SELF-LUBRICATING BEARING

SAVI 萨维
Self-lubricating Bearing

自润滑免维护滑动轴承

SAVI Solid-lubricating and Maintenance-free Sliding Bearings

嘉兴萨维精密机械有限公司
Jiaxing Savi Precision Machinery Co., Ltd.

精益求精

我们的承诺是始终不渝地创造新业绩

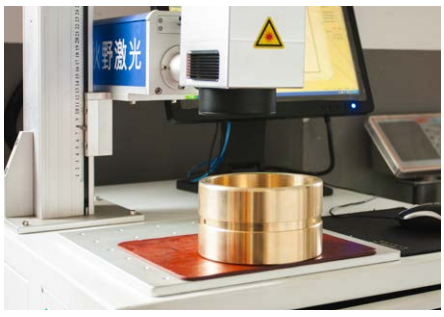
Excellence

Our commitment is to consistently
create new achievements

SAVI 萨维

Self-lubricating Bearing

关于萨维 Savi Introduction



嘉兴萨维精密机械有限公司地处长三角浙江嘉善，东距上海南距杭州，北距苏州都不超百公里， 水陆运输交通极为方便。长期研究开发无油自润滑轴承，经过多年的努力已相继开发了 JDB 固体润滑轴承（石墨铜套）、实体浇铸铜套、SF-1（DU）系列无 油自润滑轴承、SF-2(DX) 系列边界润滑轴承、JF800 系列双金属轴承、FB090 系列青铜卷制轴承、工程塑料轴承（EP）、塑料直线滑动轴承 (LIN)、陶瓷滚动轴承、纤维缠绕轴承等几大系列的产品。

公司将在轴承型号的选择，应用，性能测试，技术交流等方面向用户提供完善的服务，使客户达到提 高效率，降低消耗，节约成本，保护环境的目的。我们的轴承工程师将为您解决一系列的轴承问题，欢迎广大客户前来咨询，洽谈！

Jiaxing Savi Precision Machinery Co., Ltd. is located in Jiashan, Zhejiang Yangtze River Delta, south west of Shanghai, Hangzhou, Suzhou, do not exceed one hundred kilometers north, water and land transport is extremely convenient. Long-term research and development of oil-free self-lubricating bearings, after years of effort have successively developed JDB solid lubricating bearings (graphite copper sleeve), solid casting copper sleeve, SF-1 (DU) oil-free self-lubricating bearings, SF-2 (DX) series boundary lubricating bearings, JF800 series bimetal bearings, FB090 bronze series of rolling bearings, plastic bearings (EP), plastic linear plain bearings (LIN), ceramic bearings, filament-wound bearings, and other major series of products.

The company will provide better services to users in the bearing model selection, application, performance testing, technical exchanges, etc., enabling customers to achieve improve efficiency, reduce consumption, save costs and protect the environment. Our engineers will solve your bearing series bearing problems, welcome customers to consult, negotiate!

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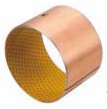
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EP 工程塑料轴承
EP Plastic Bearings

EP 工程塑料轴承
EP Plastic Bearings

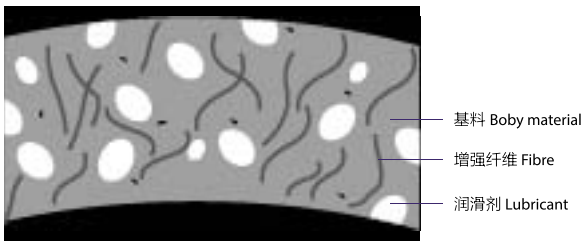
EP 系列塑料轴承技术
EP Technical Reference

EP 系列材料结构特点 Material Feature of EP series

EP 系列材料之所以具有优秀的自润滑性和耐磨性主要是工程师们充分利用了自润滑材料改性技术，在高性能工程塑料中采用高强度纤维提高了材料的承载和特种润滑脂降低了材料的摩擦系数（图表 1），从而提高了材料的综合耐磨性能延长了轴承的使用寿命。
高性能工程塑料作为基料主要作为耐磨载体；
增强纤维提高了轴承在承载和抗冲击性能；
特种润滑脂降低了轴承的摩擦系数起自润滑作用。

Engineers are dedicated on the performance improvement on the self- lubricating materials derives the result that EP Series Materials are with excellent self- lubricating features and wear resistance Features. High- strength fibers used in the engineering plastics fantastically improve the material load(Graph1). Special grease immersion in the plastic can decrease the friction coefficient of the material therefore to proiong the bearing sevice life.

图表 1 EP 系列材料内部结构示意图
Graph1 EP inner structure



High- performance engineering plastics body material mainly service as wear- resistant vector.
The reinforced fiber improves the load and impact resistant capacity of the bearing.
Special grease decreases the fricton coefficient for a better self-lubricating performance.

图表 2 塑料轴承与传统复合轴承的磨损
Graph2 Surface wear (Plastic Bearing vs Metal bearing)

EP 塑料轴承整体润滑材料使用寿命长
Plastic bearing has longer service life

传统含油轴承内部润滑油极易耗尽而失效
Metal bearing lubricating oil is easy to be failed

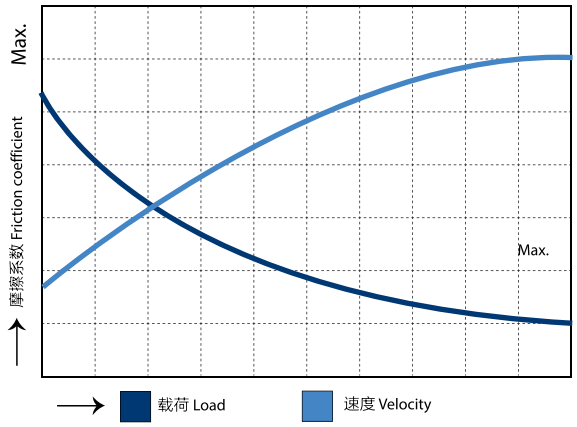
EP 系列塑料轴承技术
EP Technical Reference

EP 系列塑料轴承摩擦系数 EP Series Bearing Friction Coefficient

EP 系列塑料轴承的自润滑性能通过改性技术在基料中添加固体润滑脂和功能纤维实现，摩擦系数通过固体润滑脂降低，同时摩擦系数还受到工作载荷、运行速度以及轴表面粗糙度的影响。摩擦系数一般都会随着工作载荷的逐步增加而降低，随着运行速度的加快而升高(见图表 3)。摩擦系数与轴表面粗糙度的关系见图表 3。

The self-lubricating feature of the EP bearing is achieved by adding solid lubricants and functional fibers into the body material and the friction coefficient is decreased by the soild lubricate grease immresion. The friction coefficient is affected by the load, operating speed and shaft roughness. The friction coefficient is generally decreased along the load increasing and increased along the operating speed(see Graph3). Please refer to Gragh 3 for the relation between the friction coefficient and shaft roughness.

图表 3 摩擦系数 - 载荷 - 速度
Graph3 Friction coefficient,Load and Velocity

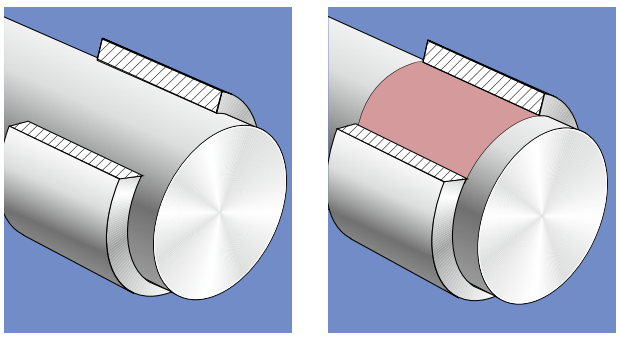


EP 系列塑料轴承磨损 The Inital Run-in Wear of EP Series

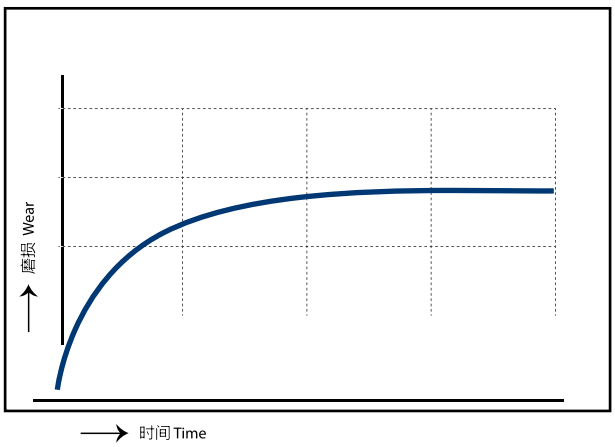
任何自润滑轴承只要一在载荷下工作，轴承就会产生细微磨损。EP 系列轴承同样如此，在启动阶段，当细微磨损发生时润滑脂就会渗出逐渐填满摩擦面和转移到对磨轴表面 (图表 4)，当对磨轴工作区域被润滑脂布满后形成一层很薄的润滑隔离膜，此时轴承的起始磨损几乎结束，在后期长时间的工作中轴承的磨损速率大大降低且较稳定 (图表 5) 。

Slightly wear off will occur as soon as the self-lubricating bearing is applied with a certain load. It is the same to the EP series bearings, when the slightly wear occurs, the immersed oil (grease) will infiltrate out from the bearing filling the wear off area of the bearing as well as the mating material to form the lubricating film (Gragh 4) ang therefore interrupt the wear process. In this way, the aforementioned working method of the plastic bearings improves the wear resistance feature of the bearings and maintain the further operation stable (Gragh 5).

图表 4：运行后，润滑膜形成
Gragh 4: After operation, lubricating oil film formed



图表 5：轴承磨损随工作时间变化曲线图
Gragh 5: Wear against operaton time



EP 系列塑料轴承技术
EP Technical Reference

技术参数 Technical Parameters

基本类型 Basic Types		EPT	EPG	EPH	EPX	EPJ
密度	Density	1.46g/cm^3	1.46g/cm^3	1.65g/cm^3	1.44g/cm^3	1.48g/cm^3
摩擦系数	The coefficient of friction	0.05-0.15	0.08-0.18	0.07-0.20	0.09-0.25	0.05-0.15
最大 P.V 值	Max. PV(dry)	0.4 (N/mm^2 × m/s)	0.5 (N/mm^2 × m/s)	1.4 (N/mm^2 × m/s)	1.5(N/mm^2 × m/s)	0.4 (N/mm^2 × m/s)
最大旋转速度值	Max. roatating velocity	1.0m/s	1.0m/s	1.0m/s	1.5m/s	1.5m/s
最大摇摆速度值	Max. oscillating velocity	0.7m/s	0.7m/s	0.7m/s	1.1m/s	1.1m/s
最大直线速度值	Max. linear velocity	3.0m/s	4.0m/s	3.0m/s	5.0m/s	8.0m/s
抗拉强度	Tensile strength	80MPa	200MPa	180MPa	170MPa	75MPa
抗压强度 (轴向)	Compressive strength(Axial)	65MPa	80MPa	80MPa	100MPa	60MPa
弹性模量	E- module	2300MPa	7700MPa	12000MPa	7900MPa	2400MPa
允许表面静压力	Allow the surface static pressure	35MPa	80MPa	90MPa	150MPa	35MPa
洛氏硬度	Rockwell hardness	108HRR	112HRR	118HRR	120HRR	107HRR
连续工作温度	Continuous work temperature	-40℃ ~80℃	-40℃ ~130℃	-40℃ ~200℃	-100℃ ~250℃	-50℃ ~90℃
短时运行速度	Short- time	-40℃ ~120℃	-40℃ ~220℃	-40℃ ~260℃	-100℃ ~315℃	-50℃ ~120℃
导热性	Thermal conductivity	0.2W/M*K	0.25W/M*K	0.6W/M*K	0.6W/M*K	0.25W/M*K
最大吸水率 23℃	Max. water absorption, 23℃	0.20%	0.70%	<0.1%	0.10%	0.20%

EP 系列塑料轴承技术
EP Technical Reference

轴承的载荷 The Bearing Load

载荷计算方法 Load capacity calculation

载荷计算方法 Load capacity calculation

$$P=\frac{F}{d\times L}\ (N/mm^2)$$

F= 轴承承载值 Load (N)

d= 轴径 Shaft (mm^2)

L= 轴径长度 Bearing Length(mm^2)

载荷计算方法 Load capacity calculation

$$P=\frac{4F}{\pi (D^2-d^2)}\ (N/mm^2)$$

F= 垫片承载值 Load (N)

D= 垫片外径 Washer OD(mm^2)

d= 垫片内径 Washer ID(mm^2)

由于受配合间隙、材料强度、内部油槽等原因的影响，轴承的真正承载面压 (P_{act}) 会大于理论计算值 (P_{mean})。

■ 最大表面静载荷 Maximum surface static load

轴承实际工作动载荷往往略小于数据表中推荐最大表面静载荷，由于轴与轴承配合总是存在间隙，所以轴承实际工作承载面积并不是轴承的投影面积，此面积的大小由配合轴公差尺寸所决定。此值适合于轴静止不动或运行速度低于 0.01m/s，更高的载荷在运行时间很短也是可能的（短时间指 3 分钟以内）。

■ 线速度计算公式 Calculation of Linear Speed

◇旋转运动 Rotating motion

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

d= 轴径 Shaft (mm)

n= 转速 / 分 Rpm

◇摇摆运动 Oscillationg motion

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

d= 轴径 Shaft (mm)

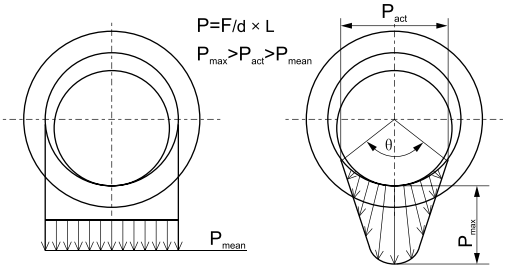
C= 摇摆频率（次数 / 分）Frequency

θ = 摇摆角度 Oscillating angle

■ 轴承 PV 值 PV Value of Bearings

PV 值是指轴承在一定的载荷和线速度条件下的乘积值，轴承的 PV 值是评价滑动轴承综合性能的一个重要指标。实际 PV 值与轴承的使用寿命成反比关系（图表 12），因此建议设计时尽可能使用比较低的 PV 值，以确保轴承会有更长的使用寿命。

PV is the product of the specific bearing load P and the sliding speed V. It is a very important design data for the bearing application. The PV value is inverse proportional to the bearing sevice life (Graph 12). So it is recommended to consider a lower design PV value during the bearing the bearing selection.



As the factor of clearance, bushes chamfer, oil groove ect, The actually load (Pact) is higher than theory of calculation(Pmean)

The actual dynamic load is usually less than the maximum surface static load recommended in the data sheet. Due to the clearance exists between the shaft and bearings, the actual working surface area are not the same as the projected area of the bearing, The working area is depended on the clearance between the shaft and the bearing. The value in the datasheet is valid when the shalt is less than 0.01m/s. The value could also be applicable for a short run (shorter than 3 minutes) condition.

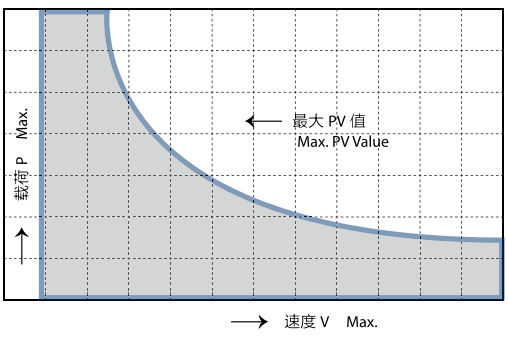
◇往复运动 Reciprocating motion

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

S= 行程长度 Stoke distance (m)

C= 往复运动（次数 / 分）Frequency

图表 12：轴承 PV Graph 12: PV Value



EPT 塑料轴承
EPT Plastic Bearings

标准产品规格表 Standard Specification Sheet:P172

产品特性 Product Features

- 通用性最强的塑料轴承。可满足工作温度 80 度以下的大部分应用场合，出色的耐磨性能和合理的价格往往是设计工程师的首选材料。
- 连续使用温度：-40℃ ~ 80℃；
- 通用性强适合多数中低载荷场合；
- 适合干运行、免维护；
- 不同轴材料磨损很小；
- 较低的摩擦系数；

- The most common plastic bearing material.It is suitbale for the application with working temperature not higher than 80℃. It is the prefereable material with good wear resistance and economic efficient for a new designation.
- Continuous working temperature: -40℃ ~ 80℃;
- Very common; suitable for most of average and low load;
- Maintenance-free dry operation;
- Light wear against different shaft materials;
- Low friction.

主要性能数据表 The Material Data Sheet

一般性能 Common Capabilty	试验方法 Testing Method	单位 Uint	EPT
密度 Density	ISO1183	g/cm^3	1.46
颜色 Color			深灰 Dark Grey
对钢的动摩擦系数 Dynamic friction/steel(dry)			0.05-0.15
最大 P.V 值 Max.PV（dry）		$n/mm^2 \times m/s$	0.4
最大旋转速度值 Max.roatating velocity		m/s	1.0
最大摇摆速度值 Max.oscillating velocity		m/s	0.7
最大直线速度值 Max.linear velocity		m/s	3.0
抗拉强度 Tensile strength	ISO527	MPa	80
抗压强度（轴向）Coppressive strength(Axial)		MPa	65
弹性模量 E-module	ISO527	MPa	2300
允许最大表面静压力（20℃）Max.static pressure of the surface，20℃		MPa	35
洛氏硬度 Rockwell hardness	ISO2039-2	HRR	108
连续工作温度 continuous work temperature		℃	-40/80
短时运行温度 Short-time		℃	-40/120
导热性 Thermal conductivity	ASTME1461	W/m k	0.2
线性热膨胀系数 Linear coef.of thermal eapansion	ASTMD696	$K^{-1} \times 10^{-5}$	10
RH50/23℃时的吸湿性 Moisture absorption RH50/23℃	ASTMD570	%	0.2
最大吸水率 23℃ Max. water absorption,23℃		%	1.2
燃烧性能 Flammability	UL94		HB
体电阻率 Volume resistivity	IEC60093	Ω cm	$> 10^{12}$
面电阻率 Surface resistivity	IEC60093	Ω	$> 10^{15}$

EPT 塑料轴承
EPT Plastic Bearings

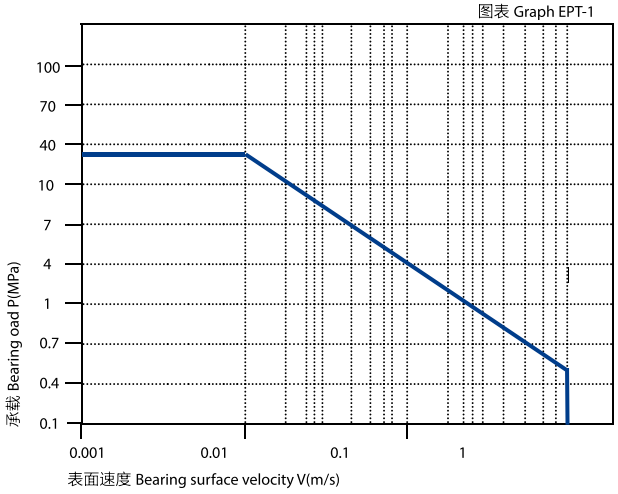
轴承 PV 值 PV Value of Bearings

EPT 系列轴承最大运行 PV 值为 0.4N/mm²*m/s; 由此决定轴承所承受的载荷与速度成反比，详情查阅图表 EPT-1。

The max PV value of the EPT series bearing is 0.4N/mm²*m/s which detemines the load capacity of bearing is inversely proportional to the speed. Please refer to the chare for more detailed information (Graph EPT-1).

■ PV 图表 Permissible PV value for EPT

图表 Graph EPT-1



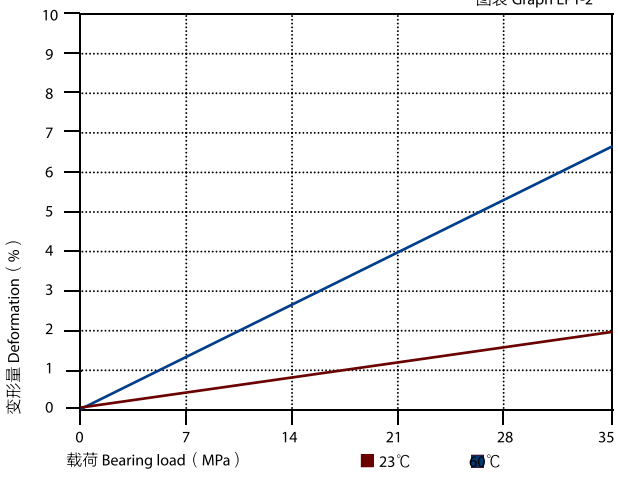
轴承的载荷、速度、温度 The Relation of Load,Speed and Temperature

EPT 系列轴承可承受最大静载荷为 35Mpa，在此载荷下轴承的最大压缩变形量参考图表 EPT-2；
轴承实际工作载荷小于 35Mpa，载荷还受到运行速度以及温度的影响，速度越快（Vmax:1.0m/s) 会导致摩擦温度上升，而温度上升（Tmax: 80℃）会导致轴承的承载能力逐渐减弱，载荷随轴承工作温度变化情况参考图表 EPT-3。

EPT allows the max static load of 35Mpa, The max compressive deformation rate under the max load is listed in Graph EPT-2;
The actual load capaxity of bearing is slightly less than 35Mpa, The bearing load is variable against the speed and temperature, Fast speed(Vmax: 1.0m/s) results into higher temperture(Tmax: 80 ℃) which decreases the load capacity of the bearing. Please refer to the Graph EPT-3 for such variation.

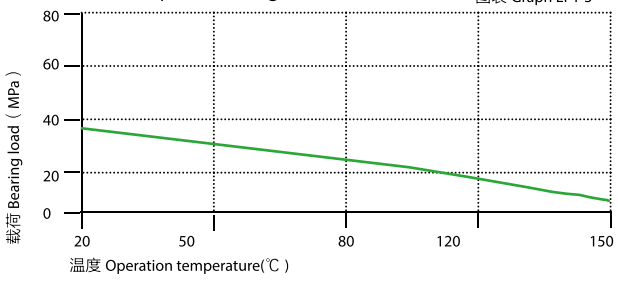
■ 载荷 - 温度 - 变形量图表
Load-Temperature deformation

图表 Graph EPT-2



■ 载荷 - 温度图表
Load-Temperature diagrams

图表 Graph EPT-3



EPT 塑料轴承
EPT Plastic Bearings

轴承的摩擦系数、磨损、轴材料

摩擦系数 Friction Factor

EPT 轴承摩擦系数受运动速度以及轴承载荷变化影响相对较小（见图表 EPT-4 与 EPT-5），这也是 EPT 作为塑料轴承通用型号选择的因素；此轴承可以保持一直比较低的摩擦系数从而确保了整个摩擦磨损性能的优越性。根据图表 EPT-6 显示 EPT 轴承的摩擦系数还会受到对磨轴表面粗糙度的影响而发生变化，我们推荐此轴承使用轴表面粗糙度值为 Ra0.3~0.5um。

EPT friction factor is not sensitive to the operation speed and bearing loading(see Graph EPT-4 and Graph EPT-5). The above features are the most common considerations for the bearing material selection. The friction of EPT could be maintained at a relatively lower lebel so that the good wearing features are guaranteed.From the Graph EPT-6, we could see that the friction factor is variable against the changing of shaft roughness. The recommended shaft roughness is Ra0.3~0.5.

EPT	干运行 Dry	油脂 Grease	油 Oil	水 Water
摩擦系数 μ Friction coef.	0.05-0.15	0.09	0.04	0.04

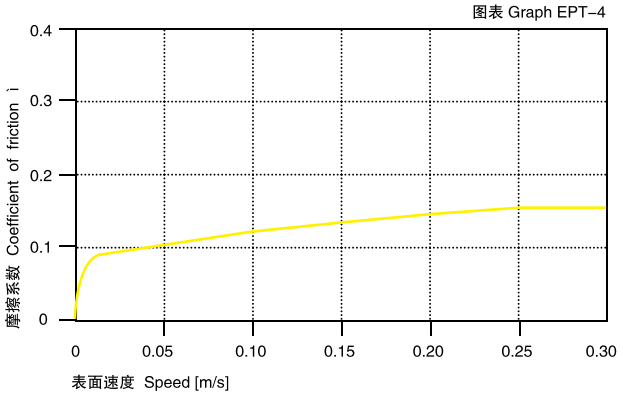
磨损与轴材料 Wearing and shaft material

轴材料对轴承的磨损有很大影响，但 EPT 轴承适合几乎所有的轴材料；通过图表 EPT-7 与图表 EPT-8 可以看出当使用硬铬钢轴或硬化钢轴以及硬化铝轴时 EPT 轴承的磨损特征都非常出色。

The shaft material is an important media for the bearing wearing but EPT is suitable for almost all kinds of shaft materials. Graph EPT-7 and Graph EPT-8 show that the wearing feature of EPT is excellent when the shaft material are hardened chrome steel or hardened steel or hardened Aluminum.

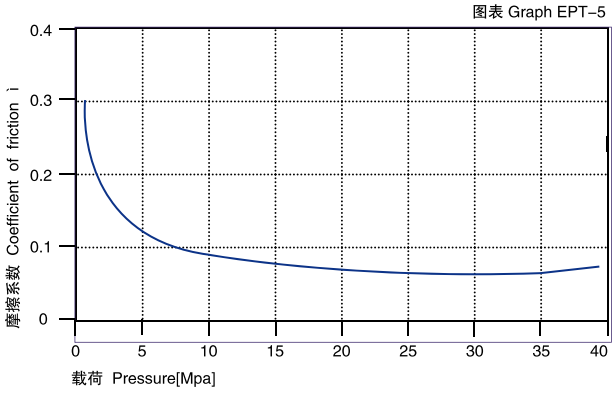
■ 摩擦系数与速度变化关系图表 P=2MPa
coefficient of friction & the speed of bearing, P=2Mpa

图表 Graph EPT–4



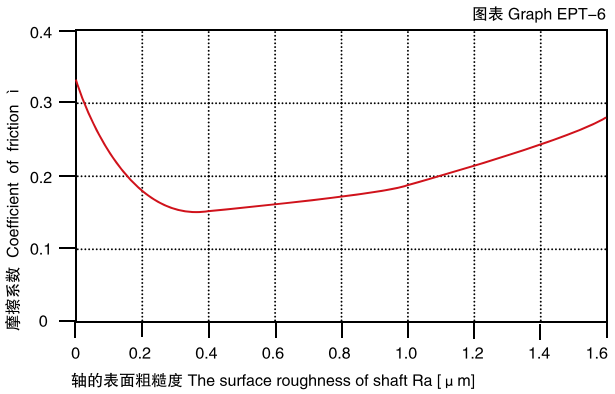
■ 摩擦系数与载荷变化关系图表 v=0.2m/s
coefficient of friction & the pressure of bearing, v=0.2m/s

图表 Graph EPT–5



■ 摩擦系数与载荷变化关系图表
coefficient of friction & the surface roughness of shaft

图表 Graph EPT–6



EPT 塑料轴承
EPT Plastic Bearings

化学抗性 Chemical Resistance

EPT 塑料轴承能抵抗弱碱、弱酸以及各类润滑油的腐蚀。

EPT is good at chemical resistance against mild base, weak acidic medium and various kinds of lubricants.

吸水性 Water Absorbability

在标准大气压中，EPT 塑料轴承的吸水率为 0.2%，浸泡水中最大平衡率为 1.2%；由于其具有低吸水率的特性，故此轴承可以用于一般潮湿环境中。

The water absorb rate of EPT is 0.2% under the atmospheric pressure while it is 1.2% when the material is immerged into water. With its low water absorbability, the material is suitable for humid environment applications.

抗 UV 性能 UV Resistance

EPT 长久暴露在紫外线下颜色基本不会改变。 材料的硬度，抗压强度和耐磨性都不会改变。

EPT can maintain its color unchanged when it is exposed into the UV ray. The hardness, Compressive strength and wear resistance of the material is also stable under such condition.

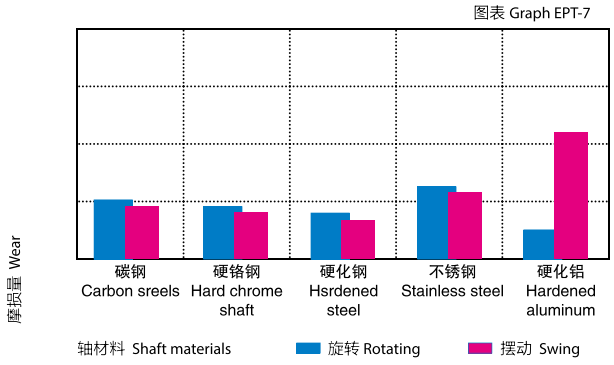
轴承安装 Bearing Installation

EPT 系列轴承配合公差 The Interfit Tolerance

直径 mm² d	压装后公差 E10 Tolerance after fit	安装孔径 H7 Fit Housing	配合轴径 h9 Fit Shaft
> 0~3	+0.014~+0.054	0~+0.010	0~-0.025
> 3~6	+0.020~+0.068	0~+0.012	0~-0.030
> 6~10	+0.025~+0.083	0~+0.015	0~-0.036
> 10~18	+0.032~+0.102	0~+0.018	0~-0.043
> 18~30	+0.040~+0.124	0~+0.021	0~-0.052
> 30~50	+0.050~+0.150	0~+0.025	0~-0.062
> 50~80	+0.060~+0.180	0~+0.030	0~-0.074
> 80~120	+0.072~+0.212	0~+0.035	0~-0.087
> 120~180	+0.085~+0.245	0~+0.040	0~-0.100

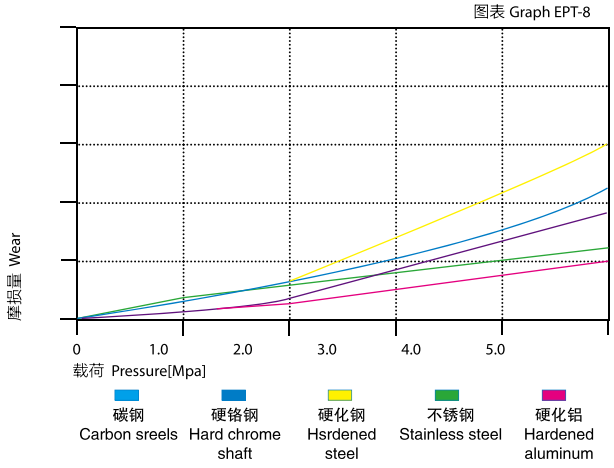
■ 在不同轴材料上旋转时的磨损量 P=2MPa，v=0.2m/s
The bearing wear under rotating with different shaft materials, p=2MPa, v=0.2m/s

图表 Graph EPT-7



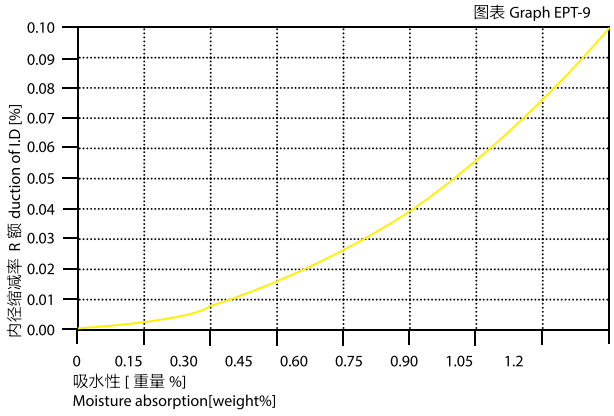
■ 旋转磨损随轴材料与压力变化关系 v=0.2m/s
The bearing wear & pressure under rotating with different shaft materials, v=0.2m/s

图表 Graph EPT-8



■ 吸水率的影响
Effect of moisture absorption on EPT bearings

图表 Graph EPT-9



EPG 塑料轴承
EPG Plastic Bearings

标准产品规格表 Standard Specification Sheet:P176

产品特性 Product Features

- 中高载荷下的应用能手。作为纤维增强和润滑的完美结合材料，可在 130 度下广泛被应用。
- 连续使用温度：-40℃ ~ 130℃；
- 适合中等载荷，通用性好；
- 适合干运行、免维护；
- 适用于不同轴材料；
- 用于旋转、摆动运动；
- 抗灰尘能力强。

- Best for middle to high load applications. With the perfect combination of reinforced fibre and good lubrication feature,this material is suitbale to be used under the temperature of 130℃ .
- Continuous working temperature: -40℃ ~ 130℃ ;
- Suitable for medium and high load operation;
- Maintenance-free dry operation;
- Applicable for various shaft materials;
- Good for rotation and oscillating operation;
- Excellent dust resistance.

