ZMD JDB 系列固体镶嵌自润滑轴承

JDB SELF-LUBRICATING BEARINGS

ZMD 嘉善迈德机械有限公司

JIASHAN MADE MACHUBERY CO.,LTD

企业简介

浙江省嘉善迈德机械有限公司（ZMD）是一个专业生产销售 MFZH 微型滚珠套直线轴承、SF-1（DU）无油轴承、SF-2（DX）边界润滑轴承、JDB（500#）固体镶嵌自润滑轴承、JF800 双金属轴承、FB090 青铜轴承等拾多种系列产品的企业。ZMD 企业技术力量雄厚，生产能力强大，检测设备完善，产品质量稳定。采用德国 DIN1494 标准作为企业产品标准，采用 ISO9000 标准管理。产品被各机械行业广泛应用，如：机械机床、工程机械、化工机械、冶金矿山机械、电力机械、食品机械、药业机械、仪器机械、农业机械、纺织机械、注塑机械，尤其在液压机械、汽车行业和印刷包装机械，冷轧行业用量较大。

ZMD 一贯坚持以质量第一、服务第一、用户第一，为用户的需要进一步研究开发各类用途的滑动轴承与新产品新领域的推广与运用……

Introduction

JIASHAN MADE MACHUBERY CO.,LTD（ZMD） is the manufacture of products as MFZH mini ball cages, SF-1(DU) oilless bushings, SF-2(DX) border lubricate bushings, JDB inlaid solid lubricating bearings, JF800 double-metal bushes, FB090 bronze bush. Our product's range , output, quality , inspection and total management are all in the lead in the domestic bush field, and adopted DIN1494 standard from Germany for their own products, also adopted ISO9000 standard managed . The products are wildly used, such as machine tool, engineering mechanical, chemic mechanical, mine mechanical, electric mechanical, food mechanical, pharmaceutical mechanical, instrument mechanical, agriculture mechanical, textile mechanical, and there special used in refrigeration compressor machine, automobile machine, printing & packing machine, and etc., ZMD always insisted on quantity must be first, service must be first , customer must be first, for various uses to meet the demands of customer's need and business man and friends come from civil and abroad.

ZMD are devoted in research product development and promotion of products for new application ……

性能介绍

JDB 固体镶嵌轴承，是以金属材料为基体，采用石墨和二硫化钼作为固体润滑剂，经过特殊工艺制作，使固体润滑剂自身结合牢固，并有均匀的空隙，能吸存 20%以上比例的润滑油，在无油条件下工作时，通过摩擦热把润滑油和固体润滑剂组合后逐渐地分布到摩擦表面使其达到摩擦系数小，耐磨性能好的效果。

本公司(ZMD)经过多年产销后的市场信息分解和模拟试验机的几百轮试验，使产品的性能不断改善，已完全达到日本同类产品的水平。轴套加工全部采用数控机床，确保了产品质量的稳定性。

为满足顾客的要求，适应更多的场合使用不加油轴承，本公司(ZMD)研制了五种不同基体材料的 JDB 轴承，供用户选用。

型号	构造
JDB-Ⅰ	高力黄铜基体镶嵌石墨
JDB-Ⅱ	6-6-3 锡青铜基体镶嵌石墨
JDB-Ⅲ	双金属(钢套内烧结铜粉)基体镶嵌石墨
JDB-Ⅳ	铸铁基体镶嵌石墨
JDB-Ⅴ	轴承钢基体镶嵌石墨

JDB PROPERTIES:

JDB is a kind of solid lubricant embedded bearing with metal such as bronze as basis and embedded graphite and MoS2 within it as lubricant. Specific technology is adopted to firmly integrate lubricant itself and meanwhile leave homogeineously distributed space within it so that the lubricant as a whole can absorb lubricating oil or grease over 20 percent of its total volume. When working without oil or under oil inadequacy, friction heat drive oil and lubricant form inner side to surface so as to reduce friction efficient and improve wear-friction performance.

