

嘉善永信无油润滑轴承厂

# JIASHAN YONGXIN OILLESS BEARING FACTORY



**YONGXIN**  
OILLESS BEARING



# Brief Introduction

## 企业简介

嘉善永信无油润滑轴承厂是专业研究、制造自润滑轴承的生产型企业，一直致力于为众多国内外客商提供一流的产品，并赢得了良好的声誉。主要产品有：SF-1无给油轴承、SF-2边界润滑轴承、JF-800双金属卷制轴承、FZ钢球保持架、JDB（500#）固体润滑轴承、FD填充四氟带、FR四氟软带轴承、FB090青铜轴承和滑动轴承与机械装配的使用。

本公司以科技为第一生产力，将不断创造卓越，提高产品质量，并一如既往地服务于顾客、服务于社会。

谨此，热诚欢迎海内外朋友前来指导和交流。



Jiashan Yongxin Bearing Factory is a specialized in developing and manufacturing of self-lubricating bearings, has long been committed to supplying first-class products to numerous domestic and overseas customers and has won a good reputation. Its products mainly include SF-1 oilless bearing, SF-2 boundary lubricating bearing, JF-800 bimetallic bearing, JDB500# solid-lubricant inlaid bearing, FB090 bronze backed bearings, FZ ball retainer,FR Bronze mesh with PTFE, and other products necessary for assembling of machines.

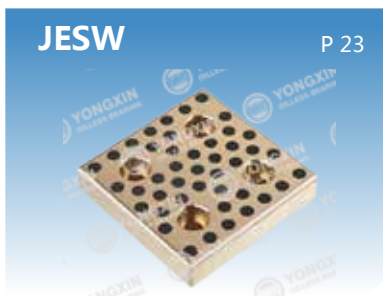
Taking science and technology as the primary productive force, our company is creating excellence and promoting product quality nonstop, and will serve our customers and the society as we have long been.

Sincerely and warmly, we welcome friends from home and abroad for advice and exchanges.

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# SF-1

## 无油润滑轴承 OILLESS BUSHING

### 产品介绍 Product introduction

是以钢板为基体，中间烧结球形青铜粉，表面轧制聚四氟乙烯和混合物卷制而成。它具有摩擦系数小、耐磨、抗腐蚀性好和无油润滑的特点。能降低成本、缩小机械体积、避免咬轴现象和降低噪音等优点。产品已广泛应用于各种机械的滑动部位，例如：印刷机、纺织机、烟草机械、汽车、摩托车与农林机械等。

It is wall wrapped bushing made of triple layer composites material which be consisted of a steel backing, a sintered porous bronze particles interlayer and calendared and mixture as surface layer, It is of low friction coefficient, anti-wear, anti-corrosion and can be used without oil, or only a trace of oil if needed. Moreover, it is of low cost, low vibration and low noise, compacted and light. It is widely applied in various sliding articles of different kind of machines, such as textile machines, tobacoo machines, hydraulic vehicles, automobiles, agriculture and forests machinese and soon.

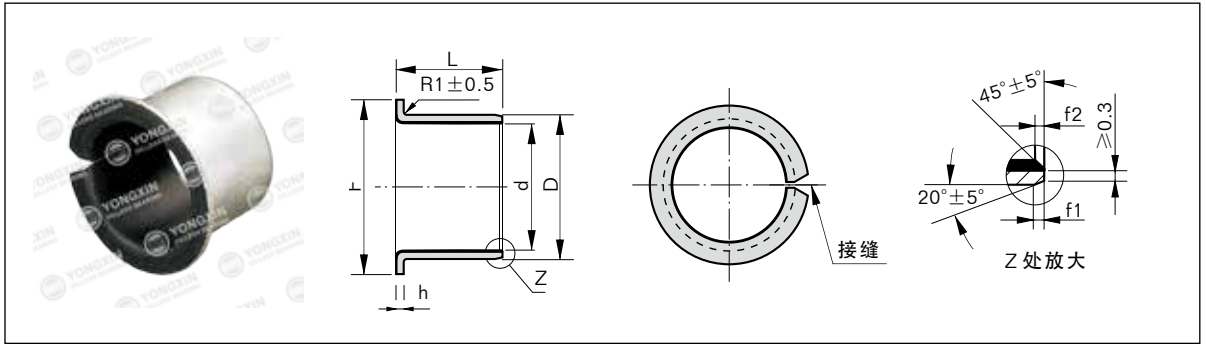
### 使用参数 The use of parameters

参数 Parameters	SF-1W 无铅轴承 Lead-Free Bushing	SF-1W 齿轮泵专用轴承 Gear Pump Bushing	SF-1P 往复运动轴承 Reciprocating Motion Bushing	SF-1B 青铜基轴承 Bronze-Based Bushing	SF-1D 液压专用轴承 Hydraulic Bushing	SF-1S 不锈钢耐蚀轴承 Stainless Steel Bushing
						
最大承载压力(动) Load capacity(Dynamic)	140 N/mm <sup>2</sup>	140 N/mm <sup>2</sup>	140 N/mm <sup>2</sup>	140 N/mm <sup>2</sup>	140 N/mm <sup>2</sup>	140 N/mm <sup>2</sup>
最大承载压力(静) Load capacity(Static)	250 N/mm <sup>2</sup>	250 N/mm <sup>2</sup>	250 N/mm <sup>2</sup>	250 N/mm <sup>2</sup>	250 N/mm <sup>2</sup>	250 N/mm <sup>2</sup>
摇摆运动 Oscillating	60 N/mm <sup>2</sup>	60 N/mm <sup>2</sup>	60 N/mm <sup>2</sup>	60 N/mm <sup>2</sup>	60 N/mm <sup>2</sup>	60 N/mm <sup>2</sup>
最高滑动速度(油润滑) Speed limit(Oil)	5 m/s	10 m/s	2.5 m/s	5 m/s	3 m/s	4.5 m/s
摩擦系数 $\mu$ Friction Coef.	0.04~0.20	0.04~0.20	0.04~0.20	0.03~0.18	0.04~0.20	0.04~0.20
最高PV值(干) PV limit(Dry)	3.6 N/ mm <sup>2</sup> .m/s	4.3 N/ mm <sup>2</sup> .m/s	3.6 N/ mm <sup>2</sup> .m/s	4.3 N/ mm <sup>2</sup> .m/s	3.8 N/ mm <sup>2</sup> .m/s	3.6 N/ mm <sup>2</sup> .m/s
最高PV值(油) PV limit(Oil)	50 N/ mm <sup>2</sup> .m/s	60 N/ mm <sup>2</sup> .m/s	50 N/ mm <sup>2</sup> .m/s	60 N/ mm <sup>2</sup> .m/s	50 N/ mm <sup>2</sup> .m/s	50 N/ mm <sup>2</sup> .m/s
工作温度 Temp. Limit	-295°C ~ +280°C	-195°C ~ +280°C	-195°C ~ +280°C	-195°C ~ +300°C	-195°C ~ +280°C	-295°C ~ +270°C
导热系数 Thermal conductivity	13 W/m · k	13 W/m · k	13 W/m · k	18 W/m · k	16 W/m · k	16 W/m · k
线膨胀系数 Linear expansion	11 × 10 <sup>-6</sup> /K	11 × 10 <sup>-6</sup> /K	11 × 10 <sup>-6</sup> /K	21 × 10 <sup>-6</sup> /K	15 × 10 <sup>-6</sup> /K	15 × 10 <sup>-6</sup> /K





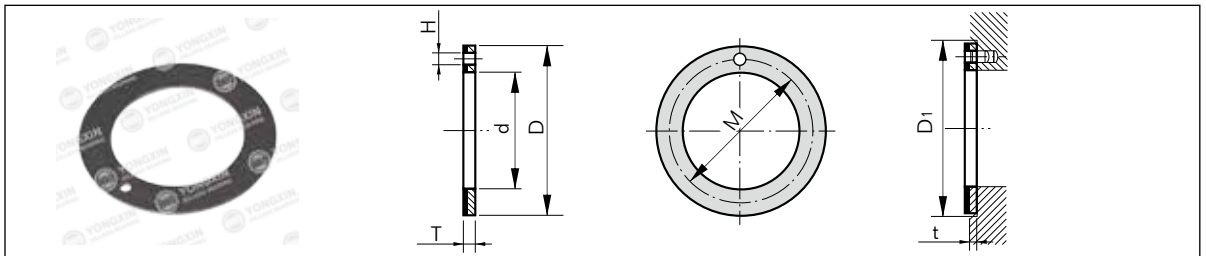
SF-1 无油润滑翻边轴套  
SF-1 Oilless Flange Bushing



单位unit:mm

压入座孔后的内径 I.D.afterfixed	D	轴径 Shaft Dia.	座孔 Bore H7 Housing	F ± 0.5	壁厚 Wall Thickness	f1	f2	L ± 0.025																		
								4	5.5	7	7.5	8	9	10	12	15	16	17	22	26						
5.990	8	+0.055	6 -0.013	8 +0.015	12	+0.005 -0.020	0.6	0.3	●		●															
6.055		-0.025	-0.028																							
7.990	10	+0.055	8 -0.016	10 +0.015	15																					
8.055		-0.025	-0.034																							
9.990	12	+0.065	10 -0.020	12 +0.018	18																					
10.058		+0.030	-0.041																							
11.990	14	+0.065	12 -0.020	14 +0.018	20																					
12.058		+0.030	-0.041																							
13.990	16	+0.065	14 -0.020	16 +0.018	22																					
14.058		+0.030	-0.041																							
14.990	17	+0.065	15 -0.020	17 +0.018	23																					
15.058		+0.030	-0.041																							
15.990	18	+0.065	16 -0.020	18 +0.018	24																					
16.058		+0.030	-0.041																							
17.990	20	+0.075	18 -0.025	20 +0.021	26																					
18.061		+0.035	-0.050																							
19.990	23	+0.075	20 -0.025	23 +0.021	30																					
20.071		+0.035	-0.050																							
21.990	25	+0.075	22 -0.025	25 +0.021	32				+0.005	0.6	0.4															
22.071		+0.035	-0.050																							
24.990	28	+0.075	25 -0.013	28 +0.021	35	-0.025																				
25.071		+0.035	-0.028																							
29.990	34	+0.085	30 -0.016	34 +0.025	45	+0.005	1.2	0.4																		
30.085		+0.045	-0.034																							
34.990	39	+0.085	35 -0.016	39 +0.025	47	-0.030																				
35.085		+0.045	-0.034																							

SF-1WC 标准公制垫片  
SF-1WC Standard Metric Washer



单位unit:mm

规格型号 Type	轴径 Shaft Dia.	垫片尺寸 Washer dimension				安装尺寸 Installation		
		d <sup>+0.25</sup>	D <sub>-0.25</sub>	T <sub>-0.05</sub>	M <sup>+0.12 -0.12</sup>	H	t	D <sub>1</sub>
WC 10	8	10	20	1.5	15	1.5	1	20
WC 12	10	12	24	1.5	18	1.5	1	24
WC 14	12	14	26	1.5	20	2	1	26
WC 16	14	16	30	1.5	23	2	1	30
WC 18	16	18	32	1.5	25	2	1	32
WC 20	18	20	36	1.5	28	3	1	36
WC 22	20	22	38	1.5	30	3	1	38
WC 24	22	24	42	1.5	33	3	1	42
WC 26	24	26	44	1.5	35	3	1	44
WC 28	25	28	48	1.5	38	4	1	48
WC 32	30	32	54	1.5	43	4	1	54
WC 38	35	38	62	1.5	50	4	1	62
WC 42	40	42	66	1.5	54	4	1	66
WC 48	45	48	74	2	61	4	1.5	74



# SF-2





## 边界润滑轴套 BOUNDARY LUBRICATING BUSHING

### 产品介绍 Product introduction

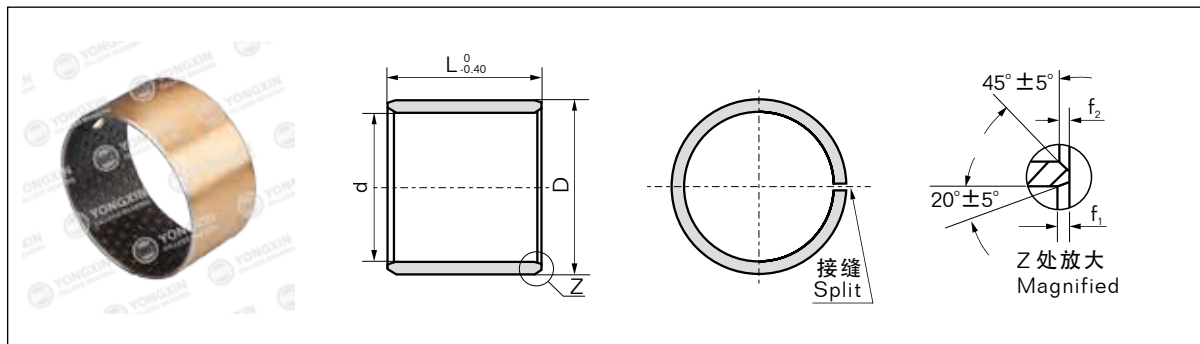
SF-2边界润滑轴承，是以钢板为基体，中间烧结球型青铜粉，表面轧制改性聚甲醛（POM），并含有储油坑。它适用于常温条件下，低速中载的场所，取代传统铜套，既降低成本又延长使用寿命。特殊情况下，在轧钢机上使用，又能节省加油频次、简化更换程序。该产品已广泛应用于汽车底盘、锻压机床、冶金矿山机械、工程机械、水电、轧钢行业等领域。

SF-2 boundary lubrication bushing is based on a composite material with 3 firmly bonded layers: steel as backing, sintered bronze spherical powder as interlayer and modified POM as lining layer, It fits well for low speed, middle-load and normal temperature and saves cost and prolongs working life when replacing normal all copper sleeves. It is widely applied in auto chassis, forging machine, metallurgical and mining machine, civil engineering, power station, strip rolling industries, etc.

### 使用参数 The use of parameters

	<b>SF-2</b> 边界润滑轴承 Marginal Bearing	<b>SF-2H</b> 无铅边界润滑轴承 Lead Free Marginal Bearing	<b>SF-2S</b> 无铅边界润滑轴承 Lead Free Marginal Bearing	<b>SF-2L</b> 无铅边界润滑轴承 Lead Free Marginal Bearing
参数 Parameters				
最大承载压力P(静) Max load capacity P(Static)	250 N/mm <sup>2</sup>	250 N/mm <sup>2</sup>	250 N/mm <sup>2</sup>	250 N/mm <sup>2</sup>
最大承载压力P(动) Max load capacity P(Dynamic)	140 N/mm <sup>2</sup>	140 N/mm <sup>2</sup>	140 N/mm <sup>2</sup>	140 N/mm <sup>2</sup>
最大线速度 V(脂) Max line speed V(Grease)	2.5m/s	2.5m/s	2.5m/s	2.5m/s
最高 PV 值(脂) Max imum PV value(Grease)	3 N/mm <sup>2</sup> .m/s	3 N/mm <sup>2</sup> .m/s	3 N/mm <sup>2</sup> .m/s	3 N/mm <sup>2</sup> .m/s
摩擦系数 μ (脂) Friction coef μ (Grease)	0.05~0.25	0.05~0.25	0.05~0.25	0.05~0.25
工作温度 Working temperature	-40℃~+110℃	-40℃~+110℃	-40℃~+110℃	-40℃~+110℃
导热系数 Thermal conductivity	4 W/(m.k)	4 W/(m.k)	4 W/(m.k)	4 W/(m.k)
线膨胀系数 Coefficient of linear expansion	11 × 10 <sup>-6</sup> /k	11 × 10 <sup>-6</sup> /k	11 × 10 <sup>-6</sup> /k	11 × 10 <sup>-6</sup> /k

SF-2 边界润滑轴套  
SF-2 Boundary Lubricating Bushing



单位Unit: mm

压入座孔后的内径 I.D.after fixed	D	轴径 Shaft Dia.	座孔 Housing Bore H7	壁厚 Wall Thickness	油孔 Oil Hole	f1	f2	L <sup>0</sup> <sub>-0.40</sub>															
								10	12	15	20	25	30	35	40	45	50	60	80	90	95	100	
5.990 6.055	12 <sup>+0.065 +0.030</sup>	10 <sup>-0.022</sup>	12 <sup>+0.018</sup>	0.955	4	0.6	0.3	●	●	●													
7.990 8.055	14 <sup>+0.065 +0.030</sup>	12 <sup>-0.027</sup>	14 <sup>+0.018</sup>					4	4	●	●	●											
9.990 10.058	16 <sup>+0.065 +0.030</sup>	14 <sup>-0.027</sup>	16 <sup>+0.018</sup>	0.980	4	0.6	0.3	●	●	●													
11.990 12.058	17 <sup>+0.065 +0.030</sup>	15 <sup>-0.027</sup>	17 <sup>+0.018</sup>					4	4	●	●	●											
13.990 14.058	18 <sup>+0.065 +0.030</sup>	16 <sup>-0.027</sup>	18 <sup>+0.018</sup>	1.445	4	0.6	0.4	●	●	●													
14.990 15.058	20 <sup>+0.075 +0.035</sup>	18 <sup>-0.027</sup>	20 <sup>+0.021</sup>					4	4	●	●	●	●	●									
15.990 16.058	23 <sup>+0.075 +0.035</sup>	20 <sup>-0.033</sup>	23 <sup>+0.021</sup>	1.475	4	0.6	0.4	●	●	●	●												
16.990 17.061	25 <sup>+0.075 +0.035</sup>	22 <sup>-0.033</sup>	25 <sup>+0.021</sup>					4	6	●	●	●	●	●									
17.990 18.061	28 <sup>+0.075 +0.035</sup>	25 <sup>-0.033</sup>	28 <sup>+0.021</sup>	1.935	6	1.2	0.4	●	●	●	●												
19.990 20.071	32 <sup>+0.085 +0.045</sup>	28 <sup>-0.033</sup>	32 <sup>+0.025</sup>					6	6	●	●	●	●	●									
21.990 22.071	34 <sup>+0.085 +0.045</sup>	30 <sup>-0.033</sup>	34 <sup>+0.025</sup>	1.970	6	1.2	0.4	●	●	●	●	●											
23.990 24.071	39 <sup>+0.085 +0.045</sup>	35 <sup>-0.039</sup>	39 <sup>+0.025</sup>					6	6	●	●	●	●	●	●								
24.990 25.071	44 <sup>+0.085 +0.045</sup>	40 <sup>-0.039</sup>	44 <sup>+0.025</sup>	2.415	8			●	●	●	●	●	●										
27.990 28.085	50 <sup>+0.085 +0.045</sup>	45 <sup>-0.039</sup>	50 <sup>+0.025</sup>					8	8	●	●	●	●	●	●	●							
28.990 29.085	55 <sup>+0.100 +0.055</sup>	50 <sup>-0.046</sup>	55 <sup>+0.030</sup>	2.460	8			●	●	●	●	●	●	●									
31.990 32.085	60 <sup>+0.100 +0.055</sup>	55 <sup>-0.046</sup>	60 <sup>+0.030</sup>					8	8	●	●	●	●	●	●	●	●						
34.990 35.085	65 <sup>+0.100 +0.055</sup>	60 <sup>-0.046</sup>	65 <sup>+0.030</sup>	2.460	8			●	●	●	●	●	●	●									
37.990 38.085	70 <sup>+0.100 +0.055</sup>	65 <sup>-0.046</sup>	70 <sup>+0.030</sup>					8	8	●	●	●	●	●	●	●	●	●					
39.990 40.085	75 <sup>+0.100 +0.055</sup>	70 <sup>-0.046</sup>	75 <sup>+0.030</sup>	2.460	8			●	●	●	●	●	●	●	●								
44.990 45.105	80 <sup>+0.100 +0.055</sup>	75 <sup>-0.046</sup>	80 <sup>+0.030</sup>					8	8	●	●	●	●	●	●	●	●	●	●				
49.990 50.110	85 <sup>+0.120 +0.070</sup>	80 <sup>-0.046</sup>	85 <sup>+0.035</sup>	2.460	8			●	●	●	●	●	●	●	●	●							
54.990 55.110	90 <sup>+0.120 +0.070</sup>	85 <sup>-0.054</sup>	90 <sup>+0.035</sup>					8	8	●	●	●	●	●	●	●	●	●	●	●			
59.990 60.110	95 <sup>+0.120 +0.070</sup>	90 <sup>-0.054</sup>	95 <sup>+0.035</sup>	2.460	8			●	●	●	●	●	●	●	●	●	●						
64.990 65.110	105 <sup>+0.120 +0.070</sup>	100 <sup>-0.054</sup>	105 <sup>+0.035</sup>					8	8	●	●	●	●	●	●	●	●	●	●	●	●	●	
69.990 70.110	110 <sup>+0.120 +0.070</sup>	105 <sup>-0.054</sup>	110 <sup>+0.035</sup>	2.460	8			●	●	●	●	●	●	●	●	●	●	●	●	●			
74.990 75.110	115 <sup>+0.120 +0.070</sup>	110 <sup>-0.054</sup>	115 <sup>+0.035</sup>					8	8	●	●	●	●	●	●	●	●	●	●	●	●	●	●
80.020 80.155	125 <sup>+0.170 +0.100</sup>	120 <sup>-0.054</sup>	125 <sup>+0.035</sup>	2.460	9.5	1.8	0.6	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
85.020 85.155	130 <sup>+0.170 +0.100</sup>	125 <sup>-0.063</sup>	130 <sup>+0.040</sup>					9.5	9.5	●	●	●	●	●	●	●	●	●	●	●	●	●	●
90.020 90.155	135 <sup>+0.170 +0.100</sup>	130 <sup>-0.063</sup>	135 <sup>+0.040</sup>	2.460	9.5			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
95.020 95.155	145 <sup>+0.170 +0.100</sup>	140 <sup>-0.063</sup>	145 <sup>+0.040</sup>					9.5	9.5	●	●	●	●	●	●	●	●	●	●	●	●	●	●
100.020 100.155	155 <sup>+0.170 +0.100</sup>	150 <sup>-0.063</sup>	155 <sup>+0.040</sup>	2.450	9.5			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
105.020 105.155	165 <sup>+0.170 +0.100</sup>	160 <sup>-0.063</sup>	165 <sup>+0.040</sup>					9.5	9.5	●	●	●	●	●	●	●	●	●	●	●	●	●	●
110.020 110.155	175 <sup>+0.170 +0.100</sup>	170 <sup>-0.063</sup>	175 <sup>+0.040</sup>	2.450	9.5			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
120.070 120.210	185 <sup>+0.210 +0.130</sup>	180 <sup>-0.072</sup>	185 <sup>+0.040</sup>					9.5	9.5	●	●	●	●	●	●	●	●	●	●	●	●	●	●
125.070 125.210	195 <sup>+0.210 +0.130</sup>	190 <sup>-0.072</sup>	195 <sup>+0.046</sup>	2.450	9.5			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
130.070 130.210	205 <sup>+0.210 +0.130</sup>	200 <sup>-0.072</sup>	205 <sup>+0.046</sup>					9.5	9.5	●	●	●	●	●	●	●	●	●	●	●	●	●	●
140.070 140.210	225 <sup>+0.210 +0.130</sup>	220 <sup>-0.072</sup>	225 <sup>+0.046</sup>	2.450	9.5			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
150.070 150.210	245 <sup>+0.210 +0.130</sup>	240 <sup>-0.072</sup>	245 <sup>+0.046</sup>					9.5	9.5	●	●	●	●	●	●	●	●	●	●	●	●	●	●
160.070 160.210	255 <sup>+0.260 +0.170</sup>	250 <sup>-0.081</sup>	255 <sup>+0.052</sup>	2.450	9.5			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
180.070 180.216	265 <sup>+0.290 +0.170</sup>	260 <sup>-0.081</sup>	265 <sup>+0.052</sup>					9.5	9.5	●	●	●	●	●	●	●	●	●	●	●	●	●	●



