FEIYU
BEARING

嘉善飞瑜滑动轴承厂

地址: 浙江省嘉善县干窑镇黎明村曹家漾70号[干窑工业城]
邮编: 314115
电话: 0573-84518271
传真: 0573-84518261
网站: www.fy-bronzebushing.com
邮件: ZhouJia@fy-bronzebushing.com

JIASHAN FEIYU SLIDING BEARING FACTORY

Add: Ganyao Industial City at N0.70
Caojialou in Liming Village, Ganyao Town,
Jiashan County, Zhejiang, China
Code: 314115
Tel: 0573-84518271
Fax: 0573-84518261
Website: www.fy-bronzebushing.com
E-mail: ZhouJia@fy-bronzebushing.com

FEIYU SLIDING BEARINGS

嘉善飞瑜滑动轴承厂

JIASHAN FEIYU SLIDING BEARING FACTORY

公司简介
INTRODUCTION

嘉善飞瑜滑动轴承厂是专业生产制造自润滑轴承的企业。高标准的生产各类自润滑复合材料轴承产品，主要有：FYB500镶嵌式固体润滑轴承、SF-1(DU)自润滑轴承、SF-1F自润滑翻边轴承、SF-2(DX)边界润滑轴承、JF双金属轴承、FB090青铜轴承、FZ钢球保持架、FR四氟增强软带、FD含铜四氟带、FU铜基含油轴承等。

本公司产品品质稳定、可靠，深受客户的好评和推崇，并多次获得有关部门的奖杯和证书。产品广泛应用于液压元件、汽车、冶金矿山、船舶海洋、工业机械、石油工业机械、纺织机械、起重设备、印刷、食品、建筑机械等各个领域。

公司以客户为中心，信誉为本，坚持以质量第一，用户至上为宗旨，竭诚为新老客户服务。

Jiashan Feiyu Sliding Bearings Factory, is specialized in manufacturing sliding bearing. Our main products are: FYB500 cast bronze with solid lubricants bearings, SF-1(DU) self-lubricating bearings, SF-1F self-lubricating flange bearings, SF-2(DX) boundary self-lubricating bearings, JF bi-metal bearings, FB090 bronze bearings, FZ ball retainer, FR PTFE tape, FD bronze powder with PTFE tape, FU sintered bronze bearings. etc.

We can supply products with stable quality, and has won the trophy and certificate authorities. It is widely used in hydraulic elements, automobile, Metallurgical Mines, Ocean Station Vessel, Industrial Machinery, Petroleum Industry Machinery, Textile machine, lifting appliance, Printing, foods and Construction Machinery etc.

We are committed to supplying products of the highest quality and providing a comprehensive and professional service.

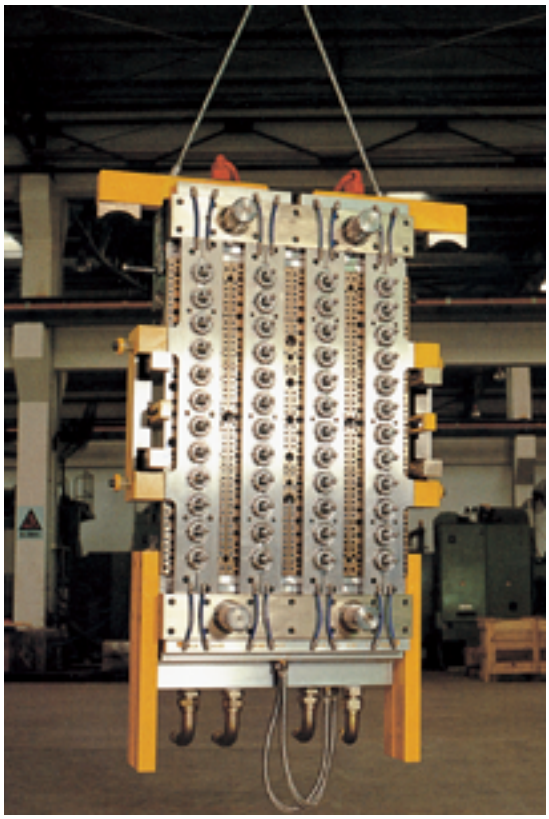
FYB500 自润轴套
Oilless Cylindrical bushes

■ 特 点

1. 可长时间在无油润滑条件下工作。
2. 更适合于重载低速工况条件，具有良好的耐磨性和极低的磨擦系数。
3. 适合于往复、旋转、和间歇运动等油膜难以形成的场合。
4. 具有耐腐蚀和抗化学性。
5. 适用于-40℃+300℃的温度范围。
6. 免维修，使用寿命长。

■ Features

1. May work without any oil for long period.
2. Extremely high load capacity, good anti-wear and low friction.
3. Particularly appropriate for low speed and high load.
4. Suitable for reciprocating, oscillation or intermittent motion where oil film is hard to be formed.
5. Good chemical resistant and anti-corrosion characteristics.
6. Can be used in wide range of temp.



■ 典型用途

1. 重载、低速自润滑如水坝工作弧门支铰轴承、事故门轴承、水轮机轴承等。
2. 使用于高温场合，如钢铁厂、冶金设备、轧机 、输送辊道、高温鼓风炉、烘干炉用轴承。
3.汽机车工业、覆盖件冲压模、组装流水线、传送带等用轴承。
4. 其它工业用轴承、工程机械、注塑机、各种高精度模具等。以及化工机械、食品机械、造纸机械、纺织印染机械等需耐蚀耐水浸润场合，重载低速 无法加油的工况场合。

■ Application

1. Use for high load low speed and self-lub. like dam gate and water gate bushes, hydraulic turbine bushes etc.
2. Use for high temp. such as iron and steel factory machines and so on.
3. Automobile production, like assembly lines, press lines, conveyor lines and so on.
4. Heavy duty machineries like steel rolling mills, injection machines, press dies etc.
5. And any others like chemical machines, food processing machines, paper mills, textile machines etc.

目录 CONTENTS

目录 CONTENTS

目录 CONTENTS

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

产品特长
Product Features

1. 无需供油装置、注油孔、油槽加工

供油装置的费用、加工费、组装费等多余的成本与时间的节省，能大幅降低制造成本。

2. 运行成本的降低

大幅降低润滑油的使用量与设备的维护保养费，另外也免除了由于供油不足造成的风险。

3. 设计时间的缩短

无油化可以使设计，结构等大幅简化，降低成本，节约设计时间，此外，使用自润滑轴承还可以提高机械性能，延长使用寿命及提高可靠性等方面获得显著效果。

4. 润滑油的回收和环保

无需废油回收处理，有利于环境保护。

FYB500(650#) 自润轴承作为机械行业零部件，有一定广义上的使用。为了使机械传动运行正常，下了不少功夫。将轴承区分为滚动轴承和滑动轴承。一般的滑动轴承在高负荷运动方式、异物混入、温度条件、供油、维护保养不完善等情况下，会引起拉毛。像这样一般的滑动轴承无法使用的严酷条件下，固体镶嵌型金属自润滑轴承的耐磨性，耐拉毛性上，发挥轴承应有的性能，实现机械的高性能化和免维护保养的作用。

1. No need to oil installations, the filling hole processing tank

The cost of oil installations, processing fees, assembly fees, the extra cost and time savings can significantly reduce manufacturing costs.

2. Lower operating costs

Substantially reduce the use of lubricants and equipment maintenance costs, while also eliminating the risk caused due to insufficient oil supply.

3. The shortening of design time

Non-oil can make the design, structure, and greatly simplify and reduce costs, save design time and to obtain significant results, in addition, the use of self-lubricating bearings can also improve the mechanical properties and extend the service life and higher reliability.

4. Lubricating oil recycling and environmental protection

No need to waste oil recycling, are environmentally friendly.

FYB500(650#), self-lubricating bearing parts of the machinery industry, the use of certain generalized. In order to make the mechanical drive is operating normally, a lot of effort. The bearing area is divided into Rolling and plain bearings. Sliding bearings in high-load movement, foreign substances, temperature, fuel, maintenance, imperfect circumstances, can cause galling. Like sliding bearings can not be used under harsh conditions, the solid inlaid metal self-lubricating bearings, wear resistance, resistance to galling, to play the bearings of the due performance, the role of mechanical performance and maintenance-free.

使用注意事项
Application Notes

1. 在可能情况下，设计时尽量采用标准规格；
2. 装配时请注意表面有无异物；
3. 使用后的滑动面，因固体润滑剂形成的油膜导致表面有黑色或灰黑色现象，请不要擦洗，照常使用；
4. 装配前，若以润滑油涂于对磨件上，可减短走合期，利于机械操作、运转；
5. 装配时应徐徐压入，严禁敲打，以免损伤轴承及引起变形；
6. 设计时，不同的部位应选用适当的材质，以便提高机械性能，延长轴承的使用寿命；
7. 在高承载，往复运动中，建议使用螺钉固定；
8. 在淡水中、海水中及在海上作业时，对磨轴建议使用不锈钢或表面镀铬。

1. Use standard designation when designing if possible;
2. Note if there are any foreign matters on the surface when assembling;
3. Do not erase the black or grey phenomenon on the sliding surface caused by the oil film that is formed by the solid lubricant after using;
4. It is good for mechanical operation and running if lay the lubricant on the corresponding friction set before installing;
5. Pressing should be carried out slowly when installing. Do not beat in the event of damaging the bushing or causing the distortion to the bushing;
6. Using proper material in different parts when designing in order to enhance the mechanical properties and prolong the service life of the bushing;
7. It would be better to fix with bolt in high load and reciprocating motion;
8. It is recommended to use stainless steel or plate chrome on the surface of the corresponding friction shaft when working in the water or in the sea.

固体自润滑轴承的优点
he Advantages of the Solid-Lubricant-Inlaid Bearings

1. 设计灵活、简单、方便，使用范围广；

供油系统在机械设计上是一件费工，费时的装置，使用固体自润滑轴承在设计时不需要考虑加油装置，节约了加油装置设备，同时可以针对各种特殊场合，把固体自润滑轴承设计成各种形状，以满足各种特殊场合的需要，使用固体自润滑轴承，可以大幅减少机械检修，油料等费用。

2. 无油可以使用；

由于固体自润滑剂的线膨胀系数大于金属基体，因此当固体自润滑轴承开始运转时，油膜会转移到对磨件上而实现自润滑，所以固体自润滑轴承可以使用在难以加油以及不能加油或油脂的地方，即使在低速高负载的情况下，也能起到良好的润滑作用。

3. 使用成本低；

传统的机械设计，在一定的操作时间内，要经常加油保养，检查油表，供油装置是否畅通，因定期加油导致机体本身及周边环境污染，造成维护保养成本的增加，实现自润滑后，不但可以实现环境整洁，而且大大降低了使用润滑油的成本。

4. 高承载、低转速情况下，可发挥优越的性能；

固体自润滑轴承是用离心铸造的高强度合金黄铜作基体，起到承载负荷的作用，用具有良好自润滑性能的特殊配方的石墨作润滑剂，起到自润滑作用，因此它综合了他们的各自优点，即使在高承载，低转速情况下，可发挥优越的性能。

5. 往复运动、摇摆运动、起动停止频繁等油膜形成困难的场所，可发挥优越的耐磨性；

固体自润滑轴承润滑剂的排列原则是保证对磨件在运转过程中各个部位都有润滑剂作用，因此排列润滑剂时必须根据对磨件的运动方向来确定润滑剂的排布位置。

6. 优越的耐药品性及耐蚀性；

固体自润滑轴承的润滑剂是用特殊配方的石墨、PTFE、二硫化钼等耐磨材料制成的，它具有稳定的分子结构，金属基体可以根据不同金属具有不同的耐药品性和耐蚀性来选择，因此固体自润滑轴承具有优越的耐药品性和耐蚀性。

7. 产品成本更具有竞争力，与同类产品相比，工作寿命较长，所需维护保养甚少，替代更换周期长，性能好。

1. Properly and simply designed, widely used;

Oil offering system is an energy waste and time waste set in mechanical design. There is no needs for considering the oil-putting set in design when using the solid lubricant bushing so it can save the oil-putting equipment and at the same time it also design the solid-lubricant-inlaid bushing into alt kinds of shapes in order to meet various needs in special places. Using solid-lubricant. inlaid bushing can reduce the costs of the machinery mending and the oil in wide range.

2. Being used without oil;

Because of the linear coefficient expansion of the solid lubricant is bigger than that of the metal basement, when the solid-lubricant-inlaid bushing starts to operate, the oil film can transfer to the corresponding friction set to make out self-lubricant. So the solid-lubricant-inlaid bushing can be used in places where the oil or grease cannot be added. It can make out the self-lubricant function even though under high load conditions.

3. Low cost for usage;

Traditional mechanical design asks for frequently aiding oil and checking if the oil watch and the offering set are through in certain period. Because adding oil at regular intervals causes the pollution to the machine itself and the nearby surroundings and increase the maintenance cost. And when the self-lubricant is made out, it can not only make the surroundings clean but also decrease the cost of using the lubricant.

4. The superior functions can be brought into play under high load and low rotati ng speed.

The solid-lubricant-inlaid bushing is based on the high intensity brass that is centrifuge cast. And then make out the loading function. Use special graphite that has good self-lubricant properties as lubricant to make out the self-lubricant so that the bushing has included all of their advantages. It can still bring the superior properties into play even under high load and low rotating speed.

5. The wear resistance can be brought into play even In places the oil film form into difficulties because of the reciprocating and rocking movement, starting and stopping;

The arrangement principle of the lubricant of the solid-lubricant-inlaid bushing is to ensure that all the parts of the corresponding friction sets have the lubricant function in the operating procession. So the arrangement place 0f the lubricant should be depended upon the operating direction of the corresponding friction sets.

6. Superior chemical resistance and corrosion resistance;

The lubricant of the solid-lubricant. inlaid bushing is made of special graphite and PTFE. It has steady molecule structures. The metal basement can be chosen according to the different chemical resistance and corrosion resistance of the metal appliance. So the solid-lubricant-inlaid bushing has the superior chemical resistance and corrosion resistance.

7. The products is more competitive, comparing to the similar kinds of products, this kind of products has longer working life and need seldom maintenance. It has longer replacement ci rcle and good properties.

选择使用FEIYU自润滑轴承的基体材料
Selection of Matrix Materials for FEIYU Self-lubricated Bearings

材料成份和性能 Material Compostion and Properties							
FEIYU Code	FYB500 (650#)	FYB500 (650#S1)	FYB500 (650#S2)	FYB500 (650#S3)	FYB500 (650#S4)	FYB500 (HT250)	FYB500 (Gcr15)
材料牌号 Code	CuZn25Al5Mn3Fe3	CuZn25Al5Mn3Fe3	CuAl9Fe4Ni4Mn2	CuSn5Pb5Zn5	CuSn12	HT250	Gcr15
密度 Density	8.0	8.0	8.5	8.9	9.05	7.3	7.8
硬度 Hardness HB	> 210	> 250	> 150	> 70	> 80	> 190	HRC > 58
抗拉强度 N/mm^2 Tensile strength	> 750	> 800	> 800	> 200	> 260	> 250	> 1500
伸长率 Elongation%	> 12	> 8	> 15	> 10	> 8	> 5	> 15
热胀系数 Coefficien of linear expansion 10^{-5}/℃	1.9	1.9	1.9	1.8	1.8	1.0	1.1
温度 Limit Temp ℃	-40~+300	-40~+150	-40~+400	-40~+400	-40~+400	-40~+400	-40~+400
最大动承载 Max.load N/mm^2	100	120	150	60	70	80	200
最大线速度 m/min Max.speed (Dry)	15	15	20	10	10	8	5
Max.PV最大PV N/mm^2*m/min	200	200	60	60	80	40	150
压缩永久变形量 300N/mm^2	< 0.01	< 0.005	< 0.04	< 0.05	< 0.05	< 0.015	< 0.002

材料对应表 Base Material Interchange								
材料代号 Material Codes	中国 China Brands GB1176-87	国际 Intenational ISO 1338	德国 Germany DIN	日本 Japan JIS	美国 America ASTM(UNS)	英国 England BS	法国 France NF	适用情况 Applicable conditions
FYB500(650#) 高力合金铜	ZCuZn25Al6 Fe3Mn3	GCuZn25Al6 Fe3Mn3	DIN1709 G-CuZn25Al5	H5102 CAC304	B30-92 C86300	HTB2		高载荷，低速，一般用 High-load，low speed Commonly used
FYB500(650#S1) 高力合金铜	ZCuZn25Al6 Fe3Mn3	GCuZn25Al6 Fe3Mn3	DIN1709 G-CuZn25Al5	H5102 CAC304	B30-92 C86300	HTB2		超高载荷，低速，高承载用 Over high load，low speed，High load used
FYB500(650#S2) 铸造锡青铜	ZCuSn5 Pb5Zn5	GCuPb5 Sn5Zn5	DIN1705 G-CuSn5ZnPb	H5111 BC6	B30-92 C83600	LG2	CuPb5 Sn5Zn5	中载荷，低速 Mid-load，low speed
FYB500(650#S3) 铸造铝青铜	ZCuAl9Fe4 Ni4Mn2	GCuAl10 FeNi5	DIN17656 G-CuAl10Ni	H5114 AlBC3	B30-92 C95500	AB2	CuAl10 Fe5Ni5	中载荷，中速，一般用 Mid-load，mid-speed，Commonly used
FYB500(HT250) 铸铁	GB5675-85 HT250			FC250	ASTM Class40			中载荷，低速 Mid-load，low speed

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

轴承的寿命
The Life The Bushing

FYB500(650#)固体润滑轴承的寿命，除急剧的烧焦外，通常由轴承内径的磨损量来决定，磨损量主要受摩擦条件的影响，而摩擦又受承载、速度、杂质、材质、表面粗糙度、工作温度、不同运行方式、所使用润滑剂等条件影响，因此，磨损量只能是一个理论估计值，轴承的寿命取决于各种复杂的条件。

The life of FYB500(650#) Solid-lubricant-inlaid depends on the wear depth of the inside diameter of the bushing except such condition as acute Singe, etc. The wear depth is influenced by the load speed, foreign matter, material, surface roughness, working temperature, different operating methods and the lubricant used. So the wear depth is only a theoretical estimate value and the life of the bushing depends on all kinds of the complex conditions.

若因供油不良，杂质渗入而使磨损急剧变化时，就很难预测磨损情形。下式为正常情况下由实验得出的磨损量计算式。

If the oil is not provided well, it is hard to estimate the abrasion state when the foreign matters intermingling. the following formula is the computing method.

$$W=K\times P\times V\times T$$

K:摩擦系数 Coefficient of Friction [$mm/(N/mm^2\cdot m/min.\ hr$]

W:磨损量 Wear Depth (mm)

P:承载压力 Load Pressure (N/mm^2)

V:线速度 Linear speed (m/min)

T:磨损时间 Wear Time (hr)

从上式中可以看出，若摩擦系数(K)已知，便可根据承载压力(P)、线速度(V)和磨损时间(T)计算出轴承实际磨损量。但是，在各种实际条件下准确计算出摩擦系数K是件非常困难的事情。在理想条件下，摩擦系数K由影响其值的因素因子Ci来决定。

From the above formula you can see that if the coefficient of the friction "K" is known the real wear depth can be computed according to the pressure "P". linear speed "V" and wear time "T". But it is very difficult to calculate "K" under various actual conditions. Under ideal conditions. "K" depends on the factor "Ci" which influences it.

即i. e. $K=Ci\times k$

Ci: 影响磨损量的因素因子$Ci=C1\times C2\times C3\times\cdots\cdots$

Ci: $Ci=C1\times C2\times C3\times\cdots\cdots$Factor genes that influence the wear depth.

K: 理想条件下的摩擦系数 And k is the coefficient of friction under ideal conditions.

$K=(1\text{-}5)\times10^{-8}$[$mm/(N/mm^2\cdot m/min.\ hr)$]

C_0：滑动条件系数 Coefficient of sliding conditions

C_0		线速度 Linear speed V(m/min)		
		≤1	1~10	10~30
承载压力 Loading pressure $P(N/mm^2)$	≤5	8~10	10~12	12~18
	5~25	12~18	18~25	25~30
	25~50	18~25	25~30	30~40

C_1：温度条件系数 Coefficient of temperature conditions

工作温度 Working temperature(℃)	≤100	100 ~ 200	200 ~ 400
C_1	1~2	3~5	5~10

C2：环境条件系数 Coefficient of surrounding temperature

环境 Surrounding	一般场所 general place	室外 outside	粉尘较多场合 Places with much powder
C_2	1~2	5~10	10~30

C3：使用场所系数 Coefficient of places used

使用场所 Places used	大气中 Atmosphere	水中 Water	海水中 Sea
C_3	1.9	0.8	1.2

工况条件
Working Conditions

1. 承载压力 Loading pressure

通常所谓承载压力是指轴承承受载荷时，轴承支持的最大载荷除以受压面积。所谓受压面积，当轴承为圆柱时，取与轴承接触部分的载荷方向的投影面积。

The so-called loading pressure generally means that when the bushing is loading, the max load it bears divides the pressed area. And the loading pressed area means the projection area of the connecting parts when the bushing is cylindrical.

2. 线速度 Linear speed

可知，对摩擦面温度的上升，滑动速度V的影响远大于承载压力P的影响。轴承若使用同一PV值，速度V愈大，轴承面温度上升愈快，因此在高温使用时，最好能供给润滑油，增大冷却效果和流 体润滑；以求降低摩擦系数，以防高磨损和烧焦现象的发生。

The heat radiated by the bushing is mainly caused by the friction of the bushing. According to the experience we know that the sliding speed "V" affects more than load pressure "P" to the surface temperature. If the bushing uses the same PV value, the higher speed the more quickly temperature ascends. So it would be better to provide lubricant to

工况条件
Working Conditions

enlarge the cooling effect and liquid lubricant by using high temperature in order to reduce the coefficient of the friction and to prevent the high abrasion and burning.

3. PV值 PV value

PV值是衡量轴承磨损极限和使用寿命的重要指标。以承载压力P(N/mm²)和线速度V(m/s)的乘积PV值(N/mm²·m/s)来表示。

PV value is an important guideline to weigh the abrasion limit and the service life of the bushing. It is shown by the load pressure P multiplying the line speed V.

轴承在单位时间，单位面积所产生的摩擦热量Q，以下式表示：

In the unit time the friction heat q caused by the unit area of the bushing can be shown by the following formula.

$$Q = \frac{\mu \cdot p \cdot v}{J} \text{ kcal/min}$$

J: 热功当量Heat equivalent of work≈ 4270(N/mm²·Kcal)

P: 承载压力 Load Pressure (N/mm²)

V: 线速度 Linear speed (m/s)

μ : 摩擦系数 coefficient of the friction

如果摩擦系数μ略大一些，轴承所产生的摩擦热量跟PV值成正比，这时所产生的热量Q，在经验上就可被认为固体润滑轴承设计时的重要依据。

当轴承运转时，轴承温度受摩擦发生的热量及热量散发情况影响，通常会在一定的温度上稳定下来. 若运转持续进行中有杂质渗入，润滑油的性能就会降低，同时由于摩擦粉末的影响，材料的疲劳，此时摩擦面的形态即发生变化，摩擦系数提高，轴承的温度上升，致使摩擦面损伤，而导致烧焦，基于此种情况，轴承的运转温度越低，亦即使用低PV值时，轴承的负荷性较好，寿命延长。所以在设计时，尽可能使用较低的PV值较安全，反之，在详细分析冷却方法，轴的材质，表面粗糙度，配合间隙等因素情况下，欲超越最大PV值使用，也是可能的。

If the coefficient of the friction " μ " is a little bigger, the friction heat and the PV value are in the direct ratio. Then the caused heat Q is commonly considered as the important principle in the solid lubricant bushing design.

When the bushing is running the heat and the heat radiation can be fixed at a certain temperature. If there are foreign matters in the running process, the lubricant property may be reduced and the friction shape may be changed because of the effect of the friction powder and the fatigue of the material. The enhancement of the coefficient of the friction and the ascending of the bushing temperature cause the damage of the friction surface and it will burn at last. Considering such cases, the load property of the bushing will be better and the service life will be longer if the operating temperature of the bushing is lower i.e.using lower PV value. So when designing, use lower PV value to ensure it is safe. Otherwise, it is also possible to use max PV value by carefully analyzing cooling methods, material of the shaft and the roughness of the surface, etc.

PV 值计算方法 The calculating method of the PV value:

	承载压力 Load pressure P(N/mm²)	线速度 Linear speed
轴承 bushing	$\frac{F}{dl}$	$\frac{\pi dn}{10^3}$ / $\frac{\pi d \theta c}{1.8\times10^3}$
垫片 washer	$\frac{4F}{\pi(D^2-d^2)}$	$\frac{\pi n\sqrt{2(D^2+d^2)}}{2\times10^3}$ / $\frac{\pi\theta\sqrt{2(D^2+d^2)}}{3.6\times10^3}$
滑块 sliding plate	$\frac{F}{BL}$	$\frac{60S}{T\times10^3}$

F: 垂直承载 uprightness load (N)

d: 轴承内径 inside diameter of the bushing (mm)

D: 轴承外径 outside diameter of the bushing (mm)

B: 滑块宽度 the width of the sliding plate (mm)

L: 滑块长度 the length of the sliding plate (mm)

N: 回转数 the rotation times (rpm)

C: 往复次数 reciprocating times (cpm)

θ : 摇摆角 the rocking angle (℃)

S: 往复长度 the length of the reciprocation (mm)

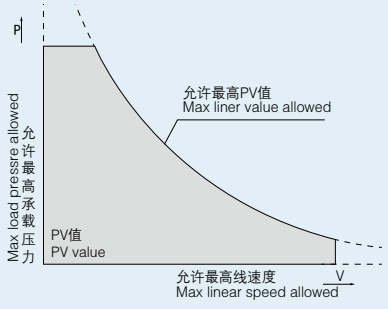
T: 往复一次需要的时间 (sec)

time spenging in each reciprocation

4. 最大PV值 Max PV value

所谓最大PV值是在轴承设计时，在轴承的单位投影面积内所承受的载荷及线速度乘积之最大值，使用时请勿超越此值，在设计时应在图1实线范围内.

The so-called max PV value means the max value of the load in the unit projection of the bushing multiplying the linear speed. Do not exceed the value when using it. When designing please be in the range of Fig 1.



对磨轴的条件
The Condition To The Corresponding Frictionshaft

FYB500(650#) 固体润滑轴承的使用寿命，磨损量，最高 PV 值，最高使用温度等都受对磨轴材质等条件的影响。

The service life, wear depth, max value and max using temperature of the #650 solid-lubricant-inlaid bushing are all influenced by the corresponding friction shaft material.

1. 对磨轴的材质和硬度
The material and hardness of the corresponding bushing

一般情况下使用轴承时，对磨轴的材质可以选用 35# 以上优质碳素结构钢，Cr12 轴承钢或 9SiCr 合金工具钢等，以上材质经淬火，调质，表面处理后硬度超过轴承硬度，就能收得到比较理想的效果，但当有硬性杂质侵入时，应尽可能选用硬度较高的轴材料，可以得到更好的使用效果。

In most cases, the material of the corresponding friction shaft can be the upwards #35 superior carbon structure steel, Cr12 steel alloy or 9SiCr tool steel alloy. All the above materials are quenched, mixed and surface dealt to reach an ideal effect. But when foreign matters come into, higher hardness bushing materials should be used in order to get better effects.

2. 表面粗糙度 The surface roughness

对磨轴表面粗糙度过大时，轴与轴承的凸起部分会切断油膜，造成两者直接接触，因此，提高对磨轴的表面粗糙度，尽可能缩小油膜间隙，使其接近流体润滑的状态，这样就能提高轴承的使用寿命，一般情况下，我们推荐轴承的表面粗糙度应在 Ra0.4 以上。

When the surface roughness of the corresponding friction shaft is too large, the bulge of the shaft and the bushing may cut down the oil film so it may cause the direct connection between the two parts. So enhancing the surface roughness of the corresponding. Friction shaft can reduce the space of the oil film and be close to the lubricant state so that it can prolong the service life of the bushing. Generally, the surface roughness we recommended is above Ra0.4.

3. 表面处理 The surface treatment

通常情况下，在对磨轴表面所做处理的目的，大致可分为以下三项：

In most cases, the purpose of the treatment to the correspon-ding friction shaft can be divided into 3 items:

a. 提高耐蚀性；
Enhance the corrosion resistance;

b. 提高表面硬度；
Enhance the SU rface hardness of the surface;

c. 使表面光滑，提高润滑性能。
Make the surface flat and enhance the lubricant properties.

对磨轴进行电镀处理，可提高其耐蚀性，而且能够有效防止粗糙磨损，以及提高润滑性能等，同样当对磨轴生锈时，所产生氧化物与异物侵入，同样会出现磨损加剧，因此，我们建议使用者在对磨轴上镀硬铬，另外，在高载荷，微小摇摆运动时，将对磨轴进行适当的热处理也会收到良好的效果，又如在海水中等类似的腐蚀条件下，对磨轴镀上二至三层硬铬，是很有必要的。

It can enhance the corrosion resistance and prevent the roughness wear by the treatment to the corresponding friction shaft, it can also enhance the lubricant property. When the corresponding friction shaft is stain, the coming of the hard oxygen and the foreign matters may also cause an increase in the wear. So we recommend the users plate rigidity chrome on the corresponding friction shaft. Besides, it will get a good result by proper heat treatment on the corresponding friction shaft. It is also necessary to plate two or three rigidity chrome on the corresponding friction shaft.

轴承宽度、厚度
The Wall-Thickness and The Height of The Bushing

1. 轴承高度 Theheightofthebushing

轴承内径是由对磨轴的轴径所决定，所以在受载荷条件下，轴承宽度受轴承承载压力 P(N/mm^2) 所决定，轴承越宽，其所承受的承载压强相对减小，但此时可能会造成偏位接触，或冷却效果降低，导致轴承寿命减短，相反，轴承宽度太窄时，润滑油会很快从轴承端面流出，因此很难形成油膜，轴承性能相应降低。

The inside diameter of the bushing depends on the shaft diameter of the corresponding friction shaft. So under the load conditions, the heigth of the bushing depends on the load pressure the bushing bears. Thicker the bushing is, lower the intensity of the pressure is. But it may cause the Lean cortact or the decrease of the cooling effect and reduce the bushing life.Contrarily, if the length of the bushing is too short, the lubricant may flow out quickly so that may be difficult to form the oil filmand decrease the bushing property accordingly.

一般轴承以 L/D(轴承宽度 / 轴承内径) 的比例在 0.5-3 的范围内为适当，但应特别注意在高载荷，易引起偏位接触，高转速时引起的发热情形，此时 L/D 取 1 以下较适当。

Generally, the proportion of the height of the bushing and the inside diameter of the bushing should be in the scale of 0.5 to 3. But special attention should be paid that heat condition may cause under high load lean contact and high running speed.Then L/d should be below 1.

2. 轴承壁厚 The wall-thickness of the bushing

滑动轴承跟滚动轴承相比，其壁厚限制较小，壁厚薄为其主要的优点之一。

Comparing to the sliding bushing, the wall-thickness of thiskind of bushing has little limit Thin wall-thickness is one of themain advantage.

一般情况下，壁厚 In most cases, the wall-thickness

$$t = (0.05\text{-}0.07)d + (2\text{-}5)mm$$

轴承宽度、厚度
The Wall-Thickness and The Height of The Bushing

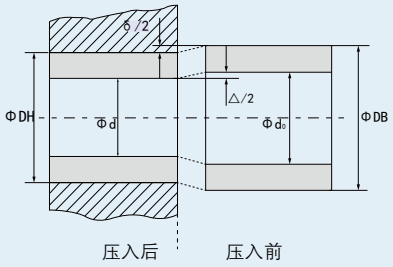
当轴承压入座孔后(如图2)，压入时的压力使轴承内外径收缩，这时，外径过盈量 δ 和内径收缩量△的关系，受座孔强度，材质，表面粗糙度，压入方式等因素而变化。

When the bushing is pressed into the housing, as Fig 2, the pressure put into makes the contraction of both the inside and outside diameter. Then the relation of the OD surplus " δ " and the ID shrinkage "△"is affected by the strength material, the roughness of the surface and the pressing method of the hole.

