

浙江华轴自润科技有限公司
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HUA ZHOU ZI RUN JIANG XIN ZHI ZHAO

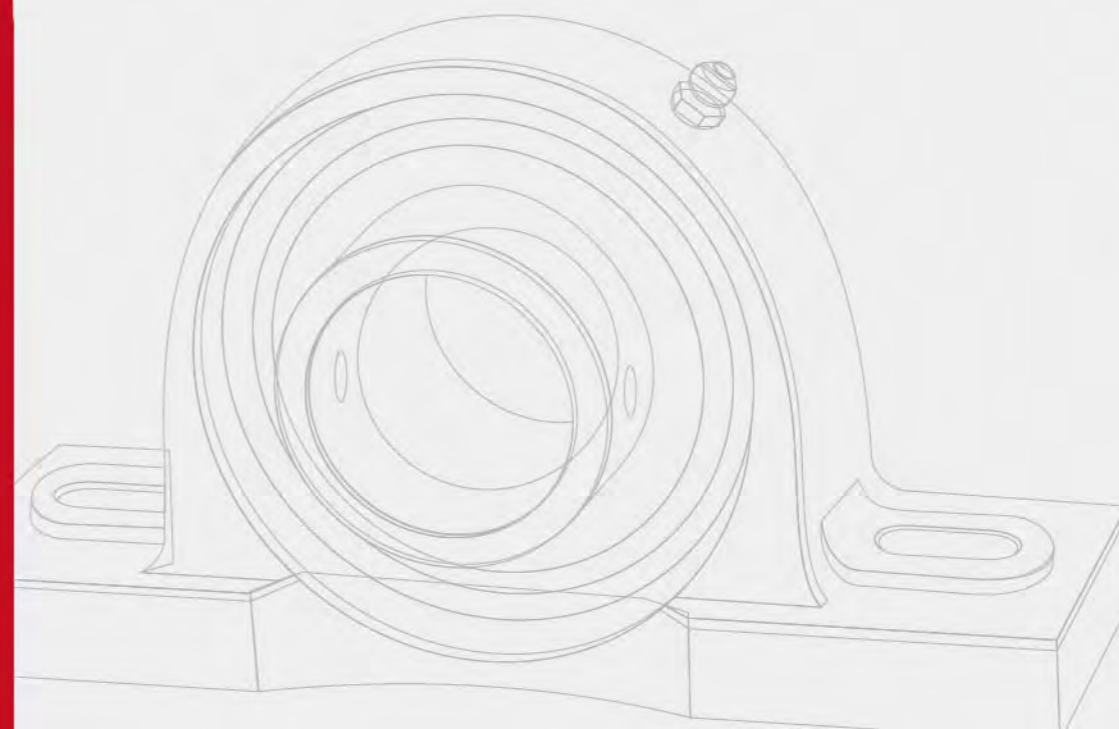


浙江华轴自润科技有限公司

2021版本

Zhejiang Huazhou Zirun Technology Co., LTD

HZZR



华轴自润科技有限公司创立于2010年，是一家集滑动轴承研发、生产、销售为一体的综合型企业。公司自建立以来一直坚持走专业化的发展道路。以其领先的技术水平、过硬的产品质量、优质的服务理念赢得市场。

未来我们将继续致力于新产品的研发、以及新材料与新应用领域推广与应用，为我们的顾客提供优质、专业的自润滑轴承解决方案。“做百年企业、创立国际品牌”是华轴人不懈的追求。

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· 基材特性 Material Features

该产品以优质低碳钢为基体，中间烧结球形青铜层，表面轧制聚乙烯（PTFE）和铅的混合物。它具有较好的自润滑、耐磨损、摩擦系数低、走合性能好、低噪音等性能，产品广泛应用于各种机械的滑动部位。
HZ10-carbon steel self-lubricating bearings used high quality low-carbon steel plate as base, sintered porous bronze as its interlayer and the compound of wear, low friction good sliding characteristics, low noise.

· 应用特点 Application Feature

- 1 无油润滑或少油润滑，适用于无法加油或较难加油的场合，可以在使用时不保养或少保养；
- 2 耐磨性能好，摩擦系数小，使用寿命长；
- 3 可在 -195℃ ~ +280℃ 范围内使用；
- 4 走合性能好，低噪音，无污染；
- 5 薄壁结构，质量轻，可缩小机械体积；
- 6 在运作时能形成转移膜，起到保护对磨轴的作用，无咬轴现象；
- 7 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；
- 8 无吸水、吸油性，热膨胀系数小，散热性好，尺寸稳定；
- 9 钢背面可电镀多种金属，因此可在腐蚀性介质中使用，不会生锈；目前已广泛运用于各种机械的滑动部位，如自动化机械设备（伸缩、摇摆、滑动、弯曲、回旋、回转部位）油缸气缸导套、齿轮泵、纺织机械、自动售货机、塑胶成型机、压铸机、橡胶机械、烟草机械、健身器材、办公机械、液压搬运车、汽车、摩托车、农林机械等。
- 1. Working under oilless or minim oil state. maintenance free or just need a little maintenance.
- 2. Resist Abrasion, low coefficient of friction long operating life.
- 3. operating in -195℃ ~ +280℃
- 4. Good mending. low-noise. non-pollution.
- 5. Thinwall. light, which can reduce the machine to small.
- 6. Forming a transferred film during operation to protect shaft.
- 7. Low demand to the shaft even no surface hardness treatment. which lower the cost of the mating components.
- 8. No absorption to water/oil. small coefficient of Thermal expansion. good thermal conductivity and size stability.
- 9. The back of the steel strip can be plated with various metal. anticorrosion. The products now are used in sliding components of different machines. such as auto machines. piston pump. gear pump. textile machine. auto-sides machine. injection Machine. sports Machine office equipment etc.

· 主要参数 Technical Data

性能指标 performance index	有关数据 Data
最大承载压力 P Max Load Capacity P	动承载 140N/mm ² 静承载 250N/mm ²
摩擦系数 μ Friction Coef μ	0.04-0.20
适用温度范围 Working Temperature	-190℃ ~ +280℃
最大滑动速度 V Speed limit V	5m/s
允许最高 PV 值 Maximum PV Value	(干) 3.6N/mm ² m/s (油) 3.6N/mm ² m/s



· 材料组织 Material Structure

- 1. 聚四氟乙烯与铅混合物 0.01-0.03mm
- 2. 球形青铜粉 0.2-0.3mm
- 3. 钢背 0.7-2.3mm
- 4. 电镀层: 镀锡层厚 0.005mm, 或镀铜层厚 0.008mm
- 1. PTEE with lead 0.01-0.03mm
- 2. Porous bronze 0.2-0.3mm
- 3. Steel backing 0.7-2.3
- 4. Tin-plating 0.005mm or copper plating 0.008mm

· 主要参数 Technical Data

HZ 开发了用于齿轮泵、柱塞泵等流体润滑条件下高速高压自润滑轴承 HZ-1T, 在流体润滑条件下线速度可以达到 10m/s, PV 达到 60N/mm²m/s
Besides of the above, HZ also develops HZ-1T, which can be applied in gear pump and piston pump under high speed, high pressure and liquid lubrication, and the linear velocity can reach 10m/s PV which up to 60N/mm²m/s



·应用特点

Application Feature

1. 聚四氟乙烯与亲油性纤维混合物在运动时可形成很好的转移膜保护对磨轴。 2 烧结层与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 具有良好的承载能力。 6 产品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。 7 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。

1.PTFE and Friber can protect the shaft. while the machine in operatron. 2.it can be composed in steel housing. or fabricated into flanged bushes which result in function for montion both on flange and I.D. 3.it is widely used in steel metallurgy industry. such as bushes for foller grooves of successive casting machines. cement grouting pumps and scrow conveyers of machine. 4. aronze have gaod thermal 5.it can be applied in the machine, working long time. which examine and repair is incapable. because the bronze can lubricate itself. 6 it is used in the feeble acid and alkali condition because of good anti-corrosion of bronze backing. 7.Good load capacity.