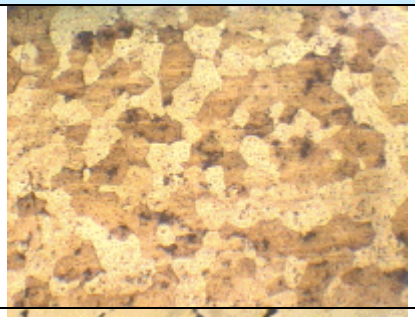
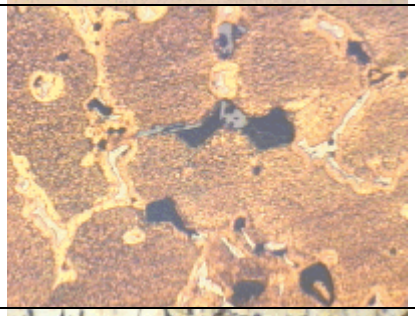
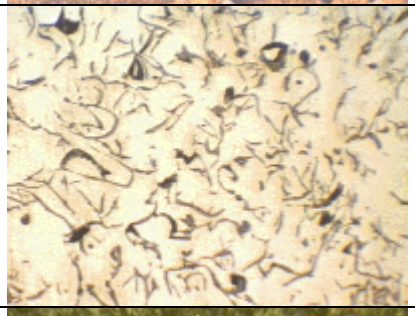
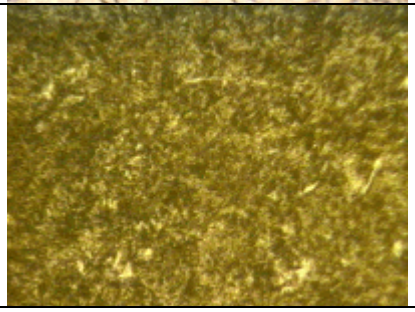
After long years of research on market application and over and again simulation test, the products' performance is being improved continuously and currently is leveled with that made in Japan. Now all the manufacture is conducted on the digital-dominated lathe so that ensure the stability on product's quality.

Five types of JDB has been developed to date in order to meet customer's increasing demands and to be applied in many circumstance as well.

TYPE	STRUCTURE
JDB-Ⅰ	High strength brass+graphite+MoS2
JDB-Ⅱ	6-6-3Sn-bronze+graphite+MoS2
JDB-Ⅲ	Bimetal(steel-copper) +graphite+MoS2
JDB-Ⅳ	Cast iron + graphite+MoS2
JDB-Ⅴ	Bearing steel + graphite+MoS2

• JDB 产品与金相图

JDB Material and Metallography

型号	示意图	金相	基体材质
JDB-Ⅰ			基体材料： CuZn25Al6Mn4 材料硬度： 220~250HB
JDB-Ⅱ			基体材料： CuSn6Zn6Pb3 材料硬度: 80~100HB
JDB-Ⅲ			基体材料： CuSn6Zn6Pb3 材料硬度： 60~90HB
JDB-Ⅳ			基体材料： HT250 材料硬度： 200~230HB
JDB-Ⅴ			基体材料： GCr15 材料硬度： HRC58~60

● JDB 主要技术指标：

JDB Main Technical Index:

型　　号	Type	JDB-I	JDB-II	JDB-III	JDB-IV	JDB-V
基体材质	Base material	CuZn24AL6	CuSn6Zn6Pb3	钢 CuSn6Zn6Pb3	HT-250	CuCr15
基体硬度	Base hardness	HB230	HB100	HB80	HB200	HRC60
摩擦系数	Friction coef(μ)	< 0.16	< 0.15	< 0.14	< 0.17	< 0.17
最高使用温度	Temp limit	300℃	350℃	300℃	400℃	350℃
极限动载荷	Dynamic load limit	100 N/mm²	60N/mm²	70N/mm²	100N/mm²	250N/mm²
1m/min 的极限载荷	Load limit under 1m/min	25N/mm²	15N/mm²	20N/mm²	25N/mm²	70N/mm²
最高滑动速度	Sliding velocity limit	1.5m/s	2m/s	2m/s	0.5m/s	0.1m/s
使用极限 PV 值	PV limit	1.0 N/mm²• m/s	0.5 N/mm²• m/s	0.6 N/mm²• m/s	0.8 N/mm²• m/s	2.5 N/mm²•m/s

