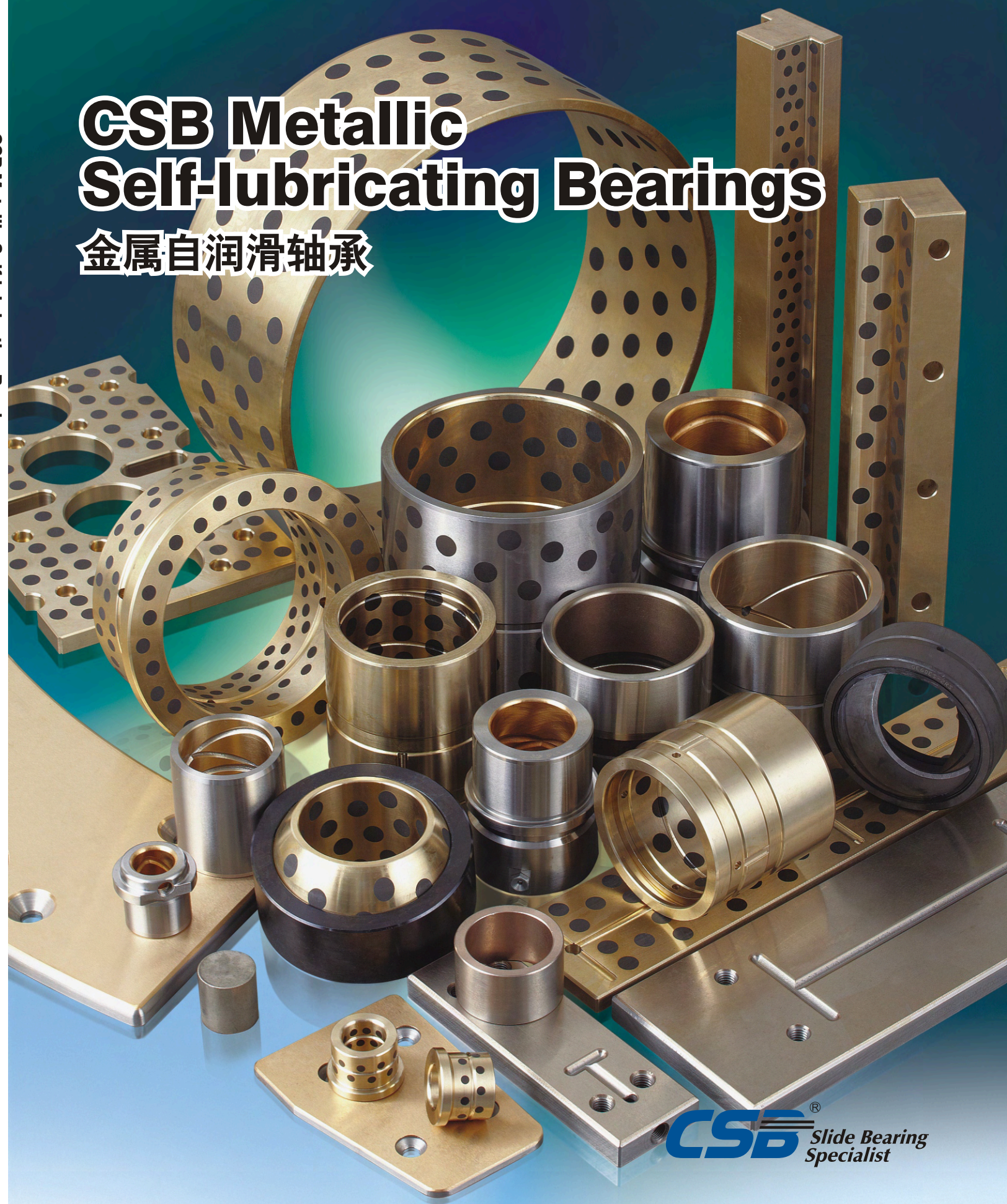


CSB Metallic Self-lubricating Bearings

CSB Metallic Self-lubricating Bearings

金属自润滑轴承



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Jiashan CSB Self-lub Materials Co.,Ltd. 嘉善长盛自润材料有限公司



Zhejiang Changsheng Sliding Bearing Co.,Ltd. 浙江长盛滑动轴承有限公司

The purpose of this manual is to provide comprehensive technical information on the characteristics, applications and installation of CSB Metallic self-lubricating bearings. Due to the continuous upgrading of production technology, the promulgation of the manual is based on data established by the existing technical conditions, CSB shall have the right to modify technologies and no advance notice; As the bearings application function affected by many complex factors, although we have mentioned in the manual application of the related, but as far as possible, we recommend users to test samples, CSB does not guarantee that all references to the use of can be used.

本手册主要介绍了金属自润滑材料的特性、运用和相关装配的情况，由于生产技术的不断提升，手册上的颁布的数据只是依据现有技术条件确立的，CSB有权对相关技术加以修改并且不作事先通知；由于轴承在实际使用时受到许多复杂因素的影响，尽管我们在手册里有提到了相关的运用，但我们还是建议用户尽可能以样品进行试验，CSB不保证所有提到的运用可以使用。

Your Partner for Self-lubricating Bearing Application

为所有工业提供各种自润滑轴承解决方案

- CSB was established in 1995, and has a registered capital of USD 7.65 million.
- 2 facilities which cover 55,000m² with 600 employees.
- China National Hi-Tech Enterprise, has been granted 32 patents.
- ISO9001:2000 and ISO/TS16949:2000 quality management system.

As a leading manufacturer of Self-lubricating bearings, we are devoted to researching and producing new Self-lubricating bearing materials. After years of work, we have successfully developed various bearing materials with many different standard bearing sizes, including Metal-polymer Composite materials, Metallic Self-lubricating materials, Bimetal Composite materials, Plastic compound materials and Filament wound composite materials. Applications covered are automotive industry, construction machinery, plastic manufacturing machinery, OA machinery, material handling equipment, dock side machinery and hydraulic transmission parts. In brief, our bearings can be used wherever there is rotation or linear motion between mechanical parts where lubricating is not allowed or external lubricating accessibility is limited.

- 成立于1995年，总注册资本765万美元（折合人民币：6000万元）
- 拥有两个生产基地，占地面积55000m²，目前拥有员工600名；
- 获得国家级高新技术企业称号，取得各项专利32项；
- 通过ISO9001:2000、ISO/TS16949:2002质量管理体系认证。

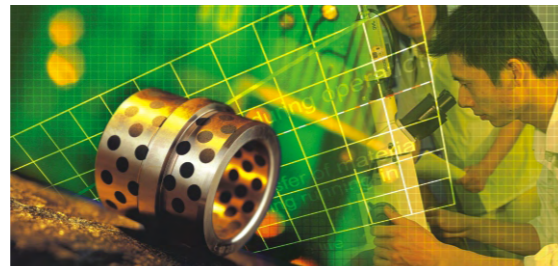
“长盛”作为业界优秀的引领者至公司成立起就一直专注于自润滑轴承、新材料的研究开发与新产品新领域的推广和应用；通过十多年的努力形成了以金属塑料基复合自润滑材料、双金属材料、金属基自润滑材料、树脂射出成型自润滑材料和长纤维基缠绕式自润材料等多种满足不同工况下使用的几万种不同规格的产品，应用领域覆盖了汽机车、建筑机械、塑胶机械、办公事务机械、物流机械、港口机械以及液压传动等几乎所有有相对运动而又需要自我润滑的部位。



Metallic Self-lubricating Bearings 金属自润滑轴承

Modern designs place enormous demands on today's self-lubricating bearing materials, requires free maintenance operating even under severe environment and extremely load conditions. Moreover, the constant pressure on costs request for increasing machine and plant availability without any loss of reliability. The metallic self-lubricating bearing materials developed by CSB can meet the maintenance-free as well as self-lubricated at long-term operating, which makes the design of reliable long-term self-lubricating system possible. CSB metallic self-lubricating bearing materials can be applied to a wide range of low-speed high-load conditions like the rotating, swing and straight-line reciprocating motion; Meanwhile this kind bearing materials are suitable for the tradition lubrication cannot given or prohibited occasion, or in special conditions such as dust, radiation, impact load but required the use of long-term and stability.

现代设计对今天的自润滑轴承材料正在发生巨大的需求，即使在严重的极端作业环境和最大负荷条件也要求免维护。随着成本要求的不断提高，企业对设备和工厂运行的可靠性要求也越来越高。CSB开发的金属自润滑轴承可以满足免维护以及在长期使用条件下的自我润滑，由此使得设计可靠的长期的自润滑系统成为可能。CSB金属型自润滑轴承材料可以广泛的运用于高承载低速度条件下的旋转、摆动和直线往复运动，同时也适用于传统润滑无法达到或被禁止使用的场合，或者在特殊工况比如粉尘、冲击负载或辐照等条件下需要长期而稳定使用的。



The Self-lubricating Bearing Concept 自润滑轴承的含义

Self-lubricating bearings are used where the bearing is working without lubricant or with marginal lubricant during operation. Our focus is on ensuring that the bearing gives the best performance and the longest life under various conditions. The working principle of self-lubricating bearings is that during the initial run-in period of the bearing, there will be a solid lubricating film created by the transference of a small amount of material from the bearing layer which is in direct contact between the moving parts and this layer will protect and lubricate the mating components, thus extending the service life of the bearing and shaft.

所谓的无给油是指无需加油或少加油，我们研究的目标是要确保轴承在这种工况下还能表现出良好的性能并尽可能的延长其使用寿命。自润滑轴承的基本工作原理是，在初期运行阶段轴承表面的固体润滑剂由于相互间的摩擦而形成转移膜并覆着到对磨件上最终形成固体润滑膜以达到自我润滑的目的，它隔断了工件之间的直接接触从而很好的保护了对磨件延长了轴承和工件的使用寿命。

The Advantages of Self-lubricating Bearings 自润滑轴承的优点

- No external lubricant supply system needed
- Maintenance cost is considerably reduced plus the service life is extended
- Less maintenance of the machinery needed
- Simplified design and manufacture of end product
- Less waste oil thus protecting the environment
- 无需额外供油装置;
- 降低轴承的运行成本;
- 减少设备停机保养;
- 简化了设计及机械构造;
- 无需废油处理，有利于环境保护。

Embedded Solid Lubrication Bearings 镶嵌型固体润滑轴承

CSB650	Cast bronze with graphite plug 铜基镶嵌型固体润滑轴承		P3-P60
CSB250	Cast iron with graphite plug 铸铁镶嵌型固体润滑轴承		P7
CSB650GT	Steel shell cast bronze with graphite plug 钢基铜合金镶嵌型固体润滑轴承		P61-P66
CSB450G	Steel shell cast bronze with graphite 钢基铜合金镶嵌型固体润滑轴承		P67
CSB452G	Cast iron with graphite 铸铁镶嵌型固体润滑轴承		P67

Dispersed Solid Lubrication Bearings 弥散型固体润滑轴承

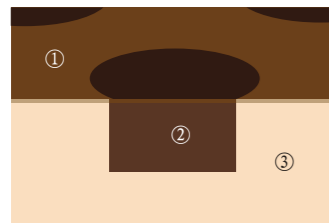
CSB850BM	Metal backed bronze powder with solid lubricants 钢基铜合金弥散型固体润滑轴承		P68-P73
CSB850S	Metal backed FeNi powder with solid lubricants 钢基铁镍合金弥散型固体润滑轴承		P74-P78
CSB85H	Powder metallurgy sintered with solid lubricants 粉末烧结弥散型固体润滑轴承		P79-P85

The Other Metallic Bearings 其他金属轴承

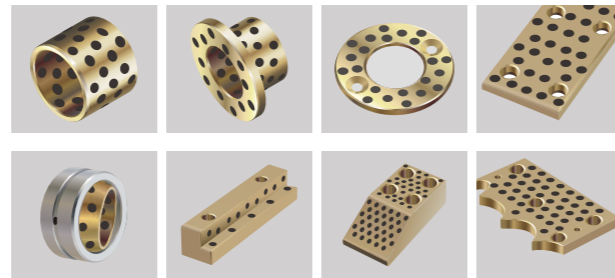
CSB450	Steel with bronze backed high precision bearings 钢基铜合金高精度导套		P86
CSB600	Solid bronze turned bearings 铜基精加工轴承		P87
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CSB650 Cast bronze with graphite plug 铜基镶嵌型固体润滑轴承

Material Structure 材料组织

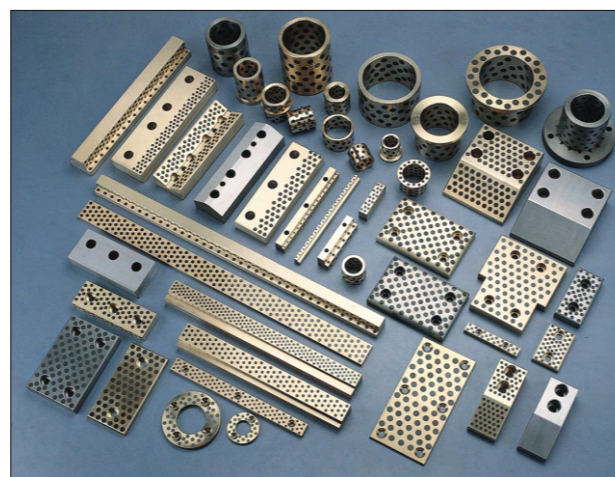
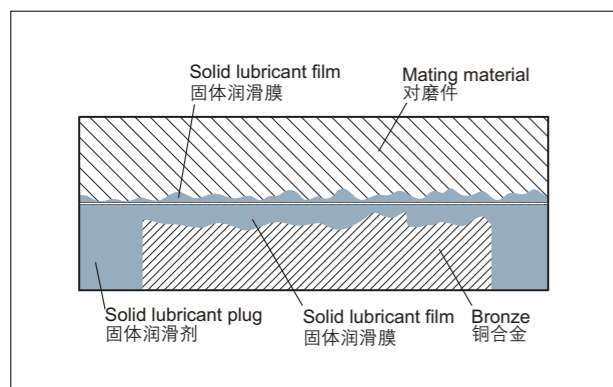


- ① Solid lubricant film
固体润滑膜
- ② Solid lubricant plug
固体润滑剂
- ③ Bronze backing
铜合金基体



CSB650# materials consist of highly wear-resistance copper cast alloy whose sliding surfaces are evenly provided with a certain percentage of solid lubricant plugs according to work condition, high-strength copper alloy provides a high load-bearing capacity and the solid lubricant can be formation of low friction film. Under technical dry running conditions, the bearing surface is designed with thick running-in film which enables the solid lubricant to be transferred to the counter material at the first contact.

CSB650#以高强度铜合金作为基础材料，根据使用工况按一定比例在其工作面加工出孔穴并填入固体润滑剂，高强度的铜合金提供了很高的承载能力而固体润滑剂则可以形成较低的摩擦副。在干摩擦条件下我们在轴承表面设计一层预润滑膜可以确保在最短的时间内将固体润滑剂转移到对偶件上并形成有效的固体润滑膜。



CSB650 Cast bronze with graphite plug 铜基镶嵌型固体润滑轴承

When the mutual friction occurs between two non-lubricated surfaces, the two contacts with the uneven surface of the peak by the shear, stick-slip and plastic deformation giving rise to friction and wear. Conventional lubricants can significantly reduce these effects, however, the conventional lubricant will be more and more squeezed out of the contact area with increasing surface which formed the dry friction or boundary lubrication, With CSB650, the lubrication is effected by the sliding material itself, The solid lubricant is released from the friction material by micro-movement. This gives the sliding partners smooth surfaces with a firmly adhesive solid lubricant film, the solid lubricant film remains within the contact area even under heavy loads. The embedded solid lubricant plugs can be continuously provided to the friction surface to reduce friction resistance and wear, thus make the bearing can be worked under low wear rate and long-life service.

Material properties

材料特点

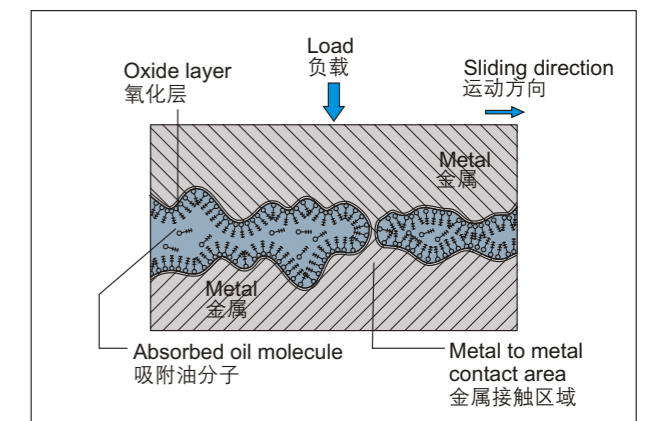
- Allows maintenance-free and long-life operation
- Suitable for high static and dynamic loads
- With low and smoothly coefficient of friction and without stick-slip effects
- Suitable for dirty, corrosion, impact load and edge loading
- The base material provided a good shock-absorbing capacity
- Can be used over a large temperature range
- Suitable for reciprocating, rotating and oscillating movement with start frequency and difficulty to form oil film occasions
- With low wear rate and long life service

Typical application

典型运用



当两个无润滑的表面相互摩擦时，两个表面凹凸不平的尖峰受到剪切、局部粘附和塑性变形而引起摩擦和磨损。传统的润滑剂能够明显地降低这些作用，然而在停顿时特别是大负载条件下，润滑油和润滑脂被挤压出来从而形成边界润滑或者干摩擦，而CSB650#润滑源来自于材料本身，一旦轴承产生微观移动后固体润滑材料在受到外力挤压变形或摩擦力的作用下容易产生层状滑移，故而在滑动表面形成一层固体润滑膜，这层膜具有低剪切强度，即使在很大的静载荷条件下仍可牢固附着在轴承表面而不易破裂。这种嵌入式固体润滑剂可以不断地向摩擦表面提供固体润滑剂，减小摩擦阻力和磨损，因而轴承可以在较低的磨损率下长期工作。



- 可以长期使用而无需维护；
- 设计用于很高的静承载和动承载；
- 具有很低的且平稳的摩擦系数，无“粘着”现象；
- 具有耐粉尘、耐腐蚀、耐冲击和耐边缘负载能力；
- 金属基材具有很好的吸震能力；
- 能够在很宽的温度范围内使用；
- 适合于往复、旋转和摆动等启动频繁又难以形成油膜的场合；
- 具有极低的磨损率，使用寿命长。

CSB650 Cast bronze with graphite plug 铜基镶嵌型固体润滑轴承

Material Composition and Properties 材料成份和性能表						
Grade 材料牌号	650	650S1	650S2	650S3	650S5	650HP
Material 化学成份	CuZn25Al5Mn4Fe3	CuSn5Pb5Zn5	CuAl10Ni5Fe5	CuSn12	CuZn25Al5Mn4Fe3	CuZn32Al5Ni3
Density 密度	8	8.9	7.8	8.9	8	8
Hardness 硬度 HB	>210	>70	>150	>95	>250	>280
Tensile strength 抗拉强度 N/mm ²	>750	>200	>600	>260	>800	>540
Yield strength 屈服强度 N/mm ²	>450	>90	>260	>150	>450	>450
Elongation 延伸率%	>12	>15	>10	>8	>8	>0.3
Coefficient of linear expansion 线膨胀系数	1.9x10 ⁻⁵ /°C	1.8x10 ⁻⁵ /°C	1.6x10 ⁻⁵ /°C	1.8x10 ⁻⁵ /°C	1.9x10 ⁻⁵ /°C	1.8x10 ⁻⁵ /°C
Max. temp. 使用温度 °C	-40~+300	-40~+400	-40~+400	-40~+400	-40~+150	-40~+150
Max. load 最大动承载 N/mm ²	100	60	50	70	120	150
Max. speed (Dry) 最大线速度 m/min	15	10	20	10	15	15
Max. PV (Lubrication) 最大PV值(润滑) N/mm ² *m/min	200	60	60	80	200	200
Compression deformation 永久压缩变形量 300N/mm ²	<0.01mm	<0.05mm	<0.04mm	<0.05mm	<0.005mm	<0.005mm

Solid Lubricants 固体润滑剂		
Lubricant 固体润滑剂	Features 特性	Typical application 典型用途
SL1 Graphite+add 高纯石墨+添加剂	Excellent resistance against chemical attacks and low friction. Temp limit 400°C 很好的耐磨性和化学稳定性, 使用温度 < 400°C	Suite for general machines and under atmosphere 适用于一般机械, 在大气中使用。
SL4 PTFE++add PTFE+添加剂	Lowest in friction and good of water lubrication, Temp. limit 300°C 极低的摩擦系数和很好的水润滑性, 使用温度 < 300°C	Ship, hydraulic turbine, gas turbine etc. 适用于水、海水润滑, 如船舶, 水工弧门, 水轮机, 制药饮料机械等。

CSB650 Cast bronze with graphite plug 铜基镶嵌型固体润滑轴承

Chemical Resistance 化学性能

The following table shows the chemical resistance of the CSB650# alloys. We recommend to test the actual performance under realistic operating conditions.

CSB650#的化学性能取决于金属的基材, 各类铜合金在各种化学介质的耐腐蚀性能如下; 建议有可能的话在使用前进行试验来确认。

Chemical resistance 化学性能						
Chemical Substance 化学物质	Conc. ratio 浓度 %	Temp. 温度 °C	650#	650S1	650S2	650S3
强酸	Strong acids					
盐酸	Hydrochloric acid	5 20	×	×	×	×
氢氟酸	Hydrofluoric acid	5 20	×	△	△	△
硝酸	Nitric acid	5 20	×	×	×	×
硫酸	Sulphuric acid	5 20	×	△	○	○
磷酸	Phosphoric acid	5 20	×	△	○	○
弱酸	Light acid					
醋酸	Acetic acid	5 20	×	×	○	○
甲酸	Formic acid	5 20	×	×	○	○
硼酸	Boric acid	5 20	×	×	○	○
柠檬酸	Citrus acid	5 20	×	×	○	○
碱	Bases					
氨	Ammonia	10 20	×	×	×	×
氢氧化钠	Sodium hydroxide	5 20	△	△	○	○
氢氧化钾	Potassium hydroxide	5 20	△	△	○	○
溶剂	Solvents					
丙酮	Acetone	20	△	△	○	○
四氯化碳	Carbon tetrachloride	20	△	△	○	○
乙醇	Ethyl alcohol	20	△	△	○	○
醋酸乙酯	Ethyl acetate	20	△	△	○	○
乙基氯	Ethyl chloride	20	△	△	○	○
甘油	Glycerol	20	△	△	○	○
盐	Salts					
硝酸铵	Ammonium nitrate		×	×	×	×
氯化钙	Calcium chloride		○	○	○	○
氯化镁	Magnesium chloride		○	○	○	△
硫酸镁	Magnesium sulphate		○	○	○	△
氯化钠	Sodium chloride		○	○	○	○
硝酸钠	Sodium nitrate		○	○	○	○
氯化锌	Zinc chloride		×	×	○	×
硫酸锌	Zinc sulphate		△	△	○	○
气体	Gases					
氨	Ammonium gas		△	△	△	△
氯	Chlorine gas		×	×	×	×
二氧化碳	Carbon dioxide		△	○	○	○
烟道气	Fluorine		×	×	×	×
二氧化硫	Sulphur dioxide		×	△	○	○
硫化氢	Hydrogen sulphide		△	△	△	△
氮	Nitrogen oxide		×	△	○	○
氢	Hydrogen		×	△	○	○
润滑剂和燃油	Lubricants and fuel					
石蜡	Paraffin		○	○	○	○
汽油	Petrol		○	○	○	○
煤油	Fuel oil		○	○	○	○
柴油	Diesel fuel		○	○	○	○
矿物油	Mineral oil		○	○	○	○
HFA-ISO46油/乳液	HFA ISO46 oil/water emulsion		○	○	○	○
HFC-水/乙二醇	HFC Water/ethylene		○	○	○	○
HFD-磷酸酯	HFD Phosphate ester		○	○	○	○
其它	Others					
水	Water		△	○	○	○
海水	Sea water		×	△	○	○
树脂	Resin		△	○	○	○
碳氢化合物	Hydrocarbon		△	○	○	○

说明: ○: 耐腐蚀 △: 取决于浓度温度等情况 ×: 不推荐

Remark: ○: Excellent △: Conditionally resistant depend on concentration, temperature etc. ×: Not recommended

CSB250 Cast Iron with Graphite Plug 铸铁镶嵌型固体润滑轴承



Material Structure 材料组织

CSB250 material is made of cast iron based metal with solid lubricants embedded. The base metal withstands high load and the solid lubricants provide for self-lubrication. The bearing shows excellent performance without pre-lubrication under conditions of extreme high or lower temperature with lower speed.

CSB250以FC250铸铁作为基础材料，根据使用工况按一定比例在其工作面加工出孔穴并填入固体润滑剂，铸铁合金提供了很高的承载能力而固体润滑剂则可以形成较低的摩擦副，在高载低速条件下显示出了其优秀的自润滑性能。

Features 材料特性

This material provides a maintenance free bearing solution, particularly for high load and intermittent oscillating motion. Solid lubricants within the cast iron, combines the high load characteristics of cast iron with the wear resistance and low friction of graphite. Applications covered are automotive production line equipment, moulds & dies, plastic machinery industry etc.

CSB250材料提供了自我润滑的解决方案，结合了铸铁的耐磨性和机械强度以及固体润滑剂的自润滑性能，使其在使用过程中无需或少加油维护；特别适合于高载低速和间歇性摆动工况条件下使用，如汽车覆盖模、五金冲压模具、射出成型机械以及冶金设备等。

Tech. Data 技术参数

最大承载 Max. Load	静承载Static	70N/mm ²	抗拉强度Tensile strength	150N/mm ²
	动承载Dynamic	10N/mm ²	使用温度 Temperature	-40℃~+400℃
最高线速度 Max. Speed	干 Dry	0.15m/s	摩擦因数 Coefficient of friction μ	0.08~0.20
	流体润滑 Hydrodynamic	1m/s	硬度 Hardness	HB>160
最大PV	Max. PV	0.8N/mm ² *m/s		

Typical Applications 典型运用

This type of product can be widely used under high temperature and high load with low speed conditions like the mould, machinery assembly line, automotive assembly line, automotive mold, steel mill, plastic industries and so on.

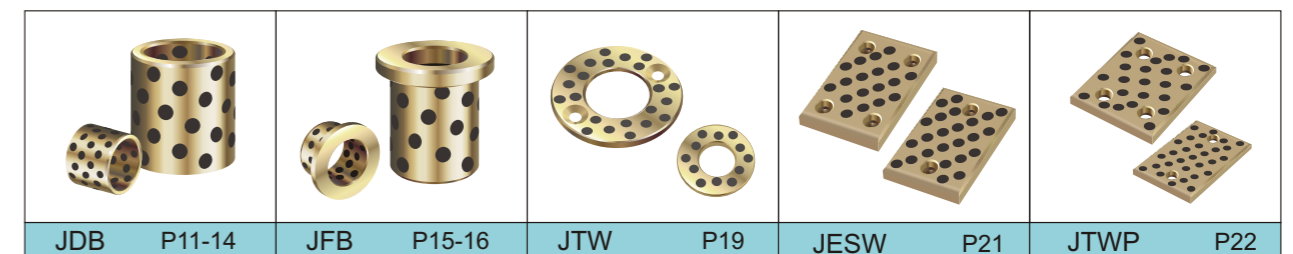
产品被广泛用于高载、间歇性或摇摆运动，如汽车生产流水线、冲压模具、压铸机械等。相比650#具有更低的生产成本。

Embedded Solid Lubrication Bearings 镶嵌型固体润滑轴承

Standard Components 标准部品



Standard Components for Plastic Moulds 塑胶模具用部品



Embedded Solid Lubrication Bearings 镶嵌型固体润滑轴承

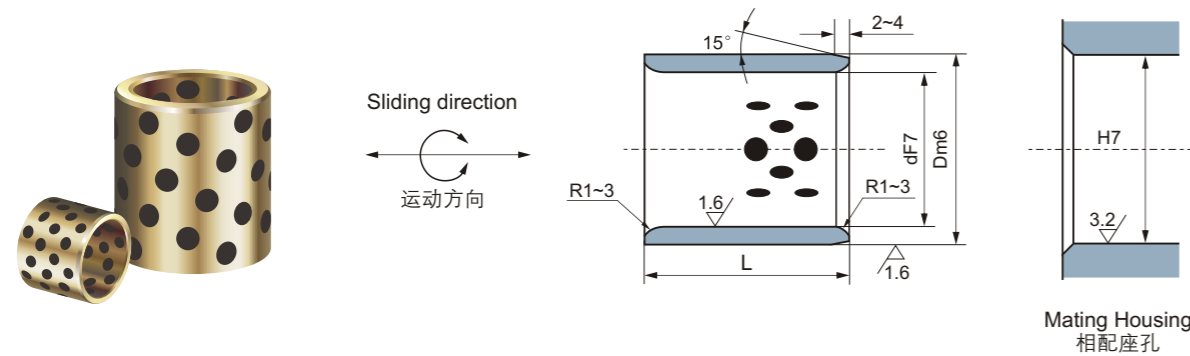
JUIP P23	JOLP P24	JTLP P26	JGLDW P27	JTGLW P28
JGLXS P29	JSOL P31	JFRP P32	JSP P34	JGB/JGBF P35-36
JOST P37-38	DIN9834 P39	JEGB/JEGBK P40	JOSG P41	JOVL P42
JGBX P42	JGL P43	JCGBF,JCGBW P44	JVSOL P45	JCUW,JCUF,JCUS P46
JCSRG,JCSRW P47	JVJ2 P48	JSOD P49	JSOVP P50	JOCU P91-94

Embedded Solid Lubrication Bearings 镶嵌型固体润滑轴承

Die Setting components 冲压模具用部品

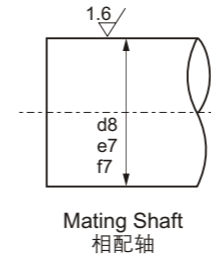
JDB P11-14	JFB P15-16	JTW P19	JESW P21	JTWP P22
JUIP P23	JOLP P24	JTLP P26	JSOL P31	JFRP P32
JESF P33	JCUW,JCUF,JCUS P46	JEFW P51	JPBW,JPBF P51	JGBZ P52
JOPF,JOPS,JOPWP53	JCSDP P54	JCBS,JCBSP P55	JSPW,JSPS P56	JSPQ,JSPQS P57
JPWS,JPSSP58	JPGPB P59	JPGPC P59	JPRP P60	

JDB650 Metric Cylindrical Bushes 自润滑轴套



I.D. ϕd 内径 F7	O.D. ϕD 外径 m6	L ^{-0.1} _{-0.3}								
		8	10	12	15	16	19	20		
6	+0.022 +0.010	10	+0.015 +0.006	061008	061010	061012				
8	+0.028 +0.013	12	+0.018 +0.007	081208	081210	081212	081215			
10		14		101408	101410	101412	101415			101420
12	+0.034 +0.016	18	+0.021 +0.008	121808	121810	121812	121815	121816	121819	121820
13		19			131910	131912	131915			131920
14		20			142010	142012	142015			142020
15		21			152110	152112	152115	152116		152120
16		22			162210	162212	162215	162216	162219	162220
17		23					172315			
18	24			182410	182412	182415	182416		182420	
19	26					192615			192620	
20	+0.041 +0.020	28	+0.025 +0.009		202810	202812	202815	202816	202819	202820
22		30			203010	203012	203015	203016		203020
25		32				223212	223215			223220
28	35				253312	253315			253320	
30	38						283816		283820	
32	40					303812	303815		303820	
35	42					304012	304015		304020	
38	44									
40	45									
45	48									
	50						405015		405020	
	55						405515			
	56									
	60									

JDB650 Metric Cylindrical Bushes 自润滑轴套



d8: High load 高负荷
e7: Light load 轻负荷
f7: High precision 高精度

Mating Shaft
相配轴

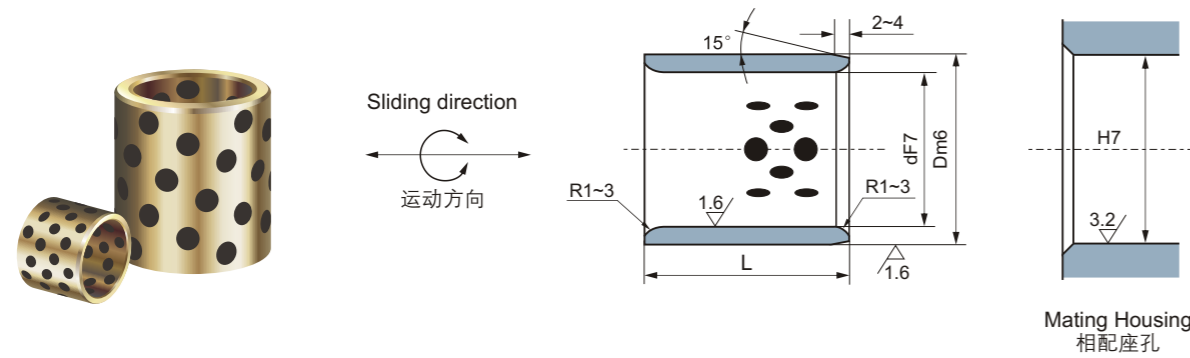
Material	650# + Graphite
材质	高力黄铜 + 石墨

Unit(单位): mm

L ^{-0.1} _{-0.3}								I.D. After Press-Fitting 压装后内孔	JTW 适用垫片	I.D. ϕd 内径
25	30	35	40	50	60	70	80			
								+0.019 +0.007	—	6
								+0.025 +0.010	—	8
								+0.031 +0.013	10	10
121825	121830							+0.030 +0.012	12	12
131925	131930								13	13
142025	142030								14	14
152125	152130	152135							15	15
162225	162230	162235							16	16
									18	17
182425	182430	182435						18	18	
								+0.037 +0.016	20	19
202825	202830	202835	202840	202850					20	20
203025	203030	203035	203040	203050					20	
223225									25	22
253325	253330	253335	253340	253350	253360				25	25
253525	253530	253535	253540	253550	253560				25	
283825	283830		283840						30	28
303825	303830	303835	303840	303850	303860				30	30
304025	304030	304035	304040	304050	304060				30	
	324230		324240						35	32
354425	354430	354435	354440	354450	354460			35	35	
354525	354530	354535	354540	354550	354560			35		
			384840					40	38	
405025	405030	405035	405040	405050	405060	405070	405080	40	40	
	405530	405535	405540	405550	405560			40		
	455530	455535	455540	455550	455560			45	45	
	455630	455635	455640	455650	455660			45		
	456030	456035	456040	456050	456060	456070	456080	45		

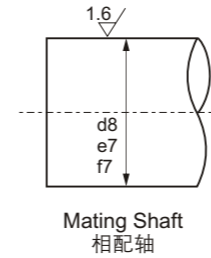
※压入后内孔公差值做参考。
The ID tolerance after fitting is for reference.

JDB650 Metric Cylindrical Bushes 自润滑轴套



I.D. ϕd 内径 F7	O.D. ϕD 外径 m6	L ^{-0.1} _{-0.3}							
		20	30	35	40	50	60	70	
50	60	506020	506030	506035	506040	506050	506060	506070	
	62		506230	506235	506240	506250	506260	506270	
	65		506530		506540	506550	506560	506570	
55	70		557030	557035	557040	557050	557060	557070	
60	74		607430	607435	607440	607450	607460	607470	
	75		607530	607535	607540	607550	607560	607570	
63	75						637560	637570	
65	80				658040	658050	658060	658070	
70	85		708530	708535	708540	708550	708560	708570	
	90					709050	709060	709070	
75	95					759550	759560	759570	
	96				809640	809650	809660	809670	
80	100				8010040		8010060	8010070	
	110					9011050	9011060		
85	110					10012050	10012060	10012070	
90	120					11013050		11013070	
100	130							12014070	
110	140								
125	145								
130	150								
140	160								
150	170								
160	180								
170	190								
180	200								
190	210								
200	230								

JDB650 Metric Cylindrical Bushes 自润滑轴套



d8: High load 高负荷
e7: Light load 轻负荷
f7: High precision 高精度

Mating Shaft
相配轴

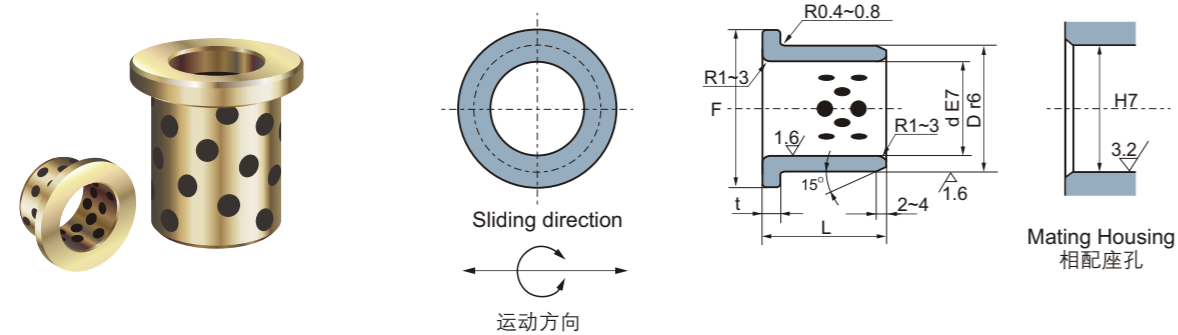
Material	650# + Graphite
材质	高力黄铜 + 石墨

Unit(单位): mm

80	90	100	L ^{-0.1} _{-0.3}				140	150	200	I.D. After Press-Fitting 压装后内孔	JTW 适用垫片	I.D. ϕd 内径
			120	130	140	150						
506080									+0.045 +0.020	50	50	
506280									+0.055 +0.025	55	55	
506580		5065100								60	60	
607480									+0.054 +0.024	65	63	
607580		6075100								65	65	
637580									+0.065 +0.030	70	70	
658080										75	75	
708580		7085100							+0.064 +0.029	80	80	
709080										85	85	
759080		7590100							+0.076 +0.036	90	90	
759580		7595100								100	100	
809680		8096100	8096120						+0.088 +0.042	110	110	
8010080		80100100	80100120			80100140				120	120	
8510080									+0.076 +0.036	125	125	
9011080	9011090	90110100	90110120							130	130	
9011080	9011090	90110100	90110120						+0.076 +0.036	140	140	
10012080	10012090	100120100	100120120			100120140				150	150	
11013080		110130100	110130120						+0.076 +0.036	160	160	
12014080	12014090	120140100	120140120			120140140				170	170	
		125145100	125145120						+0.076 +0.036	180	180	
13015080		130150100		130150130						190	190	
		140160100				140160140			+0.076 +0.036	190	190	
15017080		150170100					150170150			200	200	
16018080		160180100					160180150		+0.088 +0.042	200	200	
		170190100					170190150			200	200	
		180200100					180200150					
		190210100					190210150					
							200230150	200230200				

※压入后内孔公差值做参考。
The ID tolerance after fitting is for reference.

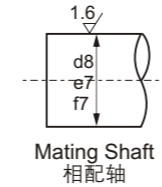
JFB650 Metric Flange Bushes 自润滑翻边轴套



I.D. ϕd 内径 E7	O.D. ϕD 外径 r6	Flange 翻边		L ^{-0.1} _{-0.3}							I.D. After Press-Fitting 压装后内孔	I.D. ϕd 内径	
		ϕF	t	10	12	15	17	18	20	23			
6	+0.032 +0.020	10	+0.028 +0.019	16	0610	0612						+0.016 +0.004	6
8	+0.040 +0.025	12	+0.034 +0.023	20	0810	0812	0815					+0.021 +0.006	8
10	+0.050 +0.032	14	+0.041 +0.028	22	1010	1012	1015	1017		1020		+0.031 +0.013	10
12		18		25	1210	1212	1215			1220			12
13	+0.050 +0.032	19	+0.041 +0.028	26	1310	1312	1315			1320		+0.026 +0.008	13
14		20		27			1415			1420			14
15		21		28	1510	1512	1515			1520			15
16	+0.061 +0.040	22	+0.060 +0.041	29		1612	1615		1618	1620	1623	+0.037 +0.016	16
18		24		32			1815			1820			18
20	+0.075 +0.050	30	+0.062 +0.043	40			2015			2020		+0.046 +0.021	20
25		35		45			2515			2520			25
30	+0.090 +0.060	40	+0.073 +0.051	50						3020		+0.053 +0.023	30
31.5		45		60						3120			31.5
35	+0.107 +0.072	50	+0.076 +0.054	65						3520		+0.060 +0.025	35
40		55		70						4020			40
45	+0.125 +0.085	60	+0.088 +0.063	75								+0.068 +0.028	45
50		65		80									50
55	+0.093 +0.068	75	+0.090 +0.065	85								+0.055 +0.025	55
60		80		90									60
63	+0.107 +0.072	85	+0.093 +0.068	95								+0.052 +0.017	63
65		90		105									65
70	+0.125 +0.085	100	+0.093 +0.068	110								+0.066 +0.025	70
75		110		120									75
80	+0.107 +0.072	120	+0.088 +0.063	130								+0.046 +0.016	80
90		130		140									80
100	+0.125 +0.085	140	+0.090 +0.065	150								+0.060 +0.025	90
120		150		160									90
130	+0.093 +0.068	160	+0.093 +0.068	170								+0.052 +0.017	100
140		170		180									100
150	+0.107 +0.072	180	+0.088 +0.063	190								+0.068 +0.028	120
160		190		200									120
		200		210								+0.065 +0.025	130
		210										+0.065 +0.025	140
													150
													150
													160
													160

JFB650 Metric Flange Bushes 自润滑翻边轴套

Material	650# + Graphite
材质	高力黄铜 + 石墨



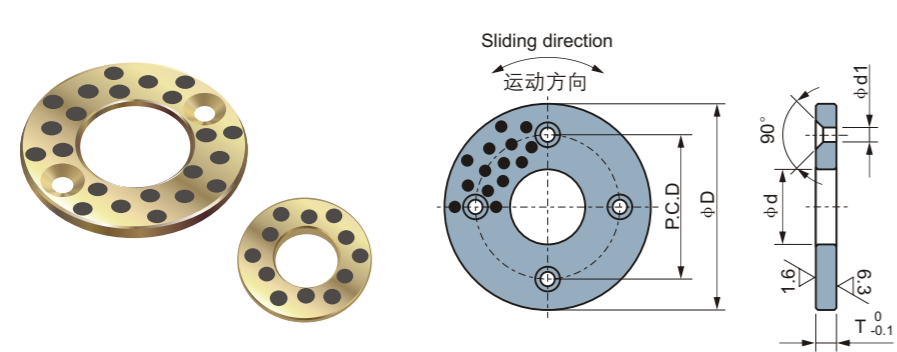
d8: High load 高负荷
e7: Light load 轻负荷
f7: High precision 高精度

Unit(单位): mm

L ^{-0.1} _{-0.3}										I.D. After Press-Fitting 压装后内孔	I.D. ϕd 内径
25	30	35	40	50	60	67.5	80	100	120		
										+0.016 +0.004	6
										+0.021 +0.006	8
										+0.031 +0.013	10
1225	1230									+0.026 +0.008	12
1325	1330										13
1425										+0.037 +0.016	14
1525	1530										15
1625	1630	1635	1640							+0.032 +0.011	16
1825	1830	1835	1840								18
2025	2030	2035	2040							+0.046 +0.021	20
2525	2530	2535	2540	2550							25
3025	3030	3035	3040	3050						+0.053 +0.023	30
	3130	3135	3140								31.5
3525	3530	3535	3540	3550						+0.040 +0.015	35
4025	4030	4035	4040	4050							40
	4530	4535	4540	4550	4560					+0.055 +0.025	45
	5030	5035	5040	5050	5060						50
			5540		5560					+0.053 +0.023	55
			6040	6050	6060		6080				60
							6367			+0.046 +0.016	63
							6560				65
				7050						+0.060 +0.025	70
											75
					7560		7080			+0.066 +0.025	80
					8060		8080	80100			80
					9060		9080			+0.052 +0.017	90
							10080	100100			100
							12080	120100		+0.068 +0.028	120
							13080	130100			130
							14080	140100		+0.065 +0.025	140
								150100	150120		150
								160100	160120	160	

※压入后内孔公差值做参考。
The ID tolerance after fitting is for reference.