# JF

## 双金属轴套 BIMETAL BUSHING

### 产品介绍

### Product introduction

JF双金属轴承,是以低碳钢板为基体,表面烧结青铜合金。合金表面轧制油穴或油醋槽,便于储存油脂,有效降低磨损。钢背根据需要镀防腐层。适用于中载、中到高速,以及大冲击载荷的轴承,如内燃机主轴瓦、连杆衬套、摇臂衬套;油泵侧摩擦片等。

It is backed with high quality low carbon steel with tin-lead-bronze alloy sintered on its surface. To effectively decrease abrasion, its alloy surface can be machined with ball shaped oil sockets for easier oil storage. When necessary, an anti-erosive coating can be plated on the steel back. It can be applied to conditions of mediate load with mediate or high running velocity and conditions with enormous impact load. In mechanical applications, It is used to make wrapped bushes, thrust washer and bushes on connecting rod level of gas engine.

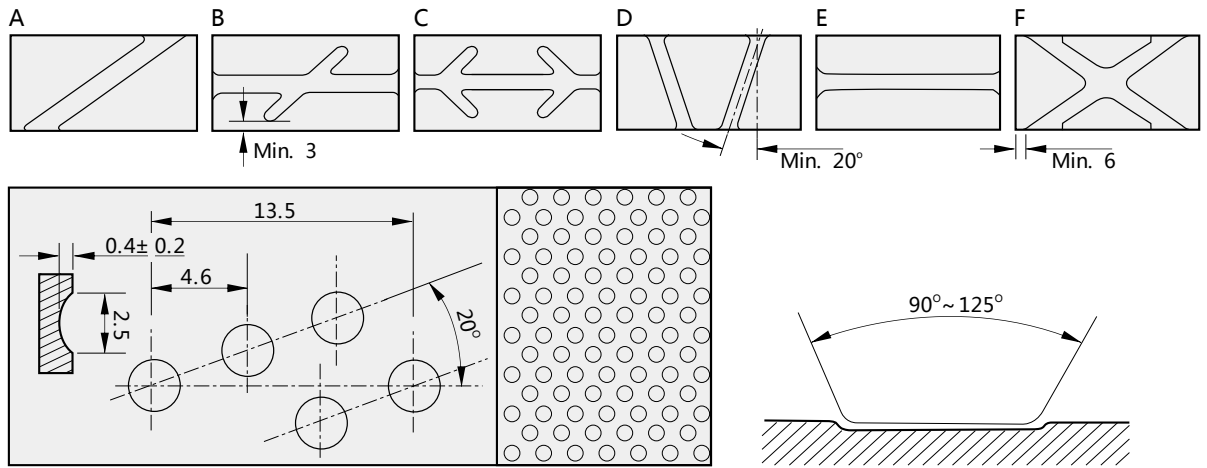
### 使用参数

### The use of parameters

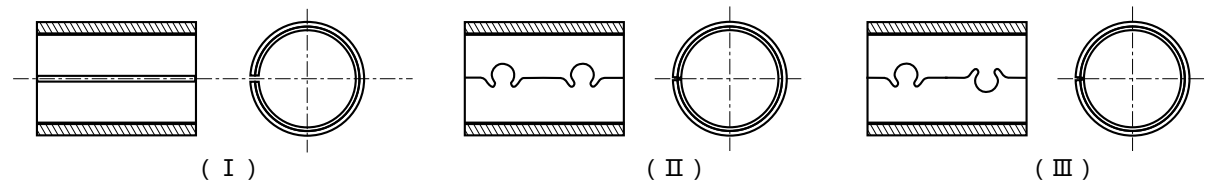
参数 Parameters	JF 800 双金属轴套 Bimetal Bushing	JF 720 双金属轴套 Bimetal Bushing	JF 700 双金属轴套 Bimetal Bushing	FB08G 双金属轴套 Bimetal Bushing	JF 20 双金属轴套 Bimetal Bushing
					
材料型号 Material type	CuPb10Sn10/ CuSn6Zn6Pb3	CuPb24Sn4	CuPb30	CuPb10Sn10+Graphite	AlSn20Cu
合金层硬度 Hardness of bronze alloy	70~100HB	45~70HB	30~45HB	60~90HB	30~40HB
最大荷载 Max. dynamic Load	65N/mm <sup>2</sup>	38N/mm <sup>2</sup>	25N/mm <sup>2</sup>	90N/mm <sup>2</sup>	30N/mm <sup>2</sup>
“蓝宝石”疲劳级 Mpa Sapphire" fatigue class	125	115	105	-	105
摩擦系数(油) Friction coefficient(oil)	0.06~0.14	0.06~0.16	0.08~0.16	<0.08	0.08~0.17
允许PV值(脂) PV limit(Grease)	2.8N/mm <sup>2</sup> .M/s	2.8N/mm <sup>2</sup> .M/s	2.5N/mm <sup>2</sup> .M/s	2.8N/mm <sup>2</sup> .M/s	-
允许PV值(油) PV limit(Oil)	10N/mm <sup>2</sup> .M/s	10N/mm <sup>2</sup> .M/s	8N/mm <sup>2</sup> .M/s	10N/mm <sup>2</sup> .M/s	6N/mm <sup>2</sup> .M/s
最高使用温度 Max. temperature	260°C	200°C	170°C	200°C	150°C
最高静承载压力 Load limit	150N/mm <sup>2</sup>	130N/mm <sup>2</sup>	120N/mm <sup>2</sup>	90N/mm <sup>2</sup>	100N/mm <sup>2</sup>
最高速度(油) Speed limit v max.	5m/s	10m/s	15m/s	5m/s	25m/s
对磨轴硬度 Hardness of mating surface	53 HRC	50 HRC	270 HB	53 HRC	250 HB
拉伸强度 Tensile strength	150N/mm <sup>2</sup>	150N/mm <sup>2</sup>	200N/mm <sup>2</sup>	185N/mm <sup>2</sup>	200N/mm <sup>2</sup>

## JF 双金属轴套 JF Bimetal Bushing

双金属轴套的油槽油穴形式（可按客户要求定制）  
Types for JF bush's grooves & indentations (or as client's options)



双金属轴套的接口形式（可按客户要求定制）  
Clinch lock of JF wrapped bushes (or as client's options)



## JF 型双金属轴套的油孔设计 The designing of oil indentations

为了使JF双金属轴套在使用中，能得到充分的油润滑，因此推荐如下尺寸油孔，客户需油孔而无特殊要求的，都按此油孔标准制作。

In order to fully lubricate the bush when in the performance, the indentations with size as follow are recommended. They should be manufactured according to the standard below if without special requirements.

轴承外径 Bush O.D	14~22	22~40	40~50	50~100	100~180
油孔直径 Lubricating hole	3	4	5	6	7

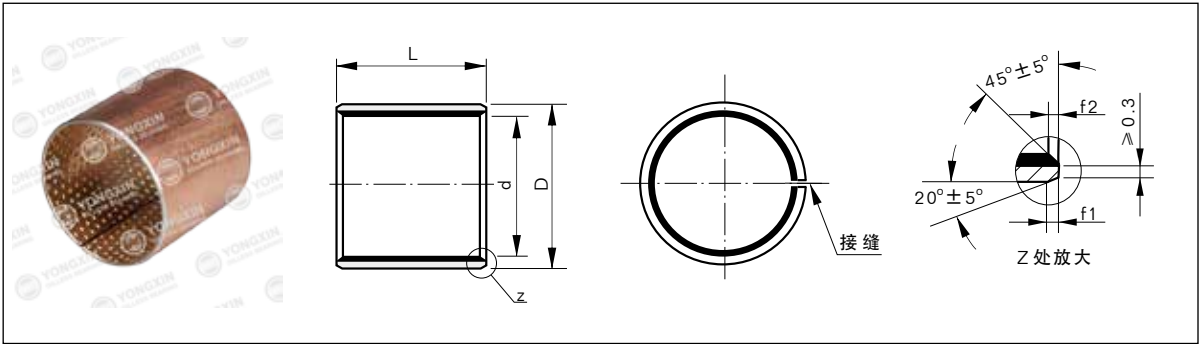
油孔的位置应避免接缝处和承载区域，这有利于进油。

The lubricating hole should be away from butt joint and loading area and designed to be easy-oil-feeding as well.

## JF双金属板材厚度尺寸及公差 Normal thickness of the JF bimetal and their tolerances

公差厚度 Nominal Thickness	1	1.5	2	2.5	3	3.5	4	5
钢基厚度 Thickness of steel backing	0.6	1	1.4	1.9	2.3	2.8	3.2	4
有效合金厚度 Thickness of bronze layer	0.4	0.5	0.6	0.6	0.7	0.7	0.8	1.0
可加工轴套壁厚 Manufacturable wall thickness	1 <sup>+0.25</sup> <sub>+0.15</sub>	1.5 <sup>+0.25</sup> <sub>+0.15</sub>	2 <sup>+0.25</sup> <sub>+0.15</sub>	2.5 <sup>+0.25</sup> <sub>+0.15</sub>	3 <sup>+0.25</sup> <sub>+0.15</sub>	3.5 <sup>+0.25</sup> <sub>+0.15</sub>	4 <sup>+0.25</sup> <sub>+0.15</sub>	5 <sup>+0.25</sup> <sub>+0.15</sub>
已加工轴套壁厚 Manufactured wall thickness	1 <sub>-0.025</sub>	1.5 <sub>-0.03</sub>	2 <sub>-0.035</sub>	2.5 <sub>-0.04</sub>	3 <sub>-0.045</sub>	3.5 <sub>-0.05</sub>	4 <sub>-0.055</sub>	5 <sub>-0.06</sub>

JF 双金属轴套  
JF Bimetal Bushing



单位Unit: mm

D	压入座孔后的内径 I.D.after fixed	壁厚 Wall Thickness	座孔 Bore H7 Housing	轴径 Shaft Dia. f7	f1	f2	L <sup>0</sup> <sub>-0.40</sub> ( $\frac{d \leq \Phi 30 L - 0.3}{d > \Phi 30 L - 0.4}$ )																	
							10	15	20	25	30	40	50	60	80	90	100							
12	+0.065 +0.030	10 +0.022	12 +0.018	10 <sup>-0.013</sup> -0.028	0.5	0.3	●	●	●															
14	+0.065 +0.030	12 +0.027	14 +0.018	12 <sup>-0.016</sup> -0.034			●	●	●															
16	+0.065 +0.030	14 +0.027	16 +0.018	14 <sup>-0.016</sup> -0.034			●	●	●															
17	+0.065 +0.030	15 +0.027	17 +0.018	15 <sup>-0.016</sup> -0.034			●	●	●															
18	+0.065 +0.030	16 +0.027	18 +0.018	16 <sup>-0.016</sup> -0.034	0.8	0.4	●	●	●															
20	+0.075 +0.035	18 +0.033	20 +0.021	18 <sup>-0.016</sup> -0.034			●	●	●	●														
23	+0.075 +0.035	20 +0.033	23 +0.021	20 <sup>-0.020</sup> -0.041			●	●	●	●														
25	+0.075 +0.035	22 +0.033	25 +0.021	22 <sup>-0.020</sup> -0.041			●	●	●	●														
27	+0.075 +0.035	24 +0.033	27 +0.021	24 <sup>-0.020</sup> -0.041	1.0	0.5	●	●	●	●	●													
28	+0.075 +0.035	25 +0.033	28 +0.021	25 <sup>-0.020</sup> -0.041			●	●	●	●	●													
30	+0.075 +0.035	26 +0.033	30 +0.021	26 <sup>-0.020</sup> -0.041			●	●	●	●	●													
32	+0.085 +0.045	28 +0.033	32 +0.025	28 <sup>-0.020</sup> -0.041			●	●	●	●	●	●												
34	+0.085 +0.045	30 +0.039	34 +0.025	30 <sup>-0.020</sup> -0.041	1.2	0.6	●	●	●	●	●													
36	+0.085 +0.045	32 +0.039	36 +0.025	32 <sup>-0.025</sup> -0.050			●	●	●	●	●	●												
39	+0.085 +0.045	35 +0.039	39 +0.025	35 <sup>-0.025</sup> -0.050			●	●	●	●	●	●	●											
42	+0.085 +0.045	38 +0.039	42 +0.025	38 <sup>-0.025</sup> -0.050			●	●	●	●	●	●	●											
44	+0.085 +0.045	40 +0.039	44 +0.025	40 <sup>-0.025</sup> -0.050	1.5	1.0	●	●	●	●	●													
50	+0.085 +0.045	45 +0.039	50 +0.025	45 <sup>-0.025</sup> -0.050			●	●	●	●	●	●												
55	+0.100 +0.055	50 +0.039	55 +0.030	50 <sup>-0.030</sup> -0.060			●	●	●	●	●	●	●											
60	+0.100 +0.055	55 +0.046	60 +0.030	55 <sup>-0.030</sup> -0.060			●	●	●	●	●	●	●	●										
65	+0.100 +0.055	60 +0.046	65 +0.030	60 <sup>-0.030</sup> -0.060	1.8	1.2	●	●	●	●	●	●												
70	+0.100 +0.055	65 +0.046	70 +0.030	65 <sup>-0.030</sup> -0.060			●	●	●	●	●	●	●	●										
75	+0.100 +0.055	70 +0.046	75 +0.030	70 <sup>-0.030</sup> -0.060			●	●	●	●	●	●	●	●	●									
80	+0.100 +0.055	75 +0.046	80 +0.030	75 <sup>-0.030</sup> -0.060			●	●	●	●	●	●	●	●	●									
85	+0.120 +0.070	80 +0.054	85 +0.035	80 <sup>-0.030</sup> -0.060	3	-0.045	●	●	●	●	●	●	●											
90	+0.120 +0.070	84 +0.054	90 +0.035	84 <sup>-0.036</sup> -0.071			●	●	●	●	●	●	●	●	●									
95	+0.120 +0.070	89 +0.054	95 +0.035	89 <sup>-0.036</sup> -0.071			●	●	●	●	●	●	●	●	●	●								
100	+0.120 +0.070	94 +0.054	100 +0.035	94 <sup>-0.036</sup> -0.071			●	●	●	●	●	●	●	●	●	●	●							
105	+0.120 +0.070	104 +0.054	105 +0.035	99 <sup>-0.036</sup> -0.071	3.5	-0.050	●	●	●	●	●	●	●	●										
110	+0.120 +0.070	104 +0.054	110 +0.035	104 <sup>-0.036</sup> -0.071			●	●	●	●	●	●	●	●	●	●								
115	+0.120 +0.070	109 +0.054	115 +0.035	109 <sup>-0.036</sup> -0.071			●	●	●	●	●	●	●	●	●	●	●							
125	+0.170 +0.100	119 +0.054	125 +0.035	119 <sup>-0.036</sup> -0.071			●	●	●	●	●	●	●	●	●	●	●							
130	+0.170 +0.100	123 +0.054	130 +0.040	123 <sup>-0.043</sup> -0.083	2	1.5	●	●	●	●	●	●	●	●	●							●		
135	+0.170 +0.100	128 +0.063	135 +0.040	128 <sup>-0.043</sup> -0.083			●	●	●	●	●	●	●	●	●	●	●							●
140	+0.170 +0.100	133 +0.063	140 +0.040	133 <sup>-0.043</sup> -0.083			●	●	●	●	●	●	●	●	●	●	●	●						●
145	+0.170 +0.100	138 +0.063	145 +0.040	138 <sup>-0.043</sup> -0.083			●	●	●	●	●	●	●	●	●	●	●	●	●					●
150	+0.170 +0.100	143 +0.063	150 +0.040	143 <sup>-0.043</sup> -0.083	2	1.5	●	●	●	●	●	●	●	●	●	●	●						●	
155	+0.170 +0.100	148 +0.063	155 +0.040	148 <sup>-0.043</sup> -0.083			●	●	●	●	●	●	●	●	●	●	●	●	●					●
160	+0.170 +0.100	153 +0.063	165 +0.040	153 <sup>-0.043</sup> -0.083			●	●	●	●	●	●	●	●	●	●	●	●	●	●				●
165	+0.170 +0.100	158 +0.063	185 +0.046	158 <sup>-0.043</sup> -0.083			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			●



# FB

## 青铜卷制轴套 BRONZE WRAPPED BUSHING

### 产品介绍






#### Product introduction

该产品以优质低碳钢板为基体，表面轧制菱形或油穴，油穴内埋入特殊的固体润滑剂，它有良好的润滑性和抗磨损性，能在无油或少油条件下工作，特别适用于高温，水溶液浸润或其他无油加油或加油困难场合。

It is made of high quality low-carbon steel, and the surface is rolled to diamond or round oil pockets. The special lubricant is embedded in the pockets. It has good lubricating and corrosion resistance property, it can work in the condition of little of oil or none of oil. It is particularly applied to high temperature, water solution and the occasions where cannot be added oil.