主要性能数据表 The Material Data Sheet

一般性能 Common Capabilty	试验方法 Testing Method	单位 Uint	EPG
密度 Density	ISO1183	g/cm^3	1.46
颜色 Color			深灰 Dark Grey
对钢的动摩擦系数 Dynamic friction/ steel(dry)			0.08-0.18
最大 P.V 值 Max. PV（dry）		$n/mm^2 \times m/s$	0.5
最大旋转速度值 Max. roatating velocity		m/s	1.0
最大摇摆速度值 Max. oscillating velocity		m/s	0.7
最大直线速度值 Max. linear velocity		m/s	4.0
抗拉强度 Tensile strength	ISO527	MPa	200
抗压强度（轴向）Coppressive strength(Axial)		MPa	80
弹性模量 E-module	ISO527	MPa	7700
允许最大表面静压力 (20℃)Max.static pressure of the surface, 20℃		MPa	80
洛氏硬度 Rockwell hardness	ISO2039-2	HRR	112
连续工作温度 continuous work temperature		℃	-40/130
短时运行温度 Short-time		℃	-40/220
导热性 Thermal conductivity	ASTME1461	W/m k	0.25
线性热膨胀系数 Linear coef. of thermal eapansion	ASTMD696	$K^{-1} \times 10^{-5}$	9
RH50/23℃时的吸湿性 Moisture absorption RH50/23℃	ASTMD570	%	0.7
最大吸水率 23℃ Max. water absorption, 23℃		%	4.0
燃烧性能 Flammability	UL94		HB
体电阻率 Volume resistivity	IEC60093	Ω cm	> 10^{13}
面电阻率 Surface resistivity	IEC60093	Ω	> 10^{11}

EPG 塑料轴承
EPG Plastic Bearings

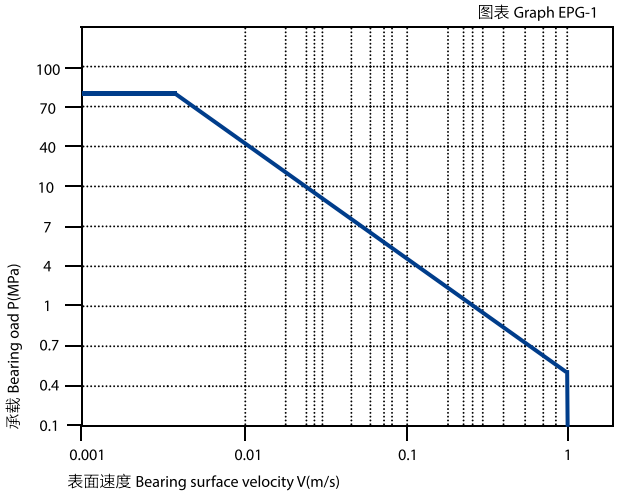
轴承 PV 值 PV Value of Bearings

EPG 系列轴承最大运行 PV 值为 0.5N/mm^{2*}m/s; 由此决定轴承所承受的载荷与速度成反比，详情查阅图表 EPG-1。

The max PV value of the EPG series bearing is 0.5N/mm^{2*}m/s which detemines the load capacity of bearing is inversely proportional to the speed. Please refer to the chare for more detailed information (Graph EPG-1).

■ PV 图表 Permissible PV value for EPG

图表 Graph EPG-1



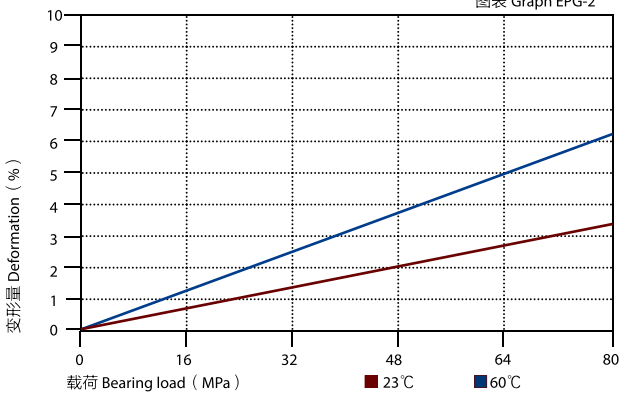
轴承的载荷、速度、温度 The Relation of Load,Speed and Temperature

EPG 系列轴承可承受最大静载荷为 80Mpa，在此载荷下轴承的最大压缩变形量参考图表 EPG-2；
轴承实际工作载荷小于 80Mpa，载荷还受到运行速度以及温度的影响，速度越快（Vmax:1.0m/s) 会导致摩擦温度上升，而温度上升（Tmax: 130℃）会导致轴承的承载能力逐渐减弱，载荷随轴承工作温度变化情况参考图表 EPG-3。

EPG allows the max static load of 80Mpa, The max compressive deformation rate under the max load is listed in Graph EPG-2;
The actual load capaxity of bearing is slightly less than 80Mpa, The bearing load is variable against the speed and temperature, Fast speed(Vmax: 1.0m/s) results into higher temperture(Tmax: 130 ℃) which decreases the load capacity of the bearing. Please refer to the Graph EPG-3 for such variation.

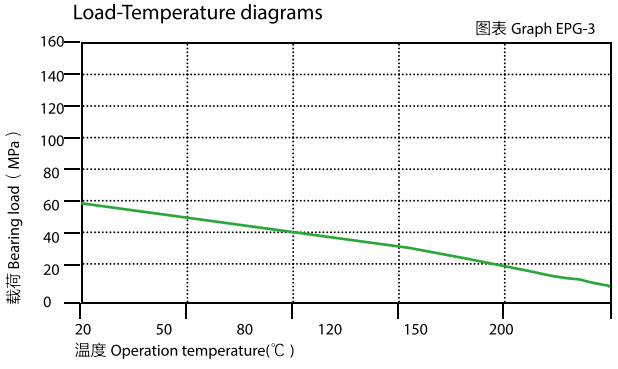
■ 载荷 - 温度 - 变形量图表
Load-Temperature deformation

图表 Graph EPG-2



■ 载荷 - 温度图表
Load-Temperature diagrams

图表 Graph EPG-3



EPG 塑料轴承
EPG Plastic Bearings

轴承的摩擦系数、磨损、轴材料

摩擦系数 Friction Factor

滑动轴承的摩擦系数与轴承的载荷、运行速度以及轴材料表面粗糙度都息息相关；EPG 轴承的摩擦系数随着载荷的增加而降低（图表 EPG-5），随着运行速度的增加而升高（图表 EPG-4）；这就表明 EPG 轴承适合用于高载低速的应用场合；而轴表面粗糙度越光滑或者越粗糙都会导致轴承的摩擦系数增加，EPG 推荐的表面粗糙度是在 Ra0.5~Ra0.8（图表 EPG-6）；

The friction factor of the sliding bearings is relatixe to the bearing load, operation speed and the roughness of the shaft material. EPG Bearing Friction factor decreased along with the increasing of the loading(See Graph EPG-5) and increased along with the increasing of the operation speed(See Graph EPG-4). The above feature induces the EPG material is applicable for the high load and low speed operation while too smooth and too rough surface may result into the increasing of friction factor. The recommended surface roughness of EPG is Ra0.5~ Ra0.8(See Graph EPG)

EPG	干运行 Dry	油脂 Grease	油 Oil	水 Water
摩擦系数 μ Friction coef.	0.08~0.18	0.09	0.04	0.04

磨损与轴材料 Wearing and shaft material

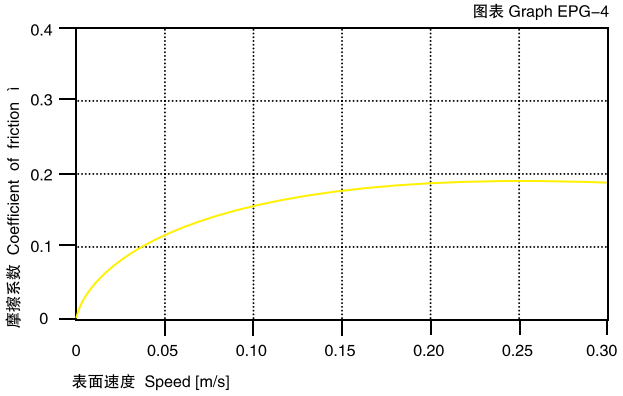
通过轴承在不同轴上的测试表明 EPG 低载时在碳钢轴和硬铬轴运行性能最好（见图表 EPG-7 和图表 EPG-8）；当然，随着轴承承受载荷的增加，对轴硬度要求也越高；较软的轴容易先产生磨损，导致轴承磨损也随之加大。当轴承的载荷超过 2MPa 时，轴承的磨损会随着轴硬度的增加而随之减少。

图表 EPG-8 表明 EPG 在摆动运动下的效果要好于旋转运动，在同等的工况条件下摆动运动下的磨损要小于旋转运动，特别是在高载荷下这种趋势就越明显。

Test of the bearing against various shaft materials shows that the material EPG features the best performance where the shaft material is carbon steel and hard chrome steel under low loading. (See Graph EPG-7 and Graph EPG-8). Therefore, the higher the load is, the more critical the hardness of the hardness of the shaft will have to be. The softer shaft .

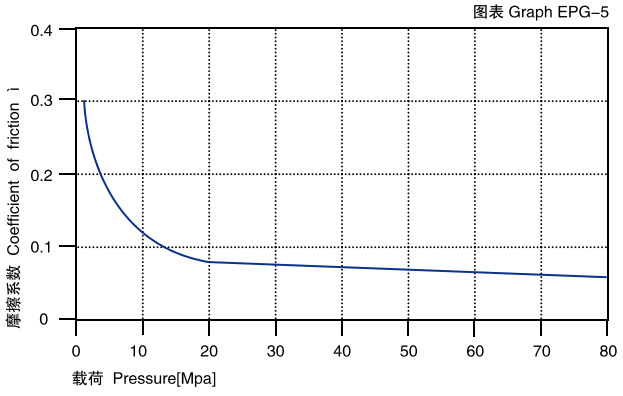
■ 摩擦系数与速度变化关系图表 P=2MPa
coefficient of friction & the speed of bearing, P=2Mpa

图表 Graph EPG–4



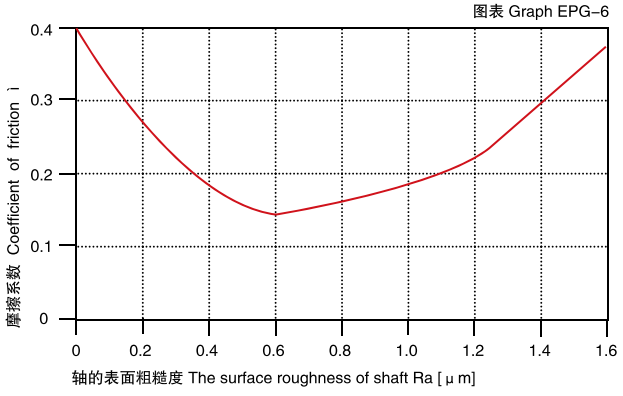
■ 摩擦系数与载荷变化关系图表 v=0.2m/s
coefficient of friction & the pressure of bearing, v=0.2m/s

图表 Graph EPG–5



■ 摩擦系数与载荷变化关系图表
coefficient of friction & the surface roughness of shaft

图表 Graph EPG–6



EPG 塑料轴承
EPG Plastic Bearings

will be worn off sooner and as a resuit, the bearing wearing will be increased. But when the loading is increased over 2MPa, the wearing of the bearing will be better along with the increasing of the shaft hardness.

Refer to Graph EPG-8. It shows that the material EPG is better under the oscillation operation comparing with the rotation operation. Under the same condition, the wearing feature of the oscillation operation is much better than that of rotation operation. This feature is sharply improved under higher loading.

化学抗性 Chemical Resistance

EPG 塑料轴承能抵抗弱碱、弱酸以及各类润滑油的腐蚀。
EPG is good at chemical resistance against mild base, weak acidic medium and various kinds of lubricants.

吸水性 Water Absorbability

在标准大气压中，EPG 塑料轴承的吸水率为 0.7%，浸泡水中最大平衡率为 4.0%；由于此吸水率的特性，我们必须考虑此轴承的应用环境。

The water absorb rate of EPG is 0.7% under the atmospheric pressure while it is 4.0% when the material is immerged into water. The application environment has to be considered because of its water absorb properties.

抗 UV 性能 UV Resistance

EPG 长久暴露在紫外线下颜色基本不会改变。 材料性能基本都不会发生改变。

EPG can maintain its color unchanged when it is exposed into the UV ray. The material performance stays stable.

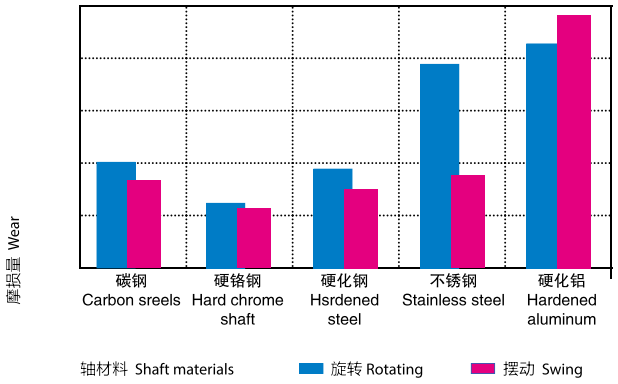
轴承安装 Bearing Installation

EPG 系列轴承配合公差 The Interfit Tolerance

直径 mm² d	压装后公差 E10 Tolerance after fit	安装孔径 H7 Fit Housing	配合轴径 h9 Fit Shaft
> 0~3	+0.014~+0.054	0~+0.010	0~-0.025
> 3~6	+0.020~+0.068	0~+0.012	0~-0.030
> 6~10	+0.025~+0.083	0~+0.015	0~-0.036
> 10~18	+0.032~+0.102	0~+0.018	0~-0.043
> 18~30	+0.040~+0.124	0~+0.021	0~-0.052
> 30~50	+0.050~+0.150	0~+0.025	0~-0.062
> 50~80	+0.060~+0.180	0~+0.030	0~-0.074
> 80~120	+0.072~+0.212	0~+0.035	0~-0.087
> 120~180	+0.085~+0.245	0~+0.040	0~-0.100

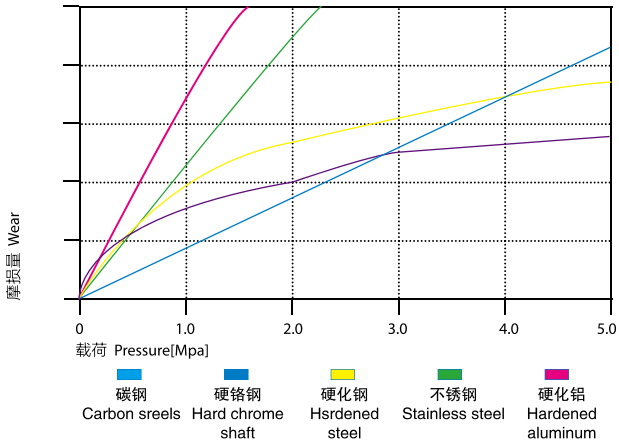
■ 在不同轴材料上旋转时的磨损量 P=2MPa，v=0.2m/s
The bearing wear under rotating with different shaft materials,p=2MPa,v=0.2m/s

图表 Graph EPG-7



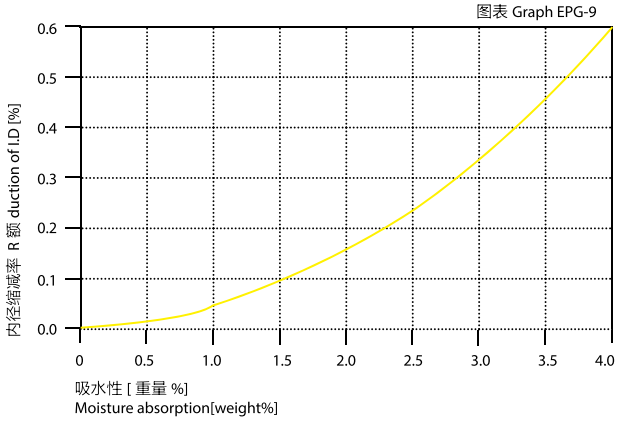
■ 旋转磨损随轴材料与压力变化关系 v=0.2m/s
The bearing wear & pressure under rotating with different shaft materials,v=0.2m/s

图表 Graph EPG-8



■ 吸水率的影响
Effect of moisture absorption on EPT bearings

图表 Graph EPG-9



EPH 塑料轴承
EPH Plastic Bearings

标准产品规格表 Standard Specification Sheet:P176

产品特性 Product Features

- 高温和良好的化学抗性材料。可在 200 度下连续使用，也适合用于潮湿环境甚至化学液体中。硬质材料与之配合使用较好。
- 连续使用温度：-40℃ ~ 200℃；
- 适合多数中高载荷场合；
- 适合干运行、免维护；
- 良好的化学抗性；
- 适合潮湿环境中使用。

- High temperature material with good chemical resistance feature. It could be continously used under the temperature of 200℃ , it is also suitable to be used in the humid environment and even inside the chemical liquids. It is best to be used against hard materials.
- Continuous working temperature:-40℃ ~ 200℃ ;
- Suitable for medium and high load operation;
- Maintenance-free dry operation;
- Good chemical resistance;
- Suitable for humid environment.

主要性能数据表 The Material Data Sheet

一般性能 Common Capabilty	试验方法 Testing Method	单位 Uint	EPH
密度 Density	ISO1183	g/cm^3	1.65
颜色 Color			黑色 Black
对钢的动摩擦系数 Dynamic friction/steel(dry)			0.07-0.20
最大 P.V 值 Max. PV（dry）		$n/mm^2 \times m/s$	1.4
最大旋转速度值 Max. roatating velocity		m/s	1.0
最大摇摆速度值 Max. oscillating velocity		m/s	0.7
最大直线速度值 Max. linear velocity		m/s	3.0
抗拉强度 Tensile strength	ISO527	MPa	180
抗压强度（轴向）Coppressive strength(Axial)		MPa	80
弹性模量 E-module	ISO527	MPa	12000
允许最大表面静压力（20℃）Max.static pressure of the surface, 20℃		MPa	90
洛氏硬度 Rockwell hardness	ISO2039-2	HRR	118
连续工作温度 continuous work temperature		℃	-40/200
短时运行温度 Short-time		℃	-40/260
导热性 Thermal conductivity	ASTME1461	W/m k	0.6
线性热膨胀系数 Linear coef. of thermal eapansion	ASTMD696	$K^{-1} \times 10^{-5}$	4
RH50/23℃时的吸湿性 Moisture absorption RH50/23℃	ASTMD570	%	0.04
最大吸水率 23℃ Max. water absorption, 23℃		%	< 0.1
燃烧性能 Flammability	UL94		V0
体电阻率 Volume resistivity	IEC60093	Ω cm	> 10^4
面电阻率 Surface resistivity	IEC60093	Ω	> 10^5

EPH 塑料轴承
EPH Plastic Bearings

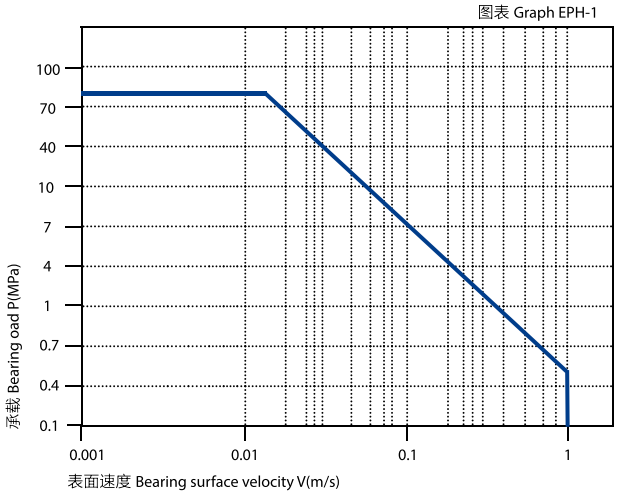
轴承 PV 值 PV Value of Bearings

EPH 系列轴承最大运行 PV 值为 1.4N/mm^{2*}m/s; 由此决定轴承所承受的载荷与速度成反比，详情查阅图表 EPH-1。

The max PV value of the EPH series bearing is 1.4N/mm^{2}*m/s which detemines the load capacity of bearing is inversely proportional to the speed. Please refer to the chare for more detailed information (Graph EPH-1).

■ PV 图表 Permissible PV value for EPH

图表 Graph EPH-1



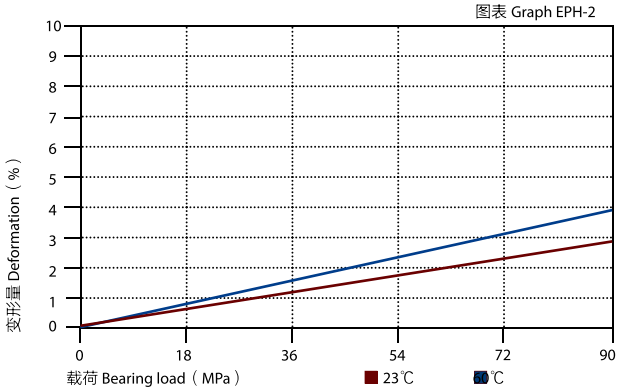
轴承的载荷、速度、温度 The Relation of Load,Speed and Temperature

EPH 系列轴承可承受最大静载荷为 90Mpa，在此载荷下轴承的最大压缩变形量参考图表 EPH-2；
轴承实际工作载荷小于 90Mpa，载荷还受到运行速度以及温度的影响，速度越快（Vmax: 1.0m/s) 会导致摩擦温度上升，而温度上升（Tmax: 200℃）会导致轴承的承载能力逐渐减弱，载荷随轴承工作温度变化情况参考图表 EPH-3。

EPH allows the max static load of 90Mpa, The max compressive deformation rate under the max load is listed in Graph EPH-2;
The actual load capaxity of bearing is slightly less than 90Mpa, The bearing load is variable against the speed and temperature, Fast speed(Vmax: 1.0m/s) results into higher temperture(Tmax: 200 ℃) which decreases the load capacity of the bearing. Please refer to the Graph EPH-3 for such variation.

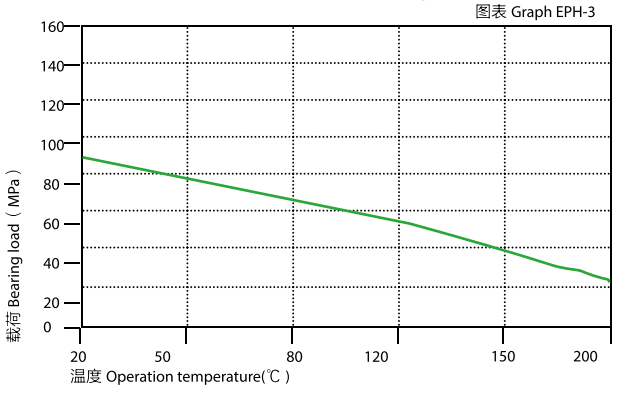
■ 载荷 - 温度 - 变形量图表 Load-Temperature deformation

图表 Graph EPH-2



■ 载荷 - 温度图表 Load-Temperature diagrams

图表 Graph EPH-3



EPH 塑料轴承
EPH Plastic Bearings

轴承的摩擦系数、磨损、轴材料

摩擦系数 Friction Factor

图表 EPH-4 表明 EPH 轴承在载荷保持不变时旋转下的摩擦系数会随着速度的增加而略有减低；图表 EPH-5 表明 EPH 轴承在速度保持不变时旋转下的摩擦系数会随着载荷的增加而逐步降低，特别是在载荷小于 30Mpa 的情况下。图表 EPH-6 表明 EPH 轴承的对磨轴粗糙度在 Ra0.1~0.4um 时摩擦系数几乎没有变化，但当轴表面粗糙度大于 Ra0.4 时摩擦系数会快速上升；我们推荐使用轴的粗糙度为 Ra0.1~0.4um。

Friction factor will be slightly decreased along with the speed increasing under certain loading of the rotation operation(See Graph EPH-4) and it will be slightly decreased along with the loading increasing under certain speed of the rotation operation especially when the loading is less than 30Mpa. Graph EPH tells that the friction of the EPH is not changed at all when the shaft roughness is between Ra0.1 to Ra0.4 and will be considerably increased when the shaft roughness is over Ra0.4. So the recommended shaft roughness is Ra0.1-Ra0.4.

EPG	干运行 Dry	油脂 Grease	油 Oil	水 Water
摩擦系数 μ Friction coef.	0.07~0.20	0.09	0.04	0.04

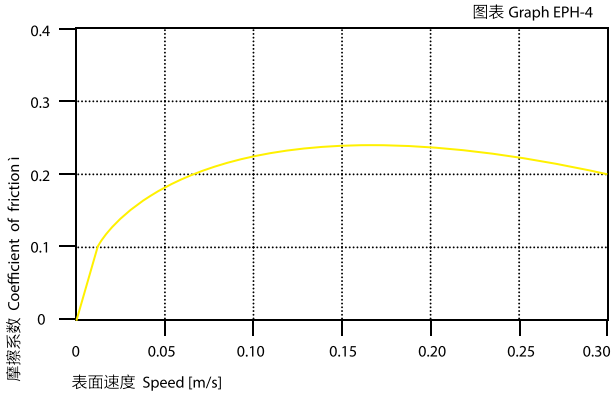
磨损与轴材料 Wearing and shaft material

图表 EPH-7 表明 EPH 轴承在低载荷旋转运动时适合大多数轴材料，而在高载旋转下硬化钢轴表现尤为突出（见图表 EPH-7）；图表 EPH-8 显示 EPH 轴承在采用不锈钢轴摆动运动下较为合适，而在旋转运动中碳钢轴和硬化钢轴效果比较好。

Graph EPH-7 shows that EPH is suitable for most of the shaft materials under low loading rotation operation and it is good for hardened carbon steel shaft under high loading rotation operation(see Graph EPH-7), From Graph EPH-8, we can also read that EPH is suitable for stainless steel shaft under oscillation operation and goog for hot rolled canbon steel and hardness carbon steel shaft under rotation operation.

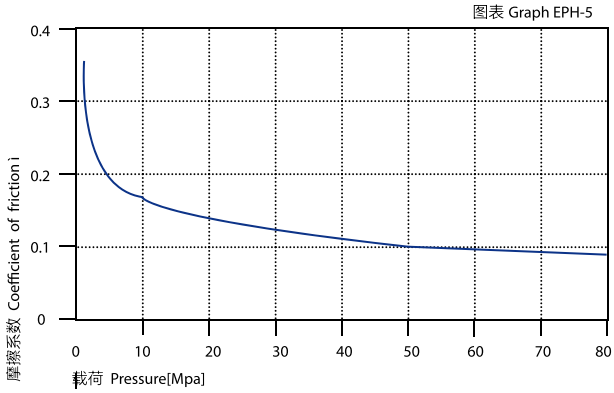
■ 摩擦系数与速度变化关系图表 P=2MPa
coefficient of friction & the speed of bearing, P=2Mpa

图表 Graph EPH-4



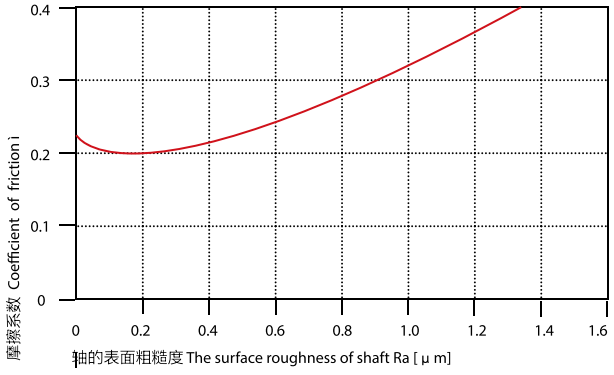
■ 摩擦系数与载荷变化关系图表 v=0.2m/s
coefficient of friction & the pressure of bearing, v=0.2m/s

图表 Graph EPH-5



■ 摩擦系数与载荷变化关系图表
coefficient of friction & the surface roughness of shaft

图表 Graph EPH-6



EPH 塑料轴承
EPH Plastic Bearings

化学抗性 Chemical Resistance

EPH 塑料轴承具有良好的化学抗性，能抵抗绝大多数酸碱。

The Chemical Resistance of EPH is fairly good against most of Acid and Alkalis.

吸水性 Water Absorbability

在标准大气压中，EPH 塑料轴承的吸水率极低为 0.1%，浸泡水中最大平衡率为 0.3%；因此材料不会吸水而发生性能和尺寸变化，适合用于潮湿环境甚至水下。

The water absorb rate of EPH is 0.1% under the atmospheric pressure while it is 0.3% when the material is immerged into water. The material performance and dimensions of the material is stabilized for the applications under humid environment.

抗 UV 性能 UV Resistance

EPH 长久暴露在紫外线下材料表面会发生蜕变，抗塔强度会下降。

Disintegration could be possible for the material EPH after long period of exposing under the UV ray and therefore the compressive strength will be reduced.

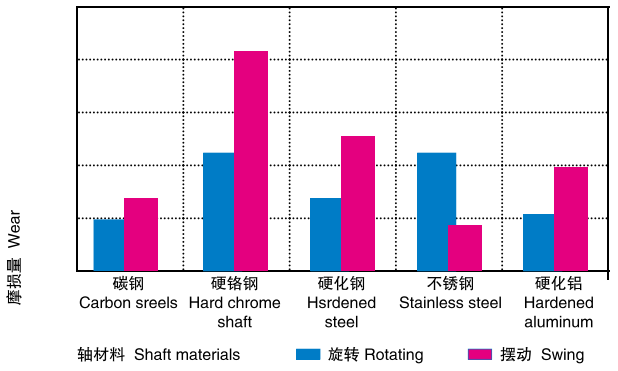
轴承安装 Bearing Installation

EPH 系列轴承配合公差 The Interfit Tolerance

直径 mm² d	压装后公差 E10 Tolerance after fit	安装孔径 H7 Fit Housing	配合轴径 h9 Fit Shaft
> 0~3	+0.014~+0.054	0~+0.010	0~-0.025
> 3~6	+0.020~+0.068	0~+0.012	0~-0.030
> 6~10	+0.025~+0.083	0~+0.015	0~-0.036
> 10~18	+0.032~+0.102	0~+0.018	0~-0.043
> 18~30	+0.040~+0.124	0~+0.021	0~-0.052
> 30~50	+0.050~+0.150	0~+0.025	0~-0.062
> 50~80	+0.060~+0.180	0~+0.030	0~-0.074
> 80~120	+0.072~+0.212	0~+0.035	0~-0.087
> 120~180	+0.085~+0.245	0~+0.040	0~-0.100

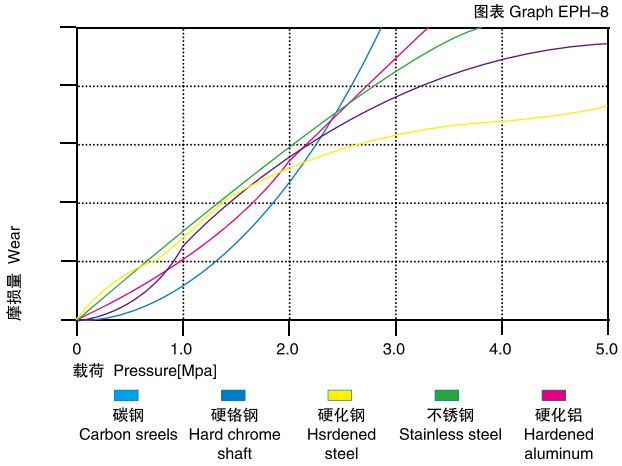
■ 在不同轴材料上旋转时的磨损量 P=2MPa，v=0.2m/s
The bearing wear under rotating with different shaft materials,p=2MPa,v=0.2m/s

图表 Graph EPH–7



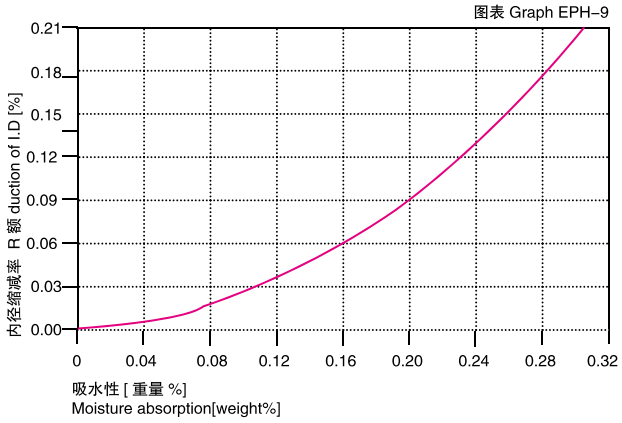
■ 旋转磨损随轴材料与压力变化关系 v=0.2m/s
The bearing wear & pressure under rotating with different shaft materials,v=0.2m/s

图表 Graph EPH–8



■ 吸水率的影响
Effect of moisture absorption on EPT bearings

图表 Graph EPH–9



EPX 塑料轴承
EPX Plastic Bearings

标准产品规格表 Standard Specification Sheet:P180

产品特性 Product Features

- 高温250度自润滑材料。高化学抗性可被用于多数腐蚀性液体中。高承载能力，一般用于高温或高化学腐蚀场合。
- 连续使用温度：-100℃～250℃；
- 适合高载荷运用；
- 高温下保持较高的承载能力；
- 较广泛的化学抗性；
- 非常低的吸水率；
- 较高的抗压强度。
- Self-lubricated material for high temperature up to 250 ℃. With its high chemical resistance feature, it coul be used inside most common chemical liquids. It is a high load material for the applications of high temperature and critical chemical environments.
- Continuous working temperature: -40℃～250℃;
- Suitable for high load operation;
- High load capacity at higher temperature;
- Good chemical resistance;
- Low water absorption;
- High pressure resistance.