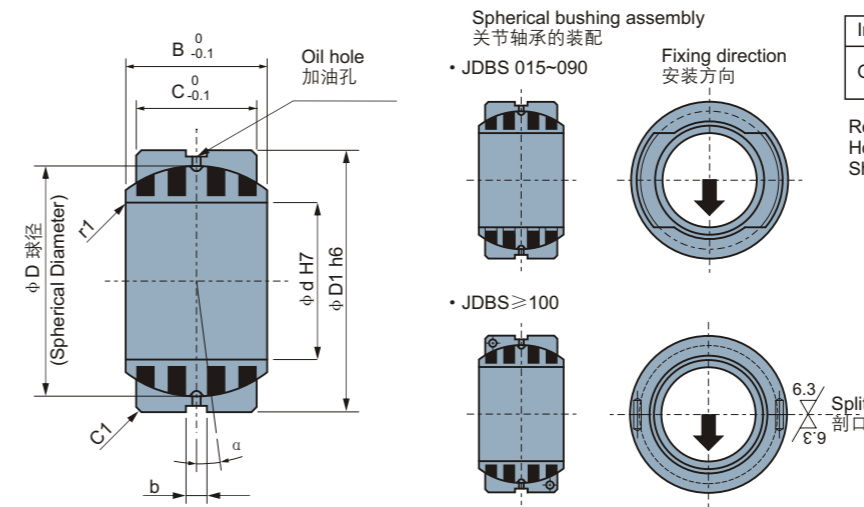
JTW650 Metric Thrust Washer 止推垫片



Unit(单位): mm

Standard No. 型号规格	I.D. φd 内径	O.D. φD 外径	Thickness 厚度	Screw Holes 螺丝孔				
				P.C.D	Number of Holes 数量	Flat Head Screw 规格	d1	
JTW-0603	6.2	25	3	15	2	M3	3.5	
JTW-0803	8.2	28						
JTW-1003	10.2	30						
JTW-1203	12.2	40		28				
JTW-1203N				Without flat head screw hole 无平头螺丝孔				
JTW-1303	13.2	50	5	28	2	M3	3.5	
JTW-1403	14.2							
JTW-1503	15.2							
JTW-1603	16.2			50				35
JTW-1603N								Without flat head screw hole 无平头螺丝孔
JTW-1803	18.2	55	5	35	2	M3	3.5	
JTW-2005	20.2							
JTW-2505	25.2							
JTW-3005	30.2							
JTW-3505	35.2							
JTW-4007	40.2	80	7	60	2	M5	6	
JTW-4507	45.2							
JTW-5008	50.3							
JTW-5508	55.3	110	8	75	4	M6	7	
JTW-6008	60.3							
JTW-6508	65.3							
JTW-7010	70.3			120				85
JTW-7510								130
JTW-8010	80.3	150	10	90	4	M8	9	
JTW-9010	90.5							
JTW-10010	100.5							
JTW-12010	120.5							

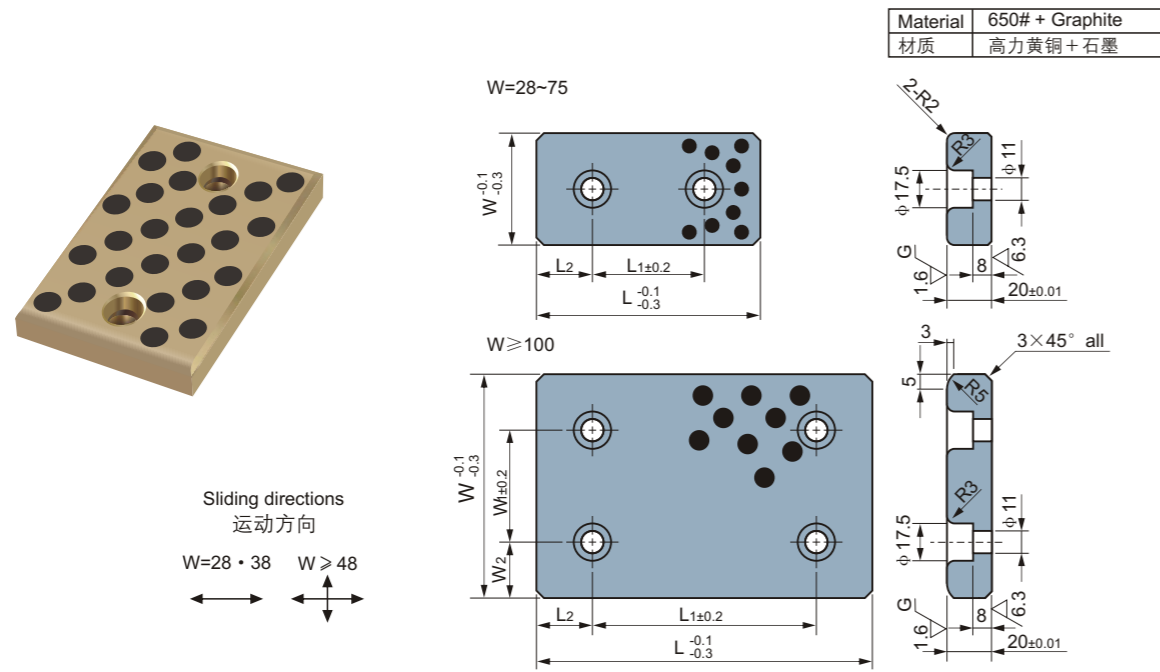
JDBS Metric Spherical Bushes 自润滑关节轴承



Unit(单位): mm

Standard No. 型号规格	d	H7	D1	h6	B	C	D	b	Alignment Angle α° 调整角度	Allowable Radial Load (kN) 径向承载	Allowable Thrust Load (kN) 轴向载荷
JDBS-015	15	+0.018/0	26	0/-0.013	12	9	22	4	8	6.5	0.5
JDBS-020	20	+0.021/0	32	0/-0.016	16	14	28		4	12.6	1.4
JDBS-025	25		21		18	36	5		21.8	2.5	
JDBS-030	30		27		23	44	6		32.0	3.5	
JDBS-035	35		30		26	49	5	43.7	4.8		
JDBS-040	40	+0.025/0	62	0/-0.019	33	28	55	4	6	54.7	5.7
JDBS-045	45		36		31	62	5		69.7	7.2	
JDBS-050	50		42		36	70	6		92.4	10	
JDBS-060	60		100		53	45	90		6	143	16
JDBS-070	70	+0.030/0	110	0/-0.022	58	50	99	4	5	181	20
JDBS-080	80		130		70	60	115		6	254	30
JDBS-090	90		140		76	65	125		6	313	36
JDBS-100	100		160		88	75	145		6	544	64
JDBS-110	110	+0.035/0	170	0/-0.025	93	80	155	4	5	642	73
JDBS-120	120		190		105	90	170		6	797	94
JDBS-130	130		200		110	95	180		5	880	105
JDBS-140	140		210		90	70	180		7	668	56
JDBS-150	150	+0.040/0	220	0/-0.029	120	105	200	6	5	1135	129
JDBS-160	160		230		105	80	200		8	891	73
JDBS-180	180		260		105	80	225		6	1002	74
JDBS-200	200		290		130	100	250		7	1434	117
JDBS-220	220	+0.046/0	320	0/-0.032	135	100	275	4	8	1577	118
JDBS-240	240		340		140	100	300		7	1720	118
JDBS-260	260		370		150	110	325		7	2072	143
JDBS-280	280		400		155	120	350		6	2455	172
JDBS-300	300	+0.052/0	430	0/-0.040	165	120	375	9	7	2630	172

JESW Oilless Wear Plate 自润滑板

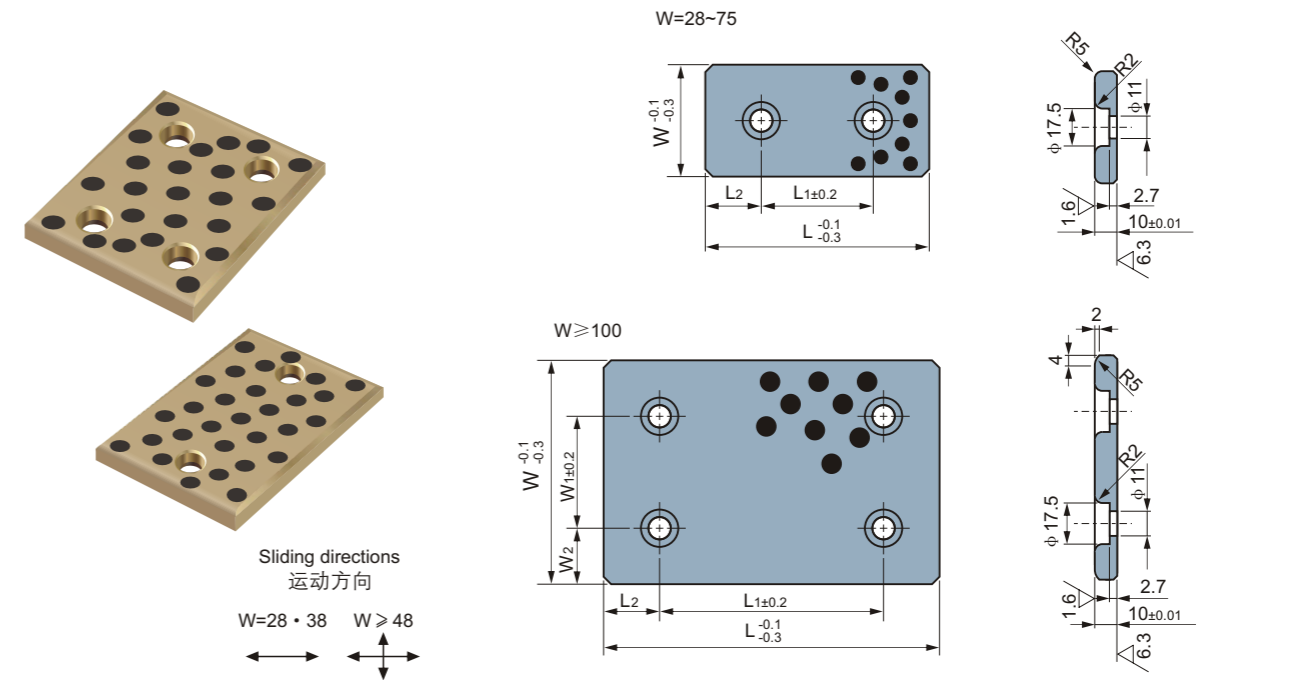


Unit(单位): mm

Standard No. 型号规格	W	L	W ₁	W ₂	L ₁	L ₂
JESW-28×75	28	75			45	15
JESW-28×100		100			50	25
JESW-28×150		150			100	
JESW-38×75	38	75			45	15
JESW-38×100		100			50	25
JESW-38×150		150			100	
JESW-48×75	48	75			45	15
JESW-48×100		100			50	25
JESW-48×125		125			75	25
JESW-48×150	48	150	-	-	100	25
JESW-48×200		200			150	
JESW-58×75		75			45	15
JESW-58×100	58	100			50	
JESW-58×150		150			100	
JESW-75×75		75			25	25
JESW-75×100	75	100			50	25
JESW-75×125		125			75	
JESW-75×150		150			100	
JESW-75×200	200	150				

Standard No. 型号规格	W	L	W ₁	W ₂	L ₁	L ₂
JESW-100×100	100	100			50	
JESW-100×125		125			75	25
JESW-100×150		150			100	
JESW-100×200	100	200	25		150	
JESW-100×250		250			200	50
JESW-100×300		300				
JESW-125×125	125	125	50		75	25
JESW-125×150		150			100	
JESW-125×200		200			150	
JESW-125×250	125	250	37.5			
JESW-125×300		300			200	50
JESW-125×350		350				75
JESW-150×150	150	150	100	25	100	
JESW-150×200		200			150	25
JESW-150×250		250			200	

JTWP Oilless Wear Plate 自润滑板



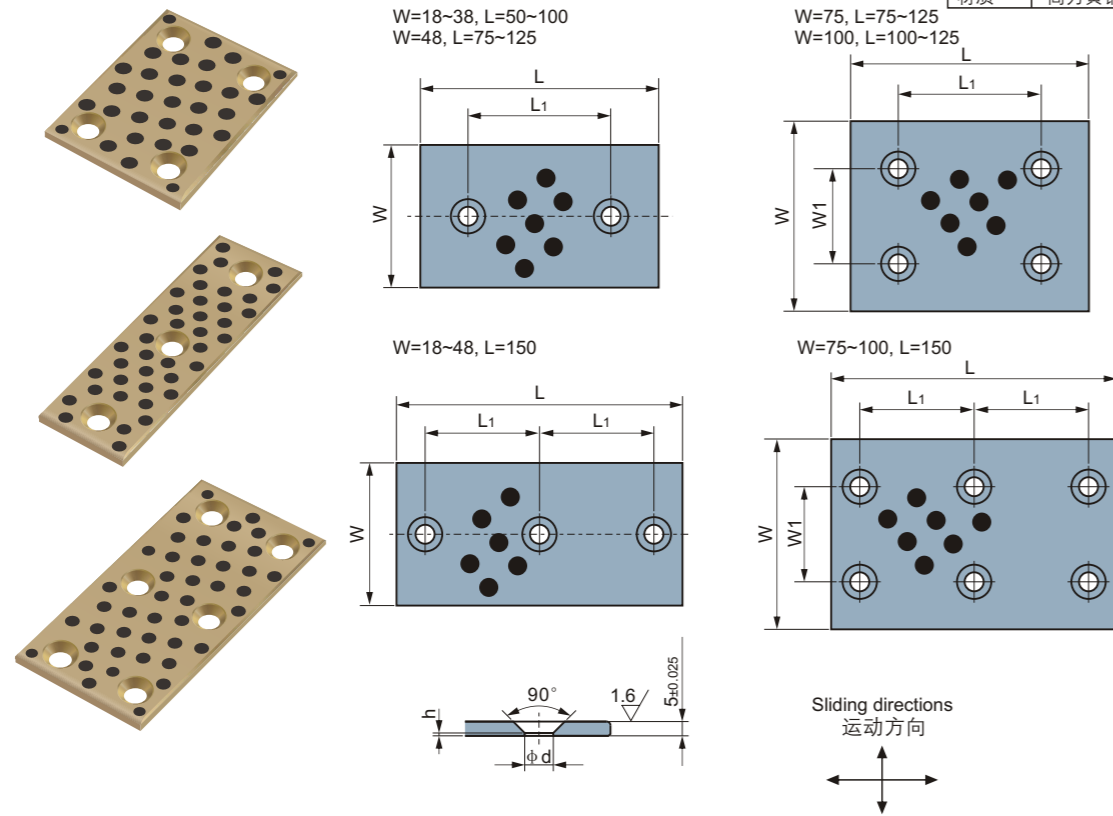
Unit(单位): mm

Standard No. 型号规格	W	L	W ₁	W ₂	L ₁	L ₂
JTWP-28×75	28	75			45	15
JTWP-28×100		100			50	
JTWP-28×125		125			75	25
JTWP-28×150	28	150			100	
JTWP-38×75		75			45	15
JTWP-38×100		100			50	
JTWP-38×125	38	125			75	25
JTWP-38×150		150			100	
JTWP-48×75		75			45	15
JTWP-48×100	48	100			50	
JTWP-48×125		125			75	25
JTWP-48×150		150			100	
JTWP-48×200	48	200			150	
JTWP-58×75		75			45	15
JTWP-58×100		100			50	25
JTWP-58×150	150	100				

Standard No. 型号规格	W	L	W ₁	W ₂	L ₁	L ₂
JTWP-75×75	75	75			25	
JTWP-75×100		100			50	
JTWP-75×125		125			75	
JTWP-75×150	75	150	-	-	100	
JTWP-75×200		200			150	
JTWP-100×100		100			50	
JTWP-100×125	100	125			75	25
JTWP-100×150		150			100	
JTWP-100×200		200			150	
JTWP-100×250	100	250	50		200	
JTWP-125×150		150			100	
JTWP-125×200		200			150	
JTWP-125×250	125	250	37.5		200	
JTWP-150×150		150			100	
JTWP-150×200		200			150	

JUWP Oilless Wear Plate 自润滑板

Material 650# + Graphite
材质 高力黄铜+石墨



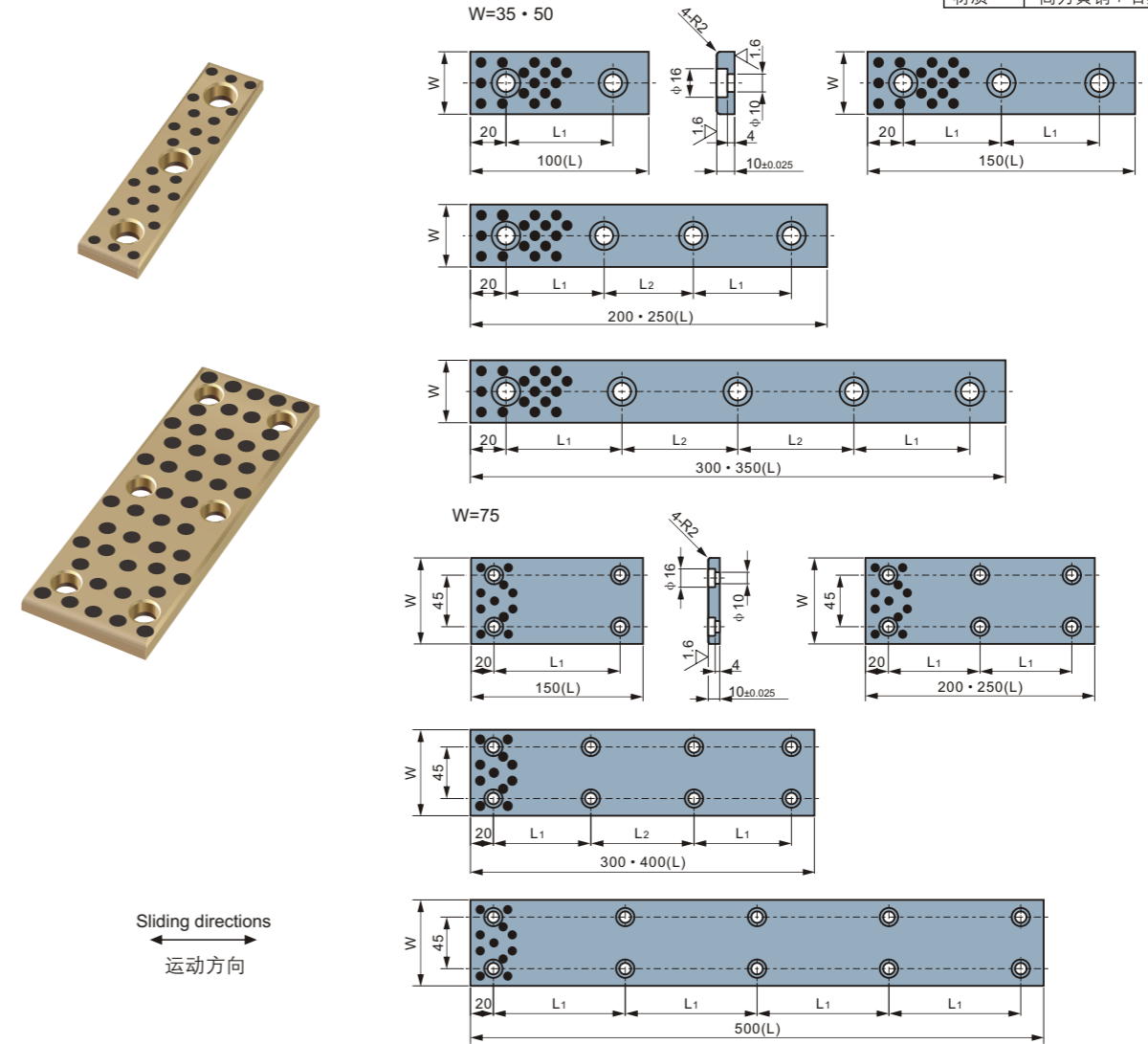
Unit(单位): mm

Standard No. 型号规格	W	L	W ₁	L ₁	d	h	Mounting Bolt 螺栓
JUWP-18×50	18	50	-	20	6.5	1.5	M6
JUWP-18×75		75		45			
JUWP-18×100		100		70			
JUWP-18×150		150		60			
JUWP-28×50	28	50	-	20	10	0.8	M8
JUWP-28×75		75		45			
JUWP-28×100		100		70			
JUWP-28×150		150		60			
JUWP-38×50	38	50	-	20	10	0.8	M8
JUWP-38×75		75		45			
JUWP-38×100		100		70			
JUWP-38×150		150		60			

Catalog No.	W	L	W ₁	L ₁	d	h	Mounting Bolt 螺栓
JUWP-48×75	48	75	-	45	10	0.8	M8
JUWP-48×100		100		70			
JUWP-48×125		125		95			
JUWP-48×150		150		60			
JUWP-75×75	75	75	45	45	10	0.8	M8
JUWP-75×100		100		70			
JUWP-75×125		125		95			
JUWP-75×150		150		60			
JUWP-100×100	100	100	70	70	10	0.8	M8
JUWP-100×125		125		95			
JUWP-100×150		150		60			

JOLP Oilless Wear Plate 自润滑板

Material 650# + Graphite
材质 高力黄铜+石墨



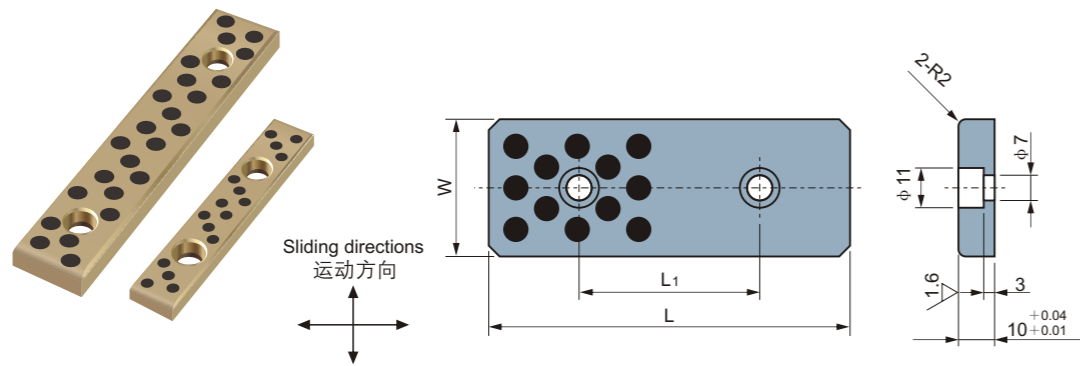
Unit(单位): mm

Standard No. 型号规格	W	L	Bolt Position 螺栓位置		Bolt Q'ty 螺栓数量
			L ₁	L ₂	
JOLP-35×100	35	100	60	-	2
JOLP-35×150		150	55	-	3
JOLP-35×200		200	55	50	4
JOLP-35×250		250	70	70	5
JOLP-35×300		300	65	65	
JOLP-35×350		350	80	75	
JOLP-50×100	50	100	60	-	2
JOLP-50×150		150	55	-	3
JOLP-50×200		200	55	50	4

Standard No. 型号规格	W	L	Bolt Position 螺栓位置		Bolt Q'ty 螺栓数量
			L ₁	L ₂	
JOLP-50×250	50	250	70	70	4
JOLP-50×300		300	65	65	5
JOLP-50×350		350	80	75	5
JOLP-75×150	75	150	110	-	4
JOLP-75×200		200	80	-	6
JOLP-75×250		250	105	-	
JOLP-75×300		300	85	90	
JOLP-75×400		400	120	120	
JOLP-75×500	500	115	-	10	

JOML Oilless Wear Plate 自润滑板

Material	650# + Graphite
材质	高力黄铜+石墨

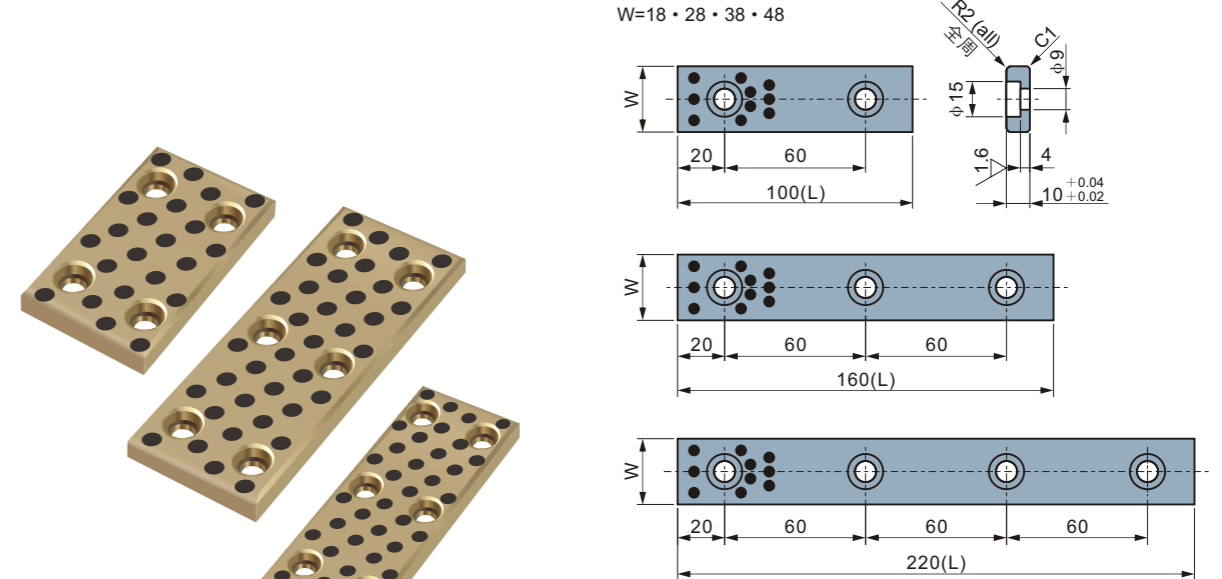


Unit(单位): mm

Standard No. 型号规格	W	L	L ₁
JOML-18×75	18	75	45
JOML-18×100		100	50
JOML-18×125		125	75
JOML-18×150	28	150	100
JOML-28×75		75	45
JOML-28×100		100	50
JOML-28×125	38	125	75
JOML-28×150		150	100
JOML-38×75		75	45
JOML-38×100	48	100	50
JOML-38×125		125	75
JOML-38×150		150	100
JOML-48×75	58	75	45
JOML-48×100		100	50
JOML-48×125		125	75
JOML-48×150	68	150	100
JOML-68×75		75	45
JOML-68×100		100	50

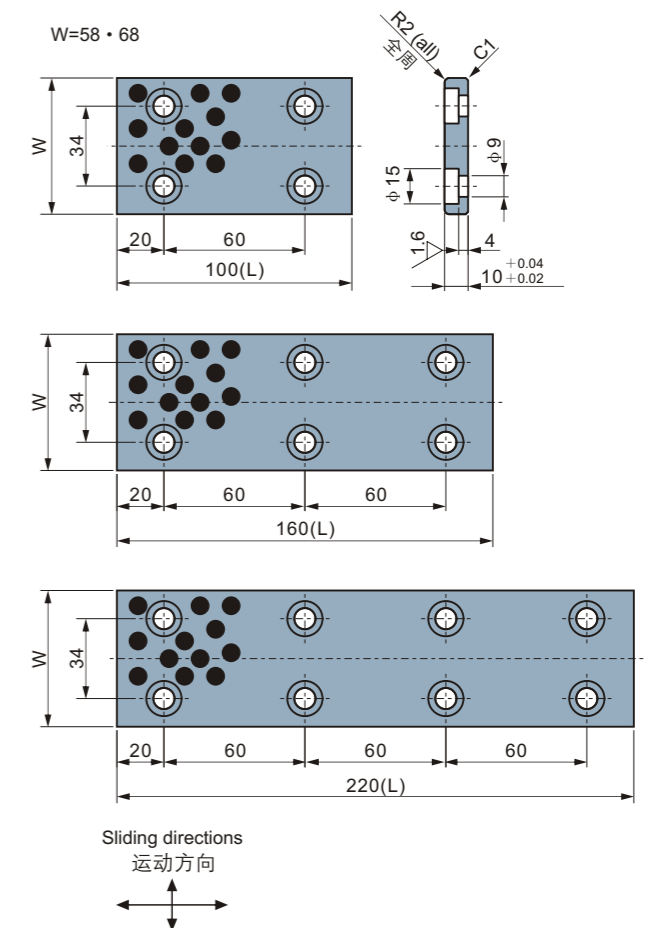
JTLP Oilless Wear Plate 自润滑板

Material	650# + Graphite
材质	高力黄铜+石墨

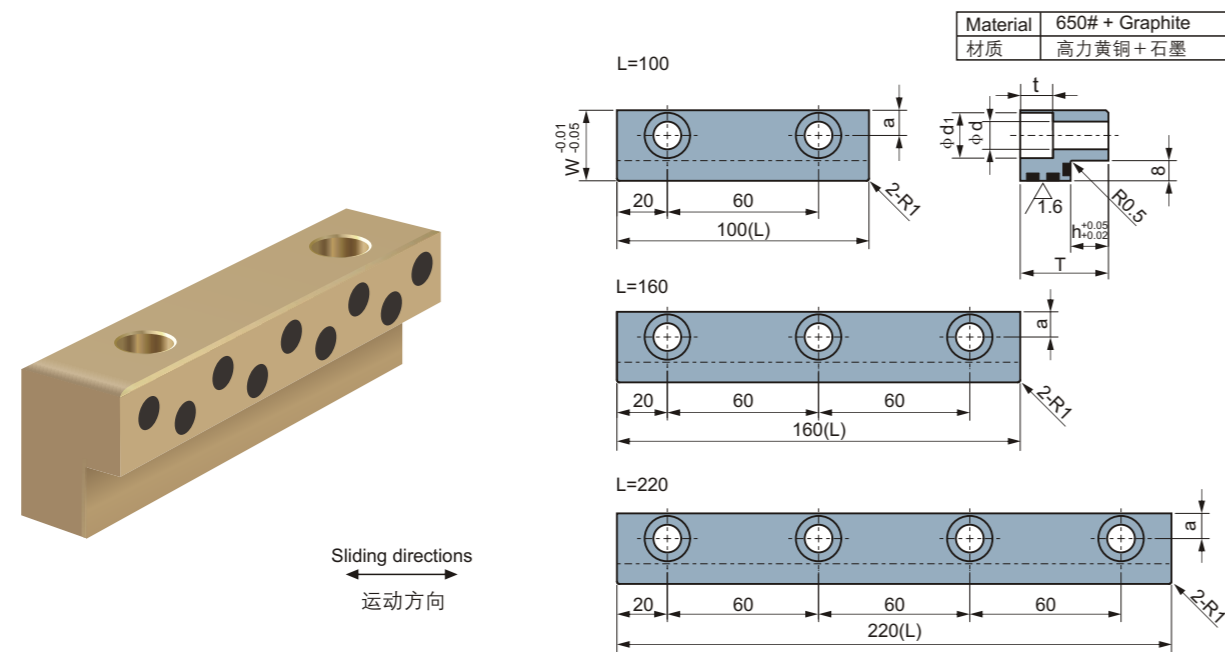


Unit(单位): mm

Standard No. 型号规格	W	L
JTLP-18×100	18	100
JTLP-18×160		160
JTLP-18×220		220
JTLP-28×100	28	100
JTLP-28×160		160
JTLP-28×220		220
JTLP-38×100	38	100
JTLP-38×160		160
JTLP-38×220		220
JTLP-48×100	48	100
JTLP-48×160		160
JTLP-48×220		220
JTLP-58×100	58	100
JTLP-58×160		160
JTLP-58×220		220
JTLP-68×100	68	100
JTLP-68×160		160
JTLP-68×220		220



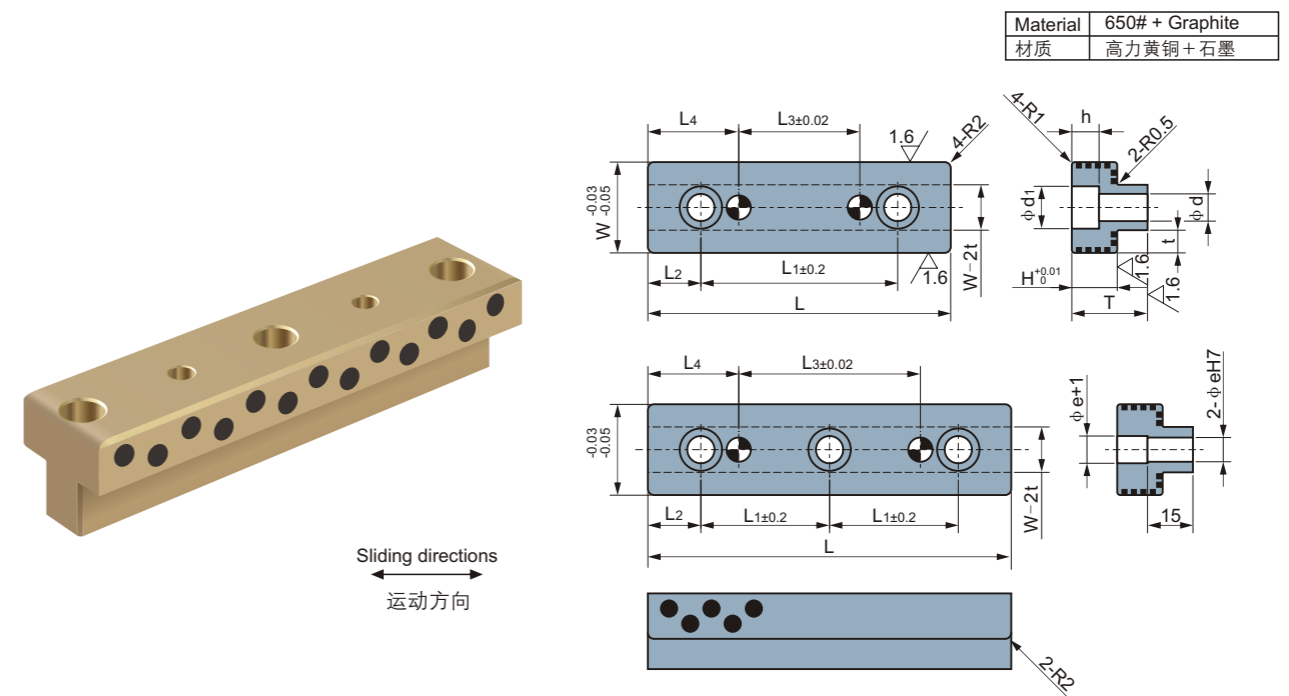
JGLDW Oilless Guide Rail 自润导轨



Unit(单位): mm

Standard No. 型号规格	W	L	T	a	d	d ₁	h	t
JGLDW-23×100	23	100	30	7.5	7	11	15	7
JGLDW-23×160		160						
JGLDW-23×220		220						
JGDWL-23×100		100	41					
JGLDW-23×160		160						
JGLDW-23×220		220						
JGLDW-28×100	28	100	25	10	11	18	10	13
JGLDW-28×160		160						
JGLDW-28×220		220						
JGLDW-28×100		100	35					
JGLDW-28×160		160						
JGLDW-28×220		220						
JGLDW-28×100		100	56	26				
JGLDW-28×160		160						
JGLDW-28×220		220						

JTGLW Oilless Guide Rail 自润导轨

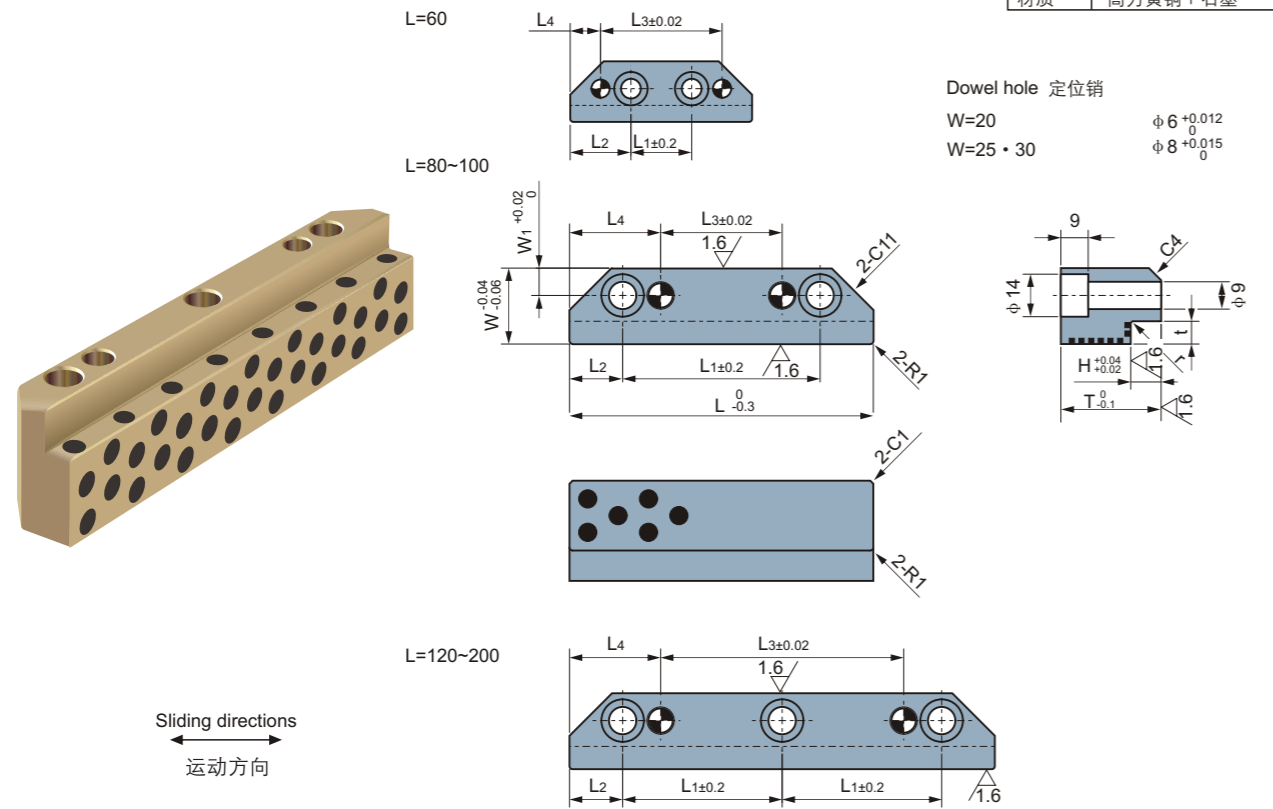


Unit(单位): mm

Standard No. 型号规格	W	L	L ₁	L ₂	L ₃	L ₄	T	H	t	d	d ₁	h	e H7
JTGLW-20×60	20	60	35	12.5	15	22.5	15	8	4.5	5.5	9.5	6	6 ^{+0.012} ₀
JTGLW-20×80		80	55										
JTGLW-20×100		100	75										
JTGLW-25×80	25	80	50	15	20	20	20		5.5	6.5	11	7	
JTGLW-25×100		100	70										
JTGLW-25×120		120	45										
JTGLW-30×100	30	100	65	17.5	40	25	25	10	7.5	9	14	9	8 ^{+0.015} ₀
JTGLW-30×120		120	42.5										
JTGLW-30×140		140	52.5										
JTGLW-40×120	40	120	40	20	40	30	30	15	11	11	18	11	
JTGLW-40×140		140	50										
JTGLW-40×160		160	60										
JTGLW-40×180		180	70										

JGLXS Oilless Wear Plate 自润滑板

Material	650# + Graphite
材质	高力黄铜+石墨

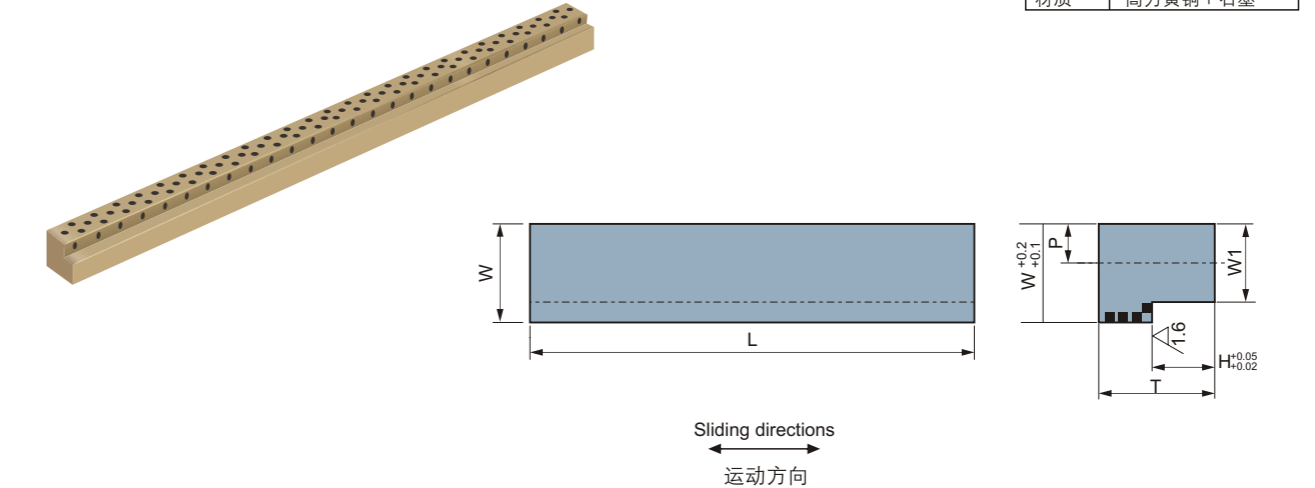


Unit(单位): mm

Standard No. 型号规格	W	L	T	W ₁	L ₁	L ₂	L ₃	L ₄	H	t	r
JGLXS-20×60×T	20	60	23	9	20	15	40	10	8	5.5	0.5
JGLXS-20×80×T		80									
JGLXS-20×100×T		100									
JGLXS-20×120×T		120									
JGLXS-20×140×T		140									
JGLXS-20×160×T		160									
JGLXS-25×80×T	25	80	28	9	45	17.5	60	10	10	7.5	0.8
JGLXS-25×100×T		100									
JGLXS-25×120×T		120									
JGLXS-25×140×T		140									
JGLXS-25×160×T		160									
JGLXS-25×180×T		180									
JGLXS-30×100×T	30	100	43	11	60	20	80	15	15	11	0.8
JGLXS-30×120×T		120									
JGLXS-30×140×T		140									
JGLXS-30×160×T		160									
JGLXS-30×180×T		180									
JGLXS-30×200×T		200									