### 使用参数

#### The use of parameters

	<b>FB090</b> 青铜卷制轴套 Bronze Wrapped Bushing	<b>FB091</b> 黄铜卷制轴套 Copper Wrapped Bushing	<b>FB092</b> 青铜布孔轴套 Bronze Wrapped Bushing	<b>FB094</b> 青铜布孔轴套带密封圈 Bronze Wrapped Bushing with Seals	<b>FB09G</b> 青铜嵌石墨卷制轴套 Bronze +Graphite Wrapped Bushing
参数 Parameters					
密度 Density	8.9g/cm <sup>3</sup>	8.4g/cm <sup>3</sup>	8.9g/cm <sup>3</sup>	8.9g/cm <sup>3</sup>	8.3g/cm <sup>3</sup>
抗压强度 Pressure resistance strength	470N/mm <sup>2</sup>	440N/mm <sup>2</sup>	470N/mm <sup>2</sup>	470N/mm <sup>2</sup>	470N/mm <sup>2</sup>
导热系数 Coefficient of heat conduction	60W/m.k	71W/m.k	60W/m.k	60W/m.k	58W/m.k
线膨胀系数 Linear expansion coefficient	18.5 × 10 <sup>-6</sup> /K	19.2 × 10 <sup>-6</sup> /K	18.5 × 10 <sup>-6</sup> /K	18.5 × 10 <sup>-6</sup> /K	18.5 × 10 <sup>-6</sup> /K
硬度 Hardness	90~120 HB	80~110 HB	90~120 HB	90~120 HB	90~120 HB
延伸率 Elongation	55%	30%	55%	55%	55%
材料名称 Alloy material	CuSn8P	CuZn31Si	CuSn8P	CuSn8P	CuSn8P
其它可选材料 Other material	CuSn6.5P		CuSn6.5P	CuSn6.5P	CuSn6.5P

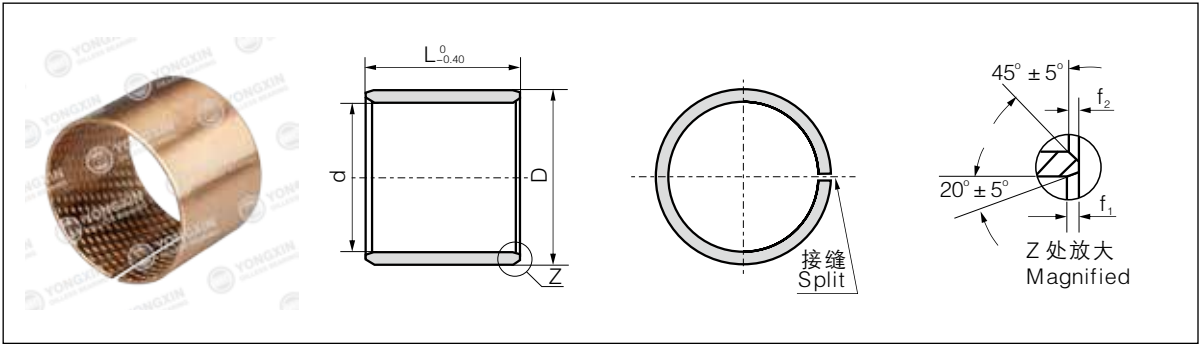
### 应用举例

#### Application case

产品主要应用于起重机械、建筑机械、汽车、拖拉机行业、机床工业及采矿机械。

Products are mainly used in lifting machinery, construction machinery, automobile, tractor industry, machine tool industry and mining machinery.

FB 青铜卷制轴套  
FB Bronze Wrapped Bushing

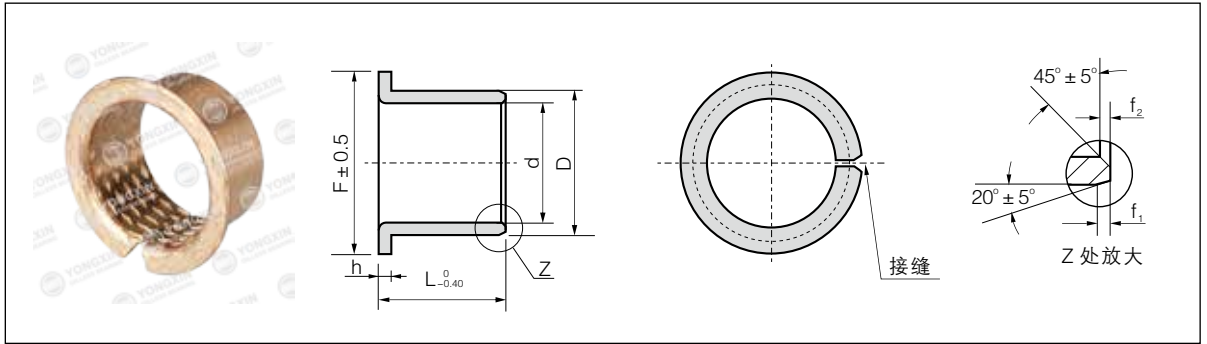


单位Unit: mm

压入座孔后的内径 I.D. after fixed		外径 O.D.		f1	f2	L															
						10	15	20	25	30	35	40	50	60	70	80	90	100			
10		12		0.5	0.3	●	●	●													
12		14		0.5	0.3	●	●	●													
14	+0.043 0	16	+0.065 +0.030	0.5	0.3	●	●	●	●												
15		17		0.5	0.3	●	●	●	●												
16		18		0.5	0.3	●	●	●	●												
18		20		0.5	0.3	●	●	●	●												
20		23		0.8	0.4	●	●	●	●												
22		25		0.8	0.4	●	●	●	●												
24	+0.052 0	27	+0.075 +0.035	0.8	0.4		●	●	●	●											
25		28		0.8	0.4		●	●	●	●											
28		32		0.8	0.4		●	●	●	●											
30		34		1.0	0.6		●	●	●	●	●										
32		36		1.0	0.6		●	●	●	●	●	●									
35		39	+0.085 +0.045	1.0	0.6		●	●	●	●	●	●									
40	+0.062 0	44		1.0	0.6			●	●	●	●	●	●								
45		50		1.2	0.8				●	●	●	●	●	●							
50		55		1.2	0.8				●	●	●	●	●	●	●						
55		60		1.2	0.8				●	●	●	●	●	●	●	●					
60		65		1.2	0.8				●	●	●	●	●	●	●	●	●				
65	+0.074 0	70	+0.100 +0.055	1.2	0.8				●	●	●	●	●	●	●	●	●				
70		75		1.2	0.8				●	●	●	●	●	●	●	●	●	●			
75		80		1.2	0.8				●	●	●	●	●	●	●	●	●	●			
80		85		1.4	0.8				●	●	●	●	●	●	●	●	●	●			
85		90		1.4	0.8				●	●	●	●	●	●	●	●	●	●	●		
90		95		1.4	0.8				●	●	●	●	●	●	●	●	●	●	●	●	
95		100		1.4	0.8					●	●	●	●	●	●	●	●	●	●	●	
100	+0.087 0	105	+0.120 +0.070	1.4	0.8						●	●	●	●	●	●	●	●	●	●	
105		110		1.4	0.8							●	●	●	●	●	●	●	●	●	
110		115		1.4	0.8								●	●	●	●	●	●	●	●	
115		120		1.4	0.8									●	●	●	●	●	●	●	
120		125		1.4	0.8										●	●	●	●	●	●	
125		130		1.4	0.8											●	●	●	●	●	
130		135		1.4	0.8												●	●	●	●	
135		140		1.4	0.8													●	●	●	
140	+0.100 0	145	+0.170 +0.100	1.4	0.8														●	●	
145		150		1.4	0.8															●	
150		155		1.4	0.8															●	
155		160		1.4	0.8															●	
160		165		1.4	0.8															●	



**FB 青铜卷制翻边轴套**  
**FB Bronze Wrapped Flange Bushing**



单位Unit: mm

压入座孔后的 内径 I.D. after fixed		外径 O.D.		F	f1	f2	L_{-0.40}^0												
							15	20	25	30	35	40	50	60	70	80	90		
25	+0.052 0	28	+0.075 +0.035	35	0.8	0.4	●	●	●										
30		34		45	1.0	0.6		●	●	●									
35		39		50	1.0	0.6		●	●	●	●								
40	+0.052 0	44	+0.085 +0.045	55	1.0	0.6			●	●	●	●							
45		50		60	1.2	0.8				●	●	●	●						
50		55		65	1.2	0.8				●	●	●	●						
55		60		70	1.2	0.8				●	●	●	●						
60		65		75	1.2	0.8				●	●	●	●	●					
65	+0.074 0	70	+0.100 +0.055	80	1.2	0.8			●	●	●	●	●	●					
70		75		85	1.2	0.8				●	●	●	●	●	●				
75		80		90	1.2	0.8					●	●	●	●	●	●			
80		85		100	1.4	0.8					●	●	●	●	●	●	●		
90		95		110	1.4	0.8							●	●	●	●	●	●	●
100	+0.087 0	105	+0.120 +0.070	120	1.4	0.8							●	●	●	●	●	●	●
110		115		130	1.4	0.8							●	●	●	●	●	●	●
120		125		140	1.4	0.8								●	●	●	●	●	●
130		135		155	1.4	0.8									●	●	●	●	●
140		145		165	1.4	0.8									●	●	●	●	●
150	+0.100 0	155	+0.170 +0.100	180	1.4	0.8									●	●	●	●	●
160		165		190	1.4	0.8									●	●	●	●	●
170		175		200	1.4	0.8									●	●	●	●	●
180		185		215	1.4	0.8									●	●	●	●	●
190		195		225	1.4	0.8									●	●	●	●	●
200	+0.115 0	205	0.210 0.130	235	1.4	0.8									●	●	●	●	●
225		230		260	1.4	0.8									●	●	●	●	●
250		255		290	1.4	0.8									●	●	●	●	●
265		270		305	1.4	0.8									●	●	●	●	●
285	+0.130 0	290	+0.260 +0.170	325	1.4	0.8									●	●	●	●	●
300		305		340	1.4	0.8									●	●	●	●	●



# JDB

## 固体润滑轴套 SOLID LUBRICANT- INLAID BUSHING

### 结构特性及用途

### Structure Characteristics and Applications

该产品以特殊配方的高力黄铜为基体有很高的力学性能、铸造性能良好、耐蚀性较好，表面按一定的角度和密度镶嵌特殊配方的固体润滑剂，经精密加工而成。产品广泛应用于注塑机、连铸机、矿山机械、船舶、气轮机等。

It is backed with strengthening brass that has good physical performance and good capability for casting. What's more, the brass backing has pretty good anti-erosion ability in air, fresh water and seawater. The surface is regularly and finely machined with sockets in which particular solid lubricant is filled. The product is widely used on consecutive casting and rolling machines, mine-exploiting equipments, ships, steam engine, etc.

### 轴承高度和壁厚的设计

### Bearing design height and thickness

**轴承高度：**轴承内径是由对磨轴的轴径所决定，所以在受载荷条件下，轴承高度受轴承承载压力 $P(N/mm^2)$ 所决定，一般轴承以 $L/D$ (轴承高度/轴承内径)的比例在0.5-3的范围内为适当，但应特别注意在高载荷，易引起偏位接触，高转速时引起的发热情形，此时 $L/D$ 取1以下较适当。

**Bearing Height:** bearing diameter from the shaft, the shaft is determined, so by loading conditions, load bearing by bearing a high pressure  $P(N/mm^2)$  of the decision, usually bearing the  $L/D$  (bearing height / bearing diameter), the ratio in the range of 0.5-3 for the appropriate, but should pay particular attention to the high load, easy cause deviation contacts, high-speed situations caused by heat, then  $L/D$  is more appropriate to take the following 1.

**轴承壁厚：**滑动轴承跟滚动轴承相比，其壁厚限制较小，壁厚薄为其主要的优点之一。一般情况下，壁厚 $t=(0.05\sim 0.07)d+(2\sim 5)mm$ 。






**Bearing wall:** plain bearings with rolling bearings compared to the wall thickness less restricted, thin wall thickness of one of its main advantages. Under normal circumstances, the wall thickness  $t=(0.05\sim 0.07)d+(2\sim 5)mm$ .

### 使用注意事项

### Caution

1. 装配前，若以润滑油涂于磨件上，可减短走合期，利于机械操作、运转；
2. 装配时请擦干净表面异物，最好采用冷冻装配，如无条件，则应徐徐压入，严禁敲打，以免伤及轴承及引起变形；
3. 使用后的工作面，因固体润滑剂形成的油膜导致表面有黑色或灰黑色现象，请不要擦洗，照常使用；
4. 工作环境具有腐蚀性的场合或在水中使用时，对磨轴建议使用不锈钢或表面镀铬。

- 1 Before assembly, on the terms of lubricant applied to the grinding parts can be cut short walk in period, is conducive to operation of machinery, running;
2. clean the surface of the assembly when foreign body, preferably refrigerated assembly, such as unconditional, they should slowly push, non-beating, to avoid harming the bearings and cause deformation;
3. Face after use, due to solid lubricant film lead to the formation of black or gray surface phenomenon, do not scrub, as usual;
4. working environment where corrosive or in water use, the shaft is recommended the surface of stainless steel or chrome.

参数 Parameters	JDB-1 镶嵌式固体润滑轴承 Embedded Solid Lubricating Bearings	JDB-2 镶嵌式固体润滑轴承 Embedded Solid Lubricating Bearings	JDB-3 镶嵌式固体润滑轴承 Embedded Solid Lubricating Bearings	JDB-4 镶嵌式固体润滑轴承 Embedded Solid Lubricating Bearings	JDB-5 镶嵌式固体润滑轴承 Embedded Solid Lubricating Bearings
					
成分牌号 Chemical Compositions	CuZn25Al6Fe3Mn3	CuSn6Zn6Pb3	Steel+CuSn6Zn6Pb3	HT250	GCr15
摩擦因数 Friction coef	<16 μ	<15 μ	<14 μ	<18 μ	<17 μ
线膨胀系数 Dilatibility	1.6-2.0 10 <sup>-5</sup> /°C	1.6-2.0 10 <sup>-5</sup> /°C	1.6-2.0 10 <sup>-5</sup> /°C	1.7-1.9 10 <sup>-5</sup> /°C	1.6-1.8 10 <sup>-5</sup> /°C
硬度 Hardness	210-250HB	80-120HB	60-90HB	180-230HB	HRC55-60
最高滑动速度 (无润滑) Velocity Max. (dry)	0.4 (m/s)	2 (m/s)	2 (m/s)	0.5 (m/s)	0.1 (m/s)
最高滑动速度 (油润滑) Velocity Max. (Oil)	5 (m/s)	10 (m/s)	10 (m/s)	5 (m/s)	3 (m/s)
最高PV值 (无润滑) Max PV Value (dry)	1.8 N/mm <sup>2</sup> - m/s	1.8 N/mm <sup>2</sup> - m/s	1.8 N/mm <sup>2</sup> - m/s	1.8 N/mm <sup>2</sup> - m/s	1.8 N/mm <sup>2</sup> - m/s
最高PV值 (油润滑) Max PV Value (Oil)	1.8 N/mm <sup>2</sup> - m/s	1.8 N/mm <sup>2</sup> - m/s	1.8 N/mm <sup>2</sup> - m/s	1.8 N/mm <sup>2</sup> - m/s	1.8 N/mm <sup>2</sup> - m/s
最高使用温度 Temperature Max.	300°C	350°C	300°C	400°C	350°C
适用情况 Applicable conditions	高载荷 High load 低速 Low speed 一般用 Commonly used	低载荷 Low load 高温 High Temp. 低速 Low speed	低载荷 Low load 高温 High Temp. 低速 Low speed 节约成本 Cost Saving	高载荷 High load 低速 low speed	低载荷 Low load 低速 Low speed

## 固体润滑剂 Solid Lubricant

固体润滑剂 Lubricant	特性 Features	典型用途 Typical application
高纯石墨+添加剂 SL1 Graphit+add	很好的耐磨性和化学稳定性, 使用温度 <400°C Excellent resistance against chemical attacks and low friction, Temp limit 400°C	应用于一般机械, 在大气中使用 Suit for general machines under atmosphere
Si4+MoS <sub>2</sub> PTFE+MoS <sub>2</sub> +CF	极低的摩擦系数和良好的睡润性, 使用温度<300°C Lowest in friction and good of water Lubrication, Temp limit 300°C	应用于水、海水润滑、如船舶 Suit for water and seawater lubricating

## 固体镶嵌自润滑轴承典型应用 Typical Applications

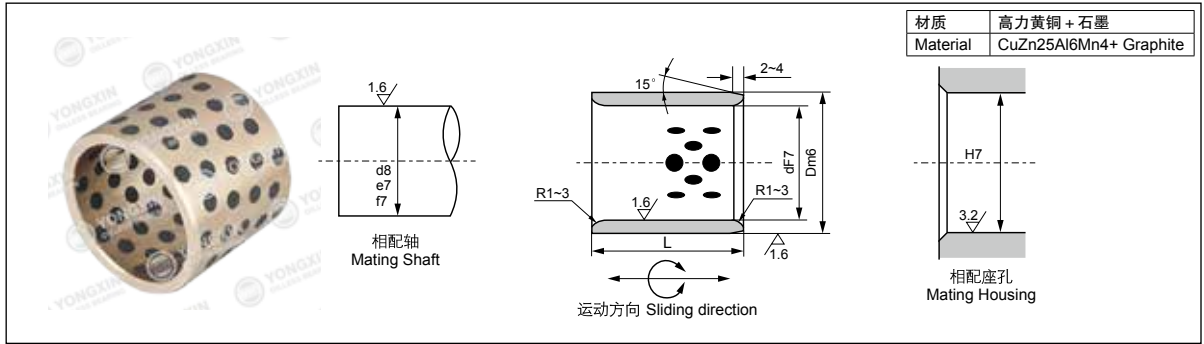
工程机械  
Engineering Machinery



塑料机械  
Engineering Machinery



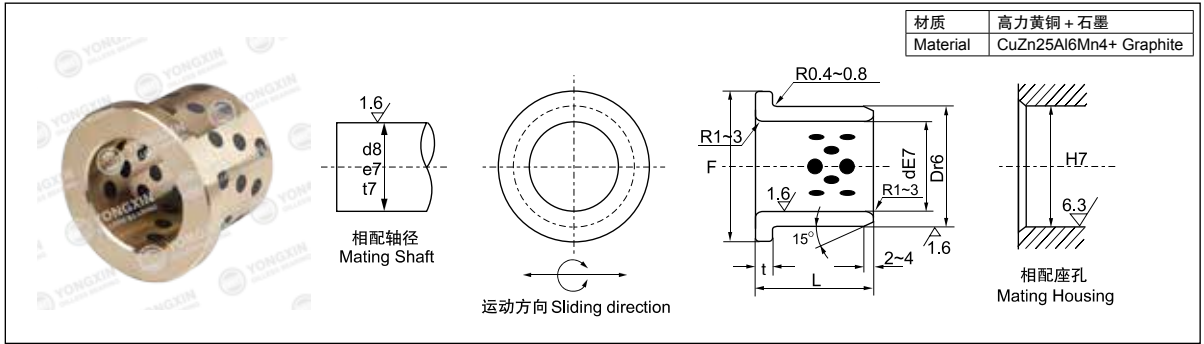
JDB 固体润滑轴承  
JDB Solid Lubricating Bearings



单位unit:mm

d	公差 (F7)	D	公差 (m6)	L																		
				8	10	12	15	20	25	30	35	40	50	60	70	80	90	100	120	140	160	180
8	+0.028 +0.013	12		●	●	●	●															
10		14	+0.018 +0.007	●	●	●	●	●														
12		18		●	●	●	●	●	●													
14	+0.034 +0.016	20			●	●	●	●	●	●												
16		22	+0.021 +0.008		●	●	●	●	●	●	●											
20		28				●	●	●	●	●	●	●										
20		30				●	●	●	●	●	●	●	●									
25	+0.041 +0.020	33					●	●	●	●	●	●	●	●								
25		35					●	●	●	●	●	●	●	●								
30		38	+0.025 +0.009					●	●	●	●	●	●	●								
30		40						●	●	●	●	●	●	●								
35		45							●	●	●	●	●	●	●							
40		50								●	●	●	●	●	●							
40		55									●	●	●	●	●	●						
45		55										●	●	●	●	●						
45	+0.050 +0.025	56											●	●	●	●						
45		60												●	●	●	●					
50		60	+0.030 +0.011												●	●	●	●				
50		65														●	●	●	●			
55		70															●	●	●	●		
60		75																●	●	●	●	
65		80																	●	●	●	●
70		85																		●	●	●
70	+0.060 +0.030	90																			●	●
75		90																				●
75		95																				●
80		100	+0.035 +0.013																			●
85		100																				●
90		110																				●
100	+0.071 +0.036	120																				●
110		130																				●
120		140																				●
130		150	+0.040 +0.015																			●
140		160																				●
150		170																				●
150	+0.083 +0.043	180																				●
160		180																				●
170		190																				●
180		200	+0.046 +0.017																			●
180		200																				●
190	+0.096 +0.050	210																				●

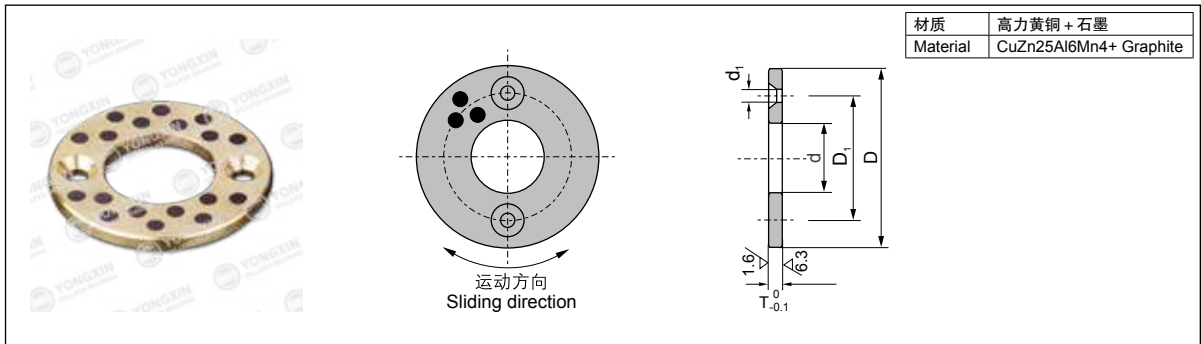
JFB 翻边自润滑轴承  
JFB Flanged Oilless Bushing