主要性能数据表 The Material Data Sheet

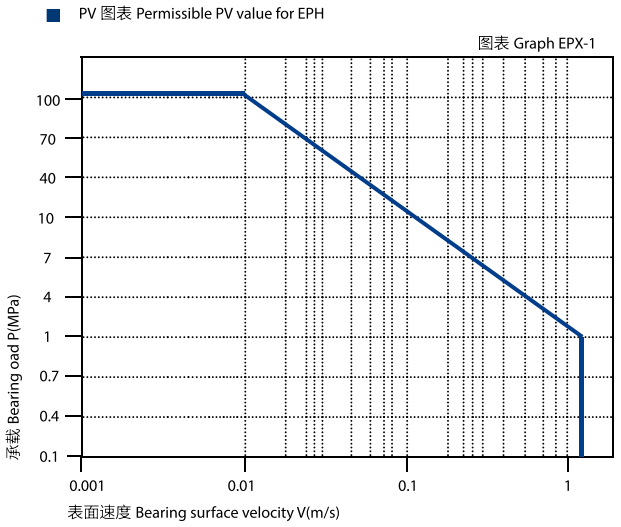
一般性能 Common Capabilty	试验方法 Testing Method	单位 Uint	EPX
密度 Density	ISO1183	g/cm^3	1.44
颜色 Color			黑色 Black
对钢的动摩擦系数 Dynamic friction/steel(dry)			0.09-0.25
最大 P.V 值 Max. PV（dry）		$n/mm^2 \times m/s$	1.5
最大旋转速度值 Max. roatating velocity		m/s	1.5
最大摇摆速度值 Max. oscillating velocity		m/s	1.1
最大直线速度值 Max. linear velocity		m/s	5.0
抗拉强度 Tensile strength	ISO527	MPa	170
抗压强度（轴向）Coppressive strength(Axial)		MPa	100
弹性模量 E-module	ISO527	MPa	7900
允许最大表面静压力（20℃）Max.static pressure of the surface, 20℃		MPa	150
洛氏硬度 Rockwell hardness	ISO2039-2	HRR	120
连续工作温度 continuous work temperature		℃	-100/250
短时运行温度 Short-time		℃	-100/315
导热性 Thermal conductivity	ASTME1461	W/m k	0.6
线性热膨胀系数 Linear coef. of thermal eapansion	ASTMD696	$K^{-1} \times 10^{-5}$	5
RH50/23℃时的吸湿性 Moisture absorption RH50/23℃	ASTMD570	%	0.1
最大吸水率 23℃ Max. water absorption, 23℃		%	0.5
燃烧性能 Flammability	UL94		V0
体电阻率 Volume resistivity	IEC60093	Ω cm	$> 10^8$
面电阻率 Surface resistivity	IEC60093	Ω	$> 10^7$

EPX 塑料轴承
EPX Plastic Bearings

轴承 PV 值 PV Value of Bearings

EPX 系列轴承最大运行 PV 值为 1.5N/mm^2*m/s; 由此决定轴承所承受的载荷与速度成反比，详情查阅图表 EPX-1。

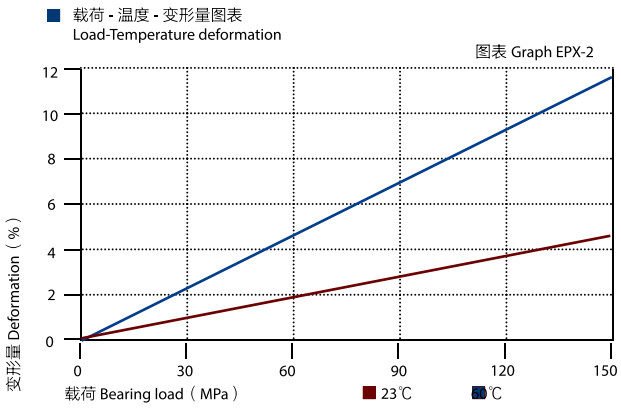
The max PV value of the EPX series bearing is 1.5N/mm^2*m/s which detemines the load capacity of bearing is inversely proportional to the speed. Please refer to the chare for more detailed information (Graph EPX-1).

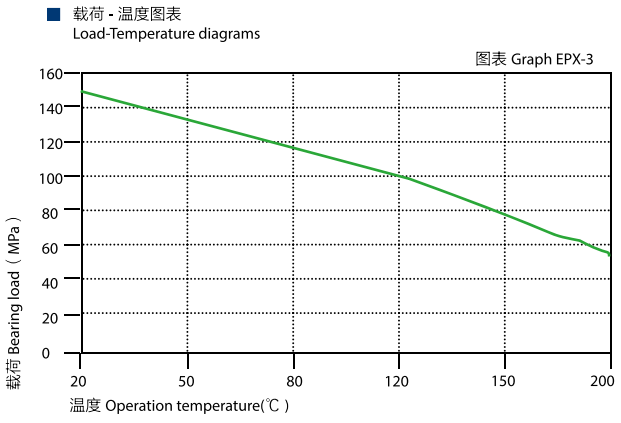


轴承的载荷、速度、温度 The Relation of Load,Speed and Temperature

EPX 系列轴承可承受最大静载荷为 150Mpa，在此载荷下轴承的最大压缩变形量参考图表 EPX-2；
轴承实际工作载荷小于 150Mpa，载荷还受到运行速度以及温度的影响，速度越快（Vmax: 1.5m/s) 会导致摩擦温度上升，而温度上升（Tmax: 250℃）会导致轴承的承载能力逐渐减弱，载荷随轴承工作温度变化情况参考图表 EPX-3。

EPX allows the max static load of 150Mpa, The max compressive deformation rate under the max load is listed in Graph EPX-2;
The actual load capaxity of bearing is slightly less than 150Mpa, The bearing load is variable against the speed and temperature, Fast speed(Vmax: 1.5m/s)results into higher temperture(Tmax: 250 ℃) which decreases the load capacity of the bearing. Please refer to the Graph EPX-3 for such variation.





EPX 塑料轴承
EPX Plastic Bearings

轴承的摩擦系数、磨损、轴材料

摩擦系数 Friction Factor

图表 EPX-4 表明 EPX 轴承的摩擦系数在载荷一定时随着运行速度的增加而逐渐升高； 图表 EPX-5 表明 EPX 轴承在速度一定载荷在 20Mpa 以内时摩擦系数会随着载荷的逐步增加而快速降低，而当载荷高于 20Mpa 时摩擦系数的变化却比较平缓。图表 EPX-6 表明 EPX 轴承比较适合的轴表面粗糙度为 Ra0.6~0.8um。

EPX Bearing Friction factor is increased a along with the increasing of the operation speed under certain loading(See Graph EPX-4). The friction factor of EPX is decreased along with the loading increasing not over 20Mpa(See Graph EPX-5). The friction factor will not change much along with the speed when the loading is over 20Mpa. The Graph EPX-6 shows that the bearing could achieve its best performance when the counter shaft surface roughness is around Ra0.6 to Ra0.8.

EPG	干运行 Dry	油脂 Grease	油 Oil	水 Water
摩擦系数 μ Friction coef.	0.07~0.20	0.09	0.04	0.04

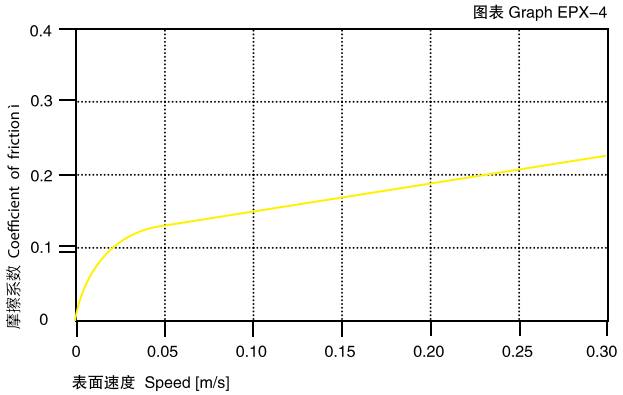
磨损与轴材料 Wearing and shaft material

图表 EPX-7 表明和图表 EPX-8 测试表明了 EPX 轴承在不同轴材料上的运行磨损对比，在载荷 2Mpa 以下旋转运动时不锈钢轴和碳钢轴比较适合，而当载荷超过 2Mpa 时在硬化钢轴和碳钢轴上的运行效果较好。图表 EPX-7 表明 EPX 轴承比较适合用于旋转运动；特别值得注意的是图表 EPX-9 表明 EPX 轴承在常温 23℃下的摩擦磨损性能并没有在高温 150℃下优秀。

Graph EPX-7 and Graph EPX-8 shows the test results of the material EPX running against different shaft material. It is suitable for stainless steel and hot rolled carbon steel shaft when the loading is less than 2Mpa and it will be more suitable for heat treated steel and carbon steel shaft when the loading is over 2Mpa. Graph EPX-7 shows EPX is good for rotation operation. Specially, from the Graph EPX-9, it is read that EPX is with better performance under high temperature around 150℃ comparing with under the ambient temperature of 23℃ .

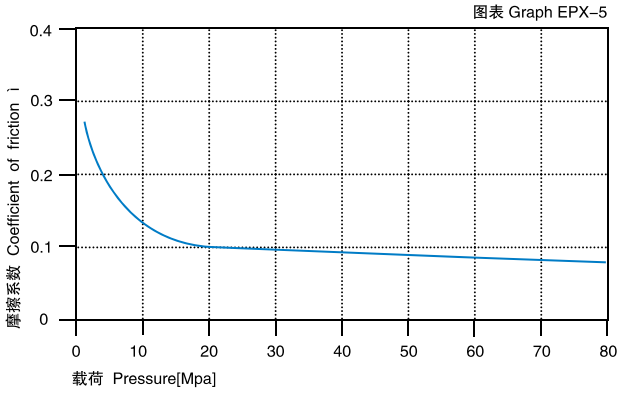
■ 摩擦系数与速度变化关系图表 P=2MPa
coefficient of friction & the speed of bearing, P=2Mpa

图表 Graph EPX–4



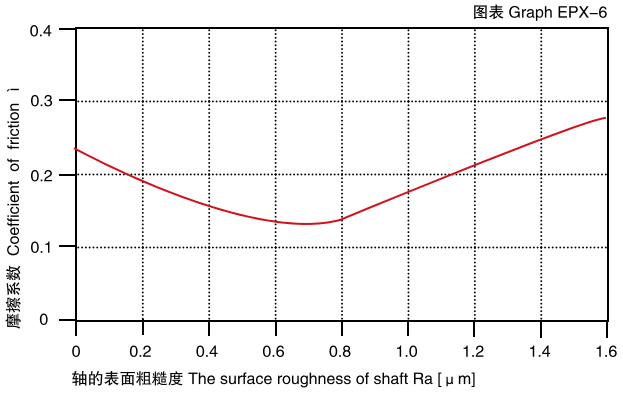
■ 摩擦系数与载荷变化关系图表 v=0.2m/s
coefficient of friction & the pressure of bearing, v=0.2m/s

图表 Graph EPX–5



■ 摩擦系数与载荷变化关系图表
coefficient of friction & the surface roughness of shaft

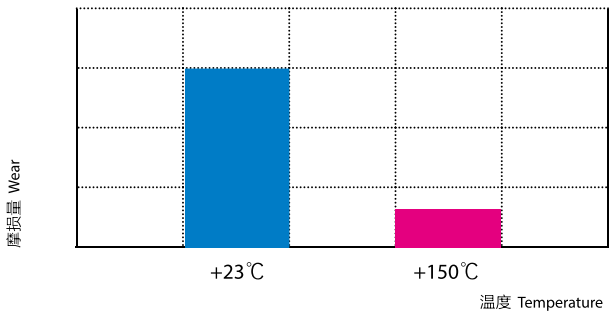
图表 Graph EPX–6



EPX 塑料轴承
EPX Plastic Bearings

■ 在不同轴材料上旋转时的磨损量 P=2MPa, v=0.2m/s
The bearing wear under rotating with different shaft materials, p=2MPa, v=0.2m/s

图表 Graph EPX-9



化学抗性 Chemical Resistance

EPX 塑料轴承具有良好的化学抗性，能抵抗浓度 65% 的强酸。

The Chemical Resistance of EPX is very good. It can work well in the heavy acid of 65%.

吸水性 Water Absorbability

在标准大气压中，EPX 塑料轴承的吸水率极低为 0.1%，浸泡水中最大平衡率为 0.5%；因此材料不会吸水而发生性能和尺寸变化，适合用于潮湿环境。

The water absorb rate of EPX is 0.1% under the atmospheric pressure while it is 0.5% when the material is immerged into water. The material performance and dimensions of the material is stabilized for the applications under humid environment.

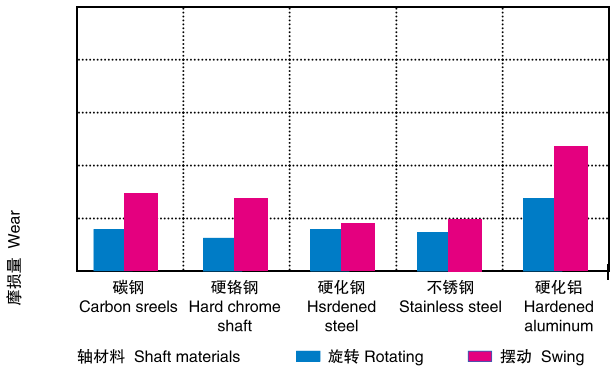
抗 UV 性能 UV Resistance

EPX 长久暴露在紫外线下材料性能不会发生变化。

applications undeer humid environment. EPX can maintain its performance to be stable even exposed in the UV ray for long period.

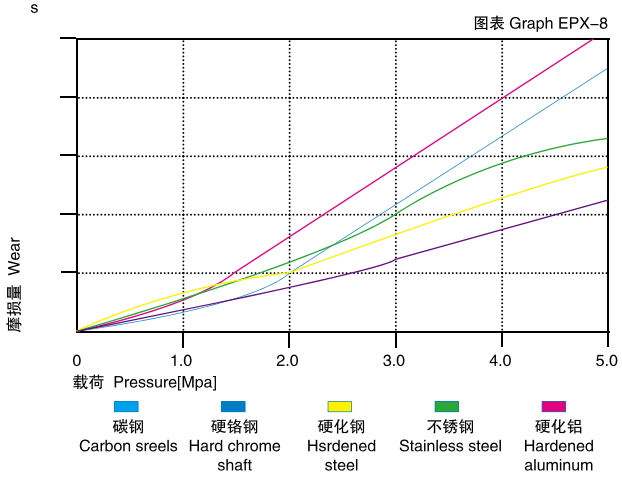
■ 在不同轴材料上旋转时的磨损量 P=2MPa, v=0.2m/s
The bearing wear under rotating with different shaft materials, p=2MPa, v=0.2m/s

图表 Graph EPX–7



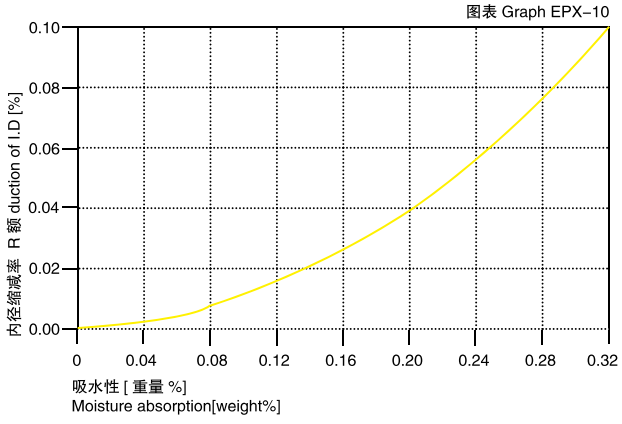
■ 旋转磨损随轴材料与压力变化关系 v=0.2m/s
The bearing wear & pressure under rotating with different shaft materials, v=0.2m/s

图表 Graph EPX–8



■ 吸水率的影响
Effect of moisture absorption on EPX bearings

图表 Graph EPX–10



EPJ 塑料轴承
EPJ Plastic Bearings

标准产品规格表 Standard Specification Sheet:P172

产品特性 Product Features

- 低摩擦系数和高耐磨性完美结合。旋转、直线和摆动应用中耐磨性和摩擦系数几乎保持一致。对轴材料硬度要求较低。不适合极高载荷。
- 连续使用温度：-50℃ ~ 90℃；
- 适合干运行、免维护；
- 不同轴材料磨损很小；
- 较低的摩擦系数；
- 适用于软轴；
- 吸水性较低。
- Low friction and high wear resistance. It could maintain a good stable wear resistance and friction factor for the rotation, linear and oscilation movement. It has no critical hardness requirement to the shaft.
- Continuous working temperature: -50℃ ~ 90℃ ;
- Maintenance-free dry operation;
- Small wear off amount against various shaft materials;
- Lower friction;
- Suitable for soft shaft;
- Low water absorption.

主要性能数据表 The Material Data Sheet

一般性能 Common Capabilty	试验方法 Testing Method	单位 Uint	EPJ
密度 Density	ISO1183	g/cm^3	1.48
颜色 Color			黄色 Yellow
对钢的动摩擦系数 Dynamic friction/steel(dry)			0.05-0.15
最大 P.V 值 Max. PV（dry）		$n/mm^2 \times m/s$	0.4
最大旋转速度值 Max. roatating velocity		m/s	1.5
最大摇摆速度值 Max. oscillating velocity		m/s	1.1
最大直线速度值 Max. linear velocity		m/s	8.0
抗拉强度 Tensile strength	ISO527	MPa	75
抗压强度（轴向）Coppressive strength(Axial)		MPa	60
弹性模量 E-module	ISO527	MPa	2400
允许最大表面静压力（20℃）Max. static pressure of the surface, 20℃		MPa	35
洛氏硬度 Rockwell hardness	ISO2039-2	HRR	107
连续工作温度 continuous work temperature		℃	-50/90
短时运行温度 Short-time		℃	-50/120
导热性 Thermal conductivity	ASTME1461	W/m k	0.25
线性热膨胀系数 Linear coef. of thermal eapansion	ASTMD696	$K^{-1} \times 10^{-5}$	9
RH50/23℃时的吸湿性 Moisture absorption RH50/23℃	ASTMD570	%	0.2
最大吸水率 23℃ Max. water absorption, 23℃		%	1.2
燃烧性能 Flammability	UL94		HB
体电阻率 Volume resistivity	IEC60093	Ω cm	$> 10^{13}$
面电阻率 Surface resistivity	IEC60093	Ω	$> 10^{12}$

EPJ 塑料轴承
EPJ Plastic Bearings

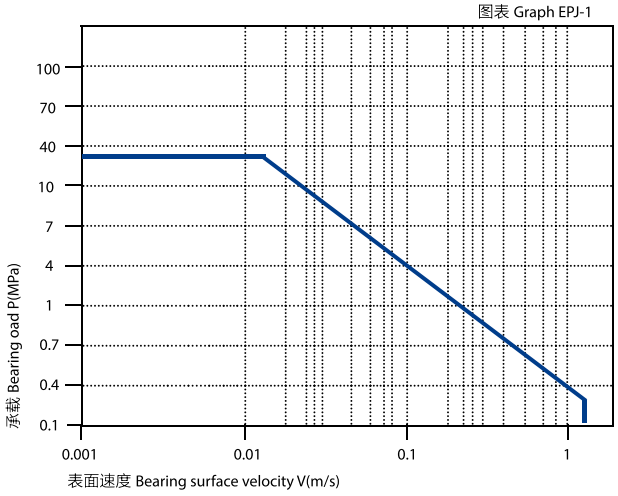
轴承 PV 值 PV Value of Bearings

EPJ 系列轴承最大运行 PV 值为 0.4N/mm^2*m/s; 由此决定轴承所承受的载荷与速度成反比，详情查阅图表 EPJ-1。

The max PV value of the EPJ series bearing is 0.4N/mm^2*m/s which detemines the load capacity of bearing is inversely proportional to the speed. Please refer to the chare for more detailed information (Graph EPJ-1).

■ PV 图表 Permissible PV value for EPJ

图表 Graph EPJ-1



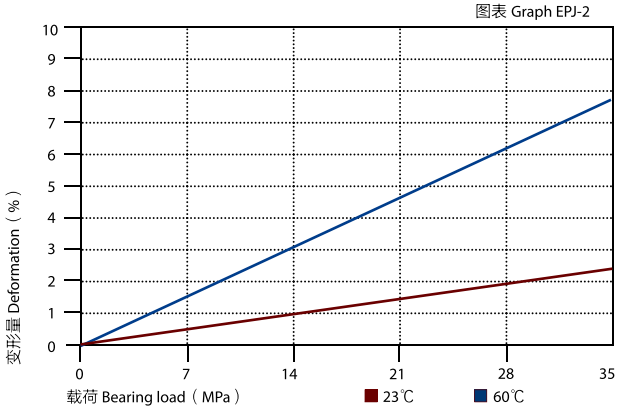
轴承的载荷、速度、温度 The Relation of Load,Speed and Temperature

EPJ 系列轴承可承受最大静载荷为 35Mpa，在此载荷下轴承的最大压缩变形量参考图表 EPJ-2；
轴承实际工作载荷小于 35Mpa，载荷还受到运行速度以及温度的影响，速度越快（Vmax: 1.5m/s) 会导致摩擦温度上升，而温度上升（Tmax: 90℃）会导致轴承的承载能力逐渐减弱，载荷随轴承工作温度变化情况参考图表 EPJ-3。

EPJ allows the max static load of 35Mpa, The max compressive deformation rate under the max load is listed in Graph EPJ-2;
The actual load capaxity of bearing is slightly less than 35Mpa, The bearing load is variable against the speed and temperature, Fast speed(Vmax: 1.5m/s) results into higher temperture（Tmax: 90 ℃）which decreases the load capacity of the bearing. Please refer to the Graph EPJ-3 for such variation.

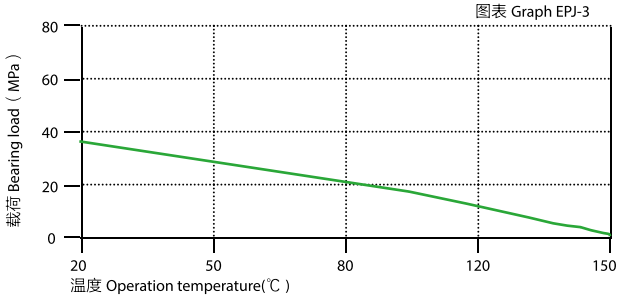
■ 载荷 - 温度 - 变形量图表
Load-Temperature deformation

图表 Graph EPJ-2



■ 载荷 - 温度图表
Load-Temperature diagrams

图表 Graph EPJ-3



EPJ 塑料轴承
EPJ Plastic Bearings

轴承的摩擦系数、磨损、轴材料

摩擦系数 Friction Factor

图表 EPJ-4 表明 EPJ 轴承的摩擦系数在载荷一定随着运行速度的变化率比较少； 图表 EPJ-5 在运动速度一定摩擦系数在载荷小于 10Mpa 时变化率较大，而在载荷大于 10Mpa 是变化率也逐渐减小；图表 EPJ-6 表明 EPJ 轴材料的粗糙度越大摩擦系数也随之越大，但当粗糙度大于 Ra0.5 时摩擦系数也趋于平稳；此轴承适合用于轴粗糙度为 Ra=0.1~0.4um。

EPJ Bearing Friction factor Varies only little amount along with the operation speed changing(See Graph EPJ-4). When the operation speed is relatively stable, the friction factor varies a lot while the load is less than 10Mpa(See Graaph EPJ-5). At the same time, it does not very much when the loading is greater than 10Mpa. Rough surface may result into the increasing of friction factor of the EPJ material but when the roughness of the surface is greater than Ra0.5, The friction factor will remain relatively stable again. The recommended shaft surface roughness is Ra0.1~Ra0.4 for theEPJ material.

EPG	干运行 Dry	油脂 Grease	油 Oil	水 Water
摩擦系数 μ Friction coef.	0.05~0.15	0.09	0.04	0.04

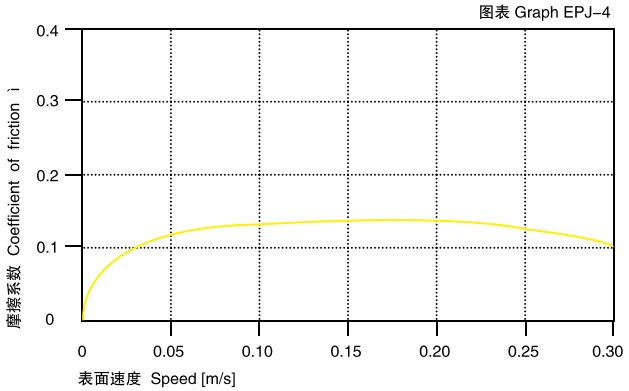
磨损与轴材料 Wearing and shaft material

图表 EPJ-7 是 EPJ 轴承在不同轴上运行磨损测试结果；图表 EPJ-8 表明当 EPJ 在载荷低于 2Mpa 下运行时适合不同的轴材料，但在硬铬轴上的摩擦磨损最小；当载荷继续增大时，此轴承在不锈钢轴的耐磨性能尤为突出。图表 EPJ-8 表明 EPJ 轴承比较适合用于旋转运动，但无论是在旋转运动还是摆动运动此轴承在硬铬轴上的运用效果是最好的。

Test of the bearing against various shaft materials shows that the material EPJ features the best performance where the shaft material is hard chrome steel with loading less than 2Mpa. (See Graph EPJ-7). Therefore, the higher the load is increased, the wear-resistance of the bearing will be better against the stainless steel shaft. Refer to Graph EPJ-8, the material EPJ is suitable for rotation operation. Ether to be used under rotation operation or the oscillation operation. It is the best suitable material for the application against hard chrome steel shaft.

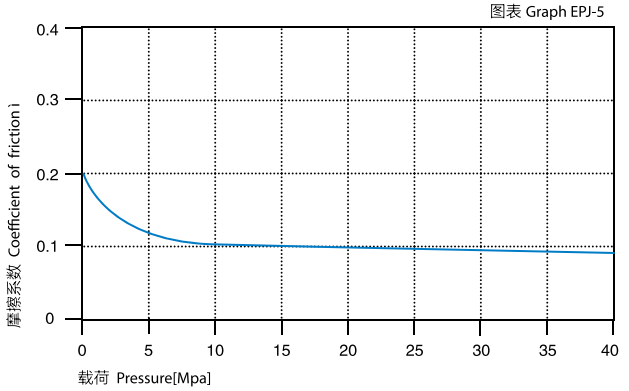
■ 摩擦系数与速度变化关系图表 P=2MPa
coefficient of friction & the speed of bearing, P=2Mpa

图表 Graph EPJ–4



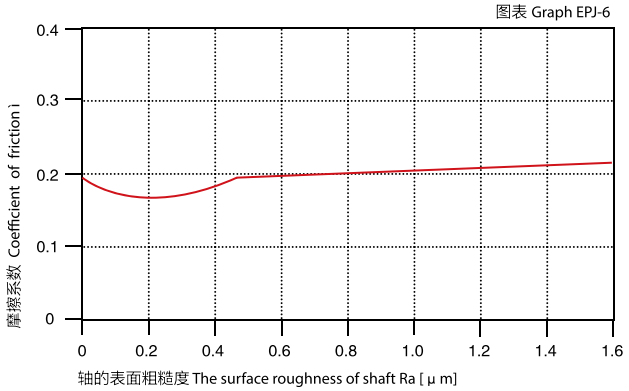
■ 摩擦系数与载荷变化关系图表 v=0.2m/s
coefficient of friction & the pressure of bearing, v=0.2m/s

图表 Graph EPJ-5



■ 摩擦系数与载荷变化关系图表
coefficient of friction & the surface roughness of shaft

图表 Graph EPJ-6



EPJ 塑料轴承
EPJ Plastic Bearings

化学抗性 Chemical Resistance

EPJ 塑料轴承能抵抗弱碱、弱酸以及各类润滑油的腐蚀。

EPJ is good at chemical resistance against mild base, weak acidic medium and various kinds of lubricants.

吸水性 Water Absorbability

在标准大气压中，EPJ 塑料轴承的吸水率极低为 0.2%，浸泡水中最大平衡率为 1.2%；由于其具有低吸水率的特性，故此轴承可以用于一般潮湿环境中。

The water absorb rate of EPH is 0.2% under the atmospheric pressure while it is 1.2% when the material is immerged into water. With its low water absorbability, the material is suitable for humid environment applications.

抗 UV 性能 UV Resistance

EPJ 长久暴露在紫外线下颜色基本不会发生改变。材料的硬度，抗压强度和耐磨性能都不会改变。

EPJ can maintain its color unchanged when it is exposed into the UV ray. The hardness, Compressive strength and wear resistance of the material is also stable under such condition.