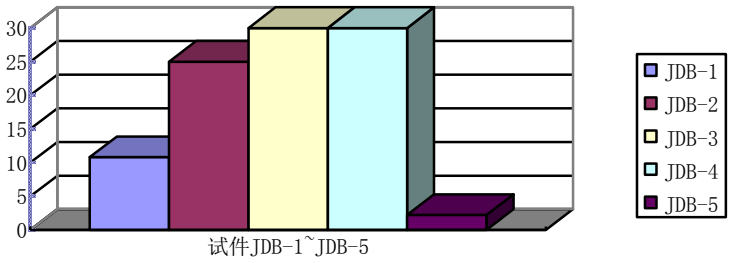
● JDB 磨损性能　(与 CuSn6Zn6Pb6 青铜套的比较耐磨性能如下表：)

JDB Wear Performance (Compared with CuSn6Zn6Pb6-composed bushing)

		62N/mm²		24.5N/mm²		14.7N/mm²	
		磨损量 Wear depth	时间 Time	磨损量 Wear depth	时间 Time	磨损量 Wear depth	时间 Time
		(um)	(hrs)	(um)	(hrs)	(um)	(hrs)
铜套 CuSn6Zn6Pb6	油润滑 oil						
JDB-I	干磨擦 dry	10.8	100	1.5	100	1.2	100
JDB-II	干磨擦 dry	25.0	30	11	100	2.5	100
JDB-III	干磨擦 dry	30.0	30	12	100	1.5	100
JDB-IV	干磨擦 dry	30.0	10	25	20	1.1	100
JDB-V	干磨擦 dry	2.2	100	1.3	100	1.0	100

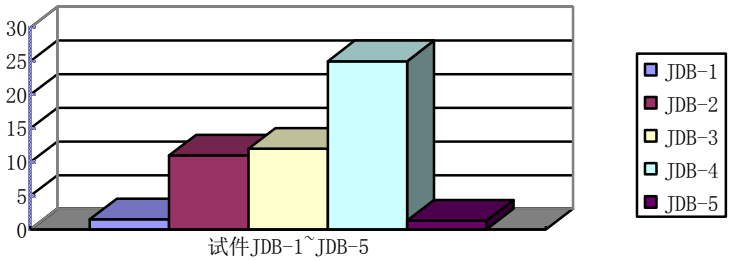
1. 高载低速：试验条件：压力 P=62N/mm2，速度 V=1m/min，干磨擦，时间 100 小时
Condition: P=62N/mm2，V=1m/min，T=100hours, under dry lubrication.

产品型号 Type	试验时间 Time(hr)	摇摆次数 Cycle q'ty	轴承磨损量 Wear (mm)
JDB-Ⅰ	100	96000	0.108
JDB-Ⅱ	约 30	31000	0.250
JDB-Ⅲ	约 30	31000	0.300
JDB-Ⅳ	约 10	9600	0.300
JDB-Ⅴ	100	96000	0.022



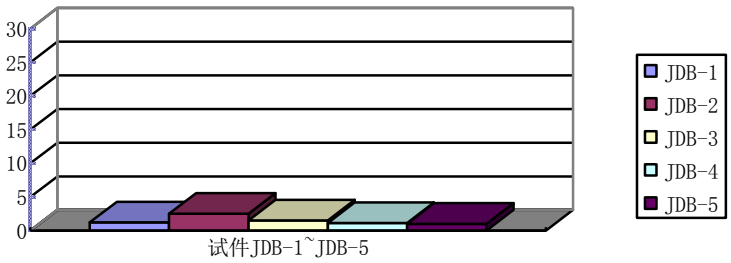
2. 中载低速：试验条件：压力 P=24.5N/mm2,速度 V=1.0m/min,干磨擦,时间 100 小时
Condition: P=24.5N/mm2，V=1.0m/min，T=100hours, under dry lubrication.