JGLX Oilless Wear Plate 自润滑板

Material	650# + Graphite
材质	高力黄铜+石墨

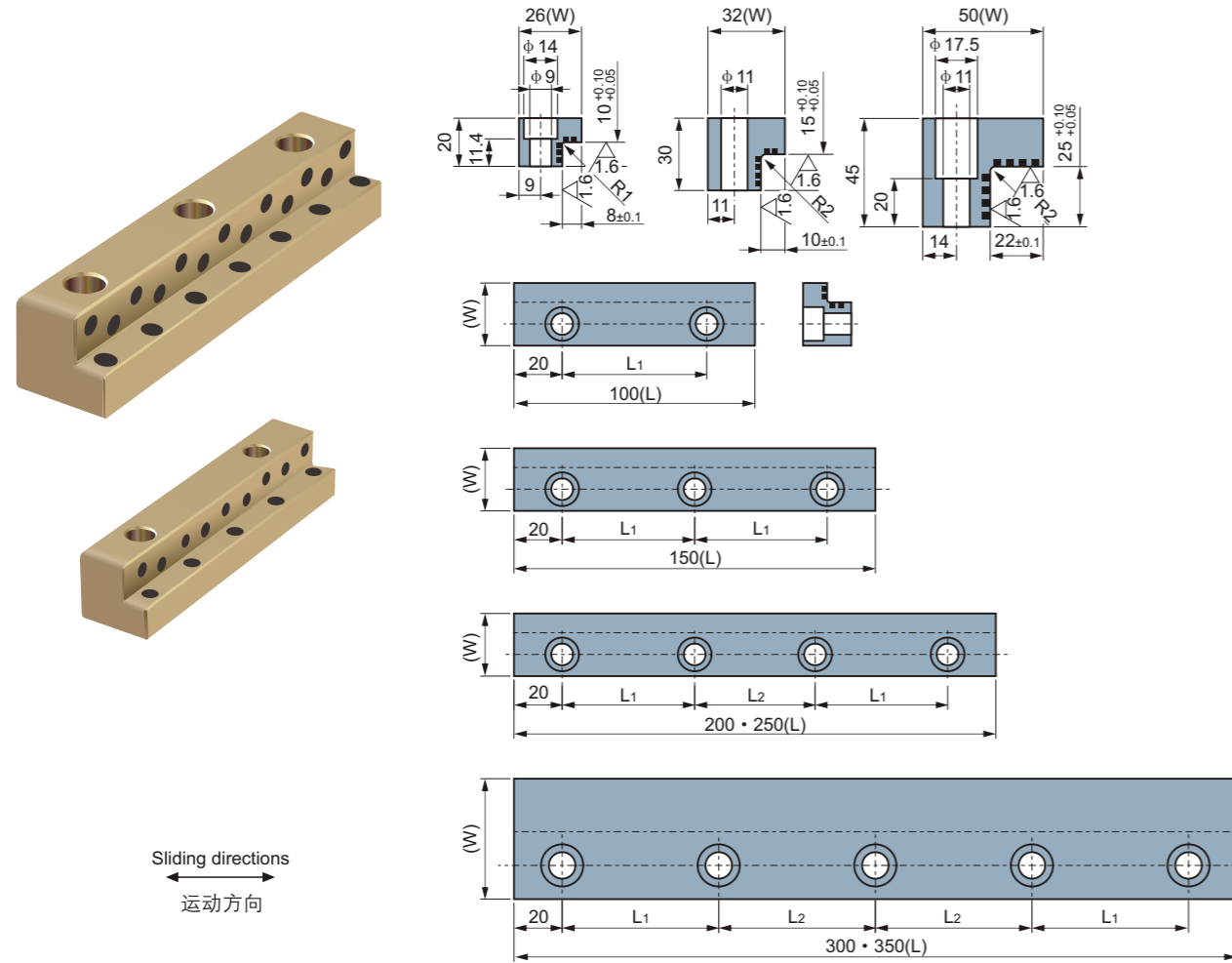


Unit(单位): mm

Standard No. 型号规格	W	L	T	W ₁	H	Recommended Mounting Hole 推荐安装孔	
						P	Size
JGLX-20×15	20	320	15	14.5	5	8	M8
JGLX-20×20			20				
JGLX-20×25			25				
JGLX-20×23			23				
JGLX-20×28	25	320	28	17.5	10	10	M8
JGLX-25×28			28				
JGLX-25×33			33				
JGLX-25×43			43				
JGLX-30×38	30	605	38	19	15	12	M10
JGLX-30×43			43				
JGLX-30×53			53				
JGLX-35×43			43				
JGLX-35×53	35	605	53	23	20	14	M12
JGLX-35×63			63				
JGLX-40×45			45				
JGLX-40×55			55				
JGLX-40×65	40	65	65	28	20	14	M12

JSOL Oilless Wear Plate 自润滑板

Material 650# + Graphite
材质 高力黄铜+石墨



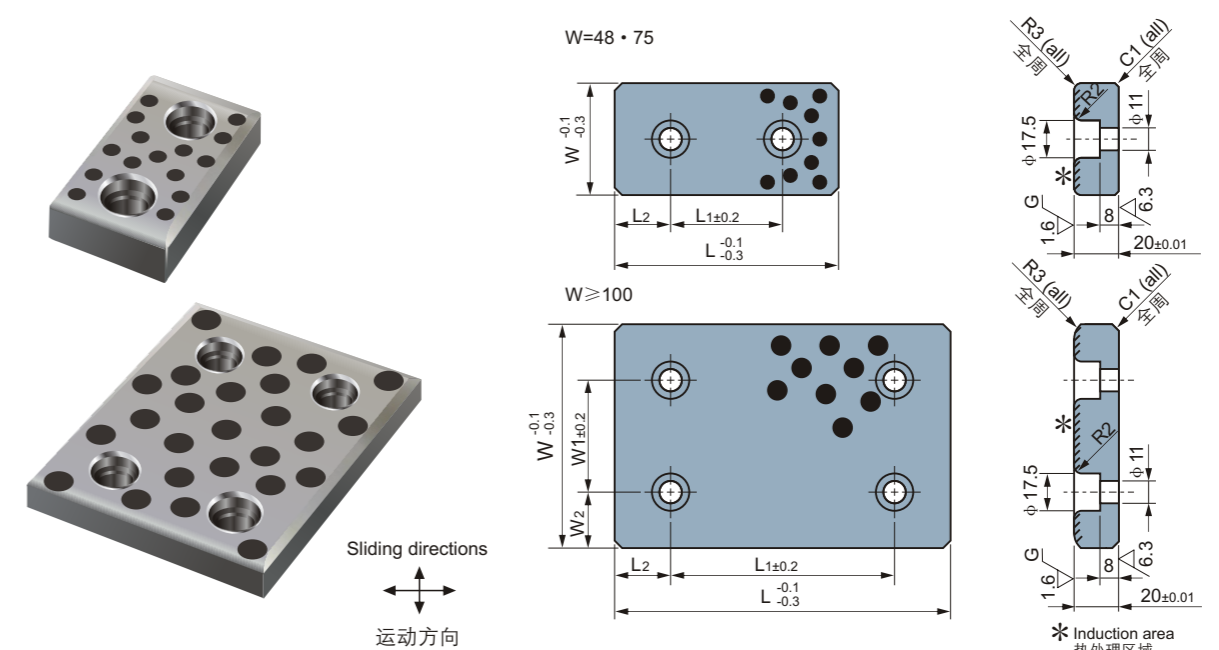
Sliding directions
运动方向

Unit(单位): mm

Standard No. 型号规格	W	L	Bolt Position 螺栓位置		Mounting Bolt 螺栓	
			L ₁	L ₂	Size 尺寸	Quantity 数量
JSOL-26×100	26	100	60	-	M8	2
JSOL-26×150		150	55	-		3
JSOL-26×200		200	55	50		4
JSOL-32×100	32	100	60	-	M10	2
JSOL-32×150		150	55	-		3
JSOL-32×200		200	55	50		4
JSOL-32×250	250	70	70			
JSOL-50×200	50	200	55	50	M10	
JSOL-50×250		250	70	70		
JSOL-50×300		300	65	65		
JSOL-50×350	350	80	75			5

JFRP Oilless Wear Plate 自润滑板

Metal材质 S45C+Gr/石墨
Hardness硬度 HRC≥40



Sliding directions
运动方向

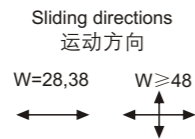
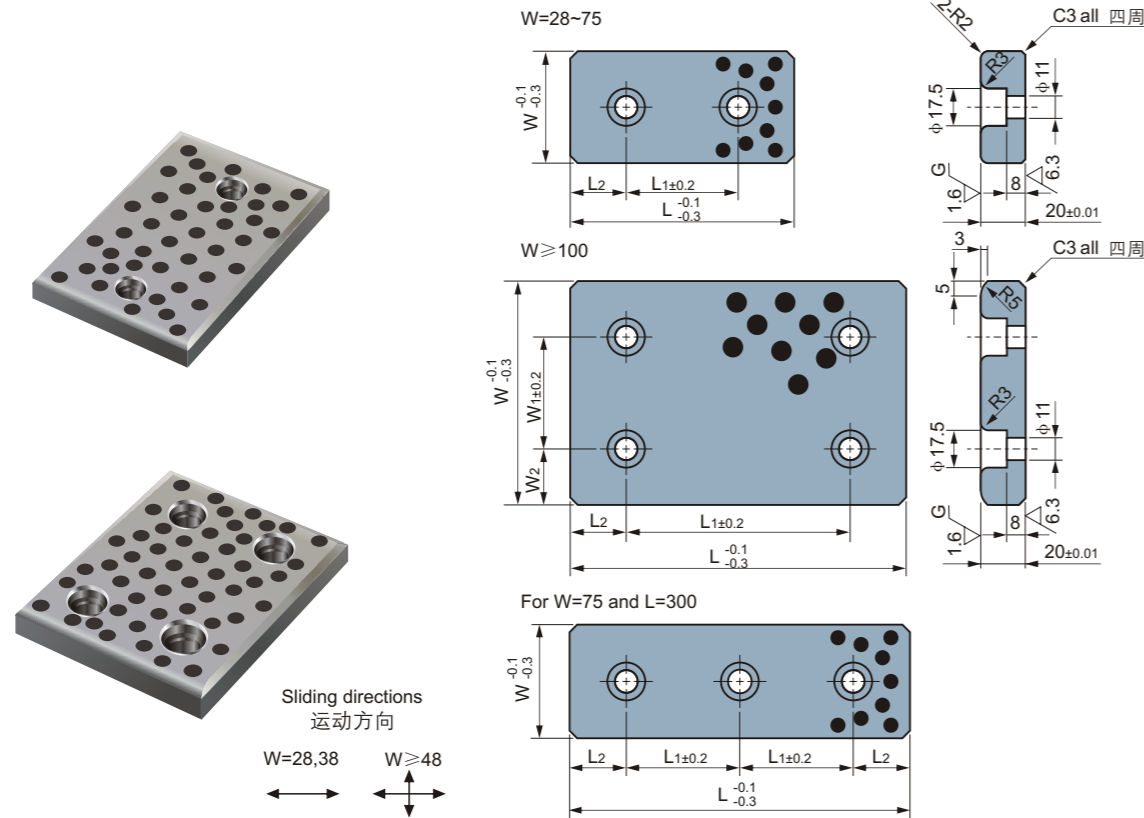
* Induction area
热处理区域

Unit(单位): mm

Standard No. 型号规格	W	L	W ₁	W ₂	L ₁	L ₂
JFRP-48×75	48	75	-	-	45	15
JFRP-48×100		100			50	25
JFRP-48×125		125			75	
JFRP-48×150		150			100	
JFRP-48×200		200			150	
JFRP-75×75	75	75	-	-	25	
JFRP-75×100		100			50	
JFRP-75×125		125			75	
JFRP-75×150		150			100	
JFRP-75×200		200			150	
JFRP-100×100	100	100	50	25	50	25
JFRP-100×125		125			75	
JFRP-100×150		150			100	
JFRP-100×200		200			150	
JFRP-100×250		250			200	
JFRP-125×125	125	125	50	37.5	75	25
JFRP-125×150		150			100	
JFRP-125×200		200			150	
JFRP-125×250		250			200	
JFRP-150×150	150	150	100	25	100	25
JFRP-150×200		200			150	
JFRP-150×250		250			200	

JESF Oilless Wear Plate 自润滑板

Material 250# + Graphite
材质 FC250铸铁 + 石墨



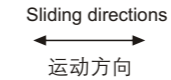
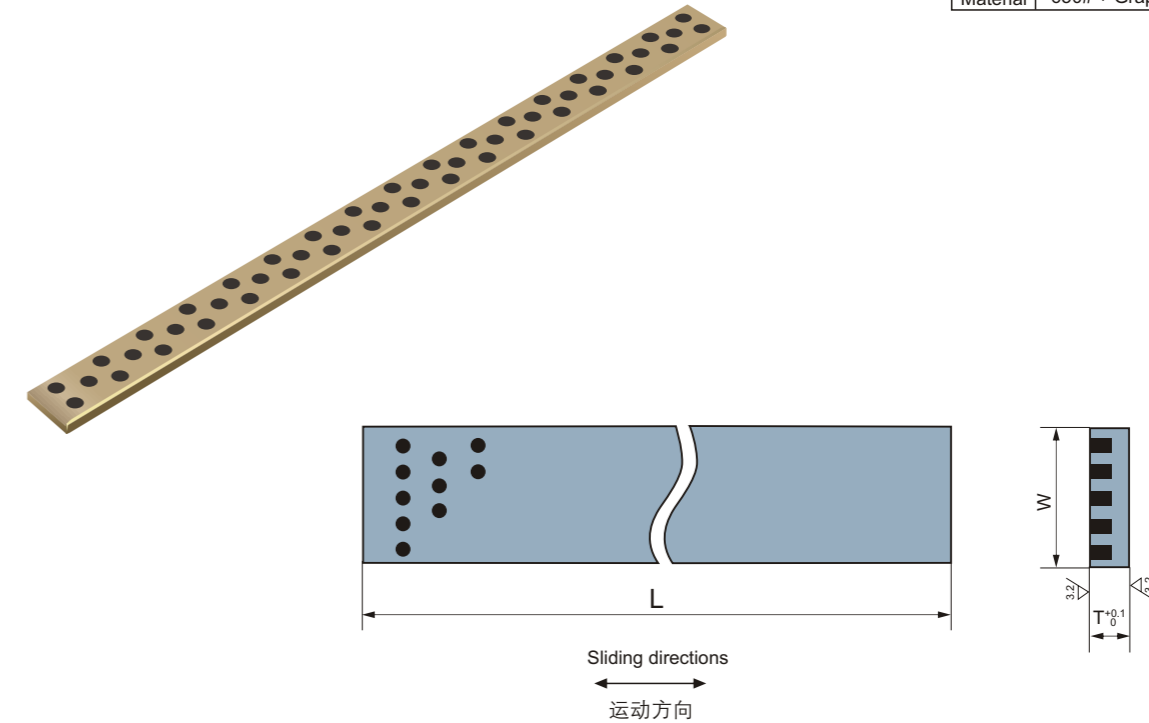
Unit(单位): mm

Standard No. 型号规格	W	L	W ₁	W ₂	L ₁	L ₂
JESF-28×75	28	75			45	15
JESF-28×100		100			50	25
JESF-28×125		125			75	
JESF-28×150		150			100	
JESF-28×200		200			150	
JESF-38×75	38	75			45	
JESF-38×100		100			50	25
JESF-38×125		125			75	
JESF-38×150		150			100	
JESF-38×200		200			150	
JESF-48×75	48	75			45	
JESF-48×100		100			50	25
JESF-48×125		125			75	
JESF-48×150		150			100	
JESF-48×200		200			150	
JESF-58×75	58	75			45	
JESF-58×100		100			50	25
JESF-58×125		125			75	
JESF-58×150		150			100	
JESF-58×200		200			150	
JESF-75×75	75	75			25	
JESF-75×100		100			50	
JESF-75×125		125			75	
JESF-75×150		150			100	

Standard No. 型号规格	W	L	W ₁	W ₂	L ₁	L ₂
JESF-75×150	75	150			100	25
JESF-75×200		200			150	
JESF-75×250		250			200	
JESF-75×300		300			250	
JESF-100×100		100			100	
JESF-100×125	100	125	50	25	75	25
JESF-100×150		150			100	
JESF-100×200		200			150	
JESF-100×250		250			200	
JESF-100×300		300			250	
JESF-100×100	100	100	50	25	50	50
JESF-100×125		125			75	
JESF-100×150		150			100	
JESF-100×200		200			150	
JESF-100×250		250			200	
JESF-100×300	300	250				
JESF-125×125	125	125	50	37.5	75	25
JESF-125×150		150			100	
JESF-125×200		200			150	
JESF-125×250		250			200	
JESF-125×300		300			250	
JESF-125×150	150	150	100	25	100	25
JESF-150×200		200			150	
JESF-150×250		250			200	
JESF-150×300		300			250	
JESF-150×150		150			100	
JESF-200×200	200	200	150	25	150	25
JESF-200×250		250			200	
JESF-200×300		300			250	

JSP Oilless Wear Plate 自润滑板

材质 高力黄铜 + 石墨
Material 650# + Graphite

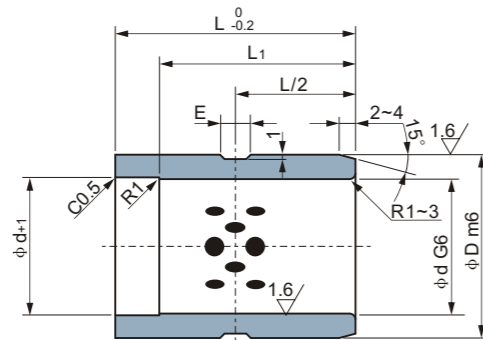
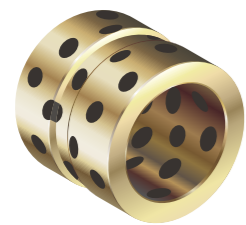


Unit(单位): mm

Standard No. 规格	w	T	L	Recommend bolt 推荐螺栓
JSP-20×5×305	20	5.3	305	M6×10 Countersunk head screw 沉头螺钉
JSP-25×5×305	25			
JSP-30×5×305	30			
JSP-30×5×400	30	10.3	400	M8×15 沉头螺钉 Hex socket round head screw
JSP-35×10×605	35			
JSP-40×10×605	40			
JSP-50×10×605	50			
JSP-60×15×605	60			
JSP-80×15×605	80	15.3	605	M10×20 Hex socket bolt 沉头螺钉
JSP-80×20×605	80			
JSP-100×20×605	100	20.3		

JGB Oilless Ejector Guide Bushes 射出座导套

Material 650# + Graphite
材质 高力黄铜+石墨



Sliding directions
运动方向

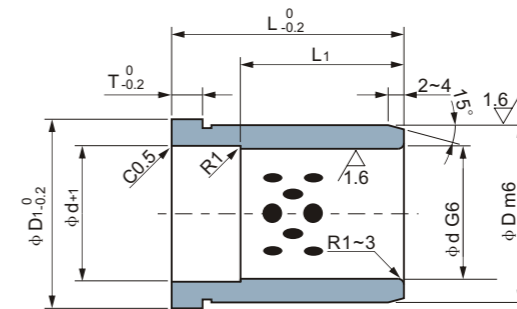
Unit(单位): mm

Standard No. 型号规格	d	L	d G6	D m6	L1	E
JGB-12×9	12	9	12	18	+0.018 +0.007	9
JGB-12×14		14				4
JGB-12×19		19				4
JGB-12×24	16	24	16	25	+0.017 +0.006	24
JGB-16×14		14				6
JGB-16×19		19				
JGB-16×24	24					
JGB-16×29	16	29	16	25	+0.017 +0.006	29
JGB-16×34		34				6
JGB-16×39		39				
JGB-20×14	20	14	20	30	+0.021 +0.008	
JGB-20×19		19				4
JGB-20×24		24				
JGB-20×29	20	29	20	30	+0.021 +0.008	
JGB-20×34		34				6
JGB-20×39		39				
JGB-20×49	25	49	25	35	+0.020 +0.007	
JGB-25×24		24				10
JGB-25×29		29				
JGB-25×34	25	34	25	35	+0.020 +0.007	
JGB-25×39		39				8
JGB-25×49		49				
JGB-25×59	30	59	30	42	+0.025 +0.009	
JGB-30×29		29				8
JGB-30×34		34				
JGB-30×39	30	39	30	42	+0.025 +0.009	
JGB-30×49		49				10
JGB-30×59		59				
JGB-30×69	30	69	30	42	+0.025 +0.009	
JGB-30×79		79				100
JGB-80×89		89				
JGB-80×99	80	99	80	100	+0.035 +0.013	
JGB-80×109		109				100
JGB-80×119		119				

Standard No. 型号规格	d	L	d G6	D m6	L1	E
JGB-35×29	35	29	35	48	+0.025 +0.009	29
JGB-35×34		34				8
JGB-35×39		39				
JGB-35×49	40	49	40	+0.025 +0.009	49	
JGB-35×59		59			55	
JGB-35×69		69				
JGB-35×79	40	79	40	+0.025 +0.009		70
JGB-40×39		39			10	
JGB-40×49		49				
JGB-40×59	50	59	50	+0.030 +0.011		59
JGB-40×69		69			70	
JGB-40×79		79				
JGB-40×89	60	89	60	80		+0.029 +0.010
JGB-50×49		49			100	
JGB-50×59		59				
JGB-50×69	60	69	60	80		+0.029 +0.010
JGB-50×79		79			100	
JGB-50×89		89				
JGB-50×99	80	99	80	100		+0.035 +0.013
JGB-60×59		59			100	
JGB-60×69		69				
JGB-60×79	80	79	80	100		+0.035 +0.013
JGB-60×89		89			100	
JGB-60×99		99				
JGB-60×109	80	109	80	100		+0.035 +0.013
JGB-80×69		69			100	
JGB-80×79		79				
JGB-80×89	80	89	80	100		+0.035 +0.013
JGB-80×99		99			100	
JGB-80×109		109				
JGB-80×119	80	119	80	100		+0.035 +0.013

JGBF Oilless Flanged Guide Bushes 自润滑翻边导向套

Material 650# + Graphite
材质 高力黄铜+石墨



Sliding directions
运动方向

Unit(单位): mm

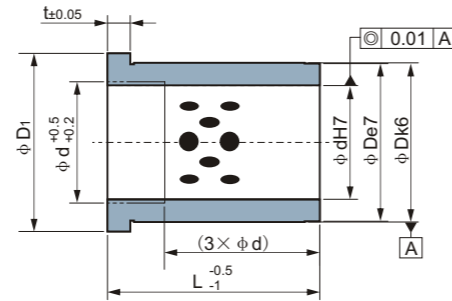
Standard No. 型号规格	d	L	d G6	D m6	D1	T	L1	
JGBF-12×19	12	19	12	18	+0.018 +0.007	25	4	19
JGBF-12×24		24						8
JGBF-12×29		29						
JGBF-12×34	16	34	16	+0.017 +0.006	25	30	34	
JGBF-16×19		19					6	
JGBF-16×24		24						
JGBF-16×29	16	29	16	+0.017 +0.006	25	30		29
JGBF-16×34		34					10	
JGBF-16×39		39						
JGBF-16×49	20	49	20	+0.021 +0.008	30	35		30
JGBF-20×24		24					8	
JGBF-20×29		29						
JGBF-20×34	20	34	20	+0.021 +0.008	30	35		34
JGBF-20×39		39					10	
JGBF-20×49		49						
JGBF-20×59	25	59	25	+0.020 +0.007	35	40		40
JGBF-25×24		24					8	
JGBF-25×29		29						
JGBF-25×34	25	34	25	+0.020 +0.007	35	40		34
JGBF-25×39		39					10	
JGBF-25×49		49						
JGBF-25×59	30	59	30	+0.025 +0.009	42	47		50
JGBF-25×69		69					100	
JGBF-30×29		29						100
JGBF-30×34	30	34	30	+0.025 +0.009	42	47		
JGBF-30×39		39					100	
JGBF-30×49		49						
JGBF-30×59	30	59	30	+0.025 +0.009	42	47		39
JGBF-30×69		69					100	
JGBF-30×79		79						
JGBF-30×89	30	89	30	+0.025 +0.009	42	47		59
JGBF-30×99		99					100	
JGBF-30×109		109						
JGBF-30×119	30	119	30	+0.025 +0.009	42	47		60
JGBF-30×129		129					100	
JGBF-30×139		139						
JGBF-30×149	30	149	30	+0.025 +0.009	42	47		60

Standard No. 型号规格	d	L	d G6	D m6	D1	T	L1	
JGBF-35×39	35	39	35	48	+0.025 +0.009	54	10	39
JGBF-35×49		49						55
JGBF-35×59		59						
JGBF-35×69	40	69	40	+0.025 +0.009	55	61	69	
JGBF-35×79		79					10	
JGBF-35×89		89						
JGBF-35×99	50	99	50	+0.030 +0.011	70	76		70
JGBF-40×39		39					100	
JGBF-40×49		49						
JGBF-40×59	60	59	60	+0.029 +0.010	80	86		59
JGBF-40×69		69					100	
JGBF-40×79		79						
JGBF-40×89	60	89	60	+0.029 +0.010	80	86		79
JGBF-40×99		99					100	
JGBF-40×109		109						
JGBF-40×119	60	119	60	+0.029 +0.010	80	86		119
JGBF-40×129		129					100	
JGBF-40×139		139						
JGBF-40×149	60	149	60	+0.029 +0.010	80	86		149

JOST Oilless Flanged Guide Bushes 自润滑翻边导向套



Sliding directions
运动方向



Material	650# + Graphite
材质	高力黄铜+石墨

Unit(单位): mm

Standard No. 型号规格	d	L	t	D	Tolerance 公差		D1	d H7	
					e7	k6			
JOST-9×12		12							
JOST-9×17		17							
JOST-9×22	9	22					9		
JOST-9×27		27							
JOST-9×36		36							
JOST-10×12		12	3	14			16	+0.015 0	
JOST-10×17		17							
JOST-10×22		22							10
JOST-10×27	10	27							
JOST-10×36		36							
JOST-12×17			17						
JOST-12×22	12	22		18			23	12	
JOST-12×27		27							
JOST-12×36		36							
JOST-14×17		17							
JOST-14×22	14	22					14	+0.018 0	
JOST-14×27		27							
JOST-14×36		36	6						
JOST-14×46	46								
JOST-14×56	56								
JOST-17×17		17		20			25		
JOST-17×22		22							
JOST-17×27	15	27							15
JOST-17×36		36							
JOST-17×46		46							
JOST-17×56		56							

Standard No. 型号规格	d	L	t	D	Tolerance 公差		D1	d H7		
					e7	k6				
JOST-16×17		17								
JOST-16×22		22								
JOST-16×27	16	27		22			27	16		
JOST-16×36		36								
JOST-16×46		46								
JOST-16×56		56								
JOST-18×17		17								
JOST-18×22		22								
JOST-18×27	18	27		6			18			
JOST-18×36		36								
JOST-18×46		46								
JOST-18×56		56								
JOST-18×66		66		26			31			
JOST-20×17		17								
JOST-20×22	20	22							20	+0.021 0
JOST-20×27		27								
JOST-20×36		36								
JOST-20×46		46								
JOST-20×56		56								
JOST-20×66		66								

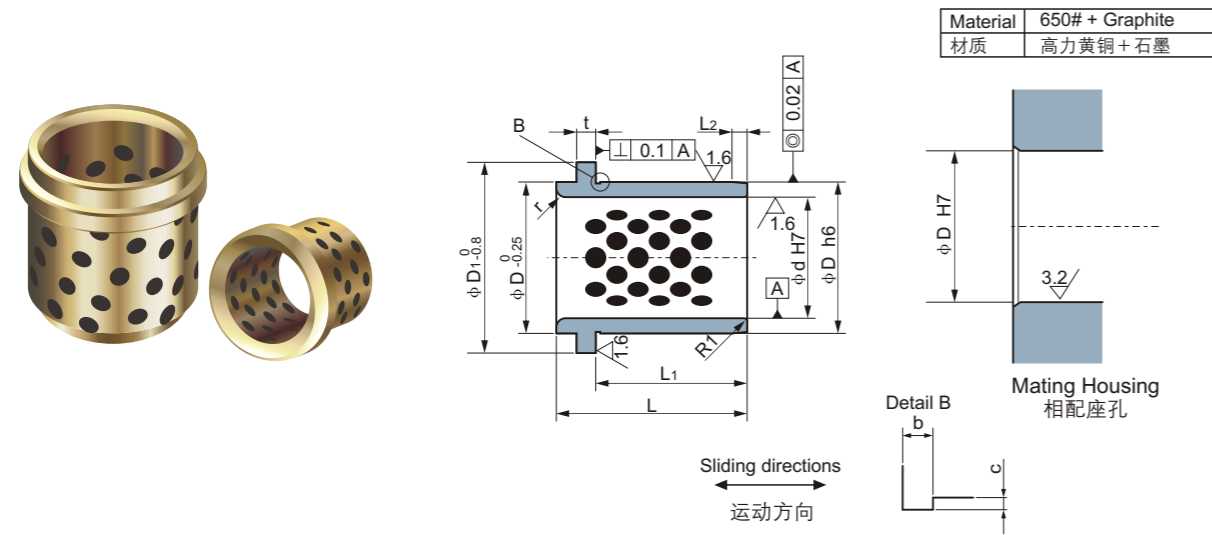
JOST Oilless Flanged Guide Bushes 自润滑翻边导向套

Unit(单位): mm

Standard No. 型号规格	d	L	t	D	Tolerance 公差		D1	d H7	
					e7	k6			
JOST-22×22		22							
JOST-22×27		27							
JOST-22×36	22	36		30			22		
JOST-22×46		46							
JOST-22×56		56							
JOST-22×66		66							
JOST-22×76		76							
JOST-22×86		86							
JOST-24×17		17		6			35		
JOST-24×22	24	22							
JOST-24×27		27							
JOST-24×36		36							
JOST-24×46		46					24	+0.021 0	
JOST-24×56	56								
JOST-24×66	66								
JOST-24×76	76								
JOST-24×86		86							
JOST-30×27		27		30					
JOST-30×36	30	36							30
JOST-30×46		46							
JOST-30×56		56							
JOST-30×66		66							
JOST-30×76		76							
JOST-30×86		86							
JOST-30×96		96							
JOST-30×116		116							
JOST-30×116		116		42			47		
JOST-32×27	32	27							
JOST-32×36		36							
JOST-32×46		46							
JOST-32×56		56							
JOST-32×66	66						32	+0.025 0	
JOST-32×76	76								
JOST-32×86	86								
JOST-32×96	96								
JOST-32×116		116							

Standard No. 型号规格	d	L	t	D	Tolerance 公差		D1	d H7	
					e7	k6			
JOST-40×56		56							
JOST-40×66		66							
JOST-40×76	40	76		54			60	40	
JOST-40×86		86							
JOST-40×96		96							
JOST-40×116		116							
JOST-40×136		136							
JOST-40×156		156							
JOST-42×56	42	56		10			60	+0.025 0	
JOST-42×66		66							
JOST-42×76		76							
JOST-42×86		86							
JOST-42×96		96					42		
JOST-42×116		116							
JOST-42×136		136							
JOST-42×156		156							
JOST-50×76		76		66			72	50	
JOST-50×86	50	86							
JOST-50×96		96							
JOST-50×116		116							
JOST-50×136		136							
JOST-50×156		156							
JOST-50×196		196							
JOST-60×96		96		20			86	60	
JOST-60×116		116							
JOST-60×136		136							
JOST-60×156		156							
JOST-60×196		196							

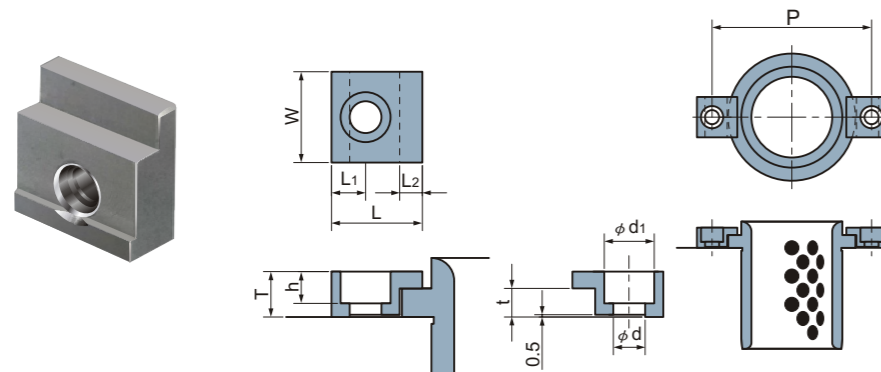
DIN9834 Oilless Guide Bushes 自润导套



Unit(单位): mm

Standard No. 型号规格	d H7	D h6	L	D ₁	L ₁	L ₂	t	r	bxc	P	
9834-025	25	32	40	40	30	3	6.3	3	0.6 × 0.3	58	
9834-032	32	40	50	50	40	4				66	
9834-040	40	50	63	63	50	5				79	
9834-050	50	63	71	71	56	6.3				89	
9834-063	63	80	80	90	63	8	10	6	1.0 × 0.4	123	
9834-080	80	100	100	112	80	10				8	143
9834-100	100	125	125	140	106	12.5				10	168
9834-125	125	160	160	180	132	16				12	203
9834-160	160	200	200	220	170	16		18		243	

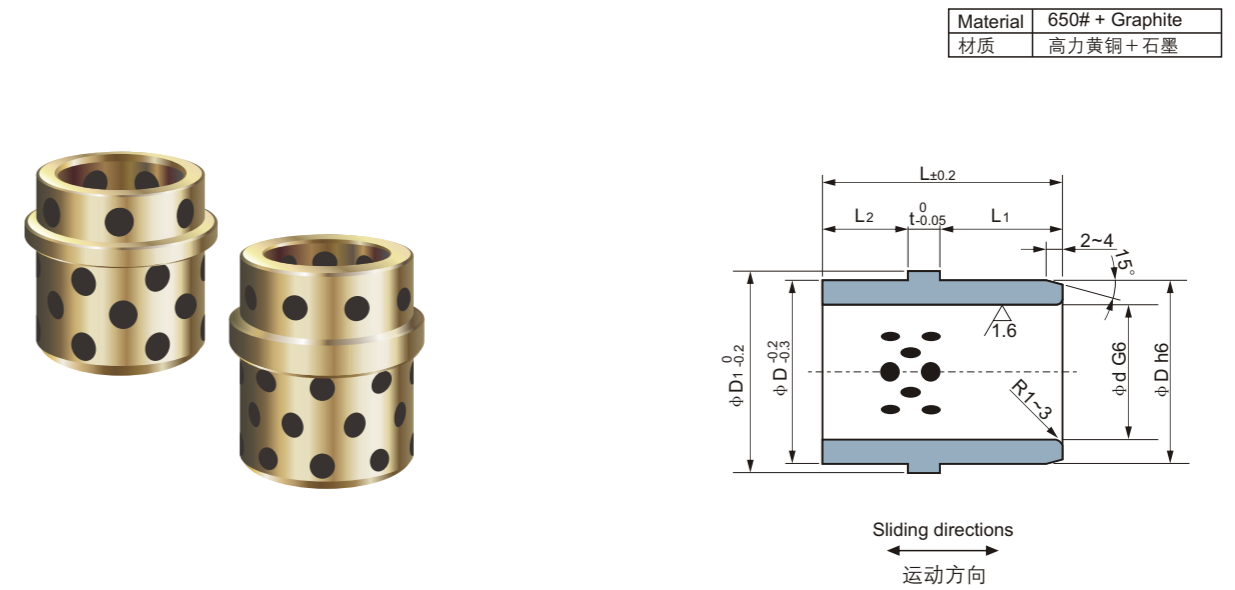
Clamp VDI-KL(DIN9834)



Clamp 压板

Standard No. 型号规格	W	L	T	L ₁	L ₂	t	d	d ₁	h	Applicable bushes ID 适用的轴套内孔尺寸
VDI-KL-6	20	20	10	7.5	5	6.3	7	11	7	φ 25-φ 50
VDI-KL-10	32	32	16	11	10	10	11.5	17.5	11.5	φ 63-φ 160

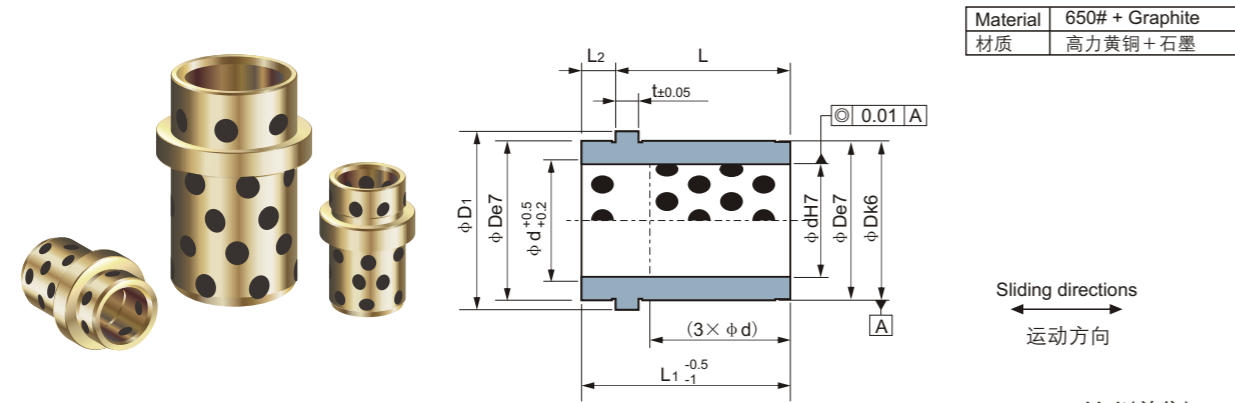
JEGB/JEGBK Oilless Ejector Guide Bushes 射出座导套



Unit(单位): mm

Standard No. 型号规格	d	L	d G6	D h6	D ₁	L ₁	L ₂	t		
JEGB-16 × 26	16	26	16	25	30	12	10	4		
JEGB-16 × 28	28	+0.017 +0.006							0	14
JEGB-16 × 33	33									
JEGB-16 × 38	38	20	30	35	12	14	19			
JEGB-20 × 26	26							25	35	40
JEGB-20 × 28	28	+0.020 +0.007	0	14						
JEGB-20 × 33	33				+0.025 +0.009	-0.016	19			
JEGB-20 × 38	38	30	40	45				12	14	19
JEGB-25 × 26	26				35	46	50			
JEGB-25 × 28	28	40	52	57				12	14	19
JEGB-25 × 33	33				45	55	60			
JEGB-25 × 38	38	50	62	67				12	14	19
JEGB-30 × 33	33				55	60	67			
JEGB-30 × 38	38	60	67	74				12	14	19
JEGB-30 × 46	43				65	74	81			
JEGB-35 × 38	38	70	77	84				12	14	19
JEGB-35 × 43	43				75	82	89			
JEGB-35 × 48	48	80	87	94				12	14	19
JEGB-40 × 48	48				85	92	99			
JEGB-40 × 53	53	90	97	104				12	14	19
JEGB-50 × 48	48				95	102	109			
JEGB-50 × 53	53	100	107	114				12	14	19

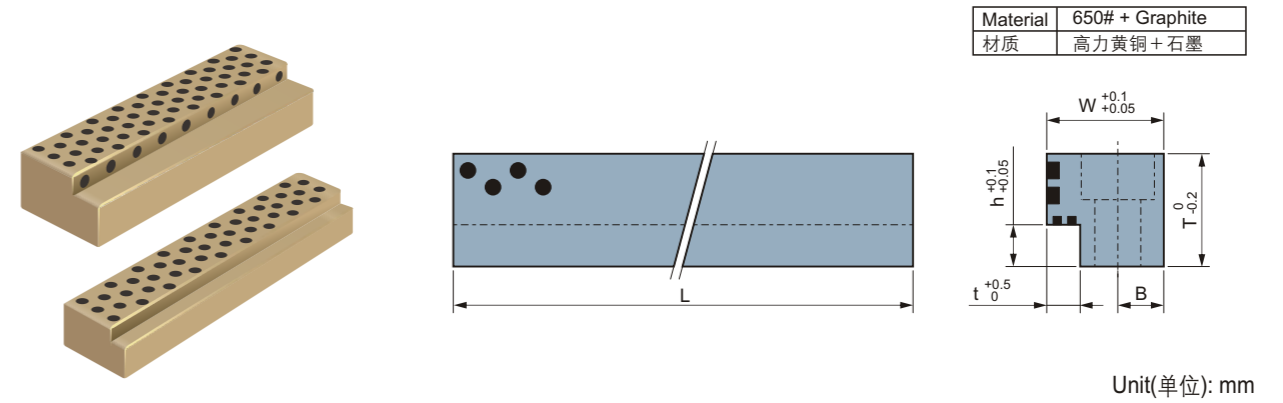
JOSG Ejector Guide Bushig 射出头自润导套



Standard No. 型号规格	d	L	L ₁	L ₂	t	D	Tolerance 公差		D ₁	d H7
							e7	k6		
JOSG-9×15	9	12	15							9
JOSG-9×20		17	20							
JOSG-9×25		22	25							
JOSG-9×30		27	30							
JOSG-9×39		36	39							
JOSG-10×15	10	12	15	3	3	14	-0.032 -0.050	+0.012 +0.001	16	+0.015 +0
JOSG-10×20		17	20							
JOSG-10×25		22	25							
JOSG-10×30		27	30							
JOSG-10×39		36	39							
JOSG-14×26	14	17	26							14
JOSG-14×31		22	31							
JOSG-14×36		27	36							
JOSG-14×45		36	45							
JOSG-14×55		46	55							
JOSG-14×65	56	65								
JOSG-15×26	15	17	26			20			25	15
JOSG-15×31		22	31							
JOSG-15×36		27	36							
JOSG-15×45		36	45							
JOSG-15×55		46	55							
JOSG-15×65	56	65								
JOSG-18×26	18	17	26							18
JOSG-18×31		22	31							
JOSG-18×36		27	36							
JOSG-18×45		36	45							
JOSG-18×55		46	55							
JOSG-18×75	66	75								
JOSG-20×26	20	17	26	9	6	26	-0.040 -0.061	+0.015 +0.002	31	+0.018 +0
JOSG-20×31		22	31							
JOSG-20×36		27	36							
JOSG-20×45		36	45							
JOSG-20×55		46	55							
JOSG-20×65	56	65								
JOSG-20×75	66	75								
JOSG-22×26	22	17	26							20
JOSG-22×31		22	31							
JOSG-22×36		27	36							
JOSG-22×45		36	45							
JOSG-22×55		46	55							
JOSG-22×65	56	65								
JOSG-22×75	66	75								
JOSG-22×85	76	85								
JOSG-22×95	86	95								