·主要参数

Technical Date

性能指标 performance index	有关数据 Data
最大承载压力 P Max Load Capacity P	动承载 140N/mm ² 静承载 250N/mm ²
摩擦系数 μ Friction Coef μ	0.03~0.18
适用温度范围 Working Temperature	-190℃ ~+300℃
最大滑动速度 V Speed limit V	5m/s
允许最高 PV 值 Maximum PV Value	(干) 4.3N/mm ² m/s (油) 50N/mm ² m/s

·基材特性

Material Features

HZ1B 青铜基轴承，是以锡青铜为基体，中间烧结青铜球粉，表面轧制聚四氟乙烯 (PTFE) 和耐高温填充材料而成。它具有很高的安全系数，在连续工作不能停机修理的场所和高温不能加油的场所特别适用。目前已广泛应用于冶金钢铁工业，连铸机方坯滚道、高温炉前设备，水泥灌浆泵和螺旋式输送机上。它可以在外部组合钢套，也可以制成翻边，达到端面、内孔同时摩擦使用的效果。桥梁支座滑动部位，就是采用 HZ1B 耐磨层加厚的产品以取代纯 PTFE 板，达到 130N，mm² 载荷使用的要求。

HZ1B is of high safety factory. and is particularly appropriate for high temperature enviranment where no oil is efficient and where the machine must be under successive lang period working condition. This is widely used in steel metallurgy industry such as bushes for roller grooves of successive casting 'machines.cement grouting pumps and screw conveyers for cement.It can also be composed in steel housing or fabricated into Flanged bushes which can move both in radial and in axial directions. It can be applied in bridge bearing plate because of thicker inner surface laver to arrive i3aN/mm²

·材料组织

Material Structure

- * 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 0.7~2.3mm
- * 1.PTEE with Fiber 0.01~0.03mm
- * 2.Porous bronze 0.2~0.3mm
- * 3.Steel backing 0.7~2.3mm

·基材特性

Material Features

HZ1S 不锈钢耐蚀轴承，是以不锈钢材料为基体，中间烧结耐蚀合金粉末，表面轧制以聚四氟烯为主的低摩擦材料，经过卷制成型的一种十分有效的耐蚀材料。它具有耐油、耐酸、耐碱、耐海水和耐磨损的特点。表面的 PTEE 材料不含铅成份。在食品饮料机械、印染机械、化工机械、海洋工业耐蚀滑动部位最适合使用。

HZ1S is of oil resistant. acid resistant, alkali resistant and seawater resistant, more over. there is no lead in the PTFE surface layer and so is particularly fit for bushings in food stuff machines, alkali flow meters.pumps motion elements in pharmaceutical machines, printing machines chemical engineering machines and other ocean industry. This is a triple layers composites bush. the base material beinga bronze plate and a film of heat resistant power filled PTFE being calendered onto the sintered spherical bronze interlayer.

·应用特点

Application Feature

1 PTFE 和亲油性混合物在运动是可形成很好的转移膜保护对磨轴； 2 耐磨性好，摩擦系数低； 3 走合性能好，无咬轴现象； 4 可运行用于旋转、摇摆、往复运动中； 5 耐蚀性能好； 6 由于不含铅，故可用于食品饮料机械、医药机械等绿色环保设备； 7 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、海洋工业耐蚀滑动部位。

1. PTFE with oil fibre can protect the shaft. while machine in operation. 2. it is of low friction coefficient. good anti-wea r. 3. Good running in property. 4. It fits well in motion of circumgyration. sway and reciprocate. 5. Good anticorrosion. 6. it can be used in foOd machine. pharmaceutical etc. due to leadfree. 7. It is mainly used in the condition of strong acid and alkali. such aschemical industry. pumps. valves etc.

·主要参数

Technical Date

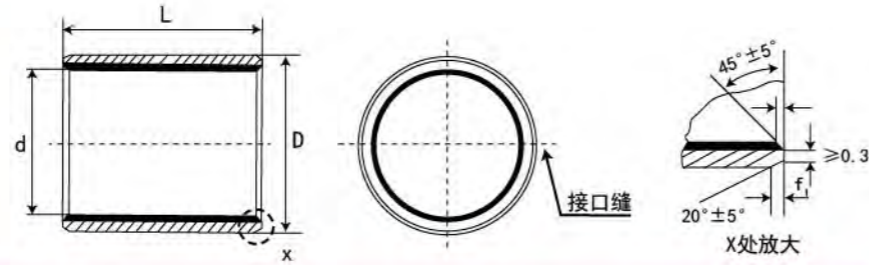
性能指标 performance index	有关数据 Data
最大承载压力 P Max Load Capacity P	动承载 140N/mm ² 静承载 250N/mm ²
摩擦系数 μ Friction Coef μ	0.04~0.20
适用温度范围 Working Temperature	-190℃ ~+280℃
最大滑动速度 V Speed limit V	2.5m/s
允许最高 PV 值 Maximum PV Value	(干) 3.6N/mm ² m/s (油) 50N/mm ² m/s



·材料组织

Material Structure

- * 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. 不锈钢背 0.7~2.3mm
- * 1.PTEE with Oil Fiber 0.01~0.03mm
- * 2.Porous bronze 0.2~0.3mm
- * 3.Stainless Steel backing 0.7~2.3mm



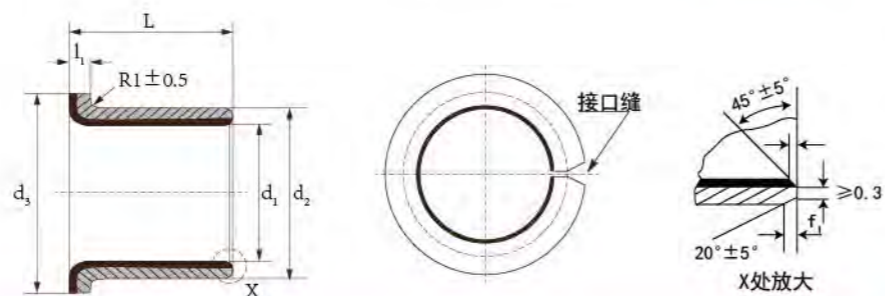
d	D	相配轴径 Shaft Dia f7	座孔 Housing H7	壁厚 Wall Thickness		f ₁	f ₂	L ⁰ _{-0.40}													
				最小 Min.	最大 Max.			6	8	10	12	15	20	25	30	40	50				
6	8	6 -0.013 -0.028	8 +0.015					0606	0606	0610											
8	10	8 -0.013 -0.028	10 +0.015					0806	0806	0810	0812	0815									
10	12	10 -0.016 -0.034	12 +0.018					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										3220		3230	3240					
35	39	35 -0.025 -0.050	39 +0.025	1.970	2.005	1.2	0.4				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, 宽度尺寸不在样本内客户要求, 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

d	D	相配轴径 Shaft Dia f7	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							6030	6040	6050	6060	6070							
65	70	65 -0.030 -0.060	70 +0.030	2.460	2.505	1.8	0.6			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									9550	9560		9580	95100					
100	105	100 -0.035	105 +0.035	2.440	2.490	1.8	0.6					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											13060		13080	130100				
140	145	140 -0.040	145 +0.040	2.415	2.465	1.8	0.6							14060		14080	140100				
150	155	150 -0.050	155 +0.040											15060		15080	150100				
160	165	160 -0.040	165 +0.040											16060		16080	160100	160115			
180	185	180 -0.050	185 +0.046													18080	180100				
190	195	190 -0.046	195 +0.046													19080	190100				
200	205	200 -0.046	205 +0.046	2.415	2.465	1.8	0.6										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														26080	260100			
280	285	280 -0.052	285 +0.052	2.415	2.465	1.8	0.6										28080	280100			
300	305	300 -0.052	305 +0.052																		

单位 Unit:mm



相配轴径 Shaft Dia. f7	底孔 Housing H7	代号 Code number	尺寸 Size					f ₁	f ₂
			d ₁	d ₂	d ₃ ±0.25	L±0.25	t ₁ -0.2		
6 -0.013 -0.028	8	06040	6	8	12	4	1	0.6	0.3
		06070				7			
8 -0.013 -0.028	10	08055	8	10	15	5.5	1	0.6	0.3
		08075				7.5			
10 -0.016 -0.034	12	10070	10	12	18	7	1.5	0.6	0.4
		10090				9			
		10120				12			
12 -0.016 -0.034	14	12070	12	14	20	7	1.5	0.6	0.4
		12090				9			
		12120				12			
14 -0.016 -0.034	16	14120	14	16	22	12	1.5	0.6	0.4
		14170				17			
15 -0.016 -0.034	17	15090	15	17	23	9	1.5	0.6	0.4
		15120				12			
		15170				17			
16 -0.016 -0.034	18	16120	16	18	24	12	1.5	0.6	0.4
		16170				17			
18 -0.016 -0.034	20	18120	18	20	26	12	1.5	0.6	0.4
		18170				17			
		18200				20			
20 -0.020 -0.041	23	20115	20	23	30	11.5	1.5	0.6	0.4
		20165				16.5			
		20215				21.5			
22 -0.020 -0.041	25	22150	22	25	32	15	1.5	0.6	0.4
		22200				20			
25 -0.020 -0.041	28	25115	25	28	35	11.5	1.5	0.6	0.4
		25165				16.5			
		25215				21.5			
30 -0.025 -0.050	34	30160	30	34	42	16	1.5	0.6	0.4
		30260				26			
35 -0.025 -0.050	39	35160	35	39	47	16	1.5	0.6	0.4
		35260				26			
40 -0.025 -0.050	44	40260	40	44	53	26	1.5	0.6	0.4
		40400				40			

单位 Unit:mm

·应用特点 Application Feature

HZ20 边界润滑轴承,是以钢板为基体,中间凝结核形青铜粉,表面轧制改性聚甲醛(POM),并含有储油坑,它适用于常温条件下,低速中载的场所,取代传统铜套既降低成本又延长使用寿命,在轧钢机上使用,能节省加油频次,简化更换程序。

HZ20 boundary lubrication bushing is based on a composite material with 3 firmly bonded layers: steel as backing, intered bronze spherical powder as inter layer and modified POM as lining layer. It has oil pocket for oil lubrication. It fits well for slow speed heavy duty under normal temperature. It can save cost and prolong working life when replacng normal bronze bushings. It can lower frquency of adding oil, simplify replaement process when it is used on rolling mill. It is widely applied in chassis of automobile, forging machine, metallurgical machine and mining machine, construction machinery, hydapower, rolling mill etc.