产品型号 Type	试验时间 Time(hr)	摇摆次数 Cycle q'ty	轴承磨损量 Wear (mm)
JDB-Ⅰ	100	96000	0.015
JDB-Ⅱ	100	96000	0.110
JDB-Ⅲ	100	96000	0.120
JDB-Ⅳ	约 20	19200	0.250
JDB-Ⅴ	100	96000	0.013



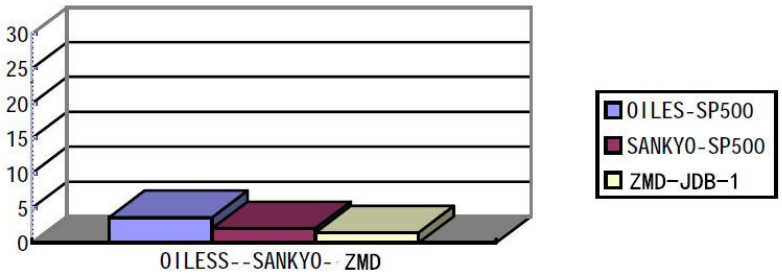
3. 低载低速：试验条件:压力 P=14.7N/mm2,速度 V=1m/min,干磨擦,时间 100 小时
Condition: P=14.7N/mm2， V=1m/min， T=100hours, under dry lubrication.

产品型号 Type	试验时间 Time(hr)	摇摆次数 Cycle q'ty	轴承磨损量 Wear (mm)
JDB-Ⅰ	100	96000	0.012
JDB-Ⅱ	100	96000	0.025
JDB-Ⅲ	100	96000	0.015
JDB-Ⅳ	100	96000	0.011
JDB-Ⅴ	100	96000	0.010



4. DB 摇摆试验(与国外同类产品对比)
试验条件:压力 P=24.5N/mm2,速度 V=1.0m/min,干磨擦,时间 100 小时
Condition: P=24.5N/mm2， V=1.0m/min， T=100hours, under dry lubrication.

产品型号 Type	试验时间 Time(hr)	摇摆次数 Cycle q'ty	轴承磨损量 Wear (mm)
日本 OILES 公司 SP500#	100	96000	0.037
日本 SANKYO 公司 SP500#	100	96000	0.021
本公司 ZMD-JDB-Ⅰ	100	96000	0.015