Standard No. 型号规格	d	L	L ₁	L ₂	t	D	Tolerance 公差		D ₁	d H7
							e7	k6		
JOSG-24×26	24	17	26							24
JOSG-24×31		22	31							
JOSG-24×36		27	36							
JOSG-24×45		36	45							
JOSG-24×55		46	55							
JOSG-24×65	56	65								
JOSG-24×75	66	75								
JOSG-24×85	76	85								
JOSG-24×95	86	95								
JOSG-30×36	30	27	36	9	6					30
JOSG-30×45		36	45							
JOSG-30×55		46	55							
JOSG-30×65		56	65							
JOSG-30×75		66	75							
JOSG-30×85	76	85								
JOSG-30×95	86	95								
JOSG-30×105	96	105								
JOSG-30×125	116	125								
JOSG-30×36	30	27	36							30
JOSG-32×45		36	45							
JOSG-32×55		46	55							
JOSG-32×65		56	65							
JOSG-32×75		66	75							
JOSG-32×85	76	85								
JOSG-32×95	86	95								
JOSG-32×105	96	105								
JOSG-32×125	116	125								
JOSG-40×68	40	56	68							40
JOSG-40×78		66	78							
JOSG-40×88		76	88							
JOSG-40×98		86	98							
JOSG-40×108		96	108							
JOSG-40×128	116	128								
JOSG-40×148	136	148								
JOSG-40×168	156	168								
JOSG-42×68	42	56	68	12	10	54	-0.060 -0.090	+0.021 +0.002	60	+0.021 +0
JOSG-42×78		66	78							
JOSG-42×88		76	88							
JOSG-42×98		86	98							
JOSG-42×108		96	108							
JOSG-42×128	116	128								
JOSG-42×148	136	148								
JOSG-42×168	156	168								

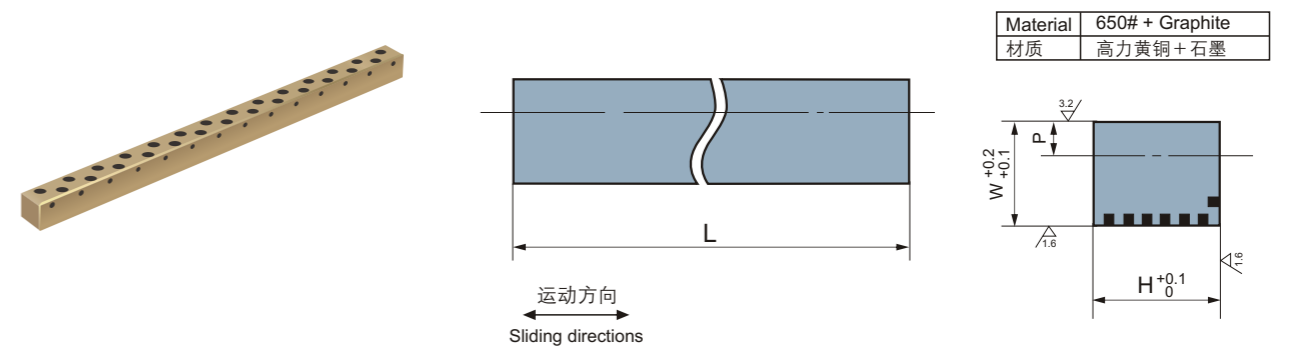
JOVL Oilless Wear Plate 自润滑板



Standard No. 型号规格	L	W	T	h	t	B
JOVL-01	205	15	12	5	5	6
JOVL-02	205	20	17	7		
JOVL-03	320		22		10	8
JOVL-04	205	28	27	10		
JOVL-05	320				36	36
JOVL-06	205	28	27	10		
JOVL-07	320				36	36
JOVL-08	605	28	27	10		
JOVL-09	205				36	36
JOVL-10	320	28	27	10		
JOVL-11	605				36	36

Standard No. 型号规格	L	W	T	h	t	B
JOVL-12	205	28	46	10	8	11
JOVL-13	320					
JOVL-14	605	40	66	22	12	14
JOVL-15	205					
JOVL-16	320	28	27	10	8	11
JOVL-17	605					
JOVL-18	205	36	36	10	8	11
JOVL-19	320					
JOVL-20	605	36	36	10	8	11

JGBX Oilless Wear Plate 自润滑板

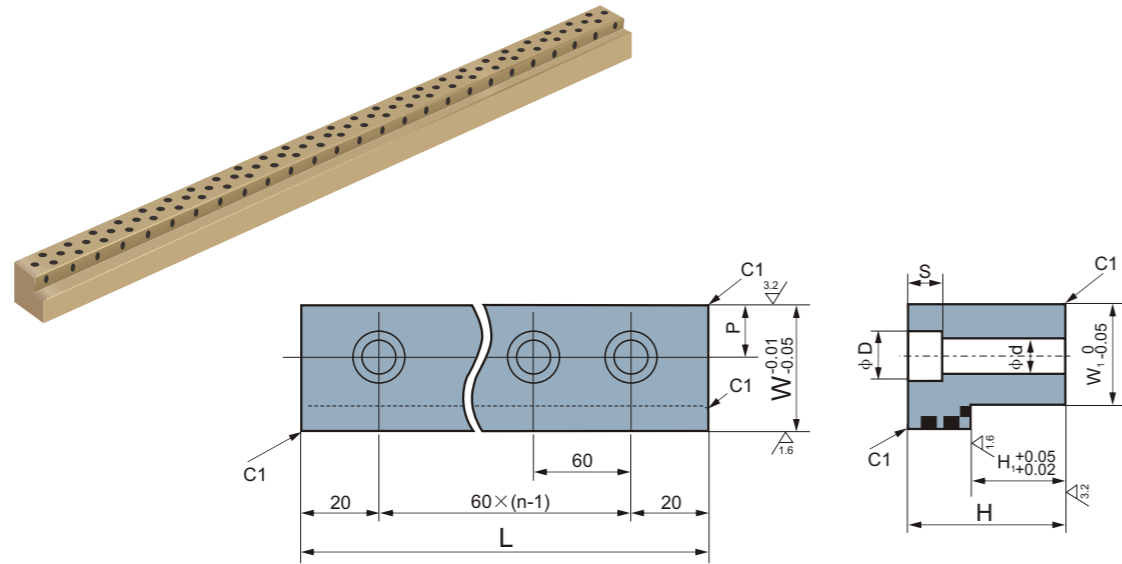


Stanard No. 规格	W	H	L	Recom.bolt 螺栓		
				P	Size 规格	
JGBX-20×10	20	10	320	10	M8	
JGBX-20×15						15
JGBX-20×20						
JGBX-25×18	25	18	605	10	M8	
JGBX-25×23						23
JGBX-25×33						
JGBX-30×23	30	23	605	10	M8	
JGBX-30×28						28
JGBX-30×38						

Stanard No. 规格	W	H	L	Recom.bolt 螺栓		
				P	Size 规格	
JGBX-35×28	35	28	605	12	M10	
JGBX-35×38						38
JGBX-35×48						
JGBX-40×28	40	28	605	14	M12	
JGBX-40×38						38
JGBX-40×48						

JGL Oilless Wear Plate 自润滑板

材质	高力黄铜+石墨
Material	650#+ Graphite

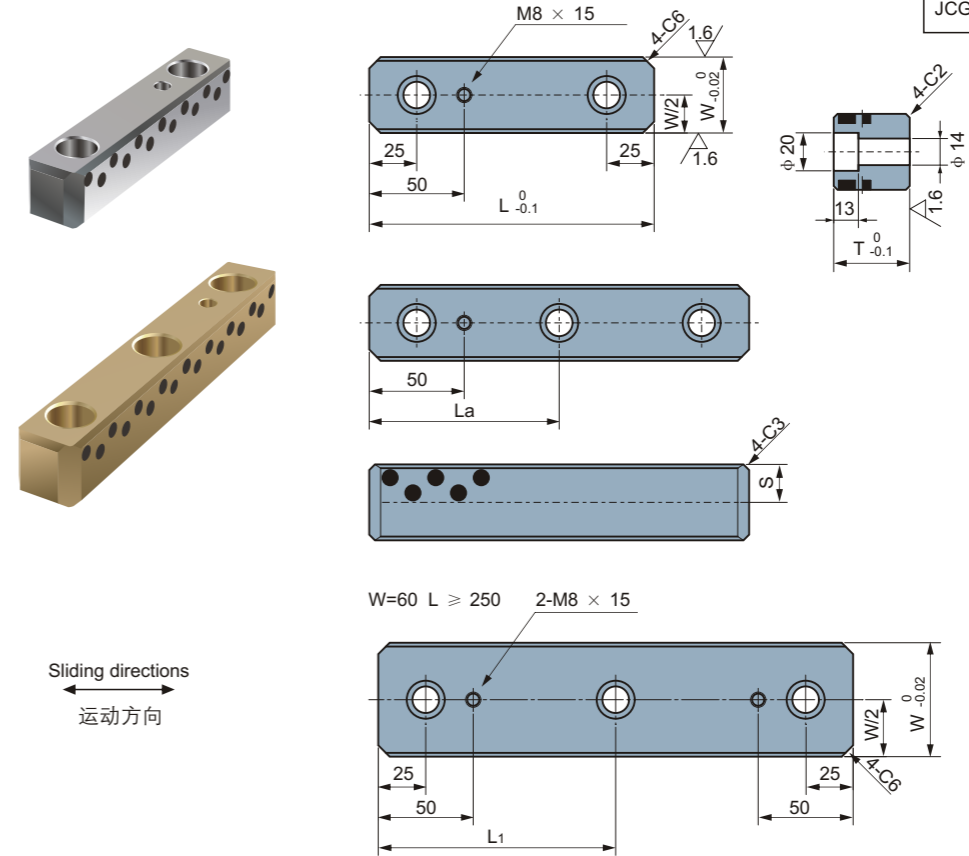


Unit(单位): mm

Standard No. 规格	w	w ₁	L	H	H ₁	n	p	φD	φd	S
JGL-100×30	23	15	100	30	15	2	7.5	11	7	7
JGL-160×30			160			3				
JGL-220×30			220			4				
JGL-100×41	23	15	100	41	26	2	7.5	11	7	7
JGL-160×41			160			3				
JGL-220×41			220			4				
JGL-100×25	28	20	100	25	10	2	10	18	11	13
JGL-160×25			160			3				
JGL-220×25			220			4				
JGL-100×35	28	20	100	35	15	2	10	18	11	13
JGL-160×35			160			3				
JGL-220×35			220			4				
JGL-100×56	28	20	100	56	26	2	10	14	9	10
JGL-160×56			160			3				
JGL-220×56			220			4				

JCGBF, JCGBW Oilless Wear Plate 自润滑板

JCGBF	FC250# + Graphite
	铸铁+石墨
JCGBW	650# + Graphite
	高力黄铜+石墨



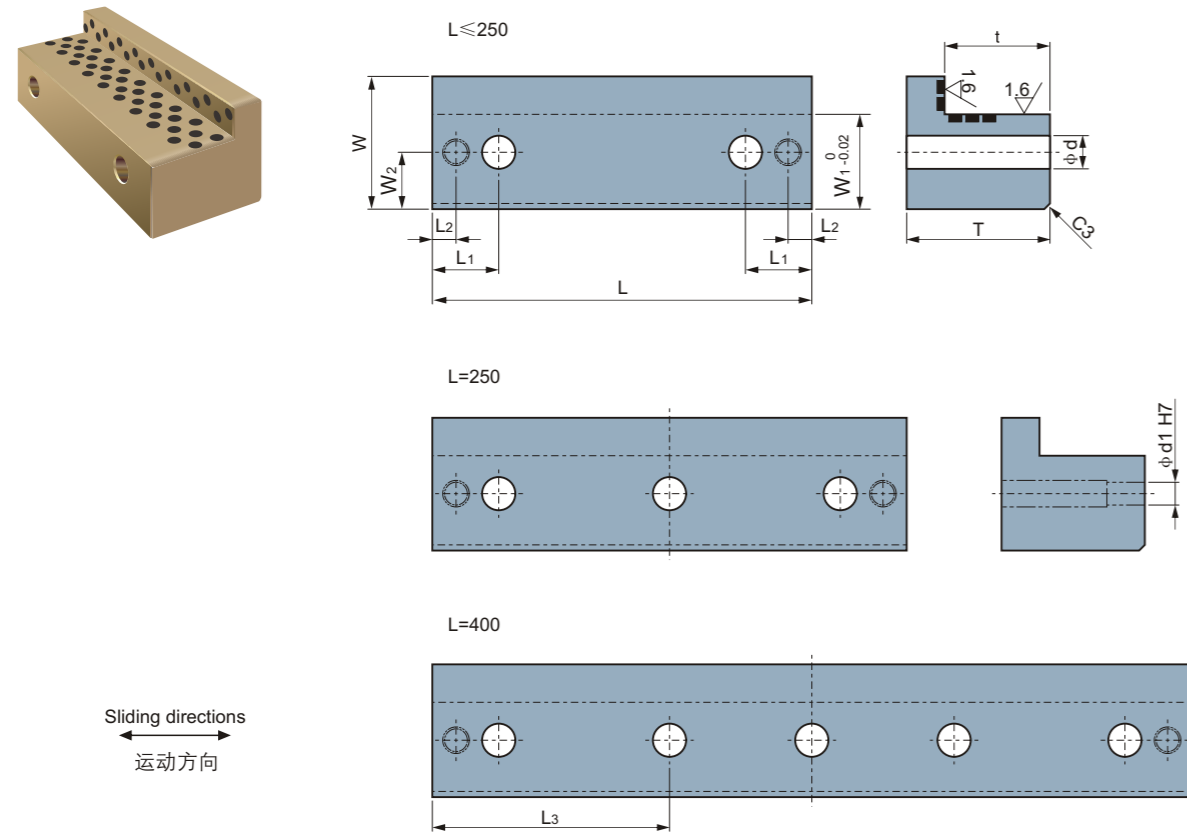
Sliding directions
运动方向

Unit(单位): mm

Standard No. 型号规格	Material 材料	W	L	T	L ₁	S
30×100×30	JCGBF	30	100	30	—	15
30×150×30			150		—	
30×200×30			200		100	
30×250×30			250		125	
30×300×30			300		150	
30×350×30			350		175	
40×100×30	JCGBF	40	100	30	—	15
40×150×30			150		—	
40×200×30			200		100	
40×250×30			250		125	
40×300×30			300		150	
40×350×30			350		175	
30×100×40	JCGBF JCGBW	40	100	40	—	20
30×150×40			150		—	
30×200×40			200		100	
30×250×40			250		125	
30×300×40			300		150	
30×350×40			350		175	
40×100×40	JCGBW	60	100	40	—	25
40×250×40			250		125	
40×300×40			300		150	
40×350×40			350		175	

JVSOL Oilless Wear Plate 自润滑板

Material	650# + Graphite
材质	高力黄铜+石墨



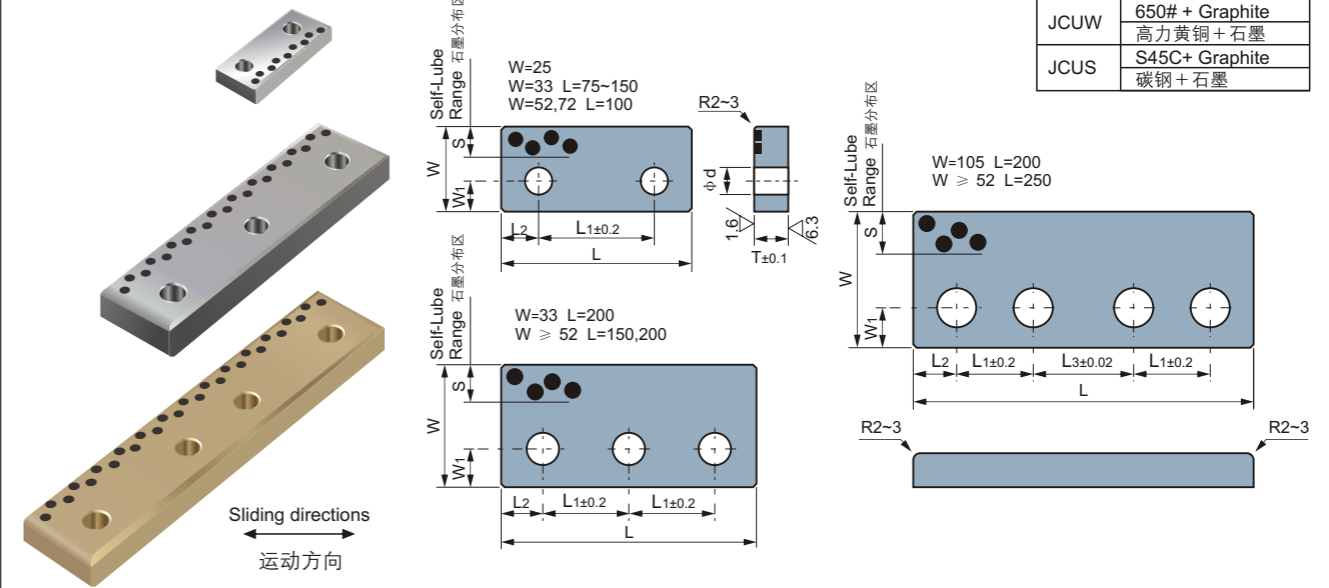
Sliding directions
运动方向

Unit(单位): mm

Standard No. 型号规格	W	L	W ₁	W ₂	L ₁	L ₂	L ₃	T	t	d	d ₁
JVSOL-25×125	25	125	18	9	27.5	10	-	15.5	8.5	9	6
JVSOL-25×160		160									
JVSOL-32×125	32	125	22	11	27.5	10	-	30.5	15.5	11	8
JVSOL-32×160		160									
JVSOL-32×200		200									
JVSOL-55×100	55	100	37	20	35	12.5	-	55.5	39.5	13.5	10
JVSOL-55×160		160									
JVSOL-70×160	70	160	50	30	35	12.5	-	75.5	55.5	17.5	12
JVSOL-70×200		200									
JVSOL-70×250		250									
JVSOL-70×400		400									
JVSOL-85×160	85	160	63	38	42.5	15	-	90.5	65.5	22	16
JVSOL-85×200		200									
JVSOL-85×250		250									
JVSOL-85×400		400									

JCUW/JCUF/JCUS Oilless Wear Plate 自润滑板

JCUF	FC250# + Graphite 铸铁+石墨
JCUW	650# + Graphite 高力黄铜+石墨
JCUS	S45C+ Graphite 碳钢+石墨



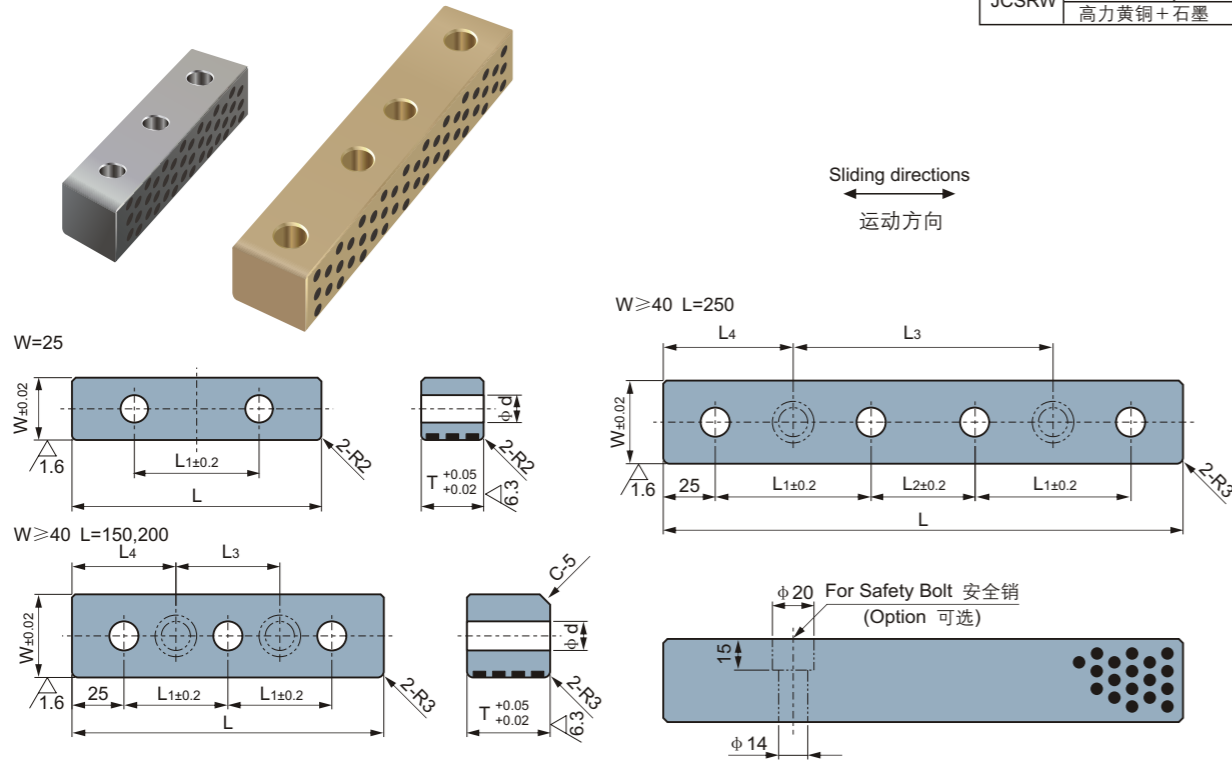
Sliding directions
运动方向

Unit(单位): mm

Standard No. 型号规格	Material 材料	W	L	T	L ₁	L ₂	L ₃	W ₁	S	d	Bolt Hole Q'ty 螺孔数
25×75	JCUW	25	75	10	45	15	-	8	7.5	9	2
25×100			100		50	25					
25×125			125		75	25					
33×75	JCUW	33	75	10	45	15	-	12.5	9	11	2
33×100			100		50						
33×125			125		75						
33×150			150		100						
33×200			200		75						
52×100	JCUW JCUF JCUS	52	100	20	50	-	-	20	13	13	2
52×150			150		50						2
52×200			200		75						3
52×250			250		50						4
72×150	JCUW JCUF JCUS	72	100	30	50	25	-	25	22	18	2
72×150			150		50						3
72×200			200		75						4
72×250			250		50						4
77×150	JCUW JCUF JCUS	77	150	35	50	-	-	25	27	18	3
77×200			200		75						4
77×250			250		50						4
82×150	JCUW JCUF JCUS	82	150	40	50	-	-	-	32	-	3
82×200			200		75						4
82×250			250		50						4
105×150	JCUW JCUF	105	150	40	50	-	-	-	-	-	3
105×200			200		75						4
105×250			250		75						4

JCSRG, JCSRW Oilless Wear Plate 自润滑板

JCSRG	FC250# + Graphite 铸铁 + 石墨
JCSRW	650# + Graphite 高力黄铜 + 石墨

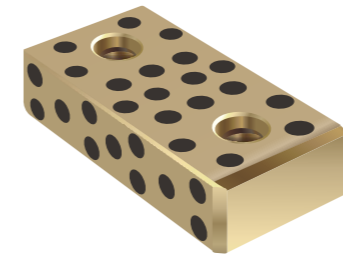


Unit(单位): mm

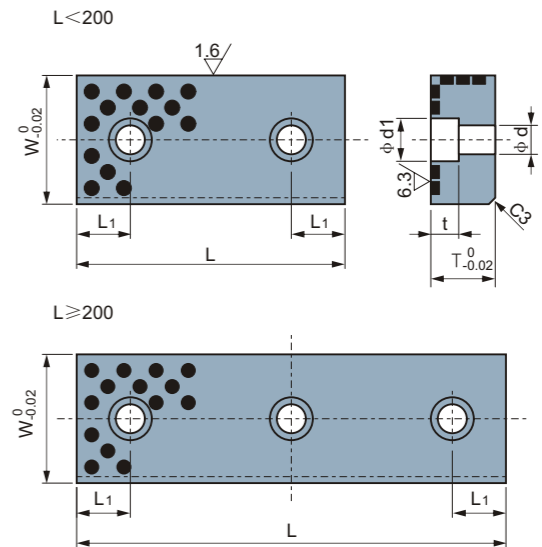
Standard No. 型号规格	Material 材料	W	L	L3	L4	T	L1	L2	d
25×75×25	JCSRG	25	75	-	-	25	45	-	11
25×100×25			100	-	-		50		
25×125×25			125	-	-		75		
25×150×25			150	-	-		100		
40×150×30	JCSRG JCSRW	40	150	50	50	30	50	-	14
40×200×30			200	75	62.5		75	50	
40×250×30			250	125	62.5		50	-	
40×150×40			150	50	50		40	50	
40×200×40			200	75	62.5	40	75	50	
40×250×40			250	125	62.5	40	75	50	
50×150×45	JCSRG JCSRW	50	150	50	50	45	50	-	20
50×200×45			200	75	62.5		75	50	
50×250×45			250	125	62.5	55	50	-	
50×150×55			150	50	50		75	50	
50×200×55			200	75	62.5	60	50	-	
50×250×55			250	125	62.5		75	50	
50×150×60			150	50	50	70	50	-	
50×200×60			200	75	62.5		75	50	
50×250×60			250	125	62.5	70	50	-	
50×150×70			150	50	50		75	50	
50×200×70	200	75	62.5	75	50				
50×250×70	250	125	62.5	75	50				

JVG2 Oilless Wear Plate 自润滑板

Material	650# + Graphite
材质	高力黄铜 + 石墨



Sliding directions
运动方向

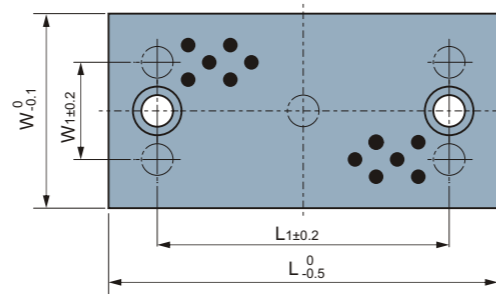
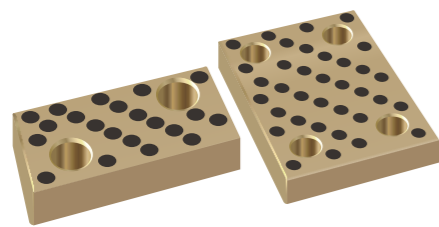


Unit(单位): mm

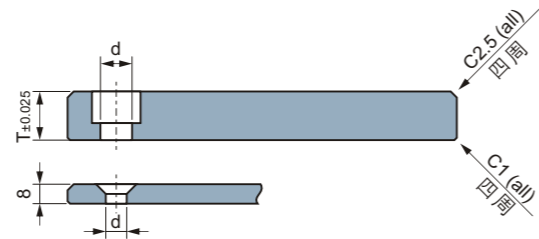
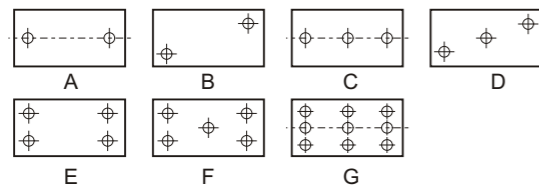
Standard No. 型号规格	W	L	T	L1	d	d1	t	Recommended mounting bolt DIN EN ISO4762
JVG2 25×110×12	25	110	12	25	9	15	8.5	M8×20
JVG2 25×120×12		120						
JVG2 25×110×15		110	15		11	18	10.5	
JVG2 25×120×15	120							
JVG2 60×125×30	60	125	30		13.5	20	13	M12×35
JVG2 60×160×30		160						
JVG2 60×200×30		200	40					
JVG2 60×125×40		125						
JVG2 60×160×40	160	40						
JVG2 60×200×40	200							

JSOD Oilless Wear Plate 自润滑板

Material	650# + Graphite
材质	高力黄铜+石墨



Sliding directions
运动方向

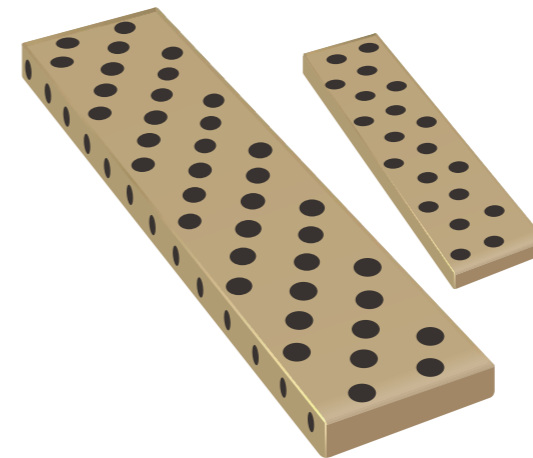


Unit(单位): mm

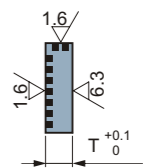
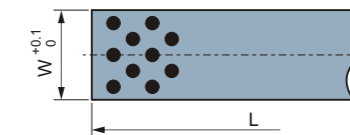
Standard No. 型号规格	T	W	W ₁	L ₁	L	Screw Q'ty 螺栓数量	Mounting Bolt	Hole Pattern 螺孔排布
JSOD 8×40×100	8	40	-	60	100	2	M8	A
JSOD 8×40×160				120	160	3		A
JSOD 8×40×250				210	250	3		C
JSOD 12×30×100	12	30	-	60	100	2	M8	A
JSOD 12×30×160				120	160	2		A
JSOD 12×30×250				210	250	3		C
JSOD 12×40×100	12	40	-	60	100	2	M8	A
JSOD 12×40×160				120	160	2		A
JSOD 12×40×250				210	250	3		C
JSOD 12×80×100	12	80	40	60	100	2	M8	B
JSOD 12×80×160				120	160	4		E
JSOD 12×80×250				210	250	5		F
JSOD 16×40×100	16	40	-	60	100	2	M10	A
JSOD 16×40×160				120	160	2		A
JSOD 16×40×250				210	250	3		C
JSOD 16×60×100	16	60	30	60	100	2	M10	B
JSOD 16×60×160				120	160	2		B
JSOD 16×60×250				210	250	3		D
JSOD 16×100×100	16	100	60	60	100	2	M10	B
JSOD 16×100×160				120	160	4		E
JSOD 16×100×250				210	250	6		G
JSOD 20×50×100	20	50	20	60	100	2	M12	B
JSOD 20×50×160				120	160	2		B
JSOD 20×50×250				210	250	3		D
JSOD 20×80×100	20	80	40	60	100	2	M12	B
JSOD 20×80×160				120	160	4		E
JSOD 20×80×250				210	250	5		F
JSOD 20×125×100	20	125	85	60	100	4	M12	E
JSOD 20×125×160				120	160	4		E
JSOD 20×125×250				210	250	6		G

JSOVP Oilless Wear Plate 自润滑板

Material	650# + Graphite
材质	高力黄铜+石墨



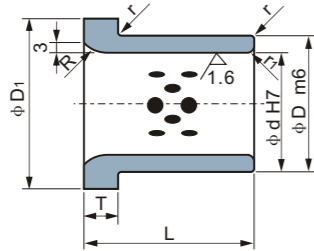
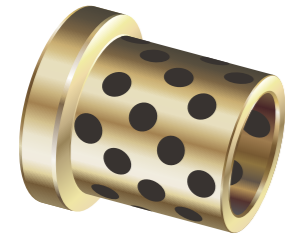
Sliding directions
运动方向



Unit(单位): mm

Standard No. 型号规格	L	W	T
JSOVP 25×305×5	305	25	5.3
JSOVP 30×305×6		30	6.3
JSOVP 40×605×8	605	40	8.3
JSOVP 35×605×10		35	10.3
JSOVP 50×605×10		50	10.3
JSOVP 40×605×12		40	12.3
JSOVP 80×605×12		80	12.3
JSOVP 60×605×16		60	16.3
JSOVP 80×605×20		80	20.3
JSOVP 100×605×20	100	20.3	

JEFW Oilless Guide Bushes 自润滑导套

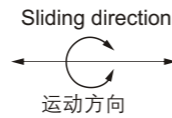
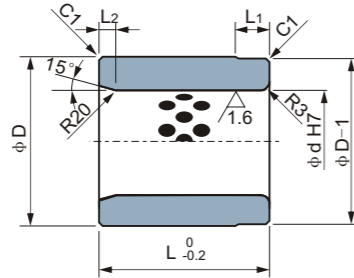
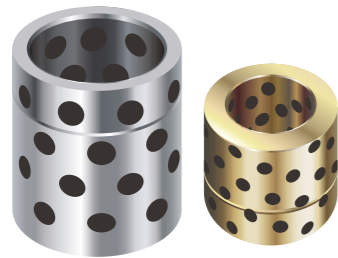


Material	650# + Graphite
材质	高力黄铜+石墨

Unit(单位): mm

Standard No. 型号规格	d	L	d	H7	D	m6	D1	T	R	r	r1
JEFW-25×40	25	40	25	+0.021 0	35	+0.025 +0.009	45	7	10	1	
JEFW-30×50	30	50	30		40		50				
JEFW-40×70	40	70	40	+0.025 0	55		65				
JEFW-50×80	50		50		65	+0.030 +0.011	75				
JEFW-60×80	60	80	60		75		85				
JEFW-65×80	65		65		80		90	10	20	2	
JEFW-65×120		120		+0.030 0							
JEFW-80×100	80	100	80		100	+0.035 +0.013	110				
JEFW-80×140		140									
JEFW-100×100	100	100	100	+0.035 0	120		130				
JEFW-100×140		140									

JPBW,JPBF Oilless Wear Plate 自润滑轴套

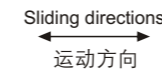
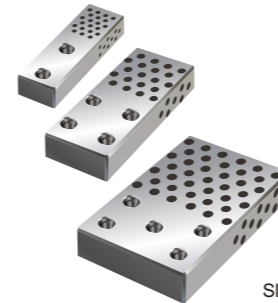


JPBF	FC250# + Graphite
	铸铁+石墨
JPBW	650# + Graphite
	高力黄铜+石墨

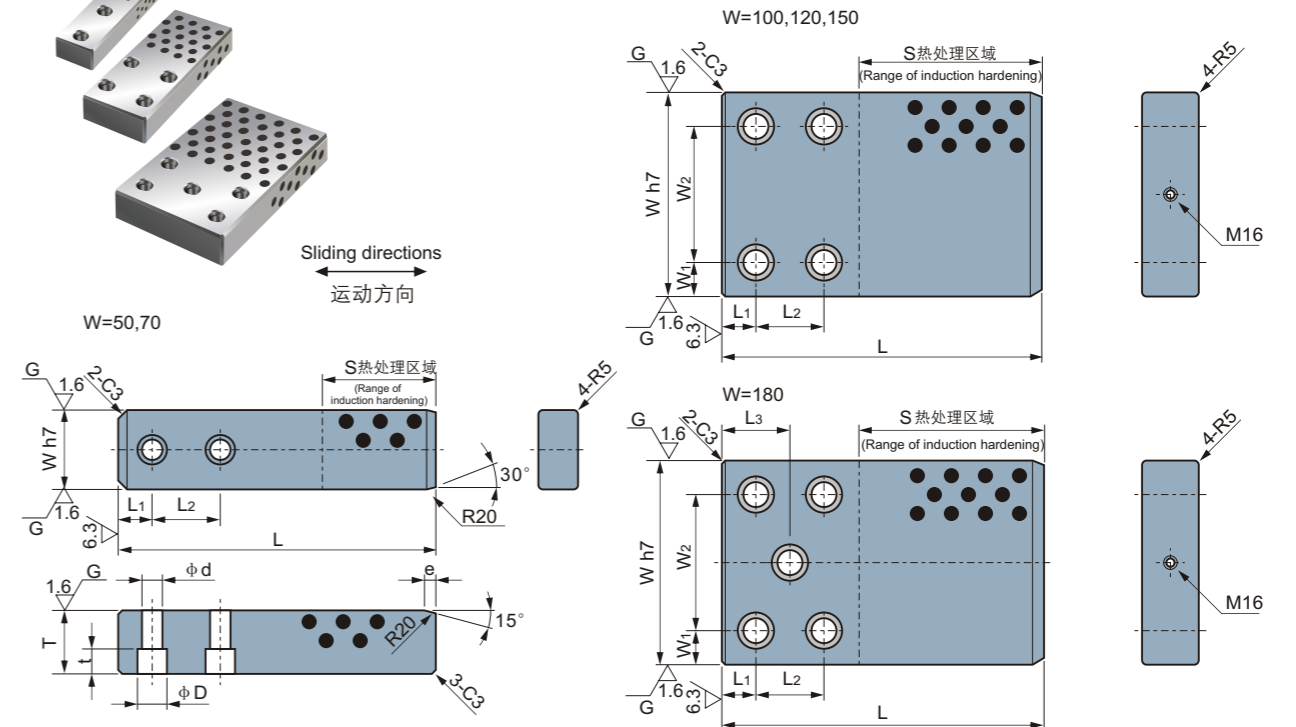
Unit(单位): mm

Material 材料	d	d H7	D Tolerance 公差	L	L1	L2
JPBW JPBF	25	25	+0.021 0	40	±0.008	40
	30	30		50		50
	35	35		60		55
	40	40	+0.025 0	±0.0095	60	10
	50	50		70		75
	60	60		80		90
	80	80	+0.030 0	±0.011	100	120
	100	100	+0.035 0		120	150
	120	120		±0.0125	140	180
						25
						10

JGBZ Oilless Wear Plate 自润滑板



Material	S45C + Graphite
材质	钢基+石墨HRC≥40

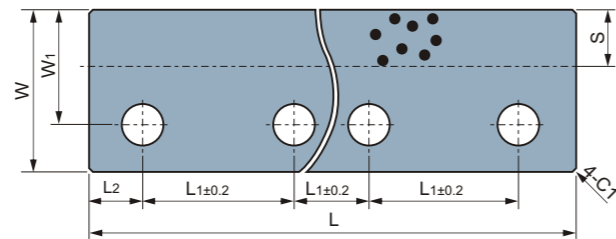
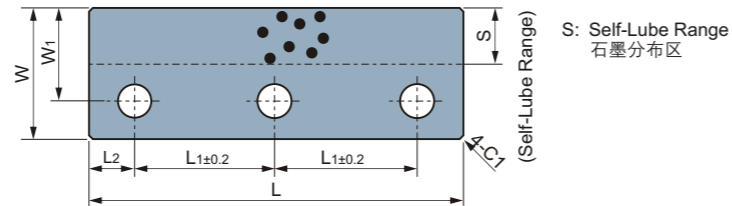
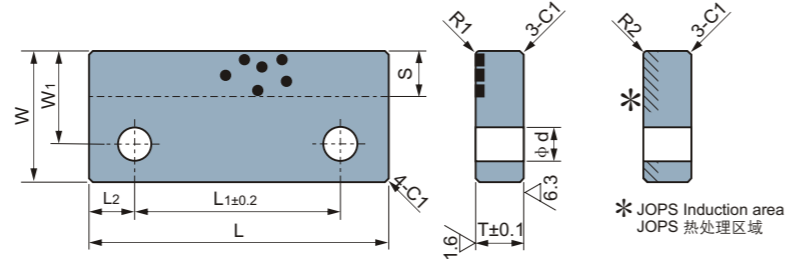
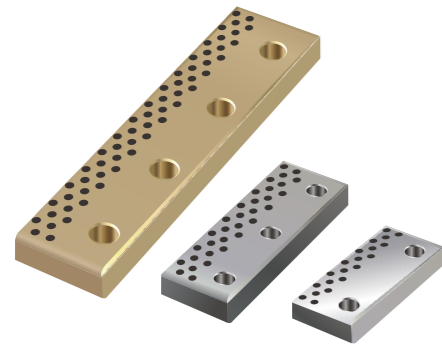


Unit(单位): mm

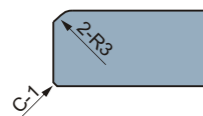
Standard No. 型号规格	W	L	W h7	L1	L2	L3	W1	W2	D	d	t	e	S	T
JGBZ-50×160		160											60	
JGBZ-50×200	50	200	50	0 -0.025	20	50							120	30
JGBZ-50×260		260			80								100	
JGBZ-70×230		230			60				26	18	18	10	160	35
JGBZ-70×260	70	260	70	0 -0.030	25	75							150	
JGBZ-70×300		300			150								100	
JGBZ-70×350		350											160	
JGBZ-100×230		230			60								100	
JGBZ-100×280	100	280	100										160	
JGBZ-100×330		330			100		20						200	45
JGBZ-100×390		390			120			60					100	
JGBZ-120×230		230		0 -0.035	60								160	
JGBZ-120×280	120	280	120										200	
JGBZ-120×330		330			100								160	
JGBZ-120×390		390			120								200	
JGBZ-150×280		280			60								160	
JGBZ-150×330	150	330	150		30		30	90	32	22	22	15	190	50
JGBZ-150×390		390			140								190	
JGBZ-150×430		430			180								160	
JGBZ-180×280		280		0 -0.040	60	60							190	55
JGBZ-180×330	180	330	180		80	70							200	
JGBZ-180×390		390			140	100							200	
JGBZ-180×430		430			180	120							200	
JGBZ-180×480		480			200	130							250	
JGBZ-180×550		550			225	142.5								

JOPF, JOPS, JOPW Oilless Wear Plate 自润滑板

JOPF	FC250# + Graphite 铸铁 + 石墨
JOPW	650# + Graphite 高力黄铜 + 石墨
JOPS	S45C + Graphite 碳钢 + 石墨, HRC > 40



Sliding directions
运动方向



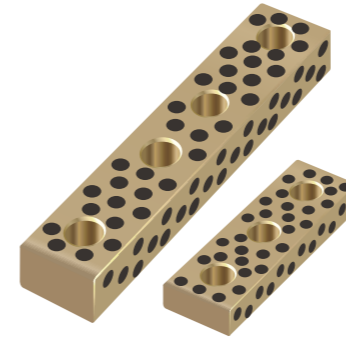
Unit(单位): mm

Standard No. 型号规格	W	L	T	W1	L1	L2	d	S	Bolt Hole Qty 螺栓孔数量			
JOPF-55×180	55	180	25	37.5	120	30	24	18	2			
JOPF-70×160		160			110	25						
JOPF-70×200	70	200	50	75	90	30	30	3				
JOPF-70×240		240			90	30						
JOPF-85×200	85	200	60	75	25	22	30	4				
JOPF-85×240		240			90				30			
JOPF-85×300		300			80				30			
JOPF-85×350		350			90				40			
JOPF-100×200	100	200	28	75	25	22	30	3				
JOPF-100×240		240			90				30			
JOPF-100×300		300			80				30			
JOPF-100×350		350			90				40			
JOPS-70×160	70	160	25	110	25	18	25	2				
JOPS-70×200		200							75	30	18	30
JOPS-70×240		240							90	30		