单位unit:mm

d	公差 Tolerance	D	公差 Tolerance	ΦF	t	L																
						10	12	15	20	25	30	35	40	45	50	55	60	65	70	75	80	90
8	+0.040 +0.025	12		20	2	●	●	●														
10		14	+0.034 +0.023	22	2	●	●	●	●													
12		18		25	3	●	●	●	●	●												
14	+0.050 +0.032	20		27	3	●	●	●	●	●	●											
16		22		29	3	●	●	●	●	●	●											
18		24	+0.041 +0.028	32	3		●	●	●	●	●	●										
20		28		35	3			●	●	●	●	●	●									
20	+0.061 +0.040	30		40	5			●	●	●	●	●	●									
25		35		45	5			●	●	●	●	●	●	●								
30		40		50	5				●	●	●	●	●	●	●							
31.5		40	+0.050 +0.034	50	5				●	●	●	●	●	●	●							
35		45		60	5				●	●	●	●	●	●	●							
40	+0.075 +0.050	50		65	5				●	●	●	●	●	●	●	●						
45		55		70	5					●	●	●	●	●	●	●						
50		60	+0.060 +0.041	75	5						●	●	●	●	●	●	●					
55		65		80	5							●	●	●	●	●	●	●				
60		75		90	7.5								●	●	●	●	●	●	●	●		
65	+0.090 +0.060	80	+0.062 +0.043	95	7.5									●	●	●	●	●	●	●	●	
70		85		105	7.5										●	●	●	●	●	●	●	
75		90	+0.073 +0.051	110	7.5											●	●	●	●	●	●	●
80		100		120	10												●	●	●	●	●	●
90		110		130	10													●	●	●	●	●
100	+0.107 +0.072	120	+0.076 +0.054	150	10														●	●	●	●
120		140	+0.088 +0.063	170	10															●	●	●
130		150		180	10																●	●
140		160	+0.090 +0.065	190	10																	●
150	+0.125 +0.085	170		200	10																	●
160		180	+0.093 +0.068	210	10																	●

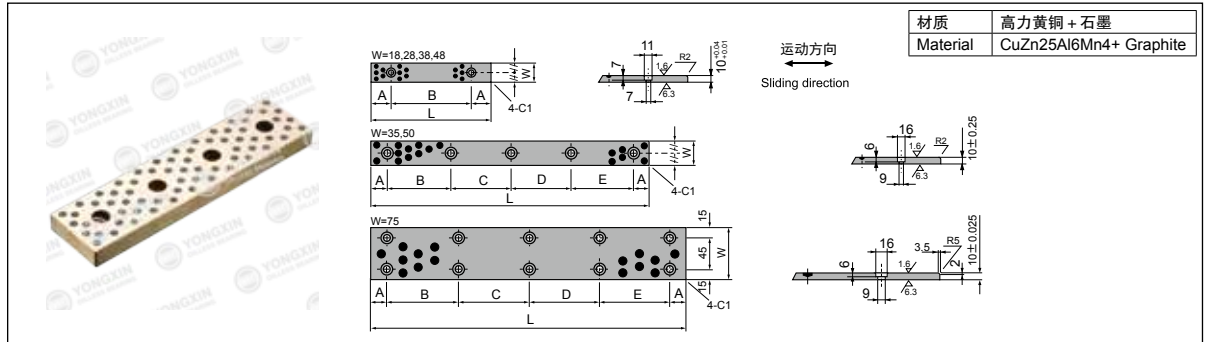
**JTW 标准止推垫片**  
**JTW Oilless Thrust Washer**



单位unit:mm

型号规格 Standard No.	d	D	T		螺丝孔 Screw Holes			
					D <sub>1</sub>	数量 Q'ty	尺寸 size	d <sub>1</sub>
JTW-0603	6.2	25			15	2	M3	3.5
JTW-0803	8.2	28			18			
JTW-1003	10.2	30			20			
JTW-1203	12.2	40			28			
JTW-1203N	12.2	40			Without flat head screw hole 无平头螺丝孔			
JTW-1303	13.2	40	3		28	2	M3	3.5
JTW-1403	14.2	40			35			
JTW-1503	15.2	50						
JTW-1603	16.2	50			Without flat head screw hole 无平头螺丝孔			
JTW-1603N	16.2	50			Without flat head screw hole 无平头螺丝孔			
JTW-1803	18.2	50			35		M3	3.5
JTW-2005	20.2	50						
JTW-2505	25.2	55			40	2	M5	6
JTW-3005	30.2	60	5	0 -0.1	45			
JTW-3505	35.2	70			50			
JTW-4007	40.2	80			60			
JTW-4507	45.2	90	7		67.5			
JTW-5008	50.3	100			75		M6	7
JTW-5508	55.3	110			85			
JTW-6008	60.3	120	8		90			
JTW-6508	65.3	125			95			
JTW-7010	70.3	130			100	4	M8	9
JTW-7510	75.3	140			110			
JTW-8010	80.3	150			120			
JTW-9010	90.5	170			140			
JTW-10010	100.5	190			160		M10	11
JTW-12010	120.5	200			175			

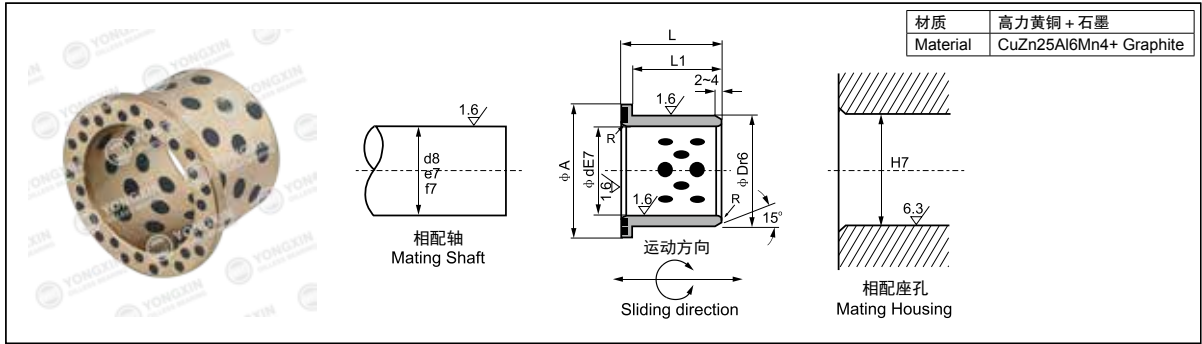
**JSP 标准自润滑耐磨板**  
**JSP Oilless Wear Plate**



单位Unit: mm

型号规格 Standard No.	W	L	A	B	C	D	E	平头螺钉尺寸 Flat Head Screw Size	孔数 Q'ty of holes			
JSP-1875	18	75	15	45				M6	2			
JSP-18100		100		50								
JSP-18125		125	25	75								
JSP-18150		150		100								
JSP-2875	28	75	15	45								
JSP-28100		100		50								
JSP-28125		125	25	75								
JSP-28150		150		100								
JSP-35100	35	100	20	60				M8	3			
JSP-35150		150		55	55							
JSP-35200		200		55	50	55						
JSP-35250		250		70	70	70						
JSP-35300		300		65	65	65	65					
JSP-35350		350		80	75	75	80					
JSP-3875	38	75	15	45				M6	2			
JSP-38100		100		50								
JSP-38125		125	25	75								
JSP-38150		150		100								
JSP-4875	48	75	15	45						M6	2	
JSP-48100		100		50								
JSP-48125		125	25	75								
JSP-48150		150		100								
JSP-50100	50	100	20	60				M8	3			
JSP-50150		150		55	55							
JSP-50200		200		55	50	55						
JSP-50250		250		70	70	70						
JSP-50300		300		65	65	65	65					
JSP-50400		400		90	90	90	90					
JSP-75150	75	150	20	110				M8	4			
JSP-75200		200		80	80							
JSP-75250		250		105	105							
JSP-75300		300		85	90	85						
JSP-75400		400		120	120	120						
JSP-75500		500		115	115	115	115					

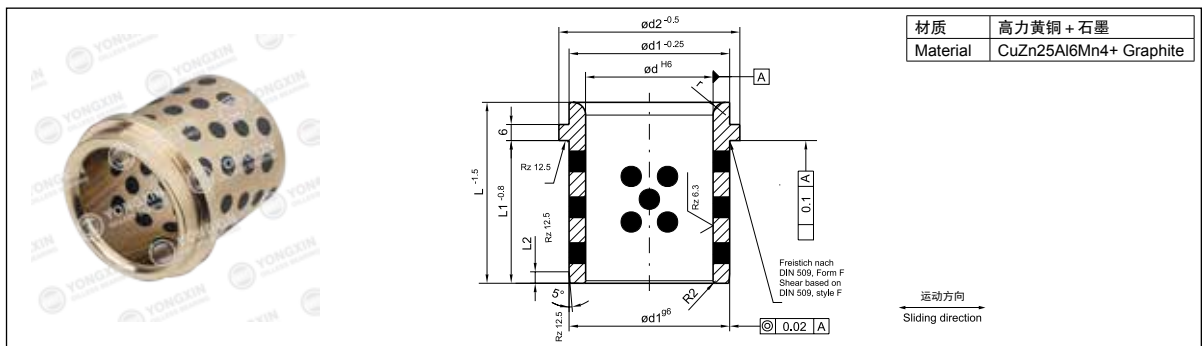
**JDBB 固体镶嵌自润滑翻边轴套**  
**JDBB Solid Self-Lubricating Inlaid Flange Bushes**



单位unit:mm

型号规格 Standard No.	$\phi d E7$		$\phi D r6$		$\phi A$	L1	L
JDBB-12 x 15	12	+0.050 +0.032	18	+0.034 +0.023	25	11	15
JDBB-16 x 20	16		22	+0.041 +0.028	30	15	20
JDBB-20 x 25	20	+0.061 +0.040	28		36	20	25
JDBB-25 x 30	25		33	+0.050 +0.034	43	25	30
JDBB-30 x 35	30	+0.075 +0.050	38		48	30	35
JDBB-40 x 45	40		50	+0.060 +0.041	60	40	45
JDBB-50 x 55	50	+0.090 +0.060	62	+0.062 +0.043	75	49	55
JDBB-60 x 65	60		74		90	58	65

**DIN9834 欧系标准汽车冲压模具导套**  
**DIN9834 Oilless Guide Bushing & Clamps**


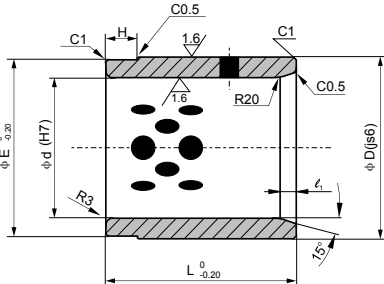


单位unit:mm

型号规格 Standard No.	d	L	d1	d2	L1	L2	L3	r
DIN9834-789	25	32	32	40	22		4	3
DIN9834-799	25	40	32	40	30		4	3
DIN9834-797	25	40	32	40	32		4	3
DIN9834-796	24	40	32	40	32	6,3	4	3
DIN9834-800	32	50	40	50	40		4	3
DIN9834-801	40	63	50	63	50		5	3
DIN9834-802	50	71	63	71	56		6,3	5
DIN9834-803	63	80	80	90	63		8	6
DIN9834-804	80	100	100	112	80		10	8
DIN9834-808	100	125	125	140	100	10	12,5	10
DIN9834-805	100	125	125	140	106		12,5	10
DIN9834-806	125	160	160	180	132		16	12
DIN9834-807	160	200	200	220	170		16	18



**GBW, GB250 自润导向套**  
**GBW, GB250 Oilless Guide Bushes**


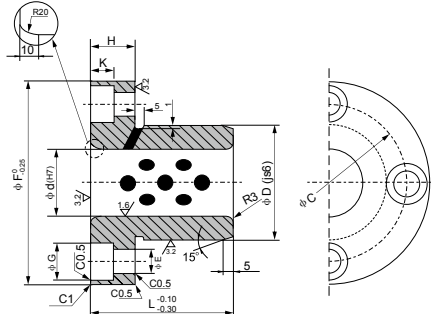



GBW	材质	高力黄铜 + 石墨
	Material	CuZn25Al6Mn4+ Graphite
GB250	材质	FC铸铁 + 石墨
	Material	HT250#+ Graphite

单位unit:mm

项目	代号	尺寸	ΦD	Φd	L	ΦE	H	ΦC <sub>1</sub>
1	30	50 × 30 × 50	50	30	50	49	10	10
2	40	60 × 40 × 50	60	40	60	59	10	
3	50	70 × 50 × 50	70	50	75	69	15	
4	60	80 × 60 × 90	80	60	90	79	20	
5	80	100 × 80 × 120	100	80	120	99	25	
6	100	120 × 100 × 130	120	100	150	119	25	
7	120	140 × 120 × 180	140	120	180	139	25	

**HGB250 自润导向套**  
**HGB250 Oilless Guide Bushes**

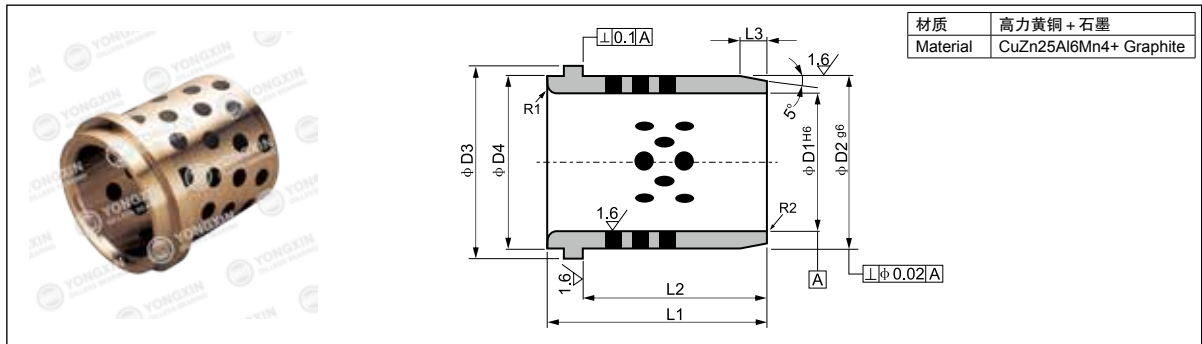



材质	高力黄铜 + 石墨
	Material
材质	FC铸铁 + 石墨
	Material

单位unit:mm

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

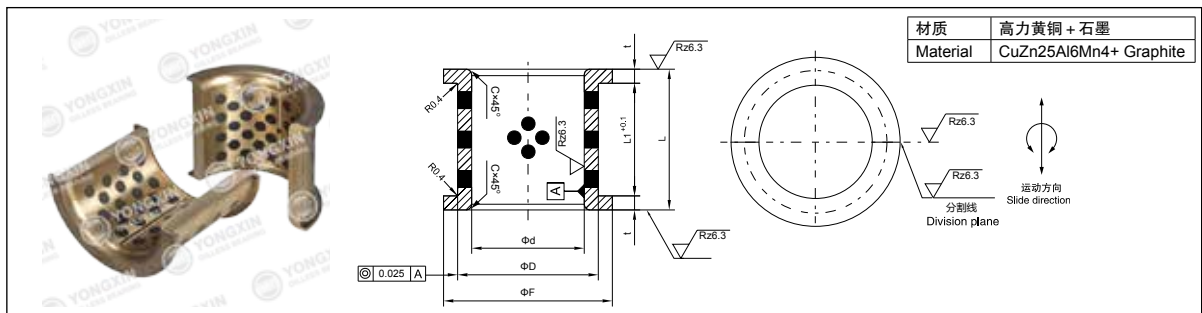
**JNA 自润导向套**  
**JNA Oilless Guide Bushes**



单位unit:mm

型号规格 Standard No.	D1	H6	D2	g6	D3	D4	L1	L2	L3	R1
JNA32 × 50	32	+0.016 0	40	-0.009	50	40	50	40	4	3
JNA40 × 63	40		50	-0.025	63	50	63	50	5	3
JNA50 × 71	50		63	-0.010	71	63	71	56	6	5
JNA63 × 80	63	+0.019 0	80	-0.029	90	80	80	63	8	6
JNA80 × 100	80		100	-0.012 -0.034	112	100	100	80	10	8
JNA100 × 125	100	+0.022 0	125	-0.014	140	125	125	106	12	10
JNA115 × 140	115		140	-0.039	155	140	140	120	12	10

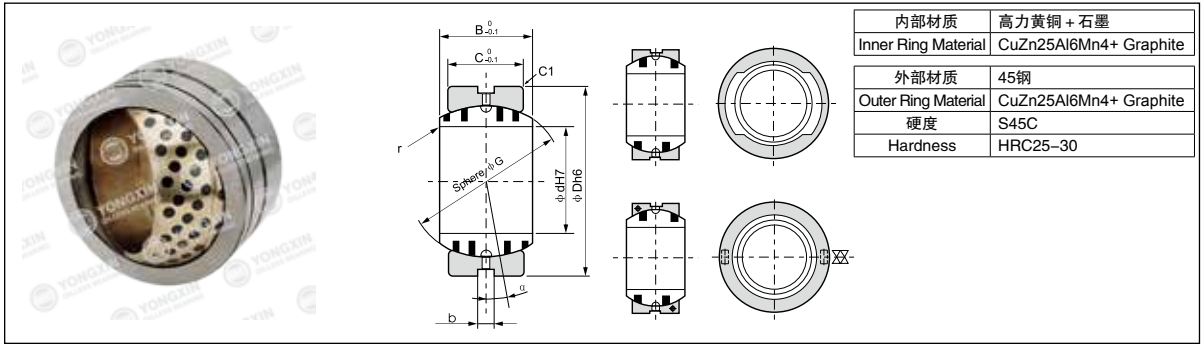
**JFFB 自润滑轴瓦 Half-Bearing**



单位unit:mm

产品代号 Part No.	I.D. φd 内径 H7	O.D. φD 外径		φF d11	L h12	L1 +0.1 0	t	C
JFFB-030	30	38	s6	48	34	22	6	1
JFFB-035	35	45	"	55	45	32	6.5	"
JFFB-040	40	50	"	60	50	35	7.5	"
JFFB-045	45	55	"	65	55	40	7.5	"
JFFB-050	50	60	"	70	60	45	7.5	"
JFFB-060	60	70	"	80	70	50	10	2
JFFB-070	70	85	"	95	80	60	10	"
JFFB-080	80	95	"	110	95	70	12.5	"
JFFB-090	90	105	"	120	105	80	12.5	"
JFFB-100	100	115	"	130	115	90	12.5	"
JFFB-110	110	125	r6	140	125	100	12.5	"
JFFB-120	120	135	"	150	140	110	15	"
JFFB-140	140	160	"	175	160	120	20	"
JFFB-160	160	180	"	200	180	140	20	"

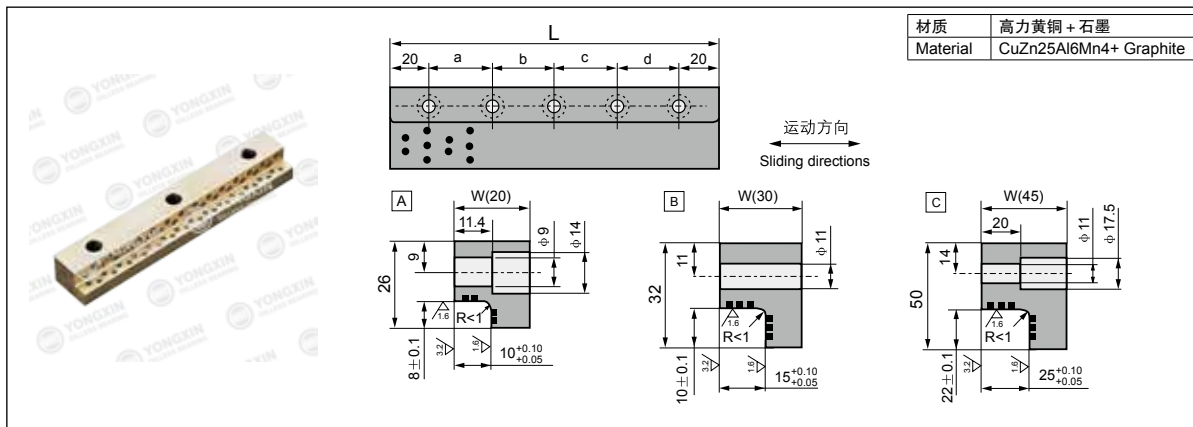
JDBS 自润球铰  
JDBS Oilless Spherical Plain Bearing



单位unit:mm

型号规格 Standard No.	Dimension							Aligning angle 调整角度 $\sigma^\circ$	Type
	$\phi d$	$\phi D$	B	C	$\phi G$	r	b		
JDBS-015	15	26	12	9	22			8	
JDBS-020	20	32	16	14	28	R0.5		4	
JDBS-025	25	42	21	18	36			5	
JDBS-030	30	50	27	23	44			6	
JDBS-035	35	55	30	26	49			5	
JDBS-040	40	62	33	28	55			6	A
JDBS-050	50	80	42	36	70		4	5	
JDBS-060	60	100	53	45	90	R1		6	
JDBS-070	70	110	58	50	99			5	
JDBS-080	80	130	70	60	115			6	
JDBS-090	90	140	76	65	125			6	
JDBS-100	100	160	88	75	145			6	B