JDB 应用特点

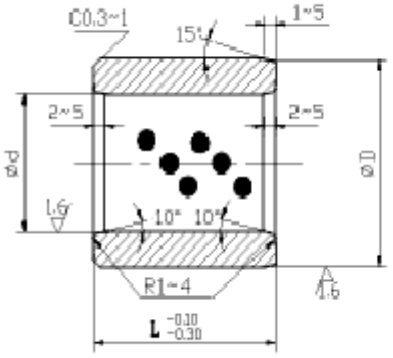
型号	应用特点	应用场合
JDB-Ⅰ	能适宜用于重载、中载、轻载场合，特别是在中载、轻载工况中，摩擦系数低，耐磨性能又好。在重载的情况中，耐磨性能要稍微差一点，容易磨损。 是通用的基础产品，无论高压、低压、高温、低温、有油润 滑、无油润滑还是水中润滑，都能适应。产品的基体是高力黄铜，比一般的铜套硬度提高一倍，耐磨性能提高一倍以上。	在冶金行业的连铸机、轧机、输送机上都可采用，还用于塑料注塑机锁模机构，挤出机构，高压电的自动开关，建筑机械的起吊支撑部位，以及水利枢纽工程的弧门支撑，滑轮和传动轮部位，还有造纸机烘道、汽车模具、船舶起锚滑动部位等。
JDB-Ⅱ	能适用于轻载场合,在中载工况中,很容易磨损,耐磨性能差,不适宜于重载场合。	例如壁炉门铰链、烘炉、滚道、轻工机械、机床工业等。
JDB-Ⅲ	能适用于轻载场合,在中载工况中,很容易磨损,耐磨性能差,不适宜于重载场合。因内材与 JDB-II同样，除了具有JDB-II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极焊接安装。	适用于建筑机械、冶金机械和输送机械中的不加油润滑部位。
JDB-Ⅳ	仅能适用轻载场合,在轻载场合表现耐磨性能特别好,不能适用于中载及重载场合。	一种典型的省材产品，在机械性能要求不是很高的地方，可作取代 JDB-I材料使用，例：模具导柱、注塑机模架等。
JDB-Ⅴ	能适用于重载、中载、轻载场合，由于基体硬度特别高，所以在重载工况耐磨性能好,均优于其它 JDB 产品。	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：推土机支撑、卷扬机支撑、吊车支撑等，但由于基体为钢件，所以不宜在水中或酸、碱的场合使用。

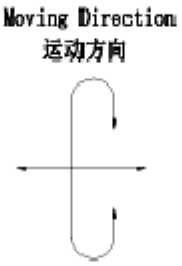
JDB APPLICATION

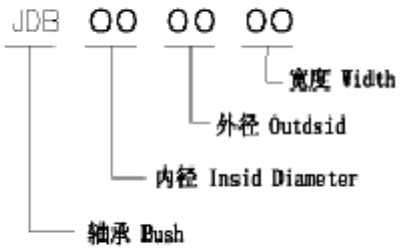
TYPE	APPLICATION FEATURES	APPLICATION POSITION
JDB-Ⅰ	Can be used under low, middle and high load. When under high load, wear performance degrades accordingly. It's a general-purpose product and can be applied under low or high pressure, low or high temperature, and oil, water or dry lubrication. The base material is high strength brass and its hardness doubles than normal bronze so that wear performance improves in large degree.	Can be applied in consistent cast machine, rolling machine, conveyor equipment; plastic injection machine, high voltage switch ; hoisting supporter, hydraulic gate supporter; paper-making machine, automobile die etc.
JDB-Ⅱ	Suitable for low load position, wear performance worsens greatly when under middle or high load.	Can be applied in furnace door lindge, furnace, conveyor, tool machines, light industries ,etc.
JDB-Ⅲ	Suitable for low load position, wear performance worsens when under middle or high load. The mating layer is same as JDB-Ⅱso that more cost-saving than JDB-Ⅱwhereas compression strength increases and weldable.	Most suitable for dry position in construction , metallurgical machines, conveyor machines etc.
JDB-Ⅳ	Very good performance when under low load. Not suitable for middle and high load.	A typical cost saving material, can substitute JDB-Ⅰ to be applied in the position without high requirements such as die guider, plastic injection machines etc.
JDB-Ⅴ	Can be used under low, middle and high load. Due to its superb high hardness, when under high load, it overperforms than other JDB type. Not suitable for water, acid, ahkili circumstances.	Most suitable for the supporting position of hoisting machine, e.g. bulldozer supporter, hoister supporter, reeling machine supporter etc.