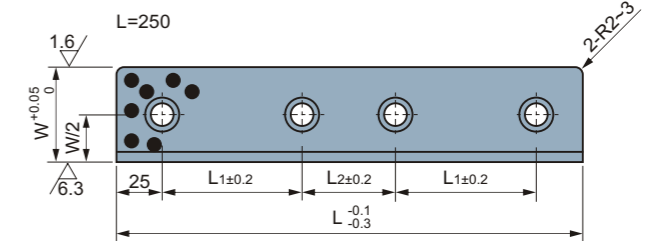
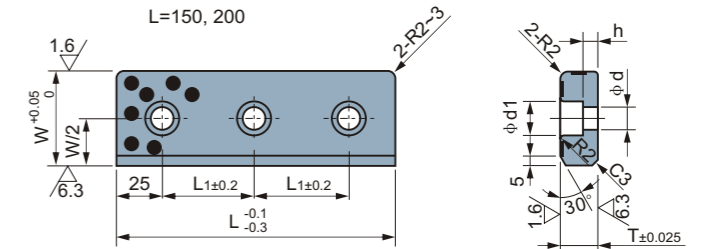
Standard No. 型号规格	W	L	T	W1	L1	L2	d	S	Bolt Hole Qty 螺栓孔数量	
JOPS-85×200	85	200	28	60	75	25	22	30	3	
JOPS-85×240		240			90	30				
JOPS-85×300		300			80	30				
JOPS-85×350	100	350	70	80	40	22	30	4		
JOPS-100×200		200			75				25	
JOPS-100×240		240			90				30	
JOPS-100×300		300			80				30	
JOPS-100×350	70	350	25	90	40	18	30	3		
JOPW-70×160		160							110	25
JOPW-70×200		200							75	30
JOPW-70×240	70	240	25	50	90	30	25	3		
JOPW-70×240		240			90	30				
JOPW-85×200		200			75	25				
JOPW-85×200		200			75	25				
JOPW-85×240	85	240	28	60	90	30	22	30		
JOPW-85×240		240			80	30				
JOPW-85×300		300			90	40				
JOPW-85×350	85	350	28	60	90	40	22	30		
JOPW-85×350		350			90	40				

JCSDP Oilless Wear Plate 自润滑板

Material	650# + Graphite
材质	高力黄铜 + 石墨



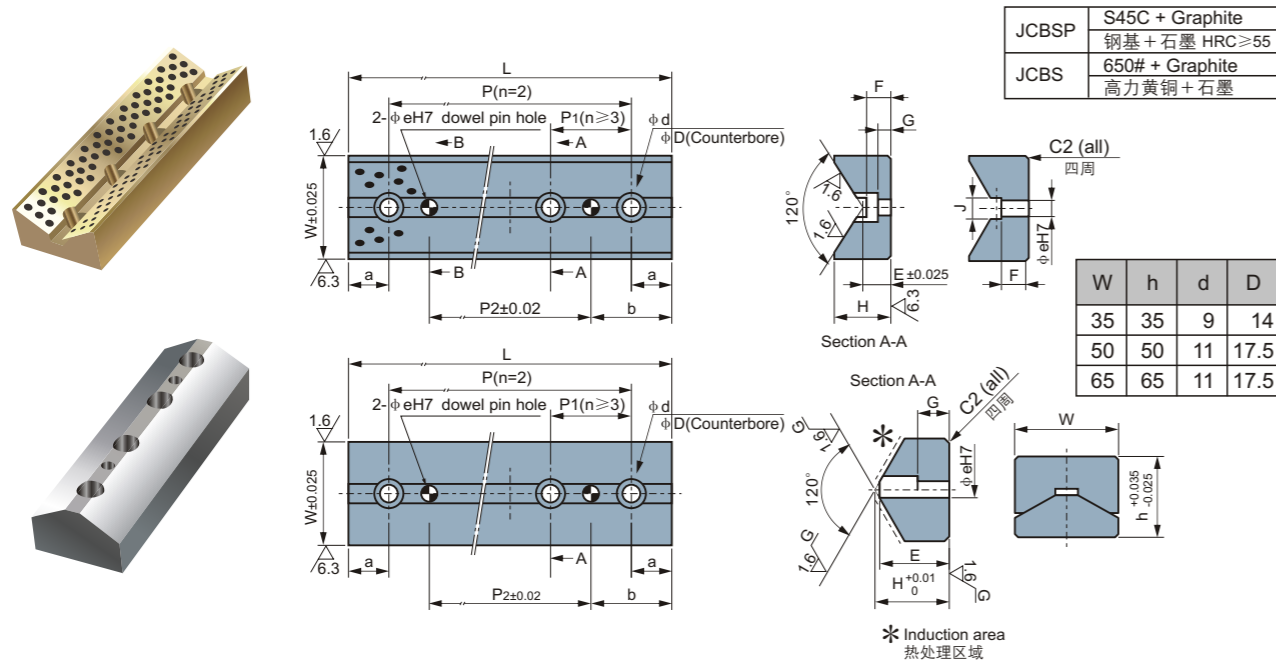
Sliding directions
运动方向



Unit(单位): mm

Standard No. 型号规格	W	L	T	L1	L2	d	d1	h
JCSDP 50×150×20	50	150	20	50	-	11	17.5	8
JCSDP 50×200×20		200		75				
JCSDP 50×250×20		250		50				
JCSDP 50×150×35	50	150	35	50	-	13	20	20
JCSDP 50×100×35		200		75				
JCSDP 50×250×35		250		50				
JCSDP 75×150×20	75	150	20	50	-	11	17.5	8
JCSDP 75×200×20		200		75				
JCSDP 75×250×20		250		50				
JCSDP 75×150×35	75	150	35	50	-	13	20	20
JCSDP 75×200×35		200		75				
JCSDP 75×250×35		250		50				

JCBS, JC BSP Oilless Cam Bottom Guide Plate 凸轮底部导板

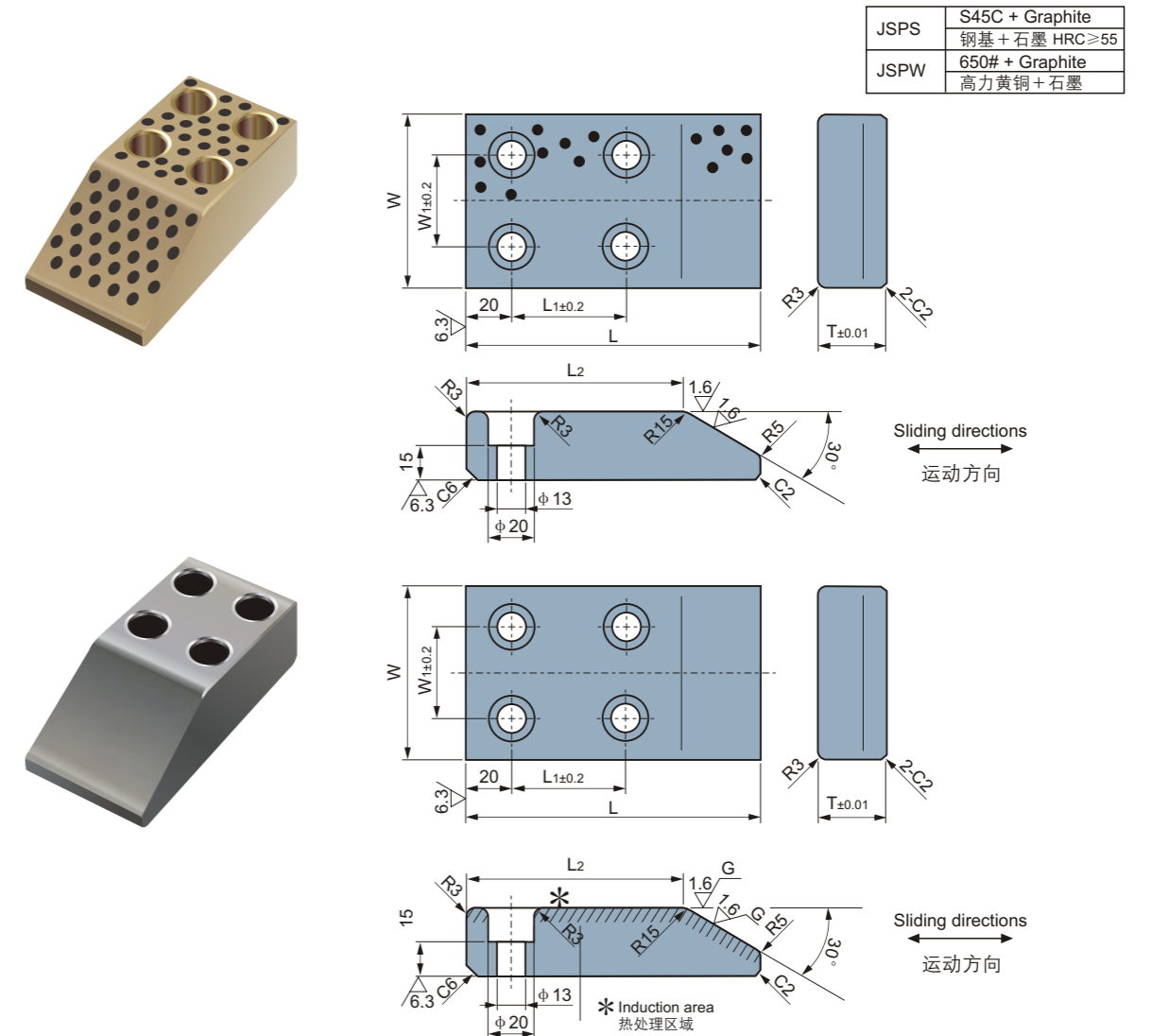


Unit(单位): mm

Standard No. 型号规格	W	L	H	a	b	P	P ₁	No. of Bolt Holes 螺栓数量	e	P ₂	E	F	G	J
JCBS-75×35	35	75	24	15	30	45	-	2	8	15	15		4	11
JCBS-100×35		100		60	20									
JCBS-125×35		125		85	40									
JCBS-150×35		150		110	40									
JCBS-75×50	50	75	31	15	30	45	-	2	10	15	15		8	13
JCBS-100×50		100		60	20									
JCBS-125×50		125		75	25									
JCBS-150×50		150		100	50									
JCBS-100×65	65	100	35	20	40	60	-	50	10	20	18		8	13
JCBS-150×65		150		50	50									
JCBS-200×65		200		100	50									
JCBS-250×65		250		150	50									
JCBS-300×65	300	300						6		200				

Standard No. 型号规格	W	L	H	a	b	P	P ₁	No. of Bolt Holes 螺栓数量	e	P ₂	E	G
JCBSP-75×35	35	75	20	15	30	45	-	2	8	15	17	4
JCBSP-100×35		100		60	20							
JCBSP-125×35		125		85	40							
JCBSP-150×35		150		110	40							
JCBSP-75×50	50	75	32	15	30	45	-	2	10	15	29	10
JCBSP-100×50		100		60	20							
JCBSP-125×50		125		75	25							
JCBSP-150×50		150		100	50							
JCBSP-100×65	65	100	47	20	40	60	-	50	10	20	44	20
JCBSP-150×65		150		50	50							
JCBSP-200×65		200		100	50							
JCBSP-250×65		250		150	50							
JCBSP-300×65	300	300						6		200		

JSPW, JSPS Cam Stroke Plate 凸轮行程滑板

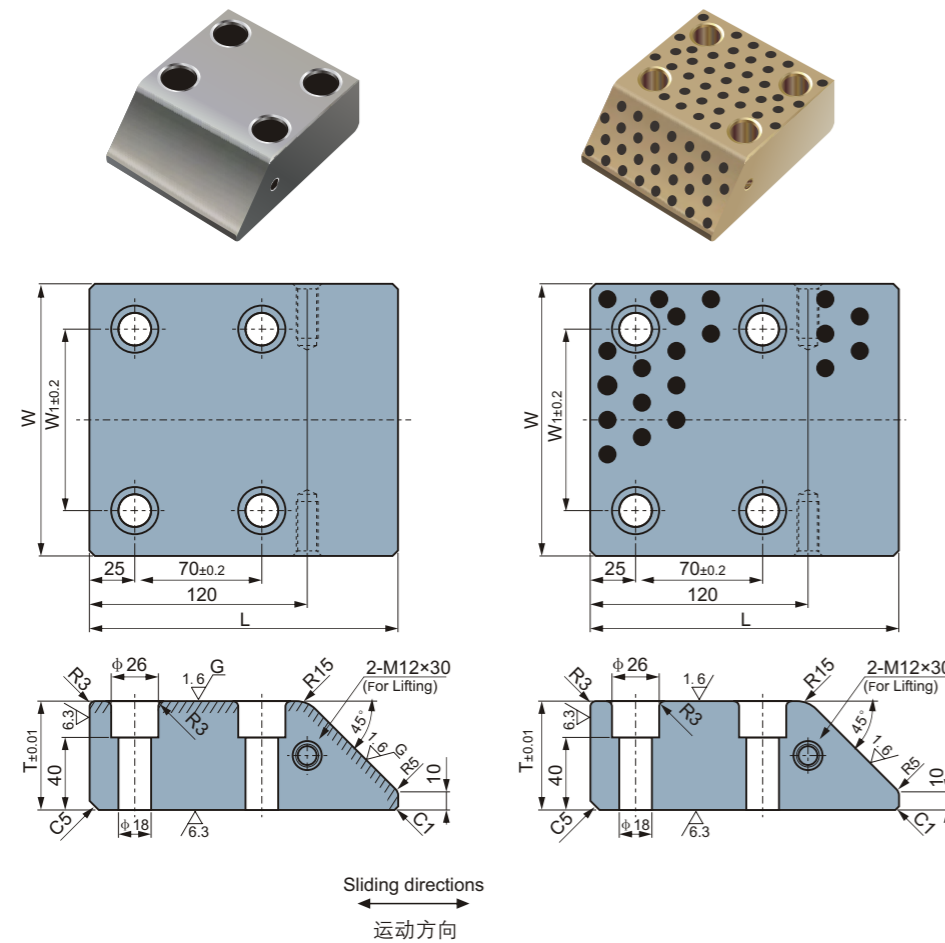


Unit(单位): mm

Standard No. 型号规格	Material 材料	W	L	T	W ₁	L ₁	L ₂	
75×130	JSPW JSPS	75	130	30	40	50	95	
75×150			150	45		45	90	
100×130			100	130	30	60	50	95
100×150				150	45		45	90
100×170		170		60	75	120		
100×200		200		60	75	120		
125×130		125	125	130	30	85	50	95
125×150				150	45		45	90
125×170				170	60	75	120	
125×200				200	60	75	120	
150×130		150	150	130	30	110	50	95
150×150				150	45		45	90
150×170	170			60	75	120		
150×200	200			60	75	120		

JSPQ, JSPQS Cam Stroke Plate 凸轮行程滑板

JSPQS	S45C + Graphite 钢基 + 石墨 HRC ≥ 55
JSPQ	650# + Graphite 高力黄铜 + 石墨

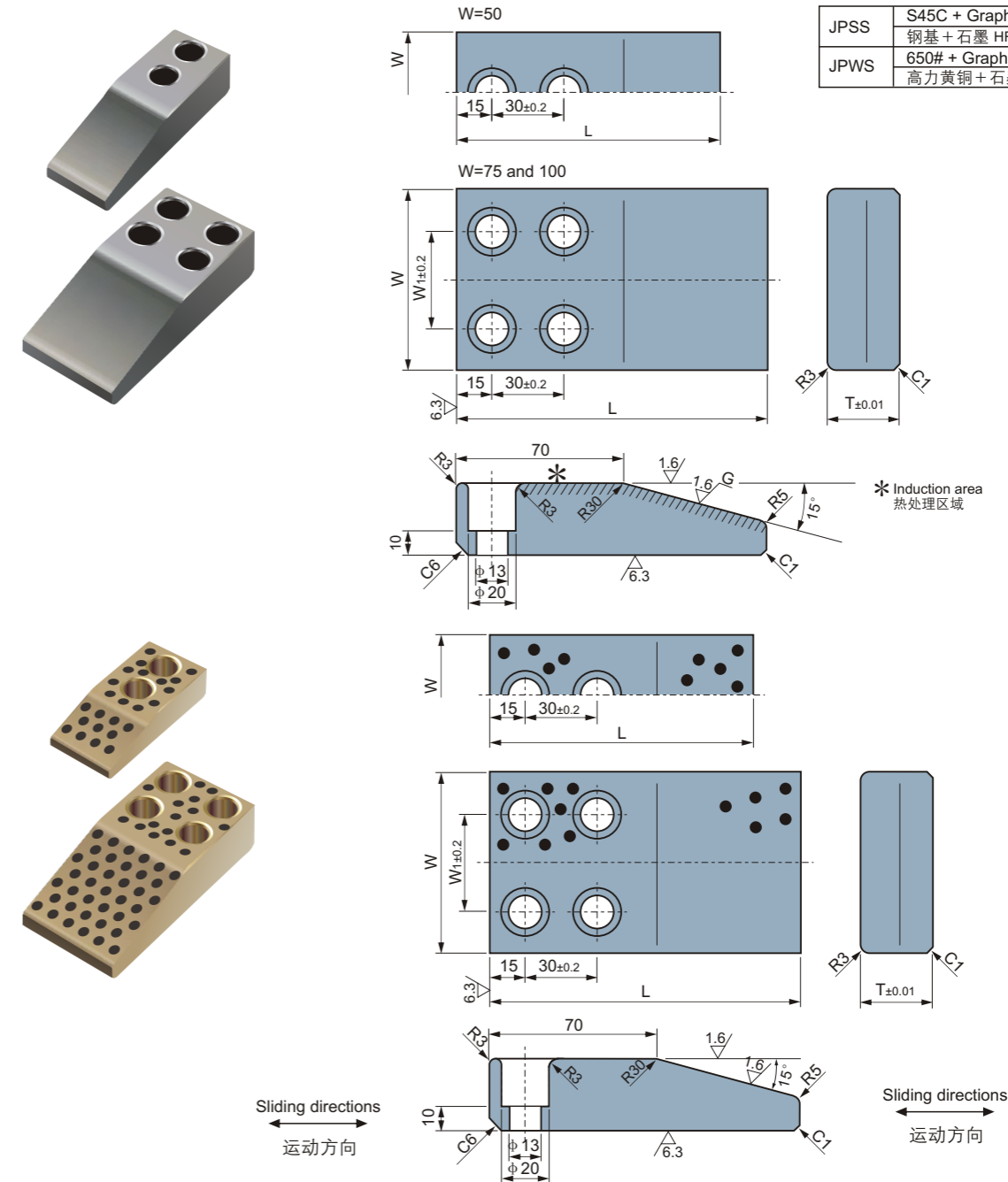


Unit(单位): mm

Standard No. 型号规格	W	L	T	W ₁
JSPQ/JSPQS-150×170	150	170	60	100
JSPQ/JSPQS-150×200		200	90	
JSPQ/JSPQS-200×170	200	170	60	140
JSPQ/JSPQS-200×200		200	90	

JPWS, JPSS Cam Stroke Plate 凸轮行程滑板

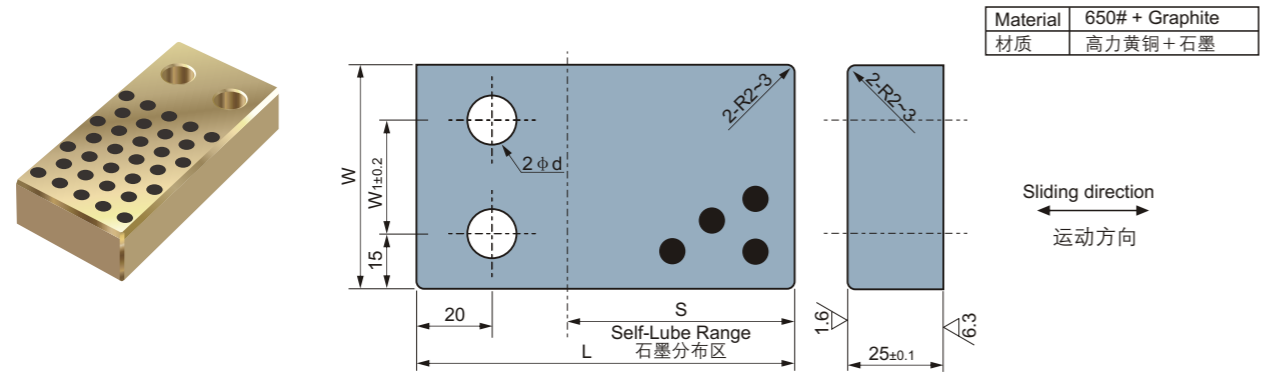
JPSS	S45C + Graphite 钢基 + 石墨 HRC ≥ 55
JPWS	650# + Graphite 高力黄铜 + 石墨



Unit(单位): mm

Standard No. 型号规格	W	L	T	W ₁
JPWS/JPSS-50×110	50	110	25	-
JPWS/JPSS-50×130		130	30	
JPWS/JPSS-75×110	75	110	25	40
JPWS/JPSS-75×130		130	30	
JPWS/JPSS-100×110	100	110	25	60
JPWS/JPSS-100×130		130	30	

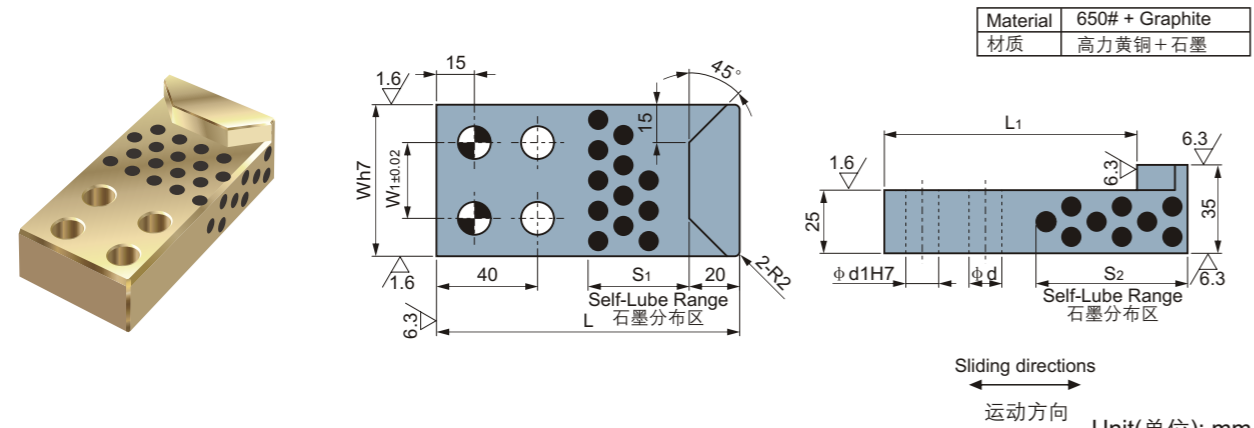
JGPB Oilless Wear Plate 自润滑板



Unit(单位): mm

Standard No. 型号规格	W	L	S	W ₁	d
JGPB-60×80	60	80	40	30	13
JGPB-60×100		100	60		
JGPB-60×120		120	80		
JGPB-100×80	100	80	40	70	18
JGPB-100×100		100	60		
JGPB-100×120		120	80		
JGPB-150×80	150	80	40	120	18
JGPB-150×100		100	60		
JGPB-150×120		120	80		

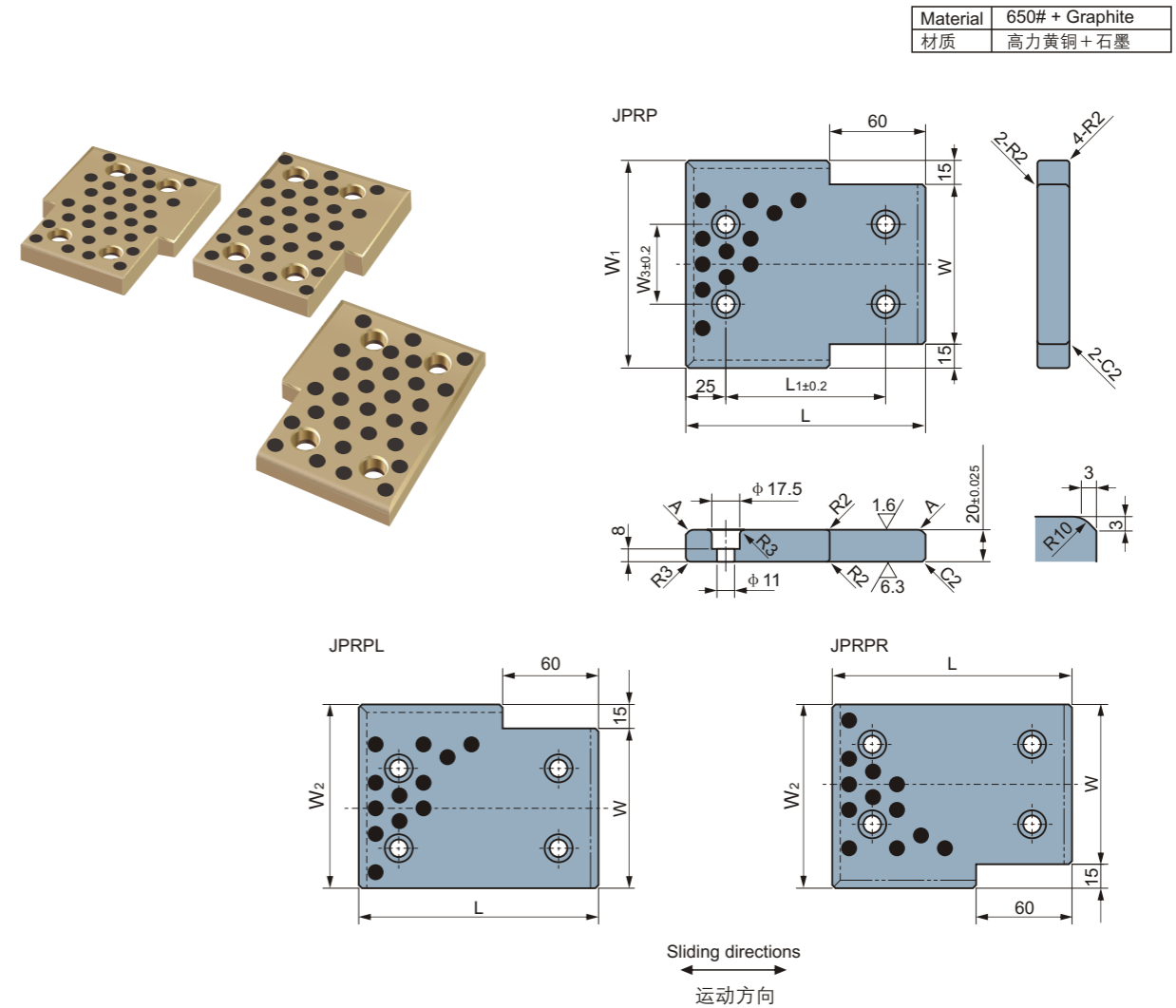
JGPC Oilless Wear Plate 自润滑板



Unit(单位): mm

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

JPRP Oilless Cam Positive Return Plate 凸轮退回滑板

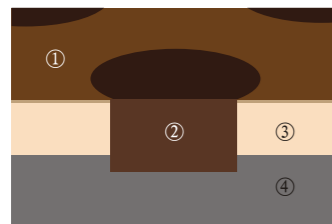


Unit(单位): mm

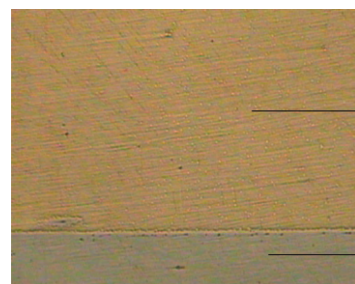
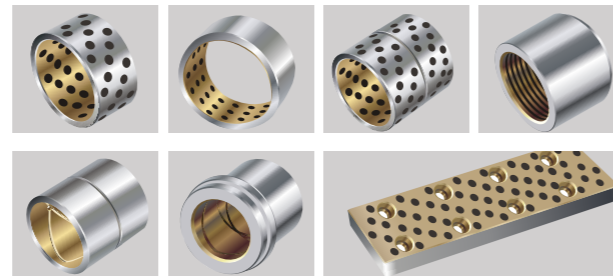
Material 材料	Standard No. 型号规格	W	L	W ₁	W ₂	W ₃	L ₁
JPRP JPRPL JPRPR	100×75	75	100	105	90	40	50
	100×75		125				75
	125×75		150				100
	125×100	100	125	130	115	50	75
	150×100		150				100
	150×125		150				100
	200×125	125	200	155	140	75	150
250×125	250		200				
200×150	200		150				
250×150	150	200	180	165	100	200	

CSB650GT Steel shell cast bronze with graphite plug 钢基铜合金镶嵌型固体润滑轴承

Material Structure 材料组织



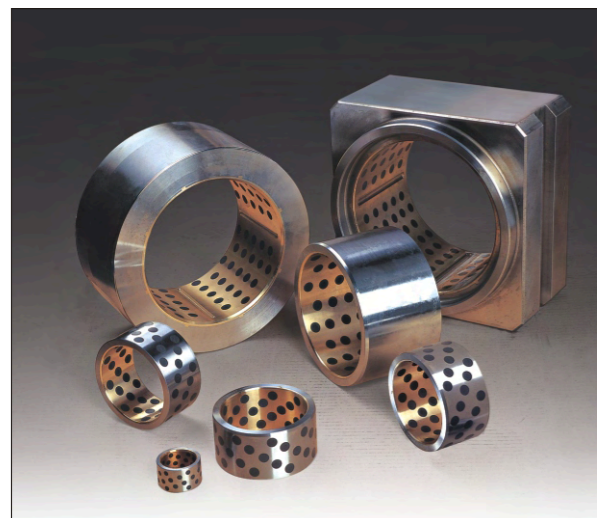
- ① Solid lubricant film
固体润滑膜
- ② Solid lubricant plug
固体润滑剂
- ③ Bronze layer
铜合金
- ④ Steel backing
钢基



- Bronze layer
铜合金
- Steel backing
优质碳素钢

Steel shell with cast bronze bearing material liner with specially formulated solid lubricants embedded into the holes in the liner material. The process of casting bronze on steel achieves an integral metallurgical structure between bronze and steel with an increased carrying capacity while the material cost is considerably reduced. The solid lubricant can reduce the coefficient of friction and performs the self-lubricating function.

在优质碳钢表面浇铸高强度铜合金作为轴承的基础材料，这种制造工艺使得铜和钢结合面达到完全的冶金结合，在降低了材料成本的同时也提高了其承载能力；而根据使用工况在其工作面镶嵌固体润滑剂大大降低了轴承的摩擦系数并达到了自我润滑的目的。



Graphite plug embedded type 石墨镶嵌方式

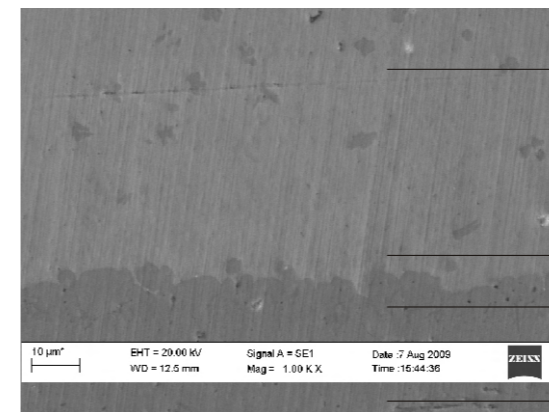
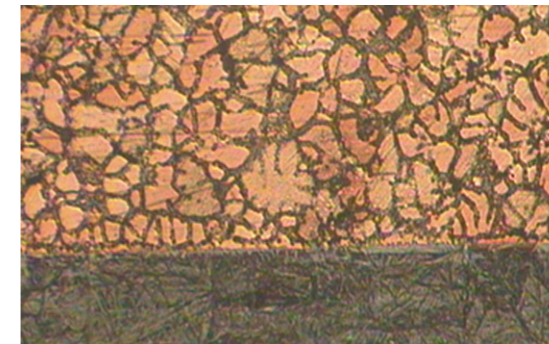


A: 内径 (ID) ≤ 100

B: 内径 (ID) ≥ 100

CSB650GT Steel shell cast bronze with graphite plug 钢基铜合金镶嵌型固体润滑轴承

The microstructure of the interface 金相下的结合面



- Bronze layer
铜合金
- Intermetallic Diffusion
金属扩散层
 $3\mu - 5\mu$
- Steel backing
优质碳素钢

Material Properties 材料特点

The microstructure of the steel and bronze interface shows there have intermetallic diffusion between $3\mu - 5\mu$ during the casting process, this ensures perfect adhesion and in every case, the mechanical properties of the interface are superior to those of bronze itself.

This intermetallic diffusion offers excellent mechanical properties and with partial transfer of load to the steel. The thin bronze layers allows the material have closed thermal expansion thus is accept the final production have heating process in case of, that means CSB650GT type material can keep the accurate and constant mechanical clearance.

从金相图可以看出临界区的钢与铜合金之间产生了相互扩散，这种在铸造过程中产生的扩散层大约在 $3\mu - 5\mu$ 之间使得两种材料达到了完全的冶金结合形成了很好的结合强度，在任何情况下这种机械强度超过了铜合金本身。

钢和铜相互之间扩散的组织结构提供了这种材料优秀的机械性能，同时可将轴承运作过程中产生的热量及时转移。薄壁的铜合金层使得这种双层材料的热膨胀系数相近，因此650GT材料可以在铸造后根据需要进行热处理，也就是说这种新型的材料可以确保在使用过程中保持很高的精度和机械配合。

CSB650GT Steel shell cast bronze with graphite plug 钢基铜合金镶嵌型固体润滑轴承



Material Properties 材料特点

- Combined with the wear resistance of copper alloy and high mechanical strength properties of steel
 - Different cast copper alloy material is available according to work condition, including lower friction lead bronze
 - The different coefficient of friction of the inner and outer material can protect the axil and rotating movement of the bearing in the housing under extremely high load with low speed
 - The solid lubricant plug can be embedded to achieve the self-lubricating performance
 - Compare with pure bronze bearing, the cost is reduced obviously
 - The steel backing allowed to heat treatment to get high hardness, meanwhile the in layer can be re-machined if necessary
 - The bronze layer can be casted on one or more layers to complex structure
 - This material have same characteristic as pure bronze bearing, suitable for wide temperature range, different oil condition
 - The CSB650GT have better mechanical load performance compare with bronze material, especially the impact strength
- 结合了铜合金的耐磨性和钢的高机械强度性能；
 - 可以根据工况要求铸造不同的铜合金材料包括低摩擦性能的铅铜合金；
 - 由于内外层材料具有的不同摩擦系数，可以防止轴承在高载低速工况下的窜动和走外圆；
 - 可以根据需要在工作面覆着或镶嵌固体润滑剂以达到自我润滑的目的；
 - 相比纯铜套更具有成本优势，节约利用资源；
 - 可以进行后期加工，比如钢基体的热处理、合金层车加工等；
 - 可以根据设计需要在不同的面或者复杂的面上进行一层或多层的铜合金铸造；
 - 与传统的铜套在使用特性上具有类似的特性，可以适合于不同温度下不同润滑条件下的工况；
 - 相比纯铜套具有更好的机械承载性能，特别是抗冲击强度；

CSB650GT Steel shell cast bronze with graphite plug 钢基铜合金镶嵌型固体润滑轴承

Material Composition and Properties 材料成份和性能表

Grade 材料牌号	650GT 600GT	650GT1 600GT1	650GT3 600GT3	650GT5 600GT5
Bronze layer material 铜合金成份	CuZn25Al5Mn4Fe3	CuSn5Pb5Zn5	CuSn12	CuZn25Al5Mn4Fe3
Bronze hardness 合金层硬度 HB	>210	>70	>95	>250
Interlay bonding strength 合金层结合强度 Mpa	>150	>100	>100	>150
Max. static load 最大静承载 Mpa	250	150	150	250
Max. dynamic load 最大动承载 Mpa	100	60	70	120
Max. Speed (dry) 最大线速度(干) m/min	15	10	10	15
Max. PV value最大PV值 N/mm ² *m/min	200	60	80	200
Coef. Of thermal expansion 热膨胀系数 10 ⁻⁵ /K	1.2x10 ⁻⁵ /°C	1.2x10 ⁻⁵ /°C	1.2x10 ⁻⁵ /°C	1.2x10 ⁻⁵ /°C
Temperature range 使用温度 °C	-40~+300	-40~+400	-40~+400	-40~+150
Compression deformation 永久压缩变形量 300N/mm ²	<0.01mm	<0.05mm	<0.05mm	<0.005mm

650GT: Steel shell bronze casted with solid lubricant

含固体润滑剂钢基铜合金铸造型轴承材料

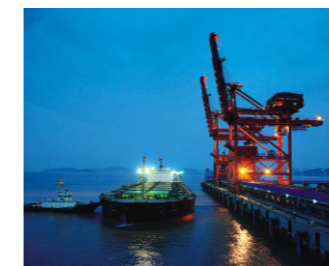
600GT: Steel shell bronze casted without solid lubricant

不含固体润滑剂钢基铜合金铸造型轴承材料

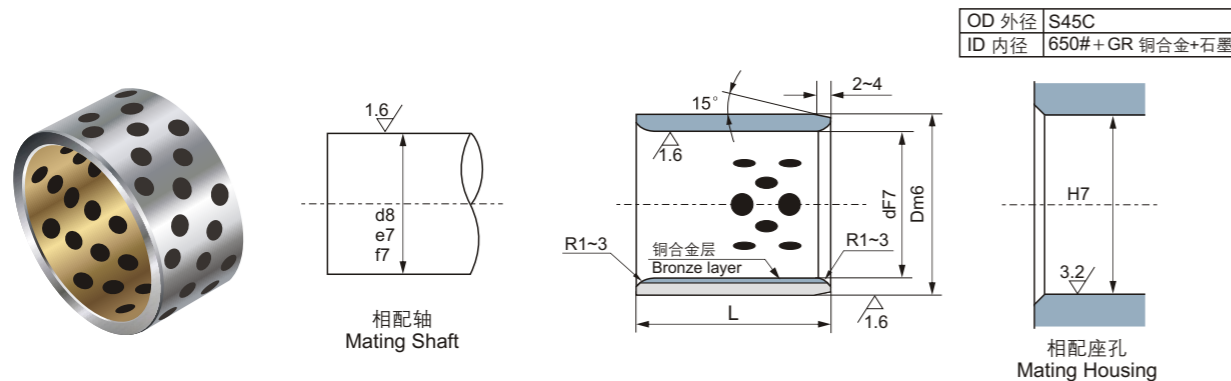
Typical Applications 典型运用

This type of products can be widely used under high temperature and high load with low speed conditions, such as successive casting machinery, mineral machinery, injection molding machinery, dock machinery and so on.