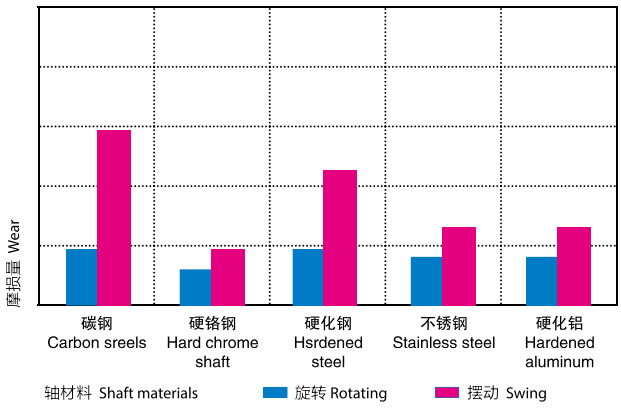
轴承安装 Bearing Installation

EPJ 系列轴承配合公差 The Interfit Tolerance

直径 mm² d	压装后公差 E10 Tolerance after fit	安装孔径 H7 Fit Housing	配合轴径 h9 Fit Shaft
> 0~3	+0.014~+0.054	0~+0.010	0~-0.025
> 3~6	+0.020~+0.068	0~+0.012	0~-0.030
> 6~10	+0.025~+0.083	0~+0.015	0~-0.036
> 10~18	+0.032~+0.102	0~+0.018	0~-0.043
> 18~30	+0.040~+0.124	0~+0.021	0~-0.052
> 30~50	+0.050~+0.150	0~+0.025	0~-0.062
> 50~80	+0.060~+0.180	0~+0.030	0~-0.074
> 80~120	+0.072~+0.212	0~+0.035	0~-0.087
> 120~180	+0.085~+0.245	0~+0.040	0~-0.100

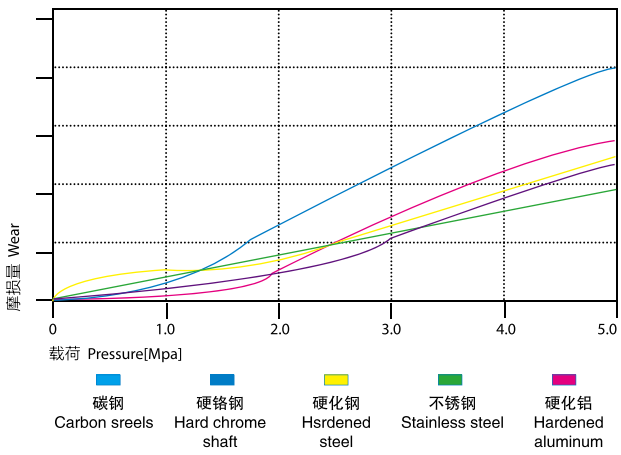
■ 在不同轴材料上旋转时的磨损量 P=2MPa, v=0.2m/s
The bearing wear under rotating with different shaft materials, p=2MPa, v=0.2m/s

图表 Graph EPJ-7



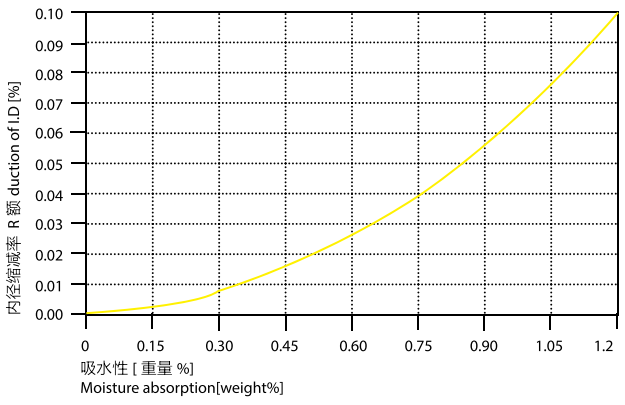
■ 旋转磨损随轴材料与压力变化关系 v=0.2m/s
The bearing wear & pressure under rotating with different shaft materials, v=0.2m/s

图表 Graph EPJ-8



■ 吸水率的影响
Effect of moisture absorption on EPT bearings

图表 Graph EPJ-9



EPS1 塑料轴承
EPS1 Plastic Bearings

标准产品规格表 Standard Specification Sheet:P184

产品特性 Product Features

- 高速低成本解决方案。耐温 260 度下几乎能抵抗所有的化学液体腐蚀。不适合极高载荷。环境温度高于 135 度需考虑额外限位装置。
- 连续使用温度：-200℃ ~260℃；
- 适合干运动、免维护；
- 低摩擦系数要求；
- 适合轻载高速运动；
- 高化学抗性；
- 适合在液体运行。
- Econimic solution for high speed application. Under the temperature of 260 ℃ , the material can still have good chemical resistance feature. It is not suitable for high load application. When the temperature is higher than 135 ℃ ,additional location ring is necessary.
  Continuous working temperture：-200℃ -260℃；
- Maintenance-free dry operation;
- Low friction requirement;
- High surface speed under low load;
- High chemical resistance;
- Suitanble for working in liquid.

主要性能数据表 The Material Data Sheet

一般性能 Common Capabilty	试验方法 Testing Method	单位 Uint	EPS_1
密度 Density	ISO1183	g/cm^3	2.13
颜色 Color			黑色 Black
对钢的动摩擦系数 Dynamic friction/steel(dry)			0.08-0.18
最大 P.V 值 Max.PV（dry）		$n/mm^2 \times m/s$	0.3
最大旋转速度值 Max.roatating velocity		m/s	2.0
最大摇摆速度值 Max.oscillating velocity		m/s	1.4
最大直线速度值 Max.linear velocity		m/s	5
抗拉强度 Tensile strength	ISO527	MPa	13
抗压强度（轴向）Coppressive strength(Axial)		MPa	8
弹性模量 E-module	ISO527	MPa	790
允许最大表面静压力（20℃）Max.static pressure of the surface，20℃		MPa	8
洛氏硬度 Rockwell hardness	ISO2039-2	HRR	78
连续工作温度 continuous work temperature		℃	-200/260
短时运行温度 Short-time		℃	-200/310
导热性 Thermal conductivity	ASTME1461	W/m k	0.25
线性热膨胀系数 Linear coef.of thermal eapansion	ASTMD696	$K^{-1} \times 10^{-5}$	12
RH50/23℃时的吸湿性 Moisture absorption RH50/23℃	ASTMD570	%	< 0.1
最大吸水率 23℃ Max. water absorption,23℃		%	< 0.1
燃烧性能 Flammability	UL94		V 0
体电阻率 Volume resistivity	IEC60093	Ω cm	> 10^4
面电阻率 Surface resistivity	IEC60093	Ω	> 10^3

EPS2 塑料轴承
EPS2 Plastic Bearings

标准产品规格表 Standard Specification Sheet:P184

产品特性 Product Features

- 符合 FDA 标准的高速高温材料。极地的摩擦系数，适用于低载荷下的高速运动。抗化学液体腐蚀性能同样出色。环境温度高于 135 度需考虑额外限位装置。
- 连续使用温度：-200℃ -260℃；
- 适合中等载荷与高速运动；
- 软轴许可；
- 高化学抗性；
- 适合在液体运行；
- FDA 等级允许食品和药品接触。

- High speed and high temperature material comforms to FDA regulations. With low friction, it is suitable for low load high speed applications. It has excellent chemical resistance feature. When the temperature is higher than 135 ℃ ,additional location ring is neccessary.
- Continuous working temperature:-200℃ -260℃ ;
- Middle load and high surface speed;
- Soft material resistance;
- High chemical resistance;
- Suitable for working in liquid;
- Meet FDA standards for contact with food.

主要性能数据表 The Material Data Sheet

一般性能 Common Capabilty	试验方法 Testing Method	单位 Uint	EPS_2
密度 Density	ISO1183	g/cm^3	2.02
颜色 Color			黄色 Yellow
对钢的动摩擦系数 Dynamic friction/steel(dry)			0.05-0.15
最大 P.V 值 Max.PV（dry）		$n/mm^2 \times m/s$	0.4
最大旋转速度值 Max.roatating velocity		m/s	2.0
最大摇摆速度值 Max.oscillating velocity		m/s	3.5
最大直线速度值 Max.linear velocity		m/s	7
抗拉强度 Tensile strength	ISO527	MPa	18
抗压强度（轴向）Coppressive strength(Axial)		MPa	10
弹性模量 E-module	ISO527	MPa	830
允许最大表面静压力（20℃）Max.static pressure of the surface，20℃		MPa	10
洛氏硬度 Rockwell hardness	ISO2039-2	HRR	78
连续工作温度 continuous work temperature		℃	-200/260
短时运行温度 Short-time		℃	-200/310
导热性 Thermal conductivity	ASTME1461	W/m k	0.25
线性热膨胀系数 Linear coef.of thermal eapansion	ASTMD696	$K^{-1} \times 10^{-5}$	13
RH50/23℃时的吸湿性 Moisture absorption RH50/23℃	ASTMD570	%	< 0.1
最大吸水率 23℃ Max. water absorption,23℃		%	< 0.1
燃烧性能 Flammability	UL94		V 0
体电阻率 Volume resistivity	IEC60093	Ω cm	> 10^{13}
面电阻率 Surface resistivity	IEC60093	Ω	> 10^{12}

EPS2 塑料轴承
EPS2 Plastic Bearings

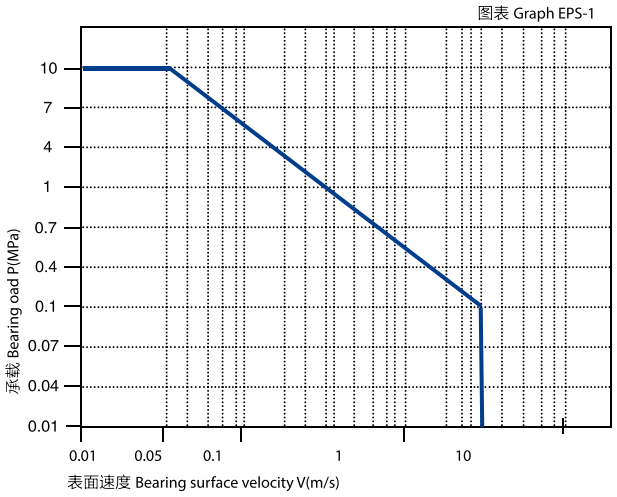
轴承 PV 值 PV Value of Bearings

EPS 系列轴承最大运行 PV 值为 0.4N/mm2*m/s; 由此决定轴承所承受的载荷与速度成反比，详情查阅图表 EPS-1。

The max PV value of the CSB-EPB series bearing is 0.4N/mm2*m/s which detemines the load capacity of bearing is inversely proportional to the speed. Please refer to the chare for more detailed information (Graph EPS-1).

■ PV 图表 Permissible PV value for EPS

图表 Graph EPS-1



轴承 PV 值 PV Value of Bearings

轴承的载荷、速度、温度

The Relation of load, Speed and Tenmperature;

EPS 系列轴承可承受最大静载荷为 10Mpa，在此载荷下轴承的最大压缩变形量参考图表 EPS-2；

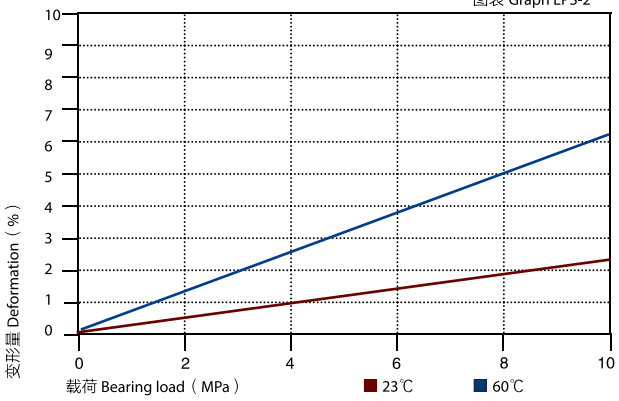
轴承实际工作载荷小于 10Mpa，载荷还受到运行速度以及温度的影响，速度越快（Vmax:5.0m/s) 会导致摩擦温度上升，而温度上升（Tmax:260℃）会导致轴承的承载能力逐渐减弱，载荷随轴承工作温度变化情况参考图表 EPS-3。

EPS allows the max static load of 10Mpa,The max compressive deformation rate under the max load is listed in Graph EPS-2;

The actual load capaxity of bearing is slightly less than 10Mpa,The bearing load is variable against the speed and temperature,Fast speed(Vmax:5.0m/s)results into higher temperture(Tmax:260 ℃) which decreases the load capacity of the bearing. Please refer to the Graph EPS-3 for such variation.

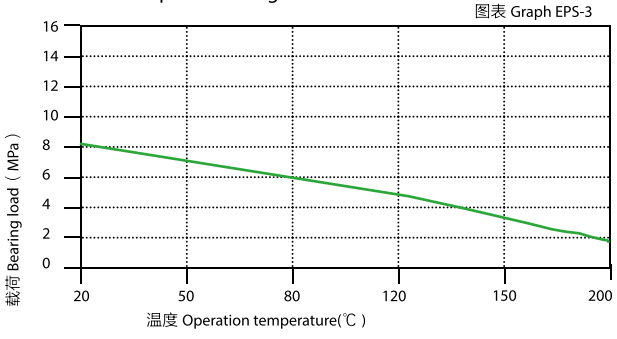
■ 载荷 - 温度 - 变形量图表
Load-Temperature deformation

图表 Graph EPS-2



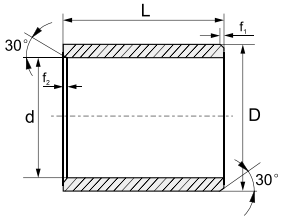
■ 载荷 - 温度图表
Load-Temperature diagrams

图表 Graph EPS-3



EP 系列规格表
EP Series Specification Table

直套 Metric Cylindrical Bushes



推荐安装公差 Recommend fitting tolerance

座孔 Housing：H7

轴 Shaft：H9

EP -0608 -06

d D L

材料 Material

d	f_1	f_2
d≤10	0.5	0.5
10 < d≤30	0.8	0.5
30 < d	1.2	0.5

直套系列尺寸规格表（各不同材料尺寸表通用）

型号 model	内径 d	压装座孔内径 d 公差	外径 D	高度 L
EP-0304-03	3	+0.014/+0.054	4.5	3
EP-0304-06	3	+0.014/+0.054	4.5	6
EP-0305-05	3	+0.014/+0.054	5.5	5
EP-0405-06	4	+0.020/+0.068	5.5	6
EP-0406-06	4	+0.020/+0.068	6	6
EP-0507-05	5	+0.020/+0.068	7	5
EP-0507-08	5	+0.020/+0.068	7	8
EP-0507-10	5	+0.020/+0.068	7	10
EP-0507-18	5	+0.020/+0.068	7	18
EP-0608-04	6	+0.020/+0.068	8	4
EP-0608-06	6	+0.020/+0.068	8	6
EP-0608-08	6	+0.020/+0.068	8	8
EP-0608-10	6	+0.020/+0.068	8	10
EP-0608-11	6	+0.020/+0.068	8	11
EP-0810-05	8	+0.025/+0.083	10	5
EP-0810-06	8	+0.025/+0.083	10	6
EP-0810-08	8	+0.025/+0.083	10	8
EP-0810-10	8	+0.025/+0.083	10	10
EP-0810-11	8	+0.025/+0.083	10	11
EP-0810-12	8	+0.025/+0.083	10	12
EP-0810-15	8	+0.025/+0.083	10	15
EP-0811-10	8	+0.025/+0.083	11	10
EP-0812-10	8	+0.025/+0.083	12	10
EP-0911-06	9	+0.025/+0.083	11	6
EP-1012-04	10	+0.025/+0.083	12	4
EP-1012-05	10	+0.025/+0.083	12	5
EP-1012-06	10	+0.025/+0.083	12	6
EP-1012-08	10	+0.025/+0.083	12	8
EP-1012-10	10	+0.025/+0.083	12	10
EP-1012-12	10	+0.025/+0.083	12	12
EP-1012-15	10	+0.025/+0.083	12	15
EP-1014-10	10	+0.013/+0.071	14	10
EP-1014-16	10	+0.025/+0.083	14	16
EP-1012-18	10	+0.025/+0.083	12	18
EP-1012-20	10	+0.025/+0.083	12	20
EP-1214-06	12	+0.032/+0.102	14	6
EP-1214-08	12	+0.032/+0.102	14	8
EP-1214-10	12	+0.032/+0.102	14	10
EP-1214-12	12	+0.032/+0.102	14	12
EP-1214-15	12	+0.032/+0.102	14	15
EP-1214-20	12	+0.032/+0.102	14	20

直套系列尺寸规格表（各不同材料尺寸表通用）

型号 model	内径 d	压装座孔内径 d 公差	外径 D	高度 L
EP-1820-20	18	+0.032/+0.102	20	20
EP-1820-25	18	+0.032/+0.102	20	25
EP-2022-12	20	+0.040/+0.124	22	12
EP-2022-15	20	+0.040/+0.124	22	15
EP-2022-28	20	+0.040/+0.124	22	28
EP-2023-10	20	+0.040/+0.124	23	10
EP-2023-15	20	+0.040/+0.124	23	15
EP-2023-20	20	+0.040/+0.124	23	20
EP-2023-23	20	+0.040/+0.124	23	23
EP-2023-25	20	+0.040/+0.124	23	25
EP-2023-30	20	+0.040/+0.124	23	30
EP-2025-15S	20	+0.020/+0.104	25	15
EP-2125-32	21	+0.040/+0.124	25	32
EP-2225-15	22	+0.040/+0.124	25	15
EP-2225-20	22	+0.040/+0.124	25	20
EP-2225-25	22	+0.040/+0.124	25	25
EP-2225-30	22	+0.040/+0.124	25	30
EP-2528-10	25	+0.040/+0.124	28	10
EP-2528-12	25	+0.040/+0.124	28	12
EP-2528-15	25	+0.040/+0.124	28	15
EP-2528-20	25	+0.040/+0.124	28	20
EP-2528-25	25	+0.040/+0.124	28	25
EP-2528-30	25	+0.040/+0.124	28	30
EP-2529-25	25	+0.040/+0.124	29	25
EP-2530-25S	25	+0.020/+0.104	30	25
EP-2832-20	28	+0.040/+0.124	32	20
EP-2832-25	28	+0.040/+0.124	32	25
EP-2832-30	28	+0.040/+0.124	32	30
EP-3034-20	30	+0.040/+0.124	34	20
EP-3034-25	30	+0.040/+0.124	34	25
EP-3034-30	30	+0.040/+0.124	34	30
EP-3034-40	32	+0.040/+0.124	34	40
EP_3236-20	32	+0.050/+0.150	36	20
EP-3236-23	32	+0.050/+0.150	36	23
EP-3236-25	32	+0.050/+0.150	36	25
EP-3236-30	32	+0.050/+0.150	36	30
EP-3236-40	32	+0.050/+0.150	36	40
EP-3539-15	35	+0.050/+0.150	39	15
EP-3539-20	35	+0.050/+0.150	39	20
EP-3539-25	35	+0.050/+0.150	39	25
EP-3539-30	35	+0.050/+0.150	39	30

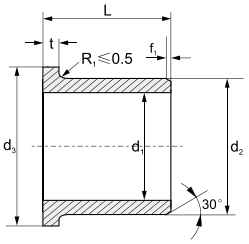
EP 系列规格表
EP Series Specification Table

直套系列尺寸规格表（各不同材料尺寸表通用）				
EP-1214-25	12	+0.032/+0.102	14	25
EP-1215-20	12	+0.032/+0.102	15	20
EP-1315-07	13	+0.032/+0.102	15	7
EP-1315-10	13	+0.032/+0.102	15	10
EP-1416-08	14	+0.032/+0.102	16	8
EP-1416-10	14	+0.032/+0.102	16	10
EP-1416-15	14	+0.032/+0.102	16	15
EP-1416-20	14	+0.032/+0.102	16	20
EP-1416-25	14	+0.032/+0.102	16	25
EP-1517-10	15	+0.032/+0.102	17	10
EP-1517-15	15	+0.032/+0.102	17	15
EP-1517-17	15	+0.032/+0.102	17	17
EP-1517-20	15	+0.032/+0.102	17	20
EP-1517-25	15	+0.032/+0.102	17	25
EP-1618-10	16	+0.032/+0.102	18	10
EP-1618-12	16	+0.032/+0.102	18	12
EP-1618-15	16	+0.032/+0.102	18	15
EP-1618-20	16	+0.032/+0.102	18	20
EP-1616-25	16	+0.032/+0.102	18	25
EP-1620-16S	16	+0.016/+0.086	20	16
EP-1820-15	18	+0.032/+0.102	20	15

直套系列尺寸规格表（各不同材料尺寸表通用）				
EP-3539-40	35	+0.050/+0.150	39	40
EP-359-50	35	+0.050/+0.150	39	50
EP-4044-20	40	+0.050/+0.150	44	20
EP-4044-30	40	+0.050/+0.150	44	30
EP-4044-40	40	+0.050/+0.150	44	40
EP-4044-50	40	+0.050/+0.150	44	50
EP-4550-30	45	+0.050/+0.150	50	30
EP-4550-40	45	+0.025/+0.125	50	40
EP-4550-50	45	+0.050/+0.150	50	50
EP-5055-20	50	+0.050/+0.150	55	20
EP-5055-30	50	+0.050/+0.150	55	30
EP-5055-40	50	+0.050/+0.150	55	40
EP-5055-50	50	+0.050/+0.150	55	50
EP-8590-40	85	+0.036/+0.176	90	40

*d 公差为压入标准 H7 座孔（符合 IS03547-1）后公差
*Tolerance d:after being pressed into housing H7(ISO3547-1)

翻边轴套 Metric F lange Bushes



推荐安装公差 Recommend fitting tolerance

座孔 Housing：H7

轴 Shaft：H9

订购编码 Order P/N：

EP F -0608 -06

d1 d2 L

翻边轴座 Flange Bushes

材料 Material

d	f_1
d≤10	0.5
10 < d≤30	0.8
30 < d	1.2

直套系列尺寸规格表（各不同材料尺寸表通用）						
型号	内径 d1	压装座孔内径 d 公差	外径 d2	法兰外径 d3	高度 L	法兰厚度 e1
EPF-0304-03	3	+0.014/+0.054	4.5	7.5	3	0.75
EPF-0304-05	3	+0.014/+0.054	4.5	7.5	5	0.75
EPF-0507-04	5	+0.020/+0.068	7	11	4	1
EPF-0507-05	5	+0.020/+0.068	7	11	5	1
EPF-0608-04	6	+0.020/+0.068	8	12	4	1
EPF-0608-06	6	+0.020/+0.068	8	12	6	1
EPF-0608-08	6	+0.020/+0.068	8	12	8	1
EPF-0608-10	6	+0.020/+0.068	8	12	10	1
EPF-0810-05	8	+0.025/+0.083	10	15	5	1
EPF-0810-07	8	+0.025/+0.083	10	15	7	1
EPF-0810-09	8	+0.025/+0.083	10	15	9	1
EPF-0810-10	8	+0.025/+0.083	10	15	10	1
EPF-081014-12	8	+0.025/+0.083	10	14	12	1
EPF-0810-12	8	+0.025/+0.083	10	15	12	1
EPF-0810-13	8	+0.025/+0.083	10	18	13	1
EPF-081017-13	8	+0.025/+0.083	10	17	15	1
EPF-081216-10	8	+0.013/+0.071	12	16	10	2
EPF-1012-05	10	+0.025/+0.083	12	18	5	1
EPF-1012-06	10	+0.025/+0.083	12	18	6	1
EPF-1012-07	10	+0.025/+0.083	12	18	7	1
EPF-1012-08	10	+0.025/+0.083	12	18	8	1
EPF_1012-09	10	+0.025/+0.083	12	18	9	1

直套系列尺寸规格表（各不同材料尺寸表通用）						
型号	内径 d1	压装座孔内径 d 公差	外径 d2	法兰外径 d3	高度 L	法兰厚度 e1
EPF-1517-17	15	+0.032/+0.102	17	23	17	1
EPF-1517-20	15	+0.032/+0.102	17	23	20	1
EPF-1518-12	15	+0.032/+0.102	18	23	12	1
EPF-1517-25	15	+0.032/+0.102	1	23	25	1
EPF-1618-12	16	+0.032/+0.102	18	24	12	1
EPF-1618-17	16	+0.032/+0.102	18	24	17	1
EPF-161822-22	16	+0.016/+0.086	18	22	22	2
EPF-162024-16	16	+0.016/+0.086	20	24	16	2
EPF-162024-22	16	+0.016/+0.086	20	24	22	2
EPF-1820-12	18	+0.032/+0.102	20	26	12	1
EPF-1820-17	18	+0.032/+0.102	20	26	17	1
EPF-1820-20	18	+0.032/+0.102	20	26	20	1
EPF-182024-22	18	+0.016/+0.086	20	24	22	2
EPF-2022-15	20	+0.040/+0.124	23	25	15	1
EPF-2023-11	20	+0.040/+0.124	23	30	11	1.5
EPF-2023-11.5	20	+0.040/+0.124	23	30	11.5	1.5
EPF-2023-16	20	+0.040/+0.124	23	30	16	1.5
EPF-2023-16.5	20	+0.040/+0.124	23	30	16.5	1.5
EPF-2023-21.5	20	+0.040/+0.124	23	30	21.5	1.5
EPF-2023-25	20	+0.040/+0.124	23	30	25	1.5
EPF-202330-15	20	+0.040/+0.124	23	30	15	2
EPF-202330-22	20	+0.040/+0.124	23	30	22	2

EP 系列规格表
EP Series Specification Table

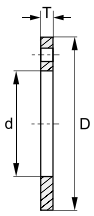
翻边系列尺寸规格表（各不同材料尺寸表通用）

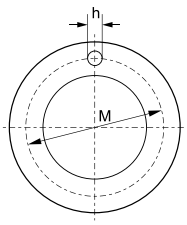
型号	内径 d1	压装座孔内径 d 公差	外径 d2	法兰外径 d3	高度 L	法兰厚度 e1
EPF-1012-10	10	+0.025/+0.083	12	18	10	1
EPF-1012-12	10	+0.025/+0.083	12	18	12	1
EPF-1012-15	10	+0.025/+0.083	12	18	15	1
EPF-1012-17	10	+0.025/+0.083	12	18	17	1
EPF-101216-12	10	+0.013/+0.071	12	16	12	2
EPF-1214-04	12	+0.032/+0.102	14	20	4	1
EPF-1214-05	12	+0.032/+0.102	14	20	5	1
EPF-1214-06	12	+0.032/+0.102	14	20	6	1
EPF-1214-07	12	+0.032/+0.102	14	20	7	1
EPF-1214-09	12	+0.032/+0.102	14	20	9	1
EPF-1214-10	12	+0.032/+0.102	14	20	10	1
EPF-1214-12	12	+0.032/+0.102	14	20	12	1
EPF-1214-13	12	+0.032/+0.102	14	20	13	1
EPF-1214-15	12	+0.032/+0.102	14	20	15	1
EPF-1214-17	12	+0.032/+0.102	14	20	17	1
EPF-1214-18	12	+0.032/+0.102	14	20	18	1
EPF-1012-20	12	+0.032/+0.102	14	20	20	1
EPF-121417-04	12	+0.032/+0.102	14	17	4	1
EPF-121417-05	12	+0.032/+0.102	14	17	5	1
EPF-121417-12	12	+0.016/+0.086	14	18	12	2
EPF-121417-25	12	+0.032/+0.102	14	18	25	1
EPF-121417-40	12	+0.016/+0.086	14	18	40	2
EPF-121417-10	12	+0.016/+0.086	16	20	10	2
EPF-1416-052	14	+0.032/+0.102	16	22	5.2	1
EPF-1416-08	14	+0.032/+0.102	16	22	8	1
EPF-1416-10	14	+0.032/+0.102	16	22	10	1
EPF-1416-12	14	+0.032/+0.102	16	22	12	1
EPF-1416-17	14	+0.032/+0.102	16	22	17	1
EPF-141620-06	14	+0.016/+0.086	16	20	6	2
EPF-141620-15	14	+0.016/+0.086	16	20	15	2
EPF-151720-05	15	+0.032/+0.102	17	20	5	1
EPF-1517-09	15	+0.032/+0.102	17	23	9	1
EPF-1517-12	15	+0.032/+0.102	17	23	12	1
EPF-151720-12	15	+0.032/+0.102	17	20	12	1

翻边系列尺寸规格表（各不同材料尺寸表通用）

型号	内径 d1	压装座孔内径 d 公差	外径 d2	法兰外径 d3	高 度 L	法兰厚度 e1
EPF-202430-20	20	+0.020/+0.104	24	30	20	2
EPF-202530-15	20	+0.020/+0.104	25	30	15	2
EPF-202732-20	20	+0.020/+0.104	27	32	20	
EFP-2225-11.5	22	+0.040/+0.124	25	32	11.5	1.5
EPF-2528-11	25	+0.040/+0.124	28	35	11	1.5
EPF-2528-11.5	25	+0.040/+0.124	28	35	11.5	1.5
EPF-2528-16	25	+0.040/+0.124	28	35	16	1.5
EPF-2528-16.5	25	+0.040/+0.124	28	35	16.5	1.5
EPF-2528-21	25	+0.040/+0.124	28	35	21	1.5
EPF-252835-32	25	+0.020/+0.104	28	35	32	2
EPF-3034-16	30	+0.040/+0.124	34	42	16	2
EPF-3034-26	30	+0.040/+0.124	34	42	26	2
EPF-3034-37	30	+0.040/+0.124	34	42	37	2
EPF-3034-32	30	+0.040/+0.124	34	42	32	2
EPF-303445-18	30	+0.020/+0.104	34	42	18	2
EPF-303445-22	30	+0.020/+0.104	34	45	22	2
EPF-303445-32	30	+0.040/+0.124	34	45	32	2
EPF-3236-16	32	+0.050/+0.150	36	40	16	2
EPF-3236-26	32	+0.050/+0.150	36	40	26	2
EPF-3539-16	35	+0.050/+0.150	39	47	16	2
EPF-3539-26	35	+0.050/+0.150	39	47	26	2
EPF-353950-22	35	+0.025/+0.125	39	50	22	2
EPF-4044-30	40	+0.050/+0.150	44	52	30	2
EPF-4044-40	40	+0.050/+0.150	44	52	40	2
EPF-4550-50	45	+0.050/+0.150	50	58	50	2
EPF-455060-45	45	+0.025/+0.125	50	60	45	2.5
EPF-5055-20	50	+0.050/+0.150	55	63	20	2
EPF-5055-30	50	+0.050/+0.150	55	63	30	2
EPF-5055-40	50	+0.050/+0.150	55	63	40	2
EPF-5055-50	50	+0.050/+0.150	55	63	50	2
EPF-505563-50	50	+0.025/+0.125	55	63	50	2
EPF-657080-60	65	+0.030/+0.150	70	80	60	2.5
EPF-9095110-50	90	+0.036/+0.176	95	110	50	2.5

垫片 Metric Thrust Washer





订购编码 Order P/N：

EP W - 08 18 - 015

d1 D L

垫片 Washer

材料 Material

垫片系列尺寸规格表（各不同材料尺寸表通用）

型号	内径 d	外径 d	厚度 T	定位孔圆心直径	定位孔直径
EPW-0815-005	8	15	0.5		
EPW-0818-015	8	18	1.5	13	1.5
EPW-1018-015	10	18	1.5	15	1.5
EPW-1224-015	12	24	1.5	18	1.5
EPW-1426-015	14	26	1.5	20	2
EPW-1630-015	16	30	1.5	23	2
EPW-1832-015	18	32	1.5	25	2
EPW-2030-015	20	30	1.5		

垫片系列尺寸规格表（各不同材料尺寸表通用）

型号	内径 d	外径 d	厚度 T	定位孔圆心直径	定位孔直径
EPW-2036-015	20	36	1.5	38	3
EPW-2238-015	22	38	1.5	30	3
EPW-2442-015	24	42	1.5	33	3
EPW-2644-015	26	44	1.5		
EPW-2644-015	26	44	1.5	35	3
EPW-2848-015	28	48	1.5	38	4
EPW-3254-015	32	54	1.5	43	4
EPW-3254-015	32	54	1.5		
EPW-4266-015	42	66	1.5	54	4
EPW-4874-020	48	74	2	61	4

LIN 塑料直线轴承
LIN Plastic Linear Bearings

LIN 塑料直线轴承
LIN Plastic Linear Bearings

LIN 系列直线轴承
LIN Series Linear Bearings

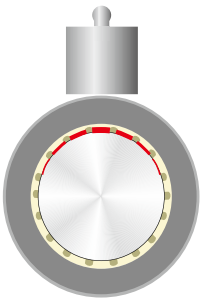
产品特性 Product Features

- 自润滑免维护塑料直线轴承。无噪音运行。适合在极其恶劣的粉尘环境中连续使用。允许被食品药品包装机械清洗液清洗。对轴材料硬度以及安装孔的精度要求较低。
- 免维护、长期干运行、无噪音；
- 适合灰尘中长期运行；
- 耐腐蚀，适合用消毒液清洗；
- 斜槽设计更强的对轴保护能力；
- 减小了槽宽以增强承载能力；
- 安装和替换简易；
- 适合轻量化设计。
- Maintanence free plastic linear bearing. Low noise operation is suitable for continously application under the critical dusty environment. It is washable by the clean detergent of the food machine. There is no critical requirement about the shaft hardness or the mounting holes of the housing;
- Maintenance-free, Drying working, noiseless;
- Suitable for long-time running in dusty environment;
- Corrosion resistance;Cleaning with disinfectant lotion;
- Inclined groove designation provides better protection to the shaft;
- Narrowed groove omproves the load capacity;
- Easy installation and replacement;
- Suitable for lightweight design.

