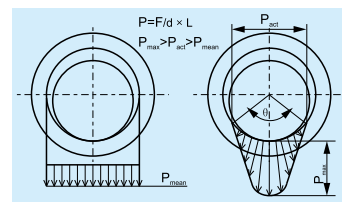
F =轴承承载值 Load (N)
 d =轴径 Shaft (mm)
 L =轴承长度 Bearing Length (mm)

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

F =垫片承载值 Load (N)
 D =垫片外径 Washer OD (mm)
 d =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

○ 往复运动 Reciprocating motion

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

d =轴径 Shaft (mm)
 n =转速/分 Rpm

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

s =行程长度 Stoke distance (m)
 c =往复频率 frequency (次数/分)

○ 摇摆运动 Oscillating motion

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

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

◎ PV值计算 $PV = P \times V$ (N/mm² × 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，PV值与轴承的使用寿命成反比关系。因此建议设计时尽量使用比较低的安全的PV值，以确保轴承会有更长的使用寿命。同时在选择材料时也要注意不能超过承载、线速度、使用温度等极限值，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 leads 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，内孔变形用较正芯棒校正。

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 < 55cm 的轴承可按图A所示，利用一个带有手柄的压头芯轴，小心操作，轻轻压力座孔中。

当轴套外径 > 55cm 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.

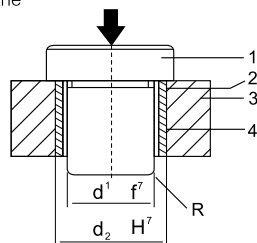
Out circle of the axle sleeve should be avoided in the high-pressure working conditions. Two methods are recommended here:

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

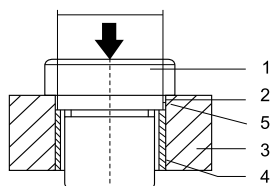
2. When installing, apply ZY 801 Oxygen-hatred glue in the housing to streng then the combination strength between the axle sleeve and base hole.

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.



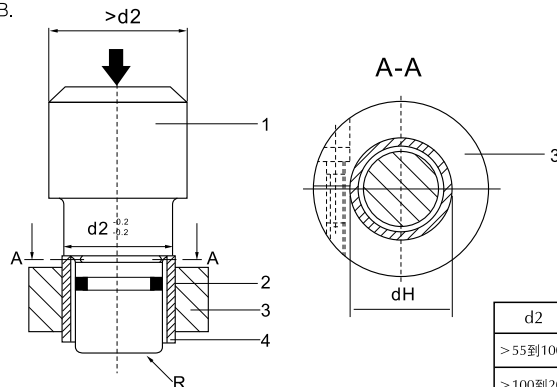
(图A a) 平面式安装
(Fig A a) Plane Installation



(b) 嵌入式安装
(B) Inset Installation

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

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



d2	dH
> 55到100	$d2 \begin{smallmatrix} +0.28 \\ +0.25 \end{smallmatrix}$
> 100到200	$d2 \begin{smallmatrix} +0.40 \\ +0.36 \end{smallmatrix}$
> 200到305	$d2 \begin{smallmatrix} +0.50 \\ +0.40 \end{smallmatrix}$

主要应用例举 Typical Application

- ◎成型机械注塑机、橡胶机械、压铸机
Injection Machine, Rubber Machine, Die-Casting Machines



- ◎建筑机械 推土机、挖掘机、铲土机、起重机、搅拌机
Construction Machine Bulldozer, Grab, Scraper, Crane



- ◎汽车上的运用
For automotive Industry

- | | |
|----------------|---|
| 1. 油门、制动、离合器踏板 | Bushes for accelerator, brake, clutch pedal |
| 2. 反光镜调节机构 | Bushes for reflector control |
| 3. 雨刮器中 | Bushes for windscreen wipers |
| 4. 玻璃窗提升机构中 | Bushes for windscreen lift system |
| 5. 天窗机构中 | Bushes for roof window system |
| 6. 操纵杆 | Bushes for gear lever |
| 7. 车门铰链中 | Bushes for door hinges |
| 8. 车门锁中 | Bushes for door lock |
| 9. 安全带张紧机构中 | Bushes for seat belt system |
| 10. 引擎轴套 | Bushes for engineer |
| 11. 启动电机轴套 | Bushes for starter motor |
| 12. 座椅调节机构 | Bushes for chair control |
| 13. 减震器中 | Bushes for shock absorbers |
| 14. 汽化器中 | Bushes for carburetor |
| 15. 行李箱、引擎盖铰链中 | Bushes for trunk and bonnet hinges |
| 16. 横直拉杆及球头中 | Bushes for suspension ball joint |



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