·磨损规律 Wear law

HZ20 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HZ20型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增长,约为五倍左右。

HZ20 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 HZ20 material is that oil shall be added with an interval of R, which is remarkably longer that that of R 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),HZ20型套的使用寿命,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)HZ20衬套的加油保养同期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 HZ20 bush is installed with application of grease such as lithium-based or silicone grease. Its service life varies from the PV value under warking 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 HZ20 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.

·主要参数 Technical Date

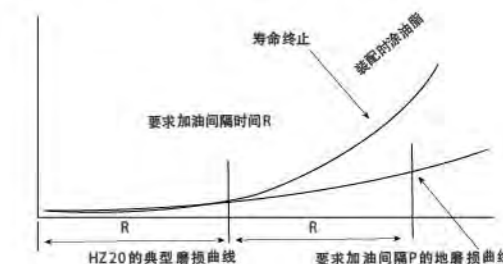
性能指标 performance index	有关数据 Data
最大承载压力 Max.Load	动承载 70N/mm ² 静承载 250N/mm ²
最高PV值 PV limit	22N/mm ² ·m/s
使用温度 Temp.limit	-40℃~+130℃
摩擦系数 Friction Coeff	0.05~0.25μ
最高滑动速度 Speed limit	2.5m/s



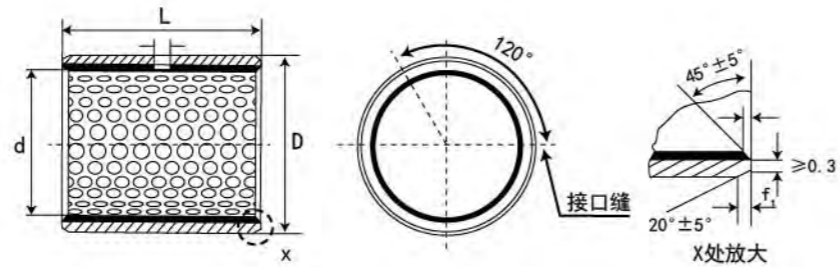
·材料组织 Material Structure

HZ20 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, HZ20 属环保无铅产品, 颜色为桔黄色。

Note: Various materials are suitable for HZ20 series products according to different working conditions, such as bronze-backing, stainless steel backing and lead-free material. HZ20 is an environmental friendly lead-free product and its color is orange.



- 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 backing
- 4. 镀铜层 Copper plating

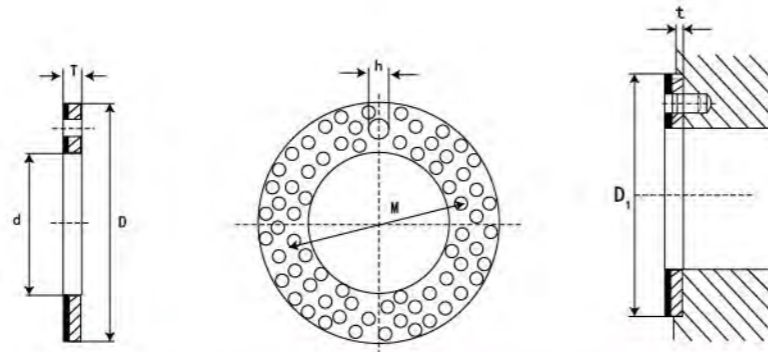


d	D	相配轴径 Shaft Dia f7	座孔 Housing H7	壁厚 Wall Thickness		油孔 Oil bore h	f ₁	f ₂	L ⁰ _{-0.40}																
				最小 Min.	最大 Max.				10	15	20	25	30	35	40	45	50	60							
10	12	10 ^{-0.022}	12 ^{+0.018}	0.955	0.980	4	0.6	0.3	1010	1015	1020														
12	14	12 ^{-0.027}	14 ^{+0.018}						1210	1215	1220														
14	16	14 ^{-0.027}	16 ^{+0.018}						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	6	0.6	0.4	2215	2225										
25	28	25 ^{-0.033}	28 ^{+0.021}											2515	2520	2525	2530								
28	32	28 ^{-0.033}	32 ^{+0.025}						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}						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	1.8	0.6	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													

单位 Unit:mm

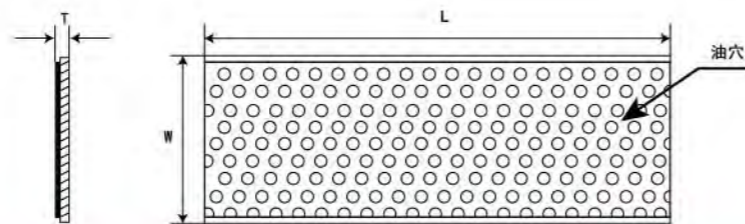
d	D	相配轴径 Shaft Dia f7	座孔 Housing H7	壁厚 Wall Thickness		油孔 Oil bore h	f ₁	f ₂	L ⁰ _{-0.40}																
				最小 Min.	最大 Max.				40	50	60	80	90	95	100	110	120								
65	70	65 ^{-0.046}	70 ^{+0.030}	2.415	2.460	4	1.8	0.6	6540	6560	6580	6600	6620	6640	6660	6680	6700	6720	6740	6760					
70	75	70 ^{-0.046}	75 ^{+0.030}						7040	7050	7060	7070	7080	7090	7100	7110	7120	7130	7140	7150	7160	7170	7180	7190	7200
75	80	75 ^{-0.046}	80 ^{+0.030}						7540	7560	7580	7600	7620	7640	7660	7680	7700	7720	7740	7760	7780	7800	7820	7840	7860
80	85	80 ^{-0.046}	85 ^{+0.035}						8040	8060	8080	8100	8120	8140	8160	8180	8200	8220	8240	8260	8280	8300	8320	8340	8360
85	90	85 ^{-0.054}	90 ^{+0.035}						8540	8560	8580	8600	8620	8640	8660	8680	8700	8720	8740	8760	8780	8800	8820	8840	8860
90	95	90 ^{-0.054}	95 ^{+0.035}						9040	9060	9080	9090	9100	9110	9120	9130	9140	9150	9160	9170	9180	9190	9200	9210	9220
100	105	100 ^{-0.054}	105 ^{+0.035}						10050	10060	10070	10080	10090	10100	10110	10120	10130	10140	10150	10160	10170	10180	10190	10200	10210
105	110	105 ^{-0.054}	110 ^{+0.035}						10560	10580	10595	10600	10610	10620	10630	10640	10650	10660	10670	10680	10690	10700	10710	10720	10730
110	115	110 ^{-0.054}	115 ^{+0.035}						11060	11080	11095	11100	11110	11120	11130	11140	11150	11160	11170	11180	11190	11200	11210	11220	11230
120	125	120 ^{-0.054}	125 ^{+0.040}						12060	12080	12090	12100	12110	12120	12130	12140	12150	12160	12170	12180	12190	12200	12210	12220	12230
125	130	125 ^{-0.063}	130 ^{+0.040}	12560	12570	12580	12590	12600	12610	12620	12630	12640	12650	12660	12670	12680	12690	12700	12710	12720					
130	135	130 ^{-0.063}	135 ^{+0.040}	13050	13060	13080	13090	13100	13110	13120	13130	13140	13150	13160	13170	13180	13190	13200	13210	13220					
140	145	140 ^{-0.063}	145 ^{+0.040}	14050	14060	14080	14090	14100	14110	14120	14130	14140	14150	14160	14170	14180	14190	14200	14210	14220					
150	155	150 ^{-0.063}	155 ^{+0.040}	15050	15060	15080	15090	15100	15110	15120	15130	15140	15150	15160	15170	15180	15190	15200	15210	15220					
160	165	160 ^{-0.063}	165 ^{+0.040}	16050	16060	16080	16090	16100	16110	16120	16130	16140	16150	16160	16170	16180	16190	16200	16210	16220					
170	175	170 ^{-0.063}	175 ^{+0.040}	17050	17080	17090	17100	17110	17120	17130	17140	17150	17160	17170	17180	17190	17200	17210	17220	17230					
180	185	180 ^{-0.063}	185 ^{+0.046}	18050	18060	18080	18090	18100	18110	18120	18130	18140	18150	18160	18170	18180	18190	18200	18210	18220					
190	195	190 ^{-0.072}	195 ^{+0.046}	19050	19060	19080	19090	19100	19110	19120	19130	19140	19150	19160	19170	19180	19190	19200	19210	19220					
200	205	200 ^{-0.072}	205 ^{+0.046}	20050	20060	20080	20090	20100	20110	20120	20130	20140	20150	20160	20170	20180	20190	20200	20210	20220					
220	225	220 ^{-0.072}	225 ^{+0.046}	22050	22060	22080	22090	22100	22110	22120	22130	22140	22150	22160	22170	22180	22190	22200	22210	22220					
240	245	240 ^{-0.072}	245 ^{+0.052}	24050	24060	24080	24090	24100	24110	24120	24130	24140	24150	24160	24170	24180	24190	24200	24210	24220					
250	255	250 ^{-0.072}	255 ^{+0.052}	25050	25060	25080	25090	25100	25110	25120	25130	25140	25150	25160	25170	25180	25190	25200	25210	25220					
260	265	260 ^{-0.081}	265 ^{+0.052}	26050	26060	26080	26090	26100	26110	26120	26130	26140	26150	26160	26170	26180	26190	26200	26210	26220					
280	285	280 ^{-0.081}	285 ^{+0.052}	28050	28060	28080	28090	28100	28110	28120	28130	28140	28150	28160	28170	28180	28190	28200	28210	28220					
300	305	300 ^{-0.081}	305 ^{+0.052}	30050	30060	30080	30090	30100	30110	30120	30130	30140	30150	30160	30170	30180	30190	30200	30210	30220					