当座孔强度足够，材质为铁系，轴承材质为铜合金时，内径收缩量△可用下式表示式中：

When the strength of the housing is enough, the material is iron and the bushing material is brass alloy, the shrinkage can be shown as the following formula.

$$\triangle = \frac{10D_o d_o}{7D_o^2+3d_o^2}\times\delta$$



图Fig 2：轴承压入示意图

In the formula:

△：轴承内径收缩量(mm)

△:The shrinkage of the bushing inside diameter(mm)

δ：轴承外径过盈量(mm)

δ :The surplus quantity of the bushing outside diameter(mm)

d_0：压入前轴承内径(mm)

d_0:The inside diameter of the bushing before pressing into

D_B：压入前轴承外径(=D_B-D_H)(mm)

D_B:The outside diameter of the bushing before pressing into(=D_B-D_N)(mm)

D_H：座孔内径(mm)

D_H: The inside diameter of the housing(mm)

D：压入後轴承内径(d_0-△)(mm)

D: The inside diameter of the bushing after pressing into(d_0-△)

例：用JDB 40 50 30 轴承压入Φ50H7座孔後，计算其内径收缩量 δ

e.g. calculate the shrinkage of the inside diameter after pressing FYB500 40 50 30 bushing into the 50H7 housing

1. FYB500 40 50 30压入前尺寸

The dimension of the FYB500 40 50 30 before pressing into

轴承内径The inside diameter of the bushing:

$d_0 = \Phi 40F7 = \Phi 40^{+0.050}_{+0.025}$

轴承外径The outside diameter of the bushing:

$D_B = \Phi 50m6 = \Phi 50^{+0.025}_{+0.009}$

座孔内径The inside diameter of the hole:

$D_H = \Phi 50H7 = \Phi 50^{+0.025}_{0}$

2. 压入後轴承外径过盈量 δ

The outside diameter surplus quantity of the bushing after pressing into δ

$\delta_{max} = D_{Bmax} - D_{Hmin} = 50.025 - 50 = 0.025mm$

$\delta_{min} = D_{Bmin} - D_{Bmax} = 50.009 - 50.025 = -0.016mm$

3. 压入後轴承内径收缩量△

The inside diameter shrinkage of the bushing after pressing into△

$$\triangle = \frac{10D_o d_o}{7D_o^2+3d_o^2}\times\delta = \frac{10\times50\times40}{7\times50^2+3\times40^2}\times\delta$$

$=0.89686\times\delta$

$\triangle_{max} = 0.89686\times\delta_{max} \approx 0.022mm$

$\triangle_{min} = 0$

4. 压入後轴承内径

The inside diameter of bushing after pressing into

$d = d_0 - \triangle$

$D_{max} = d_{0max} - \triangle_{min} = 40.050 - 0 = 40.050$

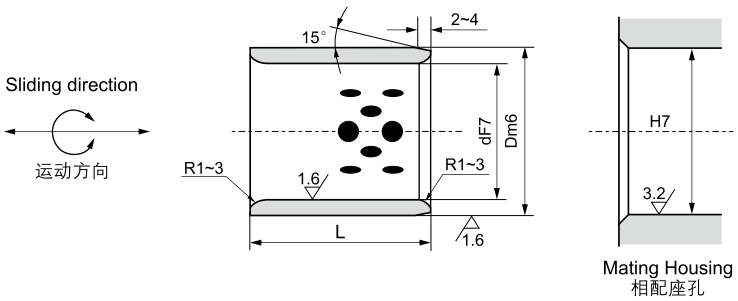
$D_{min} = d_{min} - \triangle_{max} = 40.025 - 0.022 = 40.003$

即轴承压入座孔后的内径公差为

The tolerance of the inside diameter after the bushing putting into the housing

$\Phi d = \Phi 40^{+0.050}_{+0.003}$

FYB500 固体镶嵌自润滑轴承
FYB500 Cylindrical Oilless Bushing

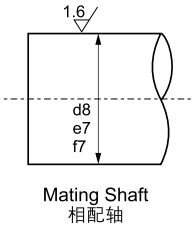


单位unit:mm

内径 F7 I.D. Ø d		外径 m6 O.D. Ø D		长度 L$^{-0.1}_{-0.3}$							
				8	10	12	15	16	19	20	25
6	+0.022 +0.010	10	+0.015 +0.006	061008	061010	061012					
8	+0.028 +0.013	12		081208	081210	081212	081215				
10		14	+0.018 +0.007	101408	101410	101412	101415			101420	
12		18		121808	121810	121812	121815	121816	121819	121820	121825
13		19			131910	131912	131915			131920	131925
14		20			142010	142012	142015			142020	142025
15	+0.034 +0.016	21			152110	152112	152115	152116		152120	152125
16		22			162210	162212	162215	162216	162219	162220	162225
17		23	+0.021 +0.008				172315				
18		24			182410	182412	182415	182416		182420	182425
19		26					192615			192620	
20		28			202810	202812	202815	202816	202819	202820	202825
–		30			203010	203012	203015	203016		203020	203025
22		32				223212	223215			223220	223225
25	+0.041 +0.020	33				253312	253315	253316		253320	253325
–		35				253512	253515	253516		253520	253525
28		38								283820	283825
30		–				303812	303815			303820	303825
–		40	+0.025 +0.009			304012	304015			304020	304025
32		42								324220	
35		44								354420	354425
–		45								354520	354525
38		48									
40		50					405015			405020	405025
–		55					405515				
45		–	+0.030 +0.011								
–		56									
–		60									

FYB500 固体镶嵌自润滑轴承
FYB500 Cylindrical Oilless Bushing

Material	650 # + Graphite
材质	高力黄铜 + 石墨

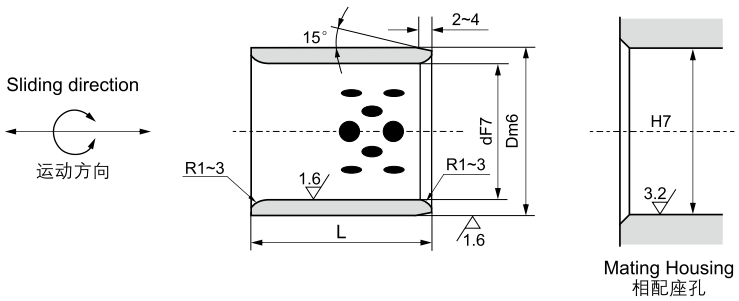


d8：High load 高负荷
e7：Light load 轻负荷
f7：High precision 高精度

单位unit:mm

长度 L$^{-0.1}_{-0.3}$							压装后内孔 I.D. After Press-Fitting	适用垫圈 SPW	内径 I.D. Ø d
30	35	40	50	60	70	80			
							$^{+0.019}_{+0.007}$	–	6
							$^{+0.025}_{+0.010}$	–	8
								10	10
121830							$^{+0.031}_{+0.013}$	12	12
131930								13	13
142030								14	14
152130	152135	152140					$^{+0.030}_{+0.012}$	15	15
162230	162235	162240						16	16
								18	17
182430	182435	182440						18	18
								20	19
202830	202835	202840	202850					20	20
203030	203035	203040	203050					20	–
								25	22
253330	253335	253340	253350	253360				25	25
253530	253535	253540	253550	253560				25	–
283830		283840					$^{+0.037}_{+0.016}$	30	28
303830	303835	303840	303850	303860				30	30
304030	304035	304040	304050	304060				30	–
324230		324240						35	32
354430	354435	354440	354450	354460				35	35
354530	354535	354540	354550	354560				35	–
		384840						40	38
405030	405035	405040	405050	405060	405070	405080		40	40
405530	405535	405540	405550	405560				40	–
455530	455535	455540	455550	455560			$^{+0.045}_{+0.020}$	45	45
455630	455635	455640	455650	455660				45	–
456030	456035	456040	456050	456060	456070	456080		45	–

FYB500 固体镶嵌自润滑轴承
FYB500 Cylindrical Oilless Bushing

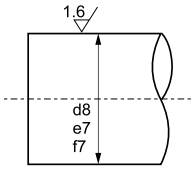


单位unit:mm

内径 F7 I.D. Ø d		外径 m6 O.D. Ø D		长度 L -0.1 -0.3							
				20	30	35	40	50	60	70	80
50		60		506020	506030	506035	506040	506050	506060	506070	506080
–	+0.050 +0.025	62			506230	506235	506240	506250	506260	506270	506280
–		65			506530		506540	506550	506560	506570	506580
55		70	+0.030 +0.011		557030	557035	557040	557050	557060	557070	
60		74			607430	607435	607440	607450	607460	607470	607480
–		75			607530	607535	607540	607550	607560	607570	607580
63		–							637560	637570	637580
65		80					658040	658050	658060	658070	658080
70	+0.060 +0.030	85			708530	708535	708540	708550	708560	708570	708580
–		90						709050	709060	709070	709080
75		–						759050	759060	759070	759080
–		95						759550	759560	759570	759580
80		96	+0.035 +0.013				809640	809650	809660	809670	809680
–		100					8010040		8010060	8010070	8010080
85		–							8510060		8510080
90		110						9011050	9011060		9011080
100	+0.071 +0.036	120						10012050	10012060	10012070	10012080
110		130						11013050		11013070	11013080
120		140								12014070	12014080
125		145									
130		150	+0.040 +0.015								13015080
140		160									
150	+0.083 +0.043	170									15017080
160		180									16018080
170		190									
180		200	+0.046 +0.017								
190	+0.096 +0.050	210									
200		230									

FYB500 固体镶嵌自润滑轴承
FYB500 Cylindrical Oilless Bushing

Material	650 # + Graphite
材质	高力黄铜 + 石墨



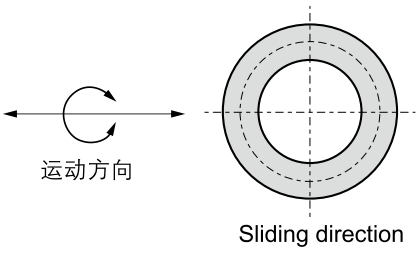
Mating Shaft
相配轴

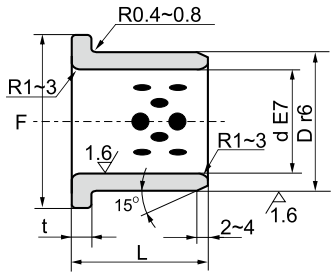
d8：High load 高负荷
e7：Light load 轻负荷
f7：High precision 高精度

单位unit:mm

长度 $L_{-0.3}^{-0.1}$							压装后内孔 I.D. After Press-Fitting	适用垫圈 SPW	内径 I.D. Ø d
90	100	120	130	140	150	200			
								50	50
							+0.045 +0.020	–	–
	5065100							–	–
								55	55
								60	60
	6075100						+0.055 +0.025	–	–
								65	63
								–	65
	7085100							70	70
								–	–
	7590100						+0.054 +0.024	75	75
	7595100							–	–
	8096100	8096120						80	80
	80100100	80100120		80100140				–	–
								90	85
9011090	90110100	90110120					+0.065 +0.030	–	90
10012090	100120100	100120120		100120140				100	100
	110130100	110130120					+0.064 +0.029	120	110
12014090	120140100	120140120		120140140				–	120
	125145100	125145120							125
	130150100		130150130						130
	140160100			140160140					140
	150170100				150170150		+0.076 +0.036		150
	160180100				160180150				160
	170190100				170190150				170
	180200100				180200150				180
	190210100				190210150		+0.088 +0.042		190
					200230150	200230200			200

FYB500-F 自润滑翻边轴套
FYB500-F Metric Flanged Bushes



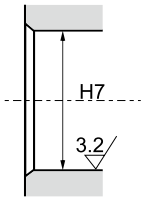


单位unit:mm

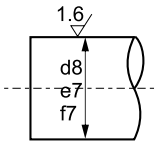
内径 E7 I.D. Ø d		外径 r6 O.D. Ø D		翻边 Flange Ø F	t		长度 L -0.1 -0.3 10	12	15	17	18	20	23	25
6	+0.032 +0.020	10	+0.028 +0.019	16			0610	0612						
8	+0.040 +0.025	12		20	2		0810	0812	0815					
10		14	+0.034 +0.023	22			1010	1012	1015	1017		1020		
12		18		25			1210	1212	1215			1220		1225
13		19		26			1310	1312	1315			1320		1325
14	+0.050 +0.032	20		27	3				1415			1420		1425
15		21	+0.041 +0.028	28			1510	1512	1515			1520		1525
16		22		29				1612	1615		1618	1620	1623	1625
18		24		32					1815			1820		1825
20		30		40					2015			2020		2025
25	+0.061 +0.040	35		45					2515			2520		2525
30		40		50								3020		3025
31.5		–	+0.050 +0.034	–								3120		
35		45		60	5							3520		3525
40	+0.075 +0.050	50		65								4020		4025
45		55		70		0 -0.1								
50		60	+0.060 +0.041	75										
55		65		80										
60		75		90										
63		–	+0.062 +0.043	85										
65	+0.090 +0.060	80		95	7.5									
70		85		105										
75		90	+0.073 +0.051	110										
80		100		120										
90		110	+0.076 +0.054	130										
100	+0.107 +0.072	120		150										
120		140	+0.088 +0.063	170	10									
130		150	+0.090 +0.065	180										
140	+0.125 +0.085	160		190										
150		170	+0.093 +0.068	200										
160		180		210										

FYB500-F 自润滑翻边轴套
FYB500-F Metric Flanged Bushes

Material	650 # + Graphite
材质	高力黄铜 + 石墨



Mating Housing
相配座孔



Mating Shaft
相配轴

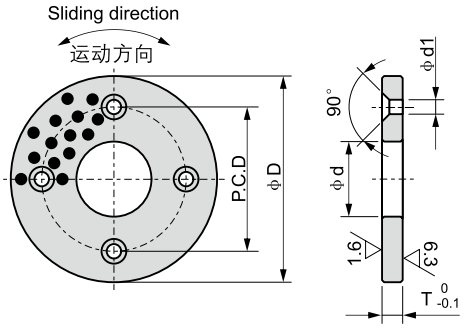
d8：High
e7：Light
f7：High

单位unit:mm

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

FYB500-C 标准止推垫片
FYB500-C Oilless Thrust Washer

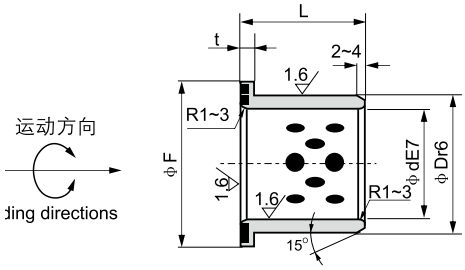
Material	650 # + Graphite
材质	高力黄铜 + 石墨

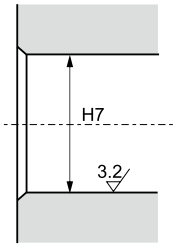


单位unit:mm

型号规格 Standard No.	I.D. Ø d 内径		O.D. Ø D 外径	厚度 Thickness		螺丝孔 Screw Holes			
						P.C.D	Nunber of Holes 数量	Flat Head Screw 规格	d1
FYB500-C-0603	6.2		25			15			
FYB500-C-0803	8.2		28			18	2	M3	3.5
FYB500-C-1003	10.2		30			20			
FYB500-C-1203	12.2		40			28			
FYB500-C-1203N	–		–			Without flat head screw hole 无定位孔			
FYB500-C-1303	13.2		–	3		28			
FYB500-C-1403	14.2		–			–	2	M3	3.5
FYB500-C-1503	15.2		50			35			
FYB500-C-1603	16.2	+0.2 +0.1	–			–			
FYB500-C-1603N	–		–				Without flat head screw hole 无定位孔		
FYB500-C-1803	18.2		–			35		M3	3.5
FYB500-C-2005	20.2		–			–			
FYB500-C-2505	25.2		55	5		40		M5	6
FYB500-C-3005	30.2		60		0 -0.1	45	2		
FYB500-C-3505	35.2		70			50			
FYB500-C-4007	40.2		80	7		60			
FYB500-C-4507	45.2		90			70		M6	7
FYB500-C-5008	50.3		100			75			
FYB500-C-5508	55.3		110	8		85			
FYB500-C-6008	60.3		120			90			
FYB500-C-6508	65.3		125			95			
FYB500-C-7010	70.3	+0.3 +0.1	130			100	4	M8	9
FYB500-C-7510	75.3		140			110			
FYB500-C-8010	80.3		150	10		120			
FYB500-C-9010	90.5		170			140			
FYB500-C-10010	100.5		190			160		M10	11
FYB500-C-12010	120.5		200			175			

FJDBB 自润滑翻边轴套
FJDBB Metric Flange Bushes





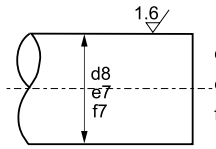
Mating Housing
相配座孔

单位unit:mm

内径 E7 I.D. Ø d		外径 r6 O.D. Ø D		翻边 Flange			长度 L $^{-0.1}_{-0.3}$								
				Ø F	t		10	11	12	13	15	18	20	23	25
6	+0.032 +0.020	10	+0.028 +0.019	20			0610	0611	0612						
8	+0.040 +0.025	12		25					0812	0813	0815				
10		14	+0.034 +0.023	–						1013		1018			
12		18		30	3			1211				1218		1223	
13		19		–						1313		1318		1323	
15	+0.050 +0.032	21		35						1513		1518		1523	
16		22	+0.041 +0.028	–		0 -0.03				1613		1618		1623	1625
18		24		40								1818		1823	
20		28		45									2020		2025
25	+0.061 +0.040	33		50	5								2520		2525
30		38	+0.050 +0.034	55									3020		3025
35		44		65									3520		3525
40	+0.075 +0.050	50		70	7										
50		62	+0.060 +0.041	90	8										
60		74	+0.062 +0.043	110											
70	+0.090 +0.060	85	+0.073 +0.051	120	10										
80		96		140											

FJDBB 自润滑翻边轴套
FJDBB Metric Flange Bushes

Material	650 # + Graphite
材质	高力黄铜 + 石墨



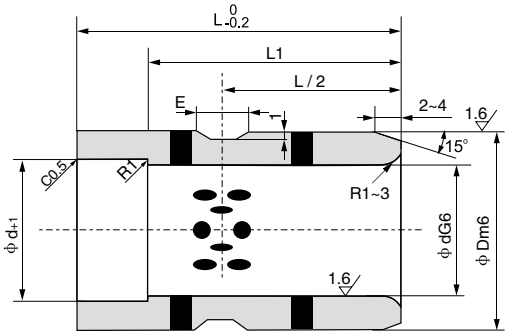
d8：High load 高负荷
e7：Light load 轻负荷
f7：High precision 高精

Mating Shaft
相配轴

单位unit:mm

长度 $L_{-0.3}^{-0.1}$												压装后内孔 I.D. After Press-Fitting	内径 I.D. Ø d
27	35	37	38	47	48	50	58	60	68	80	90		
												+0.016 +0.004	6
												+0.021 +0.006	8
													10
												+0.031 +0.013	12
													13
												+0.026 +0.008	15
													16
													18
												+0.037 +0.016	20
												+0.032 +0.011	25
	3035												30
	3535											+0.046 +0.021	35
4027		4037		4047									40
			5038		5048		5058					+0.040 +0.015	50
			6038		6048		6058		6068			+0.053 +0.023	60
						7075				7080		+0.046 +0.016	70
								8060			8090		80

FJGB 射出座导套
FJGB Oilless Ejector Guide Bushings



Material	650 # + Graphite
材质	高力黄铜 + 石墨

运动方向
Sliding direction

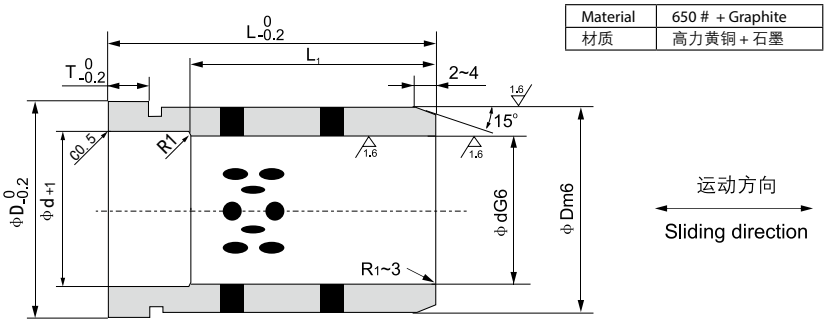
单位unit:mm

型号规格 Standard No.	d	L	d G6		D m6		L1	E
FJGB-12 × 9		9					9	
FJGB-12 × 14	12	14	12		18	+0.018 +0.007	14	4
FJGB-12 × 19		19					19	
FJGB-12 × 24		24					24	
FJGB-16 × 14		14		+0.017 +0.006			14	
FJGB-16 × 19		19					19	
FJGB-16 × 24	16	24	16		25		24	
FJGB-16 × 29		29					29	
FJGB-16 × 34		34					34	
FJGB-16 × 39		39					35	
FJGB-20 × 14		14				+0.021 +0.008	14	
FJGB-20 × 19		19					19	
FJGB-20 × 24		24					24	
FJGB-20 × 29	20	29	20		30		29	
FJGB-20 × 34		34					34	
FJGB-20 × 39		39					39	
FJGB-20 × 49		49					40	6
FJGB-25 × 24		24					24	
FJGB-25 × 29		29					29	
FJGB-25 × 34	25	34	25	+0.020 +0.007	35		34	
FJGB-25 × 39		39					39	
FJGB-25 × 49		49					49	
FJGB-25 × 59		59					50	
FJGB-30 × 29		29				+0.025 +0.009	29	
FJGB-30 × 34		34					34	
FJGB-30 × 39		39					39	
FJGB-30 × 49	30	49	30		42		49	
FJGB-30 × 59		59					59	
FJGB-30 × 69		69					60	
FJGB-30 × 79		79						

单位unit:mm

型号规格 Standard No.	d	L	d G6		D m6		L1	E
FJGB-35 × 29		29					29	
FJGB-35 × 39		34					34	
FJGB-35 × 39		39					39	
FJGB-35 × 49	35	49	35		48	+0.025 +0.009	49	8
FJGB-35 × 59		59					59	
FJGB-35 × 69		69					69	
FJGB-35 × 79		79					70	
FJGB-40 × 39		39					39	
FJGB-40 × 49		49					49	
FJGB-40 × 59	40	59	40	+0.025 +0.009	55		59	
FJGB-40 × 69		69					69	
FJGB-40 × 79		79					79	
FJGB-40 × 89		89					80	
FJGB-50 × 49		49					49	
FJGB-50 × 59		59					59	
FJGB-50 × 69	50	69	50		70	+0.030 +0.011	69	
FJGB-50 × 79		79					79	
FJGB-50 × 89		89					89	
FJGB-50 × 99		99					90	10
FJGB-60 × 59		59					59	
FJGB-60 × 69		69					69	
FJGB-60 × 79	60	79	60		80		79	
FJGB-60 × 89		89					89	
FJGB-60 × 99		99					90	
FJGB-60 × 109		109		+0.029 +0.010				
FJGB-80 × 69		69					69	
FJGB-80 × 79		79					79	
FJGB-80 × 89	80	89	80		100	+0.035 +0.013	89	
FJGB-80 × 99		99					99	
FJGB-80 × 109		109					100	
FJGB-80 × 119		119						

FJGBF 自润滑翻边导向套
FJGBF Oilless Ejector Guide Bushings



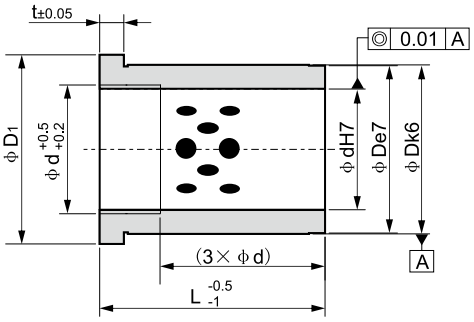
单位unit:mm

型号规格 Standard No.	d	L	d G6		D m6		D_1	T	L_1
FJGBF-12 × 19	12	19	12	+0.016 +0.006	18	+0.018 +0.007	25	4	19
FJGBF-12 × 24		24							24
FJGBF-12 × 29		29							29
FJGBF-12 × 34		34							34
FJGBF-16 × 19	16	19	16		25	+0.025 +0.009	30	6	19
FJGBF-16 × 24		24							24
FJGBF-16 × 29		29							29
FJGBF-16 × 34		34							30
FJGBF-16 × 39		39							
FJGBF-16 × 49		49							
FJGBF-20 × 24	20	24	20		30		35		24
FJGBF-20 × 29		29							29
FJGBF-20 × 34		34							34
FJGBF-20 × 39		39							39
FJGBF-20 × 49		49							40
FJGBF-20 × 59		59							
FJGBF-25 × 24	25	24	25	+0.020 +0.007	35		40	8	24
FJGBF-25 × 29		29							29
FJGBF-25 × 34		34							34
FJGBF-25 × 39		39							39
FJGBF-25 × 49		49							49
FJGBF-25 × 59		59							50
FJGBF-25 × 69		69				+0.025 +0.009			
FJGBF-30 × 29	30	29	30		42		47	10	29
FJGBF-30 × 34		34							34
FJGBF-30 × 39		39							39
FJGBF-30 × 49		49							49
FJGBF-30 × 59		59							59
FJGBF-30 × 69		69							60
FJGBF-30 × 79		79							

单位unit:mm

型号规格 Standard No.	d	L	d G6		D m6		D_1	T	L_1
FJGBF-35 × 39	35	39	35	+0.025 +0.009	48	+0.025 +0.009	54		39
FJGBF-35 × 49		49							49
FJGBF-35 × 59		59							59
FJGBF-35 × 69		69							69
FJGBF-35 × 79		79							
FJGBF-35 × 89		89							70
FJGBF-35 × 99		99							
FJGBF-40 × 39	40	39	40		55		61	10	39
FJGBF-40 × 49		49							49
FJGBF-40 × 59		59							59
FJGBF-40 × 69		69							69
FJGBF-40 × 79		79							79
FJGBF-40 × 89		89							
FJGBF-40 × 99		99							80
FJGBF-40 × 109		109							
FJGBF-50 × 49	50	49	50		70	+0.030 +0.011	76	12	49
FJGBF-50 × 59		59							59
FJGBF-50 × 69		69							69
FJGBF-50 × 79		79							79
FJGBF-50 × 89		89							89
FJGBF-50 × 99		99							
FJGBF-50 × 109		109							90
FJGBF-50 × 119		119							
FJGBF-60 × 99	60	99	60	+0.029 +0.010	80		86	15	99
FJGBF-60 × 109		109							109
FJGBF-60 × 119		119							
FJGBF-60 × 129		129							110
FJGBF-60 × 149		149							

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



单位unit:mm

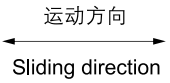
型号规格 Standard No.	d	L	t	D	Tolerance e7	Tolerance k6	D_1	d H7	
FJOST-9×12	9	12	3	14	-0.032 -0.050	+0.012 +0.001	16	9	+0.015 0
FJOST-9×17		17							
FJOST-9×22		22							
FJOST-9×27		27						10	
FJOST-9×36		36							
FJOST-10×12	10	12							
FJOST-10×17		17							
FJOST-10×22		22							
FJOST-10×27		27							
FJOST-10×36		36							
FJOST-12×17	12	17	6	18	-0.040 -0.061	+0.015 +0.002	23	12	+0.018 0
FJOST-12×22		22							
FJOST-12×27		27							
FJOST-12×36		36							
FJOST-14×17	14	17		20			25	14	
FJOST-14×22		22							
FJOST-14×27		27							
FJOST-14×36		36							
FJOST-14×46		46							
FJOST-14×56		56							
FJOST-17×17	17	17						25	
FJOST-17×22		22							
FJOST-17×27		27							
FJOST-17×36		36							
FJOST-17×46		46							
FJOST-17×56		56							

单位unit:mm

型号规格 Standard No.	d	L	t	D	Tolerance e7	Tolerance k6	D_1	d H7	
FJOST-16×17	16	17	6	22	-0.040 -0.061	+0.015 +0.002	27	16	+0.018 0
FJOST-16×22		22							
FJOST-16×27		27							
FJOST-16×36		36							
FJOST-16×46		46							
FJOST-16×56		56							
FJOST-18×17	18	17		26			31	18	
FJOST-18×22		22							
FJOST-18×27		27							
FJOST-18×36		36							
FJOST-18×46		46							
FJOST-18×56		56							
FJOST-18×66		66							
FJOST-20×17	20	17						20	+0.021 0
FJOST-20×22		22							
FJOST-20×27		27							
FJOST-20×36		36							
FJOST-20×46		46							
FJOST-20×56		56							
FJOST-20×66		66							

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

Material	650 # + Graphite
材质	高力黄铜 + 石墨



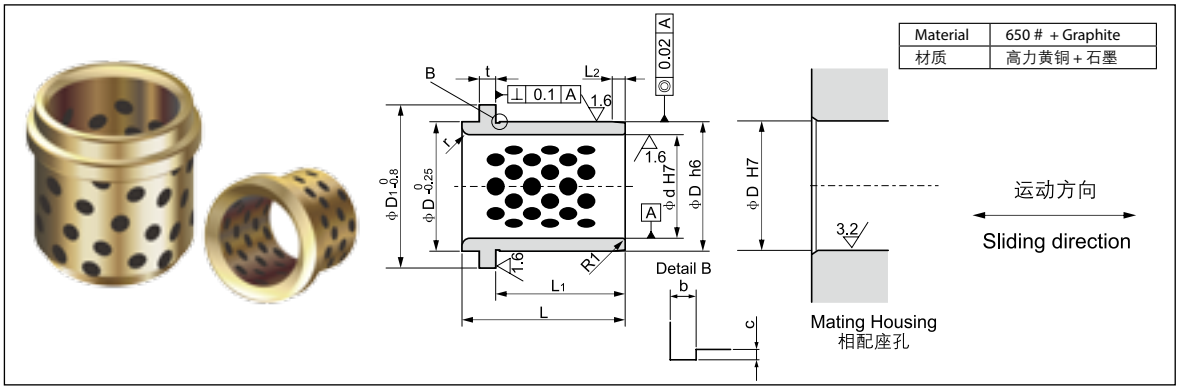
单位unit:mm

型号规格 Standard No.	d	L	t	D	Tolerance e7	Tolerance k6	D_1	d H7	
FJOST-22×22	22	22	6	30	-0.040 -0.061	+0.015 +0.002	35	22	+0.021 0
FJOST-22×27		27							
FJOST-22×36		36							
FJOST-22×46		46							
FJOST-22×56		56							
FJOST-22×66		66							
FJOST-22×76		76							
FJOST-22×86		86							
FJOST-24×17	24	17						24	
FJOST-24×22		22							
FJOST-24×27		27							
FJOST-24×36		36							
FJOST-24×46		46							
FJOST-24×56		56							
FJOST-24×66		66							
FJOST-24×76		76							
FJOST-24×86		86							
FJOST-30×27	30	27		42	-0.050 -0.075	+0.018 +0.002	47	30	
FJOST-30×36		36							
FJOST-30×46		46							
FJOST-30×56		56							
FJOST-30×66		66							
FJOST-30×76		76							
FJOST-30×86		86							
FJOST-30×96		96							
FJOST-30×116		116							
FJOST-32×27	32	27						32	+0.025 0
FJOST-32×36		36							
FJOST-32×46		46							
FJOST-32×56		56							
FJOST-32×66		66							
FJOST-32×76		76							
FJOST-32×86		86							
FJOST-32×96		96							
FJOST-32×116		116							

单位unit:mm

型号规格 Standard No.	d	L	t	D	Tolerance e7	Tolerance k6	D_1	d H7	
FJOST-40×56	40	56	10	54	-0.060 -0.090	+0.021 +0.002	60	40	+0.025 0
FJOST-40×66		66							
FJOST-40×76		76							
FJOST-40×86		86							
FJOST-40×96		96							
FJOST-40×116		116							
FJOST-40×136		136							
FJOST-40×156		156							
FJOST-42×56	42	56						42	
FJOST-42×66		66							
FJOST-42×76		76							
FJOST-42×86		86							
FJOST-42×96		96							
FJOST-42×116		116							
FJOST-42×136		136							
FJOST-42×156		156							
FJOST-50×76	50	76	20	66			72	50	+0.030 0
FJOST-50×86		86							
FJOST-50×96		96							
FJOST-50×116		116							
FJOST-50×136		136							
FJOST-50×156		156							
FJOST-50×196		196							
FJOST-60×96	60	96		80			86		
FJOST-60×116		116							
FJOST-60×136		136							
FJOST-60×156		156							
FJOST-60×196		196							

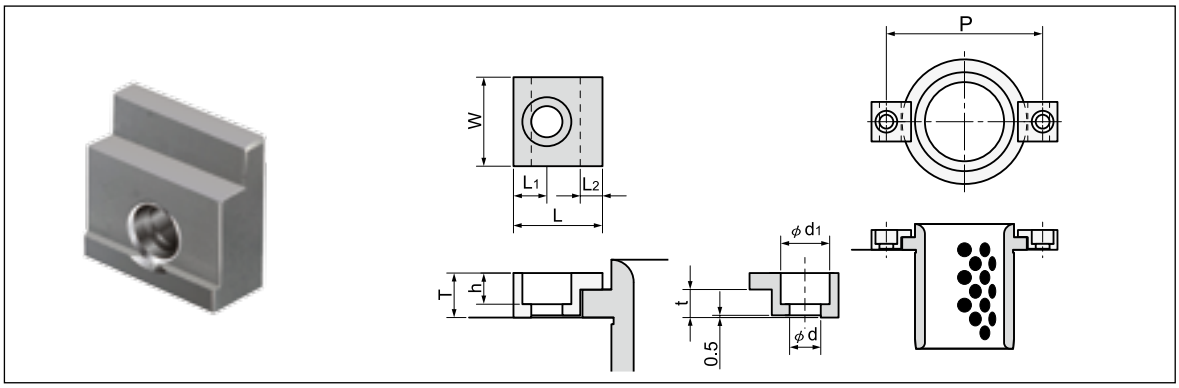
FDIN9834 自润导套
FDIN9834 Oilless Guide Bushes