LIN 直线轴承高承载能力
LIN series bearing with high loading caoability

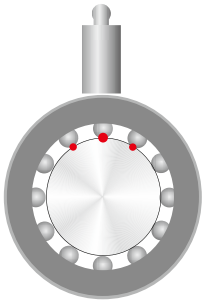
LIN 直线轴承作为一种直线滑动轴承，工作面是以面形式与轴表面接触，而转动的滚珠直线轴承是以点线的形式和轴表面接触；这就决定了较大接触面的 LIN 系列直线轴承具有比滚珠直线轴承更高的承载能力。

As a linear sliding bearings, the contacting of the bearing and the shaft is a surface instead of point contact of the traditional ball bearings. So it resuits in that the surface contacting LIN series linear sliding bearings are with better loading capability than the sliding ball bearings.



高载
High load

LIN 直线滑动轴承
LIN Linear bearing



轻载
Low load

滚动直线轴承
Ball linear bearing

LIN 系列塑料轴承
LIN Series Linear Bearings

LIN 直线轴承在污垢，灰尘中干运行
LIN series linear sliding bearing used in critical of containments and dusts

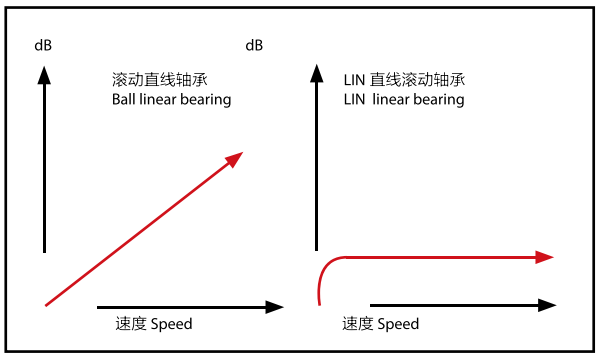
LIN 直线轴承滑动膜是专门为干运行而开发的高性能材料；特殊的专利结构设计允许轴承在污垢、灰尘或沙粒中平稳运行，螺旋式结构设计能使得赃物很快速的落入到设计的凹槽中，并通过不断的直线运动最终被从凹槽中带出直线轴承系统。而传统的金属滚动直线轴承在有污垢、灰尘或沙粒存在的情况下会很容易出现卡死、跑珠等现象而卡死，甚至会因卡死现象导致轴被拉伤。

LIN series sliding membrance is an excellent material specially designed for dry operation. The patented designation of this material allows the bearing to be used in the critical conditions such as in containments and dusts. The spiral groove designation sllows the containments or dusts entering the grooves and be brought out of the bearing system finally while the traditional sliding ball bearings will be blocked by the entered containments and therefore cause the breakout of the bearing system causing shaft or bearing damages.

LIN 直线轴承在污垢，灰尘中干运行
LIN series linear sliding bearing operation with low noise

金属滚珠直线轴承由于滚珠在运动过程中与保持架体之间的撞击所发出的噪音，而且这种噪音会随着速度的加快而增高。但 LIN 直线轴承的工作面为滑动摩擦设计，所以在运行过程中只能发出较低的摩擦声，运行噪音非常低。

Metal ball sliding bearings generates high noise by the crashing of balls to the shafts during the operation and the noise will be sharply increased when the operation speed goes higher while the LIN series linear sliding bearings are with the surface contacting structure which ensures a lower operation noise level.



■ 噪音曲线对比图 Comparison of noise development

LIN 直线轴承允许经常接触清洗液
LIN series linear sliding bearing allows the access of cleaning solution

LIN 直线轴承被经常用于食品包装机械的导向机构中，经常受到清洗液的冲刷；多年的使用证明 LIN 直线轴承正如所设计的那样足够抵抗各类碱性清洗液的腐蚀，甚至能整体浸泡在液体介质中运行。

LIN 系列直线轴承
LIN Series Linear Bearings

滑动膜性能数据表 Sliding Membrance Material Data Sheets

一般性能 Common Capabilty	试验方法 Testing Method	单位 Uint	LIN
密度 Density	ISO1183	g/cm^3	1.48
颜色 Color			黄色 Yellow
对钢的动摩擦系数 Dynamic friction/steel(dry)			0.05-0.15
最大 P.V 值 Max.PV（dry）		$n/mm^2 \times m/s$	0.4
最大旋转速度值 Max.roatating velocity		m/s	1.5
最大摇摆速度值 Max.oscillating velocity		m/s	1.1
最大直线速度值 Max.linear velocity		m/s	8.0
抗拉强度 Tensile strength	ISO527	MPa	75
抗压强度（轴向）Coppressive strength(Axial)		MPa	60
弹性模量 E-module	ISO527	MPa	2400
允许最大表面静压力（20℃）Max.static pressure of the surface，20℃		MPa	35
洛氏硬度 Rockwell hardness	ISO2039-2	HRR	107
连续工作温度 continuous work temperature		℃	-50/90
短时运行温度 Short-time		℃	-50/120
导热性 Thermal conductivity	ASTME1461	W/m k	0.25
线性热膨胀系数 Linear coef.of thermal eapansion	ASTMD696	$K^{-1} \times 10^{-5}$	9
RH50/23℃时的吸湿性 Moisture absorption RH50/23℃	ASTMD570	%	0.3
燃烧性能 Flammability	UL94		HB
体电阻率 Volume resistivity	IEC60093	Ω cm	> 10^{13}
面电阻率 Surface resistivity	IEC60093	Ω	> 10^{12}

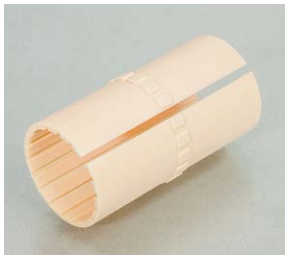
LIN 直线轴承承载能力 LIN Load Capacity

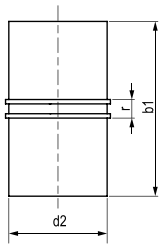
滑动膜材料：LIN
Sliding membrane material:LIN

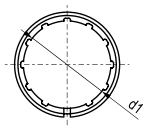
公称内径 Inside nominal diameter	最大许可动载荷 Dynamic Load P=5MPa		最大许可动载荷 Max.Static Load P=35MPa	
	LIN-01 滑动膜系列 LIN-01 series of sliding membranes	LIN-02 滑动膜系列 LIN-02 series of sliding membranes	LIN-01 滑动膜系列 LIN-01 series of sliding membranes	LIN-02 滑动膜系列 LIN-02 series of sliding membranes
10	870N	780N	6090N	5460N
12	1152N	1008N	8064N	7056N
16	1728N	1440N	12096N	10080N
20	2700N	1800N	18900N	12600N
25	4350N	3000N	30650N	21000N
30	6120N	4500N	42840N	31500N
40	9600N	7200N	67200N	50400N
50	15000N	10500N	105000N	73500N

LIN 系列塑料轴承
LIN Series Linear Bearings technology

LIN-01 系列滑动膜 LIN-01 Series of Sliding Membranes





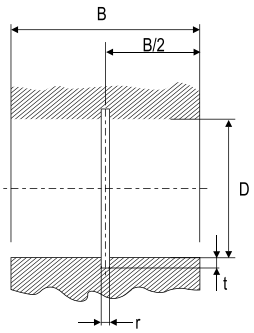


座孔 Housing:H7　轴 Shaft:h6-h9

订购编码 Order P/N	d1 mm²	公差 Tolerance mm²	d2 mm²	b1 mm²	r(-0.1/-0.2) mm²	重量 Weight g
LIN-01-10	10	+0.030/-0.070	12	29	3.0	1.3
LIN-01-12	12	+0.030/-0.070	14	31	3.0	1.6
LIN-01-16	16	+0.030/-0.070	18	35	3.5	2.2
LIN-01-20	20	+0.030/-0.070	23	44	5.0	5.0
LIN-01-25	25	+0.030/-0.070	28	57	5.0	8.0
LIN-01-30	30	+0.040/-0.085	34	67	5.0	15.1
LIN-01-40	40	+0.040/-0.085	44	79	6.0	25.6
LIN-01-50	50	+0.040/-0.085	55	99	7.0	50.6

装配尺寸 Installation size

订购编码 Order P/N	轴径 Shaft mm² h7	D mm² h10	B mm²	r mm²	t mm²
LIN-01-10	10	12	29	3.0	1.0
LIN-01-12	12	14	32	3.0	1.0
LIN-01-16	16	18	36	3.5	1.0
LIN-01-20	20	23	45	5.0	1.0
LIN-01-25	25	28	58	5.0	1.0
LIN-01-30	30	34	68	5.0	1.0
LIN-01-40	40	44	80	6.0	1.5
LIN-01-50	50	55	100	7.0	1.5

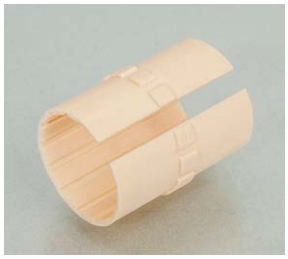


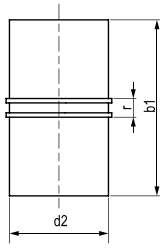
配合 LIN-01 系列滑动膜产品系列：
Membranes of the LIN-01 Series are used in:

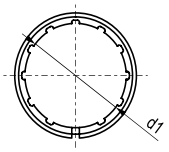
订购编码 Order P/N:
LIN-01 - 10
- 内径 Inner diameter
- 标准开口系列 01K
  Standard split type 01K

LIN 系列塑料轴承
LIN Series Linear Bearings technology

LIN-02 系列滑动膜 LIN-02 Series of Sliding Membranes





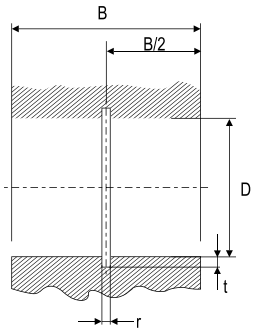


座孔 Housing:H7　轴 Shaft:h6-h9

订购编码 Order P/N	d1 mm²	公差 Tolerance mm²	d2 mm²	b1 mm²	r(-0.1/-0.2) mm²	重量 Weight g
LIN-02-10	10	+0.030/-0.070	12	25	3.0	1.1
LIN-02-12	12	+0.030/-0.070	14	27	3.0	1.4
LIN-02-16	16	+0.030/-0.070	18	29	3.5	1.9
LIN-02-20	20	+0.030/-0.070	23	29	5.0	3.3
LIN-02-25	25	+0.030/-0.070	28	39	5.0	5.5
LIN-02-30	30	+0.040/-0.085	34	49	5.0	11.1
LIN-02-40	40	+0.040/-0.085	44	59	6.0	19.0
LIN-02-50	50	+0.050/-0.100	55	69	7.0	35.3

装配尺寸 Installation size

订购编码 Order P/N	轴径 Shaft mm²	D mm² h7	B mm² h10	r mm²	t mm²
LIN-02-10	10	12	26	3.0	1.0
LIN-02-12	12	14	28	3.0	1.0
LIN-02-16	16	18	30	3.5	1.0
LIN-02-20	20	23	30	5.0	1.0
LIN-02-25	25	28	40	5.0	1.0
LIN-02-30	30	34	50	5.0	1.0
LIN-02-40	40	44	60	6.0	1.5
LIN-02-50	50	55	70	7.0	1.5

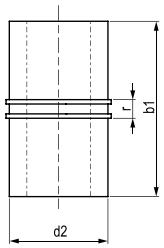


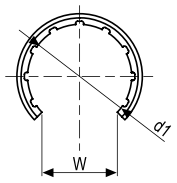
配合 LIN-02 系列滑动膜产品系列：
Membranes of the LIN-02 Series are used in:

订购编码 Order P/N:
LIN-02-10
- 内径 Inner diameter
- 标准开口系列 02
  Standard series02

LIN 系列塑料轴承
LIN Series Linear Bearings technology

LIN-01K 系列滑动膜 LIN-01K Series of Sliding Membranes



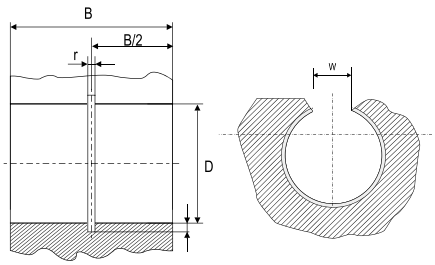


座孔 Housing:H7　轴 Shaft:h6-h9

订购编码 Order P/N	d1 mm²	公差 Tolerance mm²	d2 mm²	b1 mm²	W+0.2 mm²	r(-0.1/-0.2) mm²	重量 Weight g
LIN-01K-10	10	+0.030/-0.070	12	29	7.3	3.0	1.0
LIN-01K-12	12	+0.030/-0.070	14	31	9.0	3.0	1.3
LIN-01K-16	16	+0.030/-0.070	18	35	11.6	3.5	1.9
LIN-01K-20	20	+0.030/-0.070	23	44	12.0	5.0	4.5
LIN-01K-25	25	+0.030/-0.070	28	57	14.5	5.0	7.5
LIN-01K-30	30	+0.040/-0.085	34	67	16.6	5.0	14.5
LIN-01K-40	40	+0.040/-0.085	44	79	21.0	6.0	24.5
LIN-01K-50	50	+0.050/-0.100	55	99	25.5	7.0	49.0

装配尺寸 Installation size

订购编码 Order P/N	轴径 Shaft mm²	D mm² h7	B mm² h10	r mm²	t mm²
LIN-01K-10	10	12	29	3.0	2.6
LIN-01K-12	12	14	32	3.0	3.1
LIN-01K-16	16	18	36	3.5	3.6
LIN-01K-20	20	23	45	5.0	3.6
LIN-01K-25	25	28	58	5.0	4.1
LIN-01K-30	30	34	68	5.0	1.1
LIN-01K-40	40	44	80	6.0	5.1
LIN-01K-50	50	55	100	7.0	6.1

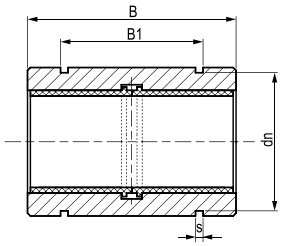


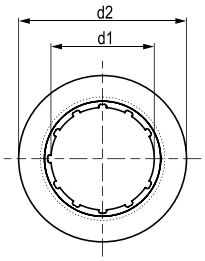
配合 LIN-01K 系列滑动膜产品系列：
Membranes of the LIN-01K Series are used in:

订购编码 Order P/N:
LIN-01K-10
- 内径 Inner diameter
- 标准开口系列 01K
  Standard split type 01K

LIN 系列直线轴承
LIN Series Linear Bearings

LIN-01R 系列滑动膜 LIN-01R Linear Bwarings





座孔 Housing:H7　轴 Shaft:h6-h9

订购编码 Order P/N	d1 mm²	公差 Tolerance mm²	d2 h7 mm²	B h10 mm²	B1 H10 mm²	dn h10 mm²	s H10 mm²
LIN-01R-10	10	+0.030/+0.088	19	29	21.6	17.5	1.3
LIN-01R-12	12	+0.030/+0.088	22	32	22.6	20.5	1.3
LIN-01R-16	16	+0.030/+0.088	26	36	24.6	24.2	1.3
LIN-01R-20	20	+0.030/+0.091	32	45	31.2	29.6	1.6
LIN-01R-25	25	+0.030/+0.091	40	58	43.7	36.5	1.85
LIN-01R-30	30	+0.040/+0.110	47	68	51.7	43.5	1.85
LIN-01R-40	40	+0.040/+0.115	62	80	60.3	57.8	2.15
LIN-01R-50	50	+0.050/+0.130	75	100	77.3	70.5	2.65

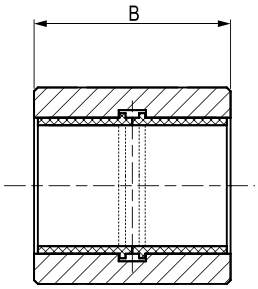
订购编码 Order P/N	轴径 Shaft mm²	座孔 Housing mm² H7	公差 Tolerance mm²	极限动载荷 Dynamic Load P=5MPa	极限动载荷 Static Load P=35Mpa	重量（g） Weight
LIN-01R-10	10	19	0/+0.021	870N	6090N	12
LIN-01R-12	12	22	0/+0.021	1152N	8064N	20
LIN-01R-16	16	26	0/+0.021	1728N	12096N	28
LIN-01R-20	20	32	0/+0.025	2700N	18900N	50
LIN-01R-25	25	40	0/+0.025	4350N	30650N	104
LIN-01R-30	30	47	0/+0.025	6120N	42840N	163
LIN-01R-40	40	62	0/+0.030	9600N	67200N	341
LIN-01R-50	50	75	0/+0.030	15000N	105000N	589

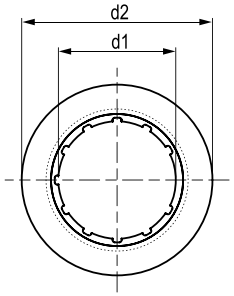
订购编码 Order P/N: LIN-01 R -10

- 内径 Inner diameter
- 保持器 Aluminum housing
- LIN-01 系列标准滑动膜 Standard membranes type LIN-01

LIN 系列直线轴承
LIN Series Linear Bearings

LIN-02R 系列直线轴承 LIN-02R Linear Bearings





座孔 Housing:H7　轴 Shaft:h6-h9

订购编码 Order P/N	d1 mm	公差 Tolerance mm	d2 h7 mm	B h10 mm
LIN-02R-10	10	+0.030/+0.088	17	26
LIN-02R-12	12	+0.030/+0.088	19	28
LIN-02R-16	16	+0.030/+0.088	24	30
LIN-02R-20	20	+0.030/+0.091	28	30
LIN-02R-25	25	+0.030/+0.091	35	40
LIN-02R-30	30	+0.040/+0.110	40	50
LIN-02R-40	40	+0.040/+0.115	52	60
LIN-02R-50	50	+0.050/+0.130	62	70

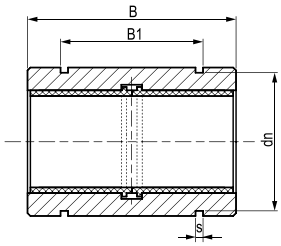
订购编码 Order P/N	轴径 Shaft mm^2	座孔 Housing mm^2 H7	公差 Tolerance mm^2	极限动载荷 Dynamic Load P=5MPa	极限动载荷 Static Load P=35Mpa	重量（g） Weight
LIN-02R-10	10	17	0/+0.018	780N	5460N	9
LIN-02R-12	12	19	0/+0.021	1008N	7056N	11
LIN-02R-16	16	24	0/+0.021	1440N	10080N	17
LIN-02R-20	20	28	0/+0.021	1800N	12600N	18
LIN-02R-25	25	35	0/+0.025	3000N	21000N	41
LIN-02R-30	30	40	0/+0.025	4500N	31500N	56
LIN-02R-40	40	52	0/+0.030	7200N	50400N	113
LIN-02R-50	50	62	0/+0.030	10500N	73500N	152

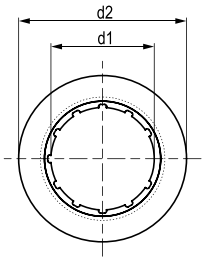
订购编码 Order P/N: LIN-02 R -10

- 内径 Inner diameter
- 保持器 Aluminum housing
- LIN-02 系列标准滑动膜 Standard membranes type LIN-02

LIN 系列直线轴承
LIN Series Linear Bearings

LIN-01RS 系列滑动膜 LIN-01RS Linear Bwarings





座孔 Housing:H7　轴 Shaft:h6-h9

订购编码 Order P/N	d1 mm²	公差 Tolerance mm²	d2 h7 mm²	B h10 mm²	B1 H10 mm²	dn h10 mm²	s H10 mm²
LIN-01RS-10	10	+0.030/+0.088	19	29	21.6	17.5	1.3
LIN-01RS-12	12	+0.030/+0.088	22	32	22.6	20.5	1.3
LIN-01RS-16	16	+0.030/+0.088	26	36	24.6	24.2	1.3
LIN-01RS-20	20	+0.030/+0.091	32	45	31.2	29.6	1.6
LIN-01RS-25	25	+0.030/+0.091	40	58	43.7	36.5	1.85
LIN-01RS-30	30	+0.040/+0.110	47	68	51.7	43.5	1.85
LIN-01RS-40	40	+0.040/+0.115	62	80	60.3	57.8	2.15
LIN-01RS-50	50	+0.050/+0.130	75	100	77.3	70.5	2.65

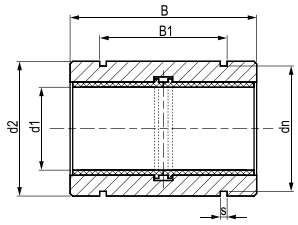
订购编码 Order P/N	轴径 Shaft mm²	座孔 Housing mm² H7	公差 Tolerance mm²	极限动载荷 Dynamic Load P=5MPa	极限动载荷 Static Load P=35Mpa	重量（g） Weight
LIN-01RS-10	10	19	0/+0.021	870N	6090N	12
LIN-01RS-12	12	22	0/+0.021	1152N	8064N	20
LIN-01RS-16	16	26	0/+0.021	1728N	12096N	28
LIN-01RS-20	20	32	0/+0.025	2700N	18900N	50
LIN-01RS-25	25	40	0/+0.025	4350N	30650N	104
LIN-01RS-30	30	47	0/+0.025	6120N	42840N	163
LIN-01RS-40	40	62	0/+0.030	9600N	67200N	341
LIN-01RS-50	50	75	0/+0.030	15000N	105000N	589

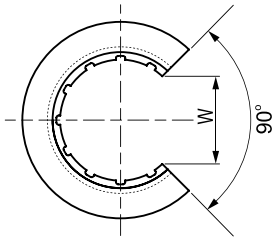
订购编码 Order P/N: LIN-01 RS -10

- 内径 Inner diameter
- 保持器 Aluminum housing
- LIN-01 系列标准滑动膜 Standard membranes type LIN-01

LIN 系列直线轴承
LIN Series Linear Bearings

LIN-01RK 系列直线轴承 LIN-01RK Linear Bearings





座孔 Housing:H7　轴 Shaft:h6-h9

订购编码 Order P/N	d1 mm²	公差 Tolerance mm²	d2 h7 mm²	B h10 mm²	B1 H10 mm²	W mm²	s H10 mm²	dn h10 mm²
LIN-01RK-10	10	+0.030/+0.088	19	29	21.6	7.3	1.30	17.5
LIN-01RK-12	12	+0.030/+0.088	22	32	22.6	9.0	1.30	20.5
LIN-01RK-16	16	+0.030/+0.088	26	36	24.6	11.6	1.30	24.2
LIN-01RK-20	20	+0.030/+0.091	32	45	31.2	12.0	1.60	29.6
LIN-01RK-25	25	+0.030/+0.091	40	58	43.7	14.5	1.85	36.5
LIN-01RK-30	30	+0.040/+0.110	47	68	51.7	16.6	1.85	43.5
LIN-01RK-40	40	+0.040/+0.115	62	80	60.3	21.0	2.15	57.8
LIN-01RK-50	50	+0.050/+0.130	75	100	77.3	25.5	2.65	70.5

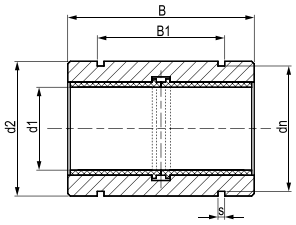
订购编码 Order P/N	轴径 Shaft mm²	座孔 Housing mm² H7	公差 Tolerance mm²	极限动载荷 Dynamic Load P=5MPa	极限动载荷 Static Load P=35Mpa	重量（g） Weight
LIN-01RK-10	10	19	0/+0.021	870N	6090N	9
LIN-01RK-12	12	22	0/+0.021	1152N	8064N	15
LIN-01RK-16	16	26	0/+0.021	1728N	12096N	21
LIN-01RK-20	20	32	0/+0.025	2700N	18900N	37
LIN-01RK-25	25	40	0/+0.025	4350N	30650N	78
LIN-01RK-30	30	47	0/+0.025	6120N	42840N	122
LIN-01RK-40	40	62	0/+0.030	9600N	67200N	256
LIN-01RK-50	50	75	0/+0.030	15000N	105000N	442

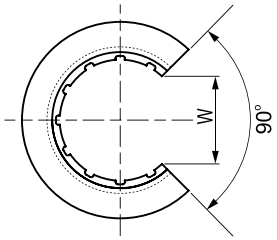
订购编码 Order P/N: LIN-01 RK-10

- 内径 Inner diameter
- 保持器 Aluminum housing
- LIN-01 系列标准滑动膜 Standard membranes type LIN-01

LIN 系列直线轴承
LIN Series Linear Bearings

LIN-01RSK 系列直线轴承 LIN-01RSK Linear Bearings





座孔 Housing:H7　轴 Shaft:h6-h9

订购编码 Order P/N	d1 mm²	公差 Tolerance mm²	d2 h7 mm²	B h10 mm²	B1 H10 mm²	W mm²	s H10 mm²	dn h10 mm²
LIN-01RSK-10	10	+0.030/+0.088	19	29	21.6	7.3	1.30	17.5
LIN-01RSK-12	12	+0.030/+0.088	22	32	22.6	9.0	1.30	20.5
LIN-01RSK-16	16	+0.030/+0.088	26	36	24.6	11.6	1.30	24.2
LIN-01RSK-20	20	+0.030/+0.091	32	45	31.2	12.0	1.60	29.6
LIN-01RSK-25	25	+0.030/+0.091	40	58	43.7	14.5	1.85	36.5
LIN-01RSK-30	30	+0.040/+0.110	47	68	51.7	16.6	1.85	43.5
LIN-01RSK-40	40	+0.040/+0.115	62	80	60.3	21.0	2.15	57.8
LIN-01RSK-50	50	+0.050/+0.130	75	100	77.3	25.5	2.65	70.5

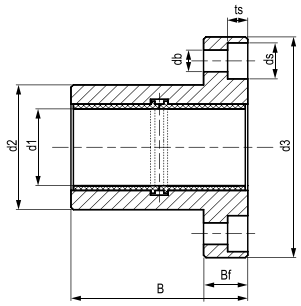
订购编码 Order P/N	轴径 Shaft mm²	座孔 Housing mm² H7	公差 Tolerance mm²	极限动载荷 Dynamic Load P=5MPa	极限动载荷 Static Load P=35Mpa	重量（g） Weight
LIN-01RSK-10	10	19	0/+0.021	870N	6090N	9
LIN-01RSK-12	12	22	0/+0.021	1152N	8064N	15
LIN-01RSK-16	16	26	0/+0.021	1728N	12096N	21
LIN-01RSK-20	20	32	0/+0.025	2700N	18900N	37
LIN-01RSK-25	25	40	0/+0.025	4350N	30650N	78
LIN-01RSK-30	30	47	0/+0.025	6120N	42840N	122
LIN-01RSK-40	40	62	0/+0.030	9600N	67200N	256
LIN-01RSK-50	50	75	0/+0.030	15000N	105000N	442

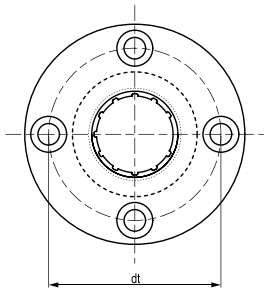
订购编码 Order P/N: LIN-01 RSK-10

- 内径 Inner diameter
- 保持器 Aluminum housing
- LIN-01 系列标准滑动膜 Standard membranes type LIN-01

LIN 系列直线轴承
LIN Series Linear Bearings

LIN-01RF 系列直线轴承 LIN-01RF Linear Bearings





座孔 Housing:H7　轴 Shaft:h6-h9

订购编码 Order P/N	d1 mm²	公差 Tolerance mm²	d2 h7 mm²	dt mm²	d3 mm²	B mm²	Bf mm²	ts mm²	db mm²	ds mm²
LIN-01RF-10	10	+0.030/+0.088	19	29	39	29	9	4.1	4.5	7.5
LIN-01RF-12	12	+0.030/+0.088	22	32	42	32	9	4.1	4.5	7.5
LIN-01RF-16	16	+0.030/+0.088	26	36	46	36	9	4.1	4.5	7.5
LIN-01RF-20	20	+0.030/+0.091	32	43	54	45	11	5.1	5.5	9.0
LIN-01RF-25	25	+0.030/+0.091	40	51	62	58	11	5.1	5.5	9.0
LIN-01RF-30	30	+0.040/+0.110	47	62	76	68	14	6.1	6.6	11.0
LIN-01RF-40	40	+0.040/+0.115	62	80	98	80	18	8.1	9.0	14.0
LIN-01RF-50	50	+0.050/+0.130	75	94	112	100	18	8.1	9.0	14.0

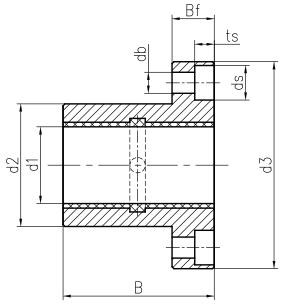
订购编码 Order P/N	轴径 Shaft mm²	座孔 Housing mm² H7	公差 Tolerance mm²	极限动载荷 Dynamic Load P=5MPa	极限动载荷 Static Load P=35Mpa	重量（g） Weight
LIN-01RF-10	10	19	0/+0.021	870N	6090N	34
LIN-01RF-12	12	22	0/+0.021	1152N	8064N	43
LIN-01RF-16	16	26	0/+0.021	1728N	12096N	54
LIN-01RF-20	20	32	0/+0.025	2700N	18900N	91
LIN-01RF-25	25	40	0/+0.025	4350N	30650N	154
LIN-01RF-30	30	47	0/+0.025	6120N	42840N	266
LIN-01RF-40	40	62	0/+0.030	9600N	67200N	555
LIN-01RF-50	50	75	0/+0.030	15000N	105000N	852

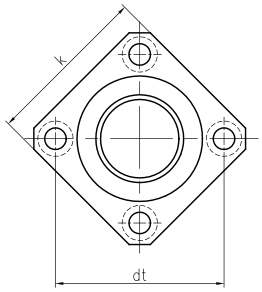
订购编码 Order P/N: LIN-01 RF-10

- 内径 Inner diameter
- 圆法兰保持器 Round Flange Aluminum housing
- LIN-01 系列标准滑动膜 Standard membranes type LIN-01

LIN 系列直线轴承
LIN Series Linear Bearings

LIN-01RT 方法塑料直线轴承 Angular Flange Linear Bearings





座孔 Housing:H7　轴 Shaft:h6-h9

订购编码 Order P/N	d1 mm²	d2 mm²	d3 mm²	dt mm²	k mm²	B mm²	Bf mm²	ts mm²	db mm²	ds mm²
LIN-01RT-10	10	19	39	29	30	29	9	4.1	4.5	7.5
LIN-01RT-12	12	22	42	32	32	32	9	4.1	4.5	7.5
LIN-01RT-16	16	26	46	36	35	36	9	4.1	4.5	7.5
LIN-01RT-20	20	32	54	43	42	45	11	5.1	5.5	9.0
LIN-01RT-25	25	40	62	51	50	58	11	5.1	5.5	9.0
LIN-01RT-30	30	47	76	62	60	68	14	6.1	6.6	11.0
LIN-01RT-40	40	62	98	80	75	80	18	8.1	9.0	14.0
LIN-01RT-50	50	75	112	94	88	100	18	8.1	9.0	14.0

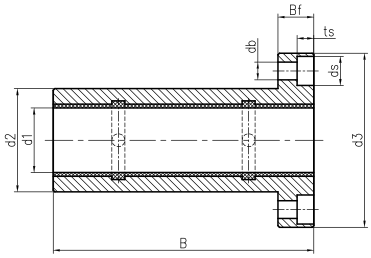
订购编码 Order P/N	轴径 Shaft mm²	座孔 Housing mm² H7	公差 Tolerance mm²	极限动载荷 Dynamic Load P=5MPa	极限动载荷 Static Load P=35Mpa	重量（g） Weight
LIN-01RT-10	10	19	0/+0.021	870N	6090N	34
LIN-01RT-12	12	22	0/+0.021	1152N	8064N	43
LIN-01RT-16	16	26	0/+0.021	1728N	12096N	54
LIN-01RT-20	20	32	0/+0.025	2700N	18900N	91
LIN-01RT-25	25	40	0/+0.025	2350N	30650N	154
LIN-01RT-30	30	47	0/+0.025	6120N	42840N	266
LIN-01RT-40	40	62	0/+0.030	9600N	67200N	555
LIN-01RT-50	50	75	0/+0.030	15000N	105000N	852