• JDB 标准尺寸

NORMAL SIZE FOR JDB BEARING



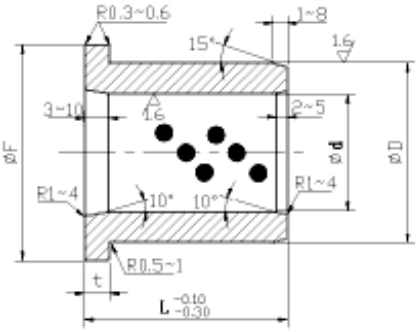


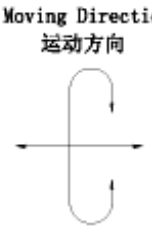


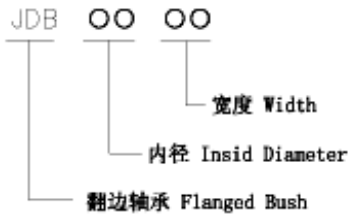
d (F7)	D (p7)	轴径 AXLE (e7)	f1	f2	f3	L -0.10 -0.30																		
						10	12	15	16	20	25	30	35	40	45	50	60	70	80	100	120	140	160
$14^{+0.034}_{+0.016}$	$20^{+0.043}_{+0.022}$	$14^{-0.032}_{-0.050}$	1	1	1	●	●	●		●	●	●											
$15^{+0.034}_{+0.016}$	$21^{+0.043}_{+0.022}$	$15^{-0.032}_{-0.050}$	1	1	1	●	●	●	●	●	●	●											
$16^{+0.034}_{+0.016}$	$22^{+0.043}_{+0.022}$	$16^{-0.032}_{-0.050}$	1	1	1	●	●	●	●	●	●	●	●	●									
$18^{+0.034}_{+0.016}$	$24^{+0.043}_{+0.022}$	$18^{-0.032}_{-0.050}$	1	1	1			●	●	●	●	●											
$20^{+0.041}_{+0.020}$	$28^{+0.043}_{+0.022}$	$20^{-0.040}_{-0.061}$	1	1	1			●	●	●	●	●	●	●	●	●							
$25^{+0.041}_{+0.020}$	$33^{+0.051}_{+0.026}$	$25^{-0.040}_{-0.061}$	2	2	2					●	●	●	●	●	●	●							
$30^{+0.041}_{+0.020}$	$38^{+0.051}_{+0.026}$	$30^{-0.040}_{-0.061}$	2	2	2					●	●	●	●	●	●	●	●						
$35^{+0.050}_{+0.025}$	$45^{+0.051}_{+0.026}$	$35^{-0.050}_{-0.075}$	2	2	2					●	●	●	●	●	●	●	●						
$40^{+0.050}_{+0.025}$	$50^{+0.051}_{+0.026}$	$40^{-0.050}_{-0.075}$	2	2	2					●	●	●	●	●	●	●	●		●				
$45^{+0.050}_{+0.025}$	$55^{+0.062}_{+0.032}$	$45^{-0.050}_{-0.075}$	2	2	2							●	●	●	●	●	●	●					
$50^{+0.050}_{+0.025}$	$60^{+0.062}_{+0.032}$	$50^{-0.050}_{-0.075}$	3	3	3							●	●	●	●	●	●	●	●				
$55^{+0.060}_{+0.030}$	$70^{+0.062}_{+0.032}$	$55^{-0.060}_{-0.090}$	3	3	3								●	●	●	●	●	●					
$60^{+0.060}_{+0.030}$	$75^{+0.062}_{+0.032}$	$60^{-0.060}_{-0.090}$	3	3	3							●	●	●	●	●	●	●	●	●			
$65^{+0.060}_{+0.030}$	$80^{+0.062}_{+0.032}$	$65^{-0.060}_{-0.090}$	3	3	3											●	●	●	●				
$70^{+0.060}_{+0.030}$	$85^{+0.072}_{+0.037}$	$70^{-0.060}_{-0.090}$	3	3	3								●	●	●	●	●	●	●	●			
$75^{+0.060}_{+0.030}$	$90^{+0.072}_{+0.037}$	$75^{-0.060}_{-0.080}$	4	4	4											●	●	●	●	●			
$80^{+0.060}_{+0.030}$	$100^{+0.072}_{+0.037}$	$80^{-0.060}_{-0.090}$	4	4	4									●	●	●	●	●	●	●	●		
$90^{+0.071}_{+0.036}$	$110^{+0.072}_{+0.037}$	$90^{-0.072}_{-0.107}$	4	4	4												●		●	●	●		
$100^{+0.071}_{+0.036}$	$120^{+0.072}_{+0.037}$	$100^{-0.072}_{-0.107}$	4	4	4												●	●	●	●	●	●	
$110^{+0.071}_{+0.036}$	$130^{+0.083}_{+0.043}$	$110^{-0.072}_{-0.107}$	4	4	4														●	●	●		
$120^{+0.071}_{+0.036}$	$140^{+0.083}_{+0.043}$	$120^{-0.072}_{-0.107}$	5	5	5												●		●	●			
$130^{+0.083}_{+0.043}$	$150^{+0.083}_{+0.043}$	$130^{-0.085}_{-0.125}$	5	5	5															●			
$140^{+0.083}_{+0.043}$	$160^{+0.083}_{+0.043}$	$140^{-0.085}_{-0.125}$	5	5	5														●	●		●	
$150^{+0.083}_{+0.043}$	$170^{+0.083}_{+0.043}$	$150^{-0.085}_{-0.125}$	5	5	5														●	●			●