CSB650GT结合了金属与非金属的优点，特别适合于高载低速而又无法加油或不能加油的工作场合，如大型港口机械、轧钢机械、模具行业以及冲压设备等。



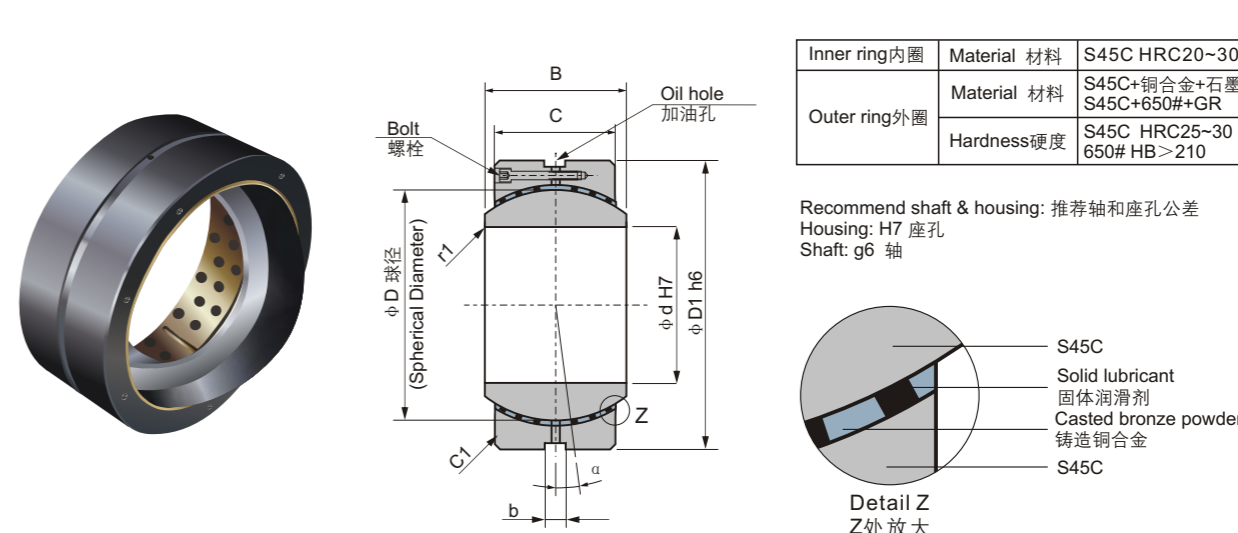
GTB650 Metric Cylindrical Bushes 自润滑轴套



Unit单位:mm

ID	F7	OD	m6	Wall Thick. 壁厚	Bronze Thick. 铜层厚	L -0.10/-0.30															
						30	35	40	50	60	70	80	90	100	120	130	140	150	200		
50	+0.050 +0.025	60		5	1.5	■	■	■	■	■	■	■									
		65		7.5	1.5	■	■	■	■	■	■	■	■								
55	+0.030 +0.011	70		7.5	1.5	■	■	■	■	■	■	■									
60		75		7.5	1.5	■	■	■	■	■	■	■	■								
65		80		7.5	1.5				■	■	■	■									
70		85		7.5	1.5			■	■	■	■	■	■	■							
	+0.060 +0.030	90		10	1.5				■	■	■	■	■	■							
75		95		7.5	1.5					■	■	■	■	■	■						
	+0.035 +0.013	95		7.5	1.5				■	■	■	■	■	■	■						
80		100		10	1.5				■	■	■	■	■	■	■	■	■				
85		100		7.5	1.5				■	■	■	■	■	■	■	■					
90		110		10	2					■	■	■	■	■	■	■	■	■			
100	+0.071 +0.036	120		10	2					■	■	■	■	■	■	■	■				
110		130		10	2							■	■	■	■	■	■	■			
120		140		10	2							■	■	■	■	■	■				
125		145		10	2									■	■	■	■	■			
130	+0.040 +0.015	150		10	2								■	■	■	■	■				
140		160		10	2										■	■	■	■			
150	+0.083 +0.043	170		10	2										■	■	■				
160		180		10	2												■	■	■		
170		190		10	2												■	■			
180		200		10	2														■	■	
190	+0.046 +0.017	210		10	2														■		
200		230		15	3																
225	+0.096 +0.050	255		15	3																
250		280		15	3																
280	+0.108 +0.056	320		20	4																
300		340		20	4																
350	+0.119 +0.062	390		20	4																
400		450		25	5																
450	+0.131 +0.068	500		25	5																

GE..GT Metric Spherical Bushes 自润滑关节轴承



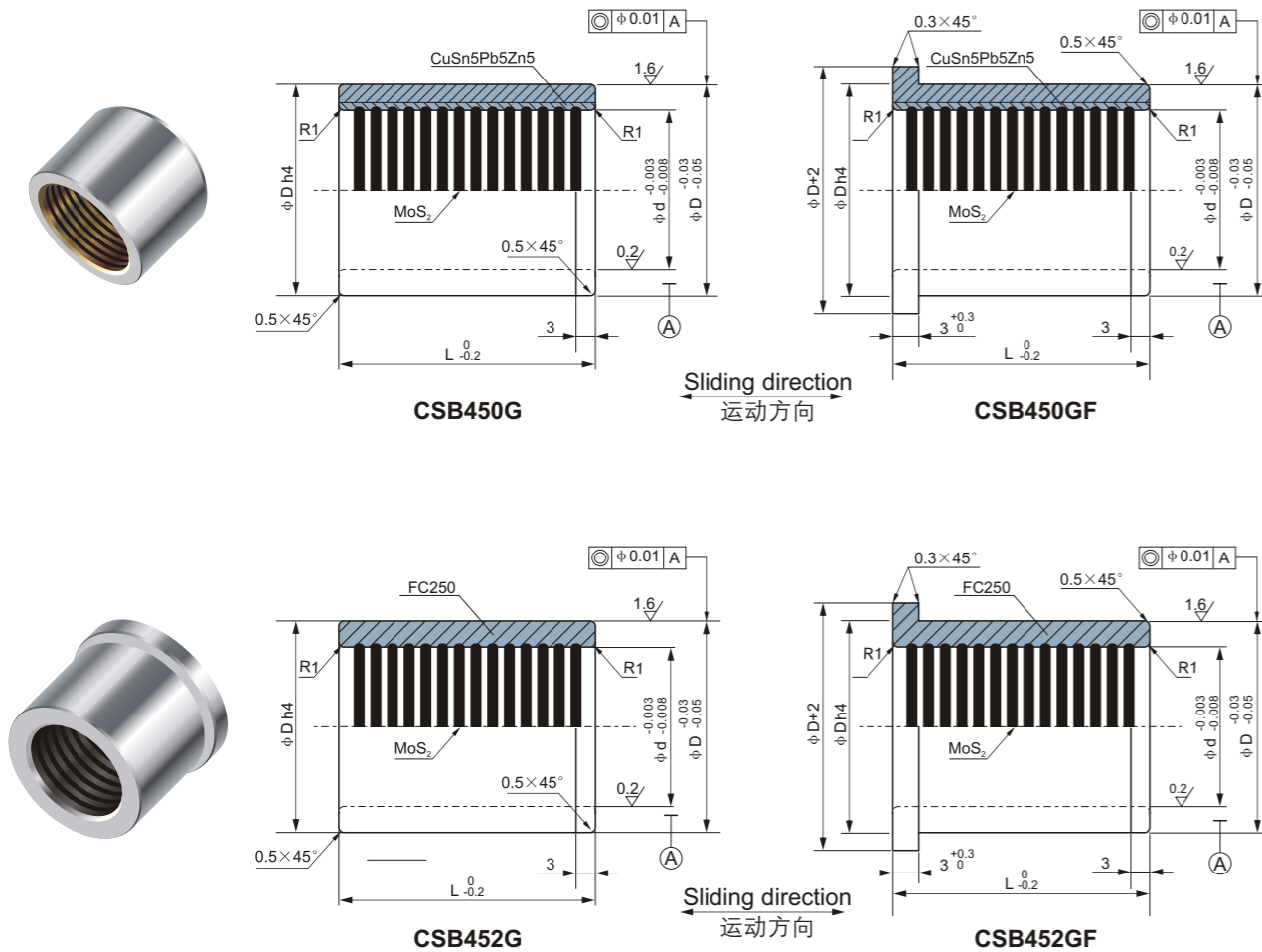
Recommend shaft & housing: 推荐轴和座孔公差
Housing: H7 座孔
Shaft: g6 轴

Detail Z
Z处放大

Unit(单位): mm

Standard No. 型号规格	d	H7	D1	h6	B	C	D	b	Alignment Angle α° 调整角度	Dynamic Load (KN) 动承载	Static Load (KN) 静载荷
GE100GT	100		160	0	71	67	135	6	2	814	1357
GE110GT	110	+0.035 0	180	-0.025	78	74	145		2	966	1610
GE120GT	120		210	0	85	80	160		2	1152	1920
GE140GT	140		235	-0.029	100	95	185		2	1582	2636
GE160GT	160	+0.040 0	260	0	115	109	210		2	2060	3434
GE180GT	180		300	-0.032	128	122	240		2	2635	4392
GE200GT	200		320		140	134	260	9	2	3136	5226
GE220GT	220	+0.046 0	350	-0.036	155	148	290		2	3863	6438
GE240GT	240		380		170	162	310		2	4520	7533
GE260GT	260		410		185	175	340		2	5355	8925
GE280GT	280	+0.052 0	440	0	200	190	370		2	6327	10545
GE300GT	300		470	-0.040	212	200	390		2	7020	11700
GE320GT	320		500		230	218	420		2	8240	13734
GE340GT	340		520		243	230	440		2	9108	15180
GE360GT	360	+0.057 0	570	0	258	243	480		2	10498	17496
GE380GT	380		590	-0.044	272	258	500		2	11610	19350
GE400GT	400		610		280	265	520		2	12402	20670
GE420GT	420		640		300	280	540		2	13608	22680
GE440GT	440		680		315	300	580	2	15660	26100	
GE460GT	460	+0.063 0	700	0	325	308	600	2	16632	27720	
GE480GT	480		730	-0.050	340	320	630	2	18144	30240	
GE500GT	500		750		355	335	650	2	19598	32663	

CSB450G/452G Metric Bushes 高精度导套

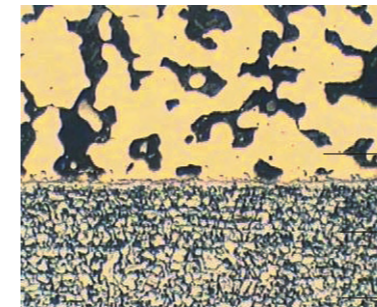


Unit(单位): mm

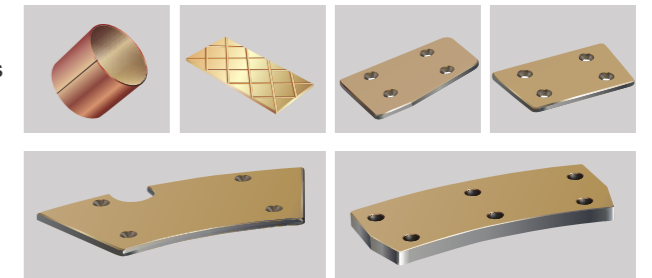
Type 型号	d	D	h4	L							
CSB450G CSB452G	10	16	$0_{-0.005}$	10	13	16	20	22	25		
	13	20	$0_{-0.006}$		13	16	20	22	25		
	16	24				16	20	22	25	30	35
	20	28					20	22	25	30	35
CSB450GF CSB452GF	10	16	$0_{-0.005}$	10	13	16	20	22	25		
	13	20	$0_{-0.006}$		13	16	20	22	25		
	16	24				16	20	22	25	30	35
	20	28					20	22	25	30	35
	25	34	$0_{-0.007}$				20	22	25	30	35

CSB850BM Metal backed bronze powder with solid lubricants 钢基铜合金弥散型固体润滑轴承

Material Structure 材料组织



- Solid lubricants 固体润滑剂
- Bronze powder 铜合金
- Metal backing 金属基板
- Plating 电镀层



CSB850BM is a composite multi-layer bearing composed of sintered material used as sliding surfaces and metal shell as backing, the sintered layers are of a special copper alloy which is uniformly dispersed with PTFE and graphite solid lubricant. This bearing material have lower initial coefficient of friction and easily form a firmly adhesive solid lubricant film as micro-range movement occurs, this film have low shear strength and remains within the contact area even under heavy loads, while the metal backing provides a high mechanical strength and dimensional stability.



CSB850BM由作为滑动耐磨材料的烧结层和作为轴承载荷支撑的金属基体组成的双合金自润滑轴承材料；烧结层由特殊的铜合金材料和均匀分布的石墨和PTFE固体润滑剂组成，在发生微观移动时就可以容易的形成一层牢固的固体转移膜，这层膜具有很低的摩擦系数和较低的剪切强度，即使在重载条件下任能覆着在对偶件表面；金属基板则提供了很好的机械强度和尺寸稳定性，根据使用工况可以选择碳钢、不锈钢、铜基等材料或者可以进行表面镀层以提高耐腐蚀性能。



CSB850BM Metal backed bronze powder with solid lubricants 钢基铜合金弥散型固体润滑轴承

Material properties 材料特点

- Allows maintenance-free and long-life operation
 - Suitable for high static and dynamic loads
 - With low and smoothly coefficient of friction and without stick-slip effects
 - Suitable for dirt, corrosion, impact load and edge loading
 - Suitable for micro-range movements
 - The base material provided a good shock-absorbing capacity
 - Can be used over a large temperature range
 - Suitable for reciprocating, rotating and oscillating movement with start frequency and difficulty to form oil film occasions
 - With low wear rate and long life service
 - Can be applied in radioactive environments
- 可以长期使用而无需维护;
 - 设计用于很高的静承载和动承载;
 - 具有很低的且平稳的摩擦系数, 无粘着现象;
 - 具有耐粉尘、耐腐蚀、耐冲击和耐边缘负载能力;
 - 材料具有良好的导电和导热性能;
 - 能够在很宽的温度范围内使用;
 - 适合于往复、旋转和摆动等启动频繁又难以形成油膜的情况;
 - 具有极低的磨损率, 使用寿命长;
 - 安装后可以再次加工以获得更高的公差;
 - 可以在真空条件下使用。

Tech. Data 技术参数

CSB standard materia 材料名称		CSB850BM1	CSB850BM2	CSB850BM3	CSB850BM4
Backing metal 金属基材		Steel 碳钢	Steel 碳钢	Stainless steel 不锈钢	Bronze 青铜
Lining layer 耐磨层	Composition 成份	CuSn12+SL	CuSn10Pb10+SL	CuSn12+SL	CuSn12+SL
	Solid lubricants 固体润滑剂	6%	6%	6%	6%
	Hardness 硬度	>40HB	>40HB	>40HB	>40HB
	Compression deformation 压缩变形 150Mpa	<0.005mm	<0.005mm	<0.005mm	<0.005mm
Max. load 最大承载	Static 静承载	150N/mm ²	120N/mm ²	150N/mm ²	150N/mm ²
	Dynamic 动承载	100N/mm ²	80N/mm ²	100N/mm ²	100N/mm ²
Max. speed 最大线速度		0.5m/s	0.5m/s	0.5m/s	0.5m/s
Max. PV 最大PV值 N/mm ² *m/s		1.5	1.5	1.5	1.5
Coefficient of friction 摩擦因数 μ		0.05~0.2	0.03~0.2	0.05~0.2	0.05~0.2
Temp. 使用温度 °C		-195~+280	-195~+280	-195~+280	-195~+280

CSB850BM Metal backed bronze powder with solid lubricants 钢基铜合金弥散型固体润滑轴承

Bearing Surface 耐磨层表面

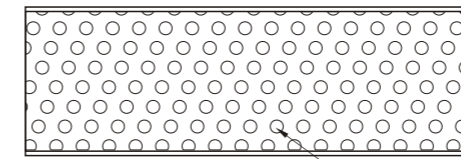
The standard bearings we supply are usually with plain surface, also we can supply the products with cleaning grooves for small angular movements or in the presence of abrasive media or dirt, and indented surface for grease lubricated applications.

标准的CSB850BM材料表面为光板形式, 同时也可以根据客户需求加工出油槽用于在轴承运行过程中产生的磨粒、外部环境侵入的异物或杂质等的有效排泄, 另外也可以根据需求加工出有规则的储油穴。在特殊工况下为了降低起始摩擦系数, 在耐磨层表面可以喷涂低摩擦材料比如PTFE或者二硫化钼等。

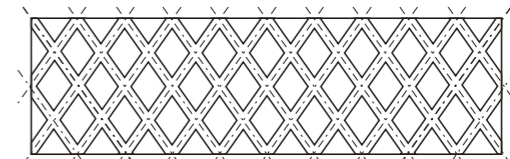
Typical Applications 典型应用

CSB850BM has been widely used in water turbines, vane controls, injection moulding machinery, packing machines, construction equipment, tire moulds, paper production machinery, furnace expansion plates, automotive transmission, heavy lifting chain linkage, food production equipment etc.

CSB850BM材料所具有的特性可以满足很多无法加油或者不能润滑的场合, 比如水轮机、导叶轮、水坝工作门事故门、射出成型机、包装机械、轮胎模具、工业炉、真空设备、造纸工业、有辐射的工作场合等。

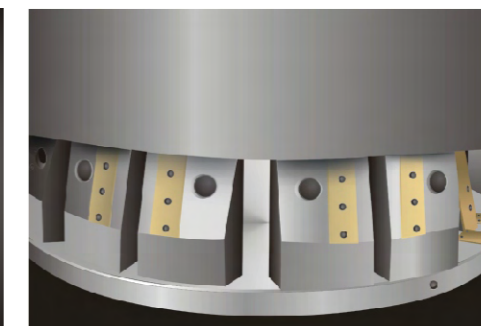
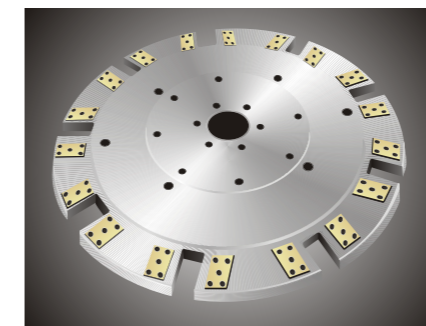
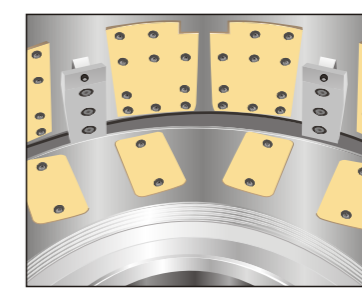
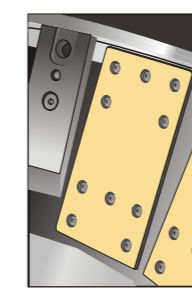
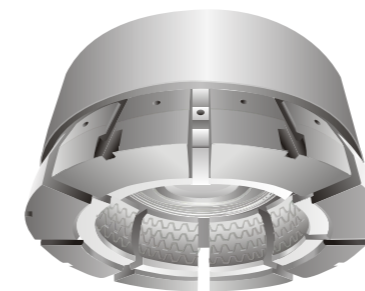


油穴
Lubrication pocket

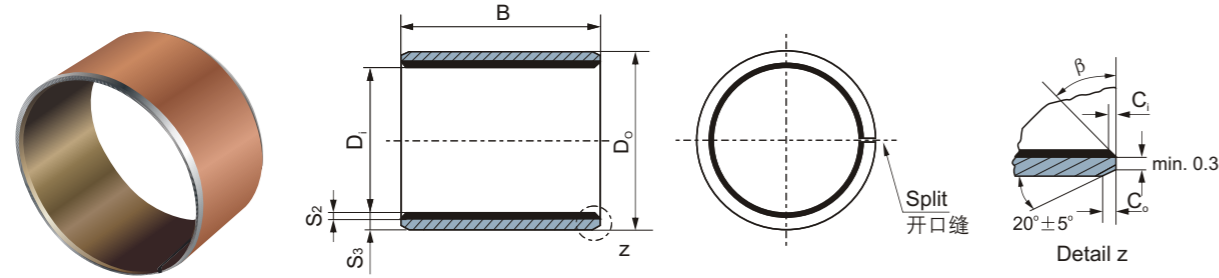


Cleaning grooves for small angular movements or in the presence of abrasive media or dirt.
排泄槽用于在粉尘或有颗粒的条件下使用

Indented surface for grease lubricated applications.
表面油穴用于油脂润滑



CSB850BM Metric Cylindrical Bushes 轴套尺寸表



ID and OD chamfers 内外径倒角

S ₃	C ₀	C ₁	β	S ₃	C ₀	C ₁	β
0.75	0.5±0.3	0.25±0.2	35° ±5°	2.00	1.2±0.4	0.50±0.3	35° ±5°
1.00	0.6±0.3	0.30±0.2	35° ±5°	2.50	1.8±0.6	0.60±0.3	45° ±5°
1.50	0.7±0.3	0.50±0.3	35° ±5°				

Unit (单位): mm

D ₁	D ₀	Shaft 相配轴 D _s h8	Housing 座孔 H7 D _H	ID after fixed 压装后内孔 D _{1a}	Clearance 配合间隙 C ₀	Wall thickness 壁厚公差 S ₃	Sinter layer 合金层 S ₂	B ⁰ _{-0.40}								
								10	15	20	25	30	40	50		
10	12	10 ^{-0.022}	12 ^{+0.018}	+0.148 +0.010	0.170 0.010	0.995 0.935	0.4	850BM 1010	850BM 1015	850BM 1020						
12	14	12 ^{-0.027}	14 ^{+0.018}					850BM 1210	850BM 1215	850BM 1220						
14	16	14 ^{-0.027}	16 ^{+0.018}					850BM 1410	850BM 1415	850BM 1420						
15	17	15 ^{-0.027}	17 ^{+0.018}					850BM 1510	850BM 1515	850BM 1520						
16	18	16 ^{-0.027}	18 ^{+0.018}					850BM 1610	850BM 1615	850BM 1620						
18	20	18 ^{-0.027}	20 ^{+0.021}					850BM 1810	850BM 1815	850BM 1820	850BM 1825					
20	23	20 ^{-0.033}	23 ^{+0.021}	+0.161 +0.020	0.194 0.020	1.490 1.430	0.5	850BM 2010	850BM 2015	850BM 2020	850BM 2025					
22	25	22 ^{-0.033}	25 ^{+0.021}					850BM 2210	850BM 2215	850BM 2220	850BM 2225					
24	27	24 ^{-0.033}	27 ^{+0.021}					850BM 2410	850BM 2415	850BM 2420	850BM 2425	850BM 2430				
25	28	25 ^{-0.033}	28 ^{+0.021}					850BM 2515	850BM 2520	850BM 2525	850BM 2530					
26	30	26 ^{-0.033}	30 ^{+0.021}					850BM 2615	850BM 2620	850BM 2625	850BM 2630					
28	32	28 ^{-0.033}	32 ^{+0.025}					850BM 2815	850BM 2820	850BM 2825	850BM 2830	850BM 2840				
30	34	30 ^{-0.033}	34 ^{+0.025}	+0.185 +0.040	0.218 0.040	1.980 1.920	0.6	850BM 3015	850BM 3020	850BM 3025	850BM 3030	850BM 3040				
32	36	32 ^{-0.039}	36 ^{+0.025}					850BM 3215	850BM 3220	850BM 3225	850BM 3230	850BM 3240				
35	39	35 ^{-0.039}	39 ^{+0.025}					850BM 3520	850BM 3525	850BM 3530	850BM 3540	850BM 3550				
38	42	38 ^{-0.039}	42 ^{+0.025}					850BM 3820	850BM 3825	850BM 3830	850BM 3840	850BM 3850				
40	44	40 ^{-0.039}	44 ^{+0.025}					850BM 4020	850BM 4025	850BM 4030	850BM 4040	850BM 4050				

CSB850BM Metric Cylindrical Bushes 轴套尺寸表

Unit (单位): mm

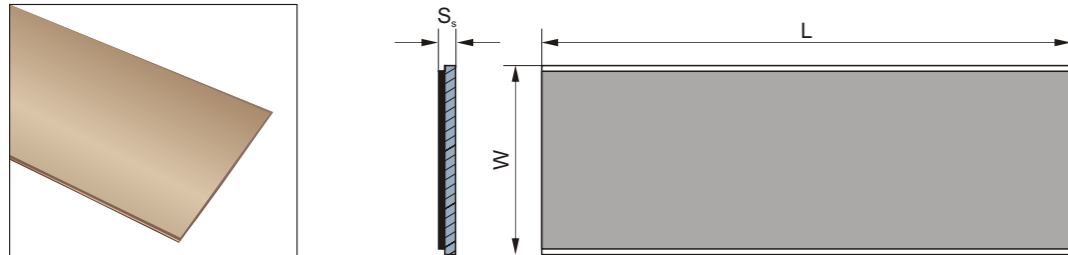
D ₁	D ₀	Shaft 相配轴 D _s h8	Housing 座孔 H7 D _H	ID after fixed 压装后内孔 D _{1a}	Clearance 配合间隙 C ₀	Wall thickness 壁厚公差 S ₃	Sinter layer 合金层 S ₂	B ⁰ _{-0.40}							
								25	30	40	50	60	80	90	100
45	50	45 ^{-0.039}	50 ^{+0.025}	+0.225 +0.080	0.264 0.080	2.460 2.400	0.7	850BM 4525	850BM 4530	850BM 4540	850BM 4550				
50	55	50 ^{-0.039}	55 ^{+0.030}	+0.230 +0.080	0.269 0.080			850BM 5030	850BM 5040	850BM 5050	850BM 5060				
55	60	55 ^{-0.046}	60 ^{+0.030}					850BM 5530	850BM 5540	850BM 5550	850BM 5560				
60	65	60 ^{-0.046}	65 ^{+0.030}					850BM 6030	850BM 6040	850BM 6050	850BM 6060				
65	70	65 ^{-0.046}	70 ^{+0.030}	+0.235 +0.080	0.276 0.080			850BM 6530	850BM 6540	850BM 6550	850BM 6560				
70	75	70 ^{-0.046}	75 ^{+0.030}					850BM 7030	850BM 7040	850BM 7050	850BM 7060	850BM 7080			
75	80	75 ^{-0.046}	80 ^{+0.030}					850BM 7530	850BM 7540	850BM 7550	850BM 7560				
80	85	80 ^{-0.046}	85 ^{+0.035}	+0.240 +0.080	0.281 0.080			850BM 8040	850BM 8050	850BM 8060	850BM 8080				
85	90	85 ^{-0.054}	90 ^{+0.035}					850BM 8530	850BM 8550	850BM 8560	850BM 8580			850BM 85100	
90	95	90 ^{-0.054}	95 ^{+0.035}					850BM 9050	850BM 9060	850BM 9080				850BM 90100	
95	100	95 ^{-0.054}	100 ^{+0.035}	+0.240 +0.080	0.289 0.080			850BM 9560	850BM 9580	850BM 9590	850BM 95100				
100	105	100 ^{-0.054}	105 ^{+0.035}					850BM 10060	850BM 10080	850BM 10090	850BM 100100				
105	110	105 ^{-0.054}	110 ^{+0.035}			850BM 10560	850BM 10580		850BM 105100						
110	115	110 ^{-0.054}	115 ^{+0.035}	+0.240 +0.080	0.303 0.080	850BM 11060	850BM 11080		850BM 110100						
115	120	115 ^{-0.054}	120 ^{+0.035}			850BM 11550	850BM 11580								
120	125	120 ^{-0.054}	125 ^{+0.040}			850BM 12050	850BM 12060					850BM 120100			
125	130	125 ^{-0.063}	130 ^{+0.040}	+0.240 +0.080	0.303 0.080	850BM 13060						850BM 130100			
130	135	130 ^{-0.063}	135 ^{+0.040}			850BM 13560	850BM 13580								
135	140	135 ^{-0.063}	140 ^{+0.040}			850BM 14060	850BM 14080					850BM 140100			
140	145	140 ^{-0.063}	145 ^{+0.040}	+0.240 +0.080	0.303 0.080	850BM 14560	850BM 14580								
145	150	145 ^{-0.063}	150 ^{+0.040}			850BM 15060	850BM 15080					850BM 150100			

CSB850BM Metric Cylindrical Bushes 尺寸表

Unit(单位):mm

Bushes tolerance 轴套公差表								
I.D. 内径	10<d≤18	18<d≤30	30<d≤50	50<d≤80	80<d≤120	120<d≤180	180<d≤250	250<d≤300
O.D. tolerance 外径公差	+0.065 +0.030	+0.075 +0.035	+0.085 +0.045	+0.100 +0.055	+0.120 +0.070	+0.170 +0.100	+0.210 +0.130	+0.260 +0.170
Installed I.D.H9 压装后内孔公差	+0.043 0	+0.052 0	+0.062 0	+0.074 0	+0.087 0	+0.100 0	+0.115 0	+0.130 0
Housing: H7, Shaft: d7 推荐座孔: H7, 推荐轴: d7								

Metric standard strip 标准板材

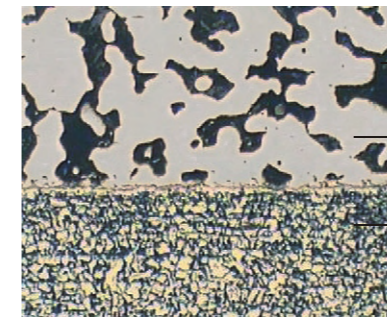


Unit(单位):mm

Wall thickness -0.05 壁厚公差	Lining layer thickness 合金层厚度	Length ±1 长度	Width 宽度
1.0	≥0.40	500	150
1.5	≥0.50	500	150
2.0	≥0.60	500	150
2.5	≥0.70	500	150
3.0	≥1.00	500	150
5.0	≥1.50	500	150

CSB850S Metal backed FeNi powder with solid lubricants 钢基铁镍合金弥散型固体润滑轴承

Material Structure 材料组织



Solid lubricants
固体润滑剂
Fe-Ni alloy
铁镍合金
Steel backing
碳钢基板



CSB850S is a composite multi-layer bearing composed of a special sintered material which forms the sliding surface and steel material forms the backing. Sintered layers are of a special ferrous-nickel alloy containing uniformly dispersed solid lubricant, the main component of which is graphite. The solid lubricant will be released at the bearing surface and easily form a firmly adhesive solid lubricant film as wear occurs. In addition, the sintered layers have been processed by oil impregnation treatment this ensures a lower dynamic coefficient of friction as well as static which obtains smoothly sliding property. While the steel backing provides a high mechanical strength and dimensional stability.

以优质金属材料为基体表面烧结含有固体润滑剂的铁镍合金作为工作层，并经含油处理；固体润滑剂主要为石墨，由于固体润滑剂均匀的分散在合金层内因此在滑动开始就能形成固体润滑膜，这层膜具有低剪切强度，即使在很大的静载荷条件下仍可牢固附着在轴承表面而不易破裂，而含油处理使得静摩擦系数和动摩擦系数基本一致，因此微观移动下不会出现爬行现象；而金属基体则提供了很高的机械强度和尺寸稳定性。

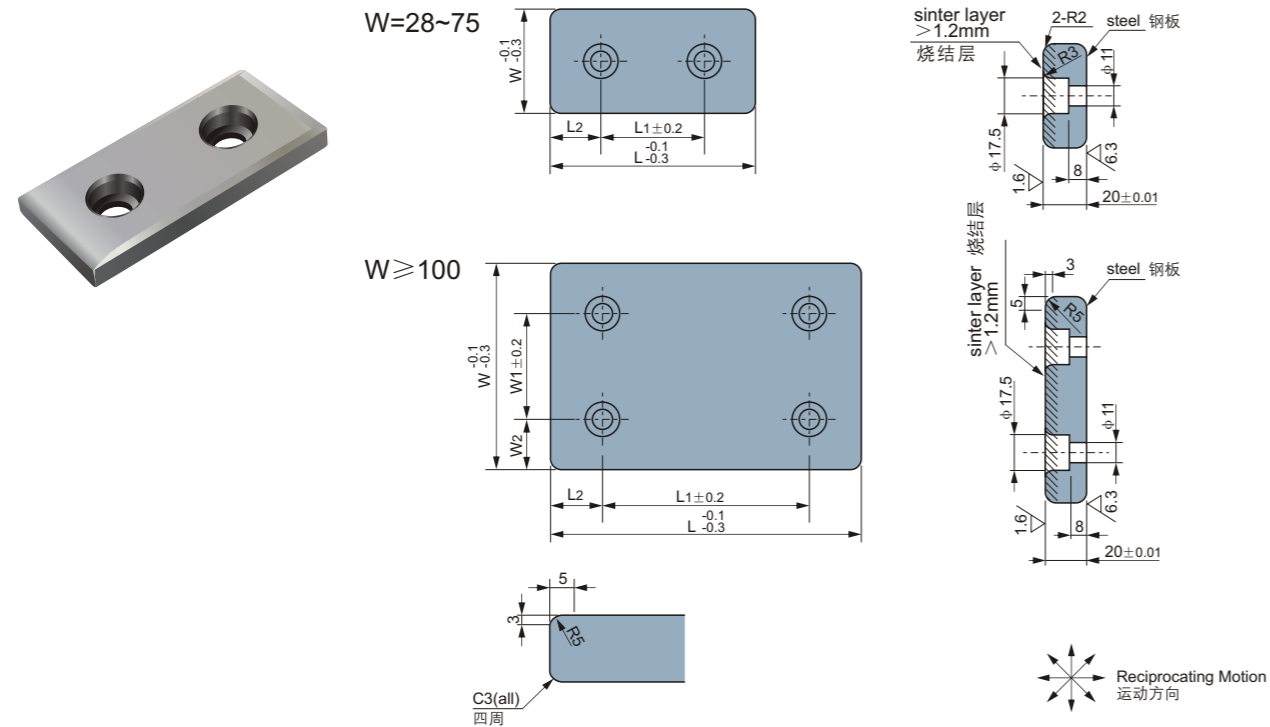
Material properties 材料特点

- Allows maintenance-free and long-life operation;
 - Suitable for high static and dynamic loads;
 - With low and smoothly coefficient of friction and without stick-slip effects;
 - Suitable for dirt, corrosion, impact load and edge loading;
 - Has good conductivity and thermal conductivity properties;
 - Can be used over a large temperature range
 - Suitable for reciprocating, rotating and oscillating movement with start frequency and difficulty to form oil film occasions;
 - With low wear rate and long life service.
- 可以长期使用而无需维护;
 - 具有相同的静摩擦系数和动摩擦系数;
 - 设计用于很高的静承载和动承载;
 - 具有很低的且平稳的摩擦系数，无粘着现象;
 - 具有耐粉尘、耐腐蚀、耐冲击和耐边缘负载能力;
 - 材料具有良好的导电和导热性能;
 - 能够在很宽的温度范围内使用;
 - 适合于往复、旋转和摆动等启动频繁又难以形成油膜的情况;
 - 具有极低的磨损率，使用寿命长。

Tech. Data 技术参数

Max. load 最大承载	Static 静承载	100N/mm ²	Temp. 使用温度	-40℃~+120℃
	Dynamic 动承载	50N/mm ²	Coefficient of friction 摩擦因素 μ	0.03~0.20
Max. speed 最大线速度	Dry 干摩擦	0.5m/s	Alloy hardness 合金层硬度	>45HB
	Lubrication 润滑	> 1m/s	Coefficient of thermal expansion 线胀系数	14*10 ⁻⁶ *K ⁻¹
Max. PV 最大PV值	Dry 干摩擦	1.5N/mm ² *m/s	Oil volume 含油率	>10%
	Lubrication 润滑	2.5N/mm ² *m/s		

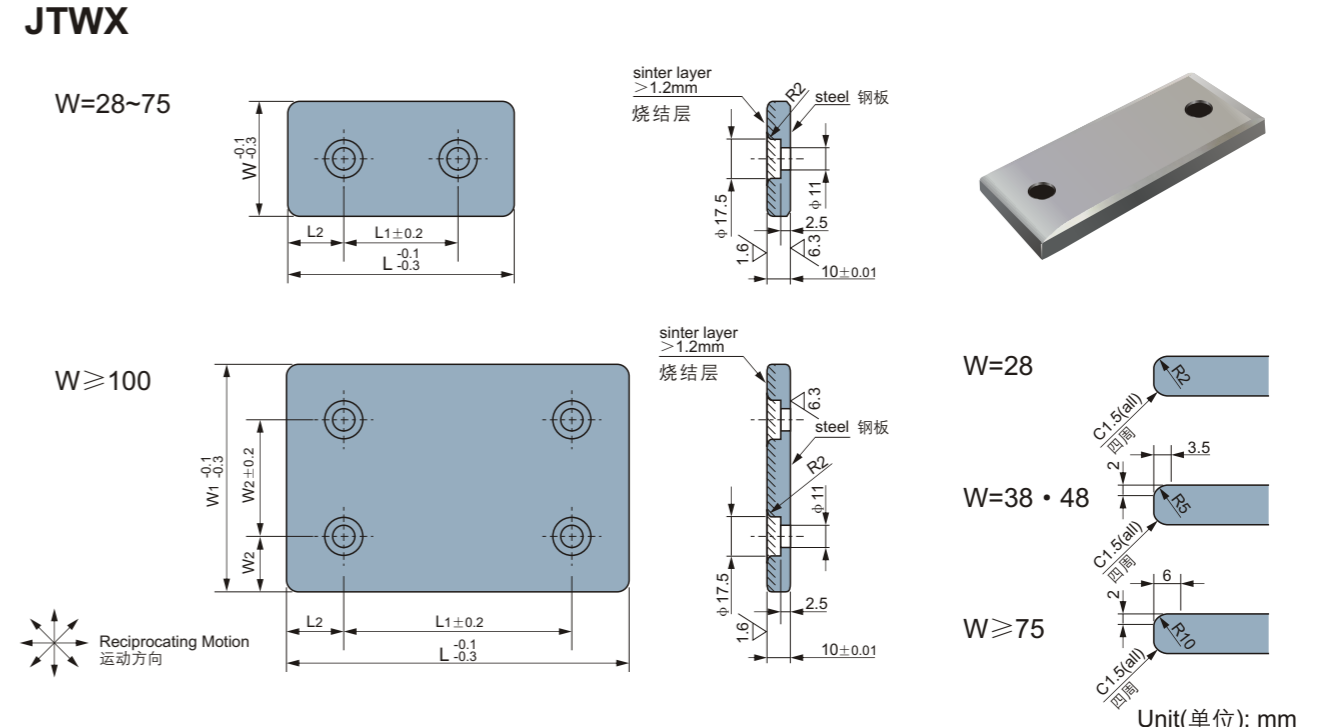
CSB850S JSOX Wear Plate 自润滑板



Unit(单位): mm

Standard No. 型号规格	W	L	W ₁	W ₂	L ₁	L ₂
JSOX	28	75			45	15
		100			50	25
		150			100	25
	38	75			45	15
		100			50	25
		150			100	25
	48	75			45	15
		100			50	25
		125			75	25
		150			100	50
	75	75			25	25
		100			50	
		125			75	
		150			100	
		200			150	
		250			200	
	100	100	50	25	50	25
		125			75	
		150			100	
		200			150	
		250			200	
125	150	50	37.5	100	25	
	200			150		
	250			200		
	300			250		
150	150	100	25	100	25	
	200			150		
	250			200		

CSB850S JTWX Wear Plate 自润滑板



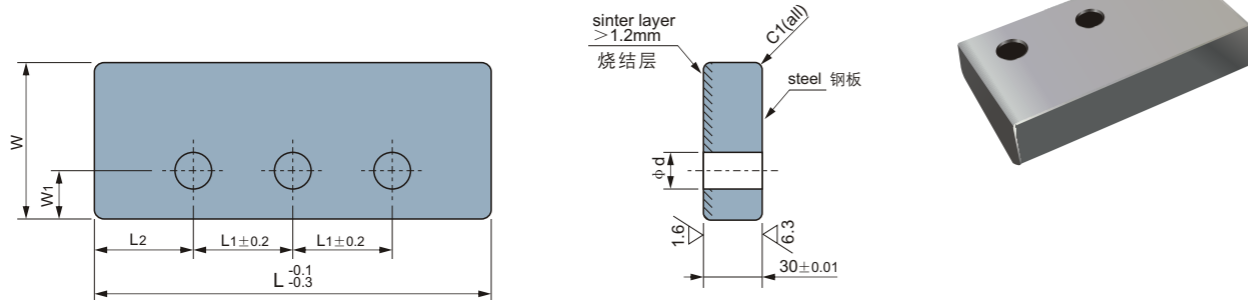
Unit(单位): mm

Standard No. 型号规格	W	L	W ₁	W ₂	L ₁	L ₂
JTWX	28	75			45	15
		100			50	25
		125			75	25
		150			100	25
	38	75			45	15
		100			50	25
		125			75	25
		150			100	25
	48	75			45	15
		100			50	25
		125			75	25
		150			100	50
	75	75			25	25
		100			50	
		125			75	
		150			100	
		200			150	
		250			200	
	100	100	50	25	50	25
		125			75	
		150			100	
200		150				
250		200				
125	125	75		75	25	
	150			100		
	200			150		
	250			200		
150	150	100	25	100	25	
	200			150		
	250			200		
	300			250		

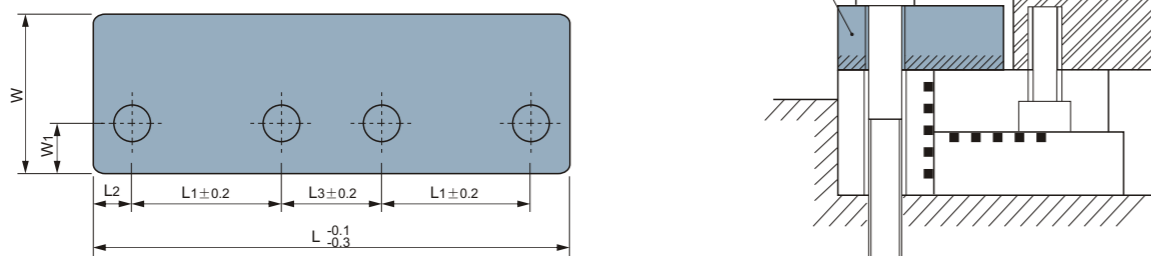
CSB850S JCUX Wear Plate 自润滑板

JCUX

L=150 · 200



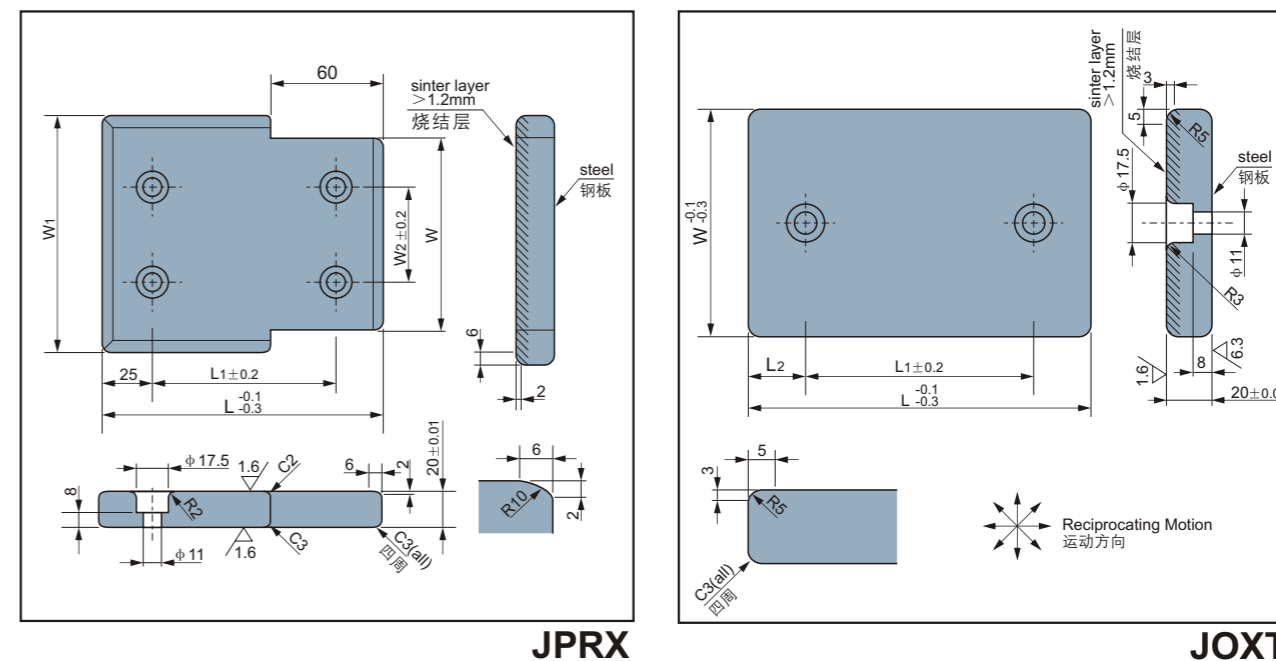
L=250



Unit(单位): mm

Standard No. 型号规格	W	L	L ₁	L ₂	L ₃	W ₁	d
JCUX	82	150	50	25	—	25	18
		200	75				
		250	50				

CSB850S JPRX/JOXT Wear Plate 自润滑板



JPRX

JOXT

Unit(单位): mm

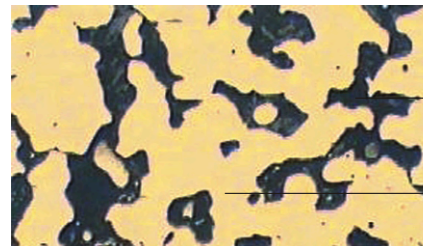
Standard No. 型号规格	W	L	W ₁	W ₂	L ₁
JPRX	74	100	100	40	50
		125			75
		150			100
		200			150
		250			200
		99			150
	200	150			
	250	200			
	124	150	150	90	100
		200			150

Unit(单位): mm

Standard No. 型号规格	W	L	L ₁	L ₂
JOXT	100	100	50	25
		125	75	
		150	100	
		200	150	
		250	200	
		300	200	
	125	125	75	25
		150	100	
		200	150	
		250	200	
	150	150	100	25
		200	150	
250		200		
300		200		

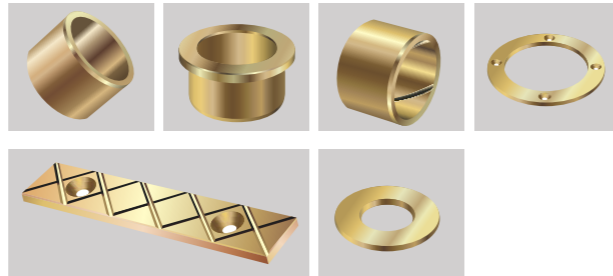
CSB85H Powder metallurgy sintered with solid lubricants 粉末烧结弥散型固体润滑轴承

Material Structure 材料组织



Solid lubricants
固体润滑剂

Metal powder
金属粉末基体



CSB85H is a self-lubricating bearing materials suitable for high load low speed application which lubrications is difficult or need dry running, it is made by advanced powder metallurgy. The CSB85H is based on three metal alloy types, bronze, iron and nickel each containing dry solid lubricant like graphite, molybdenum disulphide which uniformly dispersed within the metal matrix. The percentage, type and form of the solid lubricant is determined by the bearing application operating requirements in terms of specific load, sliding speed, temperature and other environmental factors.