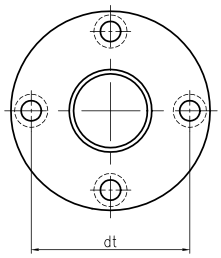
订购编码 Order P/N: LIN-01 RT-10

- 内径 Inner diameter
- 方法兰保持器 Aluminum housing
- 系列号 Design No

LIN 系列直线轴承
LIN Series Linear Bearings

LIN-02RFL 加长型方法兰塑料直线轴承 Angular Flange Linear Bearings（Long design）





座孔 Housing:H7　轴 Shaft:h6-h9

订购编码 Order P/N	d1 mm²	d2 mm²	d3 mm²	dt mm²	k mm²	B mm²	Bf mm²	ts mm²	db mm²	ds mm²
LIN-02RFL-10	10	19	39	29	30	52	9	4.1	4.5	7.5
LIN-02RFL-12	12	22	42	32	32	57	9	4.1	4.5	7.5
LIN-02RFL-16	16	26	46	36	35	70	9	4.1	4.5	7.5
LIN-02RFL-20	20	32	54	43	42	80	11	5.1	5.5	9.0
LIN-02RFL-25	25	40	62	51	50	112	11	5.1	5.5	9.0
LIN-02RFL-30	30	47	76	62	60	123	14	6.1	6.6	11.0
LIN-02RFL-40	40	62	98	80	75	151	18	8.1	9.0	14.0
LIN-02RFL-50	50	75	112	94	88	192	18	8.1	9.0	14.0

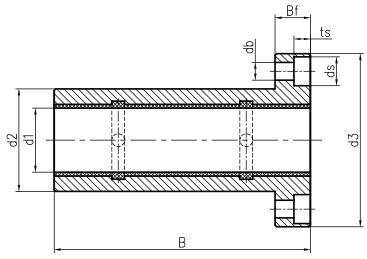
订购编码 Order P/N	轴径 Shaft mm²	公差 Tolerance mm²	极限动载荷 Dynamic Load P=5MPa	极限动载荷 Static Load P=35Mpa	重量（g） Weight
LIN-02RFL-10	10	+0.030/+0.080	1300	9100	44
LIN-02RFL-12	12	+0.030/+0.080	1680	11760	57
LIN-02RFL-16	16	+0.030/+0.080	2400	16800	79
LIN-02RFL-20	20	+0.030/+0.091	3000	21000	126
LIN-02RFL-25	25	+0.030/+0.091	5000	35000	249
LIN-02RFL-30	30	+0.030/+0.110	7500	52500	388
LIN-02RFL-40	40	+0.030/+0.115	12000	84000	835
LIN-02RFL-50	50	+0.030/+0.130	17500	122500	1352

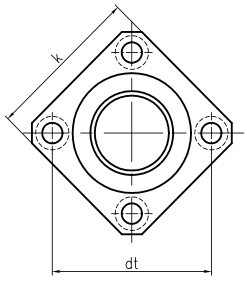
订购编码 Order P/N: LIN-02 RFL-10

- 内径 Inner diameter
- 圆法兰加长型保持器 Round Flange Aluminum housing(Long Design)
- LIN-02 系列标准滑动膜 LIN-02 Standard membbranes

LIN 系列直线轴承
LIN Series Linear Bearings

LIN-02RTL 加长型方法兰塑料直线轴承 Angular Flange Linear Bearings（Long design）





座孔 Housing:H7　轴 Shaft:h6-h9

订购编码 Order P/N	d1 mm²	d2 mm²	d3 mm²	dt mm²	k mm²	B mm²	Bf mm²	ts mm²	db mm²	ds mm²
LIN-02RTL-10	10	19	39	29	30	52	9	4.1	4.5	7.5
LIN-02RTL-12	12	22	42	32	32	57	9	4.1	4.5	7.5
LIN-02RTL-16	16	26	46	36	35	70	9	4.1	4.5	7.5
LIN-02RTL-20	20	32	54	43	42	80	11	5.1	5.5	9.0
LIN-02RTL-25	25	40	62	51	50	112	11	5.1	5.5	9.0
LIN-02RTL-30	30	47	76	62	60	123	14	6.1	6.6	11.0
LIN-02RTL-40	40	62	98	80	75	151	18	8.1	9.0	14.0
LIN-02RTL-50	50	75	112	94	88	192	18	8.1	9.0	14.0

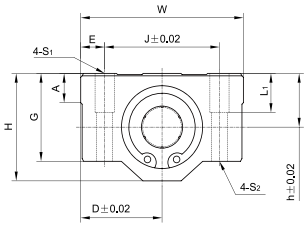
订购编码 Order P/N	轴径 Shaft mm²	公差 Tolerance mm²	极限动载荷 Dynamic Load P=5MPa	极限动载荷 Static Load P=35Mpa	重量（g） Weight
LIN-02RTL-10	10	+0.030/+0.080	1300	9100	44
LIN-02RTL-12	12	+0.030/+0.080	1680	11760	57
LIN-02RTL-16	16	+0.030/+0.080	2400	16800	79
LIN-02RTL-20	20	+0.030/+0.091	3000	21000	126
LIN-02RTL-25	25	+0.030/+0.091	5000	35000	249
LIN-02RTL-30	30	+0.030/+0.110	7500	52500	388
LIN-02RTL-40	40	+0.030/+0.115	12000	84000	835
LIN-02RTL-50	50	+0.030/+0.130	17500	122500	1352

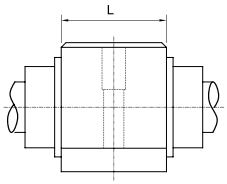
订购编码 Order P/N: LIN-02 RTL-10

- 内径 Inner diameter
- 方法兰加长型保持器 Angular Flange Aluminum housing(Long Design)
- LIN-02 系列标准滑动膜 LIN-02 Standard membbranes

LIN 系列直线轴承
LIN Series Linear Bearings

LIN-01G 系列窄设计直线轴承座 LIN-01G Pillow Block,Short Design





轴 Shaft：h6-h9

订购编码 Drder P/N	安装轴承 Bearing mm²	轴径 Shart mm²	尺寸 Size(mm²)										
			h	D	W	H	G	A	J	E	$S_1 \times L_1$	S_2	L
LIN-01G-16	LIN-01R-16	ϕ16	19	25	50	38.5	32.5	9	36	7	M5 × 12	ϕ4.3	22.3
LIN-01G-20	LIN-01R-20	ϕ20	21	27	54	41	35	11	40	7	M6 × 12	ϕ5.2	28.3
LIN-01G-25	LIN-01R-25	ϕ25	26	38	76	51.5	41	12	54	11	M8 × 18	ϕ7	40.4
LIN-01G-30	LIN-01R-30	ϕ30	30	39	78	59.5	49	15	58	10	M8 × 18	ϕ7	48.4
LIN-01G-40	LIN-01R-40	ϕ40	40	51	102	78	62	20	80	11	M10 × 25	ϕ8.7	56.4

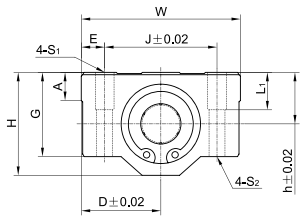
订购编码 Order P/N	内径 I.D mm²	I.D 公差 Tolerance mm²	极限动载荷 Dynamic Load P=5MPa	极限动载荷 Static Load P=35Mpa	重量（g） Weight
LIN-01G-16	16	+0.030/-0.088	1728N	12096N	67
LIN-01G-20	20	+0.030/-0.091	2700N	18900N	90
LIN-01G-25	25	+0.030/-0.091	4350N	30650N	193
LIN-01G-30	30	+0.040/-0.110	6120N	42840N	260
LIN-01G-40	40	+0.040/-0.115	9600N	67200N	641

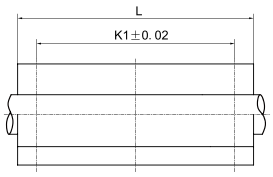
订购编码 Order P/N: LIN-01 G-16

- 轴承内径 Inner diameter
- 窄设计直线轴承座 Pillow block,short design
- LIN-01R 系列直线轴承 LIN-01R Standard Bearings

LIN 系列直线轴承
LIN Series Linear Bearings

LIN-01GN 系列标准设计直线轴承座 LIN-01GN Pillow black，Standard design





轴 Shaft：h6-h9

订购编码 Drder P/N	安装轴承 Bearing mm²	轴径 Shart mm²	尺寸 Size(mm²)										
			h	D	W	H	G	A	J	E	$S_1 \times L_1$	S_2	L
LIN-01GN-16	2xLIN-01R-16	Φ16	19	25	50	38.5	32.5	9	36	7	M5 × 12	Φ4.3	89
LIN-01GN-20	2xLIN-01R-20	Φ20	21	27	54	41	35	11	40	7	M6 × 12	Φ5.2	106
LIN-01GN-25	2xLIN-01R-25	Φ25	26	38	76	51.5	41	12	54	11	M8 × 18	Φ7	136
LIN-01GN-30	2xLIN-01R-30	Φ30	30	39	78	59.5	49	15	58	10	M8 × 18	Φ7	154
LIN-01GN-40	2xLIN-01R-40	Φ40	40	51	102	78	62	20	80	11	M10 × 25	Φ8.7	180

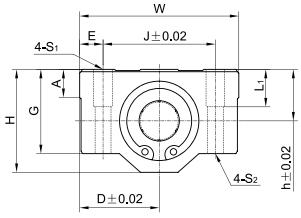
订购编码 Order P/N	内径 I.D mm²	I.D 公差 Tolerance mm²	极限动载荷 Dynamic Load P=5MPa	极限动载荷 Static Load P=35Mpa	重量（g） Weight
LIN-01GN-16	16	+0.030/-0.088	3456N	24192N	250
LIN-01GN-20	20	+0.030/-0.091	5400N	37800N	318
LIN-01GN-25	25	+0.030/-0.091	8400N	61300N	686
LIN-01GN-30	30	+0.040/-0.110	12240N	85680N	905
LIN-01GN-40	40	+0.040/-0.115	19200N	134400N	2041

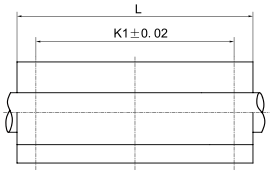
订购编码 Order P/N: LIN-01 GN-16

- 轴承内径 Inner diameter
- 标准设计直线轴承座 Pillow black，Standard design
- LIN-01R 系列直线轴承 LIN-01R Standard Bearings

LIN 系列直线轴承
LIN Series Linear Bearings

LIN-01GL 系列标准设计直线轴承座 LIN-01GL Pillow black，Standard design





轴 Shaft：h6-h9

订购编码 Drder P/N	安装轴承 Bearing mm	轴径 Shart mm	尺寸 Size(mm)										
			h	D	W	H	G	A	J	E	$S_1 \times L_1$	S_2	L
LIN-o1GL-16	2xLIN-11R-16	ϕ16	19	25	50	38.5	32.5	9	36	7	M5 × 12	ϕ4.3	89
LIN-01GL-20	2xLIN-11R-20	ϕ20	21	27	54	41	35	11	40	7	M6 × 12	ϕ5.2	106
LIN-01GL-25	2xLIN-11R-25	ϕ25	26	38	76	51.5	41	12	54	11	M8 × 18	ϕ7	136
LIN-01GL-30	2xLIN-11R-30	ϕ30	30	39	78	59.5	49	15	58	10	M8 × 18	ϕ7	154
LIN-01GL-40	2xLIN-11R-40	ϕ40	40	51	102	78	62	20	80	11	M10 × 25	ϕ8.7	180

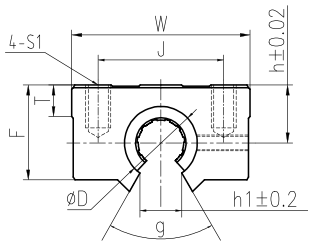
订购编码 Order P/N	内径 I.D mm	I.D 公差 Tolerance mm	极限动载荷 Dynamic Load P=5MPa	极限动载荷 Static Load P=35Mpa	重量（g） Weight
LIN-01GL-16	16	+0.030/-0.088	3456N	24192N	250
LIN-01GL-20	20	+0.030/-0.091	5400N	37800N	318
LIN-01GL-25	25	+0.030/-0.091	8400N	61300N	686
LIN-01GL-30	30	+0.040/-0.110	12240N	85680N	905
LIN-01GL-40	40	+0.040/-0.115	19200N	134400N	2041

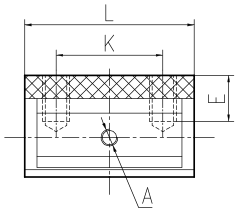
订购编码 Order P/N: LIN-01 GL-16

- 轴承内径 Inner diameter
- 标准设计直线轴承座 Pillow black，Standard design
- LIN-11R 系列直线轴承 LIN-11R Standard Bearings

LIN 系列直线轴承
LIN Series Linear Bearings

LIN-01GK 系列窄设计直线轴承座 LIN-01GK Pillow Block,Short Design





轴 Shaft：h6-h9

订购编码 Drder P/N	安装轴承 Bearing mm	轴径 Shart mm	尺寸 Size(mm)												
			D(H7)	h	W	L	F	h1	T	A	g	J	K	E	S1
LIN-01GK-16	LIN-11RK-16	ф16	28	19	49.7	46.4	32.3	17	11	M5	60°	37	40	15	M5
LIN-01GK-20	LIN-11RK-20	ф20	32	21	54.1	51.3	35.2	17	11.8	M5	60°	41	35	17	M5
LIN-01GK-25	LIN-11RK-25	ф25	40	26	76	66.4	42.2	21	12.5	M6	60°	54	50	20	M6
LIN-01GK-30	LIN-11RK-30	ф30	45	30	78	71.5	49.1	21	15.5	M6	60°	58	55	25	M8

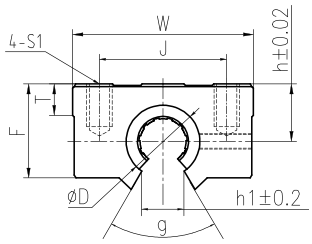
订购编码 Order P/N	内径 I.D mm	I.D 公差 Tolerance mm	极限动载荷 Dynamic Load P=5MPa	极限动载荷 Static Load P=35Mpa	重量（g） Weight
LIN-01GK-16	16	+0.030/-0.088	1728N	12096N	125
LIN-01GK-20	20	+0.030/-0.091	2700N	18900N	159
LIN-01GK-25	25	+0.030/-0.091	4350N	30650N	343
LIN-01GK-30	30	+0.040/-0.110	6120N	42840N	450

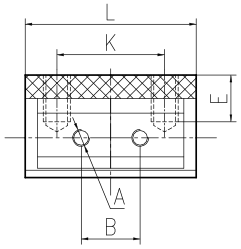
订购编码 Order P/N: LIN-01 GK-16

- 轴承内径 Inner diameter
- 窄设计直线轴承座 Pillow block,short design
- LIN-11RK 系列直线轴承 LIN-11RK Standard Bearings

LIN 系列直线轴承
LIN Series Linear Bearings

LIN-01GKL 系列标准设计直线轴承座 LIN-01GKL Pillow black，Standard design





轴 Shaft：h6-h9

订购编码 Drder P/N	安装轴承 Bearing mm	轴径 Shart mm	尺寸 Size(mm)													
			D(H7)	h	W	L	F	h1	T	A	B	g	J	K	E	S1
LIN-01GKL-16	LIN-11RK-16×2	φ16	28	19	49.7	46.4	32.3	17	11	M5	41	60°	37	70	15	M5
LIN-01GKL-20	LIN-11RK-20×2	φ20	32	21	54.1	51.3	35.2	17	11.8	M5	47	60°	41	80	17	M5
LIN-01GKL-25	LIN-11RK-25×2	φ25	40	26	76	66.4	42.2	21	12.5	M6	63	60°	54	110	20	M6
LIN-01GKL-30	LIN-11RK-30×2	φ30	45	30	78	71.5	49.1	21	15.5	M6	70	60°	58	115	25	M8

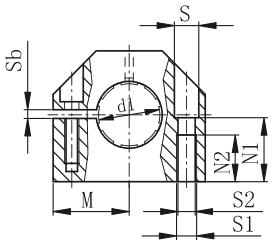
订购编码 Order P/N	内径 I.D mm	I.D 公差 Tolerance mm	极限动载荷 Dynamic Load P=5MPa	极限动载荷 Static Load P=35Mpa	重量（g） Weight
LIN-01GKL-16	16	+0.030/-0.088	3456N	24192N	250
LIN-01GKL-20	20	+0.030/-0.091	5400N	37800N	318
LIN-01GKL-25	25	+0.030/-0.091	8400N	61300N	686
LIN-01GKL-30	30	+0.040/-0.110	12240N	85680N	905

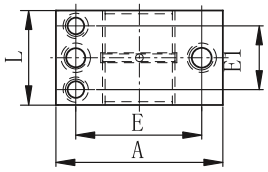
订购编码 Order P/N: LIN-01 GKL-16

- 轴承内径 Inner diameter
- 标准设计直线轴承座 Pillow black，Standard design
- LIN-11RK 系列直线轴承 LIN-11RK Standard Bearings

LIN 系列直线轴承
LIN Series Linear Bearings

LIN-05 高精度直线轴承座 LIN-05 Precision linear bearing

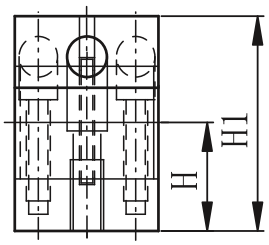




订购编码 Order P/N	轴 Axis mm²	公差 Tolerance mm²	F max. 动态 P=5 MPa	F max. 静态 P=35 MPa	重量 Weight g
LIN-05-12	12	可调	840	5,880	78
LIN-05-16	16	可调	1,200	8,400	106
LIN-05-20	20	可调	1,500	10,500	132
LIN-05-25	25	可调	2,500	17,500	253
LIN-05-30	30	可调	3,750	26,250	374
LIN-05-40	40	可调	6,000	42,000	713
LIN-05-50	50	可调	8,750	61,250	1,168

装配尺寸 Installation size

订购编码 Order P/N	d1	H +0.01 -0.014	H1	A	M	E ± 0.15	E1 ± 0.15	S	S1	S2	Sb	N1	N2	L
LIN-05-12	12	17	33	40	20.0	29	18.0	8.0	4.3	M5	2	16	11	28
LIN-05-16	16	19	38	45	22.5	34	19.0	8.0	4.3	M5	2	18	11	30
LIN-05-20	20	23	45	53	26.5	40	20.0	9.5	5.3	M6	2	22	13	30
LIN-05-25	25	27	54	62	31.0	48	25.5	11.0	6.6	M8	2	29	18	50
LIN-05-30	30	30	60	67	33.5	53	30.5	11.0	6.6	M8	2	29	18	50
LIN-05-40	40	39	76	87	43.5	69	36.0	15.0	8.4	M10	2	38	22	60
LIN-05-50	50	47	92	103	51.5	82	44.0	18.0	10.5	M12	2	46	26	70

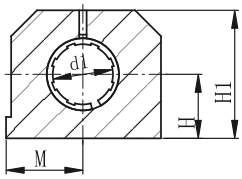


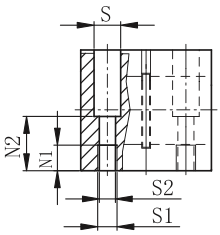
订购编码 Order P/N: LIN-05-12

- 内径 Inner diameter
- 标准开口系列 05 Standard series05

LIN 系列直线轴承
LIN Series Linear Bearings

LIN-06 加长型高精度直线轴承座 LIN-06 Long precision linear bearing

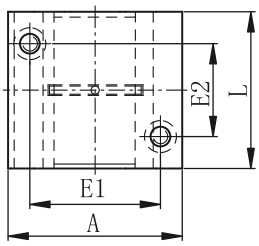




订购编码 Order P/N	轴 Axis mm²	公差 Tolerance mm²	F max. 动态 P=5 MPa	F max. 静态 P=35 MPa	重量 Weight g
LIN-06-12	12	+0.030 +0.088	960	6,720	121
LIN-06-16	16	+0.030 +0.088	1,440	10,080	211
LIN-06-20	20	+0.030 +0.091	2,250	15,750	323
LIN-06-25	25	+0.030 +0.091	3,625	25,375	651
LIN-06-30	30	+0.040 +0.110	5,100	35,700	1,050
LIN-06-40	40	+0.040 +0.115	8,000	56,000	1,820
LIN-06-50	50	+0.050 +0.130	12,500	87,500	3,250

装配尺寸 Installation size

订购编码 Order P/N	d1	H +0.01 -0.014	H1	A	M	E ± 0.15	E1 ± 0.15	S	S1	S2	N1	N2	L
LIN-06-12	12	18	35	43	25.1	32	23	8.0	M5	4.3	16.5	11	39
LIN-06-16	16	22	42	53	26.5	40	26	10.0	M6	5.3	21.0	13	43
LIN-06-20	20	25	50	60	30.0	45	32	11.0	M8	6.6	24.0	18	54
LIN-06-25	25	30	60	78	39.0	60	40	15.0	M10	8.4	29.0	22	67
LIN-06-30	30	35	70	87	43.5	68	45	15.0	M10	8.4	34.0	22	79
LIN-06-40	40	45	90	108	54.0	86	58	18.0	M12	10.5	44.0	26	91
LIN-06-50	50	50	105	132	66.0	108	50	20.0	M16	13.5	49.0	34	113

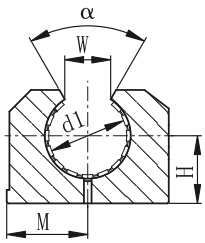


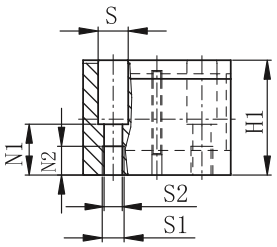
订购编码 Order P/N: LIN-06-12

- 内径 Inner diameter
- 标准开口系列 06 Standard series06

LIN 系列直线轴承
LIN Series Linear Bearings

LIN-06K 加长型高精度直线轴承座 LIN-06K Long precision linear bearing

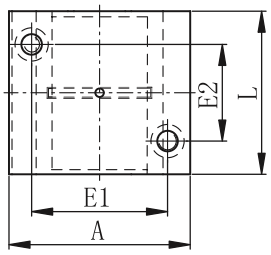




订购编码 Order P/N	轴 Axis mm²	公差 Tolerance mm²	F max. 动态 P=5 MPa			F max. 静态 P=35 MPa			重量 Weight g
			0°	90°	180°	0°	90°	180°	
LIN-06K-12	12	+0.030 +0.088	960	635	240	6,720	4,445	1,680	95
LIN-06K-16	16	+0.030 +0.088	1,440	990	396	10,080	6,943	2,772	158
LIN-06K-20	20	+0.030 +0.091	2,250	1,800	900	15,750	12,600	6,300	266
LIN-06K-25	25	+0.030 +0.091	3,625	2,953	1,523	25,375	20,670	10,658	530
LIN-06K-30	30	+0.040 +0.110	5,100	4,250	2,278	35,700	29,735	15,946	818
LIN-06K-40	40	+0.040 +0.115	8,000	6,810	3,800	56,000	47,660	26,600	1,485
LIN-06K-50	50	+0.050 +0.130	12,500	10,750	6,125	87,500	75,265	42,875	2,750

装配尺寸 Installation size

订购编码 Order P/N	d1	H	H1	A	M	E ± 0.15	E1 ± 0.15	S	S1	S2	N1	N2	w -1	α °	L
LIN-06K-12	12	18	28	43	21.5	32	23	8.0	M5	4.3	16.5	11	10.2	78	39
LIN-06K-16	16	19	35	53	26.5	40	26	10.0	M6	5.3	21.0	13	11.6	78	43
LIN-06K-20	20	22	42	60	30.0	45	32	11.0	M8	6.6	24.0	18	12.0	60	54
LIN-06K-25	25	30	51	78	39.0	60	40	15.0	M10	8.4	29.0	22	14.5	60	67
LIN-06K-30	30	35	60	87	43.5	68	45	15.0	M10	8.4	34.0	22	16.6	57	79
LIN-06K-40	40	45	77	108	45.0	86	58	18.0	M12	10.5	44.0	26	21.0	56	91
LIN-06K-50	50	50	88	132	66.0	108	50	20.0	M16	13.5	49.0	34	25.5	54	113

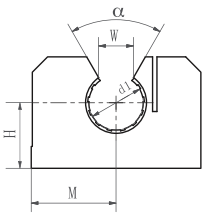


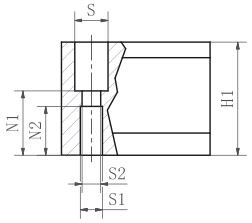
订购编码 Order P/N: LIN -06K-12

- 内径 Inner diameter
- 标准开口系列 06 Standard series05

LIN 系列直线轴承
LIN Series Linear Bearings

LIN-06E 加长型高精度直线轴承座 LIN-06E Long precision linear bearing

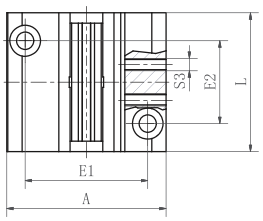




订购编码 Order P/N	轴 Axis mm²	公差 Tolerance mm²	F max. 动态 P=5 MPa			F max. 静态 P=35 MPa			重量 Weight g
			0°	90°	180°	0°	90°	180°	
LIN-06E-12	12	可调	960	635	240	6,720	4,445	1,680	100
LIN-06E-16	16	可调	1,440	990	396	10,080	6,943	2,772	160
LIN-06E-20	20	可调	2,250	1,800	900	15,750	12,600	6,300	270
LIN-06E-25	25	可调	3,625	2,953	1,523	25,375	20,670	10,658	530
LIN-06E-30	30	可调	5,100	4,250	2,278	35,700	29,735	15,946	820
LIN-06E-40	40	可调	8,000	6,810	3,800	56,000	47,660	26,600	1,490
LIN-06E-50	50	可调	12,500	10,750	6,125	87,500	75,265	42,875	2,750

装配尺寸 Installation size

订购编码 Order P/N	d1	H	H1	A	M	E ± 0.15	E1 ± 0.15	S	S1	S2	N1	N2	w -1	α °	L
LIN-06E-12	12	18	28	43	21.5	32	23	8.0	M5	4.3	16.5	11	10.2	78	39
LIN-06E-16	16	19	35	53	26.5	40	26	10.0	M6	5.3	21.0	13	11.6	78	43
LIN-06E-20	20	22	42	60	30.0	45	32	11.0	M8	6.6	24.0	18	12.0	60	54
LIN-06E-25	25	30	51	78	39.0	60	40	15.0	M10	8.4	29.0	22	14.5	60	67
LIN-06E-30	30	35	60	87	43.5	68	45	15.0	M10	8.4	34.0	22	16.6	57	79
LIN-06E-40	40	45	77	108	45.0	86	58	18.0	M12	10.5	44.0	26	21.0	56	91
LIN-06E-50	50	50	88	132	66.0	108	50	20.0	M16	13.5	49.0	34	25.5	54	113

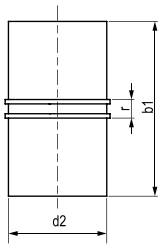


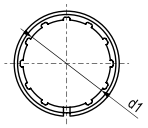
订购编码 Order P/N: LIN-06E--12

- 内径 Inner diameter
- 标准开口系列 06 Standard series05

LIN 系列直线轴承
LIN Series Linear Bearings

LIN-00 系列滑动膜 LIN-00 Series of Sliding Membranes



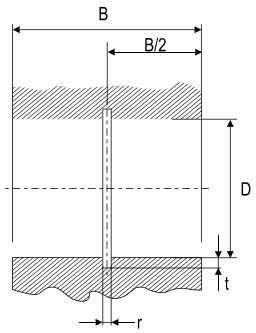


座孔 Housing:H7　轴 Shaft:h6-h9

订购编码 Order P/N	d1 mm²	公差 Tolerance mm²	d2 mm²	b1 mm²	r(-0.1/-0.2) mm²	重量 Weight g
LIN-00-10	10	+0.030/-0.070	12	29	3.0	1.3
LIN-00-12	12	+0.030/-0.070	14	31	3.0	1.6
LIN-00-16	16	+0.030/-0.070	18	35	3.5	2.2
LIN-00-20	20	+0.030/-0.070	23	44	5.0	5.0
LIN-00-25	25	+0.030/-0.070	28	57	5.0	8.0
LIN-00-30	30	+0.040/-0.085	34	67	5.0	15.1
LIN-00-40	40	+0.040/-0.085	44	79	6.0	25.6
LIN-00-50	50	+0.040/-0.085	55	99	7.0	50.6

装配尺寸 Installation size

订购编码 Order P/N	轴径 Shaft mm² h7	D mm² h10	B mm²	r mm²	t mm²
LIN-00-10	10	12	29	3.0	1.0
LIN-00-12	12	14	32	3.0	1.0
LIN-00-16	16	18	36	3.5	1.0
LIN-00-20	20	23	45	5.0	1.0
LIN-00-25	25	28	58	5.0	1.0
LIN-00-30	30	34	68	5.0	1.0
LIN-00-40	40	44	80	6.0	1.5
LIN-00-50	50	55	100	7.0	1.5



配合 LIN-00 系列滑动膜产品系列：
Membranes of the LIN-01 Series are used in:

订购编码 Order P/N:
LIN-00 - 10
- 内径 Inner diameter
- 标准开口系列 01K
  Standard split type 01K

+

SRB 直线导向系统
SRB Linear Guide System

SRB 直线导向系统
SRB Linear Guide System

SBR-G 高精度直线钢轴
Precision Steel Shafts

产品特性 Product Features

- 轴材料 Shaft Material:GCr15
- 硬度 Hardness：62 ± 2HRC
- 表面 Surface: 镀硬铬 Hard Chromed Plated
- 粗糙度 Surface Finish:Ra0.4
- 直线度 Straightness:0.01mm/1000mm
- 圆度 Roundness:≤1/2Φ 公差 Tollerance
- 特殊轴可根据要求定制，请联系我们

Special shafts can be manufactured according to your requirment. Please contact with us.

标准规格 Standard Size Sheet

订购编码 Order P/N	直径 mm^2	公差 Tollerance g6	标准长度 Standard Length（mm^2） 200 300 400 500 600 700 800 900 1000 1200 1500 1800 2000 2500 3000	硬化厚度 Hardening Depth mm^2	重量 Weight kg/m
SBR-G-06	6	-0.004/-0.012	● ● ● ● ● ● ● ● ●	0.80	0.23
SBR-G-08	8	-0.005/-0.014	● ● ● ● ● ● ● ● ● ● ●	0.80	0.40
SBR-G-10	10	-0.005/-0.014	● ● ● ● ● ● ● ● ● ● ● ● ●	1.00	0.62
SBR-G-12	12	-0.006/-0.017	● ● ● ● ● ● ● ● ● ● ● ● ● ● ●	1.00	0.89
SBR-G-16	16	-0.006/-0.017	● ● ● ● ● ● ● ● ● ● ● ● ● ● ●	1.00	1.58
SBR-G-20	20	-0.007/-0.020	● ● ● ● ● ● ● ● ● ● ● ● ● ● ●	1.50	2.47
SBR-G-25	25	-0.007/-0.020	● ● ● ● ● ● ● ● ● ● ● ● ● ● ●	1.50	3.85
SBR-G-30	30	-0.007/-0.020	● ● ● ● ● ● ● ● ● ● ● ● ● ● ●	1.50	5.55
SBR-G-40	40	-0.009/-0.025	● ● ● ● ● ● ● ● ● ● ● ● ● ● ●	2.00	9.87
SBR-G-50	50	-0.009/-0.025	● ● ● ● ● ● ● ● ● ● ● ● ● ● ●	2.00	15.40

订购编码 Order P/N：SBR-G 06- 1000

- 06 — 轴径 Shaft diameter
- 1000 — 长度 Length

SBR-A 高精度铝轴
Precision Steel Shafts

产品特性 Product Features

- 轴材料 EN AW 6061/6060
- 硬度 Hardness：75 HB
- 表面 Surface: 硬质阳极氧化 Hard anodizing
- 表面硬度 Surface hardness：450-550 HV
- 直线度 Straightness:EN 754-3
- 特殊轴可根据要求定制，请联系我们

Special shafts can be manufactured according to your requirment. Please contact with us.