单位 Unit:mm



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}	±0.20	D ₁ +0.12
8	WC10	10	20	1.5	15	1.5	1.0	20
10	WC12	12	24		18			24
12	WC14	14	26		20	26		
14	WC16	16	30		23	30		
16	WC18	18	32	2.0	25	3.0	32	
18	WC20	20	36		28		36	
20	WC22	22	38	2.0	30	4.0	38	
22	WC24	24	42		33		42	
24	WC26	26	44		35	44		
26	WC28	28	48		38	48		
30	WC32	32	54	4.0	43	1.5	54	
36	WC38	38	62		50		62	
40	WC42	42	66	4.0	54	1.5	66	
46	WC48	48	74		61		74	
50	WC52	52	78	4.0	65	1.5	78	
60	WC62	62	90		76		90	



代号 Code number	长度 (L) ±1	宽度 (W) ±1	壁厚 (T) -0.05
HZ10WC/HZ20WC	500	150	1.0
HZ10WC/HZ20WC	500	150	1.5
HZ10WC/HZ20WC	500	150	2.0
HZ10WC/HZ20WC	500	150	2.5

单位 Unit:mm

双金属轴承 Technics Design

ZH800 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, tallgate pivots, mechanical handling, lifting equipment, hydraulic motors, agricultural machines etc.



允许最大动荷载 Allowable Max Dynamic Load N/mm ²	对磨轴硬度 Hardness of mating surface	最高使用温度 Max. Temperature °C	特性与用途 Application Characteristics
65	53HRC	260	属铜铅合金中最强的一种,应用场合十分广泛,适用于承受高冲击震动载荷的轴套、止推垫片等。 The strongest stype, wide application field, most suitable for high impact vibrating load bushes and washers.
38	50HRC	200	有较高的疲劳强度和承载能力,较好的滑动性能,易受润滑油的腐蚀,适用于中载、中速,表面镀软合金时,可用于高速内燃机主轴套连、杆轴套。 Relative high fatigue strength & load capacity, good sliding performance, poor oil corrosion resistance. Fit for middle load, middle speed. Normally applied in main bushes of inner-combustion engine, connecting rod when plated.
25	270HB	170	有良好的抗咬性,异物埋没性,工作表面需镀软合金,常用于高速中低何载的内燃机主轴套、连杆轴套。 Good seizing resistance, good capacity to submerge foreign, overlayer plated. Normally applied in main bearings of high speed. Low to moderate load inner-combustion engine & connecting rod bearing.
30	250HB	150	有中等的疲劳强度和承载能力,良好的抗腐蚀性,较好的轴承滑动性能,常用于高速低载的内燃机轴瓦、气压机、制冷机轴承。 Moderate fatigue strength & load capacity good corrosion resistance, relative in half bushes of high speed, low load inner combustion engine, air compressor, refrigerator bearings.
65	50HRC	200	是一种无铅产品,有较高的疲劳强度和承载能力,较好的滑动性能,应用领域正逐步拓展。 The HZ930 bearing is a kind of product without lead, Relative high fatigue strength & load capacity, good sliding performance, whose application industry is gradually being expanded.

双金属产品的润滑 Technics Design

由于 HZ 双金属轴承材料的特点, 所以 HZ 双金属轴承必须在有油润滑环境下工作。根据其应用场合的不同, 一般可设计为三种润滑条件。在低速运动场合如汽车平衡桥、弹簧钢板、制动蹄、转向节、冲床导板、推土机支动轮、从动轮等部位, 可设计为油脂润滑, 即在装配时轴承表面涂布油脂, 然后在使用过程中定期加注油脂。在中速运动场合如连杆、冲剪机床转轴、输送轮等部位, 可设计为配置油杯润滑。在高速运动场合如齿轮箱体、油泵、油缸、发动机、离合器等部门, 可设计为浸油润滑。

ZH Bimetal bearings are widely used in oil lubricating situations. Normally under low speed and oil lubricating situations assemble with grease and work with adding oil periodically, such as suspension, steering ball joints, brake pedal points, redirector, connecting rod, slide part of punch, construction and earth-moving equipment, ETC. Under middle speed work with oil, such as connecting rod, shaft and transportation parts of cut machine. Under high speed work within oil, such as gear box, fuel pump, engine clutch, ETC.

双金属轴承合金化学成分 Composition analysis of HZ alloy

化学元素 chemical elements	ZH800	ZH720	ZH700	ZH20	ZH930
Cu	余量 remainder	余量 remainder	余量 remainder	0.7~1.3	余量 remainder
Pb	9.0~11.0	21.0~27.0	26.0~33.0	-	-
Sn	9.0~11.0	3~4.5	≤0.5	17.5~22.5	6~7
Zn	≤0.5	≤0.5	≤0.5	-	-
P	≤0.1	≤0.1	≤0.1	-	0.1~0.25
Fe	≤0.7	≤0.7	≤0.7	≤0.7	-
Ni	≤0.5	≤0.5	≤0.5	≤0.1	-
Sb	≤0.2	≤0.2	≤0.2	-	-
Al	-	-	-	余量 remainder	-
Si	-	-	-	≤0.7	-
Mn	-	-	-	≤0.7	-
Ti	-	-	-	≤0.2	-
其他 Other	≤0.5	≤0.5	≤0.5	≤0.5	≤0.5

双金属轴承的物理性能 Physical characteristics of HZ material

物理性能 PHSICAL PROPERITES	HZ800	HZ720	HZ700	HZ20	HZ930	
最高静承载压力 N/mm ² Load Limit	150	130	120	100	150	
抗拉强度 N/mm ² Tensile Strength	185	150	200	200	185	
最高速度 (油) m/s Speed Limit Vmax(Oil)	5	10	15	25	5	
摩擦因数 (油) m/s Friction coefficient(Oil)	0.06~0.14	0.06~0.16	0.08~0.16	0.08~0.17	0.06~0.16	
允许 PV 值 PV Limit N/mm ² m/s	(脂) Greases	2.8	2.8	2.5	-	2.85
	(油) Oil	10	10	8	6	10
“蓝宝石”疲劳级 Mpa “Sapphire” fatigue class	125	115	105	85	-	

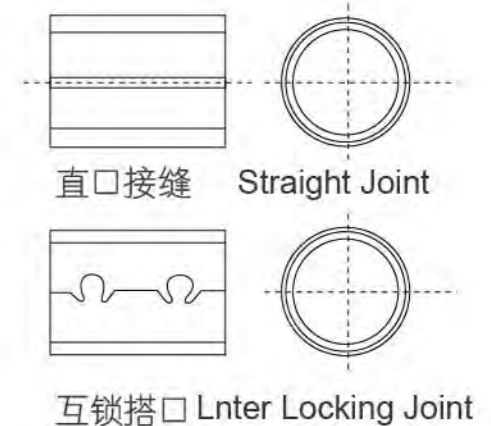
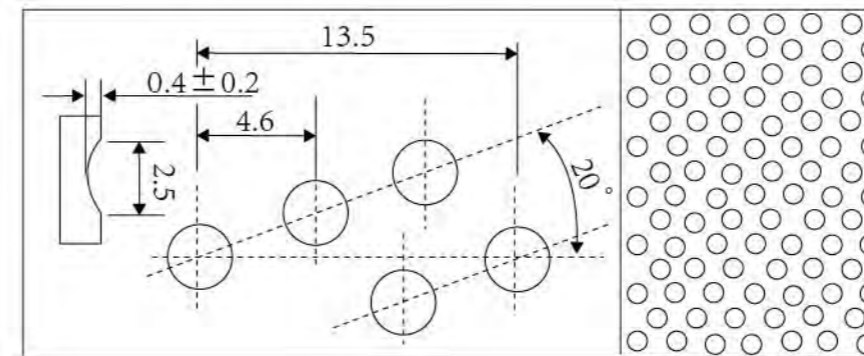
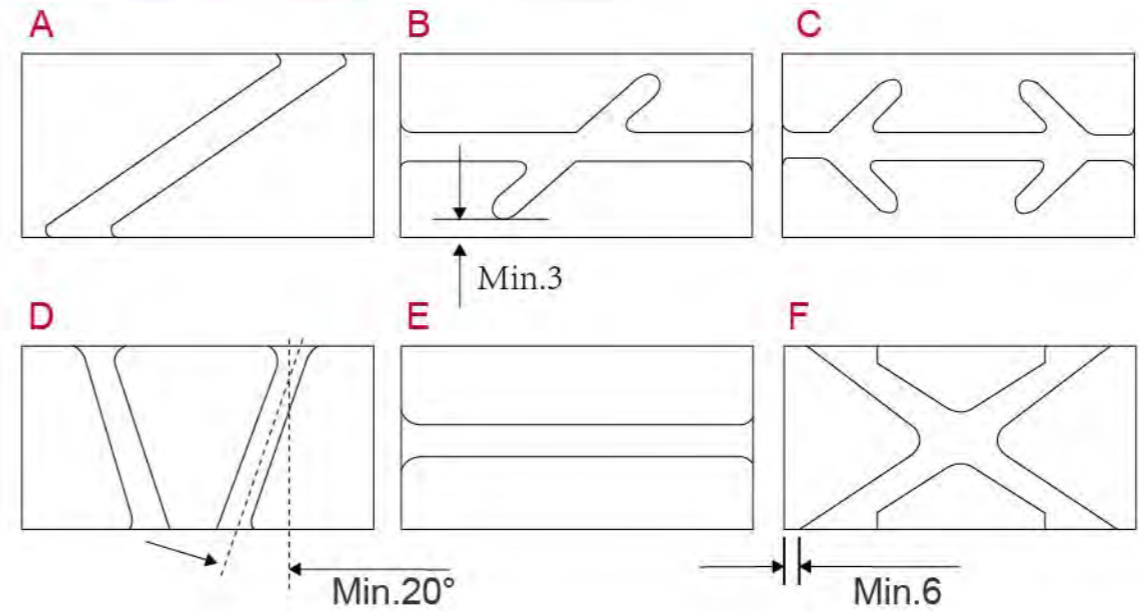
双金属摩擦焊接轴承 friction welding bimetal bearing