CSB85H金属自润滑轴承采用粉末烧结技术加工而成，适合于高载低速无法加油或需要干摩擦工况条件下工作；主体材料包括铜基、铁基和不锈钢基，同时根据轴承的使用工况、运用温度、载荷、线速度和环境要求可以选择如石墨、二硫化钼等不同比例的固体润滑剂，这些固体润滑剂均匀的分布在材料组织内可以源源不断地为轴承表面提供低摩擦材料，降低了摩擦系数从而大大提高了轴承的使用寿命，相比传统的粉末冶金更具有耐磨性和耐高温性能。



Material properties 材料特点

- Dry working condition, provides maintenance free operation
- High static load and dynamic load capacity
- Can be applied in widely temperature $-200^{\circ}\text{C} \sim +600^{\circ}\text{C}$
- Suitable for radioactive environments
- Metal based material is electrically conductive and shows no electrostatic effects
- Can applied in dirty and corrosion environment
- Machinable for high tolerance after installation
- 满足于干摩擦工况，可以免于维护；
- 具有较高的承载能力；
- 使用温度范围广 $-200^{\circ}\text{C} \sim +600^{\circ}\text{C}$ ；
- 可以再放射性环境和真空环境下使用；
- 材料具有良好的导电性能，不会产生静电现象；
- 可以在粉尘条件和腐蚀环境下使用；
- 材料可以根据需要进行再次加工。

CSB85H Powder metallurgy sintered with solid lubricants 粉末烧结弥散型固体润滑轴承

Metal Matrix 金属基材料

The properties of the metal matrix determine the general physical, mechanical and chemical performance, the following main materials are popular:

基体材料的特性决定了轴承材料基本的物理、化学和机械特性，以下是主要的金属材料

Bronze 铜基	Ferrous 铁基	Nickel 镍基
CuSn, 锡青铜 CuSnPb, 铜铅合金	Fe 铁基 FeCu 铁铜合金 FeNiCu 铁镍合金 FeCrNi 不锈钢基	Ni 镍基 NiCuFe 镍铜合金

Solid Lubricant 固体润滑剂

Material	Graphite	MoS ₂	WS ₂
Crystal structure 晶体结构	Hexagonal 六边形	Hexagonal 六边形	Hexagonal 六边形
Specific Gravity 比重	2.25	4.7	7.5
Coefficient of friction in air 在空气中的摩擦因数	0.1~0.18	0.08~0.12	0.09~0.17
Operating temperature 使用温度 $^{\circ}\text{C}$	$-120^{\circ}\text{C} \sim +600^{\circ}\text{C}$	$-100^{\circ}\text{C} \sim +400^{\circ}\text{C}$	$-180^{\circ}\text{C} \sim +600^{\circ}\text{C}$
Chemical resistance 耐化学性	Very good 很好	Good 好	Good 好
Corrosive resistance 耐腐蚀性	Good 好	Poor 差	Poor 差
Nuclear radiation resistance 耐核辐射	Very good 很好	Good 好	Good 好
Performance in air 在空气中使用	Very good 很好	Good 好	Very good 很好
Performance in water 在水中使用	Very good 很好	Poor 差	Poor 差
Performance in vacuum 在真空中使用	Poor 差	Good 好	Very good 很好

Graphite is the most popular solid lubricants have been applied.

一般而言，石墨是最为通用的固体润滑剂

Available 可供形式

Cylindrical bushes 直套

Thrust washers 翻边

Flange bushes 垫片

Non-standard parts as design 滑板

CSB85H supplied by customer ordering, the tolerance is according to CSB650 standard dimension.

CSB85H可以根据客户要求加工，公差参照标准的

CSB650尺寸表。

CSB85H Powder metallurgy sintered with solid lubricants 粉末烧结弥散型固体润滑轴承

Dry Wear Mechanism 干摩擦机理

All the solid lubricants have a lamella structure characterised which easily formed a low interfacial shear strength between adjacent intermolecular layers within the material, during initial operation the metal wear occurs and the solid lubricant is released from the bearing surface and becomes mechanically bonded to the mating surface via the asperities on the counterface. This solid lubricants transfer film is robust and provides a low friction surface then continues to operated with a much reduced rate of wear. Any damage to the transferred solid lubricant film is repaired by further solid lubricant released from the bearing metal as wear occurs.

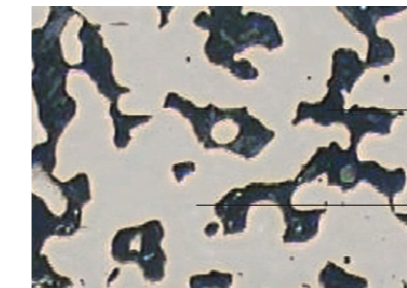
由于固体润滑剂都属于层结构晶体物质，很容易在金属基体材料内邻近的分子间形成低剪切强度的界面，在起始摩擦时由于金属发生磨损，固体润滑剂很容易被释放到轴承表面形成与对磨件的机械结合；这层转移膜具有很高的承载能力和极低的摩擦系数并且可以连续供应从而大大降低了磨损延长了使用寿命，另外一旦发生对转移膜的破坏可以在很短的时间内进行自我修复，从而起到了免维护的作用。

Material Composition and properties 材料成份和性能表

Material code 材料牌号	Bronze 铜基				Ferrous 铁基		Nickel 镍基	
	CSB85HB1	CSB85HB2	CSB85HB11	CSB85HB12	CSB85HF14	CSB85HF18	CSB85HN22	CSB85HN23
	CuSn 8613/6-1	CuSn 8613/12-1	CuSnPb 8313/6-1	CuSnPb 8413/8-1	FeNiCu 8310/8-3	FeCu 9404/8-2	NiFeCu 6033/10-2	FeCrNi 7218/20
Density 密度g/cm ³	6.8	6	7.2	5.8	6	5.9	6	5.8
Hardness 硬度HB	≥40	≥50	≥50	≥50	≥80	≥50	≥45	≥55
Compressive strength 抗压强度 Mpa	300	180	380	220	550	180	240	180
Max. Static load 最大静承载 Mpa	100	50	100	50	100	80	100	100
Max. Dynamic load 最大动承载 Mpa	50	25	50	25	50	40	50	50
Max. Speed 最大线速度 m/min	15	20	15	15	10	10	10	10
Max. PV 最大PV值 N/mm ² ·m/min	60	60	60	60	48	48	36	30
Max. Temperature 使用温度 °C	-50~+150	-50~+150	-50~+150	-50~+150	0~+600	0~+450	-200~+650	-100~+750
Coef. of friction 摩擦系数 μ	0.12~0.18	0.10~0.15	0.15~0.22	0.12~0.18	0.30~0.45	0.30~0.45	0.25~0.40	0.35~0.50
Coef. of linear thermal expansion 线膨胀系数 10 ⁻⁶ /K	18	18	18	18	13	13	12	18

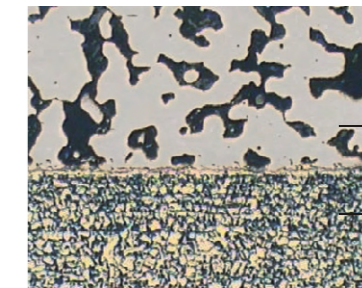
CSB85HF High performance Sintered Oilless Bearing 高性能粉末冶金自润滑轴承

Material Structure 材料组织



Solid lubricants
固体润滑剂
Fe-Cu alloy
铁铜合金

CSB85HFH microstructure
CSB85HFH 金相图



Solid lubricants
固体润滑剂
Fe-Cu alloy
铁铜合金
Steel backing
碳钢基板

CSB85HFS microstructure
CSB85HFS 金相图

CSB85HF metal self-lubricating bearings with iron-copper alloy as base materials and processed by powder metallurgy sintering technology, in order to enhance its self-lubricating properties in the material containing uniformly dispersed graphite and molybdenum disulphide, these solid lubricant will be released at the bearing surface and easily form a firmly adhesive solid lubricant film as wear occurs, in addition, the bearing have been impregnated by oil which ensures a lower dynamic coefficient of friction as well as static. But the conventional sintered oilless bearing have lower performance under extremely high load conditions, CSB succeed developed new higher performance sintered oilless bearing CSB85HFH and CSB85HFS applied for higher load application.

CSB85HFH is iron-copper based sintered bearing material with special hardened treatment, this process created high-strength martensitic structure, thus improved the mechanical strength of the bearing and anti-wear performance;

CSB85HFS are based on HFH as bearing layer and diffusion bonding with carbon steel, this new technology solved the conventional bonding strength to meet high load capacity and impact resistance.

CSB85HF金属自润滑轴承以铁铜合金为主要原材料采用粉末烧结技术加工而成，为了提高它的自润滑性能在材料组织内均匀的分散着以石墨为主的固体润滑剂，并经含油处理以获得几乎相同的静摩擦和动摩擦系数；这些固体润滑剂在摩擦发生时会被及时的释放到轴承表面，形成具有低剪切强度的固体转移膜以达到自我润滑的目的。但传统的粉末冶金在高负载条件下耐磨性能和抗冲击强度无法满足实际使用，由此我们开发了CSB85HFH高性能粉末冶金自润滑轴承和CSB85HFS钢基高性能粉末冶金自润滑轴承。

CSB85HFH是在原有材料的基础上进行特殊的热处理工艺，使得组织内部形成高强度的马氏体结构从而提高了轴承的整体机械强度和抗磨性能；

CSB85HFS则是以HFH作为耐磨层通过特殊扩散烧结的方法使得与钢套表面达到有效的结合，解决了传统工艺粘附力不够的缺点；这种新型的材料结构使得轴承表面的受力可以及时传递到钢基体上，因此大大提高了轴承整体的承载能力和抗冲击能力。

CSB85HF High performance Sintered Oilless Bearing 高性能粉末冶金自润滑轴承

Material properties 材料特点

- Allows maintenance-free and long-life operation
- Suitable for high static and dynamic load
- With low and smoothly coefficient of friction and without stick-slip effects
- Suitable for dirt, impact and edge load
- Good thermal conductivity property
- Can be used for large temperature range
- Suitable for reciprocating, rotating and oscillating movement with start frequency and difficulty to form oil film occasions
- With lower wear rate and long life service
- 可以长期使用而无需维护;
- 具有几乎相同的静摩擦系数和动摩擦系数, 无爬行现象;
- 设计用于很高的承载工况;
- 具有耐粉尘、耐冲击和耐边缘负载的能力;
- 具有良好的导热性能;
- 可在较宽的温度范围内使用;
- 适合于往复、旋转和摇摆等启动频繁又难以形成油膜的部位;
- 具有很低的磨损率, 使用寿命长;

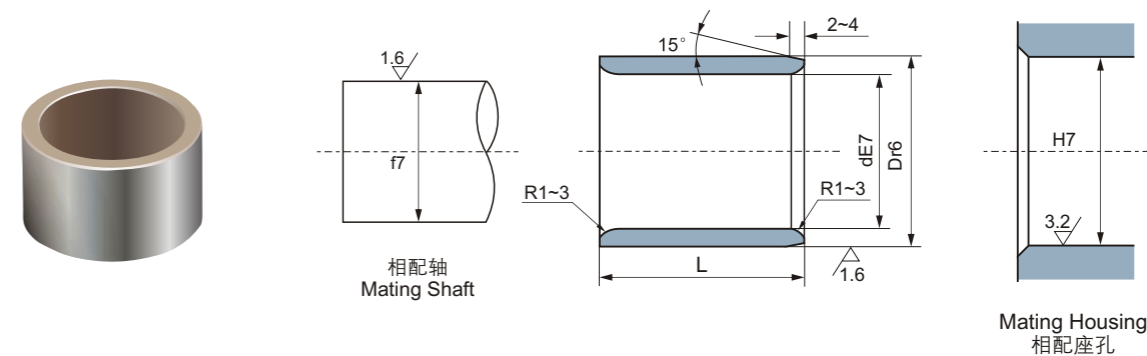
Typical Applications 典型应用

- Joint bushes for excavator
- Pin bushes for hydraulic cylinder
- Link bushes for construction and heavy industry machinery, like wheel loader, dump truck, forklift, crane etc.
- Tie-bar, Cross head pin bushes for Injection molding machinery, die casting machinery
- Industrial robot joint bushes
- Guide bushes for mold
- 挖掘机机身联接轴套;
- 液压油缸耳轴套;
- 建筑机械、重工业设备联接轴套, 比如装载机、叉车、起重机等;
- 射出成型机械、压铸机格林住、十字头导套;
- 产业机械机器人;
- 各类冲压、塑料模具导向套;

Tech. Data 技术参数

Material code 材料牌号		Unit 单位	CSB85HFH	CSB85HFS
Structure 材料结构		----	Sintered alloy 粉末烧结合金	Sintered alloy+ Steel backing 粉末烧结合金+钢基
Bearing alloy 合金成份		----	Fe+Cu+SL 铁铜合金+固体润滑剂	Fe+Cu+SL 铁铜合金+固体润滑剂
Hardness 硬度	Bearing alloy 合金层	----	HRB>70	HRB>70
	Steel 钢基	----	----	HRC>25
Bearing alloy density 合金层密度		g/cm ³	6.0~6.3	6.0~6.3
Oil impregnate 含油率		vol%	15%	15%
Max. Load 最大承载	Static load 静承载		75	75
	Dynamic load 动承载	Dry 干磨擦	25	25
		Lubrication 润滑	50	50
Max. V 最高速度	Dry 干磨擦		0.5	0.5
	Lubrication 润滑		1.0	1.0
Max. PV 最大PV值	Dry 干磨擦		1.6	1.6
	Lubrication 润滑		2.5	2.5
Service temperature 使用温度		℃	-40~+120	-40~+120

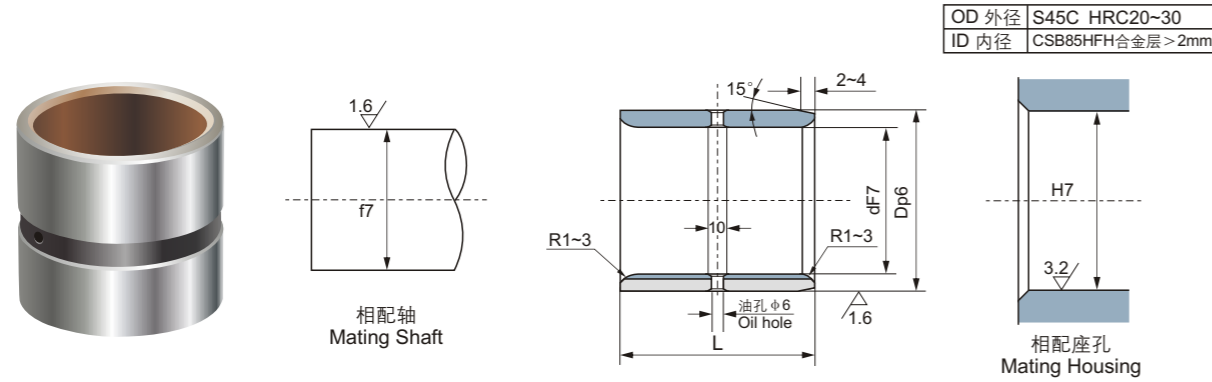
CSB85HF High performance Sintered Oilless Bearing 高性能粉末冶金自润滑轴承



Unt单位:mm

Standard No. 型号规格	ID	E7	OD	r6	L -0.10/-0.30																		
					8	10	12	15	16	19	20	25	30	35	40	50	60	70	80	90	100		
HFH-1218XL	12		18		■	■	■	■	■	■	■												
HFH-1319XL	13		19			■	■	■			■	■											
HFH-1420XL	14	+0.050 +0.032	20	+0.041 +0.028		■	■	■			■	■											
HFH-1521XL	15		21		■	■	■	■	■	■													
HFH-1622XL	16		22		■	■	■	■	■	■	■												
HFH-1824XL	18		24		■	■	■	■	■	■	■	■											
HFH-2028XL	20	+0.061 +0.040	28	+0.050 +0.034		■	■	■	■	■	■	■	■	■									
HFH-2020XL	20		30			■	■	■	■	■	■	■	■										
HFH-2533XL	25		33			■	■	■	■	■	■	■	■	■									
HFH-2535XL	25		35			■	■	■	■	■	■	■	■	■	■								
HFH-2838XL	28		38							■	■	■	■	■	■								
HFH-3038XL	30		38						■	■	■	■	■	■	■	■							
HFH-3040XL	30		40						■	■	■	■	■	■	■	■	■						
HFH-3544XL	35		44								■	■	■	■	■	■	■	■					
HFH-3545XL	35		45								■	■	■	■	■	■	■	■	■				
HFH-4050XL	40		50							■	■	■	■	■	■	■	■	■	■	■			
HFH-4555XL	45		+0.075 +0.050		55	+0.060 +0.041					■	■	■	■	■	■	■	■	■				
HFH-4560XL	45				60			■	■	■	■	■	■	■	■								
HFH-5060XL	50	60					■	■	■	■	■	■	■	■	■	■	■	■	■	■			
HFH-5062XL	50	62									■	■	■	■	■	■	■	■	■	■	■		
HFH-5065XL	50	65									■	■	■	■	■	■	■	■	■	■	■		■
HFH-5570XL	55	70															■	■	■	■			
HFH-6074XL	60	74															■	■	■	■	■	■	
HFH-6075XL	60	75													■	■	■	■	■	■			
HFH-6580XL	65	80														■	■	■	■	■			
HFH-7085XL	70	+0.090 +0.060	85	+0.073 +0.051												■	■	■	■	■	■		
HFH-7090XL	70		90															■	■	■	■	■	
HFH-7590XL	75		90																■	■	■	■	
HFH-7595XL	75		95																	■	■	■	
HFH-8096XL	80		96																		■	■	■
HFH-80100XL	80	100																	■	■	■		
HFH-90110XL	90	+0.107 +0.072	110	+0.076 +0.054																■	■		
HFH-100120XL	100		120																			■	■

CSB85HF High performance Sintered Oilless Bearing 高性能粉末冶金自润滑轴承

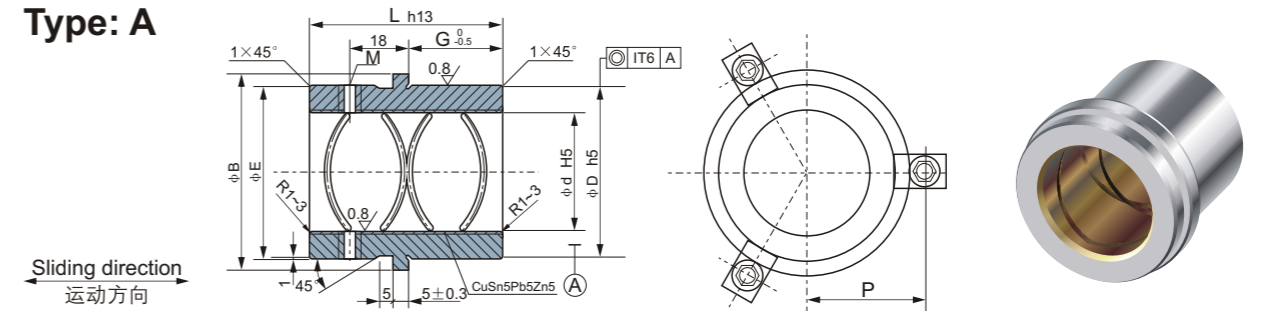


Unit单位:mm

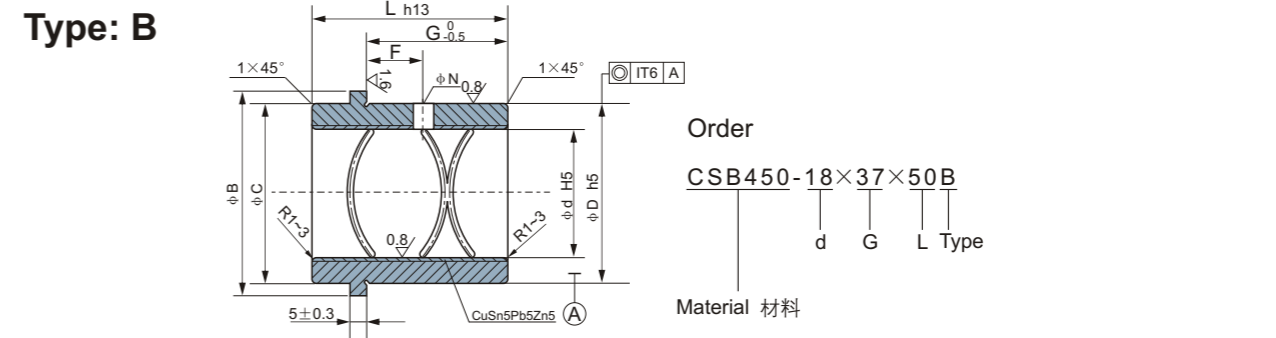
Standard No. 型号规格	ID	F7	OD	p6	L -0.10/-0.30														
					45	50	55	60	65	70	75	80	85	90	100	110	120	130	160
HFS-3545XL	35	+0.050 +0.025	45	+0.042 +0.026	■	■	■	■											
HFS-4555XL	45		55		■	■	■	■											
HFS-5060XL	50	+0.051 +0.032	60		■	■	■	■	■	■									
HFS-5065XL	50		65		■	■	■	■	■	■									
HFS-5565XL	55	+0.060 +0.030	65		■	■	■	■	■	■									
HFS-6075XL	60		75			■	■	■	■	■	■	■							
HFS-6580XL	65	+0.059 +0.037	80			■	■	■	■	■	■	■							
HFS-7085XL	70		85				■	■	■	■	■	■	■						
HFS-7186XL	71	+0.071 +0.036	86				■	■	■	■	■	■	■						
HFS-8095XL	80		95					■	■	■	■	■	■	■					
HFS-80100XL	80	+0.068 +0.043	100					■	■	■	■	■	■	■					
HFS-90105XL	90		105						■	■	■	■	■	■	■				
HFS-90110XL	90	+0.083 +0.043	110						■	■	■	■	■	■	■				
HFS-100115XL	100		115							■	■	■	■	■	■	■			
HFS-100120XL	100		120							■	■	■	■	■	■	■			
HFS-105125XL	105		125								■	■	■	■	■	■	■		
HFS-110125XL	110		125								■	■	■	■	■	■	■		
HFS-110130XL	110		130									■	■	■	■	■	■	■	
HFS-110135XL	110		135									■	■	■	■	■	■	■	
HFS-120140XL	120		140											■	■	■	■	■	■
HFS-125145XL	125		145												■	■	■	■	■

CSB450 Steel with bronze backed high precision bearings 钢基铜合金高精度导套

Type: A



Type: B



Order
CSB450-18×37×50B
d G L Type
Material 材料

Unit(单位): mm

Type 型号	d	D	B	C	E	F	G	L	M	N	P	Housing
B	18-19	28	34	29	—	8	18	31	—	5	20.5	28 ^{+0.013} ₀
				—	31	—	18	50	M6×1	—		
A	24-25	38	44	39	—	12	23	36	—	5	25.5	38 ^{+0.016} ₀
				—	41	—	18	55	M10×1	—		
B	30-32	45	53	48	—	16	30	43	—	5	31.5	45 ^{+0.016} ₀
				—	50	—	26	60	M10×1	—		
A	40-42	54	63	58	—	19	38	51	—	8	36.5	54 ^{+0.019} ₀
				—	60	—	30	67	M10×1	—		
B	50-52	65	79	74	—	19	47	61	—	8	44.5	65 ^{+0.019} ₀
				—	76	—	35	75	M10×1	—		
A	63	81	92	87	—	19	48	74	—	8	51	81 ^{+0.022} ₀
				—	89	—	35	110	M10×1	—		
B	80	100	111	106	—	19	61	74	—	8	60.5	100 ^{+0.022} ₀
				—	108	—	48	100	M10×1	—		

CSB600 Solid Bronze Turned Bearings 铜基精加工轴承



Structure 材料组织

Machined cast bronze bearings offer technically and economically favorable bearings solutions. It is with high load capability, low weight and good corrosion resistance. CSB can offer different types of bronze alloys according to the required life time, service etc. The tolerance is much tighter than wrapped bronze bushes.

精加工铜合金轴承提供了简单、经济的轴承运用方式，具有承载高，耐腐蚀性好，尺寸加工任意性等特点。同时CSB可以根据不同的使用工况提供不同牌号的铜合金，并按照要求加工出不同的形式，它比卷制类铜轴承具有更高尺寸精度。

Available 可供形式

Cylindrical bushes 直套

Thrust washers 翻边

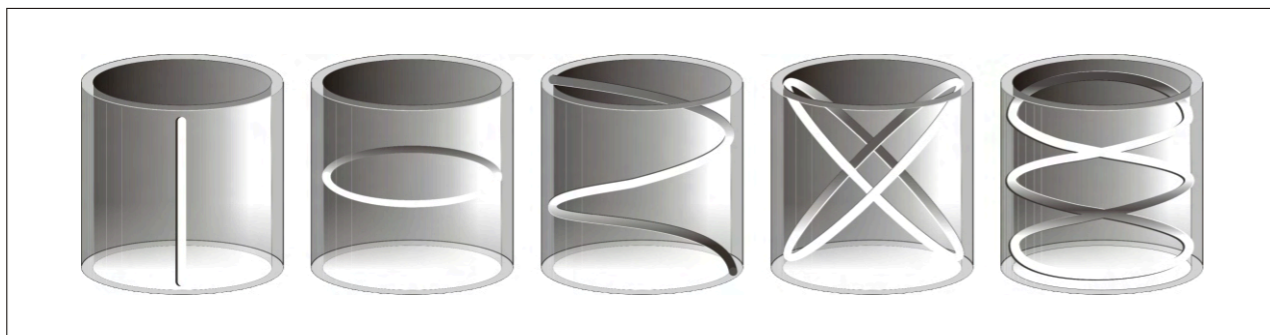
Flange bushes 垫片

Non-standard parts as design 滑板

CSB600 supplied by customer ordering, the tolerance is according to CSB650 standard dimension.

CSB600可以根据客户要求加工，公差参照标准的CSB650尺寸表。

Oil Groove 油槽



Tech. Data 技术参数

Material 材料牌号	600	600S1	600S2	600S3	600S4	600S5
	CuZn25Al6Mn4Fe3	CuSn5Pb5Zn5	CuAl10Ni5Fe5	CuSn12	CuSn10Pb10	CuZn25Al6Mn4Fe3
Density 密度	8.0	8.9	7.8	8.9	8.9	8.0
Yield point 屈服强度 N/mm ²	>450	>90	>260	>150	>100	>450
Tensile strength 抗拉强度 N/mm ²	>750	>200	>600	>260	>210	>800
Elongation 延伸率 %	>12	>15	>10	>8	>8	>8
Hardness 硬度 HB	>210	>70	>150	>95	>75	>250

CSB200 Harden steel turned bearings 钢基精加工轴承



CSB200C/CSB200G



CSB250C/CSB250S5

CSB200以优质碳素钢为基体，通过合理的油路设计，在装配时涂上油脂使得其在工作时能较长时间的储存所需要的足够油脂，并且能均匀的分布在轴承及轴的表面上，从而达到了延长使用寿命缩短加油频率的目的；同时由于特殊的油路系统能够存入工作时侵入轴承的灰尘和其它异物，从而最大限度的降低对轴承使用过程中的影响。CSB200另外一个特殊性是在轴承的工作表面经过一种特殊工艺的处理，使其表面覆盖了一层特殊的固体润滑剂，这层特殊的润滑剂在起始动作时能很快的转移到对磨轴的表面上，从而较快的降低了起始摩擦系数，提高了轴承的耐磨性。

CSB200 is produced by carbon steel with oil groove, the initial grease given can be deposited the mass lubrication for long time working. The work surface has been sprayed a special solid lubricant, this solid lubricant can be transfer to the mating material during the operation and forming a solid lubrication film between the bearing and shaft which make the bearing material have high load capacity with lower friction and excellent wear resistance.



CSB250则在CSB200的基础上进行了改良，以固体润滑剂嵌入替代了原有的披覆方式，使得产品在使用过程中提供了源源不断的润滑源，从而达到免维护的目的。

The CSB250 bearing material is developed from the CSB200, the solid lubricant have been embedded instead of covering on surface which can provide the solid lubricant for much long time during the operation even without any oil given. This material provides a maintenance-free design solution, particularly for high load, intermittent of oscillating motion with lower speed and excellent wear resistance required.



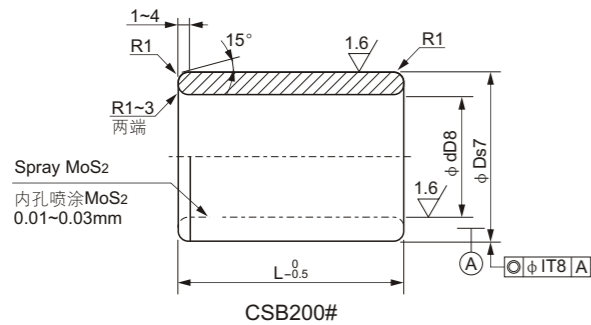
CSB200 Harden steel turned bearings 钢基精加工轴承

Material characteristic 材料特性

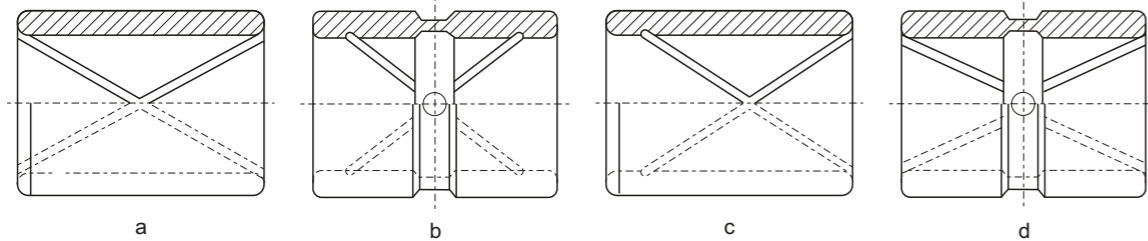
Unit(单位): mm

Standard CSB标准	CSB200C	CSB200G	CSB250S	CSB250S5
Base material 基材	S45C	GCr15	S45C	GCr15
Coe. of linear expansion 线胀系数	$1.1 \times 10^{-5}/^{\circ}\text{C}$	$1.1 \times 10^{-5}/^{\circ}\text{C}$	$1.1 \times 10^{-5}/^{\circ}\text{C}$	$1.1 \times 10^{-5}/^{\circ}\text{C}$
Temp. °C 使用温度	-100~+300	-100~+300	-100~+300	-100~+300
Hardness 硬度	HRC≥40	HRC≥50	HRC≥40	HRC≥50
Max. Load 最大承载 (Mpa)	150Mpa	200Mpa	150Mpa	200Mpa
Max. speed 最大线速度 (m/min)	10	10	15	15
Solid Lubricant 润滑剂形式	With film 表面覆盖 0.01-0.03mm		镶嵌于基体 Solid plug embedded	
Mating tolerance 公差配合	Mating Housing 装配座孔: H7 Mating shaft 相配轴: e7/f7			

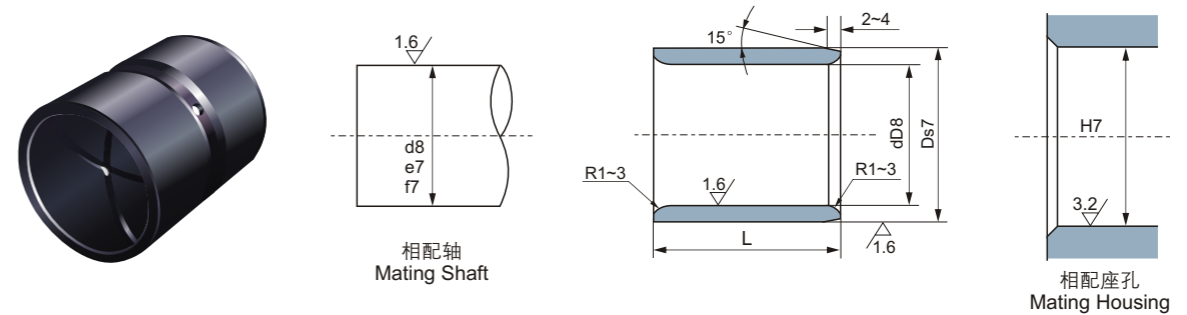
Bushes sketch 轴套示意图



Typical oil groove type 典型油槽形式



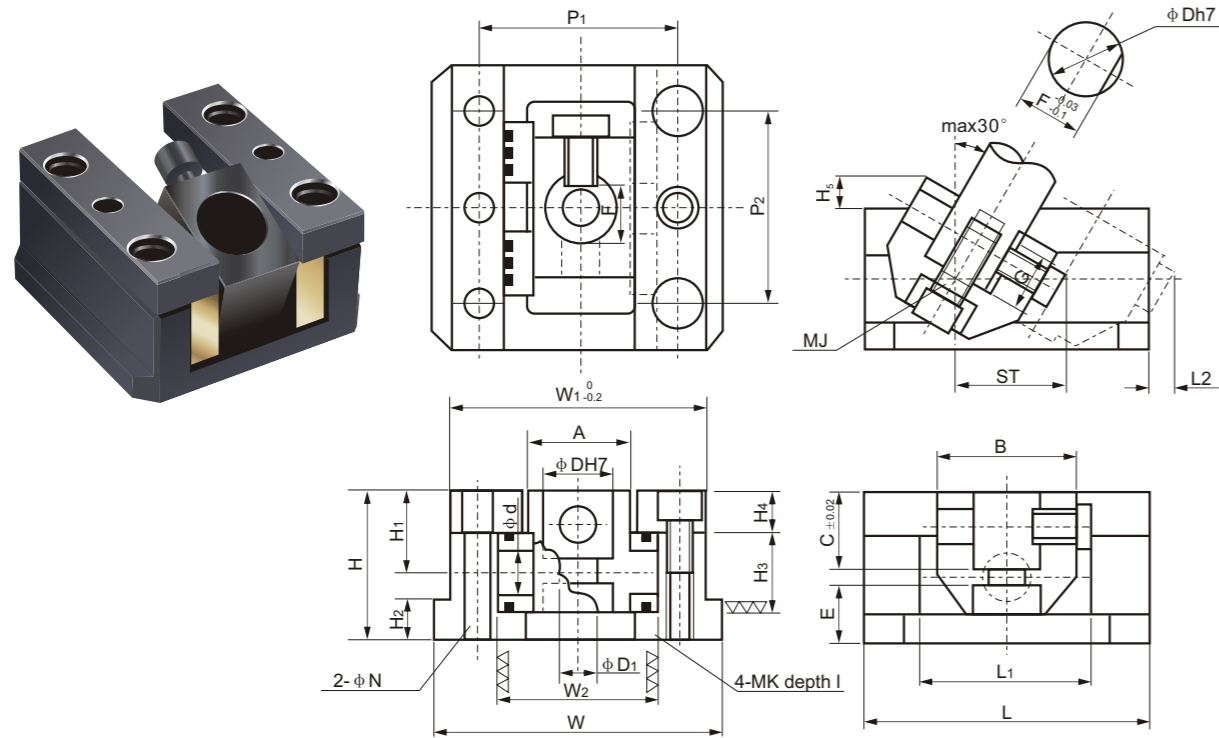
CSB200 Serious standard size 轴套尺寸表



Unit(单位): mm

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

JOCU-S Oilless Unit Parts 自润滑模架

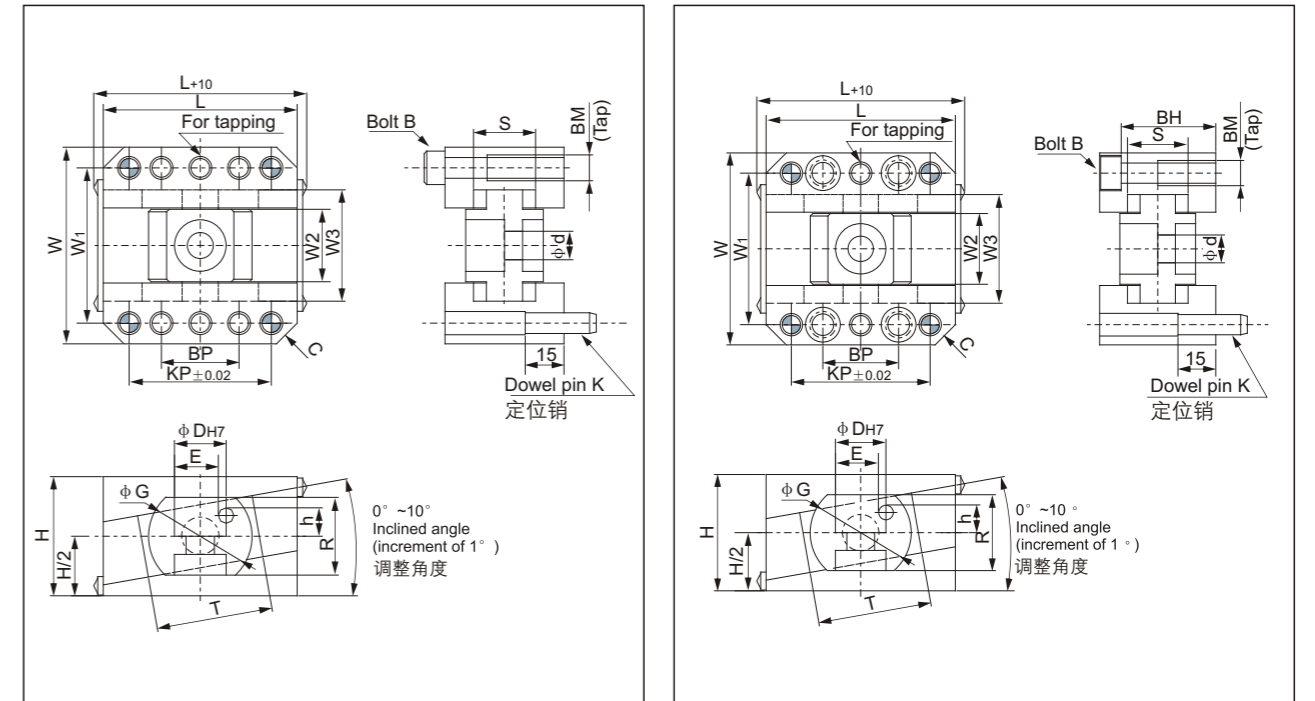


Unit(单位): mm

Standard No. 型号规格	φ D	φ d	φ D1	A	B	C	E	F	G	MJ	H	H1	H2	H3	H4
JOCU-S-8	8	7	4.5	11	20	8	10	7	8	M4	22	12.5	5	11	7
JOCU-S-10	10	7	5.5	15	25	10	12.5	9	9	M5	27	15.5	5	15	8
JOCU-S-12	12	10	7	17	25	12	15	11	10	M6	32	18	7	16	10
JOCU-S-16	16	12	9	22	30	16	15	14.5	12	M8	36	20	8	20	10
JOCU-S-20	20	14	11	26	40	20	16	18	16	M10	42	23	11	22	12
JOCU-S-25	25	16	14	32	45	25	17	22.5	20	M12	50	28	15	26	15
JOCU-S-30	30	18	14	38	50	30	17	27	25	M12	55	30	15	30	15
JOCU-S-35	35	20	14	45	60	35	18	32	30	M12	62	35	15	34	18
JOCU-S-40	40	25	18	55	70	40	19	36	35	M16	70	40	15	44	18
JOCU-S-45	45	30	18	60	80	45	24	40	40	M16	80	45	15	50	20

Standard No. 型号规格	H5	L	L1	L2	W	W1	W2	P1	P2	MK	l	φ N	ST
JOCU-S-8	10.5	32	20	3.6	33	30	19	24	20	M3	9.5	3	10
JOCU-S-10	11.3	45	25	4.5	45	40	25	32	30	M4	14	4	18
JOCU-S-12	4	50	30	8	57	51	31	39	35	M6	14	6	20
JOCU-S-16	5	65	40	8	65	58	38	46	40	M6	16	6	25
JOCU-S-20	8	80	50	8	80	72	44	56	55	M8	19	8	30
JOCU-S-25	8	90	55	12	93	85	52	66	65	M10	22	10	35
JOCU-S-30	9	100	60	12	101	93	60	74	70	M10	25	10	40
JOCU-S-35	10	120	75	8	120	110	70	85	80	M12	27	10	45
JOCU-S-40	12	135	85	8	130	120	80	95	90	M12	30	10	50
JOCU-S-45	14	150	95	10	140	130	90	105	110	M12	35	10	55

JOCU-FC/JOCU-F Oilless Unit Parts 自润滑模架



JOCU-FC

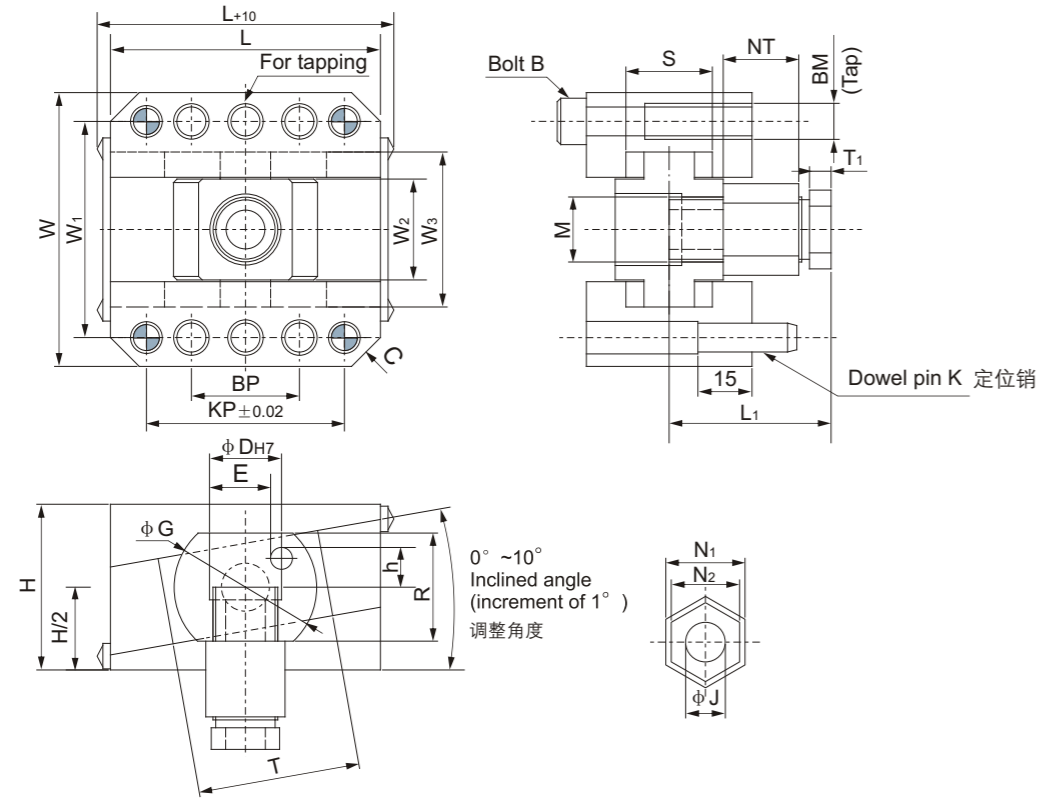
JOCU-F

Unit(单位): mm

Standard No. 型号规格	D (pin diameter) 销轴尺寸	W	L	H	W1	BP	B (Accessory) 选配	KP	k	BM	E	h	C	T	d	W2	W3	G	R	S
JOCU-FC-8	8	41	44	24	33	12	M3×30	25	φ 4×25	M4	7.5	6.5	3	25	5	12	24	20	16	13
JOCU-FC-10	10	47	50	28	38	16	M4×35	30	φ 5×25	M5	8.5	6.5	3	32	6	14	28	20	16	17
JOCU-FC-12	12	53	60	36	42	20	M6×50	40	φ 6×25	M8	10	8	4	40	7	17	31	25	20	20
JOCU-FC-25	25	75	85	48	62	40	M8×65	65	φ 8×30	M10	22	14	8	50	14	33	48	45	35	26
JOCU-FC-30	30	81	100	54	68	50	M8×70	80	φ 8×30	M10	27	15	8	60	14	38	55	50	38	30
JOCU-FC-35	35	100	115	60	80	50	M10×80	85	φ 10×30	M12	31	15	8	70	14	44	64	55	40	34
JOCU-FC-40	40	108	125	65	88	50	M10×85	85	φ 10×30	M12	36	16	8	80	18	50	72	60	43	38

Standard No. 型号规格	D (pin diameter) 销轴尺寸	W	L	H	W1	BP	B (Accessory) 选配	KP	k	BM	BH	E	h	C	T	d	W2	W3	G	R	S
JOCU-F-16	16	64	70	40	50	25	M6×45	50	φ 6×25	M8	33.5	13	10	6	45	9	21	36	30	24	24
JOCU-F-20	20	76	75	46	60	30	M8×55	55	φ 8×30	M10	37.5	17	13	8	45	11	28	43	40	30	24
JOCU-F-25	25	81	85	48	65	40	M8×55	65	φ 8×30	M10	39.5	22	14	8	50	14	33	48	45	35	26
JOCU-F-30	30	88	100	54	72	50	M8×60	80	φ 8×30	M10	45.5	27	15	8	60	14	38	55	50	38	30