• JFB 标准尺寸

NORMAL SIZE FOR JFB FLANGE BEARING



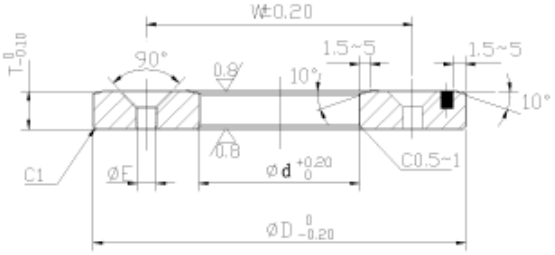




d (F7)	D (p7)	F -0.25	轴径 AXLE（e7）	t -0.10	f1	f2	f3	L -0.10 -0.30												
								10	15	20	25	30	35	40	45	50	60	70	80	100
$40^{+0.050}_{+0.025}$	$50^{+0.051}_{+0.026}$	65	$40^{-0.050}_{-0.075}$	8	6	3	3			●		●		●		●				
$45^{+0.050}_{+0.025}$	$55^{+0.062}_{+0.032}$	70	$45^{-0.050}_{-0.075}$	8	6	3	3					●		●	●	●				
$50^{+0.050}_{+0.025}$	$60^{+0.062}_{+0.032}$	75	$50^{-0.050}_{-0.075}$	5	6	3	3					●		●	●	●				
$60^{+0.060}_{+0.030}$	$75^{+0.062}_{+0.032}$	90	$60^{-0.060}_{-0.090}$	7.5	8	4	4							●		●	●			