标准规格 Standard Size Sheet

订购编码 Order P/N	直径 mm^2	公差 Tollerance g6	标准长度 Standard Length（mm） 200 300 400 500 600 700 800 900 1000 1200 1500 1800 2000 2500 3000	绝缘厚度 Insulation thickness mm^2	重量 Weight kg/m
SBR-R-06	6	h8	● ● ● ●	-	0.08
SBR-R-08	8	h8	● ● ● ●	-	0.14
SBR-R-10	10	h8	● ● ● ● ●	-	0.22
SBR-R-12	12	h8	● ● ● ● ●	-	0.32
SBR-R-16	16	h8	● ● ● ● ● ● ● ● ●	-	0.56
SBR-R-20	20	h8	● ● ● ● ● ● ● ● ●	-	0.88
SBR-R-20	20	h9	● ● ● ● ● ● ● ● ●	2	0.32
SBR-R-25	25	h8	● ● ● ● ● ● ● ● ●	-	1.37
SBR-R-25	25	h9	● ● ● ● ● ● ● ● ●	3	0.59
SBR-R-30	30	h8	● ● ● ● ● ● ● ● ● ● ●	7.5	1.48
SBR-R-40	40	h8	● ● ● ● ● ● ● ● ● ● ●	10	2.63
SBR-R-50	50	h8	● ● ● ● ● ● ● ● ● ● ● ● ● ●	11	3.75

订购编码 Order P/N：SBR-A- 06- 1000

- 06 — 轴径 Shaft diameter
- 1000 — 长度 Length

SBR 直线支撑轴
Supported Steel Shafts

产品特性 Product Features

- 材料 Material：SCS 高精度直线轴配合铝制支撑
  SCS precision steel shafts with stangardaluminum support
- 高承载 High load
- 高精度 High precision
- 低成本 Low cost
- 特殊轴可根据要求定制，请联系我们

Special shafts can be manufactured according to your requirment. Please contact with us.

标准规格 Standard Size Sheet

订购编码 Order P/N	直径 Φ mm²	公差 Tolerance g6	标准长度 Standard Length mm²	最大长度 Max.Length mm²	N mm²	P mm²	硬化厚度 Hardening Depth mm²	重量 Weight kg/m
SBR-16	16	-0.006/-0.017	190 340 640 940	3000	20	150	1.00	1.58
SBR-20	20	-0.007/-0.020	340 640 940 1240	3000	20	150	1.50	2.47
SBR-25	25	-0.007/-0.020	250 450 850 1250	3000	25	200	1.50	3.85
SBR-30	30	-0.007/-0.020	450 850 1250 1450	3000	25	200	1.50	5.55
SBR-40	40	-0.009/-0.025	460 660 860 1060 1260	3000	30	200	2.00	9.87
SBR-50	50	-0.009/-0.025	470 670 870 1070 1270	3000	35	200	2.00	15.40

订购编码 Order P/N	直径 Φ mm²	尺寸 Size（mm²）										
		E	h	B	H	T	F	X	Y	C	S1	S2 d1 × d2 × 1
SBR-16	16	20	25	40	17.8	5	18.5	8	11.7	30	5.5	5.5 × 9.5 × 5.4
SBR-20	20	22.5	27	45	17.7	5	19	8	10	30	5.5	5.5 × 9.5 × 5.4
SBR-25	25	27.5	33	55	21	6	21.5	8	12	35	6.6	6.6 × 11 × 6.5
SBR-30	30	30	37	60	22.8	7	26.5	10.3	13	40	6.6	6.6 × 11 × 6.5
SBR-40	40	37.5	48	75	29.5	9	38	15.5	17	55	9	9 × 14 × 8.6
SBR-50	50	47.5	62	95	38.8	11	45	20	21	70	11	111 × 7.5 × 10.8

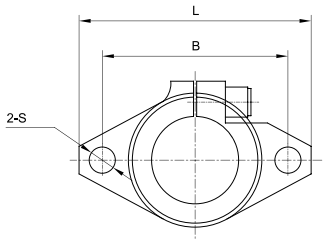
订购编码 Order P/N：

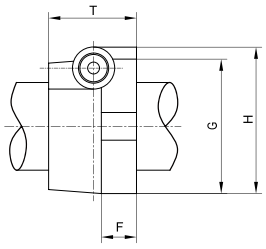
SCS- 06- 1000

- 06 — 轴径 Shaft diameter
- 1000 — 长度 Length

LIN 系列直线轴承
LIN Series Linear Bearings

SHF 法兰系列轴支撑 SHF shaft end block，Flange design





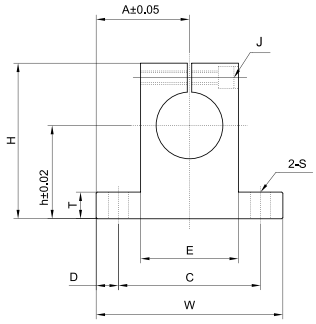
订购编码 Order P/N	轴径 Shaft mm^2	尺寸 Size（mm^2）							安装螺栓 Fitting screws	安全螺栓 Safety screws	重量（g） Weight
		L	T	F	B	G	H	S			
SHF-10	10	43	10	5	32	20	24	5.5	M5	M4	13
SHF-12	12	47	13	7	36	25	28	5.5	M5	M4	20
SHF-16	16	50	16	8	40	28	31	5.5	M5	M4	27
SHF-20	20	60	20	8	48	34	37	7	M6	M5	40
SHF-25	25	70	25	10	56	40	42	7	M6	M5	60
SHF-30	30	80	30	12	64	46	50	9	M8	M6	110
SHF-40	40	102	40	16	80	56	67	12	M10	M10	510
SHF-50	50	122	50	19	96	70	83	14	M12	M12	890

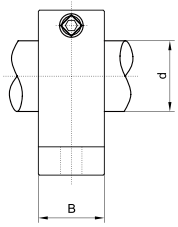
订购编码 Order P/N：SHF- 06

- 06：轴径 Shaft diameter
- SHF：法兰设计轴支撑 Shaft end block,Flange design

LIN 系列直线轴承
LIN Series Linear Bearings

SH 系列窄设计直线轴承座 SH Pillow block,Short design





订购编码 Order P/N	轴径 Shaft mm²	尺寸 Size（mm²）											重量（g） Weight
		h	A	W	H	T	E	D	C	B	S	J	
SH-10	10	20	21	42	32.8	6	18	5	32	14	Φ5.5	M4	24
SH-12	12	23	21	42	37.5	6	20	5	32	14	Φ5.5	M4	30
SH-16	16	27	24	48	44	8	25	5	38	16	Φ5.5	M4	40
SH-20	20	31	30	60	51	10	30	7.5	45	20	Φ6.6	M5	70
SH-25	25	35	35	70	60	12	38	7	56	24	Φ6.6	M6	130
SH-30	30	42	42	84	70	12	44	10	64	28	Φ9	M6	180
SH-40	40	60	57	114	96	15	60	12	90	36	Φ11	M8	420
SH-50	50	70	63	126	120	18	74	13	100	40	Φ14	M12	750

订购编码 Order P/N：SH - 06

- 06：轴径 Shaft diameter
- SH：标准设计轴支撑 Shaft end block,Standard design

JDB 固体润滑轴承
JDB Solid-lubricating Bearings

JDB 固体润滑轴承
JDB Solid-lubricating Bearings

GB 塑料滚动轴承
GB Plastic Rolling Bearings

产品特性 Product Features

GDB 系列塑料滚动轴承内外圈以及保持架均采用优质工程塑料制成，滚珠材料为不锈钢（选配）、玻璃、陶瓷等，GDB 系列塑料滚动轴承具有良好的自润滑性能和耐磨腐蚀性能突出的是比 EP 系列塑料滚动轴承具有极其高的运行速度，GDB 系列轴承弥补了 EP 系列轴承不能在高速运动使用的场合。

GDB series plastic rolling bearing is made of high quality engineering plastic. The balls are Stainless steel,Glass,Ceramics materias. This series of bearing are with perfect self-lubircating feature and anti-corrosion feature. Comparing with the normal EP series plastic bushings, the GDB series plastic rolling bearing are suitable to be applied under high speed and therefore meet the high speed application that normal EP is not workable.

GB10 全塑料直线轴承 Plasic Linear Bearings

GDB10 作为通用性最强的塑料滚动轴承具有良好的强度和耐磨性，由于其材料自身的润滑性噪音较低；此类轴承碱性环境下表现良好但不适合在酸性环境下长期运行。标准配置内外圈材料为：改良 POM，保持架材料为：改良 PA，滚珠材料为：玻璃球或不锈钢（选配）；长期连续使用温度 -40~+80℃。

GDB10 has good stength and wear resistance as a generic plastic rolling bearing, the operation nosie very low because the self-lubrication of the material; these bearings perform well in an alkaline environment but not for long-term operation in an acidic environment. The standard material of inner and outer ring: POM,cage material: PA,ball material: glass or stainless steel; The long-term operation temperature:-40~+80℃。

GB20 塑料滚动轴承 Series plastic rolling Bearings

GDB20 塑料滚动轴承具有低摩擦以及低温应用特性；此类轴承适合在酸碱交替坏境下长期运行。标准配置内外圈材料为：改良 UPE，保持架材料为：改良 UPE，滚珠材料为：玻璃球或不锈钢（选配）；长期连续使用温度 -150~+120℃。

GDB20 series of plastic rolling bearing with low working temperature properties;these bearings are suitable for long-term operation in the acid-base alternate environment.The standard material of inner and outer ring: UPE, cage material: UPE, ball material: glass or stainless steel; The long-term operation temperture:-100~+150℃ .

GB 塑料滚动轴承
GB Plastic Rolling Bearings

GB30 塑料滚动轴承 Series plastic rolling Bearings

GDB30 系列塑料滚动轴承具有耐高低温、高承载以及最好的抗腐蚀性能；可应用在强酸、强碱、无机、有机盐、海水等领域。标准配置内外圈材料为：陶瓷；保持架材料为：改良 PTFE 或改良 PEEK；滚珠材料：陶瓷；长期连续使用温度 -200~+250℃。

GDB30 series of plastic rolling bearing can work under very high temperture and low temerature.These bearings with high load and the best corrision resistance;these bearings are good working under acid, alkaline, organic and inorganic salt as in sea water environments; The standard material of inner and ouer ring: Ceramics, cage material: PTFE or PEEK, ball material: Ceramics; The long-term operation temperture; -200~+250℃ .

GB40 塑料滚动轴承 Series plastic rolling Bearings

GDB40 系列塑料滚动轴承具有极好的机械强度和耐磨性能，此产品能在 150 度的高温下正常使用，并具有极好的抗腐蚀性能几乎在所有的腐蚀环境下运行；标准配置内外圈材料为：改良 PEEK；保持架材料为：改良 PEEK，滚珠材料为：陶瓷；长期连续使用温度 -100~+150℃。

GDB40 series of plastic rolling bearing has excellent mechanical strength and wear resistance, Max. operation temperature 150 ℃ , these bearings has excellent corrosion resistance to almost all corrosive environment; The standard material of inner and ouer ring: PEEK, cage material: PEEK,ball material:Ceramics; The long-term operation temperture: -100~+150℃ .

GB50 塑料滚动轴承 Series plastic rolling Bearings

GDB50 系列塑料滚动轴承具有耐高低温、高承载以及最好的抗腐蚀性能；可应用在强酸、强碱、无机、有机盐、海水等领域。标准配置内外圈材料为：陶瓷；保持架材料为：改良 PTFE 或改良 PEEK；滚珠材料：陶瓷；长期连续使用温度 -200~+250℃。

GDB50 series of plastic rolling bearing can work under very high temperture and low temerature.These bearings with high load and the best corrision resistance;these bearings are good working under acid,alkaline,organic and inorganic salt as in sea water environments;The standard material of inner and ouer ring: Ceramics, cage material: PTFE or PEEK,ball material:Ceramics;The long-term operation temperture;-200~+250℃ .

GB 滚动轴承尺寸规格表
GB Rolling Bearings Dimensions Table

订购编码 Order P/N	d mm²	D mm²	B mm²	极限静载荷 Max.static load N	极限动载荷 Max.dynamic load N	极限转速 Max.speed RPM
GB10-623	3	10	4	25	40	4050
GB10-624	4	13	5	35	50	3240
GB10-625	5	16	5	40	55	2745
GB10-626	6	-	6	40	60	2340
GB10-607	7	19	6	35	50	2340
GB10-627	7	22	7	45	65	1980
GB10-608	8	22	7	45	65	1980
GB10-609	9	24	7	50	75	1845
GB10-629	9	26	8	60	85	1710
GB10-6000	10	26	8	75	110	1710
GB10-6200	10	30	9	110	140	1485
GB10-6300	10	35	11	160	235	1260
GB10-6001	12	28	8	90	135	1575
GB10-6201	12	32	10	125	180	1395
GB10-6301	12	37	12	175	260	1170
GB10-6002	15	32	9	110	160	1395
GB10-6202	15	35	11	140	210	1260
GB10-6302	15	42	13	215	310	1080
GB10-16002	15	32	8	110	160	1350
GB10-6003	17	35	10	140	200	1260
GB10-6203	17	40	12	180	265	1125
GB10-6303	17	47	14	250	375	945
GB10-16003	17	35	8	135	200	1260
GB10-6004	20	42	12	165	250	1080
GB10-6204	20	47	14	225	350	945
GB10-6304	20	52	15	290	440	855
GB10-16004	20	42	8	160	240	1035
GB10-6005	25	47	12	200	300	945
GB10-6205	25	52	15	265	400	855
GB10-6305	25	62	17	330	500	655
GB10-16005	25	47	8	175	260	945
GB10-6006	30	55	13	235	350	810
GB10-6206	30	62	16	300	450	720
GB10-6306	30	72	19	380	580	610
GB10-16006	30	55	9	200	310	810
GB10-6007	35	62	14	265	400	720
GB10-6207	35	72	17	340	515	630
GB10-6307	35	80	21	405	625	540
GB10-16007	35	62	9	240	350	720
GB10-6008	40	68	15	290	430	675
GB10-6208	40	80	18	365	550	560
GB10-6308	40	90	23	455	690	468
GB10-16008	40	68	9	250	375	675
GB10-6009	45	75	16	315	465	585
GB10-6209	45	85	19	390	600	522
GB10-6309	45	100	25	450	750	450
GB10-16009	45	75	10	275	415	585
GB10-6010	50	80	16	325	480	540
GB10-6210	50	90	20	450	640	495
GB10-6011	55	90	18	335	500	495
GB10-6211	55	100	21	500	665	450
GB10-6012	60	95	18	350	530	450
GB10-6212	60	110	22	525	730	405
GB10-6013	65	100	18	365	555	430
GB10-6014	70	110	20	380	590	405

设计资料

DESIGN DATA

轴承 PV 值
PV value of the bushing

定义 Definition

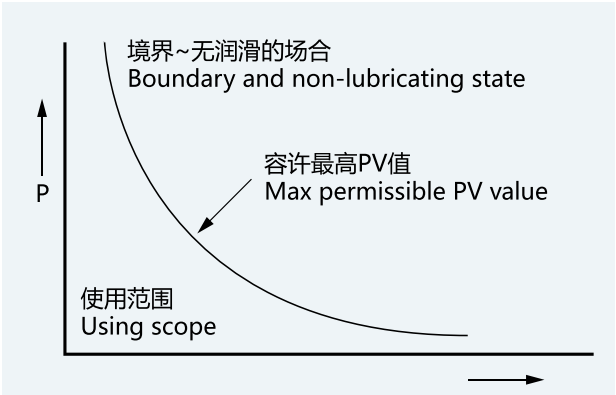
○ 负载压力 P: 定义为负荷除以轴承承受面的正投影面积（单位：N/mm2);
○ 运转速度 V：定义为对偶面上的相对线速度（单位：m/s）；
○ PV 值：定义为轴承压力 P 和速度 V 的乘积（单位：N/mm·m/s）；
○ 容许最高 PV 值：< 容许最高压力 P × 容许最高速度 V（单位：N/mm2·m/s）。

○ Load Pressure P:Load pressure equals to the result gained by making the value of load pressure divide the vertical shade projected by the load-shouldering surface of the bushing (Unit: N/mm).
○ Running Velocity V: Defined running velocity as the relative linear velocity against the mating surface (Unit: N/mm).
○ PV Value:Define PV value as the result gained by multiplying the load value P and the velocity V (Unit: N/mm·m/s).
○ permissible PV value:Max permissible value shall be smaller than the value gained by multiplying the max permissible pressure and the max permissible velocity. (Unit: N/mm·m/s).

容许最高 PV 值 Max permissible PV value

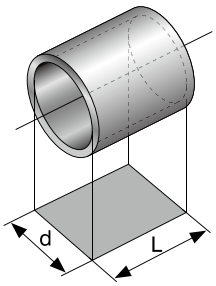
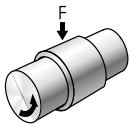
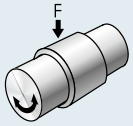
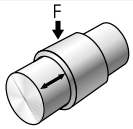
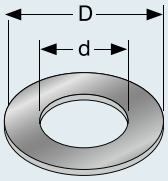
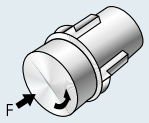
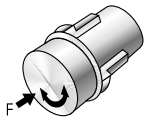
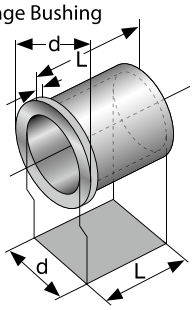
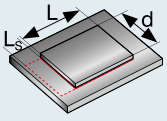
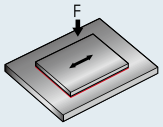
PV 值达到极限值时，轴承可以短时间的运转。在连续的运转时，容许最高 PV 值的选择取决于运转寿命的要求。设计时要求：容许最高 PV 值 < 容许最高压力 P* 容许最高速度 V。见右图：

The bushing can run for a short time when achieves its max PV value. It's the running service life requirement that decides the requirement for the value. In bushing design, we require that the max permissible PV value shall be smaller than the value gained by multiplying the max permissible load pressure and the max permissible running velocity.



容许最高 PV 值
Max permissible PV value

轴承 PV 值
PV value of the bushing

轴套 BUSHING		压力 PRESSURE, P PN/mm² {kgf/cm²}	速度 VELOCITY, V m/s {m/min}	PV值 PV Value N/mm²*m/s {kgf/cm²*m/min}
直套 Sleeve Bushing 	1.径向单向旋转 Rotating motion in single direction of radial journal 	$\frac{F}{dL}$ $\left\{\frac{10^2F}{dL}\right\}$	$\frac{\pi dn}{10^3}$ $\left\{\frac{\pi dn}{10^3}\right\}$	$\frac{\pi Fn}{10^3L}$ $\left\{\frac{\pi Fn}{10L}\right\}$
	2.摇摆运动 Oscillating motion 	$\frac{F}{dL}$ $\left\{\frac{10^2F}{dL}\right\}$	$\frac{dC\theta}{10^3}$ $\left\{\frac{\pi dc\theta}{180\times10^3}\right\}$	$\frac{FC\theta}{10^3L}$ $\left\{\frac{\pi Fc\theta}{180\times10^2L}\right\}$
	3.往复运动 Reciprocating motion 	$\frac{F}{dL}$ $\left\{\frac{10^2F}{dL}\right\}$	$\frac{2cS}{10^3}$ $\left\{\frac{2cS}{10^3}\right\}$	$\frac{2FcS}{10^3dL}$ $\left\{\frac{FcS}{5dL}\right\}$
止推垫片 Thrust Washer 	1.旋转 Rotating motion 	$\frac{4F}{\pi(D^2-d^2)}$ $\left\{\frac{400F}{\pi(D^2-d^2)}\right\}$	$\frac{\pi Dn}{10^3}$ $\left\{\frac{\pi Dn}{10^3}\right\}$	$\frac{4FDn}{10^3(D^2-d^2)}$ $\left\{\frac{4FDn}{10(D^2-d^2)}\right\}$
	2.摇摆运动 Oscillating motion 	$\frac{4F}{\pi(D^2-d^2)}$ $\left\{\frac{400F}{\pi(D^2-d^2)}\right\}$	$\frac{DC\theta}{10^3}$ $\left\{\frac{\pi Dc\theta}{180\times10^3}\right\}$	$\frac{4FDC\theta}{10^3\pi(D^2-d^2)}$ $\left\{\frac{4FDc\theta}{180\times10(D^2-d^2)}\right\}$
翻边轴套 Flange Bushing 	1.直套 Sleeve Bushing	翻边直套承载计算用上述直套承载计算公式，但 L=l+t。 Use above formulas for sleeve bushing (L=l+t)	翻边直套轴速度计算用上述直套速度计算公式。 Use above formulas for sleeve bushing	翻边直套轴PV值计算用上述直套PV值计算公式。 Use above formulas for sleeve bushing
	2.法兰面 Flange surface	翻边法兰面承载计算按上述垫片承载计算公式。 Use above formulas for thrust whsher	翻边法兰面速度计算按上述垫片计算公式。 Use above formulas for thrust whsher	翻边法兰面PV值计算按上述垫片PV值计算公式。 Use above formulas for thrust whsher
滑块 Slide Plate 	1.往复运动 Reciprocating motion 	$\frac{F}{BL}$ $\left\{\frac{10^2F}{WL}\right\}$	$\frac{2cS}{10^3}$ $\left\{\frac{2cS}{10^3}\right\}$	$\frac{2FcS}{10^3BL}$ $\left\{\frac{FcS}{5WL}\right\}$

F ：承载 ····· N {kgf}
N ：转速 ····· S-1{rpm}
c ：往复圆周速度或摇摆 ····· S-1{cpm}
S ：往复运动距离 ····· m {mm²}
θ ：摇摆角度 ····· rad { }
d ：轴套内径 ····· mm² {mm²}
D ：轴套外径 ····· mm² {mm²}
L ：轴套长度 ····· mm² {mm²}
W ：板材或滑动宽度 ····· mm² {mm²}

轴承的尺寸设计
Design of the bushing's dimension

轴承内径 Inside diameter of the bushing

轴承内径，一般由配合轴的轴径所决定。

Generally, the inside diameter of the bushing depends on the diameter of its mating axis.

轴承长度 Length of the bushing

轴承的长度由轴承面压决定。长度越长，其所承受的面压相对减少，轴承负载较轻，但此时可能造成偏位接触，或冷却效果降低，导致轴承寿命减短，故对此情况特别注意；相反的，轴承长度太短时，润滑油很快从轴承面流出，因此很难形成油膜，轴承性能即降低。一般地，轴承长度 / 轴承内径 L/d=0.5 ~ 3，但须特别注意在高负荷重时，易引起偏位接触，高速时易引起的发热情形，此种条件宜取 L/d<1.0 较适当。

The length of the bushing depends on the size of the pressure-shouldering surface. The longer the bushing, the less pressure at the surface, for the longer bushing, the load on the bushing is relatively lessened. But simultaneously, it may result in deviation contact or lower cooling efficiency and thus shorten the service life of the bushing. On the contrary, if the length of the bushing is too short, lubricating grease may quickly flow out of the bushing. Therefore, it hardly forms a grease film and capability of the bushing is accordingly debased.

(L/d 对轴承影响的比较表，特别是含油轴承)

A comparison of L/d's effect on the bushings, especially oil lubricating bushings

短轴承（d>L)Short bushing（d>L)	比较条件 Comparison items	长轴承（d<L)Long bushing（d<L)
小 Small	油膜压力 Force on the oil film	大 Great
多 Strong	冷却能力 Cooling ability	少 Weak
不能太大 Can not be too high	面压 Surface pressure	可取大值 Can be high
高 High	轴承偏位荷重的安全性 Safety against beating deviation	低 Low
小 Weak	轴承的刚性 Bushing rigidity	大 Strong
小 Week	吸振能力 Shock absorbing ability	大 Strong
小 Small	空间 Space	大 Large

轴承壁厚 Bushing thickness

标准自润滑复合轴承，壁厚小为其主要优点之一，标准壁厚为 0.5mm, 0.75mm, 1.0mm, 1.5mm, 2.0mm, 2.5mm。

非标滑动轴承，在设计轴承厚度时，主要参考数据厚径比：SB/D。

A) 薄壁金属滑动轴承，厚径比 SB/D=0.03 ~ 0.06

B) 厚壁金属滑动轴承，厚径比 SB/D=0.08 ~ 0.12

C) 塑料树脂滑动轴承，厚径比 SB/D=0.1 ~ 0.15

The main advantage of standard composite self-lubricating bushings rest with their thin wall thickness. Standard thickness can be 0.5mm, 0.75mm, 1.0mm, 1.5mm, 2.0mm, 2.5mm.

In thickness design of the non-standard gliding bushing, the designer could consult the following proportion of SB and D.

A) For thin wall thickness gliding metallic bushing, proportion between SB and D equals to 0.03 ~ 0.06.

B) For thin wall thickness gliding metallic bushing, proportion between SB and D equals to 0.08 ~ 0.12

C) For plastic gliding bushing, proportion between SB and D equals to 0.1 ~ 0.12

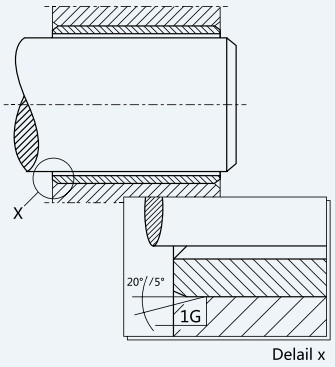
相配座孔的设计
Design of the matinghousing

直轴承 Cylindrical bushing

相配座孔应倒角 fG × 20o ± 5o，fG 的大小根据座孔直径 dH。

For cylindrical bushing, its mating housing must be chamfered according to the formula:
fG × 20o ± 5. Value of fG depends on dH, the diameter of the housing.

座孔直径 Diameter of the housing dH	倒角尺寸 Chamfered fG
dH≤30	0.8 ± 0.3
30<dH≤80	1.2 ± 0.4
80<dH≤180	1.8 ± 0.8
180<dH	2.5 ± 1.0

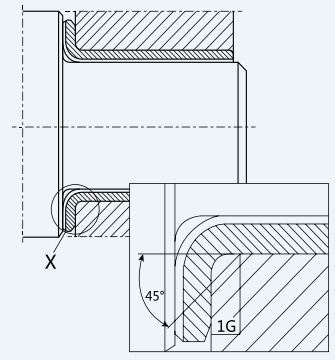


翻边轴承 Flanged bushing

对于翻边轴承相配座孔，座孔要求提供足够大的倒角以防止翻边轴承翻边半径处的变形。相配座孔倒角 fG × 45o ± 5°

As to the housing mating for flanged bushings, it requires the housing being chamfered big enough to avoid the deformation at the flanged circle. The housing mating shall be chamfered according to the formula: fG × 45o ± 5°

座孔直径 Diameter of the housing dH	倒角尺寸 Chamfered fG
dH≤10	1.2 ± 0.2
10<dH	1.7 ± 0.2



轴承倒角 Bushing Chamfer

为了便于相配轴的安装和避免轴承产生偏位负荷。轴承长度方向内外必须倒角，倒角尺寸如下所示：

In order to make fixing easier and avoid deviation load, the bushing must be inner and outer chamfered in the direction of its length. Dimension of the chamfer are showing in the following form.

2.5 壁厚 Wall thickness	外倒角尺寸 Out Chamfer Dimension	内倒角尺寸 Inner Chamfer Dimension
≤0.5	去毛刺 Burr polished	去毛刺 Burr polished
0.75	0.5 ± 0.3 × 20°	0.3+0.2 × 45°
1.0	0.6 ± 0.3 × 20°	0.3+0.2 × 45°
1.5	0.6 ± 0.3 × 20°	0.4+0.2 × 45°
2.0	1.2 ± 0.3 × 20°	0.6+0.2 × 45°
2.5	1.8 ± 0.3 × 20°	0.6+0.2 × 45°

相配轴的设计
Design of the mating axis

直套安装 Straight set of installation

自润滑轴承的性能在很大程度上受相配轴材料表面粗糙度、硬度、表面是否电镀处理的影响，高质量的相配轴表面能够延长轴承的寿命，相反粗糙的相配轴表面会降低轴承的寿命。

Surface roughness, hardness and plating of the mating axis will have great influence on the capability of the self-lubricating bushing. High-quality surface of the mating axis can prolong the life of the bushing while rough surface will shorten the life of the bushing.

相配轴表面粗糙度 Surface roughness of the mating axis

a) 在流体润滑条件下使用的自润滑轴承，相配轴表面粗糙度大时，轴与轴承的凸起部分会切断油膜，造成两者直接接触，所以要求相配轴表面做镜面加工，从而尽可能缩小油膜间隙，使其接近流体润滑的状态，如此轴承性能便可提高。

a) When self-lubricating bushings being used in the condition of fluid lubrication and the surface of the mating axis is faily rough, the convex points on the bushing and its axis will cut the oil film and thus the surface of the axis and the bushing will directly contact with each other. therefore, to improve the capability of the bushing, it requires polishing the surface of the mating axis as smooth as a mirror, thus can reduce the clearance of the oil film and make the film work well.

b) 大多数自润滑轴承在干摩擦或边界润滑条件下使用，不需要像流体润滑条件下那样要求相配轴表面做镜面加工，只要控制其相配轴表面粗糙度 Ra=0.32 ~ 1.25 的范围即可。

b) For most self-lubricating bushings applied in the condition of dry friction or marginal lubrication,a controlled roughness from 0.32 to 1.25 is acceptable and there is no need to polish the surface of the mating axis as smooth as a mirror.

相配轴硬度 Hardness of the mating axis

无硬性杂质侵入时，使用下表推荐的轴材料及硬度，即可得到良好的效果；相反地，尽可能使用硬度较高的相配轴材料。

If there is no hard article in the lubricating condition, good performance can be achieved by using bushing materials and hardness recommended in the following form. If not, it would be better to use the harder material for the mating axis.

	轴材质 Material quality of the axis	硬度 Hardness
自润滑轴承 Self-lubricating bushing	SS41(Q255B) 一般结构钢 Common Structural steel	HB220 以上 Above 220
	S25C(25#) 以上碳素结构钢 Carbon Structural Steel	左列轴材质的硬度依此类推
	SUS、SUH 耐腐蚀性钢（高温·水中用）镀铬钢等 SUS、SUH anti-erosion steel(in high temperature and water), and chrome plated steel,etc.	

在高负荷、摇摆运动的条件下，必须将相配轴进行热处理，热处理后的硬度依据材料类推。

Under running condition with heavy load and rapid swing, the mating axis must be heat-treated. The after treatment hardness will be decided by the material of the axis.

相配轴的设计
Design of the mating axis

相配轴表面处理 Surface treatment of the mating axis

相配轴表面处理的目的在于：

a) 提高耐腐蚀性

b) 提高表面硬度

c) 使表面平滑，提高润滑性。

Aim of this treatment:

a) Improve anti-erosion quality

b) Strengthen surface hardness

c) Smooth the surface and enhance lubricating capability

在相配轴上电镀，可提高其耐腐蚀性，而且有效的降低粗糙摩耗，以及提高润滑性等; 相配轴生锈时，所产生的硬氧化物与异物侵入，同样是摩耗原因之一，因此，建议使用者在相配轴上镀硬铬。若在海水中等类似的腐蚀条件下，相配轴必须电镀上二至三层硬铬。

If the mating axis was plated, it can not only improve the anti-erosion capability but also will enhance the lubricating capability, as with a plated coating, friction can be effectively decreased. Hard oxides and other impurities caused by the axis rust constitute one of the main abrasion causes. Therefore, we recommend the user to have the mating axis chrome plated. If the bushings are going to be used in sea water or similar erosive conditions, their mating axis must be chrome plated for 2 or 3 layers.