单位unit:mm

型号规格 Standard No.	d H7		D h6		L	D_1	L_1	L_2	t	r	bxc	P
FDIN9834 -025	25	+0.021 0	32	0 -0.016	40	40	30	3	6.3	3	0.6x0.3	58
FDIN9834 -032	32	+0.025 0	40		50	50	40	4				66
FDIN9834 -040	40		50		63	63	50	5				79
FDIN9834 -050	50		63	0 -0.019	71	71	56	6.3		5		89
FDIN9834 -063	63	+0.030 0	80		80	90	63	8		6		123
FDIN9834 -080	80		100	0 -0.022	100	112	80	10		8		143
FDIN9834 -100	100		125	0 -0.025	125	140	106	12.5	10	10	1.0x0.4	168
FDIN9834 -125	125	+0.040 0	160		160	180	132	16		12		203
FDIN9834 -160	160		200	0 -0.029	200	220	170	16		18		243

Clamp FVDI-KL(FDIN9834)

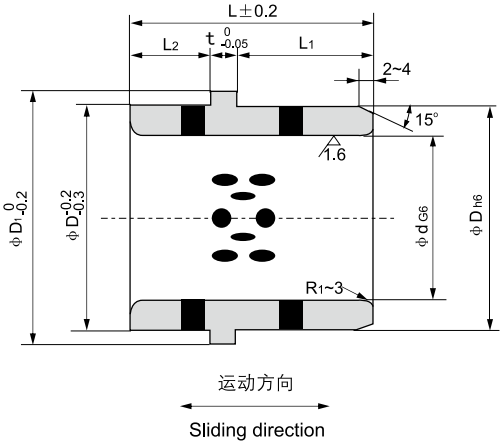


单位unit:mm

型号规格 Standard No.	W	L	T	L_1	L_2	t	d	d_1	h	Applicable bushes ID
FVDI-KL-6	20	20	10	7.5	5	6.3	7	11	7	Ø25~Ø50
FVDI-KL-10	32	32	16	11	10	10	11.5	17.5	11.5	Ø63~Ø160

FJEGB / FJEGBK 塑胶模射出座导套
FJEGB / FJEGBK Oilless Ejector Guide Bushing

Material	650 # + Graphite
材质	高力黄铜 + 石墨



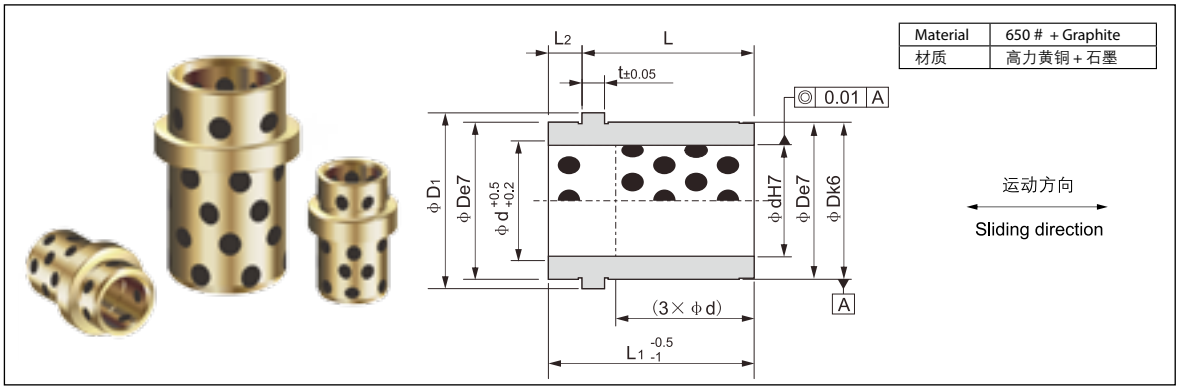
单位unit:mm

型号规格 Standard No.	d	L	d G6		D h6		D_1	L_1	L_2	t
FJEGB-16 × 26		26						12		
FJEGB-16 × 28	16	28	16	+0.017 +0.006	25		30	14		
FJEGB-16 × 33		33						19		
FJEGB-16 × 38		38				0 -0.013		24		
FJEGB-20 × 26		26						12		
FJEGB-20 × 28	20	28	20		30		35	14	10	
FJEGB-20 × 33		33						19		
FJEGB-20 × 38		38		+0.020 +0.007				24		
FJEGB-25 × 26	25	26						12		
FJEGB-25 × 28		28					40	14		
FJEGB-25 × 33		33	25		35			19		4
FJEGB-25 × 38		38						24		
FJEGB-30 × 33	30	33				0 -0.016		14		
FJEGB-30 × 38		38					45	19		
FJEGB-30 × 46		43	35		46			24	15	
FJEGB-35 × 38	35	38						19		
FJEGB-35 × 43		43					50	24		
FJEGB-35 × 48		48		+0.025 +0.009				29		
FJEGB-40 × 48	40	48	40		52		57	24		
FJEGB-40 × 53		53				0 -0.019		29	20	
FJEGB-50 × 48	50	48	50		62		67	24		
FJEGB-50 × 53		53						29		

单位unit:mm

型号规格 Standard No.	d	L	d G6		D h6		D_1	L_1	L_2	t
FJEGBK-25 × 33	25	33	25		35		40	19	6	
FJEGBK-25 × 38		38						24		
FJEGBK-30 × 48	30	48	30	+0.020 +0.006	40		45	29	11	
FJEGBK-30 × 47		47			42	0 -0.016	47	24	15	
FJEGBK-30 × 52		52						29		
FJEGBK-35 × 63	35	63	35		45		50	39	16	
FJEGBK-40 × 60	40	60	40		50		55	32	20	
FJEGBK-40 × 70		70						42		
FJEGBK-40 × 78		78						49	21	8
FJEGBK-40 × 57		57		+0.025 +0.009	55		60	24	25	
FJEGBK-40 × 67		67						29	30	
FJEGBK-45 × 88	45	88	45					59	21	
FJEGBK-45 × 95		98				0 -0.019		69		
FJEGBK-50 × 67	50	67	50		62		67	29	30	
FJEGBK-50 × 87		87						39	40	
FJEGBK-60 × 67	60	67	60	+0.029 +0.010	74		82	29	30	
FJEGBK-60 × 87		87						39	40	

FJOSG 射出头自润导套
FJOSG Ejector Guide Bushig



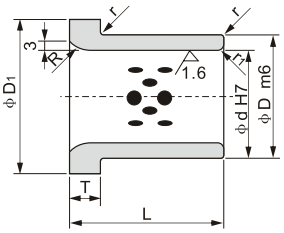
单位unit:mm

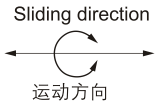
型号规格 Standard No.	d	L	L_1	L_2	t	D	Toleramce e7	Toleramce k6	D_1	L_1
FJOSG-9×15	9	12	15	3	3	14	-0.032 -0.050	+0.012 +0.001	16	9 +0.015 0
FJOSG-9×20		17	20							
FJOSG-9×25		22	25							
FJOSG-9×30		27	30							
FJOSG-9×39		36	39							
FJOSG-10×15	10	12	15							10
FJOSG-10×20		17	20							
FJOSG-10×25		22	25							
FJOSG-10×30		27	30							
FJOSG-10×39		36	39							
FJOSG-14×26	14	17	26	9	6	20	-0.040 -0.061	+0.015 +0.002	25	14 +0.018 0
FJOSG-14×31		22	31							
FJOSG-14×36		27	36							
FJOSG-14×45		36	45							
FJOSG-14×55		46	55							
FJOSG-14×65		56	65							
FJOSG-15×26	15	17	26							15
FJOSG-15×31		22	31							
FJOSG-15×36		27	36							
FJOSG-15×45		36	45							
FJOSG-15×55		46	55							
FJOSG-15×65		56	65							
FJOSG-18×26	18	17	26			26			31	18
FJOSG-18×31		22	31							
FJOSG-18×36		27	36							
FJOSG-18×45		36	45							
FJOSG-18×55		46	55							
FJOSG-18×65		56	65							
FJOSG-18×75		66	75							
FJOSG-20×26	20	17	26							20
FJOSG-20×31		22	31							
FJOSG-20×36		27	36							
FJOSG-20×45		36	45							
FJOSG-20×55		46	55							
FJOSG-20×65		56	65							
FJOSG-20×75		66	75							
FJOSG-22×26	22	17	26			30			35	22 +0.021 0
FJOSG-22×31		22	31							
FJOSG-22×36		27	36							
FJOSG-22×45		36	45							
FJOSG-22×55		46	55							
FJOSG-22×65		56	65							
FJOSG-22×75		66	75							
FJOSG-22×85		76	85							
FJOSG-22×95		86	95							

单位unit:mm

型号规格 Standard No.	d	L	L_1	L_2	t	D	Toleramce e7	Toleramce k6	D_1	L_1
FJOSG-24×26	24	17	26	9	6	30	-0.040 -0.061	+0.015 +0.002	35	24 +0.021 0
FJOSG-24×31		22	31							
FJOSG-24×36		27	36							
FJOSG-24×45		36	45							
FJOSG-24×55		46	55							
FJOSG-24×65		56	65							
FJOSG-24×75		66	75							
FJOSG-24×85		76	85							
FJOSG-24×95		86	95							
FJOSG-30×36	30	27	36			42	-0.050 -0.075	+0.018 +0.002	47	30
FJOSG-30×45		36	45							
FJOSG-30×55		46	55							
FJOSG-30×65		56	65							
FJOSG-30×75		66	75							
FJOSG-30×85		76	85							
FJOSG-30×95		86	95							
FJOSG-30×105		96	105							
FJOSG-30×125		116	125							
FJOSG-32×36	32	27	36	12	10	54	-0.060 -0.090	+0.021 +0.002	60	32 +0.025 0
FJOSG-32×45		36	45							
FJOSG-32×55		46	55							
FJOSG-32×65		56	65							
FJOSG-32×75		66	75							
FJOSG-32×85		76	85							
FJOSG-32×95		86	95							
FJOSG-32×105		96	105							
FJOSG-32×125		116	125							
FJOSG-40×68	40	56	68							40
FJOSG-40×78		66	78							
FJOSG-40×88		76	88							
FJOSG-40×98		86	98							
FJOSG-40×108		96	108							
FJOSG-40×128		116	128							
FJOSG-40×148		136	148							
FJOSG-40×168		156	168							
FJOSG-42×68	42	56	68							42
FJOSG-42×78		66	78							
FJOSG-42×88		76	88							
FJOSG-42×98		86	98							
FJOSG-42×108		96	108							
FJOSG-42×128		116	128							
FJOSG-42×148		136	148							
FJOSG-42×168		156	168							

FJEFW 自润导套
FJEFW Guide Bushes



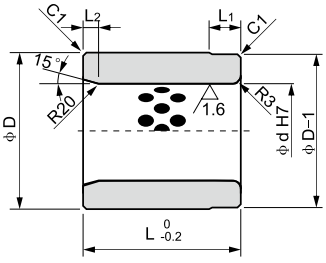


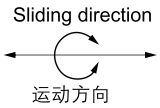
Material	650 # + Graphite
材质	高力黄铜 + 石墨

单位unit:mm

型号规格 Standard No.	d	L	d h7		D	m_6	D_1	T	R	r1	r_1
FJEFW-25 × 40	25	40	25	+0.021 0	35	+0.025 +0.009	45	7	10		
FJEFW-30 × 50	30	50	30		40		50			1	
FJEFW-40 × 70	40	70	40	+0.025 0	55		65				
FJEFW-50 × 80	50		50		65		75				
FJEFW-60 × 80	60	80	60		75	+0.030 +0.011	85				
FJEFW-65 × 80	65		65	+0.030 0	80		90	10	20		2
FJEFW-65 × 120		120								2	
FJEFW-80 × 100	80	100	80		100		110				
FJEFW-80 × 140		140				+0.035 +0.013					
FJEFW-100 × 100	100	100	100	+0.035 0	120		130				
FJEFW-100 × 140		140									

FJPBW,FJPBF 自润滑轴套
FJPBW,FJPBF Oilless Wear Plate





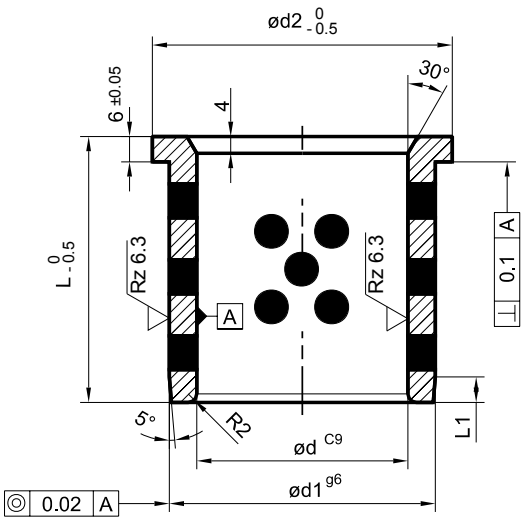
FJPBF	FC250 # + Graphite
	铸铁+石墨
FJPBW	650 # + Graphite
	高力黄铜 + 石墨

单位unit:mm

型号规格 Standard No.	d	d H7		D	Tolerance 公差	L	L_1	L_2
FJPBW FJPBF	25	25	+0.021 0	40	± 0.008	40	10	5
	30	30		50		50		
	35	35	+0.025 0	60	± 0.0095	55	15	
	40	40				60	10	
	50	50		70		75	15	
	60	60	+0.030 0	80	± 0.011	90	20	10
	80	80		100		120	25	
	100	100	+0.035 0	120		150		
	120	120		140	± 0.0125	180		

FGB71 日系汽车模具标准导套
FGB71 NAAMS Standard Guide Bushing

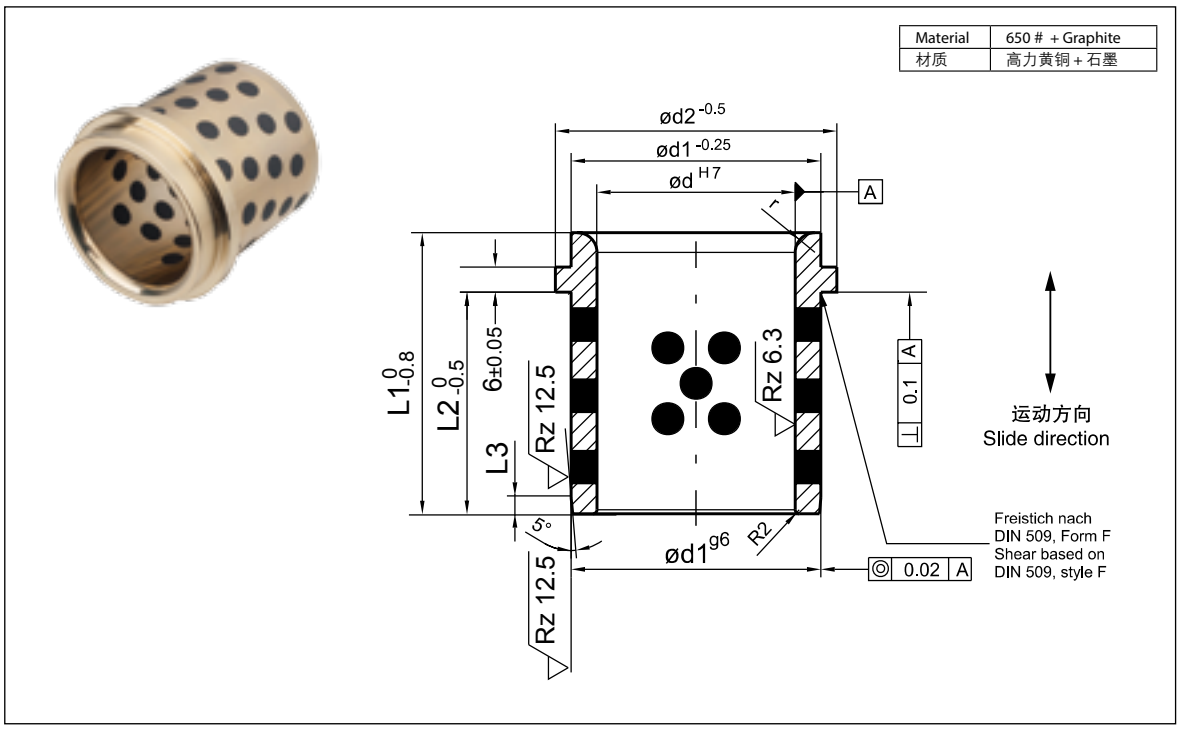
Material	650 # + Graphite
材质	高力黄铜 + 石墨



单位unit:mm

产品代号 Part No.	NAAMS Code	d	d1	d2	L	L1
FGB71 2540	G712540	25	32	40	40	4
FGB71 3250	G713250	32	40	50	50	
FGB71 4055	G714055	40	50	63	55	5
FGB71 5063	G715063	50	63	71	63	6
FGB71 6375	G716375	63	80	90	75	8
FGB71 8090	G718090	80	100	112	90	10
FGB71 100115	G711011	100	125	140	115	12
FGB71 125138	G711213	125	160	180	138	

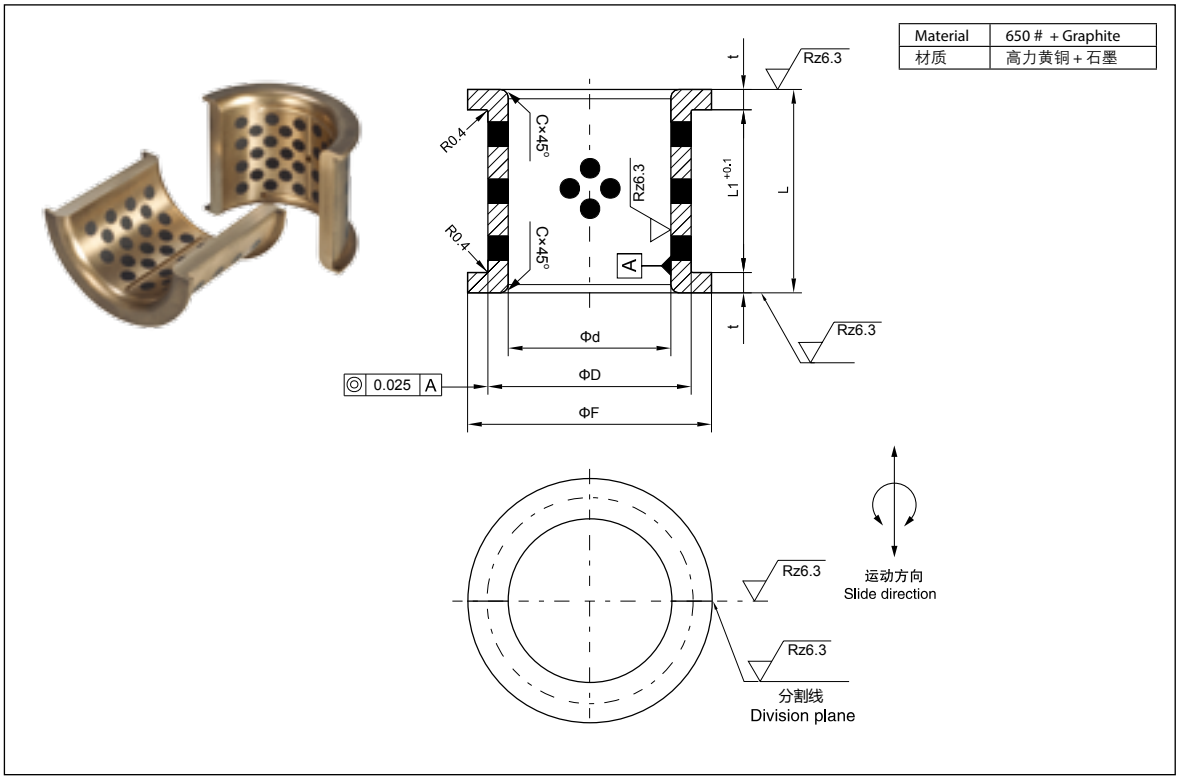
FGB61 日系汽车模具标准导套
FGB61 NAAMS Standard Guide Bushing



单位unit:mm

产品代号 Part No.	NAAMS Code	d	d1	d2	L1	L2	L3	r
FGB61 2540	G612540	25	32	40	40	30	4	
FGB61 3250	G613250	32	40	50	50	40		3
FGB61 4063	G614063	40	50	63	63	50	5	
FGB61 5071	G615071	50	63	71	71	56	6	5
FGB61 6380	G616380	63	80	90	80	63	8	6
FGB61 80100	G618010	80	100	112	100	80	10	8
FGB61 10125	G611012	100	125	140	125	106		10
FGB61 115140	G611114	115	140	155	140	120	12	
FGB61 125160	G611216	125	160	180	160	132		12

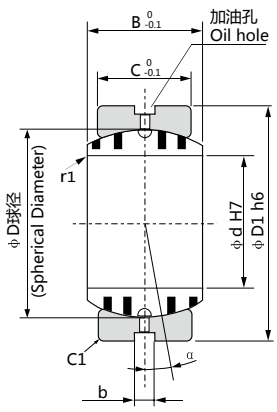
FJFFB 自润滑轴瓦
FJFFB Half-Bearing



单位unit:mm

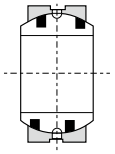
产品代号 Part No.	I.D. Φd 内径 H7	O.D. ΦD 外径		ΦF d11	L h12	L1 +0.1 0	t	C
FJFFB-030	30	38		48	34	22	6	
FJFFB-035	35	45		55	45	32	6.5	
FJFFB-040	40	50		60	50	35	7.5	1
FJFFB-045	45	55		65	55	40	7.5	
FJFFB-050	50	60	s6	70	60	45	7.5	
FJFFB-060	60	70		80	70	50	10	
FJFFB-070	70	85		95	80	60	10	
FJFFB-080	80	95		110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

FJDBS 自润滑关节轴承
FJDBS Metric Spherical Bushes

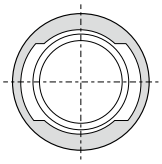


Spherical bushing assembly
关节轴承的装配

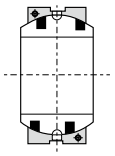
·SPS 015~090

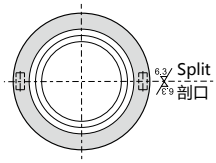


Fixing direction
安装方向



·JDBS≥100





Inner ring 内圈	Material 材质	650 # + Gr/石墨
Outer ring 外圈	Material	S45C
	Hardness 硬度	HRC 25~30

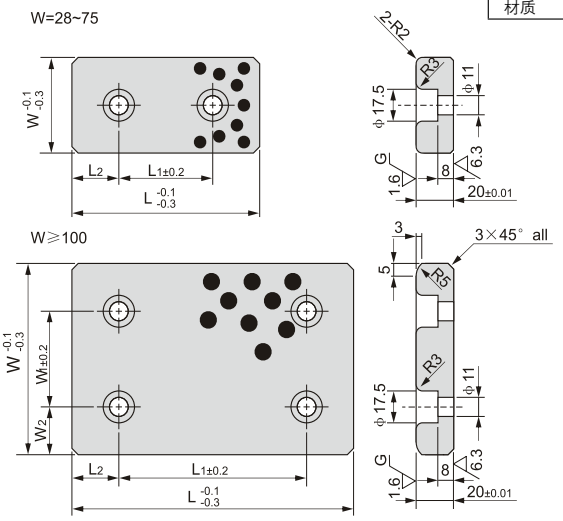
座孔 Housing: H7
轴 Shaft: g6

单位unit:mm

型号规格 Standard No.	d	H7	D1	h6	B	C	D	b	调整角度 Alignment Angle α°	径向承载 Allowable Radial Load (kN)	径向承载 Allowable Thrust Load (kN)
FJDBS-015	15	+0.018 0	26	0 -0.013	12	9	22		8	6.5	0.5
FJDBS-020	20		32		16	14	28		4	12.6	1.4
FJDBS-025	25	+0.021 0	42	0 -0.016	21	18	36		5	21.8	2.5
FJDBS-030	30		50		27	23	44		6	32.0	3.5
FJDBS-035	35		55		30	26	49		5	43.7	4.8
FJDBS-040	40	+0.025 0	62	0 -0.019	33	28	55	4	6	54.7	5.7
FJDBS-045	45		72		36	31	62		5	69.7	7.2
FJDBS-050	50		80		42	36	70		–	92.4	10
FJDBS-060	60		100		53	45	90		6	143	16
FJDBS-070	70	+0.030 0	110	0 -0.022	58	50	99		5	181	20
FJDBS-080	80		130		70	60	115		6	254	30
FJDBS-090	90		140		76	65	125		–	313	36
FJDBS-100	100	+0.035 0	160	0 -0.025	88	75	145		–	544	64
FJDBS-110	110		170		93	80	155		5	642	73
FJDBS-120	120		190		105	90	17		6	797	94
FJDBS-130	130		200		110	95	180		5	880	105
FJDBS-140	140		210	0 -0.029	90	70	–		7	668	56
FJDBS-150	150	+0.040 0	220		120	105	200	6	5	1135	129
FJDBS-160	160		230		105	80	–		8	891	73
FJDBS-180	180		260	0 -0.032	105	–	225		6	1002	74
FJDBS-200	200		290		130	100	250		7	1434	117
FJDBS-220	220	+0.046 0	320		135	–	275		8	1577	118
FJDBS-240	240		340	0 -0.036	140	–	300		–	1720	–
FJDBS-260	260		370		150	110	325	9	7	2072	143
FJDBS-280	280	+0.052 0	400		155	120	350		6	2455	172
FJDBS-300	300		430	0 -0.040	165	120	375		7	2630	–

FJESW 自润滑板
FJESW Oilless Wear Plate

Material	650 # + Graphite
材质	高力黄铜 + 石墨



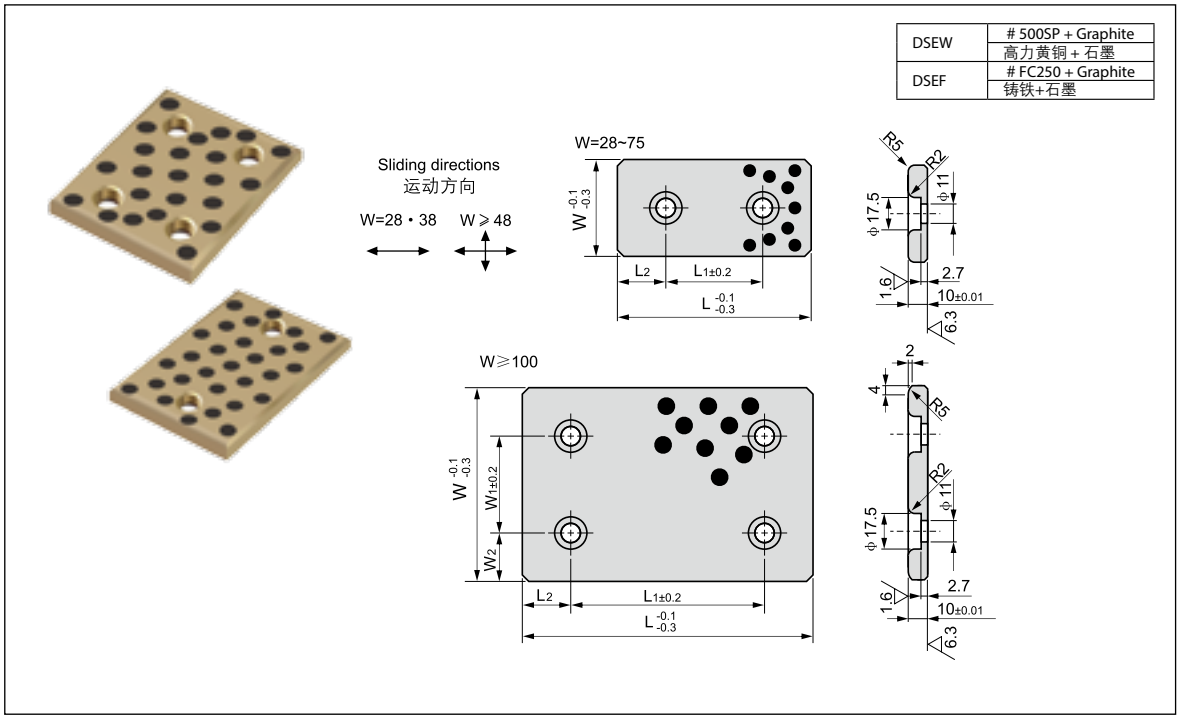
单位unit:mm

型号规格 Standard No.	W	L	W_1	W_2	L_1	L_2
FJESW-28×75	28	75			45	15
FJESW-28×100	–	100			50	25
FJESW-28×150	–	150			100	–
FJESW-38×75	38	75			45	15
FJESW-38×100	–	100			50	25
FJESW-38×150	–	150			100	–
FJESW-48×75	48	75			45	15
FJESW-48×100	–	100			50	25
FJESW-48×125	–	125			75	–
FJESW-48×150	–	150	-	-	100	–
FJESW-48×200	–	200			150	–
FJESW-58×75	58	75			45	15
FJESW-58×100	–	100			50	25
FJESW-58×150	–	150			100	–
FJESW-75×75	75	75			25	–
FJESW-75×100	–	100			50	–
FJESW-75×125	–	125			75	–
FJESW-75×150	–	150			100	–
FJESW-75×200	–	200			150	–

单位unit:mm

型号规格 Standard No.	W	L	W_1	W_2	L_1	L_2
FJESW-100×100	100	100		25	50	25
FJESW-100×125	–	125		–	75	–
FJESW-100×150	–	150		–	100	–
FJESW-100×200	–	200		–	150	–
FJESW-100×250	–	250		–	200	–
FJESW-100×300	–	300	50	–	–	50
FJESW-125×125	125	125		37.5	75	25
FJESW-125×150	–	150		–	100	–
FJESW-125×200	–	200		–	150	–
FJESW-125×250	–	250		–	200	–
FJESW-125×300	–	300		–	–	50
FJESW-125×350	–	350		–	–	75
FJESW-150×150	150	150		25	100	25
FJESW-150×200	–	200	100	–	150	–
FJESW-150×250	–	250		–	200	–

FJTWP 自润滑板
FJTWP Oilless Wear Plate



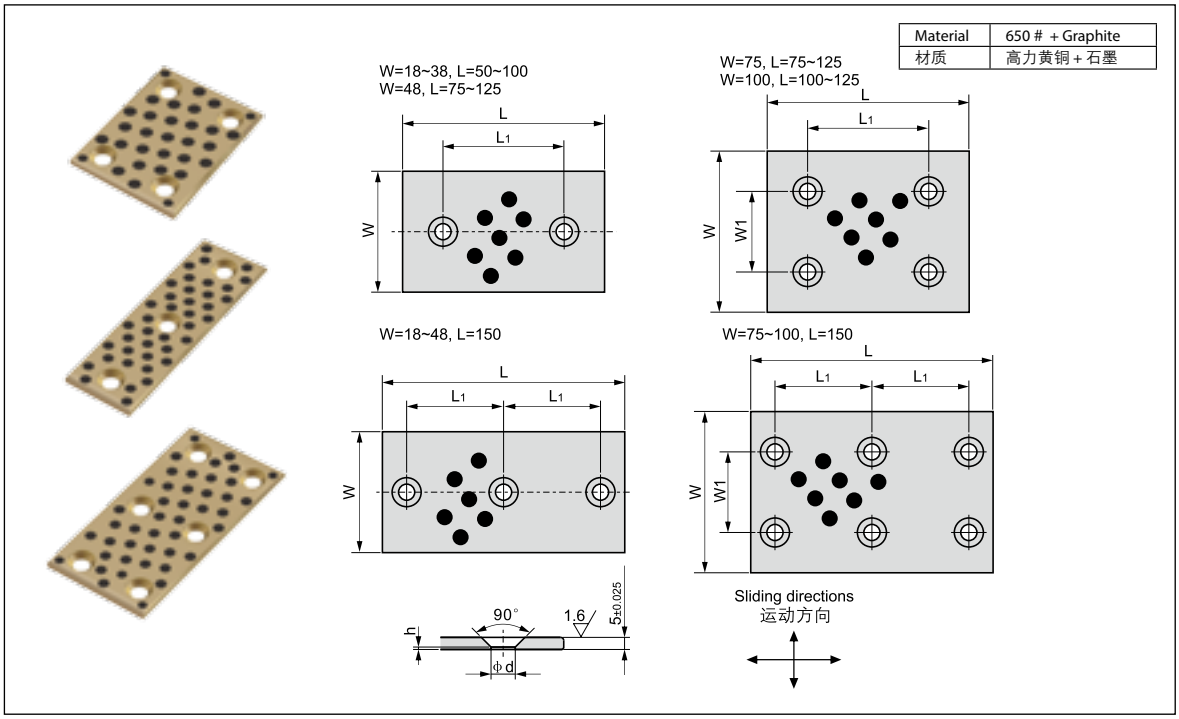
单位unit:mm

型号规格 Standard No.	W	L	W_1	W_2	L_1	L_2
FJTWP-28 × 75	28	75	–	–	45	15
FJTWP-28 × 100		100			50	25
FJTWP-28 × 125		125			75	
FJTWP-28 × 150		150			100	
FJTWP-38 × 75	38	75			45	15
FJTWP-38 × 100		100			50	25
FJTWP-38 × 125		125			75	
FJTWP-38 × 150		150			100	
FJTWP-48 × 75	48	75			45	15
FJTWP-48 × 100		100			50	25
FJTWP-48 × 125		125			75	
FJTWP-48 × 150		150			100	
FJTWP-48 × 200		200			150	
FJTWP-58 × 75	58	75			45	15
FJTWP-58 × 100		100			50	25
FJTWP-58 × 150		150			100	