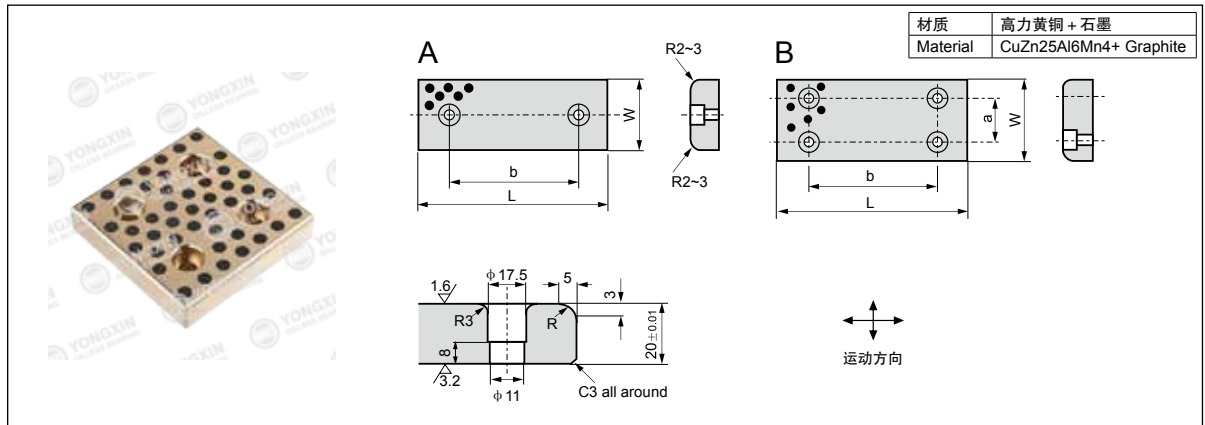
**JSL 固体自润滑滑块**  
**JSL Solid Self-Lubricating Wear Plate**



单位 Unit: mm

型号规格 Standard No.	W	L	螺孔 Bolt Hole				螺孔 Size	数量 Q'ty	图示 Sketch
			a	b	c	d			
JSL-20 × 100	20	100	60	—	—	—	M8	2	A
JSL-20 × 150		150	55	55	—	—		3	
JSL-20 × 200		200	55	50	55	—		4	
JSL-30 × 100	30	100	60	—	—	—	M10	2	B
JSL-30 × 150		150	55	55	—	—		3	
JSL-30 × 200		200	55	50	55	—		4	
JSL-30 × 250	45	250	70	70	70	—	M10	4	C
JSL-45 × 200		200	55	50	55	—		4	
JSL-45 × 250		250	70	70	70	—		4	
JSL-45 × 300	45	300	65	65	65	65	M10	5	C
JSL-45 × 350		350	80	75	75	80		5	

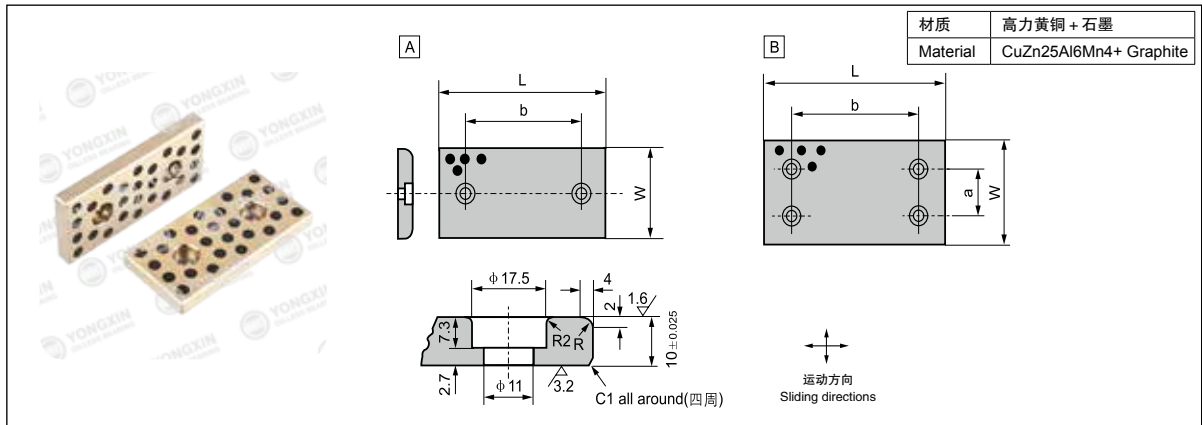
**JESW 自润滑板**  
**JESW Oilless Wear Plate-20mm Thick**



单位:unit:mm

型号规格 Standard No.	W	L	a	b	图示 Sketch
JESW- 28 × 75	28	75	-	45	
JESW- 28 × 100		100		50	
JESW- 28 × 150		150		100	
JESW- 38 × 75	38	75	-	45	
JESW- 38 × 100		100		50	
JESW- 38 × 150		150		100	
JESW- 48 × 75	48	75	-	45	
JESW- 48 × 100		100		50	
JESW- 48 × 125		125		75	
JESW- 48 × 150	58	150	-	100	A
JESW- 48 × 200		200		150	
JESW- 58 × 75		75		45	
JESW- 58 × 100	58	100	-	50	
JESW- 58 × 150		150		100	
JESW- 75 × 75		75		25	
JESW- 75 × 100	75	100	-	50	
JESW- 75 × 125		125		75	
JESW- 75 × 150		150		100	
JESW- 75 × 200	100	200	-	150	
JESW- 100 × 100		100		50	
JESW- 100 × 125		125		75	
JESW- 100 × 150	100	150	50	100	
JESW- 100 × 200		200		150	
JESW- 100 × 250		250		200	
JESW- 100 × 300	125	300	-	200	
JESW- 125 × 125		125		75	
JESW- 125 × 150		150		100	
JESW- 125 × 200	125	200	50	150	B
JESW- 125 × 250		250		200	
JESW- 125 × 300		300		200	
JESW- 125 × 350	150	350	-	200	
JESW- 150 × 150		150		100	
JESW- 150 × 200		200		150	
JESW- 150 × 250	150	250	100	200	
JESW- 150 × 250		250		200	

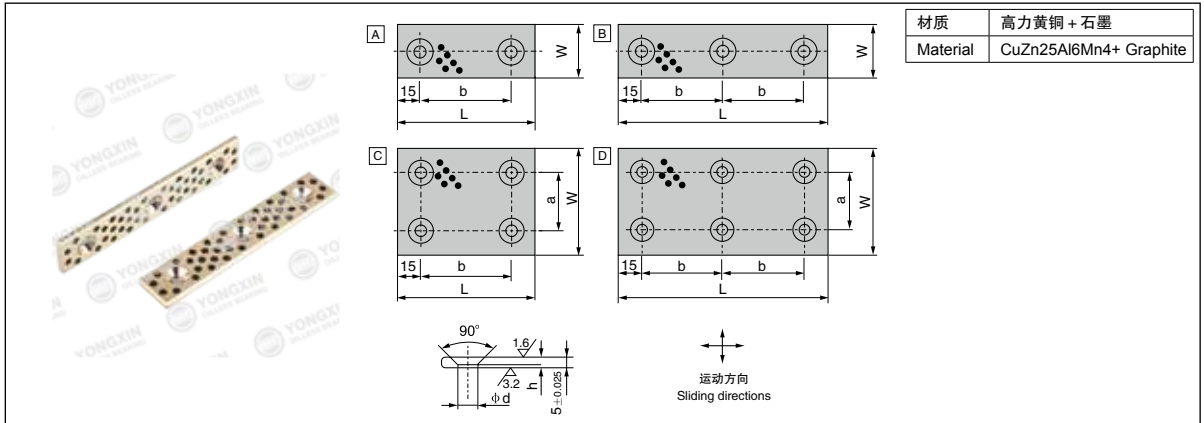
**JTWP 自润滑板**  
**JTWP Oilless Wear Plate-10mm Thick**



单位unit:mm

型号规格 Standard No.	W	L	a	b	图示 Sketch		
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			
JTWP 38 × 100		100		50			
JTWP 38 × 125		125		75			
JTWP 38 × 150		150		100			
JTWP 48 × 75	48	75	-	45			
JTWP 48 × 100		100		50			
JTWP 48 × 125		125		75			
JTWP 48 × 150		150		100			
JTWP 48 × 200		200		150			
JTWP 75 × 75	75	75	-	25		B	
JTWP 75 × 100		100		50			
JTWP 75 × 125		125		75			
JTWP 75 × 150		150		100			
JTWP 75 × 200		200		150			
JTWP 100 × 100	100	100	50	50	B		
JTWP 100 × 125		125		75			
JTWP 100 × 150		150		100			
JTWP 100 × 200		200		150			
JTWP 100 × 250		250		200			
JTWP 125 × 150	125	150	50	100			B
JTWP 125 × 200		200		150			
JTWP 125 × 250		250		200			
JTWP 150 × 150		150		150			
JTWP 150 × 200	200		150				

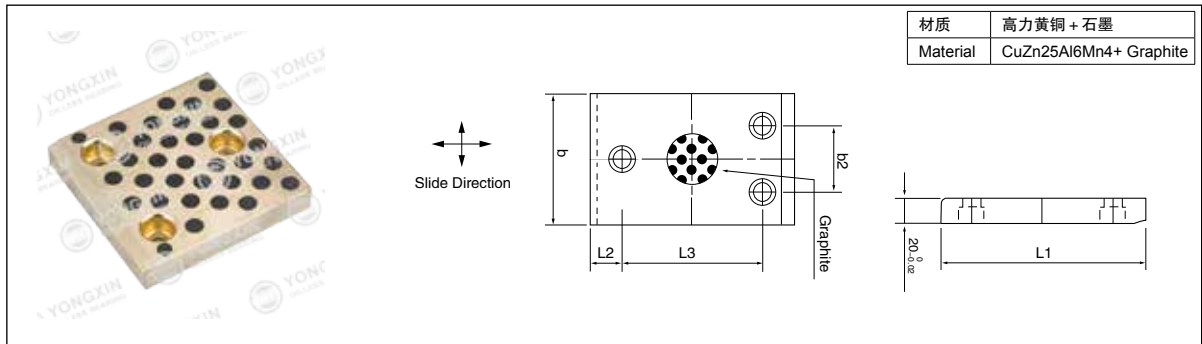
**JUWP 自润滑板**  
**JUWP Oilless Wear Plate-5mm Thick**



单位unit:mm

型号规格 Standard No.	W	L	a	b	图示 Sketch
JUWP 18 × 50	18	50	—	20	A
JUWP 18 × 75		75		45	
JUWP 18 × 100		100		70	
JUWP 18 × 150		150		60	
JUWP 28 × 50	28	50	—	20	A
JUWP 28 × 75		75		45	
JUWP 28 × 100		100		70	
JUWP 28 × 150		150		60	
JUWP 38 × 50	38	50	—	20	A
JUWP 38 × 75		75		45	
JUWP 38 × 100		100		70	
JUWP 38 × 150		150		60	
JUWP 48 × 75	48	75	—	45	A
JUWP 48 × 100		100		70	
JUWP 48 × 125		125		95	
JUWP 48 × 150		150		60	
JUWP 75 × 75	75	75	45	45	C
JUWP 75 × 100		100		70	
JUWP 75 × 125		125		95	
JUWP 75 × 150		150		60	
JUWP 100 × 100	100	100	70	70	C
JUWP 100 × 125		125		95	
JUWP 100 × 150		150		60	

**39D 863 自润滑板**  
**39D 863 Oilless Wear Plate**

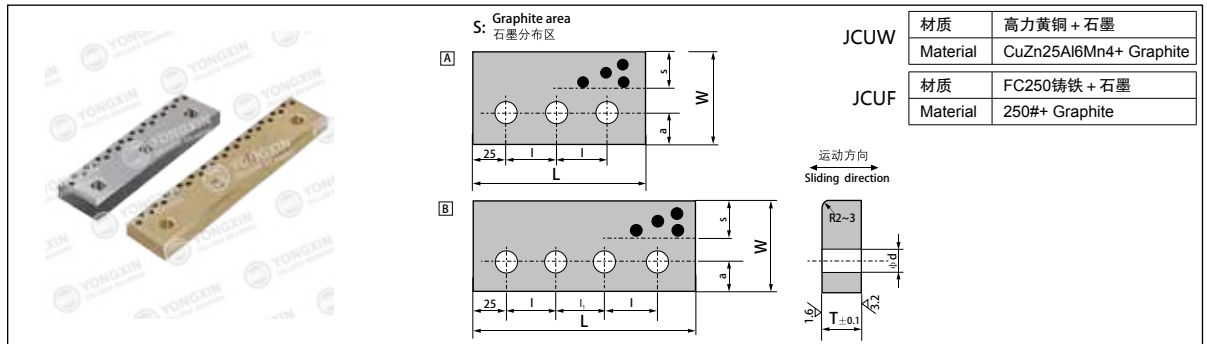


单位unit:mm

型号规格 Standard No.	b -0.2	L1 -0.2	b2 ±0.2	L2 ±0.2	L3 ±0.2	L4 ±0.2	Bolt	Screw Holes 螺丝孔
39D863-12		80	-		30	-	M8 × 25	
39D863-13		100	-		50	-		
39D863-14		125	-		75	-		2
39D863-15		160	-		110	-		
39D863-16		200	-		150	-		
39D863-111	50	250	-	25	60	80	M12 × 25	
39D863-112		300	-		80	90		
39D863-113		350	-		100	100		4
39D863-114		400	-		120	110		
39D863-115		450	-		140	120		
39D863-116		500	-		150	150		
39D863-21		50	30			-	M8 × 25	
39D863-22		80	-		30	-		
39D863-23		100	-		50	-		2
39D863-24		125	-		75	-		
39D863-25		160	-		110	-		
39D863-26	80	200	-	25	150	-	M12 × 25	
39D863-121		250	-		60	80		
39D863-122		300	-		80	90		
39D863-123		350	-		100	100		4
39D863-124		400	-		120	110		
39D863-125		450	-		140	120		
39D863-126		500	-		150	150		
39D863-31		50		25		-		
39D863-32		80	50	40		-		
39D863-33		100	-		50	-		2
39D863-34	100	125	-		75	-	M12 × 25	
39D863-35		160	-	25	110	-		
39D863-36		200	-		150	-		
39D863-131		450	-		140	120		4
39D863-132		500	-		150	150		
39D863-41		50		25		-		2
39D863-42		80		40		-		
39D863-43		100			50	-		
39D863-44	125	125	75		75	-	M12 × 25	3
39D863-45		160		25	110	-		
39D863-46		200			150	-		
39D863-141		450	-		140	120		4
39D863-142		500	-		150	150		
39D863-51		50		25		-		2
39D863-52		80		40		-		
39D863-53	160	100	110		50	-	M12 × 25	
39D863-54		125		25	75	-		3
39D863-55		160			110	-		
39D863-56		200			150	-		



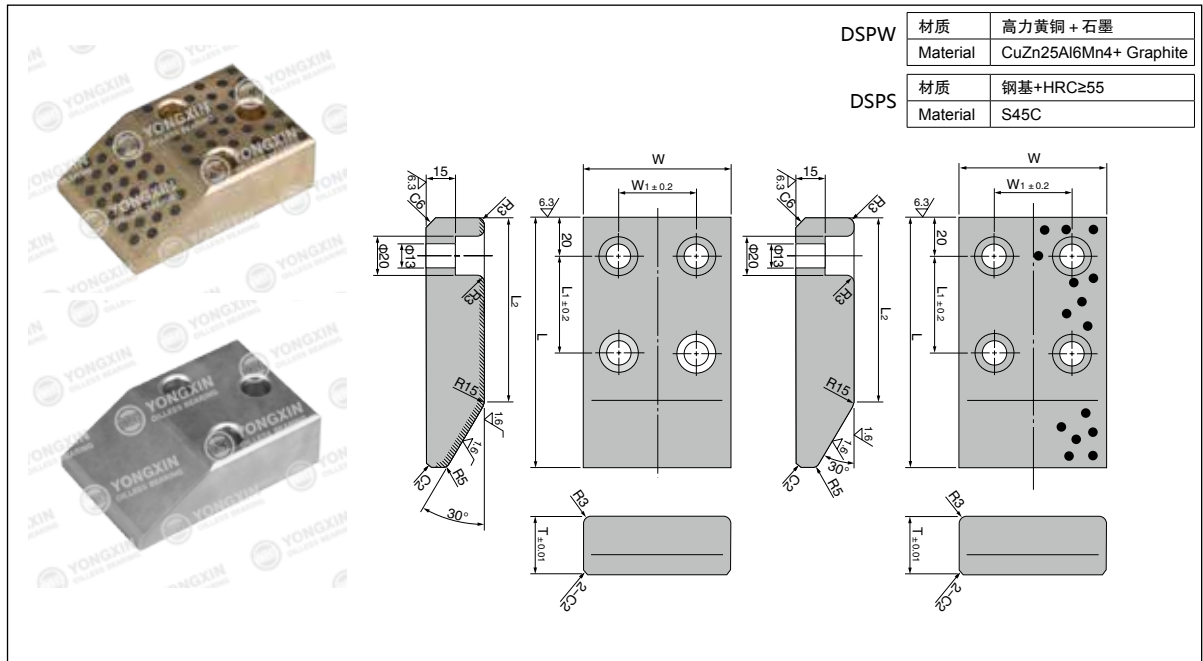
JCUW, JCUF 凸轮上滑板  
JCUW, JCUF Oilless Cam Upper Plate



型号规格 Standard No.	T	L	W	l	l <sub>1</sub>	a	s	Φd	Sketch 图示
JCUW-20 × 150	20	150	52	50	—	20	12	13	A
JCUW-20 × 200		200		75	50				B
JCUW-20 × 250		250		50	B				
JCUW-30 × 150	30	150	72	50	—	20	22	18	A
JCUW-30 × 200		200		75	50				B
JCUW-30 × 250		250		50	B				
JCUW-35 × 150	35	150	77	50	—	20	27	18	A
JCUW-35 × 200		200		75	50				B
JCUW-35 × 250		250		50	B				
JCUW-40 × 150	40	150	82	50	—	20	32	18	A
JCUW-40 × 200		200		75	50				B
JCUW-40 × 250		250		50	B				
JCUW-40 × 150D	40	150	105	50	—	20	32	18	A
JCUW-40 × 200D		200		75	50				B
JCUW-40 × 250D		250		75	50				B

JCUF-20 × 150	20	150	52	50	—	20	12	13	A
JCUF-20 × 200		200		75	50				B
JCUF-20 × 250		250		50	B				
JCUF-30 × 150	30	150	72	50	—	20	22	18	A
JCUF-30 × 200		200		75	50				B
JCUF-30 × 250		250		50	B				
JCUF-35 × 150	35	150	77	50	—	20	27	18	A
JCUF-35 × 200		200		75	50				B
JCUF-35 × 250		250		50	B				
JCUF-40 × 150	40	150	82	50	—	20	32	18	A
JCUF-40 × 200		200		75	50				B
JCUF-40 × 250		250		50	B				
JCUF-40 × 150D	40	150	105	50	—	20	32	18	A
JCUF-40 × 200D		200		75	50				B
JCUF-40 × 250D		250		75	50				B

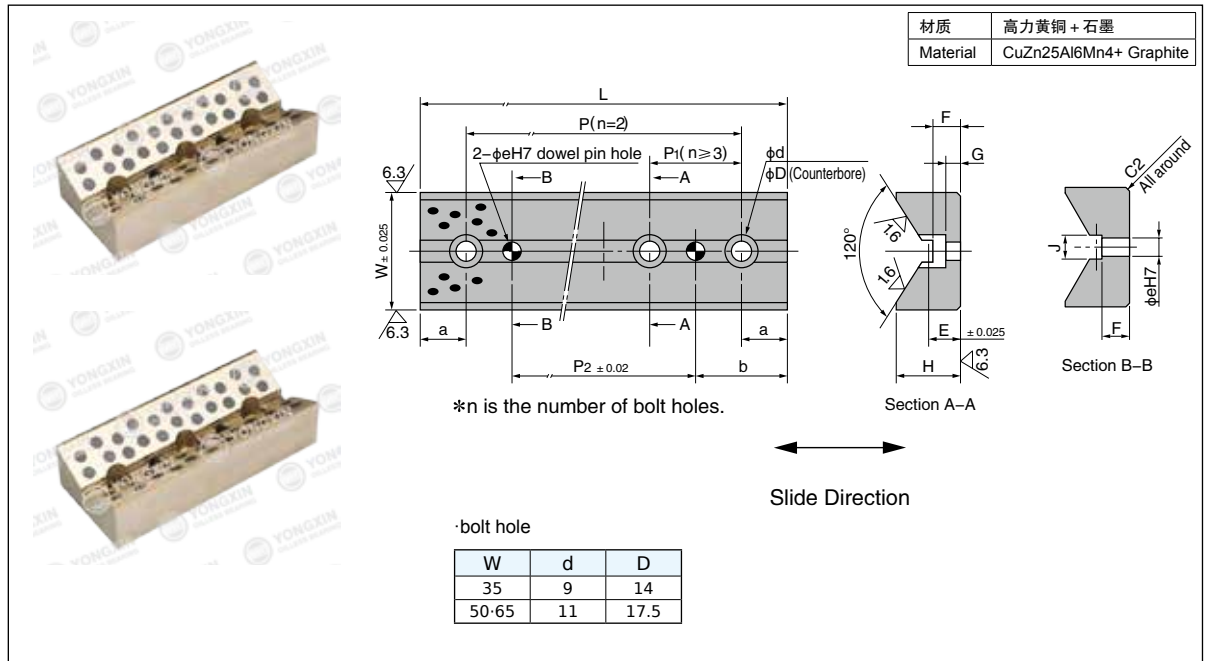
**DSPW/DSPS 凸轮行程滑板**  
**DSPW/DSPS Cam Stroke Plate**



单位unit:mm

型号规格 Standard No.	W	L	T	W <sub>1</sub>	L <sub>1</sub>	L <sub>2</sub>
DSPW/DSPS-75 × 130	75	130	30	40	50	95
DSPW/DSPS-75 × 150		150	45		45	90
DSPW/DSPS-100 × 130	100	130	30	60	50	95
DSPW/DSPS-100 × 150		150	45		45	90
DSPW/DSPS-100 × 170		170	60			
DSPW/DSPS-100 × 200		200			75	120
DSPW/DSPS-125 × 130	125	130	30	85	50	95
DSPW/DSPS-125 × 150		150	45		45	90
DSPW/DSPS-125 × 170		170	60			
DSPW/DSPS-125 × 200		200			75	120
DSPW/DSPS-150 × 130	150	130	30	110	50	95
DSPW/DSPS-150 × 150		150	45		45	90
DSPW/DSPS-150 × 170		170	60			
DSPW/DSPS-150 × 200		200			75	120

DCBS/DCBSL V 型导板  
DCBS/DCBSL V Cam Slide Guide



单位unit:mm

型号规格 Standard No.	W	L	H	$l$	$l_1$	P	P1	n	P2	E	F	G
DCBS	65	100	35	20	40	60	-	2	20	18	15	8
		150						3	50			
		200		4	100							
		250		5	150							
		300		6	200							
DCBSL	65	100	37	20	40	60	-	2	20	20	20	10
		125							75			
		150		100	50							
		200		75	100							
		250		-	100	3	150					
		300		125	200							

DCBSP/DCBSPL V 型导板  
DCBSP/DCBSPL V Cam Slide Guide

材质	高力黄铜 + 石墨
Material	CuZn25Al6Mn4+ Graphite

\*n is the number of bolt holes.