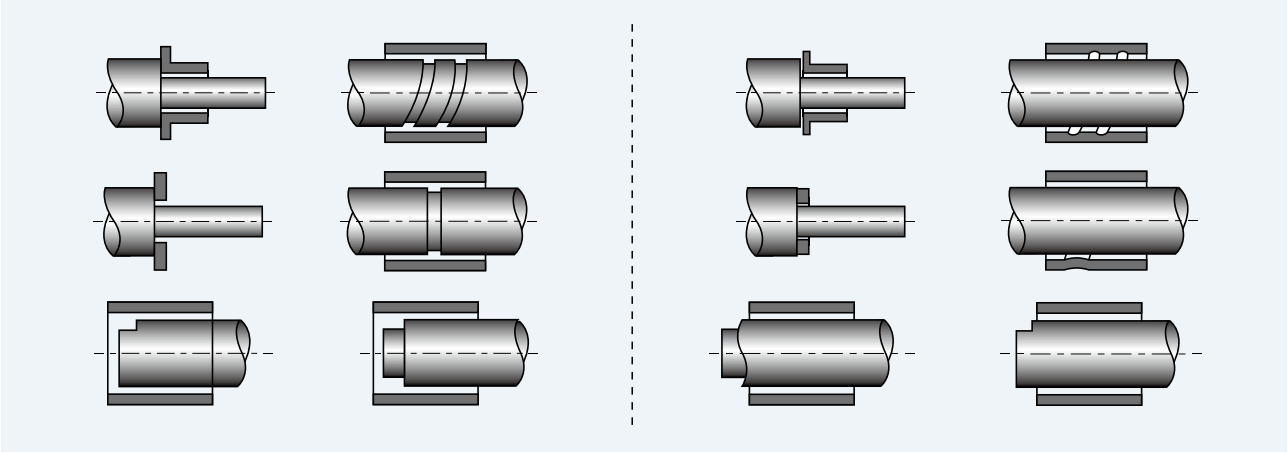
相配轴的机构设计 Structural design of the mating axis

相配轴表面粗糙、尖角毛刺、沟槽会损坏滑动层，如下图所示：

Surface roughness and keen-edged burrs or dents on the surface of the mating axis will destroy the gliding layer. Please see the following illustration for the qualified mating axis.

不正确的相配轴结构
Qualified

正确的相配轴结构
Unqualified



轴承使用寿命的计算
Calculation for the service life of bushing

自润滑轴承的寿命，除激烈的烧焦情况外，通常是以轴承内径的磨耗来决定的。自润滑轴承在干摩擦状态、边界润滑、流体润滑状态下使用，其磨耗情形有很大差异。决定自润滑轴承寿命主要因素有：负载特性及方向、润滑条件、运转速度、环境温度、相配轴硬度、对偶面的粗糙度、相配轴材料、周围空气（气体）的性质等，所以通过计算来求取确切的磨耗量是非常困难的。

With the exception of being burnt, the service life of self-lubricating bushing depends on the abrasion degree of the bushing's inner diameter. In conditions like dry friction, boundary lubrication and oil lubrication, the abrasion of the same bushing will be different. Main factors that may influence the service life are: character and direction of the load, lubrication condition, running speed, environment temperature, hardness of the mating axis, roughness of the mating surface, material of the mating axis, air quality around etc. Therefore, it's difficult to calculate the actual abrasion quantity.

在不考虑速度及负荷对轴承的影响、轴承运动方向的差异、润滑的种类、配合间隙的大小、表面粗糙度及杂志渗入程度 --- 等等因素，可以给出磨耗量 W 计算的经验公式：

Regardless the factors like influence from the load and speed, difference caused by running direction, kinds of lubricating oil, mating clearance, roughness and impurities penetration degree, the abrasion W can be calculated by the following formula.

$W=K\cdot P\cdot V\cdot T \quad (mm^2)$

P: 负载压力 Load pressure(N/mm^2)

V: 运转速度 Running velocity(m/s)；

K: 摩耗系数 Abrasion coefficient(mm^2/ ($N/mm^2\cdot$ m/s· Hr))

T: 运转时间 Running time (Hr)

不同润滑条件下，实验所得的摩耗系数 K 值见下表：

Abrasion coefficient K gained under different lubrication conditions in the laboratory. Consult the following form for K value.

润滑条件 Lubrication conditions $mm^2/(N/mm^2\cdot m/s\cdot Hr)$	
无润滑（干摩擦）Non-lubrication(dry friction)	3×10^{-3} ~ 6×10^{-4}
定期润滑（边界润滑）Periodical lubrication(marginal lubrication)	3×10^{-4} ~ 6×10^{-5}
油润滑（流体润滑）Oil lubrication(fluids lubrication)	3×10^{-5} ~ 6×10^{-6}

轴承装配过盈量的计算
Calculation of interference for bushing fixing

轴承压入座孔前：轴承外径 > 座孔内径。这种过盈装配后，在座孔里面产生较强的应力，使轴承内圆保证有较高的圆度，又能更好地固定住轴承，防止轴承在座孔内打滑磨损。过盈量的计算按下列公式：

Before the bushing is pressed into the housing: as the outside diameter of the bushing is bigger than the inside diameter of the housing, strong pressure can be available in the housing. And also this kind of fixing can assure the roundness of the bushing and make the bushing well fixed, avoiding abrasion caused by sliding of the bushing in the housing. The interference can be calculated by the following formula:

○ 过盈量最小值 б min= 轴承外径最小值 Dmin- 座孔内径最大值 DHmax

○ 过盈量最大值 б max= 轴承外径最大值 Dmax- 座孔内径最小值 DHmin

○ Min interference = Min OD of the bushing- Max ID of the housing

○ Max interference = Max OD of the bushing- Min ID of the housing

轴承装配后内径的计算
Calculation of the after-fixing inside diameter of the bushing

假设忽略装配后座孔的膨胀量。装配后轴承计算按下列公式：

Afer bushing mounting, providing that there is no expansion of the housing, the calculation can be carried out by the following formula.

○ 轴承内径最小值 dmin= 座孔内径最小值 Dmin-2× 轴承壁厚最大值 S

○ 轴承内径最大值 dmax= 座孔内径最大值 Dmin-2× 轴承壁厚最小值 S

○ Min ID of the bushing d=Min ID of the housing D-2 × Max thickness of the bushing S

○ Max ID of the bushing d=Min ID of the housing D-2 × Min thickness of the bushing S

轴承装配后配合间隙的计算
Clearance calculation after bushing fixing

轴承装配后，轴承的内径和轴之间保证合理的间隙是非常有必要的。配合间隙的计算按下列公式：

It's necessary to have an approptiate clearance between the inner surface of the bushing and the axis after bushing mounting. The matching clearance can be calculated by the following formula:

○ 间隙最小值△ min= 装配后轴承内径最小值 d min- 轴径最大值 dj max

○ 间隙最大值△ max= 装配后轴承内径最大值 d max- 轴径最小值 dj min

○ Min clearance △ min=Min ID of the bushing after fixing d min-Max diameter of the axis djmax

○ Max clearance △ max=Min ID of the bushing after fixing d max-Min diameter of the axis djmin

轴承的装配
Bushing fixing

装配时压入力 F 的计算公式
Formula for calculation the pressing-in force when fix the bushing

$$F=0.9\cdot t\cdot b\cdot \triangle \cdot \frac{б}{D} Б\ (N)$$

t: 除去复合层后基本的厚度 (mm^2)

b: 轴承高度 (mm^2)

△ : 应力系数 =1.9 × 105（ N/mm^2)B

б max: 过盈量 (mm^2)

D: 轴承外径 (mm^2)

< 注 >：此时轴承外圆与座孔内圆之间的摩擦系数通常在 0.15 左右。

举例说明：

KDB100 2015(标准产品) 压入 ϕ 23 +0.021 0 的座孔，求此时的压入力 F 大小。

计算：

知壁厚 SB=1.5mm^2，复合层厚 0.3mm^2，基体厚度 t=1.5-0.3=1.2mm^2；轴承高度 b=15；轴承外径 D=23mm^2; 过盈量 б min=0.014mm^2，过盈量 б max=0.075mm^2。

t: Thickness of the bushing after polymer laymers had removed(mm^2)

b: Height of the bushing(mm^2)

△ : Stress coefficient=1.9 × 105（ N/mm^2)B

б max: interference(mm^2)

D: OD of the bushing (mm^2)

Note: In this case, value of friction coefficient between the bushing backing and the Housing is around 0.15.

Case illustrtion

Calculating the pressing-in force F used to press KDB100 2015(standard)the housing ϕ 23+0.021 0

Calculation:

Pre-known: Wall thickness S=1.5mm2, thickness of the polymer layer=0.3mm^2, thickness of the base plate t=1.5-0.3=1.2mm^2; height of the bushing b=15; OD of the bushing D=23mm^2, surplus=0.014mm^2, surplus=0.075mm^2

$$Fmin=0.9\cdot t\cdot b\cdot \triangle \cdot \frac{б\ max}{D}=0.9\times 1.2\times 15\times 1.9\times 105\times \frac{0.014}{23}(N)\approx 1880(N)$$

$$Fmax=0.9\cdot t\cdot b\cdot \triangle \cdot \frac{б\ max}{D}=0.9\times 1.2\times 15\times 1.9\times 105\times \frac{0.075}{23}(N)\approx 10040(N)$$

所以，安装时压入力 F=1880 ~ 10040 N。

Therefore, the pressing in force for fixing F=1880 ~ 10040 N

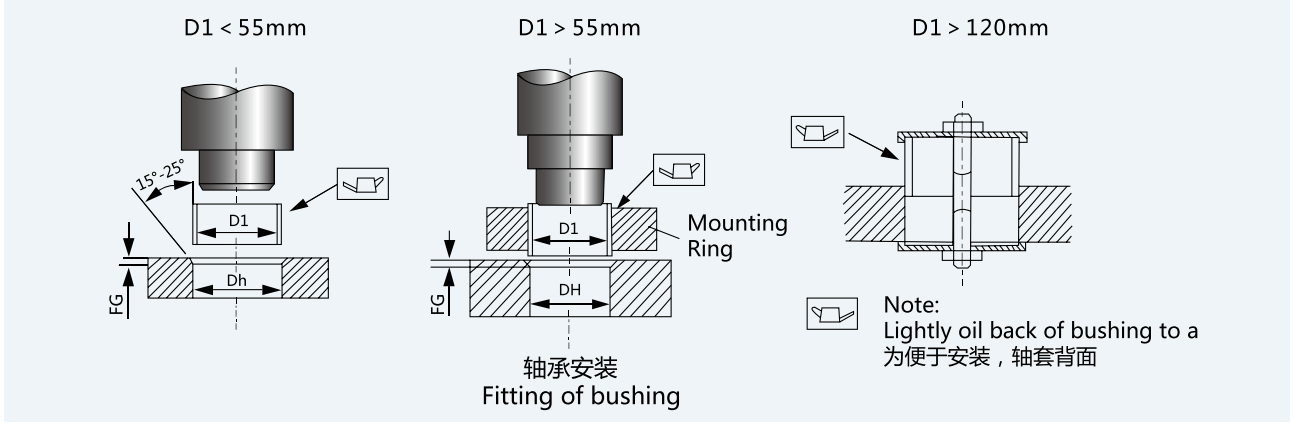
装配方法 Fixing methods

1）直轴承的装配方法 Fixing methods for cylindrical bushings

芯轴引导棒的直径比安装后的轴承直径小 0.1 ~ 0.3mm^2。芯轴最好进行热处理。为便于压装，可在轴承外径面上图一点油，请勿以铁锤直接敲打衬套的端面等冲击方法压入；安装大直径 d>55mm^2 轴承时，必须采取措施，校准轴承接缝。

Diameter of the pressing-in arbor is 0.1 ~ 0.3mm^2 smaller than the diameter of the bushing. It's better to have the core axis heat-treated. For easier fixing, we can add a light coating of oil on the bushing backing. Make sure not to fix the bushing into the housing by hammering its end surface. When the diameter of the bushing is more than 55mm^2, necessary measures must be taken to calibrate the seam position of bushing.

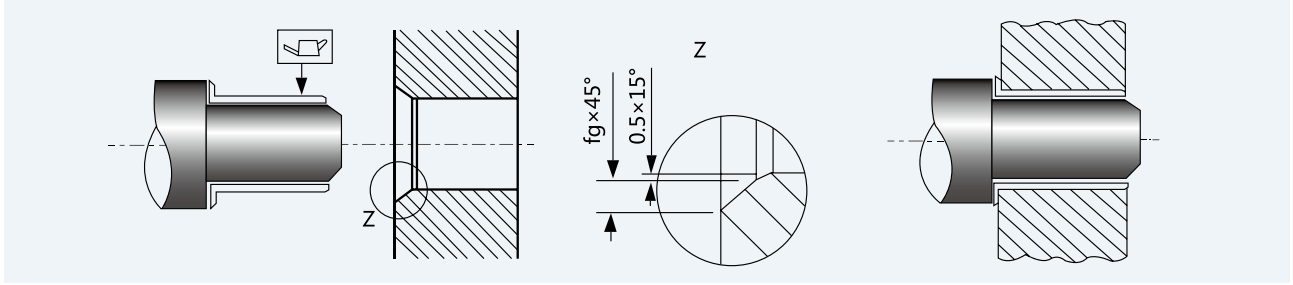
轴承的装配
Bushing fixing



2) 翻边轴承的装配方法 Fixing methods for flanged bushings

对于翻边轴承，装配时翻边处的半径应该考虑，座孔要求提供足够大的倒角，以防止翻边轴承翻边半径处的变形。翻边轴承的压装方法和直轴承基本相同，但要求翻边轴承压装芯轴凸缘外径比直轴承压装芯轴凸缘外径大些。

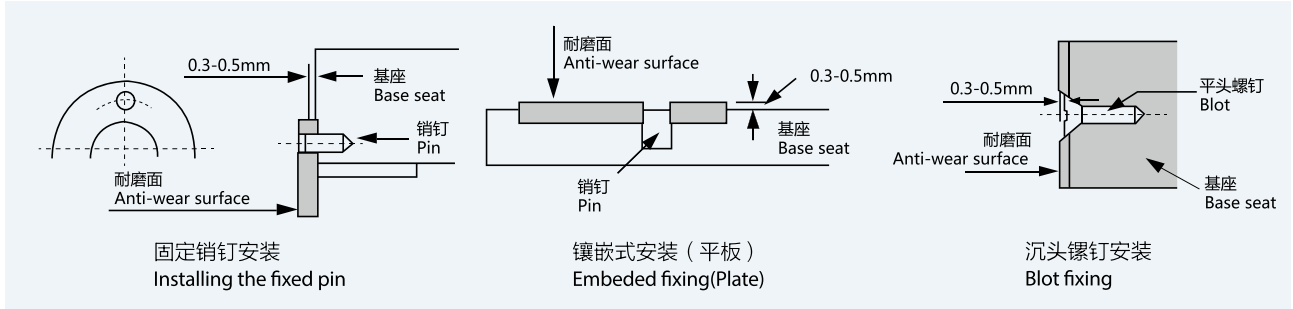
For flanged bushings, the radius at the flanged folds must be taken into account. A sufficiently large chamfer must be provided on the housing to prevent flanged bush fouling in the area of the radius. Fixing methods for the flanged bushings are similar to that for cylindrical bushings. However, the diameter of the convex part on the pressing-in arbor for flanged bushings needs to be a little bigger.



3) 止推垫片、平板的装配方法 Fixing methods for thrust washers and gliding plate.

我们推荐采用定销、沉头镙钉安装止推垫片， 采用镶嵌式安装平板。安装止推垫片或平板时，要求润滑层比基座高 0.3 ~ 0.5mm^2 thick.

We recommend using a single dowel or countersunk head screw to fix the thrust washer. For the gliding plate we recomend the methods of enchasing. When fix the thrust washer or the gliding plate, the sliding layer shall be 0.3~0.5mm^2 thicker than base seat.



轴承的装配
Bushing fixing

假如采用以上方法安装不合适或者不经济的话，可采用粘着剂、激光焊接或高温焊接。采用粘着剂安装时，可以不用固定销，但其效果较差。粘着剂以环氧树脂系的合成树脂较适合。当使用激光焊接或高温焊接时，不应该超过润滑层的最高承受温度。

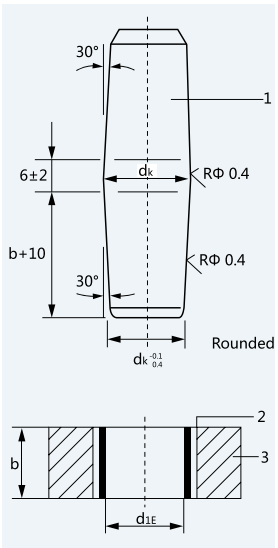
If the above fixing methods are not appropriate or economic, you can adopt laser welding, adhesive fixing or high temperature welding. When using adhesive fixing, dowel is optional, but the fixing effect may not be good. Adhesives like oxidized rosin and synthetic rosin is more appropriate. When using laser welding or high temperature welding, the temperature shall not excess the max temperature that the lubricating layer could bear.

轴承安装后内径的校准 Inside diameter alignment after fixing

1) 卷制轴承内径的校准 Inside diameter alignment for common bushings

轴承安装后，通常可以直接使用。在配合间隙要求增大、或安装时由于配合过盈量太大而造成内孔变形时，可采用下图所示整形工具使轴承内孔达到所要求的尺寸，整形工具直径 d 不宜太大，否则会降低轴承寿命。见图。

Normally the bushing can be immediately put into use after it has been fixed. But if there's need to enlarge the matching clearance or due to too much surplus the inner bore of the bushing deformed, we can use the following showed molding tools to make the inner bore meet the required dimensions. Diameter of the molding tools shall not be too big; otherwise, life of the bushing may decrease. Please see the picture:

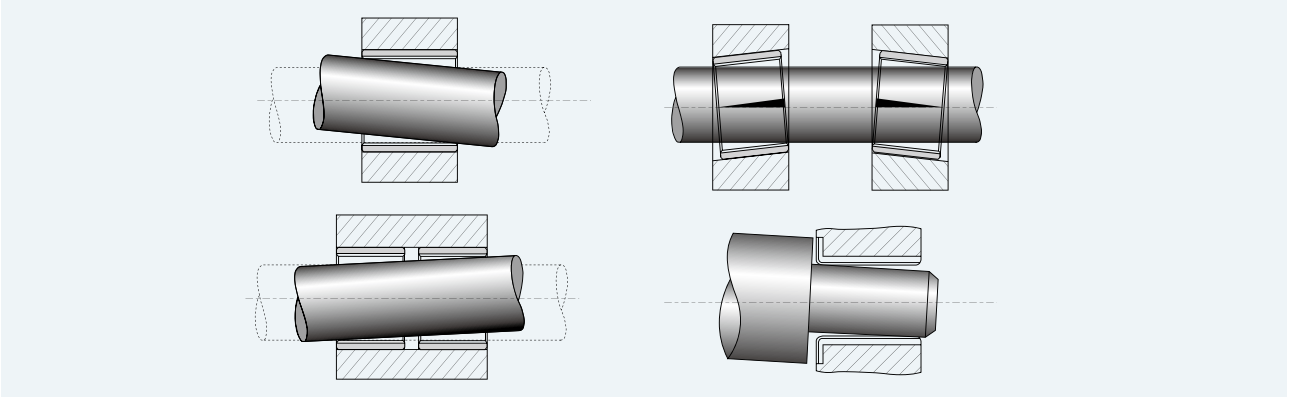


轴承内径 Dia of the axis d	要求内径 Required ID dE	整形工具直径 Diameter of the shaping tools dk
d	d	d+0.03
	d+0.02	d+0.06
	d+0.03	d+0.08
	d+0.04	d+0.10

2) 相配轴的校准 Alignment of the mating arbor

不论是径向还是轴向滑动轴承，为了避免负荷集中，安装时都要对其平行度进行校准，要求在整个宽度范围内，轴与轴承之间平行度不超出 0.02mm^2。

In order to avoid load centralization, when fixing the bushing, radial or axial movement, parallelism between the bushing and the arbor must be aligned. It requires the parallelism not exceed 0.02mm^2.



初始装配后轴承的维护
Bushing maintenance after initial fixing

装配后刚开始使用轴承时，应低载缓慢运转，这样做有以下好处：

For the first running after bushing was fixed, the bushing shall be worked under situations of light load and low speed, which will have the following benefits:

1) 使轴与轴承表面凹凸不平的平滑化，使支持轴承荷重的局部凸出面平滑

2) 修正轴承变形所致的安装误差，及凹凸的表面平滑，增加接触面积。

1) Smooth the surface of the bushing and its mating axis and smooth the partial convex part that shoulder load.

2) Rectify fixing tolerance caused by bushing deformation; smooth the surface and increase contact surface.

轴承的储存
Bushing store

轴承提供卷装或袋装，外纸箱或木箱，轴承应储藏在干净清洁、防锈的环境下。

贮存时要注意避免以下场所：

1) 阳光能直射的场所。

2) 高温高湿的场所。

3) 有水、酸碱腐蚀性液体的场所。

4) 避免重物放置其上、防止其变形。

Bushings will initially be roll packed or plastic bag packed and then will be secondly packed in carton or wooden box. Packed bushings shall be stored in clean and rust-resistant environment.

Avoid storing bushings in the following places

1) Place vertically in the sun

2) Place of high temperature and moisture

3) Place with water and other acid or alkali erosive liquids.

4) Do not place heavy articles on the carton to avoid bushing deformation

卷制轴承的检验方法
Checking methods for wrapped bushes

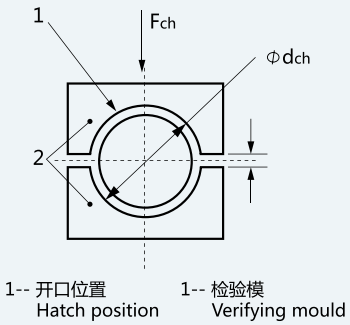
卷制轴承外径的检验方法 Methods for checking the outside diameter

1) 加压检测法（根据 DIN1494-2 检验方法 A) Load checking

检验胎由两半圆检验模组成，检验时，用校准芯轴 dch.2 校准零位，轴承的开缝置于检验模的顶部，然后两半模相向施加检验载荷 Fch, 由读数装置获得检验模下移的距离△ z。

The checking rig consists of two checking block halves. Align the "zero" position of the checking blocks by a setting plug dch. 2 and make the bush's split place at the upper halve of the checking blocks and then add the same checking load Fch on both of the checking halves. Read the moving distance of the halves displayed on the distance indicator and record the reading △ z.

卷制轴承的检验方法
Checking methods for wrapped bushes



DIN1494-2 测试 Testing A

检验模和芯棒 Verify mould and mandrel	dch1=dch2= mm²
试验力 Testing load	Fch=
极限 Limit	△ 2= e= mm²
外径 Outer diameter	D= to mm²

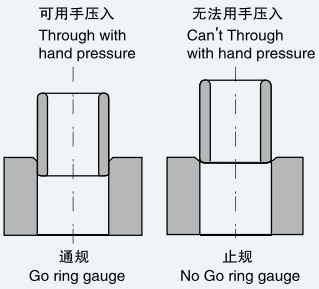
2）环规检测法（根据 DIN 1494-2 检验方法 B） Measuring of gauge

检验采用通、止环规进行检测，用手（最大力 250N) 可将轴承推入并通过通环规；相同力情况下，不能进入止环规。

注：在某些情况下，例如：卷制轴承不圆或接缝太大，检验精度可能受到影响。

The checking is carried out by two ring gauges,a "GO" ring gauge and a "NO GO" ring gauge. It must be possible to press the bushing in "GO" ring gauge with hand pressure(max 250N). With the same force it must not be possible to press the bushing in "NO GO" ring gauge.

Note: In some cases, such as the bushing with roundness problem,or the butt joints not close tightly, the accuracy of the checking may be affected.

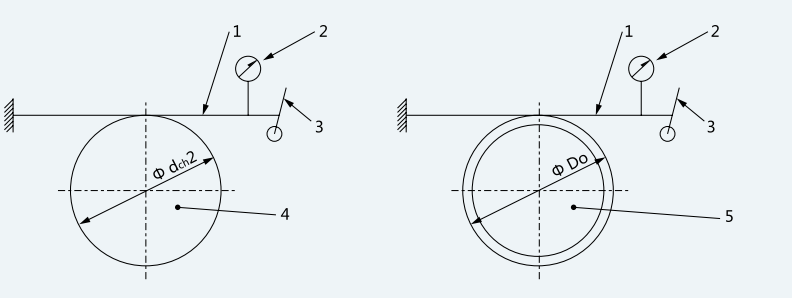


3）带尺检测法（根据 ISO3547-2 检验方法 D） Measuring of rule

为了测量尺寸较大的轴承外径，可以用带尺来测量圆周长。用测量带尺在轴承宽度的中线上沿轴承 360° ，施加足够的拉力使用使开口闭合。测量带尺绕外径等于轴承公称外径 Do 的定位芯轴进行标定。指示装置放置于测量带尺的自由端，并调至标定尺寸。在轴承检验完成后，周长指示装置读数△ ZD 应为轴承测量值与定位芯轴标定值的差。由此，可计算轴承的外径 Do。

The checking is carried out by two ring gauges,a "GO" ring gauge and a "NO GO" ring gauge. It must be possible to press the bushing in "GO" ring gauge with hand pressure(max 250N). With the same force it must not be possible to press the bushing in "NO GO" ring gauge.

Note: In some cases, such as the bushing with roundness problem,or the butt joints not close tightly, the accuracy of the checking may be affected.



1- 精密的测量线；
Precise measuring line
2- 千分表；
Dial indicator
3- 拉力板手；
Pulling spanner
4- 定位芯轴；
Locating spindle
5- 卷制轴承
Wrapped bushing

A) 用定位芯轴校定
Verified by locating spindle

b) 轴承的检验
Measuring of bush

卷制轴承的检验方法
Checking methods for wrapped bushes

卷制轴承内径的检验方法 Inside diameter checking methods for wrapped bushing

1) 塞规检测法（根据 DIN 1494-2 检验方法 C) Plug gauge checking

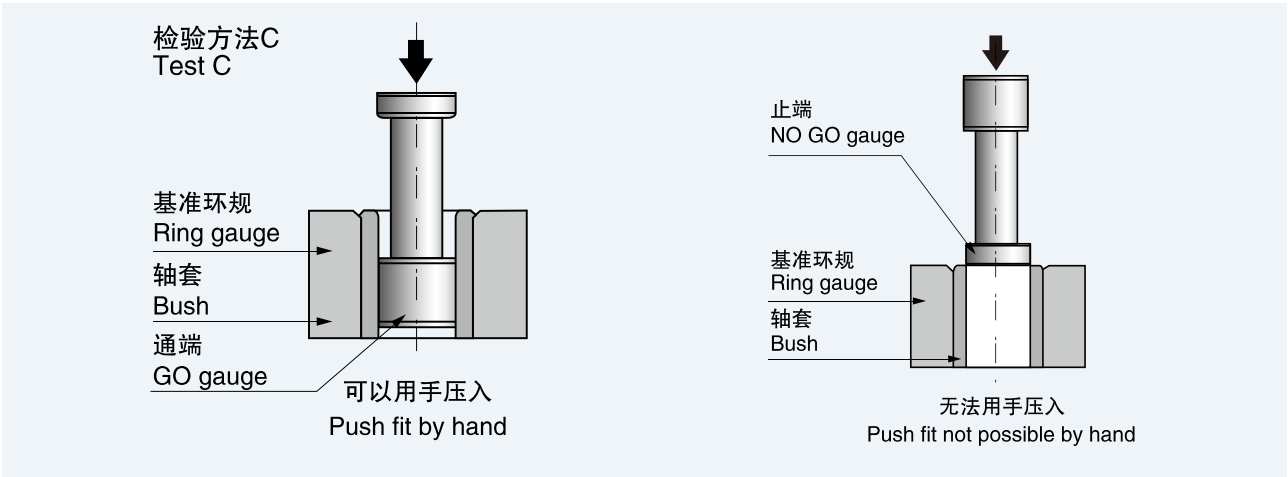
将卷制轴承压入 H7 中值环规，用塞规检测轴承内径。

Press the bush into the ring gauge, the tolerance class of which is H7, and check the inside diameter of the bushing with plug gauges.

2) 壁厚千分尺检测法 Wall thickness micrometer checking methods

用壁厚千分尺检测轴承壁厚，来间接计算轴承内径。注意：根据 DIN1494-2，切记在图纸上不能同时标注检测轴承壁厚和内径。

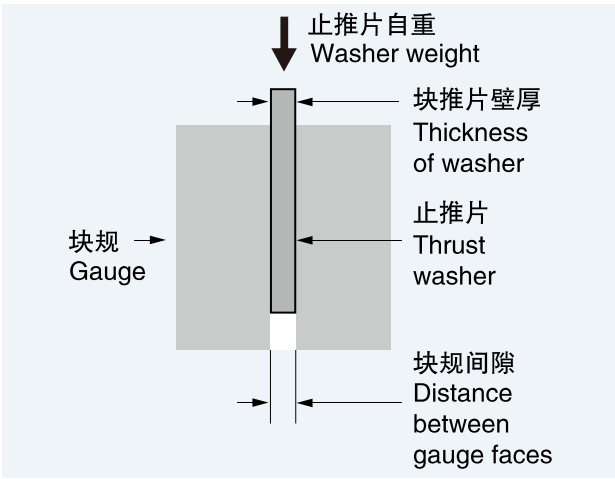
Check the wall thickness of the bushing a wall thickness micrometer and then calculate out the value of the inside diameter. According to ISO3547-2 make sure not to mark both the wall thickness and inside diameter on the drawing.



止推片检验方法 Thrust washer test method

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

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



表面粗糙度对照表
Surface Roughness Table

中国 GB 1031-83 ≈ISO 468-83			英国 BS 1134-61		美国 ASAB 46.1-62		德国 DIN4763-60			瑞士 VSM 10321-62		意大利 UNI 13963-60		波兰 PN 58/M 042-51			捷克 CSNo 14450-61			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		16	13(0.32)							0.3							6.3				
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)	16 8 √	1	4				1		1.25	6.30	√7							
1.25	5	1.60			50(1.25)							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					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															

μ=0.000001m=0.001mm

μin=0.000001 in=0.0254μ

常用硬度值对照表
Common uesd Hardness comparison form

洛氏 HRC	肖氏 HS	维氏 HV	布氏 HBS（30D²）	布氏 d/mm² (10/3000)	洛氏 HRC	肖氏 HS	维氏 HV	布氏 HBS（30D²）	布氏 d/mm² (10/3000)
70		1037	-	-	40	53.5	377	370	3.17
69		997	-	-	39	52.3	367	360	3.21
68	96.6	959	-	-	38	51.1	357	350	3.26
67	94.6	923	-	-	37	50	347	341	3.30
66	92.6	889	-	-	36	48.8	338	332	3.34
65	90.5	856	-	-	35	47.8	329	323	3.39
64	88.4	825	-	-	34	46.6	320	314	3.43
63	86.5	795	-	-	33	45.6	312	306	3.48
62	84.5	766	-	-	32	44.5	304	298	3.52
61	83.1	739	-	-	31	43.5	296	291	3.56
60	81.4	713	-	-	30	42.5	289	283	3.61
59	79.7	688	-	-	29	41.6	281	276	3.65
58	78.1	664	-	-	28	40.6	274	269	3.70
57	76.5	642	-	-	27	39.7	268	263	3.74
56	74.9	620	-	-	26	38.8	261	257	3.78
55	73.5	599	-	-	25	37.9	255	251	3.83
54	71.9	579	-	-	24	37	249	245	3.87
53	69.1	561	-	-	23	36.3	243	240	3.91
52	67.7	543	-	-	22	35.5	237	234	3.95
51	66.3	525	501	2.73	21	34.7	231	229	4.00
50	65.5	509	488	2.77	20	34	226	225	4.03
49	63.7	493	474	2.81	19	33.2	221	220	4.07
48	62.6	478	461	2.85	18	32.6	216	216	4.11
47	61059.7	463	449	2.89	17	31.9	211	211	4.15
46	57.1	449	436	2.93	16	-	-	-	-
45	55.9	436	424	2.97	15	-	-	-	-
44	58.4	413	413	3.01	14	-	-	-	-
43	57.1	401	401	3.05	13	-	-	-	-
42	55.9	391	391	3.09	12	-	-	-	-
41	54.7	388	380	3.13	11	-	-	-	-

SAVI 萨维
Self-lubricating Bearing

嘉兴萨维精密机械有限公司

地址 : 浙江省嘉善县
里泽工业区李家路 39 号
电话 : 0573-84882005 84882006
传真 : 0573-84882003 84882007
邮箱 : savi_lv@163.com
网址 : www.cnsavi.com

Jiaxing Savi Precision Machinery Co., Ltd.

Add: 39 Lijia Road, Lizhe Industrial Zone,
Jiashan county, Zhejiang Province, China.
Tel: 0573-84882005 84882006
Fax: 0573-84882003 84882007
E-mail: savi_lv@163.com
Website: www.cnsavi.com