单位unit:mm

型号规格 Standard No.	W	L	W_1	W_2	L_1	L_2
FJTWP-75 × 75	75	75	–	–	25	25
FJTWP-75 × 100		100			50	
FJTWP-75 × 125		125			75	
FJTWP-75 × 150		150			100	
FJTWP-75 × 200		200			150	
FJTWP-100 × 100	100	100	50	25	50	25
FJTWP-100 × 125		125			75	
FJTWP-100 × 150		150			100	
FJTWP-100 × 200		200			150	
FJTWP-100 × 250		250			200	
FJTWP-125 × 150	125	150	100	37.5	100	25
FJTWP-125 × 200		200			150	
FJTWP-125 × 250		250			200	
FJTWP-150 × 150	150	150			100	
FJTWP-150 × 200		200			150	

FJUWP 自润滑板
FJUWP Oilless Wear Plate



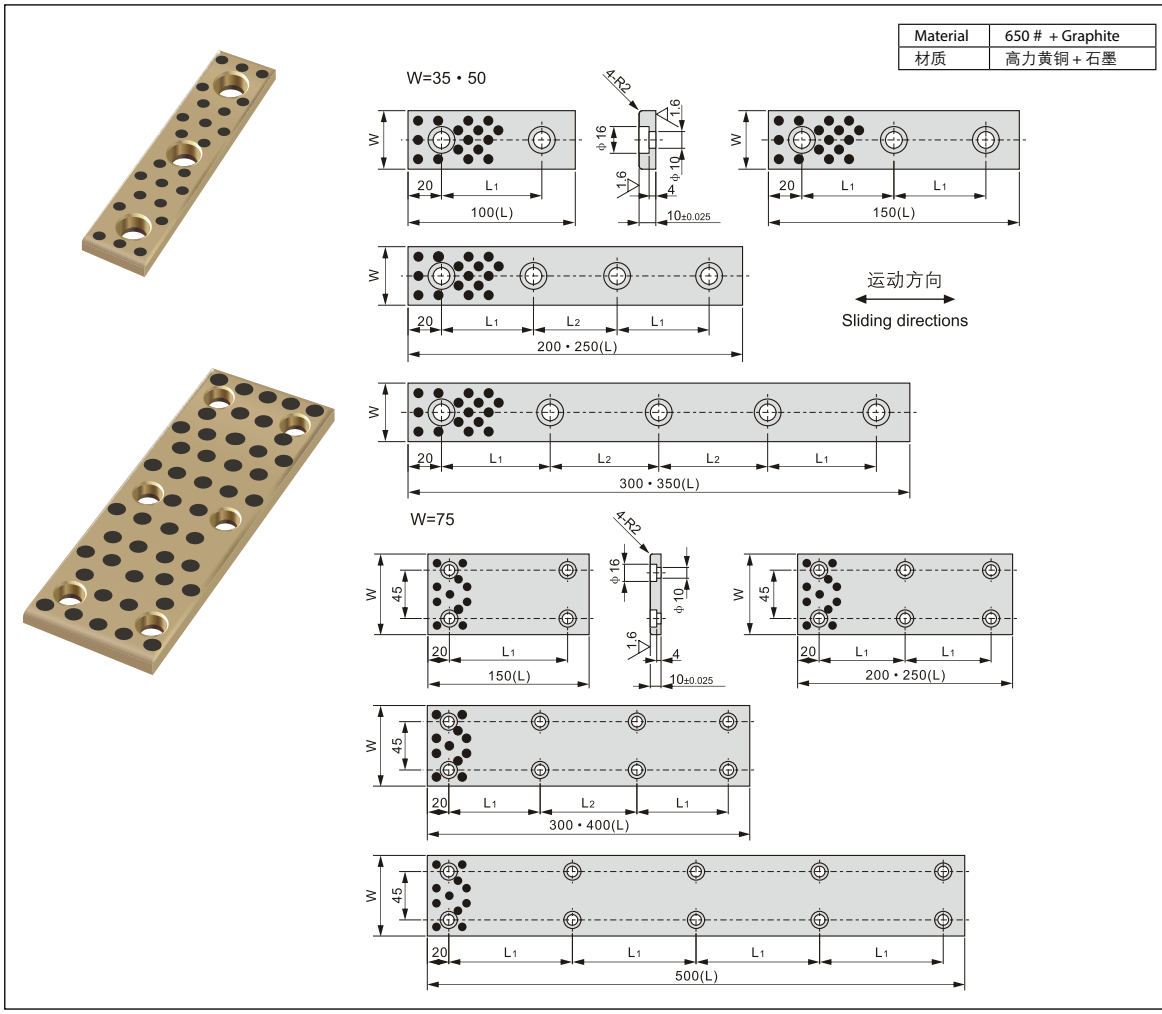
单位unit:mm

型号规格 Standard No.	W	L	W_1	L_1	d	h	螺栓 Mounting Bolt
FJUWP 18 × 50		50		20			
FJUWP 18 × 75	18	75	-	45	6.5	1.5	M6
FJUWP 18 × 100		100		70			
FJUWP 18 × 150		150		60			
FJUWP 28 × 50		50		20			
FJUWP 28 × 75	28	75	-	45			
FJUWP 28 × 100		100		70			
FJUWP 28 × 150		150		60	10	0.8	M8
FJUWP 38 × 50		50		20			
FJUWP 38 × 75	38	75	-	45			
FJUWP 38 × 100		100		70			
FJUWP 38 × 150		150		60			

单位unit:mm

型号规格 Standard No.	W	L	W_1	L_1	d	h	螺栓 Mounting Bolt
FJUWP 48 × 75		75		45			
FJUWP 48 × 100	48	100	-	70			
FJUWP 48 × 125		125		95			
FJUWP 48 × 150		150		60			
FJUWP 75 × 75		75		45			
FJUWP 75 × 100	75	100	45	70	10	0.8	M8
FJUWP 75 × 125		125		95			
FJUWP 75 × 150		150		60			
FJUWP 100 × 100		100		70			
FJUWP 100 × 125	100	125	70	95			
FJUWP 100 × 150		150		60			

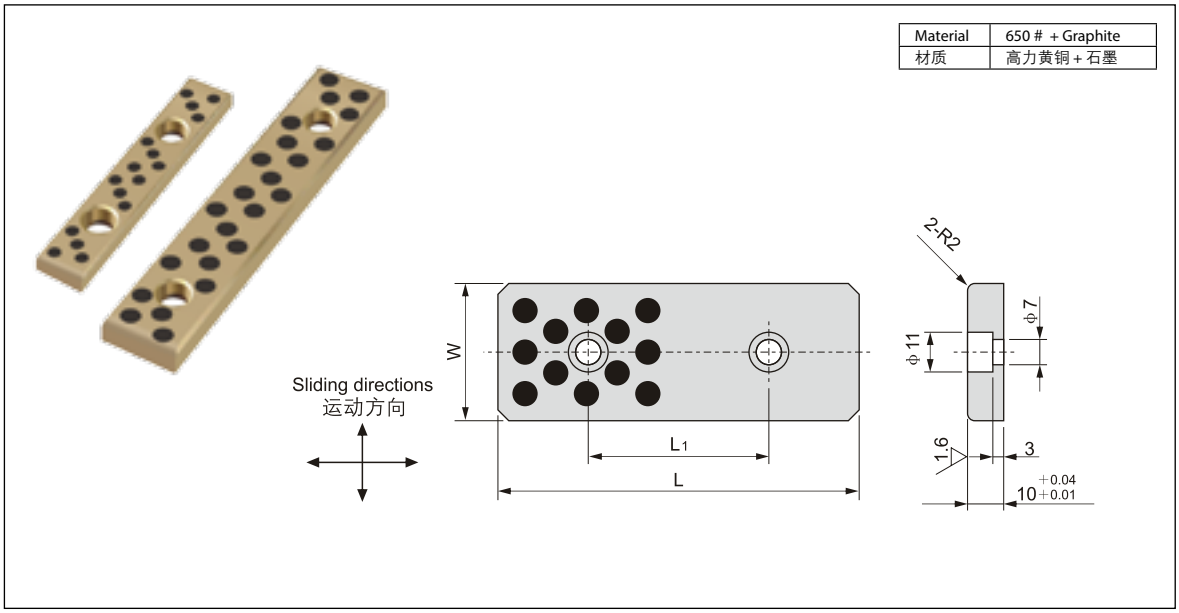
FJOLP 自润滑板
FJOLP Oilless Wear Plate



型号规格 Standard No.	W	L	螺栓位置 Bolt Position		螺栓数量 Bolt Q'ty
			L_1	L_2	
FJOLP-35 × 100	35	100	60	-	2
FJOLP-35 × 150		150	55		3
FJOLP-35 × 200		200	55	50	4
FJOLP-35 × 250		250	70	70	
FJOLP-35 × 300		300	65	65	5
FJOLP-35 × 350		350	80		
FJOLP-50 × 100	50	100	60	75	2
FJOLP-50 × 150		150	55		3
FJOLP-50 × 200		200	55	50	4

型号规格 Standard No.	W	L	螺栓位置 Bolt Position		螺栓数量 Bolt Q'ty
			L_1	L_2	
FJOLP-50 × 250	50	250	70	70	4
FJOLP-50 × 300		300	65	65	5
FJOLP-50 × 350		350	80		
FJOLP-75 × 150	75	150	110	75	4
FJOLP-75 × 200		200	80		6
FJOLP-75 × 250		250	105		
FJOLP-75 × 300		300	85	90	8
FJOLP-75 × 400		400	120	120	
FJOLP-75 × 500		500	115		10

FJOML 自润滑板
FJOML Oilless Wear Plate



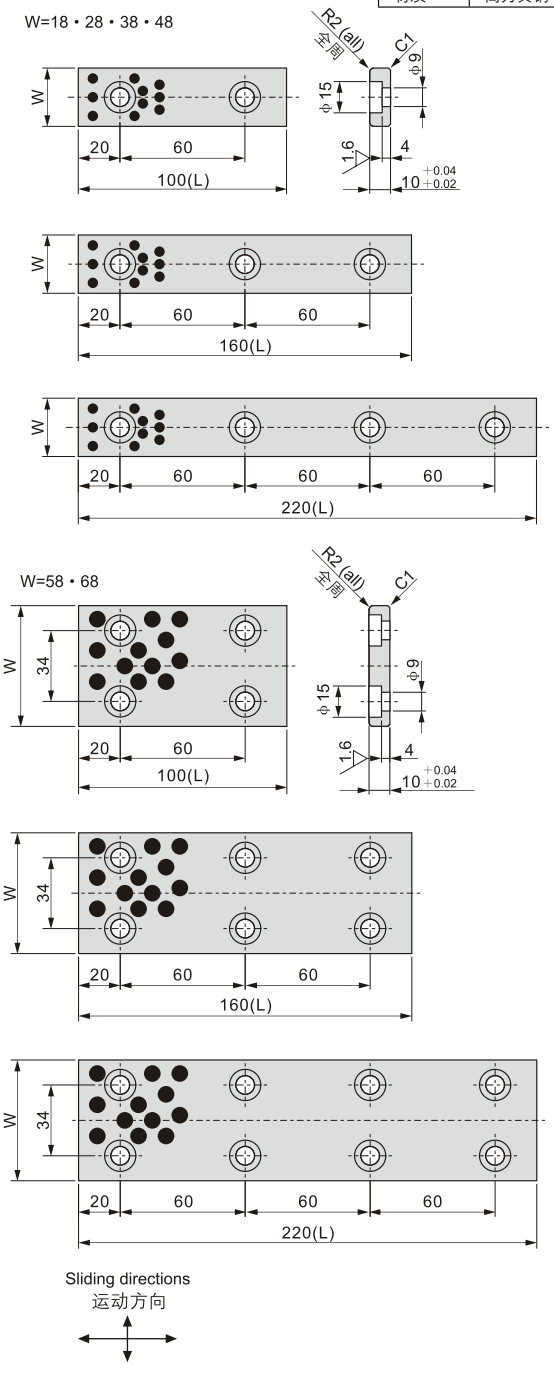
型号规格 Standard No.	W	L	L_1
FJOML-18×75	18	75	45
FJOML-18×100		100	50
FJOML-18×125		125	75
FJOML-18×150		150	100
FJOML-28×75	28	75	45
FJOML-28×100		100	50
FJOML-28×125		125	75
FJOML-28×150		150	100
FJOML-38×75	38	75	45
FJOML-38×100		100	50
FJOML-38×125		125	75
FJOML-38×150		150	100
FJOML-48×75	48	75	45
FJOML-48×100		100	50
FJOML-48×125		125	75
FJOML-48×150		150	100

FJTLP 自润滑板
FJTLP Oilless Wear Plate

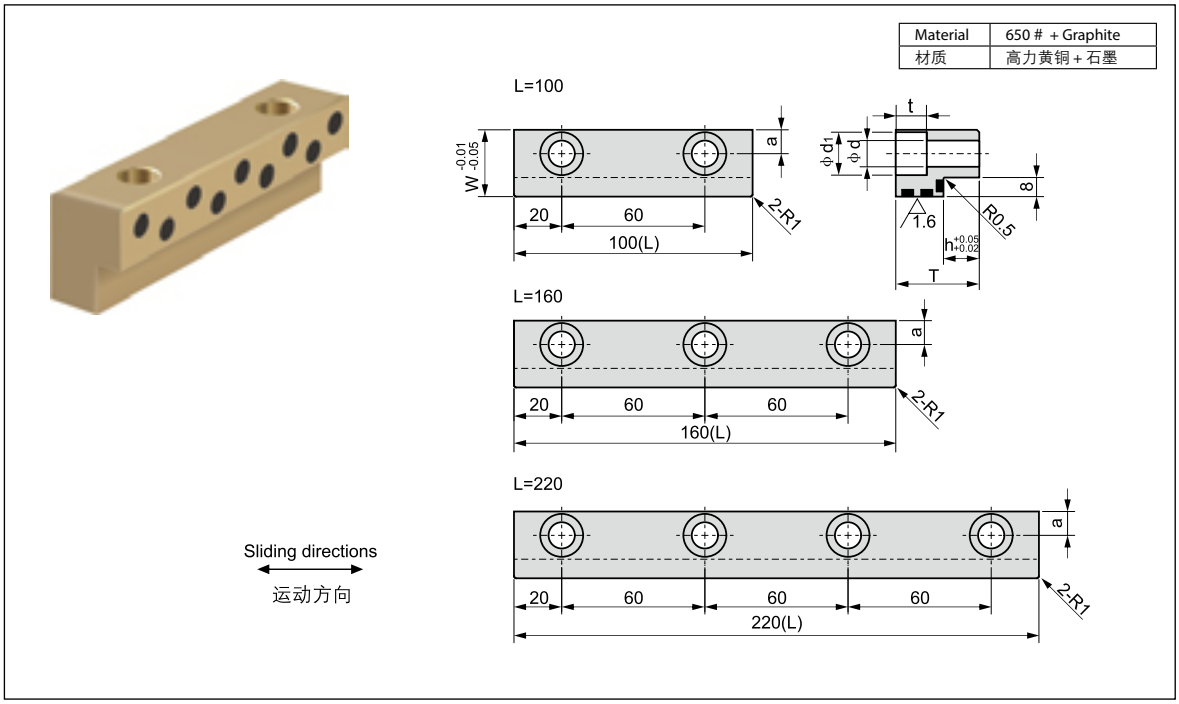
单位unit:mm

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

Material	650 # + Graphite
材质	高力黄铜 + 石墨



FJGLDW 自润导轨
FJGLDW Oilless Guide Rail

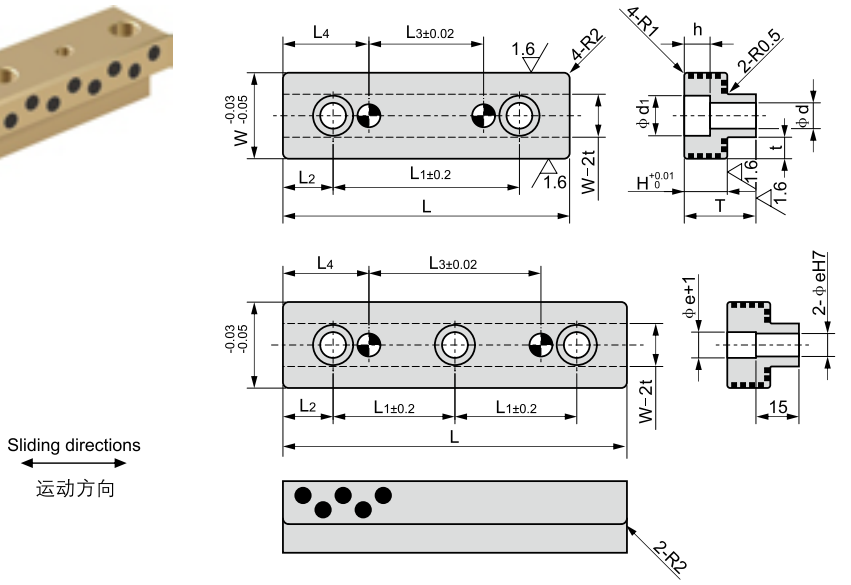


单位unit:mm

型号规格 Standard No.	W	L	T	a	d	d_1	h	t
FJGLDW-23x100		100						
FJGLDW-23x160		160	30				15	
FJGLDW-23x220		220						
FJGLDW-23x100	23	100		7.5	7	11		7
FJGLDW-23x160		160	41				26	
FJGLDW-23x220		220						
FJGLDW-28x100		100						
FJGLDW-28x160		160	25				10	
FJGLDW-28x220		220						
FJGLDW-28x100		100						
FJGLDW-28x160	28	160	35	10	11	18	15	13
FJGLDW-28x220		220						
FJGLDW-28x100		100						
FJGLDW-28x160		160	56				26	
FJGLDW-28x220		220						

FJTGLW 自润导轨
FJTGLW Oilless Guide Rail

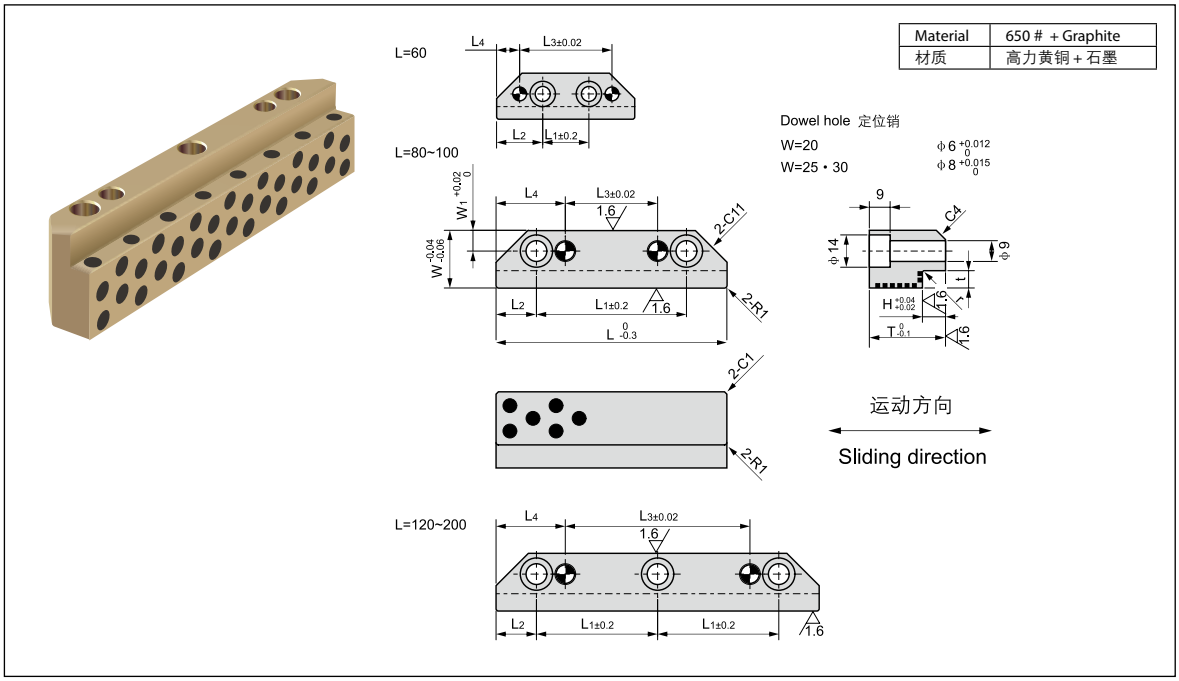
Material	650 # + Graphite
材质	高力黄铜 + 石墨



单位unit:mm

型号规格 Standard No.	W	L	L_1	L_2	L_3	L_4	T	H	t	d	d_1	h	e H7
FJTGLW-20×60		60	35		15								
FJTGLW-20×80	20	80	55	12.5	35	22.5	15		4.5	5.5	9.5	6	
FJTGLW-20×100		100	75		55			8					6 $^{+0.012}_{0}$
FJTGLW-25×80		80	50		20								
FJTGLW-25×100	25	100	70	15	40		20		5.5	6.5	11	7	
FJTGLW-25×120		120	45		60	30							
FJTGLW-30×100		100	65		40								
FJTGLW-30×120	30	120	42.5	17.5	60		25	10	7.5	9	14	9	
FJTGLW-30×140		140	52.5		80								
FJTGLW-40×120		120	40		40								8 $^{+0.015}_{0}$
FJTGLW-40×140	40	140	50	20	60	40	30	15	11	11	18	11	
FJTGLW-40×160		160	60		80								
FJTGLW-40×180		180	70		100								

FJGLXS 自润滑板
FJGLXS Oilless Wear Plate

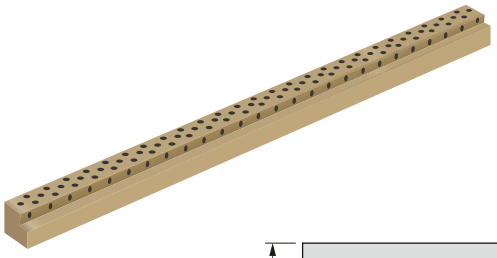


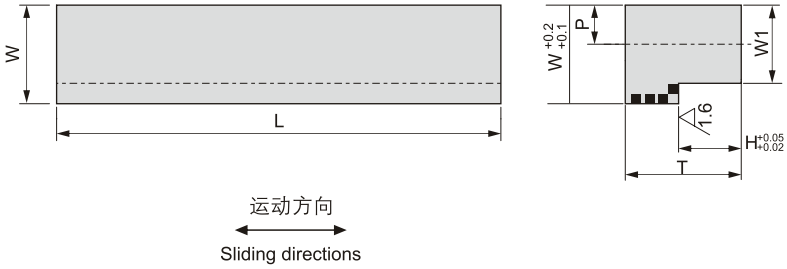
单位unit:mm

型号规格 Standard No.	W	L	T	W_1	L_1	L_2	L_3	L_4	H	t	r
FJGLXS-20×60×T		60			20	20	40	10			
FJGLXS-20×80×T		80			50		20				
FJGLXS-20×100×T	20	100	23		70		40		8	5.5	0.5
FJGLXS-20×120×T		120			45	15	60				
FJGLXS-20×140×T		140			55		80				
FJGLXS-20×160×T		160			65		100				
FJGLXS-25×80×T		80		9	45		20	30			
FJGLXS-25×100×T		100			65		40				
FJGLXS-25×120×T		120	28		42.5		60				
FJGLXS-25×140×T	25	140	33		52.5	17.5	80		10	7.5	
FJGLXS-25×160×T		160	43		62.5		100				
FJGLXS-25×180×T		180			72.5		120				
FJGLXS-25×200×T		200			82.5		140				0.8
FJGLXS-30×100×T		100			60		20				
FJGLXS-30×120×T		120			40		40				
FJGLXS-30×140×T	30	140	43	11	50	20	60	40	15	11	
FJGLXS-30×160×T		160	53		60		80				
FJGLXS-30×180×T		180			70		100				
FJGLXS-30×200×T		200			80		120				

FJGLX 自润滑板
FJGLX Oilless Wear Plate

Material	650 # + Graphite
材质	高力黄铜 + 石墨

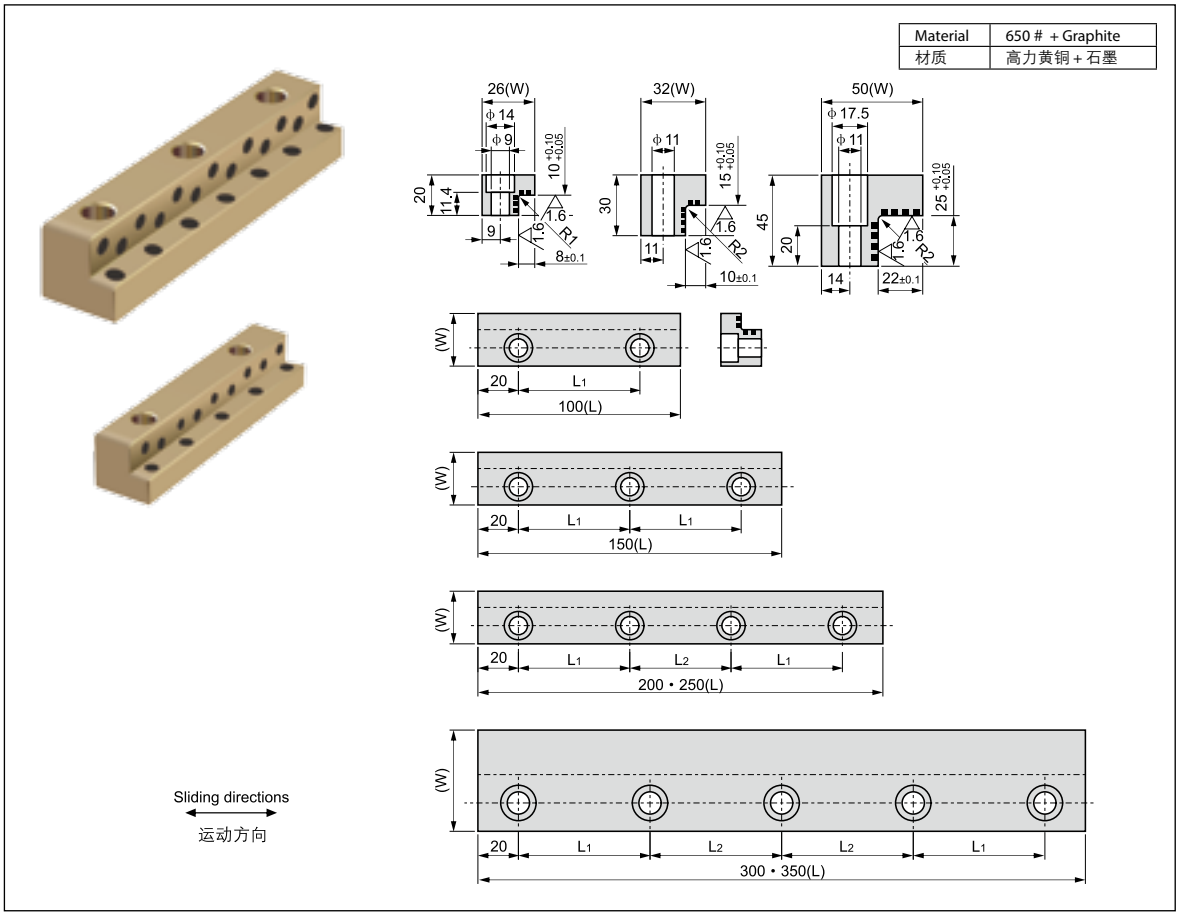




单位unit:mm

型号规格 Standard No.	W	L	T	W_1	H	推荐安装孔 Recommended Mounting Hole	
						P	Size
FJGLX-20 × 15			15				
FJGLX-20 × 20			20		5		
FJGLX-20 × 25	20	320	25	14.5		8	
FJGLX-20 × 23			23		8		
FJGLX-20 × 28			28				
FJGLX-25 × 28			28				M8
FJGLX-25 × 33	25		33	17.5	10		
FJGLX-25 × 43			43			10	
FJGLX-30 × 38			38				
FJGLX-30 × 43	30		43	19			
FJGLX-30 × 53		320 605	53		15		
FJGLX-35 × 43			43				
FJGLX-35 × 53	35		53	23		12	M10
FJGLX-35 × 63			63				
FJGLX-40 × 45			45		20		
FJGLX-40 × 55	40		55	28		14	M12
FJGLX-40 × 65			65				

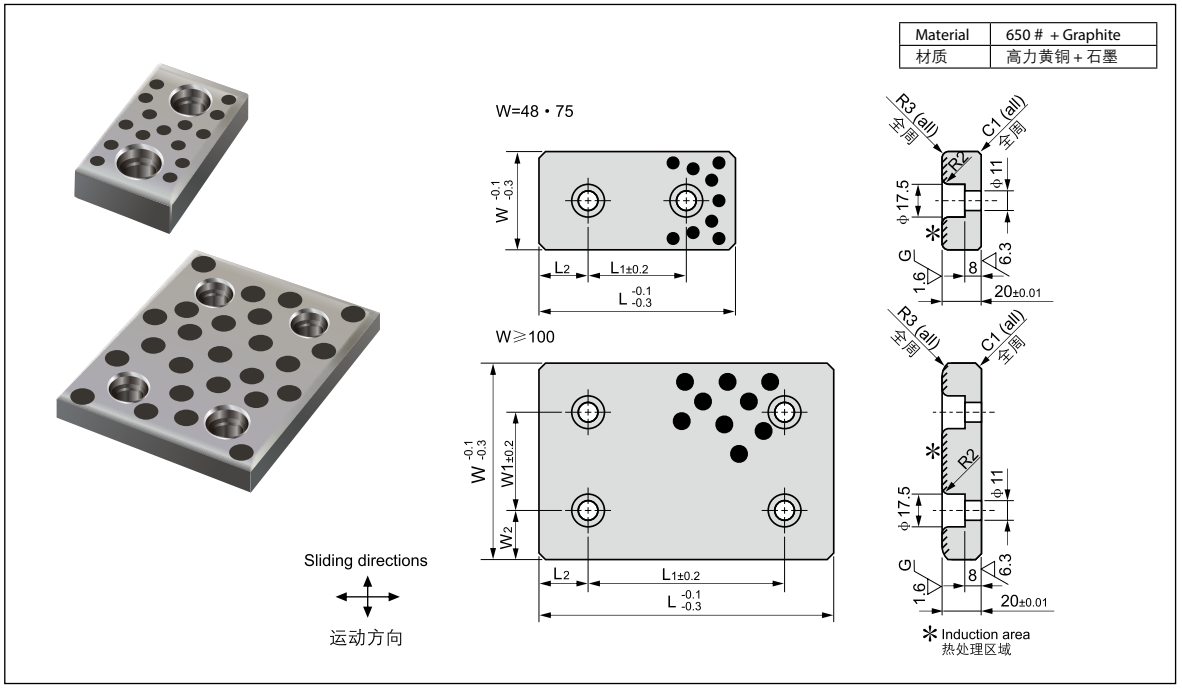
FJSOL 自润滑板
FJSOL Oilless Wear Plate



单位unit:mm

型号规格 Standard No.	W	L	螺栓孔位置 Bolt Position		螺栓孔 Mounting Bolt	
			L1	L1	尺寸 Size	数量 Quantity
FJSOL-26 × 100	26	100	60	-	M8	2
FJSOL-26 × 150		150	55			3
FJSOL-26 × 200		200		50		4
FJSOL-32 × 100	32	100	60	-	M10	2
FJSOL-32 × 150		150	55			3
FJSOL-32 × 200		200		50		4
FJSOL-32 × 250		250	70	70		
FJSOL-50 × 200	50	200	55	50		
FJSOL-50 × 250		250	70	70		
FJSOL-50 × 300		300	65	65		5
FJSOL-50 × 350		350	80	75		