\*The dowel hole effective depth is 15 mm.

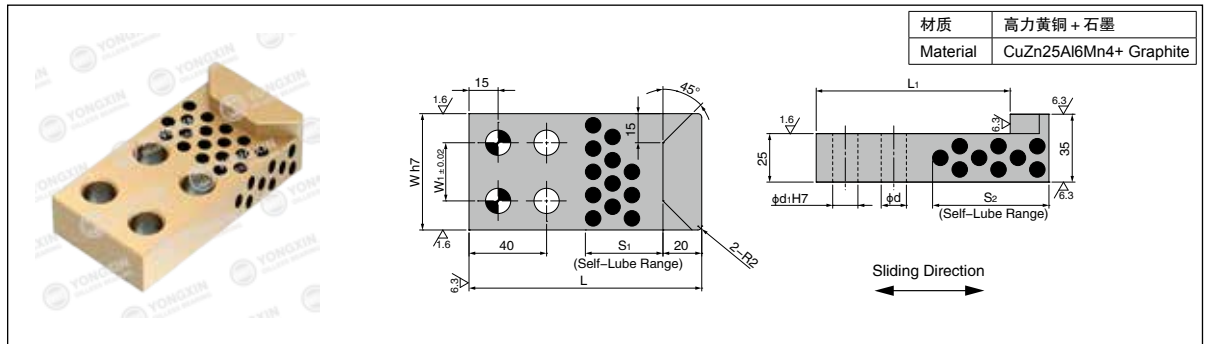
W	d	D
35	9	14
50-65	11	17.5

W	H
35	35
50	50
65	65

单位unit:mm

型号规格 Standard No.	W	L	H	$\ell$	$\ell_1$	P	P1	n	P2	E	G
DCBSP	65	100	47	25	50	60	-	2	20	44	20
		150						3	50		
		200						4	100		
		250						5	150		
		300						6	200		
DCBSPL	65	100	30	25	50	60	-	2	20	26	10
		125							25		
		150							50		
		200							75		
		250							100		
		300							125		

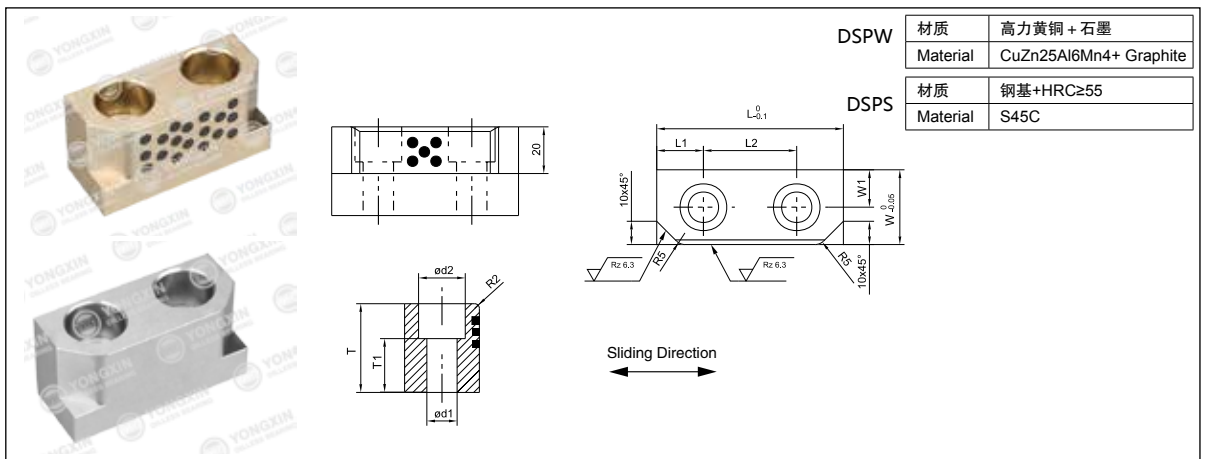
**DPGPC 自润导板**  
**DPGPC Cam Pad Guide Plate**



单位unit:mm

型号规格 Standard No.	W	h7	L <sub>1</sub>	L <sub>2</sub>	S <sub>1</sub>	S <sub>2</sub>	W <sub>1</sub>	d	d <sub>1</sub>
DPGPC-60 × 120	60	0 -0.030	120	100	40	60	30	13	13
DPGPC-60 × 140			140	120	60	80			
DPGPC-60 × 160			160	140	80	100			
DPGPC-100 × 120	100	0 -0.035	120	100	40	60	70	18	16
DPGPC-100 × 140			140	120	60	80			
DPGPC-100 × 160			160	140	80	100			
DPGPC-150 × 120	150	0 -0.040	120	100	40	60	120	18	16
DPGPC-150 × 140			140	120	60	80			
DPGPC-150 × 160			160	140	80	100			

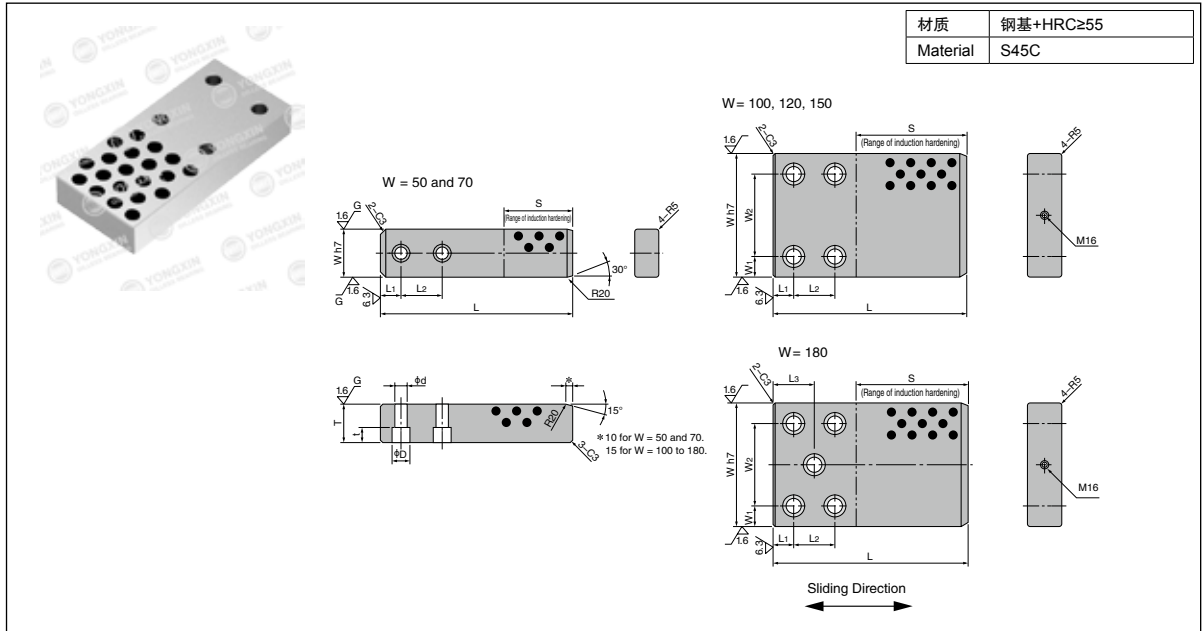
**DCPRB/DCPRBS 自润导板**  
**DCPRB/DCPRBS Cam Pad Guide Plate**



单位unit:mm

型号规格 Standard No.	W × L × S	L <sub>1</sub>	L <sub>2</sub>	W <sub>1</sub>	T <sub>1</sub>	d <sub>1</sub>	d <sub>2</sub>
DCPRB/DCPRBS	25 × 60 × 30	15	30	11	18	11	17.5
DCPRB/DCPRBS	32 × 60 × 38	15	30	16	23	13	20
DCPRB/DCPRBS	32 × 80 × 38	20	40	16	23	13	20

DGBZ 自润外导板  
DGBZ Oilless Wear Plate



单位unit:mm

型号规格 Standard No.	W	L	W h7	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	W <sub>1</sub>	W <sub>2</sub>	D	d	t	e	s	T	
DGBZ-50 × 160	50	160	50	20	50								60	30	
DGBZ-50 × 200		200			0 -0.025								80		120
DGBZ-50 × 260		260													
DGBZ-70 × 230	70	230	70	25	60			26	18	18	10		100	35	
DGBZ-70 × 260		260			0 -0.030								75		160
DGBZ-70 × 300		300											150		150
DGBZ-70 × 350		350													
DGBZ-100 × 230	100	230	100		60	20							100		
DGBZ-100 × 280		280											100		160
DGBZ-100 × 330		330											120		200
DGBZ-100 × 390		390			0 -0.035								60		100
DGBZ-120 × 230	120	230	120		60		60						100	45	
DGBZ-120 × 280		280											100		160
DGBZ-120 × 330		330											120		200
DGBZ-120 × 390		390													
DGBZ-150 × 280	150	280	150		60	30	90	32	22	22	15		160	50	
DGBZ-150 × 330		330											80		190
DGBZ-150 × 390		390											140		180
DGBZ-150 × 430		430													
DGBZ-180 × 280	180	280	180	30	60								160	55	
DGBZ-180 × 330		330			0 -0.040								80		70
DGBZ-180 × 390		390											140		100
DGBZ-180 × 430		430											180		120
DGBZ-180 × 480		480											200		130
DGBZ-180 × 550		550											225		142.5



# FR

## 增强四氟软带 BORNZE SELF- LUBRICATING BEARING

### 结构特性及用途

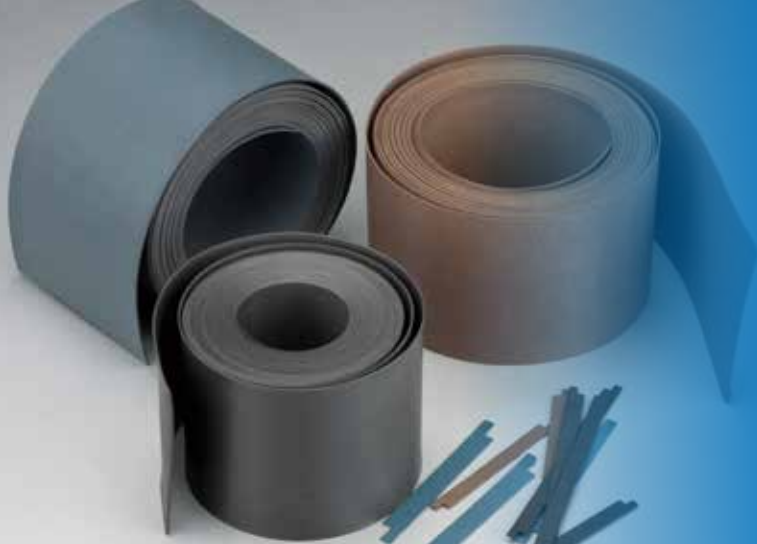
### Structure Characteristics and Applications



FR 以金属网为基材，表面附着以PTFE为主的耐磨材料。产品广泛运用化工行业、食品工业、汽机车、办公机械、纺织机械、汽车门铰链风轻载但需要自润滑材料，可运用于不同的领域。这种产品更容易于安装。

FR soft strip material consists of a bronze mesh shell, laminated with compounded PTFE tape. It is widely used in car door hinges, joint bearings, medical industries, food industries, textile machines etc. The standard wall thickness is  $0.48 \pm 0.02$  mm.

性能指标 Performance index		数据 Data
最大承载 P Max Load Capacity	静载 Static load	350N/mm <sup>2</sup>
	动载 Dynamic load	180N/mm <sup>2</sup>
最高线速度 V Max Sliding Speed	干摩擦 Dry friction	0.5m/s
	油润滑 Oil lubrication	2.5m/s
最高PV值 Max PV Value Limit		3.6N/mm <sup>2</sup> ·m/s
摩擦系数μ Friction coefficient		0.03~0.20
使用温度 Working temperature		-50°C ~ +250°C



# FD

## 含铜四氟软带 PTFE SOFT STRIPS

### 结构特性及用途 Structure Characteristics and Applications



#### FD-1 含铜四氟软带 Copper PTFE soft strip

该产品是以聚四氟乙烯为主要原料，填充铜粉等耐磨材料，经模具压制烧结而成，具有良好的耐磨性，摩擦系数低，在有润滑油和无油润滑条件下都能正常使用。产品被广泛应用于汽车减震器，汽车活塞环。

FD-1 Copper PTFE soft strip as main material is made of filling copper powder and wear resistance material pressing and agglomeration, it has low wear resistance and low friction, it can work with or without oil. The products have been widely used in automobile shake absorber and piston rings.

性能指标 Performance index		数据 Data	性能指标 Performance index		数据 Data
最大承载 P Max Load Capacity	静载 Static load	80N/mm <sup>2</sup>	延伸率 Extension Rate		100%
	动载 Dynamic load	40N/mm <sup>2</sup>	摩擦系数μ Friction coefficient		≤0.25
最高线速度 V Max Sliding Speed		1.5m/s	使用温度 Working temperature		-100°C ~ +250°C
抗拉强度 Tensile Strength		18N/mm <sup>2</sup>	热膨胀系数 Coefficient of thermal expansion		8×10 <sup>-5</sup> /K



#### FD-2 含铜四氟软带 Copper PTFE soft strip

该产品是以聚四氟乙烯为主要原料，填充石墨等耐磨材料，经模具压制烧结而成，具有良好的韧性，耐磨性。产品被广泛应用于汽车减震器。

Graphite PTFE soft strip with PTFE as main material is made though filling wear proof material such as graphite though polishing, pressing and agglomeration, it has good tenacity and wearing performance. The products have been widely used in automobile absorber.

性能指标 Performance index		数据 Data	性能指标 Performance index		数据 Data
最大承载 P Max Load Capacity	静载 Static load	80N/mm <sup>2</sup>	延伸率 Extension Rate		200%
	动载 Dynamic load	40N/mm <sup>2</sup>	摩擦系数μ Friction coefficient		≤0.25
最高线速度 V Max Sliding Speed		1.5m/s	使用温度 Working temperature		-100°C ~ +250°C
抗拉强度 Tensile Strength		13.2N/mm <sup>2</sup>	热膨胀系数 Coefficient of thermal expansion		8×10 <sup>-5</sup> /K



#### FD-3 含铜四氟软带 Copper PTFE soft strip

该产品是以聚四氟乙烯为主要原料，填充特殊的耐磨材料，经模具压制烧结而成，具有良好的耐磨性，耐冲击性及密封性能。产品被广泛应用于加油机流量泵，或密封环使用。

FD-3 modified soft strip is based on PTFE and filled into specific lubricant through a combination of mold pressing and sintering. It is of high wear resistance; good anti impact ness and good performance in airproof. at present it is widely applied in flow pump of the greasing machinery and ring seal etc.

性能指标 Performance index		数据 Data	性能指标 Performance index		数据 Data
最大承载 P Max Load Capacity	静载 Static load	80N/mm <sup>2</sup>	延伸率 Extension Rate		250%
	动载 Dynamic load	40N/mm <sup>2</sup>	摩擦系数μ Friction coefficient		≤0.25
最高线速度 V Max Sliding Speed		1.5m/s	使用温度 Working temperature		-100°C ~ +250°C
抗拉强度 Tensile Strength		20N/mm <sup>2</sup>	热膨胀系数 Coefficient of thermal expansion		8×10 <sup>-5</sup> /K





# FU

## 粉末冶金含油轴承 POWDER METALLURGY OIL-RETAINING BEARING

### 产品介绍 Product introduction

FU-1 铜基含油轴承，是以锡青铜粉末为原料，经过模具压制，在高温中烧结后整形而成。它的基体有细微、均布的孔隙，经润滑油真空浸渍后形成含油状态。该产品具有短期不加油润滑，使用成本低，内外径尺寸可变化等特点，适应于中速、低载荷的场所使用。产品已广泛应用于家用电机、电动工具、纺织机械、化工机械、汽车工业和办公设备等场合。

FU-1 its copper oil-retaining bearing, bronze powder in zion as raw material, through the mould pressing, sintering temperature after in plastic. It is fine, the matrix of the pore, oil vacuum macerate formed after oil. This product has the short-term oil lubrication, using low cost, can change od characteristics, such as low speed, suitable for use of load. The products have been widely applied in household motor, electric tools, textiles machinery, chemical machinery, automobile industry and office equipment etc.

### 技术参数 Technical Parameters

性能指标 Performance index		数据 Data
最大承载压力	The maximum load pressure	35 N/mm <sup>2</sup>
最高温度	The highest temperature	- 80 ~ +160°C
最高滑动速度	Maximum sliding speed	2.5 m/s
合金材质	Alloy material	CuSn6-6-3
最高PV值	The highest PV value	2.45N/mm <sup>2</sup> . m/s

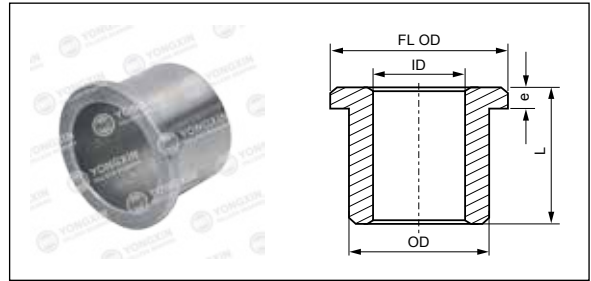
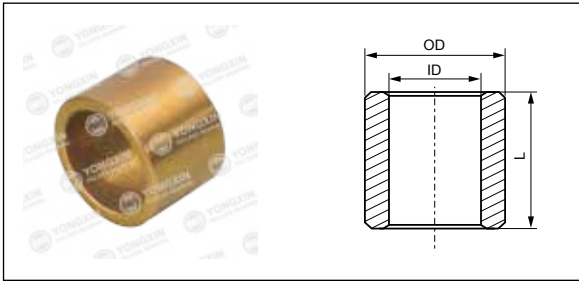
FU-2 铁基含油轴承具有生产效力高、加工工时少、花费成本低、耗损材料省等优点。用一般切削加工法制造零件时材料利用率为40-50%甚至更低，而粉末冶金法的材料利用率可达95%以上并且在许多情况下可用铁基粉末冶金轴套代替铜合金轴套，从而节省大量有色金属，而且生产的制品零件性能平稳、耐磨、精度要求高，与其它金属切削方法制造的零件具有明显的经济效益。

FU-2 iron-based oil bearing has several advantages, such as high production efficiency, less processing time, cost-efficient, and less wear and tear. With the general method of manufacturing machining parts, material utilization can be 40-50% or even lower, while the powder metallurgy method of material utilization uses up to 95% and in many cases can be used instead of iron-based powder metallurgy copper alloy sleeve bushings, thus saving a lot of non-ferrous metals, and the production of products, parts, steady performance, wear resistance, high precision, and other parts made of metal cutting method has obvious economic benefits.