该产品已优质低碳钢为基体, 表面烧结锡表铜合金 (CuPb10Sn10 或 CuSn6Zn6Pb3), 经多次烧结轧而成, 具有很高的疲劳强度和承载能力, 高的抗冲击力。广泛应用到工程机械底盘四轮, 空调压缩机等部位。特别在挖掘机四轮部位, 已替代离心浇铸式双金属轴套, 改善了原工艺材料不稳定, 合金层偏心, 材料浪费等缺点。在满足客户性能要求的前提下, 降低采购成本。

It is made of high quality low-carbon steel (CuPb10Sn10 or CuSn6Zn6Pb3) and sintered and rolled copper alloy as its surface. It has high fatigue strength, load capacity and impact strength. The product is applies to con-rod of automobile engines, transmission gearbox, engineering and agriculture machinery, etc.



双金属轴套的油槽油穴形状及接口 Technics Design



润滑油孔 The Designing of Oil Indentation

为使轴承得到充分的润滑, 一般在设计轴承时需要考虑润滑油孔, 油孔尺寸推荐按下表。
In order to fully lubricate the bush when in the performance, the size of lubrication hole as follows are recommended.

油孔的位置应避开接缝处和承载区域, 并应有利于进油。
The lubrication hole should be away from butt joint and loading area and designed to be easy oil feeding as well.

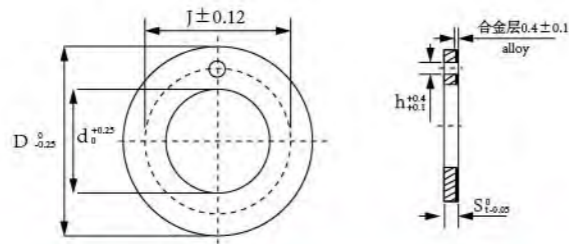
轴承外径 O.D.	14 ~ 22	22 ~ 40	40 ~ 50	50 ~ 100	100 ~ 180
油孔直径 (mm) Lubrication hole	3	4	5	6	7



壁厚尺寸 Thickness of ZH Bearing

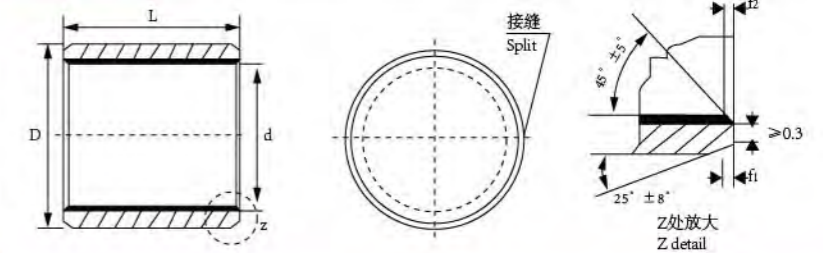
公称厚度 Nominal Thickness of	1	1.5	2	2.5	3	3.5	4	5
钢背厚度 Thickness of Steel Backing	0.6	1	1.4	1.9	2.3	2.8	3.2	4
铜合金层厚度 Thickness of Bronze layer	0.4	0.5	0.6	0.6	0.7	0.7	0.8	1.0
留加工余量轴承推荐壁厚 Manufacturable wall Thickness	1 ^{+0.25} / _{+0.15}	1.5 ^{+0.25} / _{+0.15}	2 ^{+0.25} / _{+0.15}	2.5 ^{+0.25} / _{+0.15}	3 ^{+0.25} / _{+0.15}	3.5 ^{+0.25} / _{+0.15}	4 ^{+0.25} / _{+0.15}	5 ^{+0.25} / _{+0.15}
直接装配轴承推荐壁厚 Manufactured wall Thickness	1 _{-0.25}	1.5 _{-0.03}	2 _{-0.035}	2.5 _{-0.04}	3 _{-0.04}	3.5 _{-0.05}	4 _{-0.055}	5 _{-0.06}

垫片标准产品 standard washer



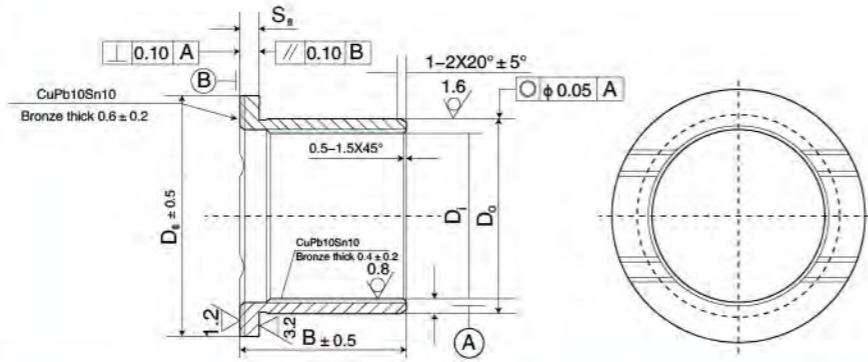
ΦD	ΦD ⁰ / _{-0.25}	St	ΦJ±0.12	Φh ^{+0.4} / _{+0.3}
12	24	1.5	18	1.5
14	26		20	2
16	30		22	
18	32		25	
20	36		28	
22	38		30	
24	42		33	
26	44		35	
28	48	2	38	
32	54		43	
38	62		50	
42	66		54	
48	74		61	
52	78		65	

轴承标准产品 Stand Size Series of HZ800 Bushing



d	D	壁厚 Wall Thickness	外径 O.D.	内径 I.D.	座孔 Housing Bore	轴径 Journal Diameter	f ₁	f ₂	L ⁰ / _{-0.40}												
									10	15	20	25	30	40	50	60	80	90	100		
45	50	2.5 _{-0.040}	50	45	50	45	1.5	1.0			▲	▲	▲	▲	▲						
50	55		55	50	55	50	1.5	1.0					▲	▲	▲	▲					
55	60		60	55	60	55	1.5	1.0					▲	▲	▲	▲					
60	65		65	60	65	60	1.5	1.0					▲	▲	▲	▲					
65	70		70	65	70	65	1.5	1.0					▲	▲	▲	▲					
70	75		75	70	75	70	1.5	1.0					▲	▲	▲	▲	▲				
75	80		80	75	80	75	1.5	1.0					▲	▲	▲	▲	▲				
80	85		85	80	85	80	1.5	1.0					▲	▲	▲	▲	▲				
84	90		90	84	90	84	1.8	1.2					▲	▲	▲	▲	▲				
89	95		95	89	95	89	1.8	1.2					▲	▲	▲	▲	▲				
94	100	100	94	100	94	1.8	1.2					▲	▲	▲	▲	▲	▲				
99	105	105	99	105	99	1.8	1.2					▲	▲	▲	▲	▲	▲				
104	110	3 _{-0.045}	110	104	110	104	1.8	1.2				▲	▲	▲	▲	▲	▲				
109	115		115	109	115	109	1.8	1.2				▲	▲	▲	▲	▲	▲				
114	120		120	114	120	114	1.8	1.2				▲	▲	▲	▲	▲	▲				
119	125		125	119	125	119	1.8	1.2				▲	▲	▲	▲	▲	▲				
123	130		130	123	130	123	2	1.5				▲	▲	▲	▲	▲	▲	▲			
128	135		135	128	135	128	2	1.5				▲	▲	▲	▲	▲	▲	▲			
133	140		140	133	140	133	2	1.5				▲	▲	▲	▲	▲	▲	▲			
138	145		145	138	145	138	2	1.5				▲	▲	▲	▲	▲	▲	▲			
143	150		150	143	150	143	2	1.5				▲	▲	▲	▲	▲	▲	▲			
148	155		155	148	155	148	2	1.5				▲	▲	▲	▲	▲	▲	▲			
153	160	3.5 _{-0.050}	160	153	160	153	2	1.5				▲	▲	▲	▲	▲	▲				
158	165		165	158	165	158	2	1.5				▲	▲	▲	▲	▲	▲	▲			
163	170		170	163	170	163	2	1.5				▲	▲	▲	▲	▲	▲	▲			
168	175		175	168	175	168	2	1.5				▲	▲	▲	▲	▲	▲	▲			
173	180		180	173	180	173	2	1.5				▲	▲	▲	▲	▲	▲	▲			