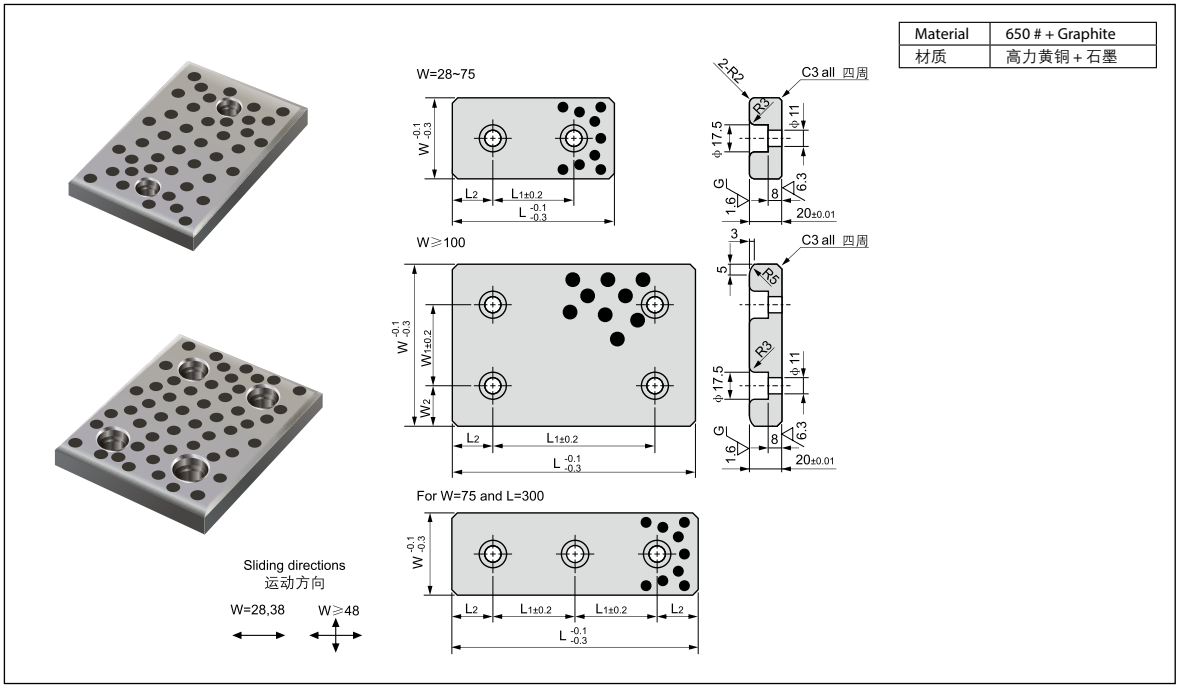
FJFRP 自润滑板
FJFRP Oilless Wear Plate



单位unit:mm

型号规格 Standard No.	W	L	W_1	W_2	L_1	L_2
FJFRP-48 × 75		75			45	15
FJFRP-48 × 100		100			50	
FJFRP-48 × 125	48	125			75	
FJFRP-48 × 150		150			100	
FJFRP-48 × 200		200			150	
FJFRP-75 × 75		75	–	–	25	
FJFRP-75 × 100		100			50	
FJFRP-75 × 125	75	125			75	
FJFRP-75 × 150		150			100	
FJFRP-75 × 200		200			150	
FJFRP-100 × 100		100			50	
FJFRP-100 × 125		125			75	25
FJFRP-100 × 150	100	150		25	100	
FJFRP-100 × 200		200			150	
FJFRP-100 × 250		250	50		200	
FJFRP-125 × 125		125			75	
FJFRP-125 × 150	125	150		37.5	100	
FJFRP-125 × 200		200			150	
FJFRP-125 × 250		250			200	
FJFRP-150 × 150		150			100	
FJFRP-150 × 200	150	200	100	25	150	
FJFRP-150 × 250		250			200	

FJESF 自润滑板
FJESF Oilless Wear Plate



单位unit:mm

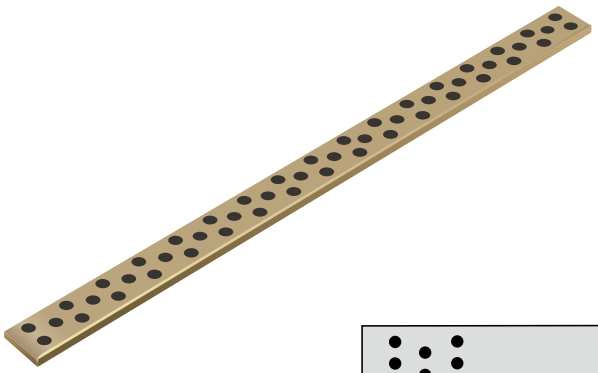
型号规格 Standard No.	W	L	W_1	W_2	L_1	L_2
FJESF-28 × 75	28	75	–	–	45	15
FJESF-28 × 100		100			50	25
FJESF-28 × 125		125			75	
FJESF-28 × 150		150			100	
FJESF-28 × 200		200			150	
FJESF-38 × 75	38	75			45	15
FJESF-38 × 100		100			50	25
FJESF-38 × 125		125			75	
FJESF-38 × 150		150			100	
FJESF-38 × 200		200			150	
FJESF-48 × 75	48	75			45	15
FJESF-48 × 100		100			50	25
FJESF-48 × 125		125			75	
FJESF-48 × 150		150			100	
FJESF-48 × 200		200			150	
FJESF-58 × 75	58	75			45	15
FJESF-58 × 100		100			50	25
FJESF-58 × 125		125			75	
FJESF-58 × 150		150			100	
FJESF-75 × 75	75	75			25	
FJESF-75 × 100		100			50	
FJESF-75 × 125		125			75	

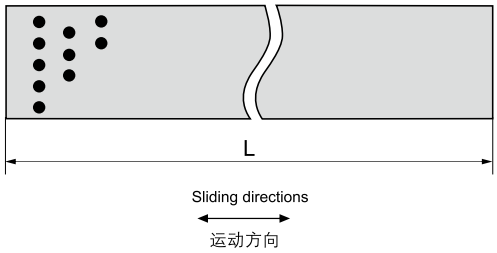
单位unit:mm

型号规格 Standard No.	W	L	W_1	W_2	L_1	L_2
FJESF-75 × 150	75	150	–	–	100	25
FJESF-75 × 200		200			150	
FJESF-75 × 250		250			200	
FJESF-75 × 300		300			100	50
FJESF-100 × 100	100	100	50	25	50	25
FJESF-100 × 125		125			75	
FJESF-100 × 150		150			100	
FJESF-100 × 200		200			150	
FJESF-100 × 250		250			200	
FJESF-100 × 300		300				50
FJESF-125 × 125	125	125	50	37.5	75	25
FJESF-125 × 150		150			100	
FJESF-125 × 200		200			150	
FJESF-125 × 250		250			200	
FJESF-125 × 300		300				50
FJESF-150 × 150	150	150	100	25	100	25
FJESF-150 × 200		200			150	
FJESF-150 × 250		250			200	
FJESF-150 × 300		300			250	
FJESF-200 × 200	200	200	150	25	150	
FJESF-200 × 250		250			200	
FJESF-200 × 300		300			250	

FJSP 自润滑板
FJSP Oilless Wear Plate

Material	650 # + Graphite
材质	高力黄铜 + 石墨

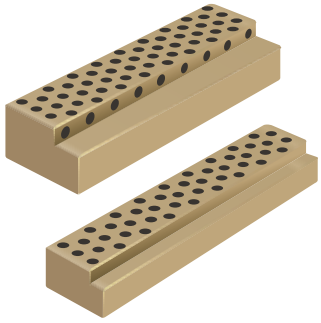




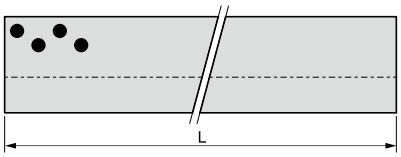
单位unit:mm

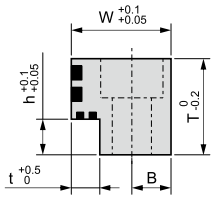
型号规格 Standard No.	W	T	L	推荐螺栓 Recommend bolt
FJSP-20 × 5 × 305	20	5.3	305	M6 × 10 Countersunk head screw 沉头螺钉
FJSP-25 × 5 × 305	25			
FJSP-30 × 5 × 305	30			
FJSP-30 × 5 × 400			400	
FJSP-35 × 10 × 605	35	10.3	605	M8 × 15 沉头螺钉 Hex socket round head screw
FJSP-40 × 10 × 605	40			
FJSP-50 × 10 × 605	50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

FJOVL 自润滑板
FJOVL Oilless Wear Plate



Material	650 # + Graphite
材质	高力黄铜 + 石墨





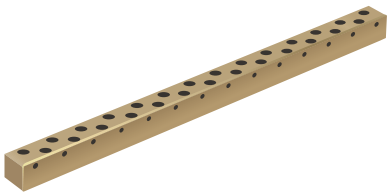
单位unit:mm

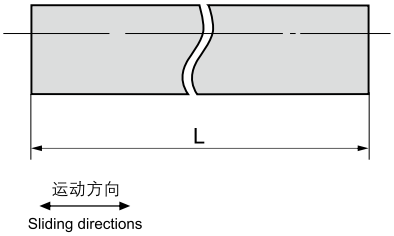
型号规格 Standard No.	L	W	T	h	t	B
FJOVL-01	205	15	12	5		6
FJOVL-02	205		17			
FJOVL-03	320	20		7	5	7.5
FJOVL-04	205		22			
FJOVL-05	320					
FJOVL-06	205					
FJOVL-07	320		27			
FJOVL-08	605	28		10	8	11
FJOVL-09	205					
FJOVL-10	320		36			
FJOVL-11	605					

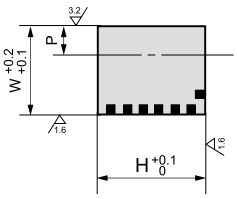
单位unit:mm

型号规格 Standard No.	L	W	T	h	t	B
FJOVL-12	205					
FJOVL-13	320	28	46	10	8	11
FJOVL-14	605					
FJOVL-15	205					
FJOVL-16	320		66	22		
FJOVL-17	605	40			12	14
FJOVL-18	205					
FJOVL-19	320		86	26		
FJOVL-20	605					

FJGBX 自润滑板 FJGBX Oilless Wear Plate







单位unit:mm

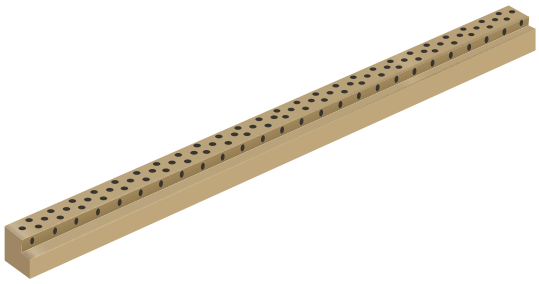
型号规格 Standard No.	W	H	L	Recom.bolt 螺栓	
				P	Size 规格
FJGBX-20×10		10			
FJGBX-20×15	20	15	320		
FJGBX-20×20		20			
FJGBX-25×18		18			
FJGBX-25×23	25	23		10	M8
FJGBX-25×33		33	605		
FJGBX-30×23		23			
FJGBX-30×28	30	28			
FJGBX-30×38		38			

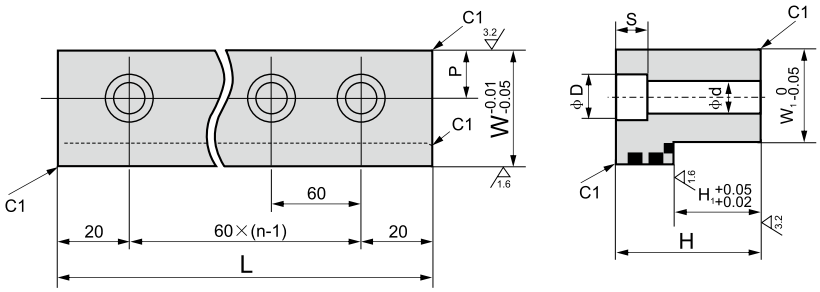
单位unit:mm

型号规格 Standard No.	W	H	L	Recom.bolt 螺栓	
				P	Size 规格
FJGBX-35×28		28			
FJGBX-35×38	35	38		12	M10
FJGBX-35×48		48	605		
FJGBX-40×28		28			
FJGBX-40×38	40	38		14	M12
FJGBX-40×48		48			

FJSL 自润滑板
FJSL Oilless Wear Plate

Material	650 # + Graphite
材质	高力黄铜 + 石墨

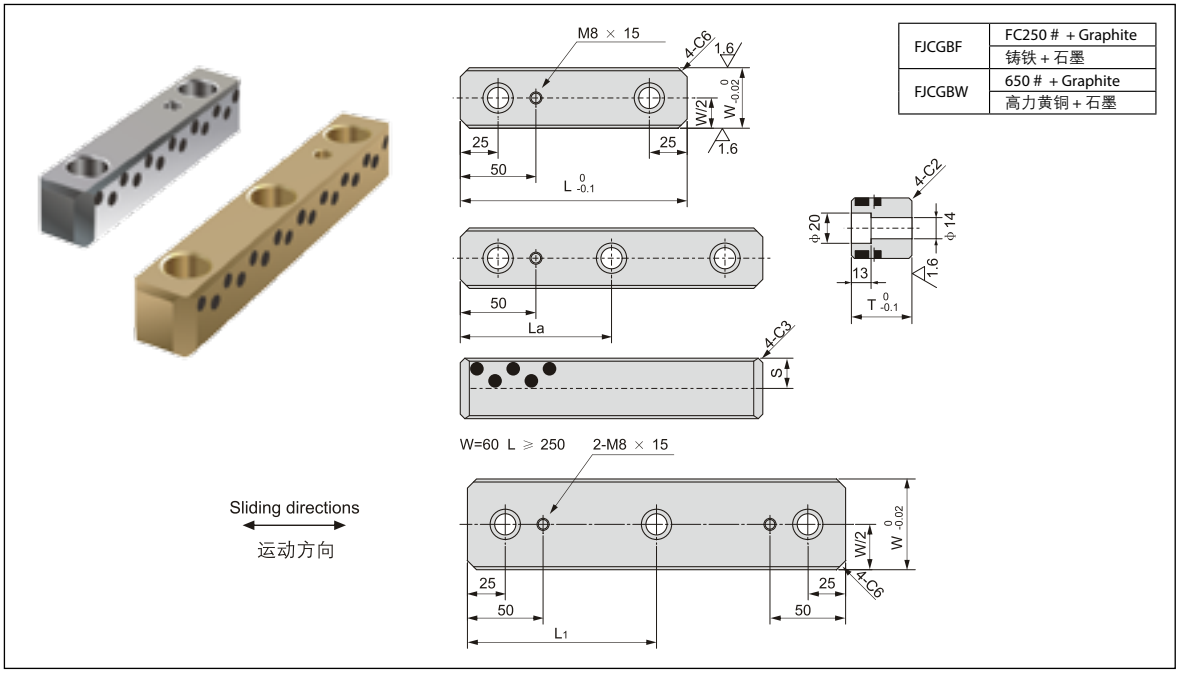




单位unit:mm

型号规格 Standard No.	W	w_1	L	H	H_1	n	p	ϕ D	ϕ d	S
FJGL-100×30			100			2				
FJGL-160×30			160	30	15	3				
FJGL-220×30	23	15	220			5	7.5	11	7	7
FJGL-100×41			100			2				
FJGL-160×41			160	41	26	3				
FJGL-220×41			220			4				
FJGL-100×25			100			2				
FJGL-160×25			160	25	10	3				
FJGL-220×25			220			4				
FJGL-100×35			100			2	10	18	11	13
FJGL-160×35	28	20	160	35	15	3				
FJGL-220×35			220			4				
FJGL-100×56			100			2				
FJGL-160×56			160	56	26	3	10	14	9	10
FJGL-220×56			220			4				

FJCGBF, FJCGBW 自润滑板
FJCGBF, FJCGBW Oilless Wear Plate

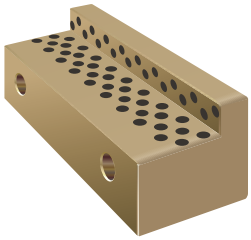


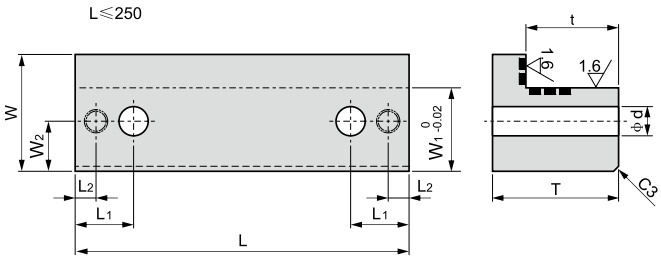
单位unit:mm

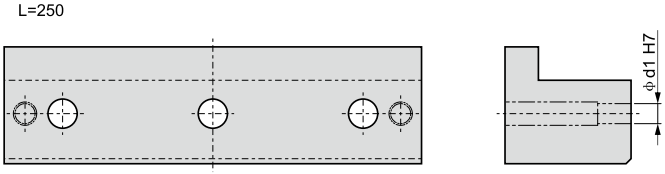
型号规格 Standard No.	材料 Material	W	L	T	L_1	S
30 × 100 × 30	FJCGBF	30	100	30	-	15
30 × 150 × 30			150		-	
30 × 200 × 30			200		100	
30 × 250 × 30			250		125	
30 × 300 × 30			300		150	
30 × 350 × 30			350		175	
40 × 100 × 30	FJCGBF	40	100	30	-	
40 × 150 × 30			150		-	
40 × 200 × 30			200		100	
40 × 250 × 30			250		125	
40 × 300 × 30			300		150	
40 × 350 × 30			350		175	
30 × 100 × 40	FJCGBF FJCGBW	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	FJCGBW	60	100	40	-	25
40 × 250 × 40			250		125	
40 × 300 × 40			300		150	
40 × 350 × 40			350		175	

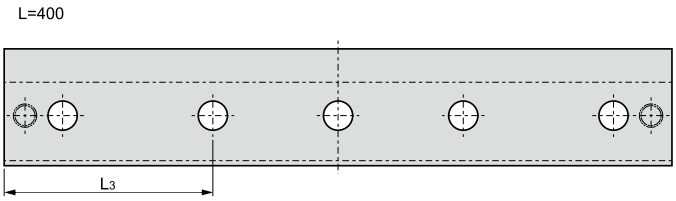
FJVSOL 自润滑板
FJVSOL Oilless Wear Plate

Material	650 # + Graphite
材质	高力黄铜 + 石墨







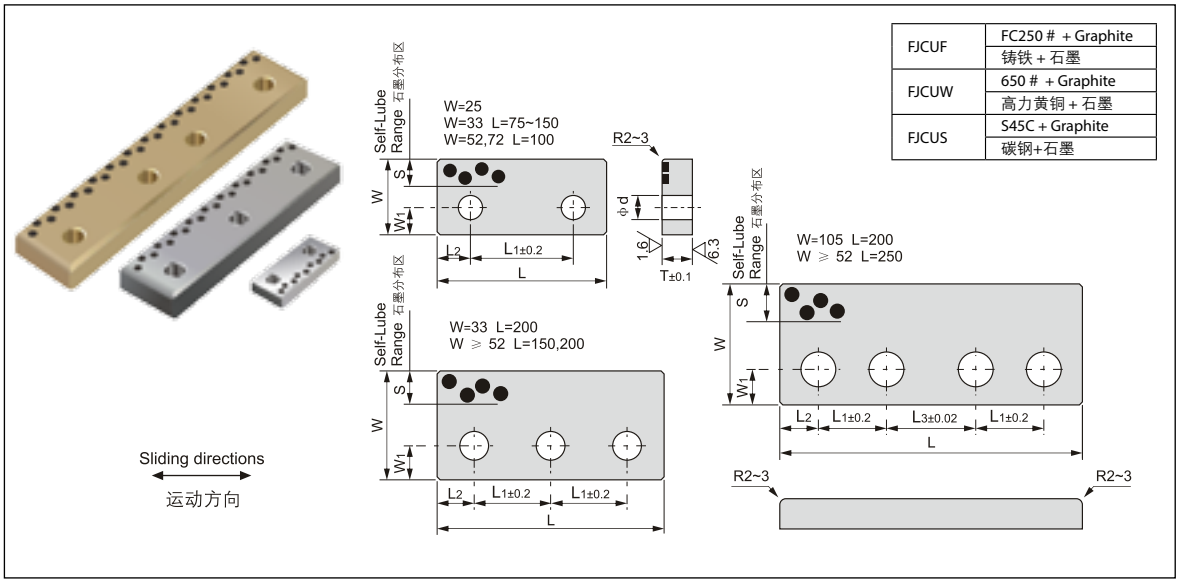


Sliding directions
运动方向

单位unit:mm

型号规格 Standard No.	W	L	W_1	W_2	L_1	L_2	L_3	T	t	d	d1
FJVSOL-25 × 125	25	125	18	9				15.5	8.5	9	6
FJVSOL-25 × 160		160									
FJVSOL-32 × 125	32	125	22	11	27.5	10	—	30.5	15.5	11	8
FJVSOL-32 × 160		160									
FJVSOL-32 × 200		200									
FJVSOL-55 × 100	55	100	37	20				55.5	39.5	13.5	10
FJVSOL-55 × 160		160									
FJVSOL-70 × 160	70	160	50	30	35	12.5		75.5	55.5	17.5	12
FJVSOL-70 × 200		200									
FJVSOL-70 × 250		250									
FJVSOL-70 × 400		400					125				
FJVSOL-85 × 160	85	160	63	38	42.5	15	—	90.5	65.5	22	16
FJVSOL-85 × 200		200									
FJVSOL-85 × 250		250									
FJVSOL-85 × 400		400					125				

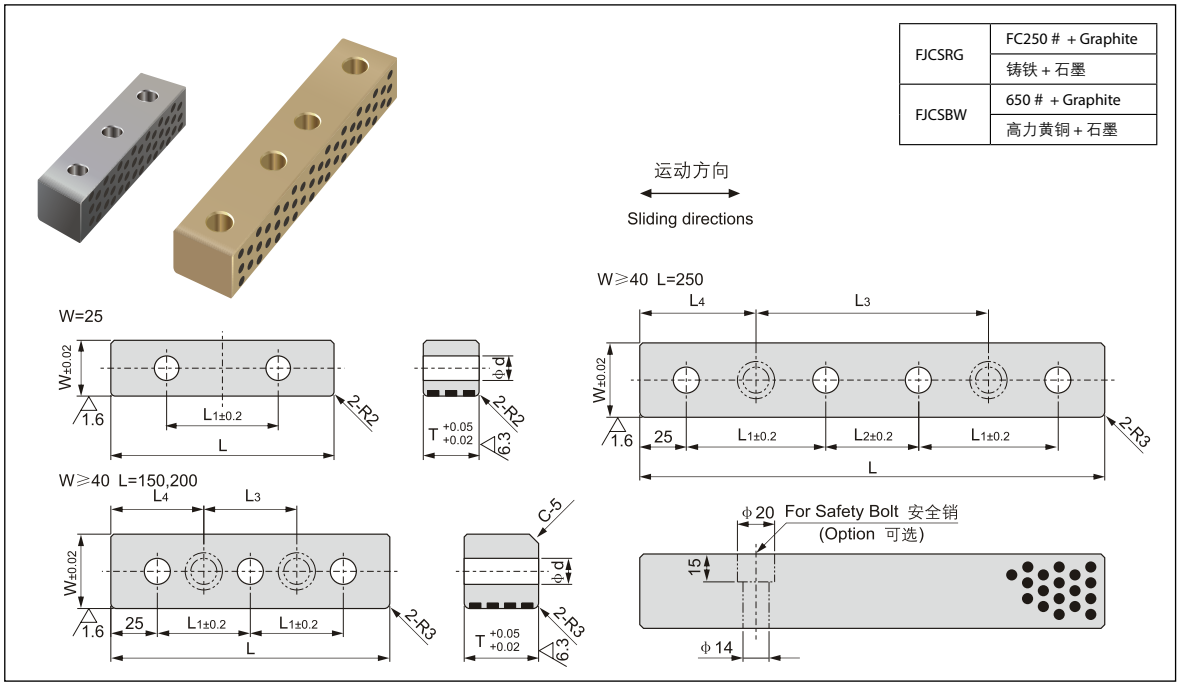
FJCUW, FJCUF, FJCUS 自润滑板
FJCUW, FJCUF, FJCUS Oilless Wear Plate



单位unit:mm

型号规格 Standard No.	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			75		45	15					
25 × 100	FJCUW	25	100		50	25		8	7.5	9	
25 × 125			125		75						
33 × 75			75	10	45	15					2
33 × 100			100		50						
33 × 125	FJCUW	33	125		75		-	12.5	9	11	
33 × 150			150		100						
33 × 200			200		75						3
52 × 100			100		50						2
52 × 150	FJCUW FJCUF FJCUS	52	150	20				20	13	13	3
52 × 200			200		75						
52 × 250			250				50				4
72 × 100			100		50						2
72 × 150	FJCUW FJCUF FJCUS	72	150	30		25			22		3
72 × 200			200		75						
72 × 250			250				50				4
77 × 150			150		50						3
77 × 200	FJCUW FJCUF FJCUS	77	200	35	75				27		
77 × 250			250				50	25		18	4
82 × 150			150		50						3
82 × 200	FJCUW FJCUF FJCUS	82	200		75						
82 × 250			250	40			50		32		4
105 × 150			150		50						3
105 × 200	FJCUW FJCUF	105	200				50				4
105 × 250			250		75						

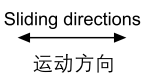
FJCSRG, FJCSRW 自润滑板
FJCSRG, FJCSRW Oilless Wear Plate



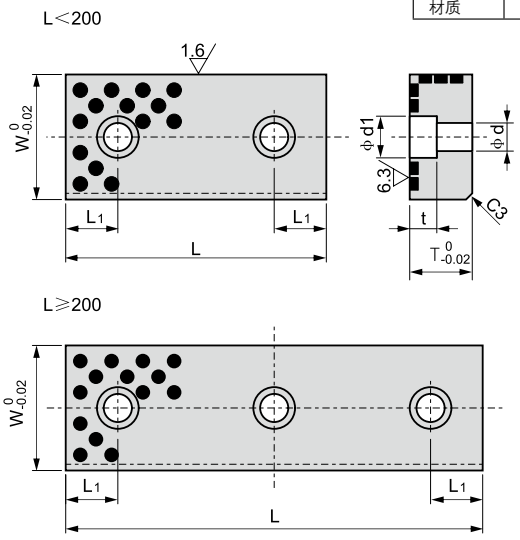
单位unit:mm

型号规格 Standard No.	材料 Material	W	L	L_3	L_4	T	L_1	L_2	d
25×75×25	FJCSRG	25	75	-	-	25	45	-	11
25×100×25			100				50		
25×125×25			125				75		
25×150×25			150				100		
40×150×30	FJCSRG FJCSRW	40	150	50	50	30	50	-	14
40×200×30			200	75	62.5		75		
40×250×30			250	125	62.5			50	
40×150×40			150	50	50	40	50	-	
40×200×40			200	75	62.5		75		
40×250×40			250	125	62.5			50	
50×150×45	FJCSRG FJCSRW	50	150	50	50	45	50	-	20
50×200×45			200	75	62.5		75		
50×250×45			250	125	62.5			50	
50×150×55			150	50	50	55	50	-	
50×200×55			200	75	62.5		75		
50×250×55			250	125	62.5			50	
50×150×60			150	50	50	60	50	-	
50×200×60			200	75	62.5		75		
50×250×60			250	125	62.5			50	
50×150×70			150	50	50	70	50	-	
50×200×70			200	75	62.5		75		
50×250×70			250	125	62.5			50	

FJVG2 自润滑板
FJVG2 Oilless Wear Plate



Material	650 # + Graphite
材质	高力黄铜 + 石墨

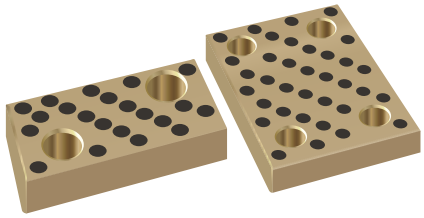


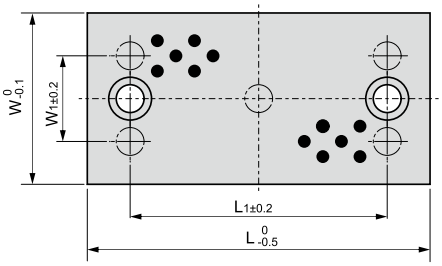
单位unit:mm

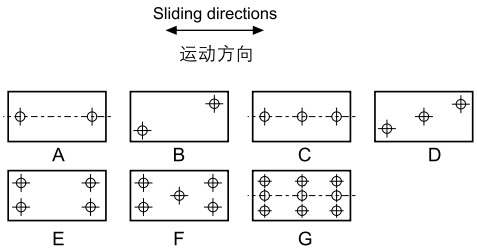
型号规格 Standard No.	W	L	T	L_1	d	d_1	t	Recommended mounting bolt DIN EN ISO4762
FJVG2 25 × 110 × 12	25	110	12	25	9	15	8.5	M8 × 20
FJVG2 25 × 120 × 12		120						
FJVG2 25 × 110 × 15		110	15		11	18	10.5	M10 × 25
FJVG2 60 × 120 × 15		120						
FJVG2 60 × 125 × 30	60	125	30		13.5	20	13	M12 × 35
FJVG2 60 × 160 × 30		160						
FJVG2 60 × 200 × 30		200						
FJVG2 60 × 125 × 40		125	40					M12 × 45
FJVG2 60 × 160 × 40		160						
FJVG2 60 × 200 × 40		200						

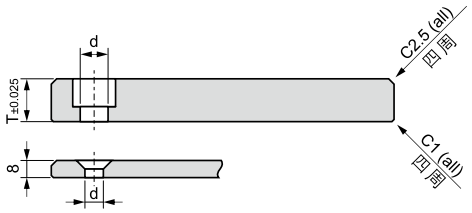
FJSOD 自润导套
FJSOD Guide Bushes

Material	650 # + Graphite
材质	高力黄铜 + 石墨







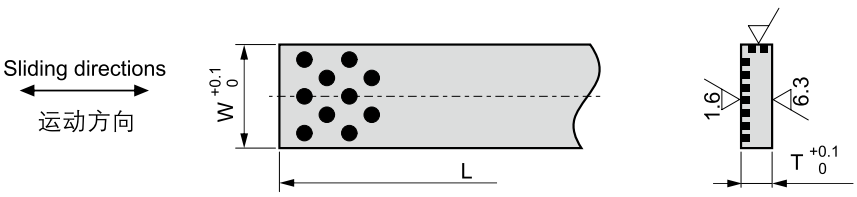


单位unit:mm

型号规格 Standard No.	T	W	W_1	L_1	L	Screw Q'ty 螺栓数量	Mounting Bolt	Hole Pattern 螺孔排布
FJSOD 8×40×100				60	100	2		A
FJSOD 8×40×160	8	40	—	120	160		M8	A
FJSOD 8×40×250				210	250	3		C
FJSOD 12×30×100				60	100	2		A
FJSOD 12×30×160	12	30	—	120	160		M8	A
FJSOD 12×30×250				210	250	3		C
FJSOD 12×40×100				60	100	2		A
FJSOD 12×40×160	12	40	—	120	160		M8	A
FJSOD 12×40×250				210	250	3		C
FJSOD 12×80×100				60	100	2		B
FJSOD 12×80×160	12	80	40	120	160	4	M8	E
FJSOD 12×80×250				210	250	5		F
FJSOD 16×40×100				60	100	2		A
FJSOD 16×40×160	16	40	—	120	160		M10	A
FJSOD 16×40×250				210	250	3		C
FJSOD 16×60×100				60	100	2		B
FJSOD 16×60×160	16	60	30	120	160		M10	B
FJSOD 16×60×250				210	250	3		D
FJSOD 16×100×100				60	100	2		B
FJSOD 16×100×160	16	100	60	120	160	4	M10	E
FJSOD 16×100×250				210	250	6		G
FJSOD 20×50×100				60	100	2		B
FJSOD 20×50×160	20	50	20	120	160		M12	B
FJSOD 20×50×250				210	250	3		D
FJSOD 20×80×100				60	100	2		B
FJSOD 20×80×160	20	80	40	120	160	4	M12	E
FJSOD 20×80×250				210	250	5		F
FJSOD 20×125×100				60	100	4		E
FJSOD 20×125×160	20	125	85	120	160		M12	E
FJSOD 20×125×250				210	250	6		G