JOCU-MC Oilless Unit Parts 自润滑模架

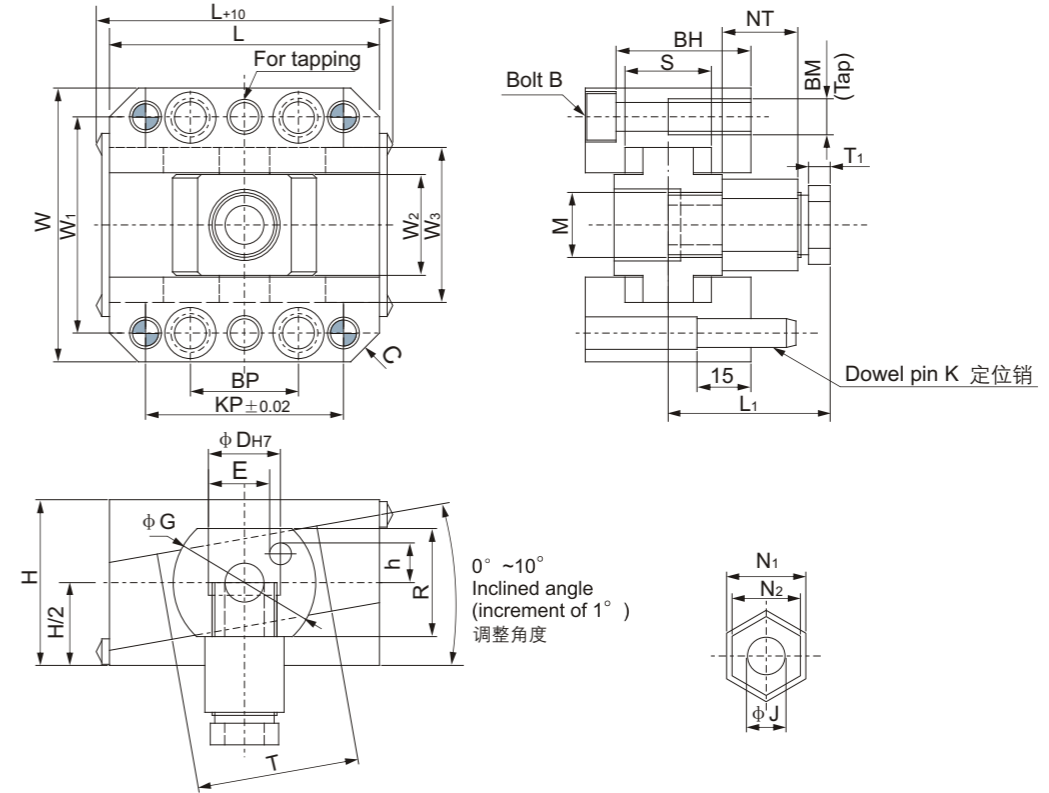


Unit(单位): mm

Standard No. 型号规格	D (pin diameter) 销轴尺寸	W	L	H	W ₁	BP	B (Accessory) 选配	KP	k	BM	E	h
JOCU-MC-25	25	75	85	48	62	40	M8×65	65	φ8×30	M10	22	14
JOCU-MC-30	30	81	100	54	68	50	M8×70	80	φ8×30	M10	27	15
JOCU-MC-35	35	100	115	60	80	50	M10×80	85	φ10×30	M12	31	15
JOCU-MC-40	40	108	125	65	88	50	M10×85	85	φ10×30	M12	36	16

Standard No. 型号规格	C	T	N ₁	N ₂	NT	J	W ₂	W ₃	G	R	S	L ₁	T ₁	M×Pitch
JOCU-MC-25	8	50	27	22	21.5	13	33	48	45	35	26	49	7	M22×P1.5
JOCU-MC-30	8	60	32	27	26	13	38	55	50	38	30	55	7	M27×P1.5
JOCU-MC-35	8	70	36	32	28	13	44	64	55	40	34	58	7	M30×P1.5
JOCU-MC-40	8	80	41	38	29	17	50	72	60	43	38	60.5	7	M36×P1.5

JOCU-M Oilless Unit Parts 自润滑模架



Unit(单位): mm

Standard No. 型号规格	D (pin diameter) 销轴尺寸	W	L	H	W ₁	BP	B (Accessory) 选配	KP	k	BM	BH	E
JOCU-M-16	16	64	70	40	50	25	M6×45	50	φ6×25	M8	33.5	13
JOCU-M-20	20	76	75	46	60	30	M8×55	55	φ8×30	M10	37.5	17
JOCU-M-25	25	81	85	48	65	40	M8×55	65	φ8×30	M10	39.5	22
JOCU-M-30	30	88	100	54	72	50	M8×60	80	φ8×30	M10	45.5	27

Standard No. 型号规格	h	C	T	N ₁	N ₂	NT	J	W ₂	W ₃	G	R	S	L ₁	T ₁	M×Pitch
JOCU-M-16	10	6	45	17	14	21	9	21	36	30	24	24	42	6	M14×P1.5
JOCU-M-20	13	8	45	22	19	21	11	28	43	40	30	24	45	6	M18×P1.5
JOCU-M-25	14	8	50	27	22	21.5	13	33	48	45	35	26	49	7	M22×P1.5
JOCU-M-30	15	8	60	32	27	26	13	38	55	50	38	30	55	7	M27×P1.5

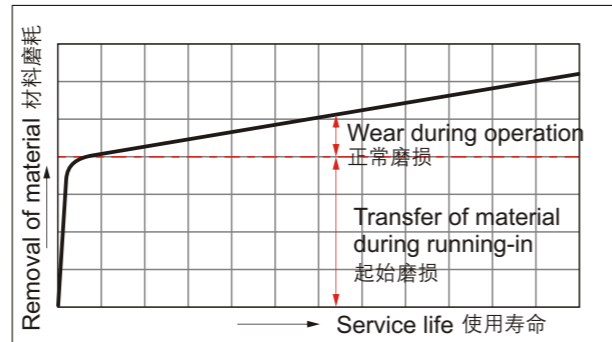
The Technical 相关设计

Influences on the service life

影响轴承使用寿命的因素

Wear and service life of the CSB slide bearings are dependent on the following:

- Specific bearing load
- Sliding speed
- PV value
- Roughness depth of the mating surface
- Mating surface material and Temperature etc.
- 轴承载荷和负载方式
- 线速度
- PV值
- 对磨件表面光洁度
- 对磨件热处理方式
- 环境温度等



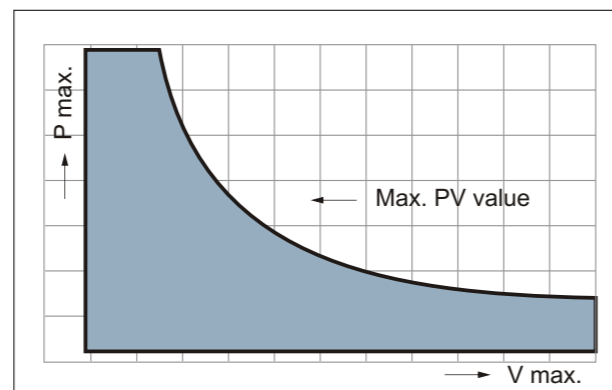
PV Value Calculation PV值的计算 $PV=P \times V(N/mm^2 \times m/s)$

The PV value has a considerable influence on the bearing service life. It is the product of the specific load P and the sliding speed V and the PV is one of the most important design data, it is recommended a PV value lower than the required specification will leads to a longer service life.

PV value listed in this catalogues is allowable PV value for radial journal rotational operation. In many cases, engineers need to take into account the actual bearing work situation, designing small PV values as far as possible so as to extend the service life of bearing, of course the suitable data will need a lot of experiments to verify.

Also, the environmental temperature is necessary to consideration, the clearance can be changed caused by the dimensional change of the bearing and housing, the mating material hardness change from the environment temperature, the interference and so on.

PV是指轴承在一定的承载和线速度条件下的乘积之和，PV值与轴承的使用寿命成反比例关系；因此建议设计时尽量使用比较低的安全的PV值，以确保轴承会有更长的使用寿命；虽然样本中有明确了各类材料的PV值但是这些都是在径向旋转条件下测得的，而事实上设计人员在设计轴承寿命时还需要考虑很多因素。另外环境温度是一个必须要考虑的参数，由于温度的上升会导致轴承与座孔间的配合间隙发生变化，轴与轴承内孔的配合公差也会发生变化。



The Technical 相关设计

Direction of motion and PV value 运转方式和PV值的计算

	Load 负载 P N/mm ² {kgf/cm ² }	Velocity V 线速度 m/s {m/min}	PV Value PV值 N/mm ² *m/s {kgf/cm ² *m/min}
1. Rotating motion in single direction of radial journal 旋转运动	$\frac{F}{dL}$ $\left\{ \frac{10^2 F}{dL} \right\}$	$\frac{\pi dn}{10^3}$ $\left\{ \frac{\pi dn}{10^3} \right\}$	$\frac{\pi Fn}{10^3 L}$ $\left\{ \frac{\pi Fn}{10L} \right\}$
2. Oscillating motion 摇摆运动	$\frac{F}{dL}$ $\left\{ \frac{10^2 F}{dL} \right\}$	$\frac{dc \theta}{10^3}$ $\left\{ \frac{\pi dc \theta}{180 \times 10^3} \right\}$	$\frac{Fc \theta}{10^3 L}$ $\left\{ \frac{\pi Fc \theta}{180 \times 10^2 L} \right\}$
3. Reciprocating motion 往复运动	$\frac{F}{dL}$ $\left\{ \frac{10^2 F}{dL} \right\}$	$\frac{2cS}{10^3}$ $\left\{ \frac{2cS}{10^3} \right\}$	$\frac{2FcS}{10^3 dL}$ $\left\{ \frac{FcS}{5dL} \right\}$
4. Thrust motion 推力运动	$\frac{4F}{\pi(D^2-d^2)}$ $\left\{ \frac{400F}{\pi(D^2-d^2)} \right\}$	$\frac{\pi Dn}{10^3}$ $\left\{ \frac{\pi Dn}{10^3} \right\}$	$\frac{4FDn}{10^3(D^2-d^2)}$ $\left\{ \frac{4FDn}{10(D^2-d^2)} \right\}$
	$\frac{4F}{\pi(D^2-d^2)}$ $\left\{ \frac{400F}{\pi(D^2-d^2)} \right\}$	$\frac{Dc \theta}{10^3}$ $\left\{ \frac{\pi Dc \theta}{180 \times 10^3} \right\}$	$\frac{4FDc \theta}{10^3 \pi(D^2-d^2)}$ $\left\{ \frac{4FDc \theta}{180 \times 10(D^2-d^2)} \right\}$
5. Plane reciprocating motion 平面滑动	$\frac{F}{BL}$ $\left\{ \frac{10^2 F}{WL} \right\}$	$\frac{2cS}{10^3}$ $\left\{ \frac{2cS}{10^3} \right\}$	$\frac{2FcS}{10^3 BL}$ $\left\{ \frac{FcS}{5WL} \right\}$

- F : Vertical load N {kgf}
- N : Number of rotation S⁻¹ {rpm}
- c : Cylic velocity of reciprocating or oscillating motion S⁻¹ {cpm}
- S : Stroke distance m {mm}
- θ : Oscillating angle rad
- d : Bearing ID mm {mm}
- D : Bearing OD mm {mm}
- L : Bearing length mm {mm}
- W : Bearing width mm {mm}

- F : 承载 N {kgf}
- N : 转数 S⁻¹ {rpm}
- c : 往复或摇摆数 S⁻¹ {cpm}
- S : 行程 m {mm}
- θ : 摇摆角度 rad
- d : 轴承内径 mm {mm}
- D : 轴承外径 mm {mm}
- L : 轴承高度 mm {mm}
- W : 轴承宽度 mm {mm}

The Technical 相关设计

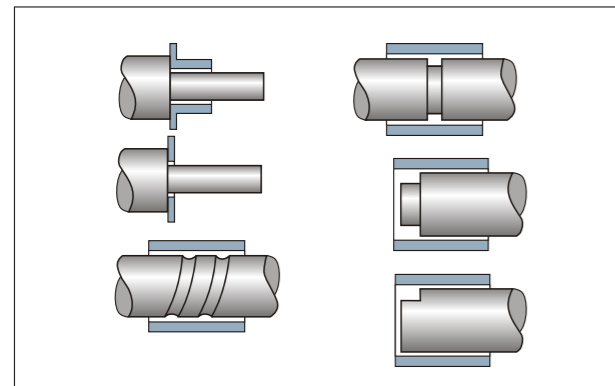
Mating Shaft 相配轴

Bearing performance is influenced by the material, hardness, surface roughness and surface treatment of the mating shaft. If used in a corrosive environment such as in the seawater, or in the chemical liquid, double or triple chrome plating should be consideration.

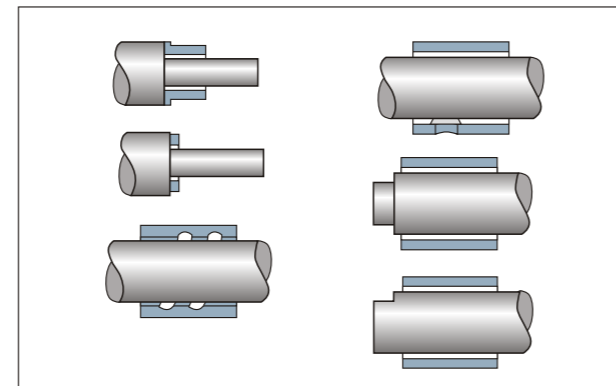
相配轴的材料、硬度、表面粗糙度和表面处理对轴承的使用有很大的影响，以下推荐材料可供参考；另外，在海水、药液等腐蚀场合下使用时建议使用不锈钢或表面镀铬处理。

Bearing material 轴承材料	Bearing load 面压	Shaft material recommend 推荐相配轴材料	Hardness 硬度	Roughness 表面粗糙度
Metallic Bearing 金属基 自润滑轴承	<25Mpa	Carbon steel, structure alloy steel (S45C,SNC415,SCM435), In corrosive environment, corrosion resistant steel (SUS304,SUS403,SUS420) 优质碳钢，合金钢，腐蚀条件下使用耐腐蚀钢	>HB150	<1.6a
	25~49Mpa	Surface hardening treatment such as induction hardening and carburizing should be implemented for the above materials. 表面硬化处理如渗碳处理、感应淬火等	>HB250	<1.6a
	49~98Mpa	In addition to surface hardening treatment as above, additional surface treatment such as nitride treatment and hard chrome plating for above material. 以上处理外同时作渗氮处理、镀硬铬等	>HRC50	<1.6a

Incorrect 不正确设计



Correct 正确设计



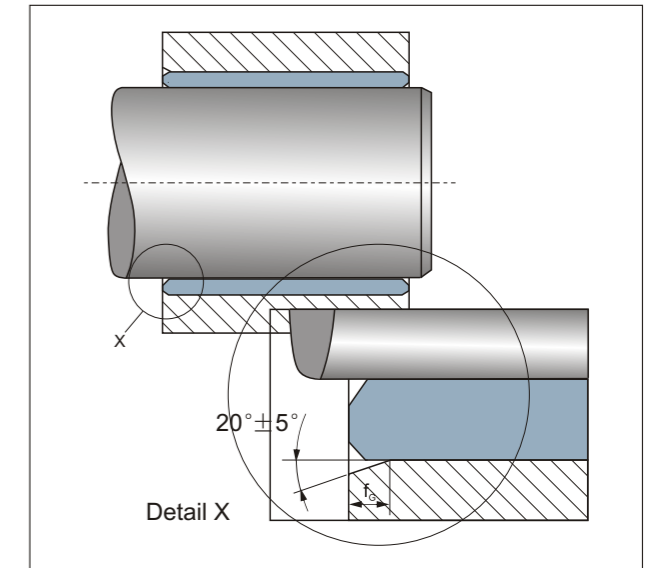
The Technical 相关设计

Housing 轴承座孔

There should be chamfers on the housing bore during the assembly. A chamfer $F_6 \times 20^\circ \pm 5^\circ$ is important for the easier pressing of the bushing into the housing

CSB设计的标准轴承要求座孔必须加工到H7公差，最大表面粗糙度为Ra3.2。为了便于轴承的安装，轴承座孔应有 $20^\circ \pm 5^\circ$ 的倒角。

Housing bore diameter d_6 座孔	Chamfer with f_6 倒角
$d_6 \leq 30$	0.8 ± 0.3
$30 < d_6 \leq 80$	1.2 ± 0.4
$80 < d_6 \leq 180$	1.8 ± 0.8
$180 < d_6$	2.5 ± 1.0



Wall thickness 壁厚设计

Wall thickness of the metallic bearings can be made thin to realize smaller mechanical design.

金属自润滑轴承的壁厚可以尽可能的设计成薄壁结构已达到尺寸的最小化，建议壁厚设计如下：

ID 内径	10mm	20mm	50mm	100mm	300mm
Wall thickness 壁厚	3~4mm	3~5mm	7.5~10mm	10~15mm	20~30mm

Length 长度设计

In general, length of bearing is calculated by the ratio of the bearing length and inner side diameter, for normal application: the Length/ID = 0.5~2.0, for high load, high speed and uneven contact is recommend: the Length/ID = 0.8~1.0.

一般来说，轴承的长度是根据轴承的长度和内径比计算得到的，比如一般工况我们建议长度和内径比为0.5~2.0，而对于高速、高载和不平稳的接触面运用时建议长度和内径比为0.8~1.0。

The Technical 相关设计

Periodic greasing 定期给油

CSB metallic self-lubricating bearings designed for maintenance-free and dry operation, but periodic greasing or oiling will improve the bearing performance and extension the service life.

- Reduction of coefficient of friction and wear amount
- Smoothly running and Increase the limited PV value
- Cooling effect
- Greatly extension the bearing service life
- Protect the contamination reach the bearing section
- Prevent mating material rust

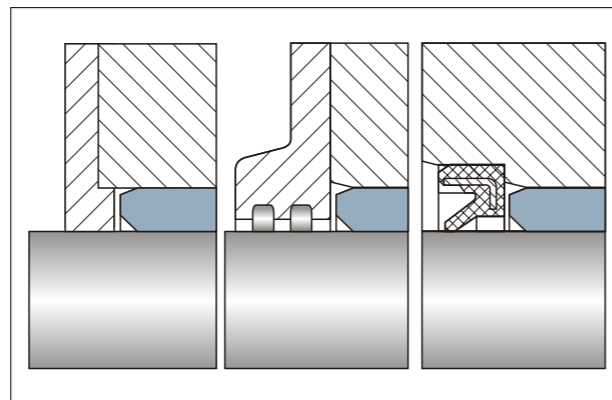
CSB金属基自润滑轴承设计为自润滑免维护的轴承材料，但在润滑条件下更能表现出其优越的性能。

- 降低摩擦系数，减少磨损量
- 运行更平稳，提高PV值
- 带走轴承运行过程中产生的热量
- 可以大大延长轴承的使用寿命
- 防止异物的侵入
- 防止对磨件的生锈现象

Seals 密封件

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 can not reach the bearing section. if the contamination is critical, a collar of grease or a shaft seal is recommended.

金属基自润滑轴承允许一些不会损害轴承表面的异物进入，但当异物的侵入增加或高磨损型物质进入时应当安装合适的密封件以提高轴承的使用寿命。

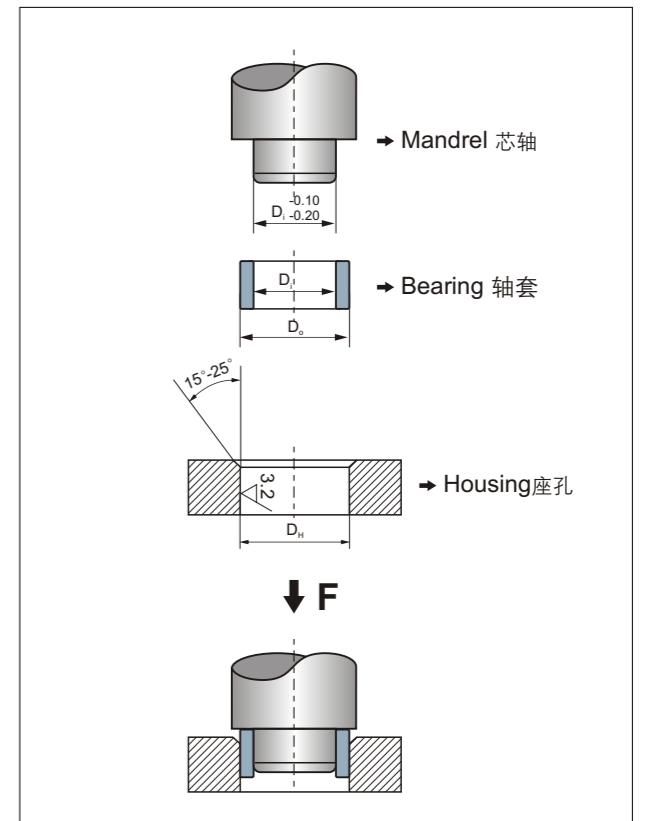


Bearing Installation 轴承的装配

Pressure assembly 机械压装

In most applications, CSB 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.

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。



Cooling assembly 冷冻装配

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℃~-70℃, cooling time should be more than one hour, details according to the bushing wall thickness and interference design.

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℃~-70℃，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。

Calculation of bearing shrinkage amount of outer diameter:

轴承的收缩量可以根据以下公式计算：

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

ΔD : Shrinkage of bearing OD 外径收缩量

D: Bearing OD 轴承外径

α : Coefficient of thermal expansion 线性膨胀系数 (1/10⁵k)

ΔT : Temperature difference 温度差

Bearing Installation 轴承的装配

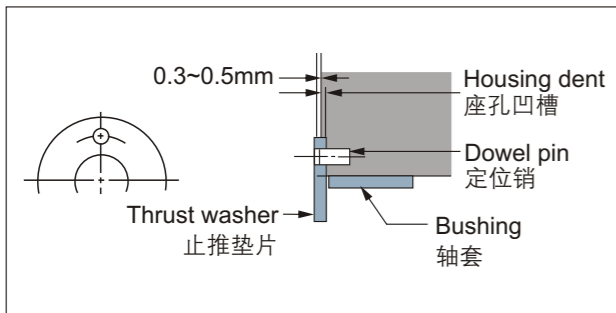
Thrust washers and plate fit

止推垫片和滑板的安装

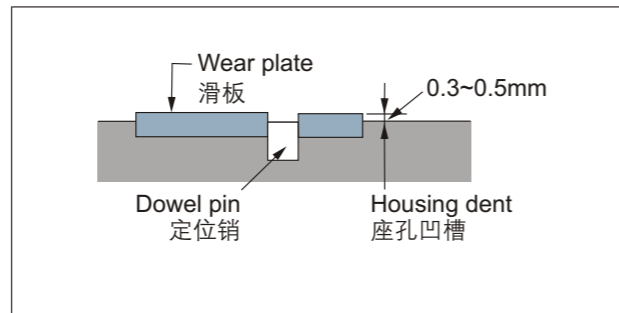
It is recommend to install the thrust washers and sliding plates with the hollow indented housings. To avoid the moving of such parts, a dowel pins is recommended to be installed.

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。

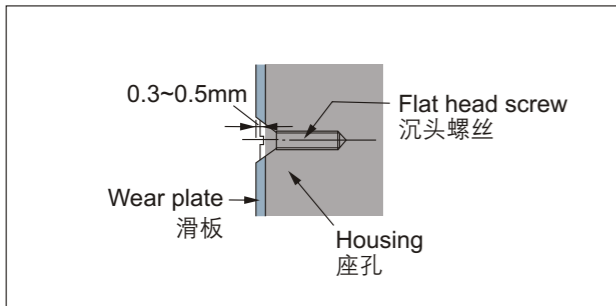
1. Dowel pin application(thrust washer) 定位销安装



2. Inlaid installation(plate) 镶嵌式安装



3. Flat head screw application 沉头螺丝安装



Surface Roughness Table 表面粗糙度对照表

CHINA 中国 GB 1031-83 ≈ISO 468-83			UK 英国 BS 1134-61		USA 美国 ASAB 46.1-62		GERMANY 德国 DIN4763-60		SWITZERLAND 瑞士 VSM 10321-62		ITALY 意大利 UNI 13963-60	POLAND 波兰 PN 58/M 042-51			CZECH 捷克 CSNo 14450-61			JAPAN 日本 JIS B0601-70									
Ra (μ)	Rz Ry (μ)	Code	Ra (μ in)(μ)	Code	Ra (μ in)(μ)	Code	Ra (μ)	Rz (μ)	Code	Ra (μ)	Code	Ra (μ)	Rz (μ)	Code	Ra (μ)	Rz (μ)	Code	Ra (μ)	Rz (μ)	Rmax (μ)	Code						
0.008	0.032	0.012/0.009					0.01	0.04					0.01	0.05	√14												
0.01	0.04																	0.012	0.05			(0.0125a)	(0.05S)				
0.012	0.05																										
0.016	0.063	0.025					0.016	0.063																			
0.02	0.08																										
0.025	0.10		1(0.025)				0.025	0.10		0.025	N1		0.025					0.025	0.10				0.1Z	0.1S			
0.032	0.125	0.05																									
0.04	0.16						0.04	0.16																			
0.05	0.20		2(0.05)							0.05	N2		0.05										0.05a	0.2Z	0.2S		
0.063	0.25	0.10					0.063	0.25																			
0.08	0.32																										
0.10	0.40		4(0.10)				0.10	0.40		0.1	N3		0.1										0.1a	0.4Z	0.4S		
0.125	0.50	Rz0.5					0.125	0.50																			
0.16	0.63						0.16	0.63																			
0.20	0.80		8(0.2)							0.2	N4		0.2											0.2a	0.8Z	0.8S	
0.25	1	Rz1					0.25	1																			
0.32	1.25						0.32	1.25																			
0.40	1.6		16(0.4)				0.40	1.60		0.4	N5		0.4										0.4a	1.6Z	1.6S		
0.50	2	0.80								0.5	N6		0.5														
0.63	2.5						0.63	2.5																			
0.8	3.2		32(0.8)																					0.8a	3.2Z	3.2S	
1	4						1	4																			
1.25	5	1.60					1.25	5																			
1.6	6.3		63(1.6)				1.6	6.3		1.6	N7		1.6											1.6a	6.3Z	6.3S	
2	8																										
2.5	10	3.2					2.5	10																			
3.2	12.5		125(3.2)							3.2	N8		3.2											3.2a	12.5Z	12.5S	
4	16						4	16																			
5	20	6.3																									
6.3	25		250(6.3)				6.3	25		6.3	N9		6.3											6.3a	25Z	25S	
8	32																										
10	40	Rz50					10	40																			
12.5	50		500(12.5)							12.5	N10		12.5												12.5a	50Z	50S
16	63						16	63																			
20	80	25																									
25	100		1000(25)				25	100		25	N11		25														
32	125																										
40	160	Rz200					40	160																			
125	200									50	N12																
63	250						63	250																			
80	320	100																									
250	400																										
							100	400																			
							160	630																			
							250	1000																			
								1600																			
								2500																			

μ=0.000001m=0.001mm
 μin=0.000001 in=0.0254μ

Shaft Tolerance Table (ISO) 轴径公差

Unit(单位): mm

>	≤	c9	d8	e7	e8	f7	g6	h5	h6	h7	h8	js6	js7	k6	m6	n6	p6	p7	r6	s6
—	3	-60 -85	-20 -34	-14 -24	-14 -28	-6 -16	-2 -8	0 -4	0 -6	0 -10	0 -14	±3	±5	+6 0	+8 +2	+10 +4	+12 +6	+16 +6	+16 +10	+20 +14
3	6	-70 -100	-30 -48	-20 -32	-20 -38	-10 -22	-4 -12	0 -5	0 -8	0 -12	0 -18	±4	±6	+9 +1	+12 +4	+16 +8	+20 +12	+24 +15	+23 +15	+27 +19
6	10	-80 -116	-40 -62	-25 -40	-25 -47	-13 -28	-5 -14	0 -6	0 -9	0 -15	0 -22	±4.5	±7	+10 +1	+15 +6	+19 +10	+24 +15	+30 +15	+28 +19	+32 +23
10	18	-95 -138	-50 -77	-32 -50	-32 -59	-16 -34	-6 -17	0 -8	0 -11	0 -18	0 -27	±5.5	±9	+12 +1	+18 +7	+23 +12	+29 +18	+36 +18	+34 +23	+39 +28
18	24	-110 -162	-65 -98	-40 -61	-40 -73	-20 -41	-7 -20	0 -9	0 -13	0 -21	0 -33	±6.5	±10	+15 +2	+21 +8	+28 +15	+35 +22	+43 +22	+41 +28	+48 +35
24	30																			
30	40	-120 -182	-80 -119	-50 -75	-50 -89	-25 -50	-9 -25	0 -11	0 -16	0 -25	0 -39	±8	±12	+18 +2	+25 +9	+33 +17	+42 +26	+51 +26	+50 +34	+59 +43
40	50																			
50	65	-140 -214	-100 -146	-60 -90	-60 -106	-30 -60	-10 -29	0 -13	0 -19	0 -30	0 -46	±9.5	±15	+21 +2	+30 +11	+39 +20	+51 +32	+62 +32	+60 +41	+72 +53
65	80																			
80	100	-170 -257	-120 -174	-72 -107	-72 -126	-36 -71	-12 -34	0 -15	0 -22	0 -35	0 -54	±11	±17	+25 +3	+35 +13	+45 +23	+59 +37	+72 +37	+73 +51	+93 +71
100	120																			
120	140	-200 -300	-145 -208	-85 -125	-85 -148	-43 -83	-14 -39	0 -18	0 -25	0 -40	0 -63	±12.5	±20	+28 +3	+40 +15	+52 +27	+68 +43	+83 +43	+88 +63	+117 +92
140	160																			
160	180	-230 -330	-170 -242	-100 -146	-100 -172	-50 -96	-15 -44	0 -20	0 -29	0 -46	0 -72	±14.5	±23	+33 +14	+46 +17	+60 +31	+79 +50	+96 +50	+109 +80	+159 +130
180	200																			
200	225	-280 -395	-190 -271	-110 -162	-110 -191	-56 -108	-17 -49	0 -23	0 -32	0 -52	0 -81	±16	±26	+36 +4	+52 +20	+66 +34	+88 +56	+108 +56	+126 +94	+190 +158
225	250																			
250	280	-300 -430	-210 -299	-125 -182	-125 -214	-62 -119	-18 -54	0 -25	0 -36	0 -57	0 -89	±18	±28	+40 +4	+57 +21	+73 +37	+98 +62	+119 +62	+114 +108	+226 +190
280	315																			
315	355	-360 -500	-230 -327	-135 -198	-135 -232	-68 -131	-20 -60	0 -27	0 -40	0 -63	0 -97	±20	±31	+45 +5	+63 +23	+80 +40	+108 +68	+131 +68	+166 +126	+272 +232
355	400																			
400	450	-440 -595	-230 -327	-135 -198	-135 -232	-68 -131	-20 -60	0 -27	0 -40	0 -63	0 -97	±20	±31	+45 +5	+63 +23	+80 +40	+108 +68	+131 +68	+166 +126	+272 +232
450	500																			

Housing Tolerance Table(ISO) 座孔公差

Unit(单位): mm

>	≤	B10	C9	D8	E7	E8	F7	G7	H6	H7	H8	JS7	K7	M7	N7	P7	R7	S7	T7	
—	3	+180 +140	+85 +60	+34 +20	+24 +14	+28 +14	+16 +6	+12 +2	+6 0	+10 0	+14 0	±5	0 -10	-2 -12	-4 -14	-6 -16	-10 -20	-14 -24	—	
3	6	+188 +140	+100 +70	+48 +30	+32 +20	+38 +20	+22 +10	+16 +4	+8 0	+12 0	+18 0	±6	+3 -9	0 -12	-4 -16	-8 -20	-11 -23	-15 -27	—	
6	10	+208 +150	+116 +80	+62 +40	+40 +25	+47 +25	+28 +13	+20 +5	+9 0	+15 0	+22 0	±7	+5 -10	0 -15	-4 -19	-9 -24	-13 -28	-17 -32	—	
10	14	+200 +150	+138 +95	+77 +50	+50 +32	+59 +32	+34 +16	+24 +6	+11 0	+18 0	+27 0	±9	+6 -12	0 -18	-5 -23	-11 -29	-16 -34	-21 -39	—	
14	18																			
18	24	+244 +160	+162 +110	+98 +65	+61 +40	+73 +40	+41 +20	+28 +7	+13 0	+21 0	+33 0	±10	+6 -15	0 -21	-7 -28	-14 -35	-20 -41	-27 -48	—	
24	30																			
30	40	+270 +170	+182 +120	+119 +80	+75 +50	+89 +50	+50 +25	+34 +9	+16 0	+25 0	+39 0	±12	+7 -18	0 -25	-8 -33	-17 -42	-25 -50	-34 -59	-39 -64	
40	50																			
50	65	+310 +190	+214 +140	+146 +100	+90 +60	+106 +60	+60 +30	+40 +10	+19 0	+30 0	+46 0	±15	+9 -21	0 -30	-9 -39	-21 -51	-30 -60	-42 -72	-55 -85	
65	80																			
80	100	+320 +200	+224 +150	+174 +120	+107 +72	+125 +72	+71 +36	+47 +12	+22 0	+35 0	+54 0	±17	+10 -25	0 -35	-10 -45	-24 -59	-38 -73	-58 -93	-78 -113	
100	120																			
120	140	+360 +220	+257 +170	+420 +260	+300 +200	+380 +240	+267 +180	+120	+125 +72	+148 +85	+83 +43	+54 +14	+25 0	+40 0	+63 0	±20	+12 -28	0 -40	-12 -52	-28 -68
140	160																			
160	180	+440 +280	+310 +210	+208 +145	+125 +85	+148 +85	+83 +43	+54 +14	+25 0	+40 0	+63 0	±20	+12 -28	0 -40	-12 -52	-28 -68	-50 -90	-85 -125	-119 -159	
180	200																			
200	225	+525 +340	+355 +240	+242 +170	+146 +100	+172 +100	+96 +50	+61 +15	+29 0	+46 0	+72 0	±23	+13 -33	0 -46	-14 -60	-33 -79	-60 -106	-105 -151	-149 -195	
225	250																			
250	280	+565 +380	+375 +260	+605 +420	+395 +280	+225 +170	+146 +100	+172 +100	+96 +50	+61 +15	+29 0	+46 0	+72 0	±23	+13 -33	0 -46	-14 -60	-33 -79	-60 -106	-105 -151
280	315																			
315	355	+690 +480	+430 +300	+690 +480	+430 +300	+271 +190	+162 +110	+191 +110	+108 +56	+69 +17	+32 0	+52 0	+81 0	±26	+16 -36	0 -52	-14 -66	-36 -88	-74 -126	-138 -190
355	400																			
400	450	+750 +540	+460 +330	+830 +600	+500 +360	+299 +210	+182 +125	+214 +125	+119 +62	+75 +18	+36 0	+57 0	+89 0	±28	+17 -40	0 -57	-16 -73	-41 -98	-87 -144	-169 -226
450	500																			
500	500	+1010 +760	+595 +440	+1090 +840	+635 +480	+327 +230	+198 +135	+232 +135	+131 +68	+83 +20	+40 0	+63 0	+97 0	±31	+18 -45	0 -63	-17 -80	-45 -108	-103 -166	-209 -272
500	500																			

Production and quality control 生产与品质控制



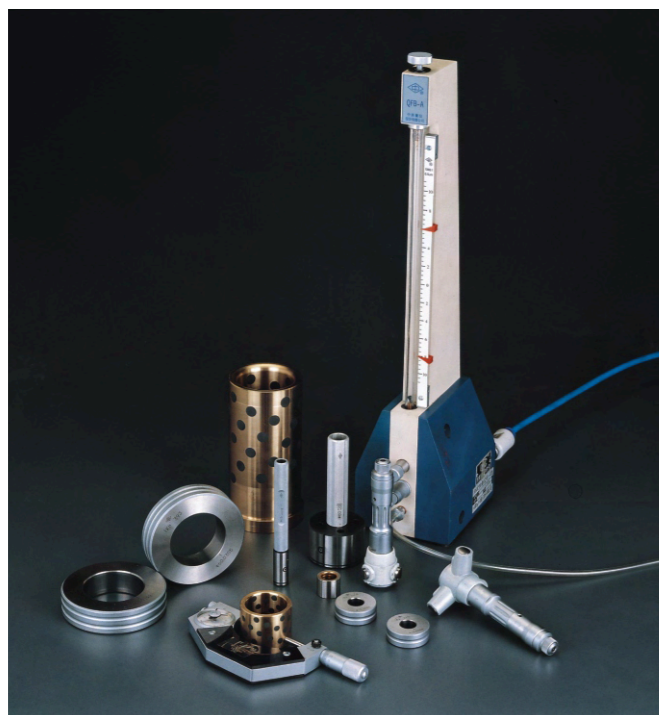
CNC workshop
CNC加工车间



Micrograph
金相分析仪



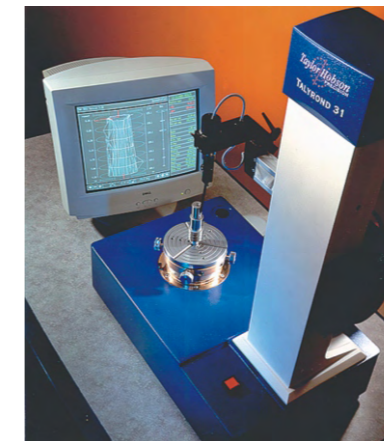
CSB testing center
测试中心



Bearing measurements
轴承公差检测



CMM measurement
三坐标测量仪



Roundness machinery
圆度仪



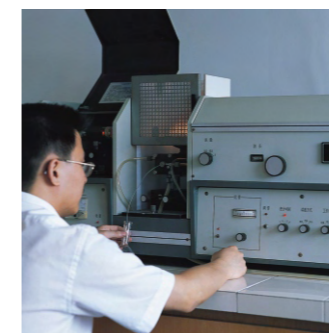
EDAX, EBSD, SEM Test machinery
能谱仪, 电子背散射衍射仪, 电子扫描镜



Contour graph
轮廓仪



High load PV testing
高承载PV试验机



Atomic absorption spectrometer
原子吸收分光光度计



Oscillation motion testing machine
低速重载摇摆试验机



Spectrometer
光谱仪



滑动轴承技术参数咨询单

运用机械或者装置

部件名称

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原设计
新设计

产品形状(尺寸和公差, 请附上图纸和规格表)

形状及公差值	<input type="checkbox"/> 直套		<input type="checkbox"/> 翻边轴套		<input type="checkbox"/> 滑板		<input type="checkbox"/> 垫片		<input type="checkbox"/> 其他	
	法兰		外径		内径		高度		壁厚	
	宽度		长度		厚度					
对磨件	材质		表面处理		粗糙度		硬度		公差	
座孔	材质		座孔壁厚		粗糙度		导向		公差	
运动方式	<input type="checkbox"/> 旋转		<input type="checkbox"/> 摇摆		<input type="checkbox"/> 往复					
	转速rpm		角度±		行程		周期		cpm	
载荷	N	面压	Mpa	<input type="checkbox"/> 静承载 <input type="checkbox"/> 动承载 <input type="checkbox"/> 旋转承载 <input type="checkbox"/> 冲击						
线速度	m/s		PV值	N/mm ² *m/s						
轴套使用时间		h/天	<input type="checkbox"/> 连续 <input type="checkbox"/> 间隙		每年工作日		天	运行距离		公里
使用环境: <input type="checkbox"/> 大气中 <input type="checkbox"/> 海水中 <input type="checkbox"/> 淡水中 <input type="checkbox"/> 泥水中 <input type="checkbox"/> 化学药剂(名称: PH值:) <input type="checkbox"/> 其他										
温度:	℃	有无异物侵入 <input type="checkbox"/> 有() <input type="checkbox"/> 无			密封 <input type="checkbox"/> 有 <input type="checkbox"/> 无					
润滑:	<input type="checkbox"/> 完全无润滑 <input type="checkbox"/> 安装时给油 <input type="checkbox"/> 定期供油 <input type="checkbox"/> 油中 <input type="checkbox"/> 其他()									
润滑剂	<input type="checkbox"/> 润滑油() <input type="checkbox"/> 润滑脂() <input type="checkbox"/> 其他()									

其他说明: (目前问题点, 原有选型材料等等)

期望使用寿命		允许磨损mm	
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轴承的失效判断:

贵公司名称: _____ 网址: _____

地址: _____

联系部门: _____ 联系人: _____

邮件: _____ 电话: _____ 传真: _____

如对自润滑轴承的设计或材料选型时有疑问请填写以上表格传真到CSB公司 传真: 0573 84183450



Data For Sliding Bearing Design Calculations

Applied Machinery

Applied part name

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Exist Design
New Design

Bearing Specification (Size, tolerance, please attachment the drawings)

Shape and Tolerance	<input type="checkbox"/> Cylindrical Bush		<input type="checkbox"/> Flange Bush		<input type="checkbox"/> Slide plate		<input type="checkbox"/> Thrust washer		<input type="checkbox"/> Others	
	Flange		OD		ID		Length		Wall thick.	
	Length		Width		Thickness					
Mating	Material		Surface finish		Roughness		Hardness		Tolerance	
Housing	Material		Housing wall thick.		ID Roughness		Chamfer		Tolerance	
Movement	<input type="checkbox"/> Rotation		<input type="checkbox"/> Oscillating		<input type="checkbox"/> Reciprocating					
	rpm		Angle ±		Stroke		mm	Cycle		cpm
Load	N	Pressure	Mpa	<input type="checkbox"/> Static load <input type="checkbox"/> Dynamic load <input type="checkbox"/> Rotating load <input type="checkbox"/> Impact						
Speed	m/s		PV	N/mm ² *m/s						
Service hours per day		<input type="checkbox"/> Continuous <input type="checkbox"/> Intermittent			Service day per year		Distance total			km
Environment: <input type="checkbox"/> atmosphere <input type="checkbox"/> Seawater <input type="checkbox"/> Freshwater <input type="checkbox"/> Turbid <input type="checkbox"/> Chemical (name: PH:) <input type="checkbox"/> Others										
Temp.:	℃	Impurity Incursion <input type="checkbox"/> Yes() <input type="checkbox"/> No			Seal <input type="checkbox"/> Yes <input type="checkbox"/> No					
Lubricate:	<input type="checkbox"/> Dry <input type="checkbox"/> Initial <input type="checkbox"/> Regular giving <input type="checkbox"/> lubrication <input type="checkbox"/> Others ()									
lubricant	<input type="checkbox"/> Oil () <input type="checkbox"/> Grease () <input type="checkbox"/> Others ()									

Others description: (the technical problem, the exist material etc.)

Required Service Life		Allowed wear lost mm	
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Judgment of Bearing Failure:

Company Name: _____ Web: _____

Address: _____

Department: _____ Contact person: _____

E-mail: _____ Telephone: _____ FAX: _____

Any questions of self-lubricating bearing material during your design please contact us Fax: +86 573 84183450