### 技术参数 Technical Parameters

性能指标 Performance index		数据 Data
最大承载压力	The maximum load pressure	35 N/mm <sup>2</sup>
最高温度	The highest temperature	- 80 ~ +160°C
最高滑动速度	Maximum sliding speed	2.5 m/s
合金材质	Alloy material	CuSn6-6-3
最高PV值	The highest PV value	2.45N/mm <sup>2</sup> . m/s

**FU 粉末冶金含油轴承**  
**FU Powder Metallurgy Oil-retaining Bearing**



Part No.	ID	ID	OD	L
005	04*07*08	4	7	8
636	04*08*08	4	8	8
006	04*08*10	4	8	10
007	04*08*12	4	8	12
008	04*10*10	4	10	10
647	04*12*08	4	12	8
009	05*09*05	5	9	5
010	05*09*09	5	9	9
011	05*09*11	5	9	11
012	05*10*05	5	10	5
013	05*10*10	5	10	10
014	05*10*14	5	10	14
015	06*08*08	6	8	8
016	06*10*06	6	10	6
017	06*10*10	6	10	10
018	06*10*12	6	10	12
019	06*10*14	6	10	14
020	06*12*06	6	12	6
609	06*12*10	6	12	10
021	06*12*12	6	12	12
022	06*12*15	6	12	15
625	06*12*16	6	12	16
023	06*12*25	6	12	25
024	06*14*12	6	14	12
025	07*11*08	7	11	8
026	07*11*13	7	11	13
635	07*11*14	7	11	14
027	07*14*10	7	14	10
029	08*11*16	8	11	16
030	08*12*08	8	12	8
031	08*12*10	8	12	10
032	08*12*12	8	12	12

SIZE	ID	OD	FLOD	e	L
6*12*14*2*8	6	12	14	2	8
6*12*14*2*13	6	12	14	2	13
6*12*14*2*20	6	12	14	2	20
7*12*16*2.5*8	7	12	16	2.5	8
7*12*16*2.5*14	7	12	16	2.5	14
7*12*16*2.5*20	7	12	16	2.5	20
8*14*18*3*8	8	14	18	3	8
8*14*18*3*14	8	14	18	3	14
8*14*18*3*20	8	14	18	3	20
10*14*18*2*10	10	14	18	2	10
10*14*18*2*14	10	14	18	2	14
10*14*18*2*20	10	14	18	2	20
10*16*20*3*10	10	16	20	3	10
10*16*20*3*16	10	16	20	3	16
10*16*20*3*20	10	16	20	3	20
12*16*20*2*12	12	16	20	2	12
12*16*20*2*16	12	16	20	2	16
12*16*20*2*25	12	16	20	2	25
12*18*22*3*12	12	18	22	3	12
12*18*22*3*18	12	18	22	3	18
12*18*22*3*25	12	18	22	3	25
14*20*25*3*14	14	20	25	3	14
14*20*25*3*20	14	20	25	3	20
14*20*25*3*25	14	20	25	3	25
15*22*28*3*15	15	22	28	3	15
15*22*28*3*22	15	22	28	3	22
15*22*28*3*30	15	22	28	3	30
16*22*28*3.5*15	16	22	28	3.5	15
16*22*28*3.5*22	16	22	28	3.5	22
16*22*28*3.5*30	16	22	28	3.5	30
17*25*32*4*17	17	25	32	4	17
17*25*32*4*25	17	25	32	4	25

# FZ

## 钢球保持架

### BALL RETAINER BEARING

#### 优点与用途

#### Advantages and Application

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、又有移动の場合，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場合，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。

#### 产品简介 Introduction

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

FZH, FZL, FZP, ball retaining solid are made with respectively, a copper, aluminum, POM base. In its peripheral surface, they are processed orderly, with proper size, shape, and special cavities which have inserted rolling balls. Using the latest trench mouth circumference lock ball technology, it effectively solves the traditional lock balls, but ball indentation-type lock cannot completely prevent the ball off problems. Bottom of the hole machined rabbet 90° free rotation of the ball in the hole without falling off. As the ball retainer is greater than the diameter of the wall thickness of the ball up when in use to maintain the circle, the outer peripheral surface, direct contact with the shaft hole match, the base member (retaining ring) floating in the middle, and a hole matching the shaft radius is less than the ball diameter, namely coordinated with the ball for the interference fit, with high accuracy, flexible shaft and hole relative motion. It is ideal replacements for retaining rings.

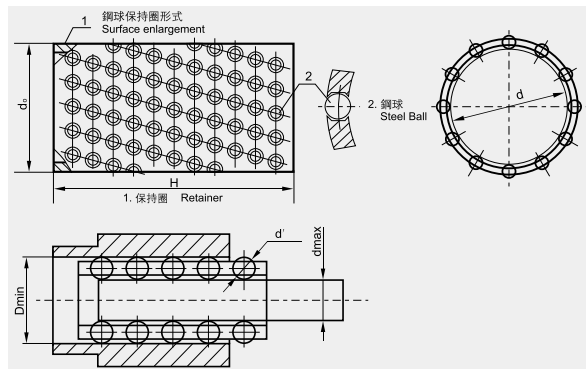
As the traditional work-craft has some grudge between bushing with posts, and the coefficient of friction is larger. now we have changed the work-ways to steel-ball directly face to face guide bushing, so the precision is improved. it composes of both active roll and lower friction coefficient, now they 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

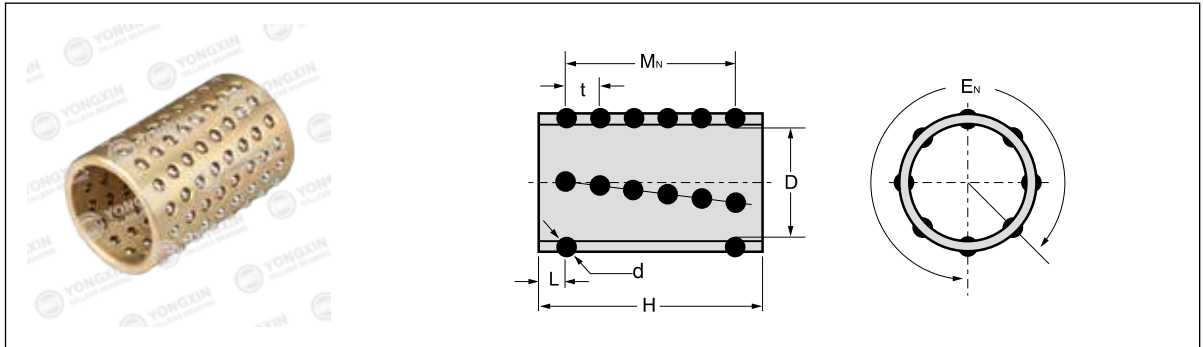
#### Requirements for Installed Components

1. 导套：材料GCr15、YB9，热处理，硬度HRC62~66，技术条件按GB/T12446与轴配合应具有0.01-0.02径向过盈量，表面粗糙度为 $R_{a}0.05$
2. 轴：材料GCr15、YB9，热处理，硬度HRC62~66，技术条件按GB/T12446，轴的公差采用h5，表面粗糙度为 $R_{a}0.05$
3. 测量：用通用的测量手段（气动量仪、外径千分尺、内径千分表等）测量轴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/T12446. Request 0.01-0.02Mm the surface roughness is  $R_{a}0.05$
2. Guidie posts: matrial GRr15, TB9, heat treatment HRC62-66, the tolerance of shaft is h5, the surface roughness is  $R_{a}0.05$
3. Size test: it is tested by outside micrometer & dial gauge as usual. The ymax ( $y_{max}+2d'-d_{min}$ ) request 0.01-0.02Mm



**FZ 钢球保持架**  
**FZ Ball Retainer Bearing**



Model	D	H	d	$E_N$	$M_N$	Balls	t	L
BKL-FZ(X)-1950	19	50	3	12	8	96	5.5	5.75
BKL-FZ(X)-1960	19	60	3	12	10	120	5.5	5.25
BKL-FZ(X)-2050	20	50	3	12	8	96	5.5	5.75
BKL-FZ(X)-2060	20	60	3	12	10	120	5.5	5.25
BKL-FZ(X)-2250	22	50	3	14	8	112	5.5	5.75
BKL-FZ(X)-2260	22	60	3	14	10	140	5.5	5.25
BKL-FZ(X)-2360	23	60	3	14	10	140	5.5	5.25
BKL-FZ(X)-2475	24	75	3	16	13	208	5.45	4.8
BKL-FZ(X)-2550	25	50	3	16	8	128	5.5	5.75
BKL-FZ(X)-2560	25	60	3	16	10	160	5.5	5.25
BKL-FZ(X)-2575	25	75	3	16	13	208	5.45	4.8
BKL-FZ(X)-2775	27	75	3	16	13	208	5.45	4.8
BKL-FZ(X)-2860	28	60	4	14	8	112	6.5	7.25
BKL-FZ(X)-2875	28	75	4	14	11	154	6.5	5.0
BKL-FZ(X)-3060	30	60	4	14	8	112	6.5	7.25
BKL-FZ(X)-3075	30	75	4	14	11	154	6.5	5.0
BKL-FZ(X)-3260	32	60	4	16	8	128	6.5	7.25
BKL-FZ(X)-3275	32	75	4	16	11	176	6.5	5.0
BKL-FZ(X)-3290	32	90	4	16	13	208	6.5	6.0
BKL-FZ(X)-3685	36	85	4	16	12	192	6.5	6.75
BKL-FZ(X)-3690	36	90	4	16	13	208	6.5	6.0
BKL-FZ(X)-3870	38	70	5	16	8	128	8.0	7.0
BKL-FZ(X)-3890	38	90	5	16	11	176	7.9	5.5
BKL-FZ(X)-4090	40	90	5	16	11	176	7.9	5.5
BKL-FZ(X)-4590	45	90	5	18	11	198	7.9	5.5
BKL-FZ(X)-45110	45	110	5	18	13	234	8.0	7.0
BKL-FZ(X)-5090	50	90	5	20	11	220	7.9	5.5
BKL-FZ(X)-50110	50	110	5	20	13	260	8.0	7.0
BKL-FZ(X)-6090	60	90	5	22	11	242	7.9	5.5
BKL-FZ(X)-60110	60	110	5	22	13	286	8.0	7.0
BKL-FZ(X)-80130	80	130	5	28	15	420	8.0	9.0

## JDB 轴承的装配 JDB Bearing Installation

### 机械压装 Pressure assembly

通常情况下，轴承可以采用压力装配的方式进行安装，装配时应采用芯轴慢慢压入，禁止直接击打轴承以免产生变形，装配前应确保座孔内表面光洁无异物。

In most applications, ZTBz bearings can be fitted by press. For this procedure, a mandrel and a press machine are used, it is forbidden to hit the bearing in order to avoid deformation of bearings. The housing inner side should smooth without contamination.

### 冷冻装配 Pressure assembly

通过液氮或干冰采用冷装配压装相比采用机械压装方式更为有效，此时标准的冷冻温度为  $-40^{\circ}\text{C} \sim -70^{\circ}\text{C}$ ，冷冻时间一般为 1 小时以上，具体需要根据零件的壁厚和配合公差。

The cooling fit uses liquid nitrogen or dry ice, compared to press fitting, cooling fit is efficient and achieves more accurate installation. The standard cooling temperature is  $-40^{\circ}\text{C} \sim -70^{\circ}\text{C}$ , cooling time should be more than one hour, details according to the bushing wall thickness and interference design.

轴承的收缩量可以根据以下公式计算：

Calculation of bearing shrinkage amount of outer diameter:

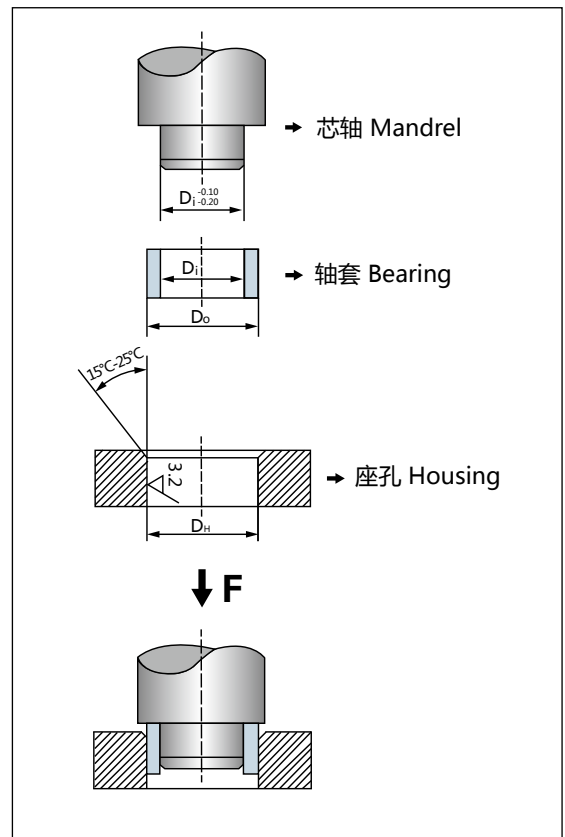
$$\Delta D = D \times \alpha \times \Delta T$$

$\Delta D$ : 外径收缩量 Shrinkage of bearing OD

D: 轴承外径 Bearing OD

$\alpha$ : 线性膨胀系数 ( $1/10^5\text{K}$ )

$\Delta T$ : 温度差 Temperature difference



## JDB 轴承的装配

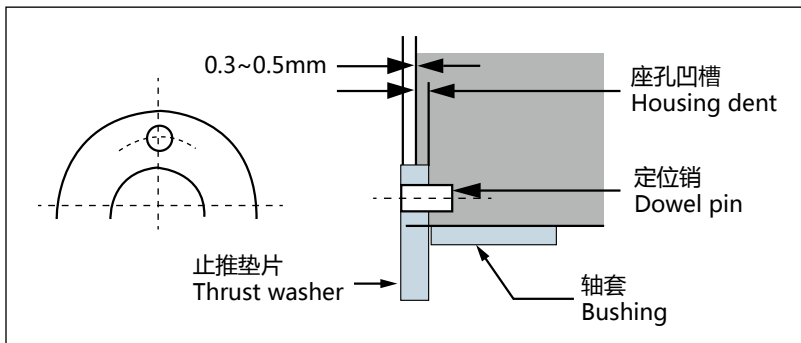
## JDB Bearing Installation

### 止推垫片和滑板的安装 Thrust washers and plate fit

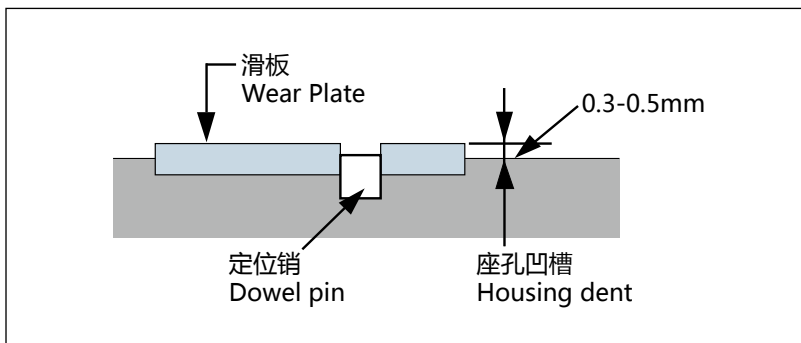
止推垫片和滑板应当安装在座孔的凹槽内，为了避免零件的移动建议使用定位销或沉头螺丝加以固定。

It is recommend to install the thrust washers and sliding plates with the hollow indented housings. To avoid the moving of such parts, a dowel pins is recommended to be installed.

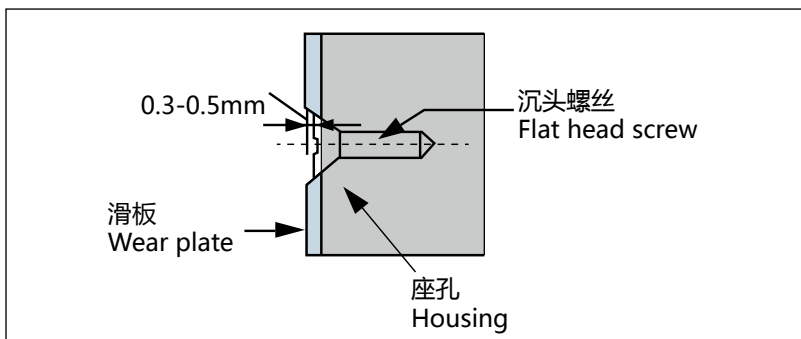
#### 1. 定位销安装 Dowel pin application(thrust washer)



#### 2. 镶嵌式安装 Inlaid installation(plate)



#### 3. 沉头螺丝安装 Flat head screw application



## 卷制类轴承尺寸公差检测方法 Wrapped Bushing Dimensional Inspection

卷制类产品的制造工艺决定了开口缝的存在，使得产品在自由状态下没有很好的圆整度，同时轴套外径和座孔之间为过盈配合，轴套要最大限度地适应座孔的形状，因此不能在自由状态下直接测量产品的内外径而必须使用特殊的测量仪和设备才能检测；ISO3547 标准第 2 部分中对卷制类产品的公差检验作了明确的规定，包括：

检验方法 A：哈夫规检验外径；

检验方法 B：止通规检验外径；

检验方法 C：止通规检验内径；

检验方法 D：测量尺检验大规格产品外径

以及替代检验方法 C 的壁厚检验方法，壁厚检验方法和检验方法 C 不能同时使用。

Rolled products in the manufacturing process determine the existence of open joints, making products in the free state not have a good whole circle shape, while sleeve diameter and the seat for the interference fit between the holes, sleeve adapted to maximize Block hole shape can not be directly measured in the free state the inner/ outside diameter of the product only can be by a special measuring instrument; In ISO3547 standards measured Part 2 of the rolled products made clear tolerance test requirements, including :

Test Method A: Huff regulatory test outside diameter;

Test method B: use stop-pass gauge to test the outside diameter;

Test method C: use stop-pass gauge to test the inside diameter;

Test method D: Measure the outer diameter of large scale product and use wall-thickness test to replace test method C. (Wall-thickness test and test method C can not be used at the same time.)

### 外径检验方法 External diameter test methods

检验方法 A (ISO3547-2: Test A)

采用如右视图的上下两哈夫规对外径进行检验，检验时产品的开口缝朝上哈夫规相向施加检验载荷  $F_{ch}$ ，该载荷使卷制轴套能够按符合要求的方式就位于检验模。检验中，由于弹性变形卷制轴套外径会变小但不会产生永久变形。产品的外径可以通过检验模之间的距离  $Z$  的变化量  $\Delta Z$  来计算。

Test A of ISO 3547 Part 2

Check the outside diameter of a wrapped bush using measuring equipment as shown to the right, with a checking block consisting of upper and lower halves and setting plugs, at a determined checking load of  $F_{ch}$ , during the test the outside diameter of the bush is made smaller by the elastic reduction, however it is not a permanent deformation. The bushes outside diameter can be calculated from the difference in the value of  $z$  ( $\Delta Z$ )

检验方法 B (ISO3547-2: Test B)

检验采用两个环规即通规和止规，用手以最大力 250N 可将轴套推入并通过通规；在相同情况下无法进入和通过止规。在某些情况下检验精度可能受到影响，比如轴套不圆或闭合开口缝的力本身已超过 250N，此时建议采用检验方法 A 或测压入力或壁厚相结合的检验方法。

Test B of ISO 3547 Part 2

The test is carried out with two ring gaugs, a Go gauge and a No Go gauge whose diameter Shall be chosen empirically from with Table 6 of ISO3547-1:1999 and agreed upon. It shall be possible to press the bushes into the GO gauge and then push them through with hand pressure (maximum force 250N). On the other hand with the same force, it shall not be possible for them to go into and through the NO GO gauge (See ISO 12307-1)

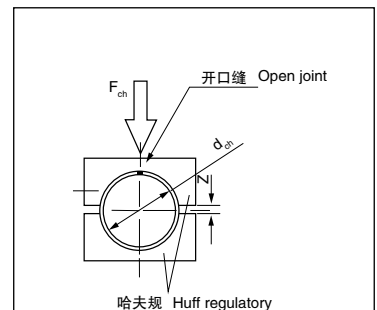
检验方法 D (ISO3547-2: Test D)

采用精确的测量尺来测量外径，一般针对大规格的轴套外径检测。

Test D (ISO 3547-2)

The test is carried out by means of a precision measuring tape.