• JTW 镶嵌固体润滑止推垫片标准尺寸

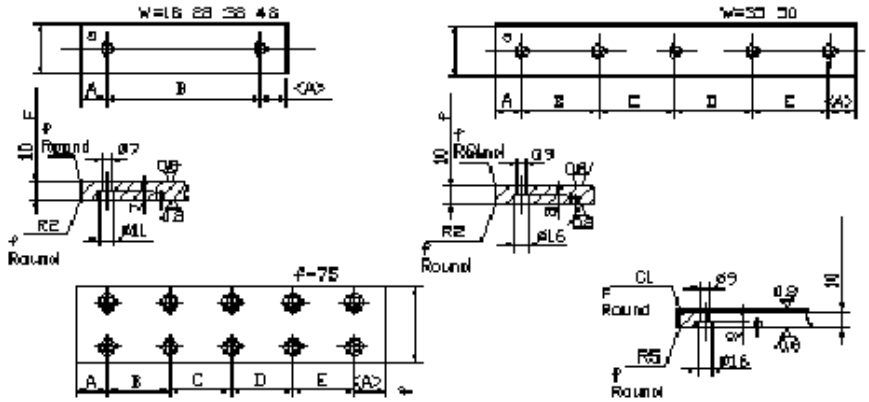
NORMAL SIZE FOR JTW THRUST WASHER



规格 Designation	内径 Ød	外径 ØD	厚度 $T^{0}_{-0.10}$	镙孔 Screw Holes			倒角 Chamfer
				镙孔中心距 W	平头镙钉 Fiat Head Screw	孔数 No.of Holes	a
JTW-30	30.2	60	5	45	M5	2	2.5
JTW-40	40.2	80	7	60	M6	2	3
JTW-50	50.3	100	8	75	M6	4	4

JSP 镶嵌固体润滑道轨标准尺寸

NORMAL SIZE FOR JSP SLIDING PLATE



规格	W	L	A	B	C	D	E	平头镙钉	孔数
JSP-1875	18	75	15	45				M6	2
JSP-18100	18	100	25	50				M6	2
JSP-18125	18	125	25	75				M6	2
JSP-18150	18	150	25	100				M6	2
JSP-2875	28	75	15	45				M6	2
JSP-28100	28	100	25	50				M6	2
JSP-28125	28	125	25	75				M6	2
JSP-28150	28	150	25	100				M6	2
JSP-35100	35	100	20	60				M8	2
JSP-35150	35	150	20	55	55			M8	3
JSP-35200	35	200	20	55	50	55		M8	4
JSP-35250	35	250	20	70	70	70		M8	4
JSP-35300	35	300	20	65	65	65	65	M8	5
JSP-35350	35	350	20	80	75	75	80	M8	5
JSP-3875	38	75	15	45				M6	2
JSP-38100	38	100	25	50				M6	2
JSP-38125	38	125	25	75				M6	2
JSP-38150	38	150	25	100				M6	2
JSP-4875	48	75	15	45				M6	2
JSP-48100	48	100	25	50				M6	2
JSP-48125	48	125	25	75				M6	2
JSP-48150	48	150	25	100				M6	2
JSP-50100	50	100	20	60				M8	2
JSP-50150	50	150	20	55	55			M8	3
JSP-50200	50	200	20	55	50	55		M8	4
JSP-50250	50	250	20	70	70	70		M8	4
JSP-50300	50	300	20	65	65	65	65	M8	5
JSP-50400	50	400	20	90	90	90	90	M8	5
JSP-75150	75	150	20	110				M8	4
JSP-75200	75	200	20	80	80			M8	6
JSP-75250	75	250	20	105	105			M8	6
JSP-75300	75	300	20	85	90	85		M8	8
JSP-75400	75	400	20	120	120	120		M8	8

售后服务

1. 本公司负责对售后产品的技术指导与服务工作。
2. 欢迎用户反馈使用结果与状况，以利改进产品，提高客户满意度。

目前，SF 产品可以板材、轴套、轴承、轴瓦、垫片、球座、道轨等形式供货，为满足特殊使用的要求。可根据用户要求，代为设计定制，欢迎选用订购。

1、 产品基本实行以销定产，并有现货供应，合同签订后可保证 3 天至 15 天内交货。
2、 轴承尺寸系列是企业标准，同英国、德国标准基本相同，请用户选用。
3、 非标准及特殊规格产品，可根据要求，本厂承接代为设计和加工制造。
4、 SF 系列产品公差尺寸采用国际标准，内径为 H8、H9，相配座孔要求 H7。
5、 本厂代办快递、邮寄、托运、方便用户。
6、 欢迎来人、来函或电话联系，洽谈业务。
7、 我厂特点：信守合同、供货及时、质量保证、服务尽善。

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