FJSOVP 自润滑板
FJSOVP Oilless Wear Plate

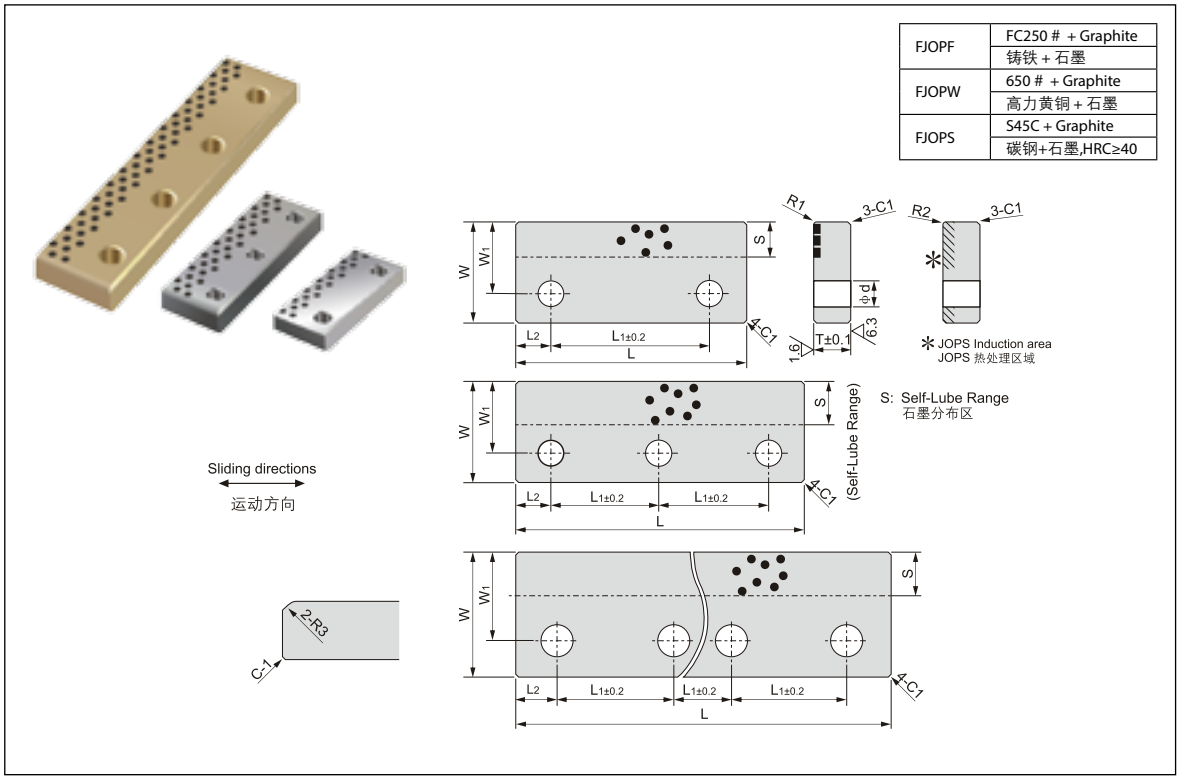
Material	650 # + Graphite
材质	高力黄铜 + 石墨



单位unit:mm

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

FJOPF, FJOPW, FJOPW 自润滑板
FJOPF, FJOPW, FJOPW Oilless Wear Plate



单位unit:mm

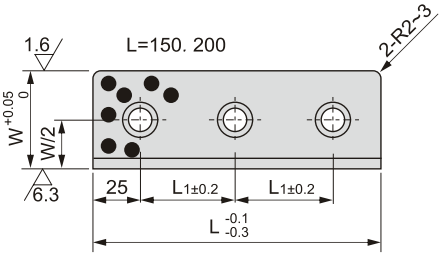
型号规格 Standard No.	W	L	T	W_1	L_1	L_2	d	s	Bolt Hole Q'ty 螺栓孔数量
FJOPF-55 × 180	55	180	25	50	120	25	18	24	2
FJOPF-70 × 160	70	160			110			25	
FJOPF-70 × 200		200			75			30	3
FJOPF-70 × 240		240			90	30			
FJOPF-85 × 200	85	200	28	60	75	25	22	30	
FJOPF-85 × 240		240			90	30			
FJOPF-85 × 300		300			80	30			4
FJOPF-85 × 350		350			90	40			
FJOPF-100 × 200	100	200		70	75	25			3
FJOPF-100 × 240		240			90	30			
FJOPF-100 × 300		300			80	30			4
FJOPF-100 × 350		350			90	40			
FJOPF-70 × 160	70	160	25	50	110	25	18	25	2
FJOPF-70 × 200		200			75			30	3
FJOPF-70 × 240		240			90	30			

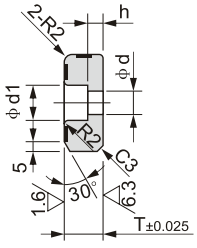
单位unit:mm

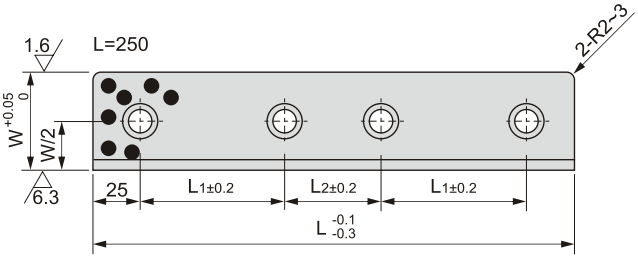
型号规格 Standard No.	W	L	T	W_1	L_1	L_2	d	s	Bolt Hole Q'ty 螺栓孔数量
FJOPF-85 × 200	85	200	28	60	75	25	22	30	3
FJOPF-85 × 240		240			90	30			
FJOPF-85 × 300		300			80	30			4
FJOPF-85 × 350		350			90	40			
FJOPF-100 × 200	100	200		70	75	25			3
FJOPF-100 × 240		240			90	30			
FJOPF-100 × 300		300			80	30			4
FJOPF-100 × 350		350			90	40			
FJOPF-70 × 160	70	160	25	50	110	25	18	25	2
FJOPF-70 × 200		200			75			30	3
FJOPF-70 × 240		240			90	30			
FJOPF-85 × 200	85	200	28	60	75	25	22	30	
FJOPF-85 × 240		240			90	30			
FJOPF-85 × 300		300			80	30			4
FJOPF-85 × 350		350			90	40			

FJCSDP 自润滑板
FJCSDP Oilless Wear Plate

Material	650 # + Graphite
材质	高力黄铜 + 石墨





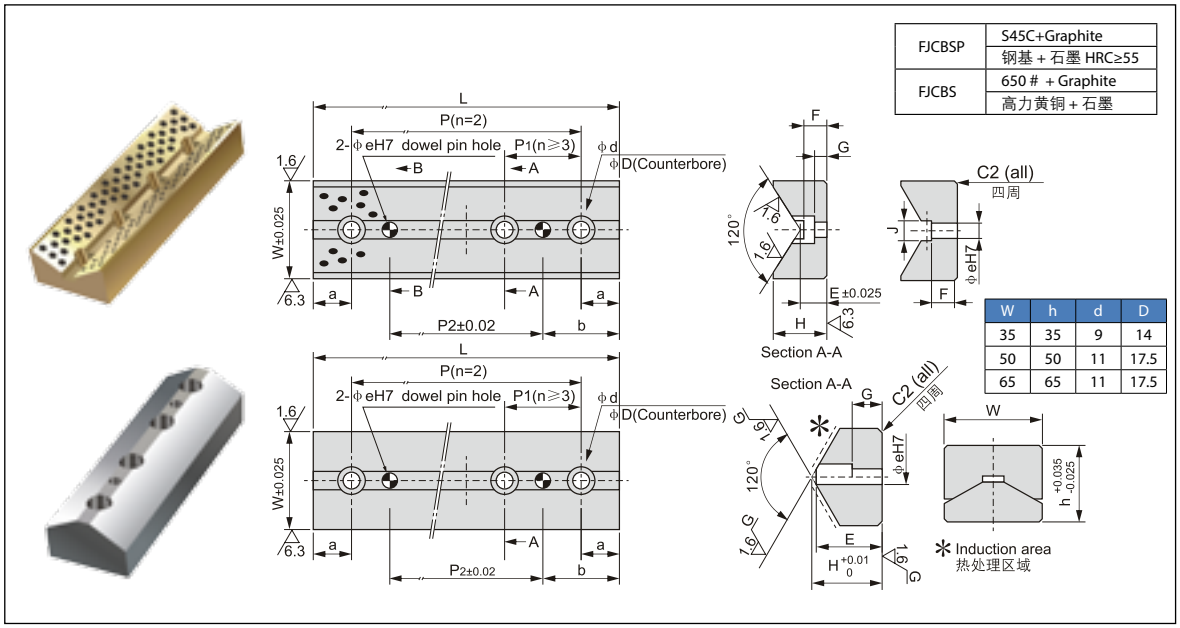


Sliding directions
运动方向

单位unit:mm

型号规格 Standard No.	W	L	T	L_1	L_2	d	d_1	h
FJCSDP 50 × 150 × 20	50	150	20	50	–	11	17.5	8
FJCSDP 50 × 200 × 20		200		75				
FJCSDP 50 × 250 × 20		250			50			
FJCSDP 50 × 150 × 35		150	35	50	–	13	20	20
FJCSDP 50 × 200 × 35		200		75				
FJCSDP 50 × 250 × 35		250			50			
FJCSDP 50 × 150 × 20	75	150	20	50	–	11	17.5	8
FJCSDP 50 × 200 × 20		200		75				
FJCSDP 50 × 250 × 20		250			50			
FJCSDP 50 × 150 × 35		150	35	50	–	13	20	20
FJCSDP 50 × 200 × 35		200		75				
FJCSDP 50 × 250 × 35		250			50			

FJCBS, FJCBSP 凸轮底部导板
FJCBS, FJCBSP Oilless Cam Btroke Guide Plate



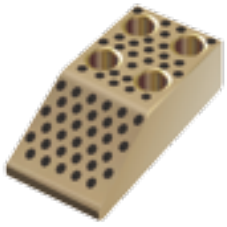
W	h	d	D
35	35	9	14
50	50	11	17.5
65	65	11	17.5

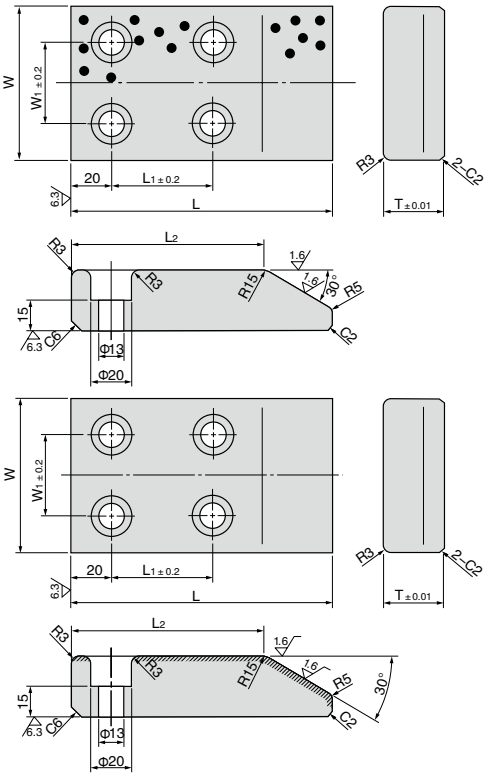
单位unit:mm

型号规格 Standard No.	W	L	H	a	b	P	P1	No. of Bolt Holes 螺栓数量	e	P2	E	F	G	J
FJCBS-75 × 35		75		15	30	45				15				
FJCBS-100 × 35	35	100	24			60				20				
FJCBS-125 × 35		125		20	40	85			8	45	15		4	11
FJCBS-150 × 35		150				110				70				
FJCBS-75 × 50		75		15	30	45	–	2		15				
FJCBS-100 × 50	50	100	31	20	40	60				20				
FJCBS-125 × 50		125		25	50	75				25		15		
FJCBS-150 × 50		150				100				50				
FJCBS-100 × 65		100		20	40	60			10	20	18		8	13
FJCBS-150 × 65		150						3		50				
FJCBS-200 × 65	65	200	35	25	50	–	50	4		100				
FJCBS-250 × 65		250						5		150				
FJCBS-300 × 65		300						6		200				

型号规格 Standard No.	W	L	H	a	b	P	P1	No. of Bolt Holes 螺栓数量	e	P2	E	G
FJCBSP-75 × 35		75		15	30	45				15		
FJCBSP-100 × 35	35	100	20			60				20		
FJCBSP-125 × 35		125		20	40	85			8	45	17	4
FJCBSP-150 × 35		150				110				70		
FJCBSP-75 × 50		75		15	30	45	–	2		15		
FJCBSP-100 × 50	50	100	32	20	40	60				20		
FJCBSP-125 × 50		125		25	50	75				25	29	10
FJCBSP-150 × 50		150				100				50		
FJCBSP-100 × 65		100		20	40	60			10	20		
FJCBSP-150 × 65		150						3		50		
FJCBSP-200 × 65	65	200	47	25	50	–	50	4		100	44	20
FJCBSP-250 × 65		250						5		150		
FJCBSP-300 × 65		300						6		200		

FJSPW, FJSPS 凸轮行程滑板
FJSPW, FJSPS Cam Stroke Plate





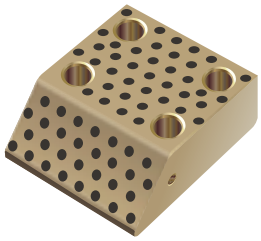
FJSPS	S45C+Graphite 钢基 + 石墨 HRC≥55
FJSPW	650 # + Graphite 高力黄铜 + 石墨

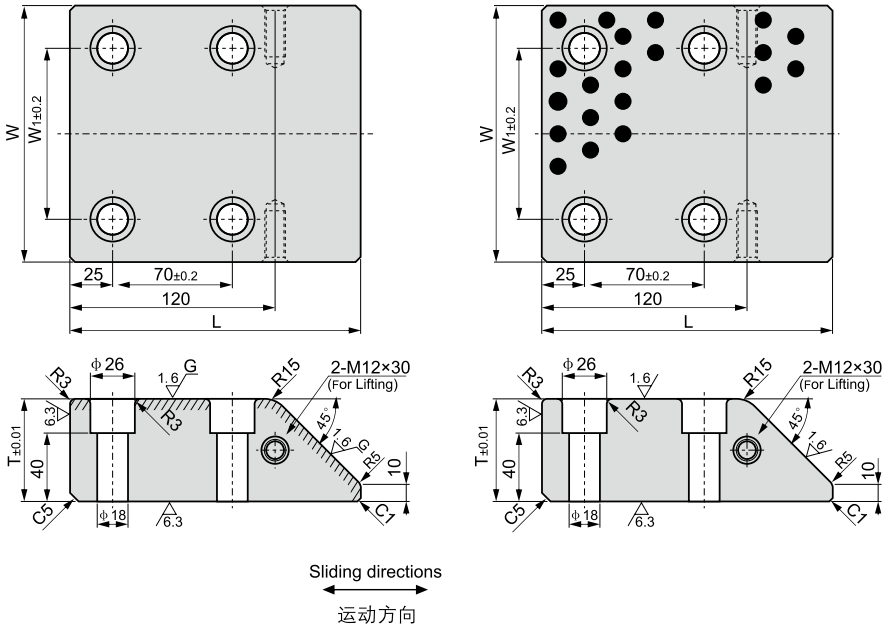
单位unit:mm

型号规格 Standard No.	W	L	T	W_1	L_1	L_2
FJSPW/FJSPS-75×130	75	130	30	40	50	95
FJSPW/FJSPS-75×150		150	45		45	90
FJSPW/FJSPS-100×130	100	130	30	60	50	95
FJSPW/FJSPS-100×150		150	45		45	90
FJSPW/FJSPS-100×170		170	60			
FJSPW/FJSPS-100×200		200			75	120
FJSPW/FJSPS-125×130	125	130	30	85	50	95
FJSPW/FJSPS-125×150		150	45		45	90
FJSPW/FJSPS-125×170		170	60			
FJSPW/FJSPS-125×200		200			75	120
FJSPW/FJSPS-150×130	150	130	30	110	50	95
FJSPW/FJSPS-150×150		150	45		45	90
FJSPW/FJSPS-150×170		170	60			
FJSPW/FJSPS-150×200		200			75	120

FJSPQ,FJSPQS 凸轮行程滑板
FJSPQ,FJSPQS Cam Stroke Plate

FJSPQS	S45C + Graphite
	铜基 + 石墨HRC≥55
FJSPQ	650 # + Graphite
	高力黄铜 + 石墨

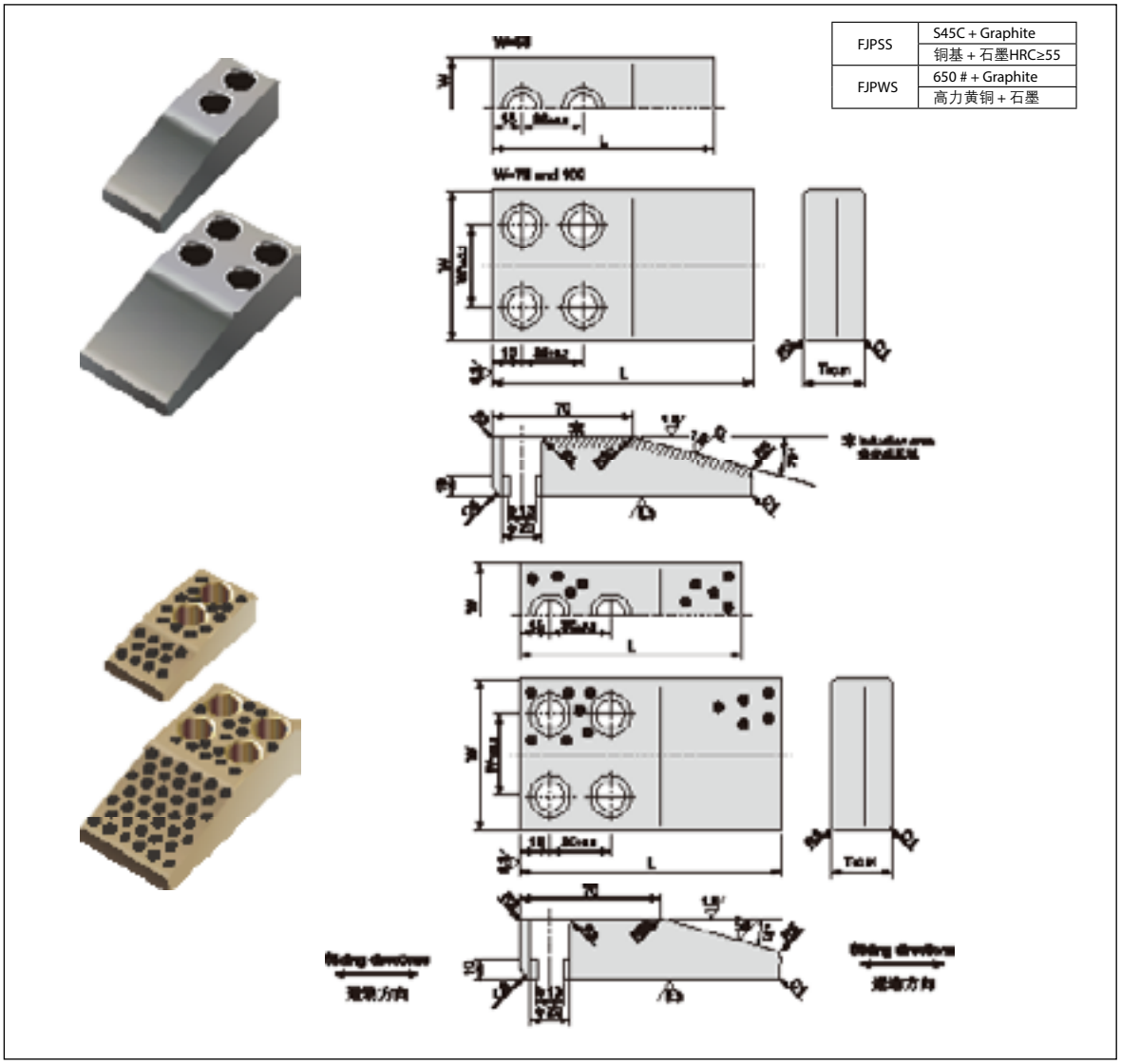




单位unit:mm

型号规格 Standard No.	W	L	T	W_1
FJSPQ/FJSPQS-150×170	150	170	60	100
FJSPQ/FJSPQS-150×200		200	90	
FJSPQ/FJSPQS-200×170	200	170	60	140
FJSPQ/FJSPQS-200×200		200	90	

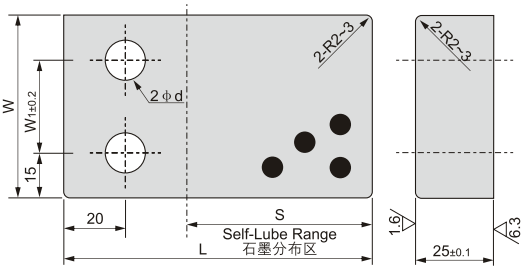
FJPWS,FJPSS 凸轮行程滑板
FJPWS,FJPSS Cam Stroke Plate



单位unit:mm

型号规格 Standard No.	W	L	T	W_1
FJPWS/FJPSS-50 × 110	50	110	25	–
FJPWS/FJPSS-50 × 130		130	30	
FJPWS/FJPSS-75 × 110	75	110	25	40
FJPWS/FJPSS-75 × 130		130	30	
FJPWS/FJPSS-100 × 110	100	110	25	60
FJPWS/FJPSS-100 × 130		130	30	

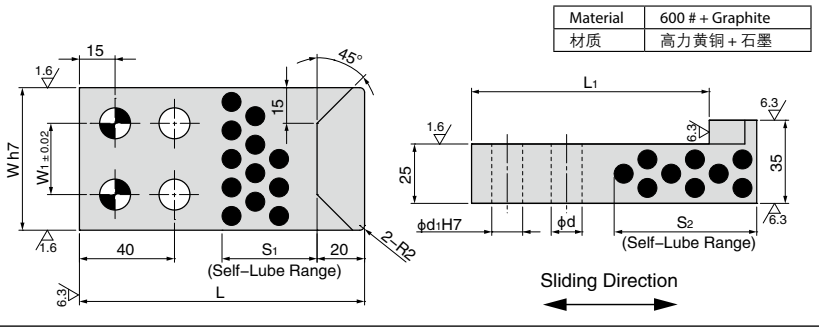
FJPGPB 自润滑板
FJPGPB Oilless Wear Plate



单位unit:mm

型号规格 Standard No.	W	L	S	W_1	d
FJPGPB-60 × 80	60	80	40	30	13
FJPGPB-60 × 100		100	60		
FJPGPB-60 × 120		120	80		
FJPGPB-100 × 80	100	80	40	70	18
FJPGPB-100 × 100		100	60		
FJPGPB-100 × 120		120	80		
FJPGPB-150 × 80	150	80	40	120	
FJPGPB-150 × 100		100	60		
FJPGPB-150 × 120		120	80		

FJPGPC 自润滑板
FJPGPC Oilless Wear Plate

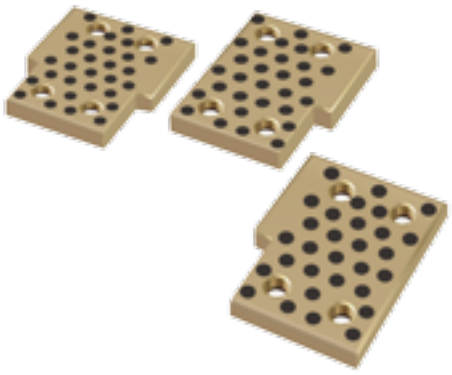


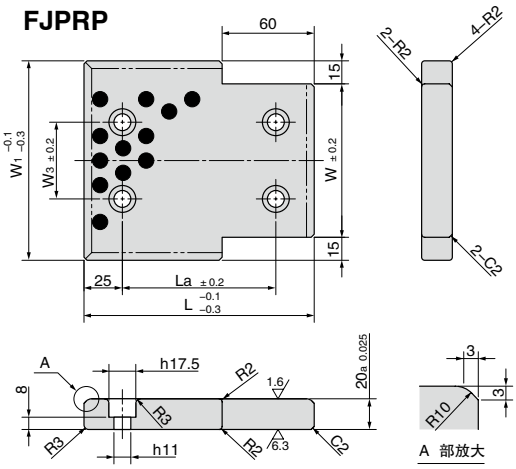
单位unit:mm

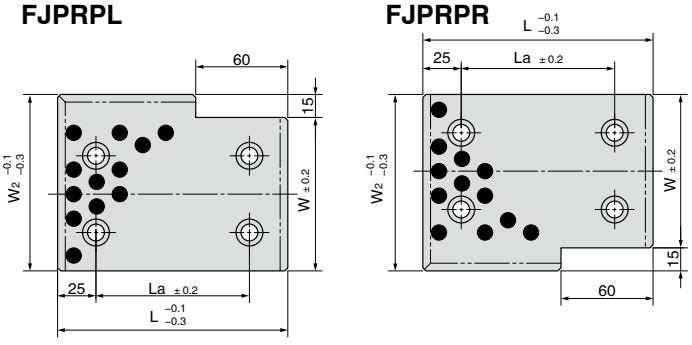
型号规格 Standard No.	W h7		L_1	L_2	S_1	S_2	W_1	d	d_1
FJPGPC-60 × 120	60	0 -0.030	120	100	40	60	30	13	13
FJPGPC-60 × 140			140	120	60	80			
FJPGPC-60 × 160			160	140	80	100			
FJPGPC-100 × 120	100	0 -0.035	120	100	40	60	70	18	16
FJPGPC-100 × 140			140	120	60	80			
FJPGPC-100 × 160			160	140	80	100			
FJPGPC-150 × 120	150	0 -0.040	120	100	40	60	120		
FJPGPC-150 × 140			140	120	60	80			
FJPGPC-150 × 160			160	140	80	100			

FJPRP 凸轮退回滑板
FJPRP Oilless Cam Positive Return Plate

Material	600 # + Graphite
材质	高力黄铜 + 石墨







单位unit:mm

材料 Material	型号规格 Standard No.	W	L	W1	W2	W3	La
FJPRP FJPRPL FJPRPR	75 × 100	75	100	105	90	40	50
	75 × 125		125				75
	75 × 150		150				100
	100 × 125	100	125	130	115	50	75
	100 × 150		150				100
	125 × 150	125	150	155	140	75	100
	125 × 200		200				150
	125 × 250		250				200
	150 × 200	150	200	180	165	100	150
	150 × 250		250				200

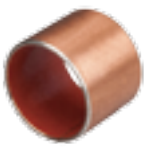
SF-1 无油润滑轴承
OILLESS BUSHING

产品介绍
Product introduction

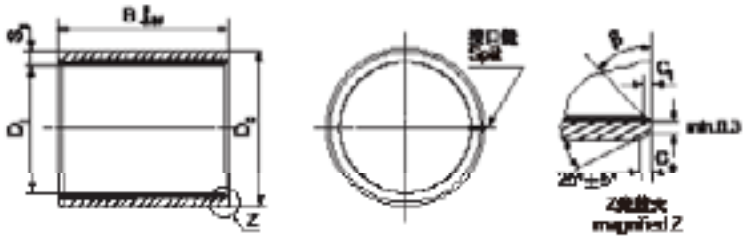
是以钢板为基体，中间烧结球形青铜粉，表面轧制聚四氟乙烯和混合物卷制而成。它具有摩擦系数小、耐磨、抗腐蚀性好和无油润滑的特点。能降低成本、缩小机械体积、避免咬轴现象和降低噪音等优点。产品已广泛应用于各种机械的滑动部位, 例如：印刷机、纺织机、烟草机械、汽车、摩托车与农林机械等。

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

使用参数
The use of parameters

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

SF-1 标准公制轴套
SF-1 Normal Metric Bushing



内外倒角

S_3	C_o	C_i	β
0.75	0.5 ± 0.3	0.25 ± 0.2	30° ± 5°
1.00	0.6 ± 0.3	0.30 ± 0.2	30° ± 5°
1.50	0.7 ± 0.3	0.50 ± 0.3	30° ± 5°

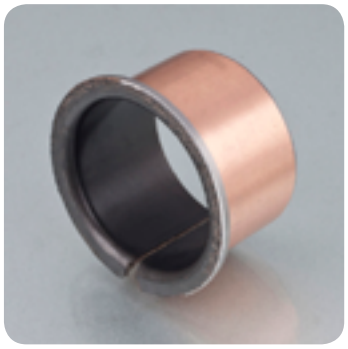
S_3	C_o	C_i	β
2.00	1.2 ± 0.4	0.50 ± 0.3	30° ± 5°
2.50	1.8 ± 0.6	0.60 ± 0.3	45° ± 5°

型号 Type	轴径(f7) D_s	座孔(H7) D_H	外径公差 D_O	压装后内孔公差 $D_{i,a}$	配合间隙 D_D	壁厚 S_3	长度B $^{0}_{-0.40}$ (d≤Φ28 L-0.30 d>Φ30 L-0.40)									
							6	8	10	12	15	20	25	30	40	50
SF–1	6 $^{-0.010}_{-0.022}$	8 $^{+0.015}$	8 $^{+0.055}_{+0.025}$	6.055 5.990	0.077 0.000	1.005 0.980	0606	0608	0610							
SF–1	8 $^{-0.013}_{-0.028}$	10 $^{+0.015}$	10 $^{+0.055}_{+0.025}$	8.055 7.990	0.083 0.003		0806	0808	0810	0812	0815					
SF–1	10 $^{-0.013}_{-0.028}$	12 $^{+0.018}$	12 $^{+0.065}_{+0.030}$	10.058 9.990	0.086 0.003		1006	1008	1010	1012	1015	1020				
SF–1	12 $^{-0.016}_{-0.034}$	14 $^{+0.018}$	14 $^{+0.065}_{+0.030}$	12.058 11.990	0.092 0.006		1206	1208	1210	1212	1215	1220	1225			
SF–1	13 $^{-0.016}_{-0.034}$	15 $^{+0.018}$	15 $^{+0.065}_{+0.030}$	13.058 12.990					1310			1320				
SF–1	14 $^{-0.016}_{-0.034}$	16 $^{+0.018}$	16 $^{+0.065}_{+0.030}$	14.058 13.990					1410	1412	1415	1420	1425			
SF–1	15 $^{-0.016}_{-0.034}$	17 $^{+0.018}$	17 $^{+0.065}_{+0.030}$	15.058 14.990					1510	1512	1515	1520	1525			
SF–1	16 $^{-0.016}_{-0.034}$	18 $^{+0.018}$	18 $^{+0.065}_{+0.030}$	16.058 15.990					1610	1612	1615	1620	1625			
SF–1	17 $^{-0.016}_{-0.034}$	19 $^{+0.021}$	19 $^{+0.075}_{+0.035}$	17.061 16.990	0.095 0.006				1710	1712		1720				
SF–1	18 $^{-0.016}_{-0.034}$	20 $^{+0.021}$	20 $^{+0.075}_{+0.035}$	18.061 17.990					1810	1812	1815	1820	1825			
SF–1	20 $^{-0.020}_{-0.041}$	23 $^{+0.021}$	23 $^{+0.075}_{+0.035}$	20.071 19.990	0.112 0.010	1.505 1.475			2010	2012	2015	2020	2025	2030		
SF–1	22 $^{-0.020}_{-0.041}$	25 $^{+0.021}$	25 $^{+0.075}_{+0.035}$	22.071 21.990					2210	2212	2215	2220	2225	2230		
SF–1	24 $^{-0.020}_{-0.041}$	27 $^{+0.021}$	27 $^{+0.075}_{+0.035}$	24.071 23.990							2415	2420	2425	2430		
SF–1	25 $^{-0.020}_{-0.041}$	28 $^{+0.021}$	28 $^{+0.075}_{+0.035}$	25.071 24.990					2510	2512	2515	2520	2525	2530	2540	2550
SF–1	28 $^{-0.020}_{-0.041}$	32 $^{+0.025}$	32 $^{+0.085}_{+0.045}$	28.085 27.990	0.126 0.010	2.005 1.970					2815	2820	2825	2830	2840	
SF–1	30 $^{-0.020}_{-0.041}$	34 $^{+0.025}$	34 $^{+0.085}_{+0.045}$	30.085 29.990						3012	3015	3020	3025	3030	3040	
SF–1	32 $^{-0.025}_{-0.050}$	36 $^{+0.025}$	36 $^{+0.085}_{+0.045}$	32.085 31.990	0.135 0.015							3220		3230	3240	
SF–1	35 $^{-0.025}_{-0.050}$	39 $^{+0.025}$	39 $^{+0.085}_{+0.045}$	35.085 34.990						2512	2515	2520	2525	2530	2540	3550
SF–1	38 $^{-0.025}_{-0.050}$	42 $^{+0.025}$	42 $^{+0.085}_{+0.045}$	38.085 37.990							3815			3830	3840	
SF–1	40 $^{-0.025}_{-0.050}$	44 $^{+0.025}$	44 $^{+0.085}_{+0.045}$	40.085 39.990						4012		4020	4025	4030	4040	4050