单位 Unit:mm



$D_i \pm 0.05$	$S_3 \pm 0.05$	D_o	D_1	S_{II}	$B_{\pm 0.5}$	$D_i \pm 0.05$	$S_3 \pm 0.05$	D_o	D_1	S_{II}	$B_{\pm 0.5}$			
44	3.5	36	30	-0.15 -0.10	40	88	4.5	68	+0.15 +0.10	60	4	-0.07 -0.12	60	
45	4			3	-0.03 -0.08	30	87	4.5	69	+0.19 +0.14	65	2	-0.03 -0.08	64.5
60	3.5	41	35	-0.09 -0.15	42	103	4.52	70.7	+0.09 -0.04	63.7	3.5	0 -0.05	65	
52	4			0 -0.05	35	103	4.52		63.3	3.7	+0.01 -0.04	73		
54	3.5	42	-0.10 -0.05	3.5	-0.02 -0.07	30	86.4	4.5	+0.15 +0.09			-0.08 -0.13	64.5	
60	4.52	44	40	2		39.5	95	4.52	+0.27 +0.21			-0.045 -0.095	71.5	
53	4.5					-0.14 -0.09	40	40	95	3.5	72	+0.09 +0.03	65	3.5
60	4	45	40	2.4		-0.03 -0.08	39.5	108	3.5			-0.03 -0.08	75	
66	4					40	87	4.5			+0.11 +0.06		+0.01 -0.04	53
60	4.5	46	40	3		39.5	95	4.52	+0.27 +0.21			-0.045 -0.095	67.5	
61	4					-0.12 -0.07	40	40	99	4.5	74	+0.19 +0.14		2
62	4	47	-0.13 -0.07	3.5	0 -0.05	40	112	4.6	+0.27 +0.21				89.5	
70	4.5	54	-0.19 -0.14	50	-0.03 -0.08	53	95	4.5	+0.14 +0.09	70	3.5	-0.04 -0.10	72	
68	4.52	54.9	-0.045 -0.005	48	-0.045 -0.095	41.3	112	4.52	+0.27 +0.21			-0.005 -0.055	89.7	
70	3.5	56	-0.16 -0.11	50	3	-0.09 -0.14	48	93	6	78	+0.15 +0.09	4	-0.09 -0.14	71
76	3.5	57	-0.10 -0.05		3.5	+0.01 -0.04	54	93	8	80			5	-0.075 -0.125
70.5	8	58	-0.14 -0.09	54.4	4	-0.11 -0.16	46	107	4.5	83		4	-0.07 -0.13	74
92	4.52	60.6	-0.03 -0.02		3.1	+0.02 -0.03	59	97	10				5	-0.10 -0.16
87	4.5	67	60	3.5	-0.06 -0.11	60	97	5						70
77	4.5				-0.15 -0.10	60	-0.08 -0.13	65	120	3.8	92.6	+0.16 +0.09	85	3.8
88	8	68	-0.075 -0.125	4	-0.075 -0.125	58	120	6				4	-0.11 -0.17	94

The above mentioned sizes are only for reference ,HZ can produce the parts according to the customers drawings.
以上尺寸仅供参考 / 华正可根据客户图纸生产零部件

单位 Unit:mm

· 产品概述 Product Overview

HZ 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。它与传统的铸造铜套相比,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,HZ 系列轴套广泛应用于农业机械、建筑机械、工程机械、汽车行业等。

The major feature of HZ090 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. HZ090 series bearings are widely used in applications such as agricultural machineries, construction machineries, engineering machineries and automobile industry.



· 产品的优点 Product Benefits

1. 节约大量铜材,节省车制铜套工时;
 2. 与车制轴套相比其重量轻、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。

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.

· 产品概述 Product Overview

HZ 青铜轴承，是以青铜材料为基体，加工均匀有序的注油孔，经卷制而成的薄壁轴承，在装配后注入润滑油脂，再配置端面密封而使用。该轴承具有存油量、安装方便、设计体积小等优点，而且可以取代铜套使用，能大大地降低成本。目前该产品已应用于输送机、升降机、卷场机、校平机等中载、低速的场合。

HZ092 bronze bearing is made of bronze with oil holes evenly distributed on it. When assemble it, the bearing should be lubricated with grease before both ends of the bearing is assembled with seals. FB092 has the advantages of abundant oil storage, easy-to-assembly Or easy to be machined etc. It can substitute bushings made by complete copper material, in addition, it suits for conditions of middle load and low speed including convey machine. Hoisting machine, windlass, aligning machine etc.



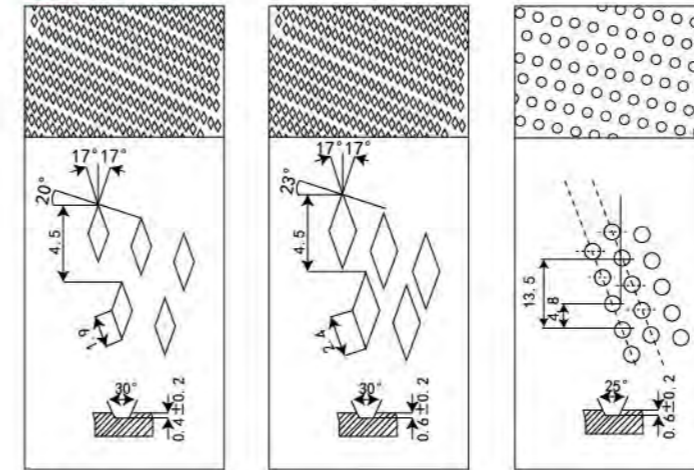
· 产品的优点 Product Benefits

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。

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

· 内表面油穴形式 Product Overview

HZ090

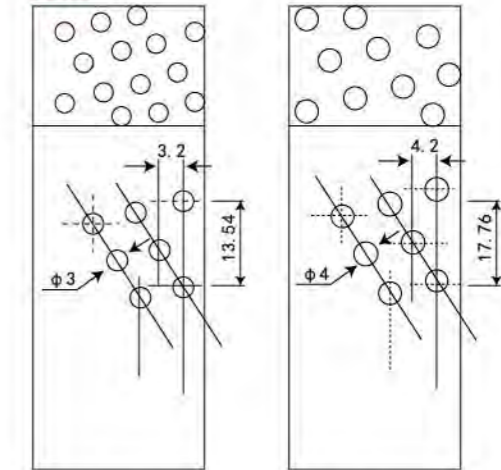


轴承套内 Inside the bush of the shaft
 菱形油穴 $r \leq \phi 22$
 Rhomb oil holes $r \geq \phi 22$

轴承套内 Inside the bush of the shaft
 菱形油穴 $r \leq \phi 22$
 Rhomb oil holes $r > \phi 22$

圆形油穴 Round oil hole

HZ092



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

材质 Material	铜 Cu	锡 Sn	磷 P	铅 Pb	锌 Zn
CuSn8P0.3	91.7%	8.5%	0.2%	-	-
CuSn6.5P0.1	93.4%	6.5%	0.1%	-	-

· 化学成分 Chemical Composition

型号 Type	硬度 Hardness	适用温度范围 Applicable temperature range	最大承载压力 Max.Load	最高滑动速度 Speed limit
HZ090	HB90-120	-80℃-200℃	75N/mm ²	2.5m/s
HZ092	HB90-120	-100℃-200℃	60N/mm ²	2.5m/s

· 应用范围 Application scope

HZ90 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、止推垫片和球碗等形式。It is widely used in hoisting machines, construction machines, automobiles, tractors, trucks, machine tools and some mining industry.

HZ092 已广泛用于输送机、升降机、卷场机、校平机等中载、低速的场合。

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

· 产品概述 Product Overview

HZ09G 以青铜为基体，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、汽车单向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.



· 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

· 应用范围 Application scope

因此该产品应用于汽车传动轴内作为耐磨轴套使用，也可以在无油润滑的其他场合使用。
Therefore, the products used in automotive drive shaft within the sleeve to use as a wear-resistant, oil-free lubrication can also be other occasions

· 主要参数 Technical Data

性能指标 performance index	有关数据 Data
表面材料 Materil	CuSn6.Pb0.1+石墨 Graphite
最大承载压力 Max.Load	60N/mm ²
最高使用温度 Working Temperature	260℃
摩擦系数 Friction Coeff	0.06 ~ 0.20
最高滑动速度 Speed limit	4m/s

· 产品概述 Product Overview

HZ8G 固体润滑轴承是以 HZ-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耗性免除加油。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。

HZ08G 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.

· 应用范围 Application scope

产品已应用于汽车变速齿轮箱、发电机、升降机、起重机及冶金机械等行业。
It is particularly used in gear box for automobiles, generators, lifters, cranes and machines for metallurgical industry

· 主要参数 Technical Data

性能指标 performance index	有关数据 Data
表面材料 Materil	CuSn6.Pb0.1+石墨 Graphite
最大承载压力 Max.Load	65N/mm ²
最高使用温度 Working Temperature	260℃
摩擦系数 Friction Coeff	0.06 ~ 0.20
最高滑动速度 Speed limit	4m/s



· 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 accordingto the work cond ition.