检验方法 A Test A of ISO



哈夫规和芯棒  $d_{ch} = \text{_____mm}$

Checking block and setting mandrel

检验压力  $F_{ch} = \text{_____N}$

Force test

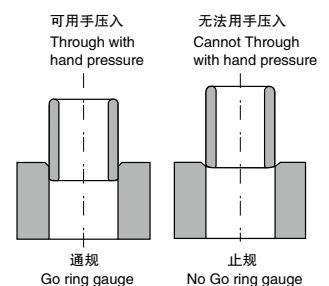
极限值  $\Delta z = \text{_____and_____mm}$

Limiting value

外径公差  $D_o = \text{_____to_____mm}$

OD tolerance

检验方法 B Test B of ISO



## 卷制类轴承尺寸公差检测方法 Wrapped Bushing Dimensional Inspection

### 内径检验方法 Internal diameter test methods

#### 检验方法C (ISO3547-2: Test C)

将轴套压入基准环规后检查轴套的内径，内径的检测可以采用三点测量装置或通、止塞规检验。从实际使用考虑一般建议采用通、止塞规检验，此时在用手最大推力不超过 250N 时通端塞规可以通过轴套内孔，在相同情况下止端塞规应当无法通过轴套内孔。当轴套压入基准环规后，轴套外径可能会引起永久变形而无法正常使用。

#### Test C (ISO3547-2: Test C)

To check the inside diameter, the bush is to be pressed into a ring gauge, whose nominal diameter corresponds to the dimension specified in ISO3547-1:1999. The inside diameter shall be measured with a 3-point measuring instrument or checked with a GO and NO GO plug gauge. The GO plug gauge shall be inserted by a minimum effort; the NO GO plug gauge shall not be inserted by manual pressure (maximum force 250N). In order to enable the manufacturer and the customer to compare results of this test it should be agreed whether results should be obtained by measuring or by gauging.

### 止推片检验方法 Thrust washer test method

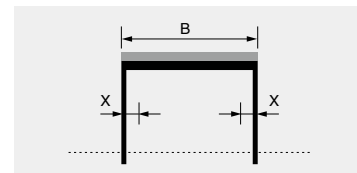
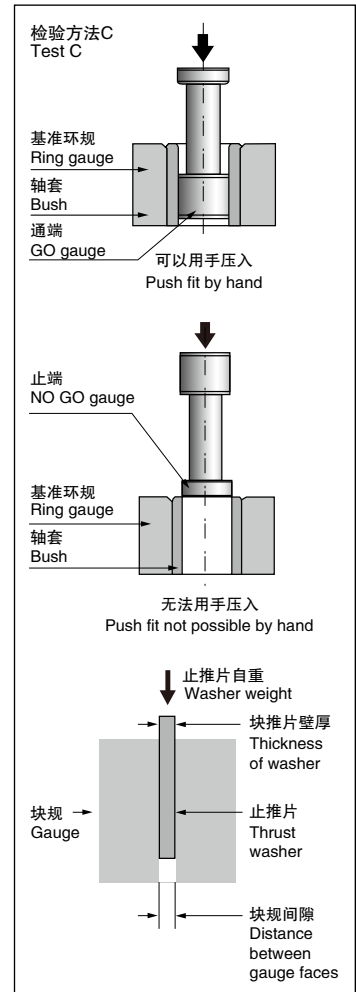
除了厚度公差以外，垫片的平行度对于垫片和对磨件的使用寿命同样重要。我们使用比较有效的检验方法来检测垫片的平行度，让垫片依靠自重来通过两个平行块；当然平行块必须大于垫片本身的规格。

Beside the thickness, the flatness of washer is also important for washer and grinding parts' usage age. We use very helpful test in which the washer falls through the gap between two plain parallel plates of a gauge under its dead weight. The plates must be big enough to cover the whole washer.

### 壁厚检测方法 Wall Thickness test method

作为检验方法 C 的替代方案两则不能同时使用，壁厚根据轴套尺寸在轴向进行测量。

The wall thickness is measured at once, two or three positions axially according to the bearing dimensions. The wall thickness and the inside diameter shall not be specified together on the same drawing.

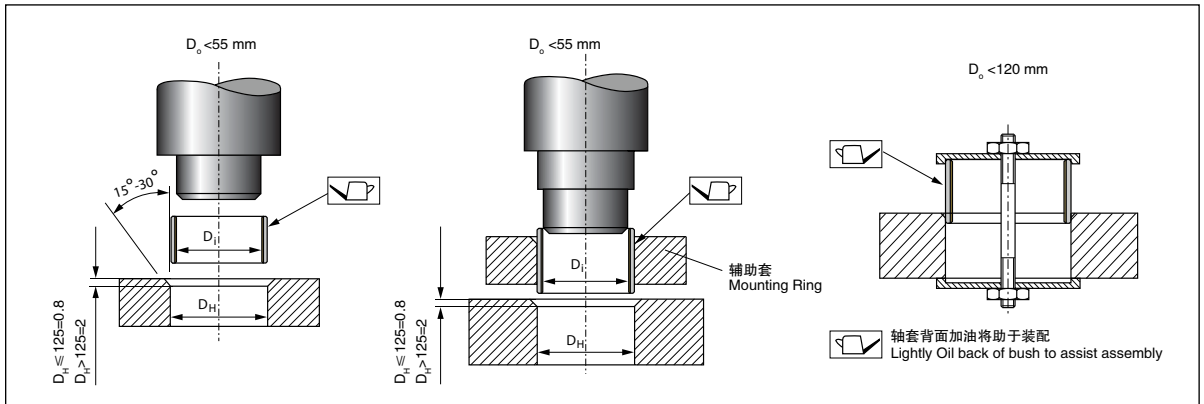


B[mm]	X[mm]	测量点 measurement position
$B \leq 15$	$B/2$	1
$15 < B \leq 50$	4	2
$50 < B \leq 90$	6 and $B/2$	3
$B > 90$	8 and $B/2$	3

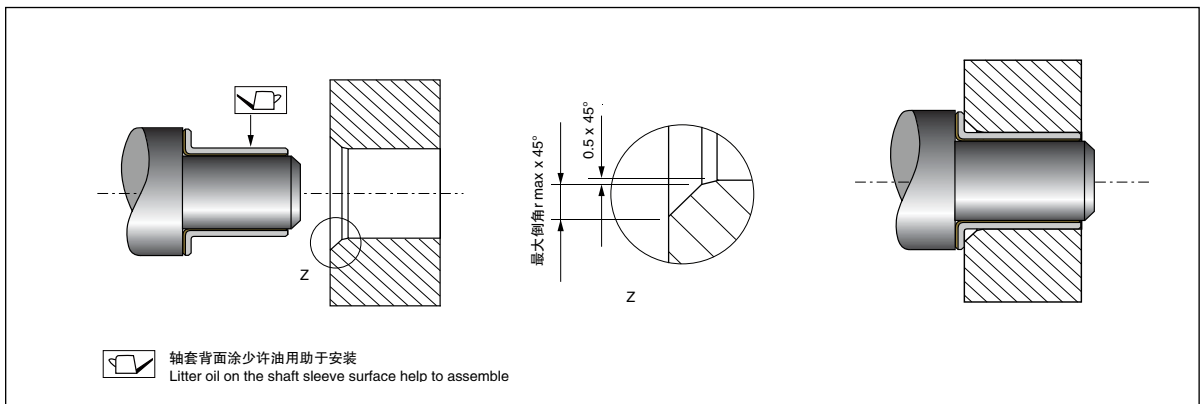


## 卷制类轴承的安装 Wrapped Bushing Installation

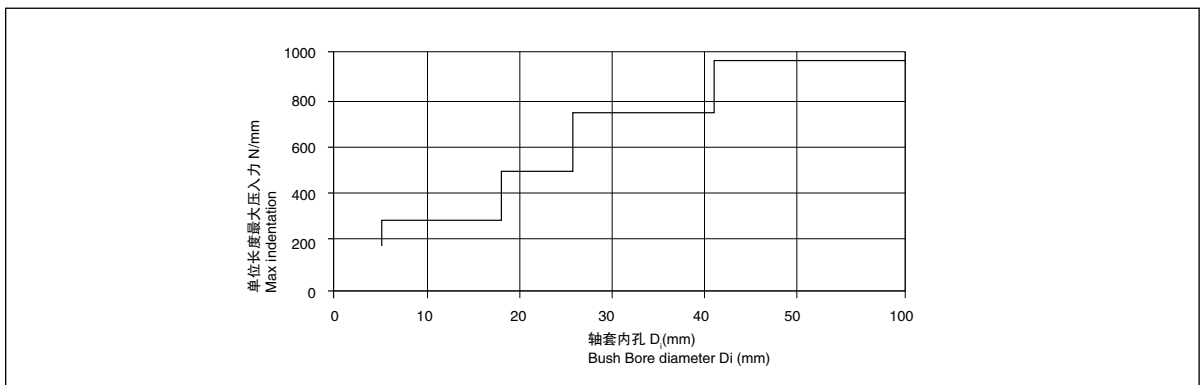
### 直套安装 Straight set of installation



### 翻边套安装 Flange set of installation



### 压入力计算 Indentation Calculation



## 卷制类轴承的安装 Wrapped Bushing Installation

### 同轴度 Concentricity

精确的同轴度对于轴承的正常使用非常重要，要求轴套在一个或者两个长度内的不同轴度以及在翻边或止推片直径内的不同轴度控制在0.02mm内。

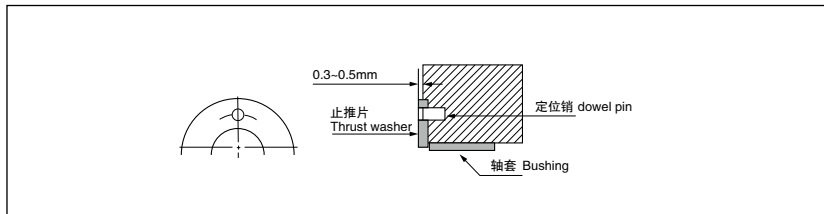
Degree of precision coaxial bearing the normal use for a very important requirement sleeve length in one or two degrees of the different axes and in the flange or thrust washer diameter of the different degree of control shaft within 0.02mm.

### 垫片和滑板的安装 Thrust washers and sliding plates installation

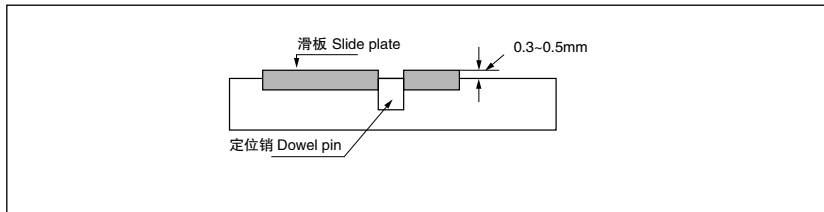
建议垫片和滑板安装在凹陷的座孔内，为了避免移动，同时建议采用定位销加以固定。

It is recommended to install the thrust washers and sliding plates with the hollow indented housing. To avoid the moving of such parts, a Dowel pins is recommended to be installed.

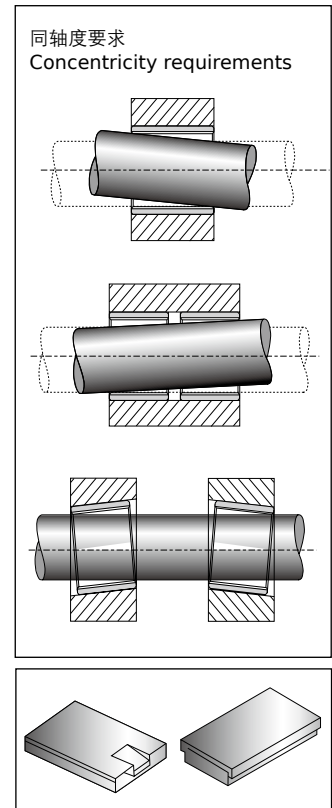
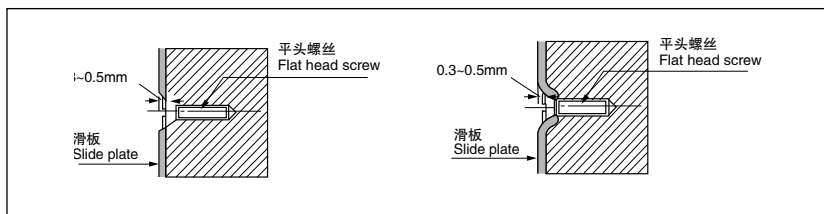
#### 1. 定位销在垫片上的使用 Dowel pin application (thrust washer)



#### 2. 定位销在滑板上的使用 Dowel pin used on slide plate



#### 3. 平头螺丝的使用 Flat head screw application



### 其他固定方法 Other fixation methods

当无法使用定位销时，可以采用激光焊接，粘剂剂和钎焊（温度 < 320℃）的方法加以固定；此时必须注意使用的温度不能超过轴承材料本身能够承受的范围，轴套工作面防止与粘合剂等接触。

When the pin is not available, you can use laser welding, adhesives and brazing (temperature < 320 °C) method to be fixed; while do in this way, temperature used must not higher then the bearing material itself can be standed, the cleave face should be prevent from contacting with adhesives.

## 卷制类轴承的安装 Wrapped Bushing Installation

### PTFE基轴承的加工和安装注意事项 Processing and installation considerations of PTFE-based bearing

PTFE 基轴承一般都是成品零件，组装后内孔不再进行铰、镗等加工，若座孔按推荐的尺寸加工时，卷制类轴承内径的真圆度完全能满足使用要求；

如果客户可以接受干摩擦性能大幅度降低，可以对 PTFE 基轴承在安装后进行内孔挤压以达到更高的精度，强烈建议对挤压芯棒表面进行热处理（深度 0.6mm，HRC > 55）并抛光处理至 Rz1；

当轴承的比压力小或摆动小而要求运行平稳时，可以增大工作间隙，在高温下使用时，每升高 100℃时建议轴径减少 0.008mm；

若轴承座材质是青铜、铝或锌合金时，建议减少轴承座孔以增加轴承装配过盈量；为保证轴承座的刚性，轴承座外径通常为轴承外径的 1.5 倍，薄壁座孔使用时需要考虑压装和使用过程的产生的变形；

PTFE 轴承需要加工时，为了避免毛刺的产生建议从 PTFE 一侧进行加工或钻孔，在钻孔过程中轴套应当有足够的支撑已确保不会由于钻孔压力导致变形；带材的加工方法可以通过剪切、水切割、激光切割等方法。

PTFE-based bearings are generally finished parts, assembled in the hole without the hinge, and other processing, if the bore size of the recommended process, the rolling type bearings with bore roundness can meet the requirements;

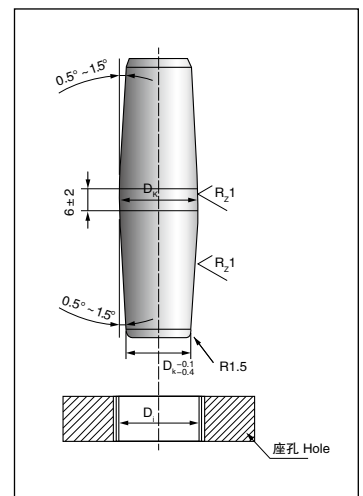
If the client can accept a significant reduction of dry friction, extruding the inner holes on the PTFE-based bearing after the compression to achieve higher accuracy, we strongly recommend the extrusion mandrel surface treatment (depth of 0.6mm, HRC > 55) and polished to Rz1;

When the bearing's specific pressure is small and required to run a smooth swing, you can increase the working space, when used at high temperatures, it is increased by 100 °C , the proposed reduction of shaft diameter 0.008mm;

If the material of bearing is bronze, aluminum or zinc alloy, it is recommended to reduce the bearing hole to increase the amount of interference bearing assembly; to ensure the bearing rigidity, The base of bearing's diameter is usually 1.5 times to the bearing's diameter, thin-walled bore with pressure to consider when installed and used in the process of the deformation;

PTFE bearings need processing, in order to avoid the generation of burrs from the PTFE side of the proposed processing or drilling in the drilling process should have sufficient support sleeve has been to ensure that no pressure leads to deformation of the borehole; processing methods strip can cut, water jet cutting, laser cutting and other methods.

轴承内径 Dia of the axis d	要求内径 Required ID dE	整形工具直径 Diameter of the shaping tools dk
d	d	d+0.03
	d+0.02	d+0.06
	d+0.03	d+0.08
	d+0.04	d+0.10



## 卷制类轴承的安装 Wrapped Bushing Installation

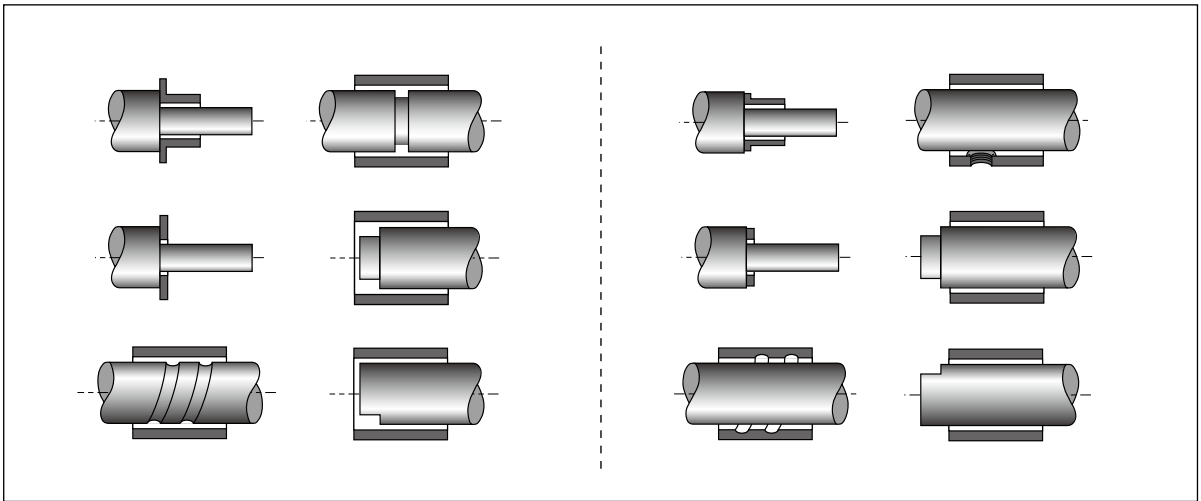
### 对磨轴 The shaft

对磨件的材料、表面硬度、表面粗糙度以及表面处理方式对于轴承的使用寿命的影响很大，一般情况下我们建议轴的硬度在 HRC > 50，表面粗糙度 Ra0.4 以下；在潮湿或易腐蚀的场合建议使用不锈钢、硬质铬镀层。

Grinding pieces of material, surface hardness, surface roughness and surface treatments have a great impact on the life of bearing, in general, we recommend that the hardness of the shaft HRC > 50, surface roughness below Ra0.4; We suggest using stainless steel, hard chrome plating in the wet or corrosive place.

不正确的设计  
Incorrect design

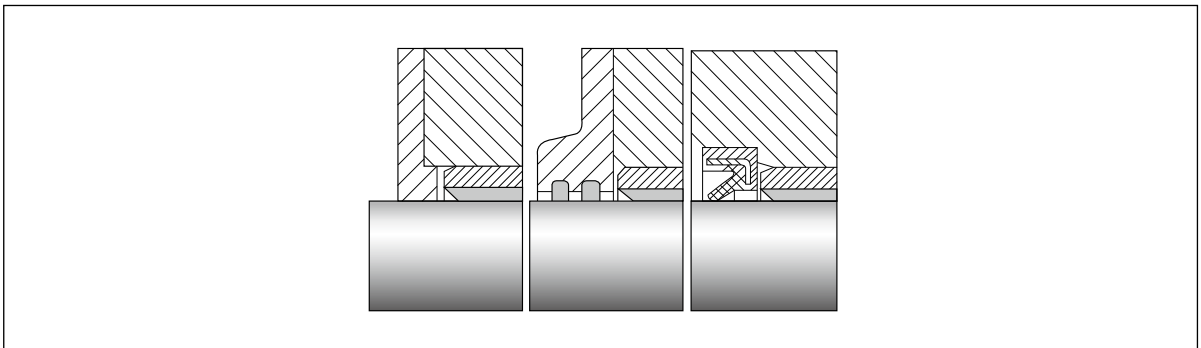
正确的设计  
Correct design



### 密封 Seal

金属塑料基自润滑轴承允许一些不会损害轴承表面材料的异物进入，但当异物的侵入增加或高磨损型物质进入时应当安装核实的密封圈以提高轴承的使用寿命。

If increased levels of contamination occur or the bearing is used in an aggressive environment, the bearing section should be protected from dust and containment. The normal solution is to re-design the surrounding structure so that the contamination cannot reach the bearing section. If the contamination is critical, a collar of grease or a shaft seal is recommended.



## 嘉善永信无油润滑轴承厂

地址 嘉善县干窑镇北范泾 248 号

邮编 314100

电话 0573-84516218

传真 0573-84516216

手机 13957348680

网站 [www.zjyxzc.com](http://www.zjyxzc.com)

邮箱

## JIASHAN YONGXIN OILLESS BEARING FACTORY

Add No.248 Fan Jing North, Ganyao Town, Jiashan  
County, Zhejiang Province, China. Code 314100

Tel +86-573-84516218

Fax +86-573-84516216

Mobile 13957348680

Web [www.zjyxzc.com](http://www.zjyxzc.com)

E-mail

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