SF-1 标准公制轴套
SF-1 Normal Metric Bushing

型号 Type	轴径(f7) D_s	座孔(H7) D_H	外径公差 D_O	压装后内孔公差 $D_{i,a}$	配合间隙 C_O	壁厚 S_3	长度B									
							20	25	30	40	50	60	70	80	100	115
SF–1	45 $^{-0.050}_{-0.025}$	50 $^{+0.025}$	50 $^{+0.085}_{+0.045}$	45.105 44.990	0.155 0.015		4520	4525	4530	4540	4550					
SF–1	50 $^{-0.050}_{-0.025}$	55 $^{+0.030}$	55 $^{+0.100}_{+0.055}$	50.110 49.990	0.160 0.015		5020		5030	5040	5050	5060				
SF–1	55 $^{-0.060}_{-0.030}$	60 $^{+0.030}$	60 $^{+0.100}_{+0.055}$	55.110 54.990					5530	5540	5550	5560				
SF–1	60 $^{-0.060}_{-0.030}$	65 $^{+0.030}$	65 $^{+0.100}_{+0.055}$	60.110 59.990		2.505 2.460			6030	6040	6050	6060	6070			
SF–1	65 $^{-0.060}_{-0.030}$	70 $^{+0.030}$	70 $^{+0.100}_{+0.055}$	65.110 64.990	0.170 0.020				6530	6540	6550	6560	6570			
SF–1	70 $^{-0.060}_{-0.030}$	75 $^{+0.030}$	75 $^{+0.100}_{+0.055}$	70.110 69.990						7040	7050	7060	7070	7080		
SF–1	75 $^{-0.060}_{-0.030}$	80 $^{+0.030}$	80 $^{+0.100}_{+0.055}$	75.110 74.990					7530	7540	7550	7560	7570	7580		
SF–1	80 $^{}_{-0.045}$	85 $^{+0.035}$	85 $^{+0.120}_{+0.070}$	80.155 80.020	0.201 0.020					8040	8050	8060	8070	8080	80100	
SF–1	85 $^{}_{-0.054}$	90 $^{+0.035}$	90 $^{+0.120}_{+0.070}$	85.155 85.020						8540		8560		8580	85100	
SF–1	90 $^{}_{-0.054}$	95 $^{+0.035}$	95 $^{+0.120}_{+0.070}$	90.155 90.020						9040	9050	9060		9080	90100	
SF–1	95 $^{}_{-0.054}$	100 $^{+0.035}$	100 $^{+0.120}_{+0.070}$	95.155 95.020	0.209 0.020	2.490 2.440					9550	9560		9580	95100	
SF–1	100 $^{}_{-0.054}$	105 $^{+0.035}$	105 $^{+0.120}_{+0.070}$	100.155 100.020							10050	10060		10080		100115
SF–1	105 $^{}_{-0.054}$	110 $^{+0.035}$	110 $^{+0.120}_{+0.070}$	105.155 105.020								10560		10580		105115
SF–1	110 $^{}_{-0.054}$	115 $^{+0.035}$	115 $^{+0.120}_{+0.070}$	110.115 110.020								11060		11080		110115
SF–1	120 $^{}_{-0.054}$	125 $^{+0.040}$	125 $^{+0.170}_{+0.100}$	120.210 120.070	0.264 0.070							12060		12080	120100	
SF–1	125 $^{}_{-0.063}$	130 $^{+0.040}$	130 $^{+0.170}_{+0.100}$	125.210 125.070								12560			125100	125115
SF–1	130 $^{}_{-0.063}$	135 $^{+0.040}$	135 $^{+0.170}_{+0.100}$	130.210 130.070								13060		13080	130100	
SF–1	140 $^{}_{-0.063}$	145 $^{+0.040}$	145 $^{+0.170}_{+0.100}$	140.210 140.070	0.273 0.070	2.465 2.415						14060		14080	140100	
SF–1	150 $^{}_{-0.063}$	155 $^{+0.040}$	155 $^{+0.170}_{+0.100}$	150.210 150.070								15060		15080	150100	
SF–1	160 $^{}_{-0.063}$	165 $^{+0.040}$	165 $^{+0.170}_{+0.100}$	160.210 160.070								16060		16080	160100	160115
SF–1	180 $^{}_{-0.063}$	185 $^{+0.046}$	185 $^{+0.210}_{+0.130}$	180.216 180.070	0.279 0.070									18080	180100	
SF–1	190 $^{}_{-0.072}$	195 $^{+0.046}$	195 $^{+0.210}_{+0.130}$	190.216 190.070										19080	190100	
SF–1	200 $^{}_{-0.072}$	205 $^{+0.046}$	205 $^{+0.210}_{+0.130}$	200.016 200.070	0.288 0.070	2.465 2.415								20080	200100	
SF–1	220 $^{}_{-0.072}$	225 $^{+0.046}$	225 $^{+0.210}_{+0.130}$	220.216 220.070								20060		22080	220100	
SF–1	250 $^{}_{-0.072}$	255 $^{+0.052}$	255 $^{+0.260}_{+0.170}$	250.222 250.070	0.294 0.070									25080	250100	
SF–1	260 $^{}_{-0.081}$	265 $^{+0.052}$	265 $^{+0.260}_{+0.170}$	260.222 260.070										26080	260100	
SF–1	280 $^{}_{-0.081}$	285 $^{+0.052}$	285 $^{+0.260}_{+0.170}$	280.222 280.070	0.303 0.070	2.465 2.415								28080	280100	
SF–1	300 $^{}_{-0.081}$	305 $^{+0.052}$	305 $^{+0.260}_{+0.170}$	300.222 300.070										30080	300100	

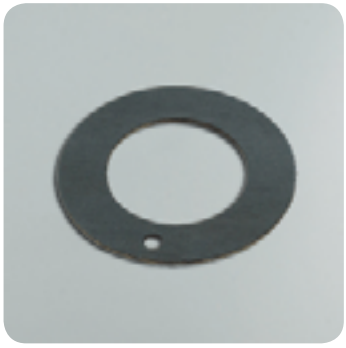
SF-1F 标准公制翻边轴套
SF-1F Normal Metric Flange Bushing

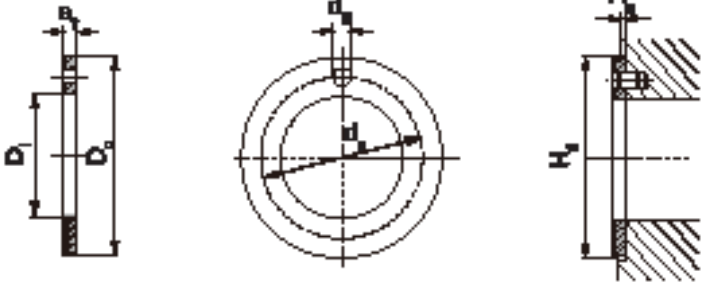


S_3	1.0	1.5	2.0	2.5
r	$1^{-0.5}$	1 ± 0.5	1.5 ± 0.5	2 ± 0.5

型号规格 Designation	轴径 D_s	座孔(H7) D_H	外径公差 D_O	压装后内孔公差 $D_{i,a}$	配合间隙 C_O	壁厚 S_3	尺寸				
							D_i	D_o	D_{fl} ± 0.5	B ± 0.25	S_{fl}-0.2
SF-1F 06040	6 -0.013 -0.028	8 +0.015	8 +0.055 +0.025	6.055 5.990	0.077 0.000	1.005 0.980	6	8	12	4	1
SF-1F 06070										7	
SF-1F 08055	8 -0.013 -0.028	10 +0.015	10 +0.055 +0.025	8.055 7.990	0.083 0.003		8	10	15	5.5	
SF-1F 08075										7.5	
SF-1F 10070	10 -0.016 -0.034	12 +0.018	12 +0.055 +0.025	10.058 9.990	0.086 0.003		10	12	18	7	
SF-1F 10090										9	
SF-1F 10120										12	
SF-1F 12070	12 -0.016 -0.034	14 +0.018	14 +0.065 +0.030	12.058 11.990	0.092 0.006		12	14	20	7	
SF-1F 12090										9	
SF-1F 12120										12	
SF-1F 14120	14 -0.016 -0.043	16 +0.018	16 +0.065 +0.030	14.058 13.990			14	16	22	12	
SF-1F 14170										17	
SF-1F 15090	15 -0.016 -0.034	17 +0.018	17 +0.065 +0.030	15.058 14.990			15	17	23	9	
SF-1F 15120										12	
SF-1F 15170										17	
SF-1F 16120	16 -0.016 -0.034	18 +0.018	18 +0.065 +0.030	16.058 15.990			16	18	24	12	
SF-1F 16170										17	
SF-1F 18120	18 -0.016 -0.034	20 +0.021	20 +0.075 +0.035	18.061 17.990	0.095 0.006		18	20	26	12	
SF-1F 18170										17	
SF-1F 18200										20	
SF-1F 20115	20 -0.020 -0.041	23 +0.021	23 +0.075 +0.035	20.071 19.990	0.112 0.010	1.505 1.475	20	23	30	11.5	1.5
SF-1F 20165										16.5	
SF-1F 20215										21.5	
SF-1F 22150	22 -0.020 -0.041	25 +0.021	25 +0.075 +0.035	22.071 21.990			22	25	32	15	
SF-1F 22200										20	
SF-1F 25115	25 -0.020 -0.041	28 +0.021	28 +0.075 +0.035	25.071 24.990			25	28	35	11.5	
SF-1F 25165										16.5	
SF-1F 25215										21.5	
SF-1F 30160	30 -0.025 -0.050	34 +0.025	34 +0.075 +0.035	30.285 29.990	0.126 0.010	2.005 1.970	30	34	42	16	2
SF-1F 30260										26	
SF-1F 35160	35 -0.025 -0.050	39 +0.025	39 +0.085 +0.045	35.085 34.990	0.135 0.015		35	39	47	16	
SF-1F 35260										26	
SF-1F 40260	40 -0.025 -0.050	44 +0.025	44 +0.085 +0.045	40.085 39.990			40	44	53	26	
SF-1F 40400										40	

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





型号规格	轴径 D_s	垫片尺寸				安装尺寸		H_d+0.12
		D_i+0.25	D_o–0.25	S_T –0.05	d_p ± 0.125	d_D +0.4 +0.1	H_a ± 0.2	
SF–1WC 10	8	10	20	1.5	15	1.5	1	20
SF–1WC 12	10	12	24		18			24
SF–1WC 14	12	14	26		20	2		26
SF–1WC 16	14	16	30		23			30
SF–1WC 18	16	18	32		25			32
SF–1WC 20	18	20	36		28	3		36
SF–1WC 22	20	22	38		30			38
SF–1WC 24	22	24	42		33			42
SF–1WC 26	24	26	44		35			44
SF–1WC 28	26	28	48		38	4		48
SF–1WC 32	30	32	54		43			54
SF–1WC 38	36	38	62		50			62
SF–1WC 42	40	42	66		54			66
SF–1WC 48	46	48	74	2	61		1.5	74
SF–1WC 52	50	52	78		65			78
SF–1WC 62	60	62	90		76			90

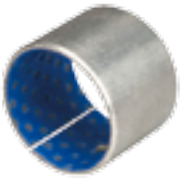
SF-2 边界润滑轴套
BOUNDARY LUBRICATING BUSHING

产品介绍
Product introduction

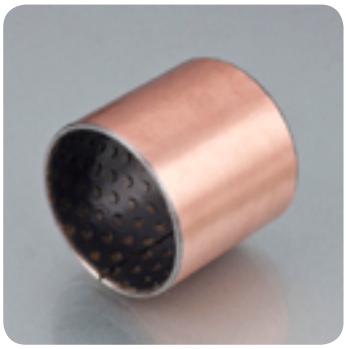
SF-2边界润滑轴承，是以钢板为基体，中间烧结球型青铜粉，表面轧制改性聚甲醛（POM），并含有储油坑。它适 用于常温条件下，低速中载的场所，取代传统铜套，既降低成本又延长使用寿命。特殊情况下，在轧钢机上使用，又能节省加油频次、简化更换程序。该产品已广泛应用于 汽车底盘、锻压机床、冶金矿山机械、工程机械、水电、 轧钢行业等领域。

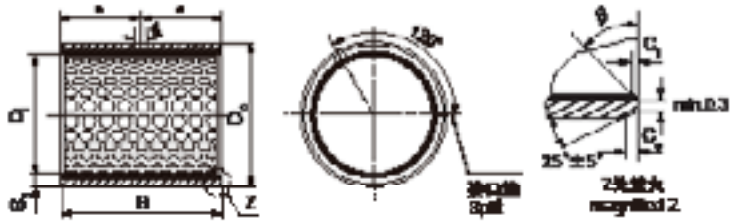
SF-2 boundary lubrication bushing is based on a composite material with 3 firmly bonded layers: steel as backing. sintered bronze sphericalpowder as interlayer and modified POM as lining layer, It fits well for low speed, middle-load and normal temperature and saves cost and prolongs working life when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

使用参数
The use of parameters

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

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





内外倒角

S_3	C_o	C_i	β
1.0	0.6 ± 0.3	0.30 ± 0.2	30° ± 5°
1.5	0.7 ± 0.3	0.50 ± 0.2	30° ± 5°

S_3	C_o	C_i	β
2.00	1.2 ± 0.4	0.50 ± 0.3	30° ± 5°
2.50	1.8 ± 0.6	0.60 ± 0.3	45° ± 5°

※标准直套标注方式：Standard Bushing Label Mode SF–2

单位unit:mm

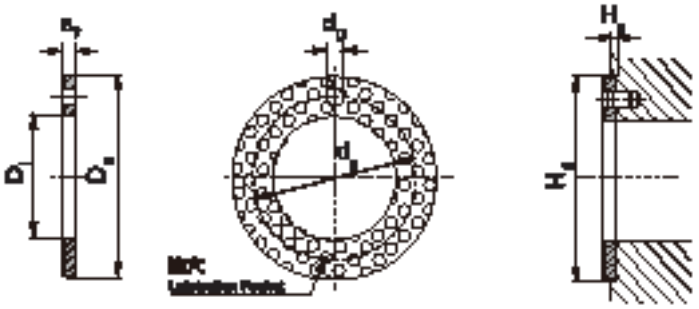
型号规格 Designation	轴径 D_i h8	座孔 H7 D_H	外径公差 D_O	压装后内孔公差 $D_{i,a}$	配合间隙 C_D	壁厚 S_3	油孔 d_L	长度 B $^{0}_{-0.40}$									
								10	15	20	25	30	35	40	45	50	60
SF–2	10 $^{}_{-0.022}$	12 $^{+0.018}$	12 $^{+0.065}_{+0.030}$	10.108 10.040	0.130 0.040	0.980 0.955	4	1010	1015	1020							
SF–2	12 $^{}_{-0.027}$	14 $^{+0.018}$	14 $^{+0.065}_{+0.030}$	12.108 12.040	0.135 0.040			1210	1215	1220							
SF–2	14 $^{}_{-0.027}$	16 $^{+0.018}$	16 $^{+0.065}_{+0.030}$	14.108 14.040					1415	1420							
SF–2	15 $^{}_{-0.027}$	17 $^{+0.018}$	17 $^{+0.065}_{+0.030}$	15.108 15.040					1515	1520	1525						
SF–2	16 $^{}_{-0.027}$	18 $^{+0.018}$	18 $^{+0.065}_{+0.030}$	16.108 16.040					1615	1620	1625						
SF–2	18 $^{}_{-0.027}$	20 $^{+0.021}$	20 $^{+0.075}_{+0.035}$	18.111 18.040	0.138 0.040				1815	1820	1825						
SF–2	20 $^{}_{-0.033}$	23 $^{+0.021}$	23 $^{+0.075}_{+0.035}$	20.131 20.050	0.164 0.050	1.475 1.445			2015	2020	2025	2030					
SF–2	22 $^{}_{-0.033}$	25 $^{+0.021}$	25 $^{+0.075}_{+0.035}$	22.131 22.050					2215		2225						
SF–2	25 $^{}_{-0.033}$	28 $^{+0.021}$	28 $^{+0.075}_{+0.035}$	25.131 25.050			6		2515	2520	2525	2530					
SF–2	28 $^{}_{-0.033}$	32 $^{+0.025}$	32 $^{+0.085}_{+0.045}$	28.155 28.060	0.188 0.060					2820		2830					
SF–2	30 $^{}_{-0.033}$	34 $^{+0.025}$	34 $^{+0.085}_{+0.045}$	30.155 30.060		1.970 1.935				3020	3025	3030		3040			
SF–2	35 $^{}_{-0.039}$	39 $^{+0.025}$	39 $^{+0.085}_{+0.045}$	35.155 35.060	0.194 0.060					3520		3530	3535	3540			
SF–2	40 $^{}_{-0.039}$	44 $^{+0.025}$	44 $^{+0.085}_{+0.045}$	40.155 40.060			8			4020		4030		4040		4050	
SF–2	45 $^{}_{-0.039}$	50 $^{+0.025}$	50 $^{+0.085}_{+0.045}$	45.195 45.080	0.234 0.080	2.460 2.415				4520		4530		4540	4545	4550	
SF–2	50 $^{}_{-0.039}$	55 $^{+0.030}$	55 $^{+0.100}_{+0.055}$	50.200 50.080	0.239 0.080							5030		5040		5050	5060
SF–2	55 $^{}_{-0.046}$	60 $^{+0.030}$	60 $^{+0.100}_{+0.055}$	55.200 55.080	0.246 0.080							5530		5540		5550	5560
SF–2	60 $^{}_{-0.046}$	65 $^{+0.030}$	65 $^{+0.100}_{+0.055}$	60.200 60.080								6030		6040		6050	6060

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

单位unit:mm

型号规格 Designation	轴径 D_i h8	座孔 H7 D_H	外径公差 D_O	压装后内孔公差 $D_{i,a}$	配合间隙 C_D	壁厚 S_3	油孔 d_L	长度 B $^{0}_{-0.40}$								
								40	50	60	80	90	95	100	110	120
SF–2	65 -0.046	70 +0.030	70 +0.030	65.200 65.080	0.246 0.080	2.460 2.415	8	6540		6560						
SF–2	70 -0.046	75 +0.030	75 +0.030	70.200 70.080				7040	7050		7080					
SF–2	75 -0.046	80 +0.030	80 +0.030	75.200 75.080				7540		7560	7580					
SF–2	80 -0.046	85 +0.035	85 +0.035	80.265 80.100	0.313 0.100	2.450 2.385	9.5	8040		8060	8080					
SF–2	85 -0.054	90 +0.035	90 +0.035	85.265 85.100	0.321 0.100			8540		8560	8580					
SF–2	90 -0.054	95 +0.035	95 +0.035	90.265 90.100				9040		9060	9080	9090				
SF–2	100 -0.054	105 +0.035	105 +0.035	100.265 100.100					10050		10080		10095			
SF–2	105 -0.054	110 +0.035	110 +0.035	105.265 105.100						10560	10580		10595		105110	
SF–2	110 -0.054	115 +0.035	115 +0.035	110.265 110.110						11060	11080		11095		110110	
SF–2	120 -0.054	125 +0.040	125 +0.040	120.270 120.110	0.324 0.100					12060	12080				120110	
SF–2	125 -0.063	130 +0.040	130 +0.040	125.270 125.110						12560					125110	
SF–2	130 -0.063	135 +0.040	135 +0.040	130.270 130.110					13050	13060	13080			130100		
SF–2	140 -0.063	145 +0.040	145 +0.040	140.270 140.110					14050	14060	14080			140100		
SF–2	150 -0.063	155 +0.040	155 +0.040	150.270 150.110					15050	15060	15080			150100		
SF–2	160 -0.063	165 +0.040	165 +0.040	160.270 160.110					16050	16060	16080			160100		
SF–2	170 -0.063	175 +0.040	175 +0.040	170.270 170.110					17050		17080			170100		
SF–2	180 -0.063	185 +0.046	185 +0.046	180.270 180.110	0.339 0.110				18050	18060	18080			180100		
SF–2	190 -0.072	195 +0.046	195 +0.046	190.276 190.110					19050	19060	19080			190100		190120
SF–2	200 -0.072	205 +0.046	205 +0.046	200.276 200.110					20050	20060	20080			200100		200120
SF–2	220 -0.072	225 +0.046	225 +0.046	220.276 220.110					22050	22060	22080			220100		220120
SF–2	240 -0.072	245 +0.046	245 +0.046	240.276 240.110					24050	24060	24080			240100		240120
SF–2	250 -0.072	255 +0.052	255 +0.052	250.282 250.110	0.354 0.110				25050	25060	25080			250100		250120
SF–2	260 -0.081	265 +0.052	265 +0.052	260.282 260.110					26050	26060	26080			260100		260120
SF–2	280 -0.081	285 +0.052	285 +0.052	280.282 280.110					28050	28060	28080			280100		280120
SF–2	300 -0.081	305 +0.052	305 +0.052	300.282 300.110					30050	30060	30080			300100		300120

SF-2WC 标准公制垫片
SF-2WC Normal Metric Washer



※标准垫片标注方式：Standard Washer Label Mode SF–2WC 10

单位unit:mm

型号规格	轴径 D_s	垫片尺寸				安装尺寸		H_d+0.12
		D_i+0.25	D_o–0.25	S_T –0.05	d_p ± 0.125	d_D $^{+0.4}_{+0.1}$	H_a ± 0.2	
SF–2WC 10	8	10	20	1.5	15	1.5	1	20
SF–2WC 12	10	12	24		18			24
SF–2WC 14	12	14	26		20	2		26
SF–2WC 16	14	16	30		23			30
SF–2WC 18	16	18	32		25			32
SF–2WC 20	18	20	36		28	3		36
SF–2WC 22	20	22	38		30			38
SF–2WC 24	22	24	42		33			42
SF–2WC 26	24	26	44		35			44
SF–2WC 28	26	28	48		38	4		48
SF–2WC 32	30	32	54		43			54
SF–2WC 38	36	38	62		50			62
SF–2WC 42	40	42	66		54			66
SF–2WC 48	46	48	74	2	61		1.5	74
SF–2WC 52	50	52	78		65			78
SF–2WC 62	60	62	90		76			90

JF 双金属轴套
BIMETAL BUSHING

产品介绍
Product introduction

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

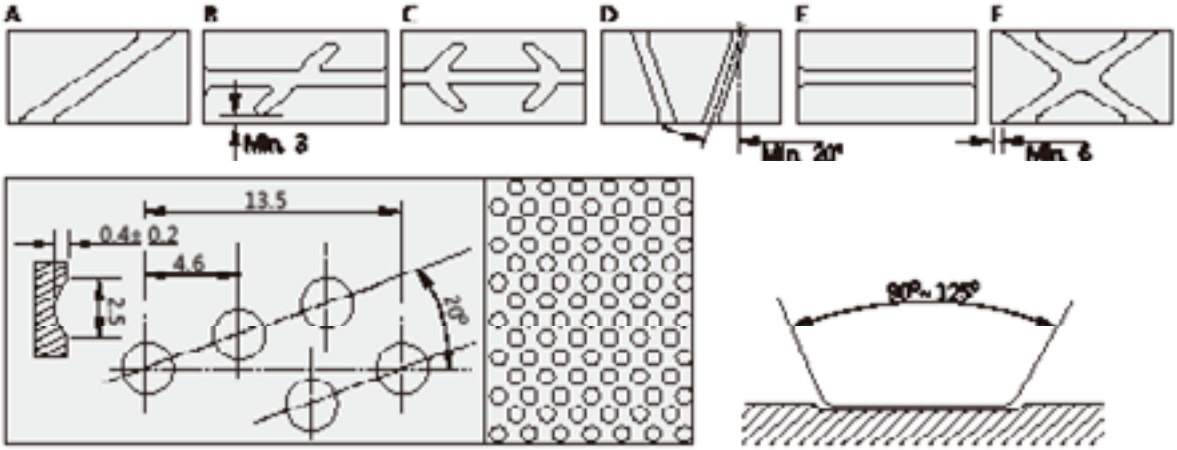
It is backed with high quality low carbon steel with tin-lead-bronze alloy sintered on its surface. To effectively decrease abrasion, its alloy surface can be machined with ball shaped oil sockets for easier oil storage. When necessary, an anti-erosive coating can be plated on the steel back. It can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

使用参数
The use of parameters

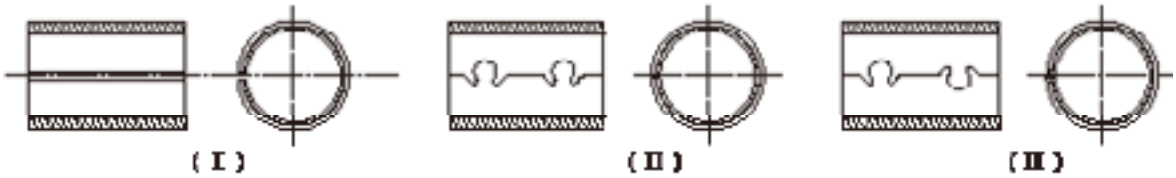
参数 Parameters	JF 800 双金属轴套 Bimetal Bushing	JF 720 双金属轴套 Bimetal Bushing	JF 700 双金属轴套 Bimetal Bushing	JF 20 双金属轴套 Bimetal Bushing	FB08G 双金属轴套 Bimetal Bushing
					
材料型号 Material type	CuPb10Sn10/ CuSn6Zn6Pb3	CuPb24Sn4	CuPb30	AlSn20Cu	CuPb10Sn10+Graphite
合金层硬度 Hardmess of bronze alloy	70~100HB	45~70HB	30~45HB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

JF 双金属轴套
JF Bimetal Bushing

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



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



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

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

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

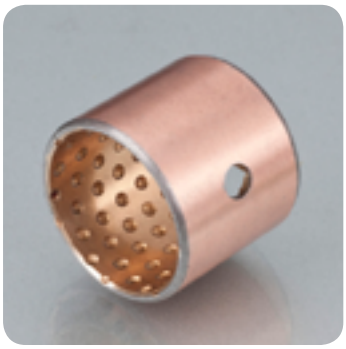
轴承外径 Bush O.D	14~22	22~40	40~50	50~100	100~180
油孔直径 Lubricating hole	3	4	5	6	7

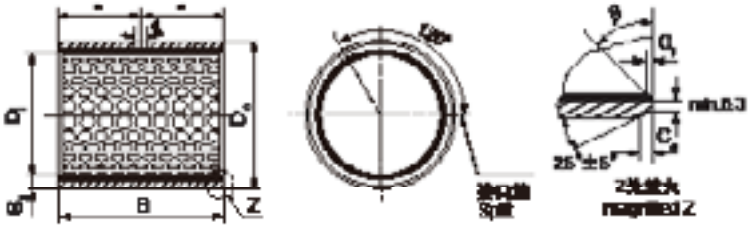
油孔的位置应避开接缝处和承载区域，这有利于进油。
The lubricating hole should be away from butt joint and loading area and designed to be easy–oil–feding as well.

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

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

JF 标准公制轴套
JF Normal Metric Bushing





内外倒角

S_3	C_o	C_i	β
0.75	0.5 ± 0.3	0.25 ± 0.2	35° ± 5°
1.00	0.6 ± 0.3	0.30 ± 0.2	35° ± 5°
1.50	0.7 ± 0.3	0.50 ± 0.3	35° ± 5°

S_3	C_o	C_i	β
2.00	1.2 ± 0.4	0.50 ± 0.3	30° ± 5°
2.50	1.8 ± 0.6	0.60 ± 0.3	45° ± 5°

※标准直套标注方式：Standard Bushing Label Mode FYB–800

单位unit:mm

型号规格 Designation	D_i	D_O	轴径(h8) D_s	座(H7) D_H	压装后内孔公差 $D_{i,a}$	配合间隙 C_D	壁厚 S_3	油孔 d_L	$B^{0}_{0.40}$ 10	15	20	25	30	40	50
JF-800	10	12	$10^{}_{-0.022}$	$12^{+0.018}$	+0.148 +0.010	0.170 0.010	0.995 0.935	4	1010	1015	1020				
JF-800	12	14	$12^{}_{-0.027}$	$14^{+0.018}$		0.175 0.010			1210	1215	1220				
JF-800	14	16	$14^{}_{-0.027}$	$16^{+0.018}$					1410	1415	1420				
JF-800	15	17	$15^{}_{-0.027}$	$17^{+0.018}$					1510	1515	1520				
JF-800	16	18	$16^{}_{-0.027}$	$18^{+0.018}$					1610	1615	1620				
JF-800	18	20	$18^{}_{-0.027}$	$20^{+0.021}$	+0.151 +0.010	0.178 0.010			1810	1815	1820	1825			
JF-800	20	23	$20^{}_{-0.033}$	$23^{+0.021}$	+0.161 +0.020	0.194 0.020	1.490 1.430		2010	2015	2020	2025			
JF-800	22	25	$22^{}_{-0.033}$	$25^{+0.021}$				6	2210	2215	2220	2225			
JF-800	24	27	$24^{}_{-0.033}$	$27^{+0.021}$					2410	2415	2420	2425	2430		
JF-800	25	28	$25^{}_{-0.033}$	$28^{+0.021}$						2515	2520	2525	2530		
JF-800	26	30	$26^{}_{-0.033}$	$30^{+0.021}$	+0.181 +0.040	0.214 0.040				2615	2620	2625	2630		
JF-800	28	32	$28^{}_{-0.033}$	$32^{+0.025}$	+0.185 +0.040	0.218 0.040				2815	2820	2825	2830	2840	
JF-800	30	34	$30^{}_{-0.033}$	$34^{+0.025}$						3015	3020	3025	3030	3040	
JF-800	32	36	$32^{}_{-0.039}$	$36^{+0.025}$			1.980 1.920			3215	3220	3225	3230	3240	
JF-800	35	39	$35^{}_{-0.039}$	$39^{+0.025}$		0.224 0.040					3520	3525	3530	3540	3550
JF-800	38	42	$38^{}_{-0.039}$	$42^{+0.025}$				8			3820	3825	3830	3840	3850
JF-800	40	44	$40^{}_{-0.039}$	$44^{+0.025}$							4020	4025	4030	4040	4050

JF 标准公制轴套
JF Normal Metric Bushing

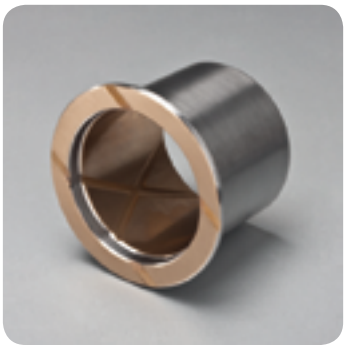
单位unit:mm

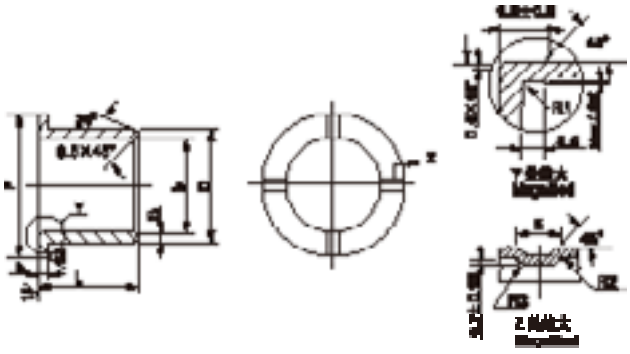
型号规格 Designation	D_i	D_O	轴径(h8) D_s	座(H7) D_H	压装后内孔公差 $D_{i,a}$	配合间隙 C_D	壁厚 S_3	油孔 d_L	B $^{0}_{-0.40}$							
									25	30	40	50	60	80	90	100
JF-800	45	50	$45^{\ }_{-0.039}$	$50^{+0.025}$	$^{+0.225}_{+0.080}$	0.264 0.080	2.460 2.400	8	4525	4530	4540	4550				
JF-800	50	55	$50^{\ }_{-0.039}$	$55^{+0.030}$	$^{+0.230}_{+0.080}$	0.269 0.080				5030	5040	5050	5060			
JF-800	55	60	$55^{\ }_{-0.046}$	$60^{+0.030}$		0.276 0.080				5530	5540	5550	5560			
JF-800	60	65	$60^{\ }_{-0.046}$	$65^{+0.030}$						6030	6040	6050	6060			
JF-800	65	70	$65^{\ }_{-0.046}$	$70^{+0.030}$						6530	6540	6550	6560			
JF-800	70	75	$70^{\ }_{-0.046}$	$75^{+0.030}$						7030	7040	7050	7060	7080		
JF-800	75	80	$75^{\ }_{-0.046}$	$80^{+0.030}$				9.5		7530	7540	7550	7560			
JF-800	80	85	$80^{\ }_{-0.046}$	$85^{+0.035}$	$^{+0.235}_{+0.080}$	0.281 0.080					8040	8050	8060	8080		
JF-800	85	90	$85^{\ }_{-0.054}$	$90^{+0.035}$		0.289 0.080				8530		8550	8560	8580		85100
JF-800	90	95	$90^{\ }_{-0.054}$	$95^{+0.035}$								9050	9060	9080		90100
JF-800	95	100	$95^{\ }_{-0.054}$	$100^{+0.035}$									9560	9580	9590	95100
JF-800	100	105	$100^{\ }_{-0.054}$	$105^{+0.035}$									10060	10080	10090	100100
JF-800	105	110	$105^{\ }_{-0.054}$	$110^{+0.035}$									10560	10580		105100
JF-800	110	115	$110^{\ }_{-0.054}$	$115^{+0.035}$									11060	11080		110100
JF-800	115	120	$115^{\ }_{-0.054}$	$120^{+0.035}$								11550		11580		
JF-800	120	125	$120^{\ }_{-0.054}$	$125^{+0.040}$	$^{+0.240}_{+0.080}$							12050	12030			120100
JF-800	125	130	$125^{\ }_{-0.063}$	$130^{+0.040}$		0.303 0.080										125100
JF-800	130	135	$130^{\ }_{-0.063}$	$135^{+0.040}$									13060			130100
JF-800	135	140	$135^{\ }_{-0.063}$	$140^{+0.040}$									13560	13580		
JF-800	140	145	$140^{\ }_{-0.063}$	$145^{+0.040}$									14060	14080		140100
JF-800	150	155	$150^{\ }_{-0.063}$	$155^{+0.040}$									15060	15080		150100

注：内孔公差是轴套压入 0 位座孔时的公差

Note: In addition to the above specifications of size, manufactured according to customer drawings .