主要技术指标

Main Technical Index

型号 model	单位 (Unit)	JOB-1	JOB-2	JOB-3	JOB-4	JOB-5
基材材质 Material		CuZn25Al6Fe3Mn4 材料硬度: 210-250HB	CuSn6Zn6Pb3 材料硬度: 80-120HB	Steel+CuSn6Zn6Pb3 材料硬度: 60-90HB	HT250 材料硬度: 180-230HB	GCR15 材料硬度: HRC55-60
摩擦因素 Friction coef	μ	<0.16	<0.15	<0.14	<0.18	<0.17
最高使用温度 (无润滑) Temp Max.	℃	300	350	300	400	350
极限载荷 Load Max	N/mm2	100	60	70	60	250
最高滑动速度 (无润滑) Velocirty Max.(dry)	m/s	0.4	2	2	0.5	0.1
最高滑动速度 (有润滑) Velocirty Max.(oil)	m/s	5	10	10	5	3
最高极限 PV 值 (无润滑) PV Max.(dry)	N/mm2.m/s	1.8	0.5	0.6	0.8	2.5
最高极限 PV 值 (有润滑) PV Max.(OIL)	N/mm2.m/s	3.8	3.8	3.8	3.8	3.8
线膨胀系数 Dilatability	x10-6/℃	16 ~ 20	16 ~ 18	16 ~ 20	8 ~ 12	8 ~ 12

JDB 磨损性能 (CuSn6Zn6Pb3 青铜套的比较耐磨性能如下表)

JDB Wear Performance(Compared with CuSn6Zn6Pb3-composed bushing)

实验压强 Load Applied		62N/mm2		24.5N/mm2		14.7N/mm2	
项目 Item		磨损量 Wear depth	时间 Time	磨损量 Wear depth	时间 Time	磨损量 Wear depth	时间 Time
型号 Type	润滑条件 Lubrication	(mm)	(hrs)	(mm)	(hrs)	(mm)	(hrs)
铜套 CuSn6Zn6SPb3	油润滑 oil	0.098	10	0.0125	100	0.10	100
JDB-1	干摩擦 dry	0.075	100	0.015	100	0.012	100
JDB-2	干摩擦 dry	0.025	30	0.065	100	0.025	100
JDB-3	干摩擦 dry	0.03	30	0.12	100	0.015	100
JDB-4	干摩擦 dry	0.03	10	0.25	20	0.011	100
JDB-5	干摩擦 dry	0.022	100	0.013	100	0.01	100

JDB-1 是通用型的基础产品, 无论高压、低压、高温、低温、有油润滑、无油润滑还是水中润滑, 都能适用。产品的基体是高力黄铜, 比一般的铜套硬度提高一倍, 耐磨性能提高一倍以上, 因此在冶金行业的连铸机、轧机、输送机上都可采用。还用于注塑机锁模机构, 挤出机构, 高压电的自动开关, 建筑机械的起吊支撑部位, 以及水利枢纽工程的弧门支撑, 滑轮和传动轮部位。还有造纸机烘道, 汽车模具, 船舶起锚滑动部位等。

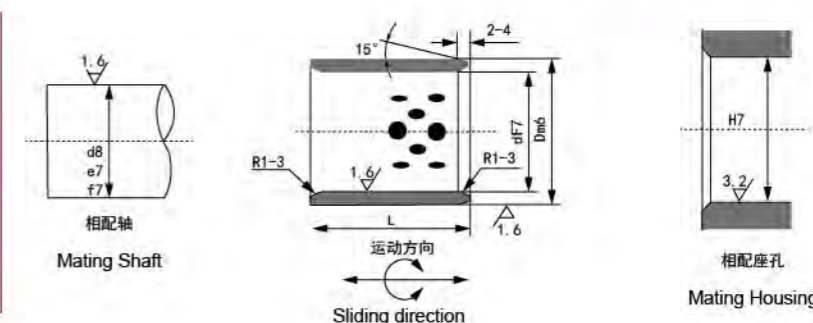
JDB-2 主要适应低载高温中速的使用场合, 例如壁炉门铰链, 烘炉滚道, 轻工机械、机床工业等。

JDB-3 的内材与 JDB-2 同样, 除了具有 JDB-2 的功能外, 还体现了节省成本, 提高抗压强度和可以端面与基体焊接安装的作用, 适用于建筑机械、冶金机械和输送机中的不加油润滑部位。

JDB-4 是一种典型的省材产品, 在机械性能要求不是很高的地方, 可作取 JDB-2 替代材料使用, 能大大的降低成本, 满足使用要求, 例如模具导套, 注塑机模架等。

JDB-5 是一种加强型的产品, 它具有极高的抗压性能, 在起重机械的支撑部位特别适应, 例如挖土机支承、卷扬机支承、吊车支承等。但由于基体为钢材, 所以不宜在水中或酸、碱的场合使用。

TYPE	APPLICATION FEATURES
JDB-1	basically general-purproducts. suitable for various circumatances including high or low temperature, withoil or oilless lubrication. or even in the water. With it's matrix made of high strength brass. It's hardness doubles than nirmal bronze bushings and the wear performance improves in large degree,so it is applicable for conticaster, pritching machine. converors of metallurgy industry. It could also be used in plastic injection machines, in the automatic switch of high=tension electricity,in the luffing and supporting parts of construction machines. hydraulic gate supporter. pilley, drive wheels of water control project,and drying tunnel of paper machines. auto die sliding parts for ships unmooning etc.
JDB-2	products of JDB-2 series are mainly for circumstances with low load and high temperature,for example:gemel of fireplace gate,racewahy of baker machines of light industry. machine tools industry and so on.
JDB-3	The innerside material of products of JDB-3 series is the sane as that of the JDB-2 series. so they could function as well as the that of JDB-2 series. in additional. they have other aducantages such as saving material costs, improvng compressive strength,and that they Could be assembled by welding the bushing surface together with other matrix. They are suita ble for parts which need not oil lubrication of construction machines, metallu rgy machines and conveying machines.
JDB-4	Products of JDB-4 are typical kind of material-saving product. They could raplace JDB-2 products where the mechanictal requiements are not so high. They could reduce the cost largely. and meet the demands for application. Such as: mould guide bushing, die carrier of plastic moulding machines and so on.
JDB-5	products of JDB-5 sense are a kind of fortified products. Due to it's excellent comprehensive capability. it's especially suited in the surppoting parts of hoisting machines. for example: surpport of rooter. surpport of hoist engine. surpport of crane and so on. But as for their matrix being steel, they are not suitable for circum-astances with water. acid and alkali

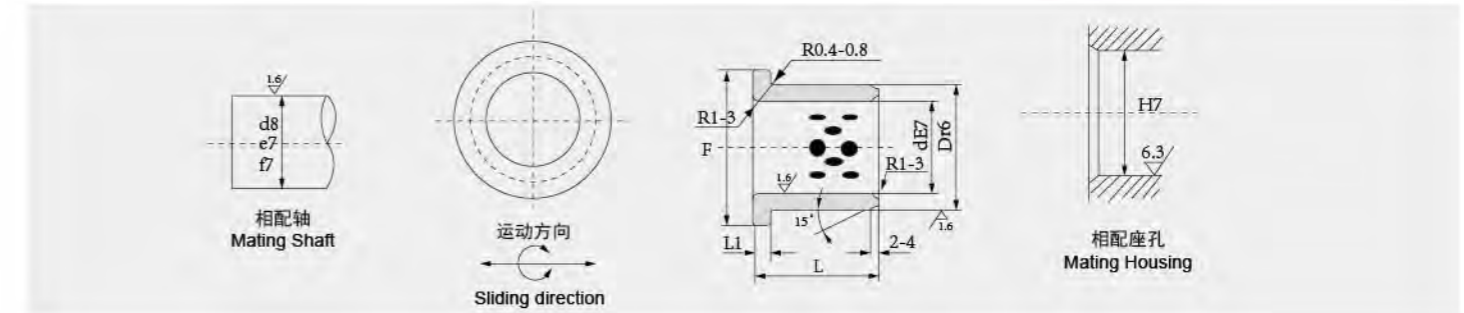


d	D	内径 I.D.	外径 O.D.	L																
				8	10	12	15	16	20	25	30	35	40	50	60	70	80			
8	12	8	12	081208	081210	081212	081215													
10	14	10	14	101408	101410	101412	101415	101420												
12	18	12	18		121810	121812	121815	121816	121820	121825	121830									
13	19	13	19		131910		131915	131916												
14	20	14	20	142010	142012	142015		142020	142025	142030										
15	21	15	21		152110	152112	152115	152116	152120	152125	152130									
16	22	16	22	162210	162212	162212	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	38			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		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

单位 Unit:mm

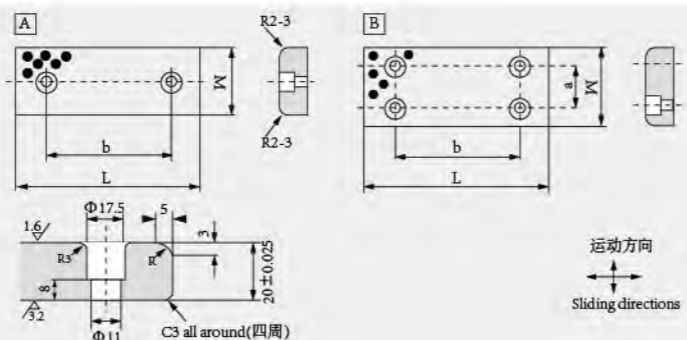
单位 Unit:mm

d	D	内径 I.D.	外径 O.D.	L $\begin{matrix} -0.10 \\ -0.30 \end{matrix}$													
				30	35	40	50	60	70	80	100	120	130	140	150		
50	62	50	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	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	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					809660	809670	759580	7595100						
80	96	80	96			809640	809560	8010060	8010070	809680	8096100	8096120					
80	100	80	100				8010040	8010050	9011060	9011070	8010080	80100100	80100120		80100140		
90	110	90	110	9011030			9011050	10012060	10012070	9011080	90110100	90110120					
100	120	100	120							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								130150100		130150130				
140	160	140	160								140160100			140160140			
150	170	150	170								150170100						150170150
160	180	160	180								160180100						160180150