JF 标准公制翻边轴套
JF Normal Metric Flange Bushing





单位unit:mm

规格型号 Type	F	D	d	L	h	B
4040	60	46	40	39.5	3.5	3.0
4035	62	47	40	35	3.5	3.5
4055	68	55	45	55	3.5	5.0
5040A	72	57	50	40	3.5	3.5
5040B	70	57	50	40	3.5	3.5
5050	70	57	50	50	3.5	3.5
5460	92	60.6	54	60	3.5	3.3
6053	83	67	60	53	3.5	3.5
6060	87	67	60	60	3.5	3.5
6065	77	67	60	65	3.5	3.5
6060A	88	68	60	60	4.0	4.0
6060B	87	68	60	60	4.0	4.0
6465	102.6	70.4	63.5	65	3.5	3.5
6473	103	70.8	63.8	73	3.5	3.5
6553	85	72	65	53	3.5	3.5
6564	87	72	65	64	3.5	3.5
6575	108	72	65	75	3.5	3.5
7060	93	77	70	60	3.5	3.5
7090	108	80	70	90	5.0	5.0
7560	100	82	75	60	3.5	3.5
8060	105	87	80	68	3.5	3.5
8580	127	92	85	80	3.5	3.5
85103	128	92.6	85	103.5	3.5	3.8
89126	138	97.5	89.2	126.5	4.2	4.2
95127	144	105	95	127	5.0	5.0

FB 青铜卷制轴套
BRONZE WRAPPED BUSHING

产品介绍
Product introduction

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

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

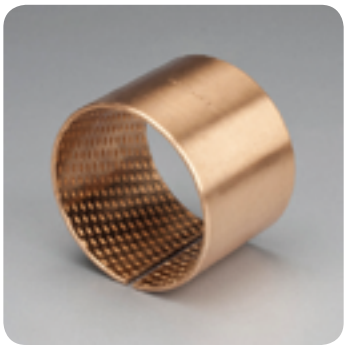
使用参数
The use of parameters

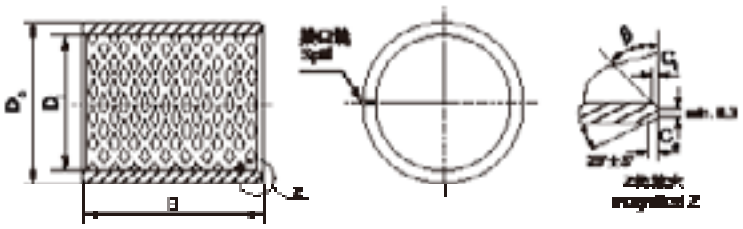
参数 Parameters	FB090 青铜卷制轴套 Bronze Wrapped Bushing	FB091 黄铜卷制轴套 Copper Wrapped Bushing	FB092 青铜布孔轴套 Bronze Wrapped Bushing	FB094 青铜布孔轴套带密封圈 Bronze Wrapped Bushing with Seals	FB09G 青铜嵌石墨卷制轴套 Bronze +Graphite Wrapped Bushing
					
密度 Density	8.9g/cm³	8.4g/cm³	8.9g/cm³	8.9g/cm³	8.3g/cm³
抗压强度 Pressure resistance strength	470N/mm²	440N/mm²	470N/mm²	470N/mm²	470N/mm²
导热系数 Coefficient of heat conduction	60W/m.k	71W/m.k	60W/m.k	60W/m.k	58W/m.k
线膨胀系数 Linear expansion coefficient	18.5×10^{-6}/K	19.2×10^{-6}/K	18.5×10^{-6}/K	18.5×10^{-6}/K	18.5×10^{-6}/K
硬度 Hardness	90~120 HB	80~110 HB	90~120 HB	90~120 HB	90~120 HB
延伸率 Elongation	55%	30%	55%	55%	55%
材料名称 Alloy material	CuSn8P	CuZn31Si	CuSn8P	CuSn8P	CuSn8P
其它可选材料 Other material	CuSn6.5P		CuSn6.5P	CuSn6.5P	CuSn6.5P

应用举例
Application case

产品主要应用于起重机械、建筑机械、汽车、拖拉机行业、机床工业及采矿机械。
Products are mainly used in lifting machinery, construction machinery, automobile, tractor industry, machine tool industry and mining machinery.

FB 标准公制轴套
FB Normal Metric Bushing





ID and OD chamfers

S_3	C_o	C_i	β
0.75	0.5 ± 0.3	0.25 ± 0.2	35° ± 5°
1.00	0.6 ± 0.3	0.30 ± 0.2	35° ± 5°
1.50	0.7 ± 0.3	0.50 ± 0.3	35° ± 5°

S_3	C_o	C_i	β
2.00	1.2 ± 0.4	0.50 ± 0.3	30° ± 5°
2.50	1.8 ± 0.6	0.60 ± 0.3	45° ± 5°

单位unit:mm

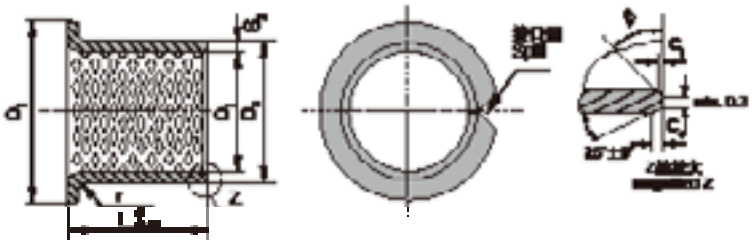
压入H7座孔内径 Installed Bushing I.D.		外径 O.D.		f_1	f_2	B $^{0}_{-0.40}$									
						10	15	20	25	30	35	40	50	60	70	80
10	+0.060 -0.005	12	+0.065 +0.030	0.5	0.3	1010	1015	1020								
12		14				1210	1215	1220								
14		16				1410	1415	1420	1425							
15		17				1510	1515	1520	1525							
16		18				1610	1615	1620	1625							
18		20				1810	1815	1820	1825							
20	+0.070 -0.005	23	+0.075 +0.035	0.8	0.4	2010	2015	2020	2025							
22		25				2210	2215	2220	2225	2230						
24		27					2415	2420	2425	2430						
25		28					2515	2520	2525	2530						
28	+0.070 -0.010	32	+0.085 +0.045	1.0	0.6		2815	2820	2825	2830						
30		34					3015	3020	3025	3030	3035	3040				
32		36					3215	3220	3225	3230	3235	3240				
35		39					3515	3520	3525	3530	3535	3540				
40		44						4020	4025	4030	4035	4040	4050			
45		50		1.2	0.8			4520	4525	4530	4535	4540	4550			
50	+0.090 -0.015	55	+0.100 +0.055					5020	5025	5030	5035	5040	5050	5060		
55		60						5520	5525	5530	5535	5540	5550	5560		
60		65							6025	6030	6035	6040	6050	6060	6070	
65		70								6530	6535	6540	6550	6560	6570	
70		75								7030	7035	7040	7050	7060	7070	7080
75		80								7530	7535	7540	7550	7560	7570	7580
80	+0.130 0	85	+0.120 +0.070	1.4						8030	8035	8040	8050	8060	8070	8080

FB 标准公制轴套
FB Normal Metric Bushing

单位unit:mm

压入H7座孔内径 Installed Bushing I.D.		外径 O.D.		f_1	f_2	B $^{0}_{-0.40}$								
						30	35	40	50	60	70	80	90	100
85	+0.130 0	90	+0.120 +0.070	1.4	0.8	8530	8535	8540	8550	8560	8570	8580	8590	85100
90		95				9030	9035	9040	9050	9060	9070	9080	9090	90100
95		100						9540	9550	9560	9570	9580	9590	95100
100		105							10050	10060	10070	10080	10090	100100
105		110							10550	10560	10570	10580	10590	105100
110		115							11050	11060	11070	11080	11090	110100
115		120							11550	11560	11570	11580	11590	115100
120	+0.140 0	125	+0.170 +0.070							12060	12070	12080	12090	120100
125		130								12560	12570	12580	12590	125100
130		135								13060	13070	13080	13090	130100
135		140								13560	13570	13580	13590	135100
140		145								14060	14070	14080	14090	140100
145		150								14560	14570	14580	14590	145100
150		155								15060	15070	15080	15090	150100
155		160								15560	15570	15580	15590	155100
160		165								16060	16070	16080	16090	160100
165		170								16560	16570	16580	16590	165100
170		175								17060	17070	17080	17090	170100
175		180								17560	17570	17580	17590	175100
180		185	+0.210 +0.130							18060	18070	18080	18090	180100
185		190								18560	18570	18580	18590	185100
190		195								19060	19070	19080	19090	190100
195		200								19560	19570	19580	19590	195100
200		205								20060	20070	20080	20090	200100
205		210								20560	20570	20580	20590	205100
215		220								21560	21570	21580	21590	215100
225		230								22560	22570	22580	22590	225100
230		235								23060	23070	23080	23090	230100
240		245								24060	24070	24080	24090	240100
250		255	+0.260 +0.170							25060	25070	25080	25090	250100
260		265								26060	26070	26080	26090	260100
270		275								27060	27070	27080	27090	270100
280		285								28060	28070	28080	28090	280100
290		395								29060	29070	29080	29090	290100
300		305								30060	30070	30080	30090	300100

FB 标准公制翻边轴套
FB Normal Metric Flange Bushing



S_3	1.0	1.5	2.0	2.5
r	$1^{-0.5}$	1 ± 0.5	1.5 ± 0.5	2 ± 0.5

单位unit:mm

内径 D_i ϕ d	外径 D_O ϕ D	法兰外径 D_{fl}	长度 L $^{0}_{-0.40}$										
			15	20	25	30	35	40	50	60	70	80	90
25	28	35	2515	2520	2525								
30	34	45		3020	3025	3030							
35	39	50		3520	3525	3530	3535						
40	44	55			4025	4030	4035	4040					
45	50	60				4530	4535	4540	4550				
50	55	65				5030	5035	5040	5050				
55	60	70				5530	5535	5540	5550				
60	65	75				6030	6035	6040	6050	6060			
65	70	80				6530	6535	6540	6550	6560			
70	75	85					7035	7040	7050	7060	7070		
75	80	90					7535	7540	7550	7560	7570		
80	85	100					8035	8040	8050	8060	8070	8080	
90	95	110							9050	9060	9070	9080	9090
100	105	120							10050	10060	10070	10080	10090
110	115	130							11050	11060	11070	11080	11090
120	125	140							12050	12060	12070	12080	12090
130	135	155								13060	13070	13080	13090
140	145	165								14060	14070	14080	14090
150	155	180								15060	15070	15080	15090
160	165	190								16060	16070	16080	16090
170	175	200								17060	17070	17080	17090
180	185	215								18060	18070	18080	18090
190	195	225								19060	19070	19080	19090
200	205	235								20060	20070	20080	20090
225	230	260								22560	22570	22580	22590
250	255	290								25060	25070	25580	25590
265	270	305								26560	26570	26580	26590
285	290	325								28560	28570	28580	28590
300	305	340								30060	30070	30080	30090

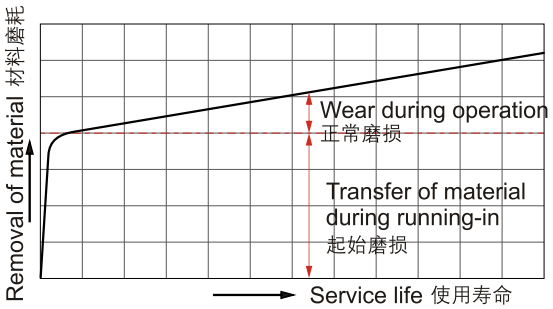
相关设计
The Technical

影响轴承使用寿命的因素 Influences on the service life

- 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

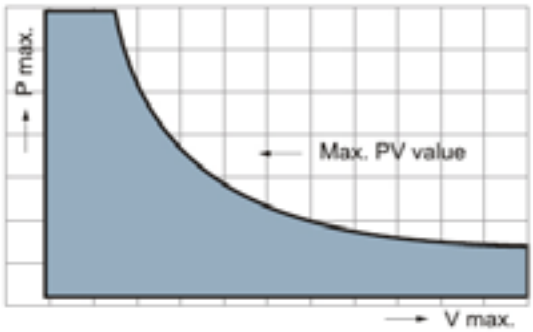
Wear and service life of the slide bearings are dependent on the following:

- Specific bearing load
- Sliding speed
- PV value
- Roughness depth of the mating surface
- Mating surface material and Temperature etc.



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

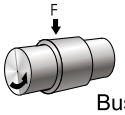
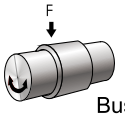
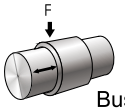
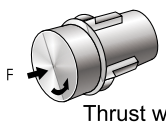
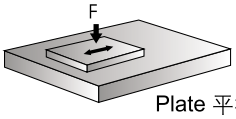
PV 是指轴承在一定的承载和线速度条件下的乘积之和，PV 值与轴承的使用寿命成反比例关系；因此建议设计时尽量使用比较低的安全 PV 值，以确保轴承会有更长的使用寿命；虽然样本中有明确了各类材料的 PV 值，但是这些都是在径向旋转条件下测得的，而事实上设计人员在设计轴承的寿命是还需要考虑很多因素。另外环境温度是一个必须要考虑的因素，由于温度的上升会导致轴承于座孔间的配合间隙发生变化，轴与轴承内孔的配合公差也会发生变化，从而影响轴承的正常使用。



As the sum of products of a bearing under the conditions of certain loading and linear velocity, PV value is inversely proportional to the service life of the bearing, so lower safe PV value is suggested to be used during design to ensure longer service life of the bearing. Although PV values of different materials are defined in the sample, these are measured under the condition of radial rotation, as a matter of fact, designers need to consider many factors when designing bearing life. Besides, ambient temperature, as a parameter which must be considered, should consider many factors, because fit clearance between bearing and seat hole and fit tolerance between shaft and bearing bore change due to temperature rise.

相关设计
The Technical

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

		Load 负载 P N/mm² {kgf/cm²}	Velocity V 线速度 m/s {m/min}	PV Value PV值 N/mm²*m/s {kgf/cm²*m/min}
1. Rotating motion in single direction of radial journal 旋转运动	 Bushing 轴套	$\frac{F}{dL}$ $\left\{\frac{10^2F}{dL}\right\}$	$\frac{\pi dn}{10^3}$ $\left\{\frac{\pi dn}{10^3}\right\}$	$\frac{\pi Fn}{10^3L}$ $\left\{\frac{\pi Fn}{10L}\right\}$
2. Oscillating motion 摇摆运动	 Bushing 轴套	$\frac{F}{dL}$ $\left\{\frac{10^2F}{dL}\right\}$	$\frac{dc\,\theta}{10^3}$ $\left\{\frac{\pi\,dc\,\theta}{180\times10^3}\right\}$	$\frac{Fc\,\theta}{10^3L}$ $\left\{\frac{\pi\,Fc\,\theta}{180\times10^2L}\right\}$
3. Reciprocating motion 往复运动	 Bushing 轴套	$\frac{F}{dL}$ $\left\{\frac{10^2F}{dL}\right\}$	$\frac{2cS}{10^3}$ $\left\{\frac{2cS}{10^3}\right\}$	$\frac{2FcS}{10^3dL}$ $\left\{\frac{FcS}{5dL}\right\}$
4. Thrust motion 推力运动	 Rotation 旋转 Oscillation 摇摆 Thrust washer 垫片	$\frac{4F}{\pi(D^2-d^2)}$ $\left\{\frac{400F}{\pi(D^2-d^2)}\right\}$	$\frac{\pi Dn}{10^3}$ $\left\{\frac{\pi Dn}{10^3}\right\}$	$\frac{4FDn}{10^3(D^2-d^2)}$ $\left\{\frac{4FDn}{10(D^2-d^2)}\right\}$
		$\frac{4F}{\pi(D^2-d^2)}$ $\left\{\frac{400F}{\pi(D^2-d^2)}\right\}$	$\frac{Dc\,\theta}{10^3}$ $\left\{\frac{\pi\,Dc\,\theta}{180\times10^3}\right\}$	$\frac{4FDc\,\theta}{10^3\,\pi\,(D^2-d^2)}$ $\left\{\frac{4FDc\,\theta}{180\times10(D^2-d^2)}\right\}$
5. Plane reciprocating motion 平面滑动	 Plate 平板	$\frac{F}{BL}$ $\left\{\frac{10^2F}{WL}\right\}$	$\frac{2cS}{10^3}$ $\left\{\frac{2cS}{10^3}\right\}$	$\frac{2FcS}{10^3BL}$ $\left\{\frac{FcS}{5WL}\right\}$

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 }

相关设计
The Technical

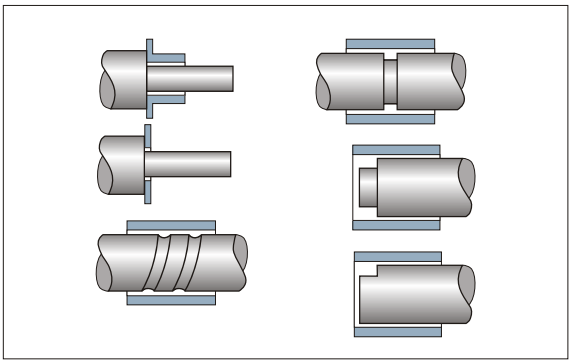
相配轴 Mating Shaft

相配轴的材料、硬度、表面粗超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霍表面镀铬处理。

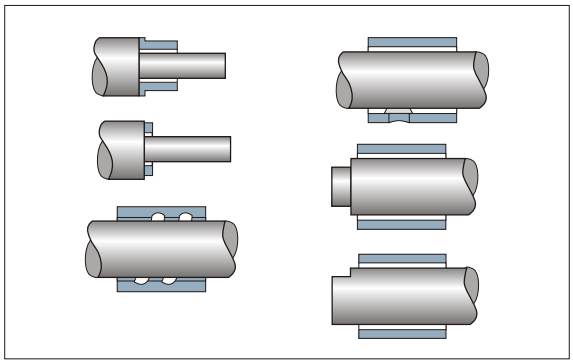
Bearing performance is influenced by the material, hardness, surface roughness and surface treatment of the mating shaft. If uesd in a corrosive environment such as in the seawater, or in the chemical liquid, double or triple chrome plating should be consideration.

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

不正确设计 Incorrect



正确设计 Correct



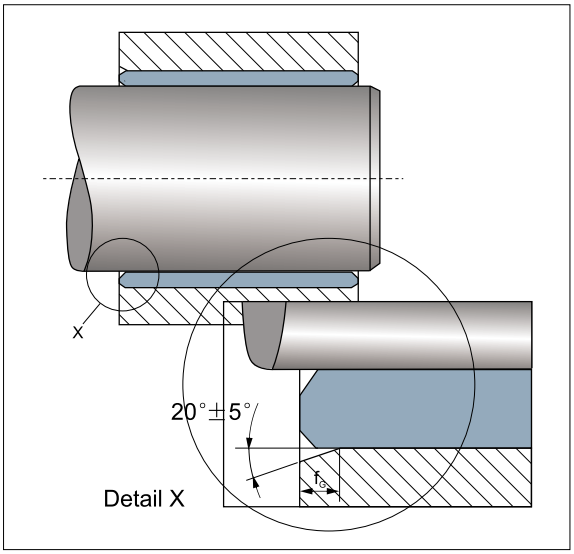
相关设计
The Technical

轴承座孔 Housing

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° ±5° 的倒角。

There should be chamfers on the housing bore during the assembly. A chamfer $F_G \times 20°$ ±5° is important for the easier pressing of the bushing into the housing.

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



壁厚设计 Wall thickness

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：

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

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

长度设计 Length

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。

In general, length of bearing is calculated by the ratio of the bearing hength 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.

相关设计
The Technical

定期给油 Periodic Greasing

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

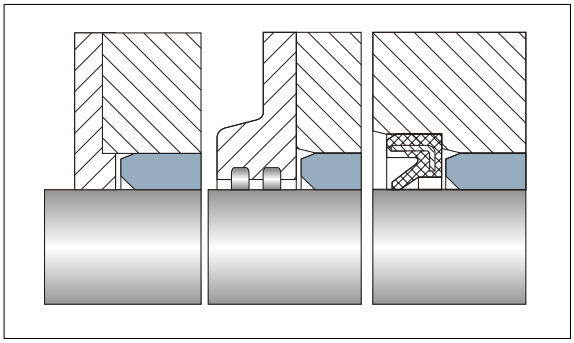
Metallic self-lubricating bearings designed for maintenance-free and dry operation, but periodic greasing or oiling will improve the bearing performance and extension the service life.

- 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

密封件 Seals

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碾磨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。

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.



金属类轴承的安装
Metal Bushing Installation

机械压装 Pressure Assembly

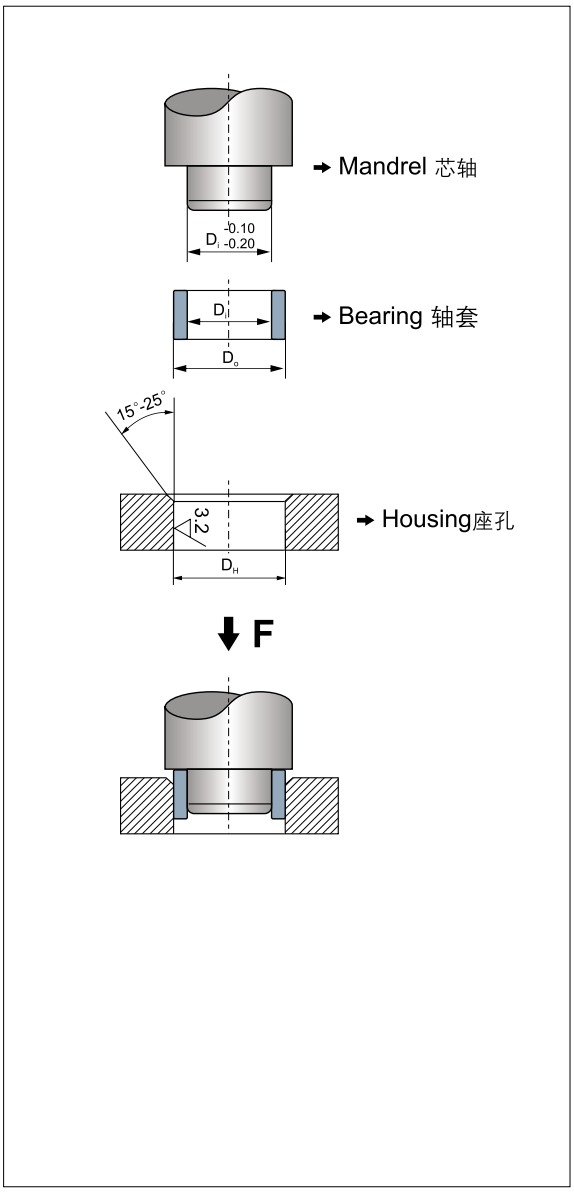
通常情况下，轴承可以采用压力装配的方式进行安装，装配时应采用芯轴慢慢压入，禁止直接击打轴承以免产生变形，装配前应确保座孔内表面光洁无异物。

Typically, the bearings can be used to pressure the assembly with the installation, assembly, slowly push the mandrel should be used to prohibit the direct hit to avoid deformation of the bearing, the assembly should ensure that the seat before the hole smooth surface without foreign body.

冷冻装配 Cooling assembly

通过液氮或干冰采用冷装配压装相比采用机械压装方式更为有效，此时标准的冷冻温度为 -40℃ ~-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。

By liquid nitrogen or dry ice compared with cold press-fit assembly with mechanical press-fit method is more effective, then the standard freezing temperature of -40 ℃ ~ -70 ℃ , freezing time is generally 1 hour or more, according to the specific needs of parts of the wall thick and with tolerance.



轴承的收缩量可以根据以下公式计算：

Shrinkage of the bearing can be calculated according to the following companies:

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

ΔD:OD 外径收缩量

D:OD 轴承外径

α：线性膨胀系数 (1/105K)

ΔT: 温度差

$\Delta D=D \times \alpha \times \Delta T$ ΔD:OD Diameter shrinkage

D:OD Bearing outer diameter

α:Linear expansion coefficient(1/105K)

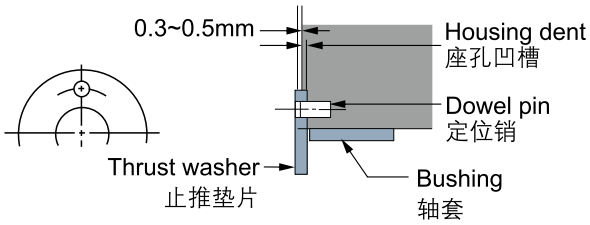
ΔT:Temperature difference

金属类轴承的安装
Metal Bushing Installation

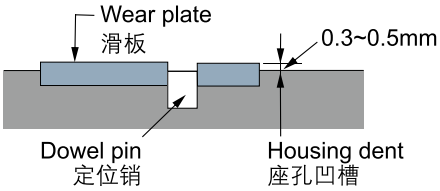
止推垫片和滑板的安装

止推垫片和滑板应当安装在座孔的凹槽内，为了避免零件的移动建议使用定位销或沉头螺丝加以固定。
It is recommended to install the thrust washers and sliding plates with the hollow indented housings. To avoid the moving of such parts, a dowel pins is recommended to be installed.

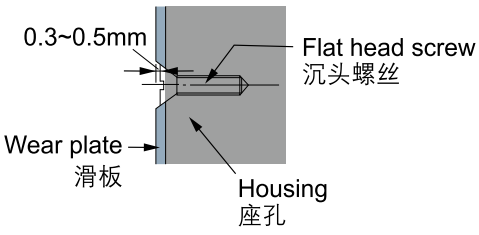
1. 定位销安装 Dowel pin application (thrust washer)



2. 镶嵌式安装 Inlaid installation（ Plate ）



3. 沉头螺丝安装 Flat head screw application



表面粗糙度对照表
Surface Roughness Table

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)	Ra (μ)	Rz (μ)	Code	Ra (μ)	Rz (μ)	Code	Ra (μ)	Rz (μ)	Rmax (μ)	Code
0.008	0.032												0.01	0.05	√14							
0.01	0.04	0.012 0.008					0.01	0.04														
0.012	0.05															0.012	0.05		(0.0125a)		(0.05S)	
0.016	0.063						0.016	0.063					0.02	0.10	√13							
0.02	0.08	0.025																				
0.025	0.10		1(0.025)		1(0.025)		0.025	0.10		0.025	N1	0.025				0.025	0.10			0.1Z	0.1S	
0.032	0.125												0.04	0.20	√12							
0.04	0.16	0.05					0.04	0.16														
0.05	0.20		2(0.05)		2(0.05)					0.05	N2	0.05				0.05	0.20		0.05a	0.2Z	0.2S	
0.063	0.25						0.063	0.25					0.08	0.40	√11							
0.08	0.32	0.10			3(0.08)							0.08										
0.10	0.40		4(0.10)		4(0.10)		0.10	0.40		0.1	N3	0.1				0.10	0.40		0.1a	0.4Z	0.4S	
0.125	0.50				5(0.125)							0.12	0.16	0.80	√10							
0.16	0.63	Rz0.8			6(0.16)		0.16	0.63				0.16										
0.20	0.80		8(0.2)		8(0.2)					0.2	N4	0.2				0.20	0.80		0.2a	0.8Z	0.8S	
0.25	1				10(0.25)		0.25	1				0.25	0.32	1.60	√9							
0.32	1.25	Rz1.6			13(0.32)							0.3										
0.40	1.6		16(0.4)		16(0.4)		0.40	1.60		0.4	N5	0.4				0.40	1.60		0.4a	1.6Z	1.6S	
0.50	2				20(0.5)					0.5	N6	0.5	0.63	3.20	√8							
0.63	2.5	0.80			25(0.63)		0.63	2.5				0.6										
0.8	3.2		32(0.8)		32(0.8)	16 √						0.8				0.80	3.2		0.8a	3.2Z	3.2S	
1	4				40(1)		1	4				1	1.25	6.30	√7							
1.25	5	1.60			50(1.25)	16 8 √						1.2										
1.6	6.3		63(1.6)		63(1.6)		1.6	6.3		1.6	N7	1.6				1.6	6.3		1.6a	6.3Z	6.3S	
2	8				80(2)							2	2.5	10	√6							
2.5	10	3.2			100(2.5)		2.5	10				2.5										
3.2	12.5		125(3.2)		125(3.2)					3.2	N8	3				3.2	12.5		3.2a	12.5Z	12.5S	
4	16				160(4)		4	16				4	5	20	√5					(18Z)	(18S)	
5	20	6.3			200(5)							5										
6.3	25		250(6.3)		250(6.3)		6.3	25		6.3	N9	6				6.3	25		6.3a	25Z	25S	
8	32											8	10	40	√4					35Z	35S	
10	40	Rz50					10	40				10										
12.5	50		500(12.5)		500(12.5)					12.5	N10	12				12.5	50		12.5a	50Z	50S	
16	63						16	63					20	80	√3							
20	80	25			800(20)															(70Z)	(70S)	
25	100		1000(25)		1000(25)		25	100		25	N11	25				25	100		25a	100Z	100S	
32	125												40	160	√2					140Z	140S	
40	160	Rz200					40	160														
125	200									50	N12					50	200		(50a)	200Z	200S	S
63	250						63	250					80	320	√1					280Z	280S	
80	320	100																				
250	400						100	400								100	400		(100a)	400Z	400S	
							160	630	S											560Z	560S	
							250	1000														
								1600														
								2500														

16 C LA 8-16 C LA or 8.16 C LA √16 — 6.3

μ=0.000001m=0.001mm

μin=0.000001 in=0.0254μ

轴径公差
Shaft tolerances

≥	<	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 +12	+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	-130 -192																		
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	-150 -224																	+62 +43	+78 +59
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	-180 -267																	+76 +54	+101 +79
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	-210 -310																	+90 +65	+125 +100
160	180	-230 -330																	+93 +68	+133 +108
180	200	-240 -355	-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	+106 +77	+151 +122
200	225	-260 -375																	+109 +80	+159 +130
225	250	-280 -395																	+113 +84	+169 +140
250	280	-300 -430	-190 -271	-110 -162	-110 -191	-56 -108	-17 -49	0 -23	0 -32	0 -52	0 -81	± 16	± 26	+36 +14	+52 +20	+66 +34	+88 +56	+108 +56	+126 +94	+190 +158
280	315	-330 -460																	+130 +98	+202 +170
315	355	-360 -500	-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
355	400	-400 -540																	+150 +114	+244 +208
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	-480 -635																	+172 +132	+292 +252

座孔公差
Bore tolerance

≥	<	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																		-33 -54
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	+280 +180	+192 +130																-45 -70
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	+320 +200	+224 +150														-32 -62	-48 -78	-64 -94
80	100	+360 +220	+257 +170	+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	+380 +240	+267 +180														-41 -76	-66 -101	-91 -126
120	140	+420 +260	+300 +200	+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	-48 -88	-77 -117	-107 -147
140	160	+440 +280	+310 +210														-50 -90	-85 -125	-119 -159
160	180	+470 +310	+330 +230														-53 -93	-93 -133	-131 -171
180	200	+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
200	225	+565 +380	+375 +260														-63 -109	-113 -159	-163 -209
225	250	+605 +420	+395 +280														-67 -113	-123 -169	-179 -225
250	280	+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	-198 -250
280	315	+750 +540	+460 +330														-78 -130	-150 -202	-220 -272
315	355	+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	-247 -304
355	400	+910 +680	+540 +400														-93 -150	-187 -224	-273 -330
400	450	+1010 +760	+595 +440	+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	-307 -370
450	500	+1090 +840	+635 +480														-109 -172	-229 -292	-337 -400