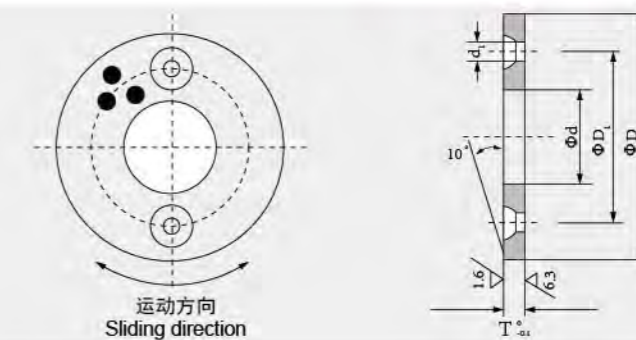
d	D	内径 I.D.	外径 O.D.	F	L ₁	L $\begin{matrix} -0.10 \\ -0.30 \end{matrix}$											
						15	20	25	30	35	40	50	60	80	100		
10	14	10	14	22	2	1015	1020										
12	18	12	18	25		1215	1220										
13	19	13	19	26		1315	1320										
14	20	14	20	27	3	1415	1420										
15	21	15	21	28		1515	1520	1525	1530								
16	22	16	22	29		1615	1620	1625	1630								
20	30	20	30	40			2020	2025	2030	2035							
25	35	25	35	45			2520	2525	2530	2535							
30	40	30	40	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	55	70					4530	4535	4540	4550	4560				
50	60	50	60	75							5050	5050	5060				
55	65	55	65	80							5540	5550	5560				
60	75	60	75	90							6040	6050	6060	6080			
70	85	70	85	105	7.5						7050	7060	7080				
75	90	75	90	110							7550	7560					
80	100	80	100	120										8060	8080	80100	
100	120	100	120	150	10									10060	10080	100100	
120	140	120	140	170											12060	12080	120100

单位 Unit:mm

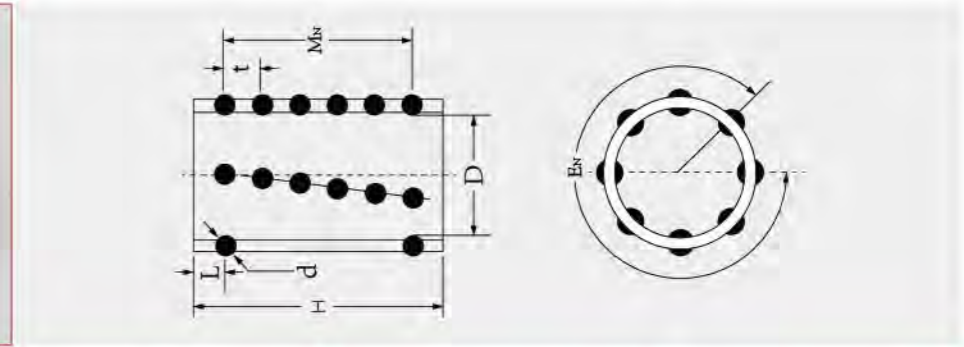
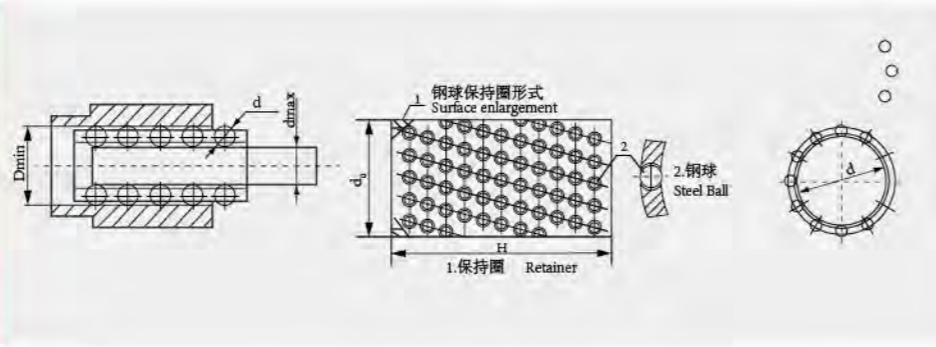


型号规格 Designation	W	L	a	b	图示 Sketch
JSP28×75		75		45	A
JSP28×100	28	100	-	50	
JSP28×150		150		100	
JSP38×75		75		45	
JSP38×100	38	100	-	50	
JSP38×150		150		100	
JSP48×75		75		45	
JSP48×100		100		50	
JSP48×125	48	125	-	75	
JSP48×150		150		100	
JSP48×200		200		150	
JSP58×75		75		45	
JSP58×100	58	100	-	50	
JSP58×150		150		100	
JSP75×75		75		25	
JSP75×100		100		50	
JSP75×125	75	125	-	75	
JSP75×150		150		100	
JSP75×200		200		150	
JSP100×100		100		50	
JSP100×125		125		75	
JSP100×150		150	50	100	
JSP100×200	100	200		150	
JSP100×250		250		200	
JSP100×300		300		200	
JSP125×125		125		75	
JSP125×150		150		100	
JSP125×200	125	200	50	150	
JSP125×250		250		200	
JSP125×300		300		200	
JSP125×350		350		200	
JSP150×150		150		100	
JSP150×200	150	200	100	150	
JSP150×250		250		200	

单位 Unit:mm



型号规格 Designation	Φd	ΦD	T ⁰ _{-0.10}	螺孔 Bolt Hole			
				ΦD ₁	平头螺钉 Crop Bolt	Φd ₁	孔数 Bore Number
JTW10	10.2	30		20			
JTW12	12.2						
JTW13	13.2	40		28			
JTW14	14.2		3		M3	3.5	
JTW15	15.2						
JTW16	16.2	50		35			2
JTW18	18.2						
JTW20	20.2						
JTW25	25.2	55		40	M5	6	
JTW30	30.2	60	5	45			
JTW35	35.2	70		50			
JTW40	40.2	80		60			
JTW45	45.3	90	7	70	M6	7	
JTW50	50.3	100		75			
JTW55	55.3	110	8	85			
JTW60	60.3	120		90			
JTW70	70.3	130		100	M8	9	
JTW75	75.3	140		110			4
JTW80	80.3	150		120			
JTW90	90.3	170	10	140			
JTW100	100.5	190		160	M10	11	
JTW120	120.5	200		175			



· 产品概述 Product Overview

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。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, 即钢球与之配合为边盈配合, 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 accjiracy.

· 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 $\sqrt{0.5}$
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 $\sqrt{0.5}$
3. 测量: 用通用的测量手段 (气流量仪, 外径千分尺, 内径千分表等) 测量轴导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 $\sqrt{0.5}$
- 2.GUIDIE POSTS:MATERIAL GCr15,YB9,HEAT TREATMENT HRC 62-66,THE TOLERANCE OF SHAFT IS h5, THE SURFACE ROUGHNESS IS $\sqrt{0.5}$
- 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

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

· 产品概述 Product Overview

FR 四氟软带轴承, 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。由于它的柔性好, 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。

FR is a composite material. It is made of bronze wire mesh as frame and cover the mixture of PTFE and other anti-wear material by special sintering. It is of low friction coefficient and good performance in anti-wear. Due to its flexibility, it can act as segregation film between two steel friction surfaces, in this application, the superior performance of no clearance, no noise, no oil lubrication, no maintenance and no pollution will be appeared.

· 应用范围 Application scope

目前, 产品已广泛应用于纺织机械、关节轴承、汽车门铰链等场合。

At present, it is widely used in textile machines, spherical bearings, automobile door hinge and so on.

· 主要参数 Technical Date

性能指标 performance index	有关数据 Data
最大承载压力 Max Load	100N/mm ²
摩擦系数 Friction Coeff	0.05-0.20
使用最高温度	40℃-280℃
最高滑动速度 Speed limit	1.0m/s

· 轴承的选型 Bearing Selection

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。

HZ 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

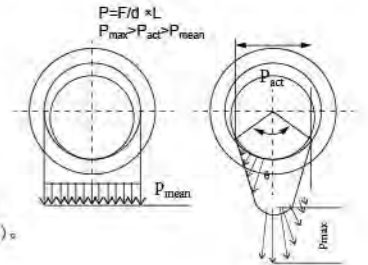
$$P = \frac{F}{dL} \text{ (N/mm}^2\text{)}$$

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

$$P = \frac{4F}{(D_2-d_2)\pi} \text{ (N/mm}^2\text{)}$$

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

· 止推垫片 Thrust Washer



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

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

D= 轴径 Shaft (mm)
n= 转速 / 分 Rpm

· 摇摆运动 Oscillating motion

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

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

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

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

· PV 值计算 PV=PXV (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。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

HZ 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。HZ 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, 内孔变形用校正芯棒校正。2. 安装时, 座孔涂 ZY 801 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轴芯, 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, 将轴套压入座孔中。

HZ 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 HZ 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 assising circle. Fig B.

