Http: //www.csb-bearing.com

Headquarter
Zhejiang Changsheng Sliding Bearing Co., Ltd.
Add: NO.138,Changsheng Road, Weitang Industrial Zone, Jiashan, Zhejiang, China
Zip Code: 314100
Tel: 0086 573 84184540/84184307/84185528
Fax: 0086 573 84183450/84185526

总公司:
浙江长盛滑动轴承有限公司
地址：浙江嘉善魏塘工业园区长盛路138号
邮编：314100
Tel: 0573-84183287/84183761/84184710
Fax: 0573-84183450/84185526

Http: //www.csb-ep.com

Subsidiary company
Jiashan Changsheng Engineering Plastic Bearing Co., Ltd.
Add: Economic Development Zone, Jiashan, Zhejiang, China
Zip Code: 314100
Tel: 0086 573 84184540/84184307/84185528
Fax: 0086 573 84183450/84185526

分公司:
嘉善长盛塑料轴承技术有限公司
地址：浙江嘉善经济开发区汾湖路6号
邮编：314100
Tel: 0573-84186133/84186820
Fax: 0573-84185517

CSB/CAT.035
Print: 04/2009

CSB PLASTIC COMPOUND BEARINGS

工程塑料自润滑轴承

CATALOGUE 2009-2010

An ISO9001&ISO/TS16949 Certified Bearing Company

CSB Slide Bearing Specialist

CSB Bearings France

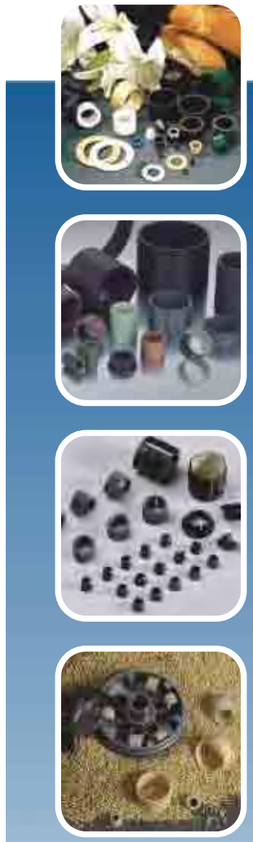
3, boulevard Eugene Marie B.P.111,
F-27800 Brionne, France

Tel: +33 232 433 276
Fax: +33 232 471 468
Email: p.mouclier@csb-bearings.fr

www.csb-bearings.fr

CSB PLASTIC COMPOUND BEARINGS

工程塑料自润滑轴承



目录 Index

新型无铅绿色材料应对环境要求
Concern for Environment Requirement

CSB积极应对环境保护的要求，通过多年的努力在各个应用领域都已成功开发了满足无铅要求的不同材料。

Concern for environmental requirement, CSB has developed various kinds of lead free materials to conform to both European and USA governmental legislation.

RoHS指令限制的六种有害物质
EC Directive 2002/95/EC (the RoHS Directive)

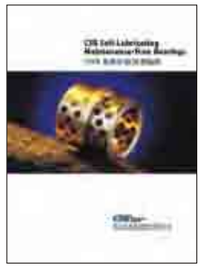
汞Hg、六价铬Cr^{+6}、铅Pb、镉Cd、多溴联苯醚PBDE、多溴联苯PBB。

This directive restricts the use of hazardous substances. Listed below are CSB products which are all RoHS compliant.

RoHS

CSB产品可以满足RoHS要求的标志

Material with this symbol conforms to the European RoHS directive.



Your Partner for Self-lubricating Bearing Application

为所有工业提供各种自润滑轴承解决方案

浙江长盛滑动轴承有限公司
ZHEJIANG CHANGSHENG SLIDING BEARING CO., LTD.

嘉善长盛塑料轴承技术有限公司
JIASHAN CHANGSHENG ENGINEERING PLASTIC BEARING CO., LTD.

- 成立于1995年，总注册资本765万美元;
- 2008年销售额超过3亿元人民币，目前拥有员工600名;
- 拥有两个生产基地，占地55000m^2;
- 获得国家级高新技术企业称号，取得35项专利;
- 通过ISO9001:2000、ISO/TS16949:2002质量管理体系认证。

- CSB was established in 1995 and its legal registered capital is 7.65 million US Dollars.
- CSB turnover in 2008 was more than USD 45 million. Currently there are 600 employees working at CSB.
- There are 2 facilities covering over 55000m^2 with extendable area for future enlargement.
- China National Hi-Tech Enterprise has been granted, 35 patents obtained till now.
- ISO9001: 2000 and ISO/TS 16949:2000 quality management system were certificated.

公司简介 Company Profile

CSB是中国最专业的免维护自润滑材料、轴承研究开发制造商。CSB凭借多年来对自润滑材料科学的关注与研究开发出四大系列产品：金属复合基滑动轴承、金属基滑动轴承、塑料滑动轴承、纤维缠绕轴承。本手册详细介绍的是CSB旗下分公司嘉善长盛塑料轴承技术有限公司生产的塑料滑动轴承、塑料直线轴承、纤维缠绕轴承的技术特性和应用指南，CSB已发布的标准系列材料及其产品适用于大多数应用场合，CSB也专注于客户特殊材料的开发与应用；高性能聚合物自润滑改性技术的研究促使CSB在非金属滑动轴承领域逐步成为市场的领跑者。

As a leading manufacturer of Self-lubricating bearings, we are devoted to researching and producing new Self-lubricating bearing materials. We have successfully developed various bearing materials with many different standard bearing sizes, including Metal-polymer Composite materials, Metallic Based Self-lubricating materials, Plastic compound materials and Filament wound composite materials. This manual mainly introduces the technical characteristics and the applications of Plastic sliding bearings, Plastic Linear bearings, Filament wound composite bearings that are produced by CSB subsidiary company Jiashan Changsheng Engineering Plastic Bearing Co., Ltd. The issued standard series of materials and the products are suitable for most applications. We concentrate on the special material developing and new application promotion of the bearings. The self-lubricating modification technology research of high polymers makes CSB the market leader in Non-metal sliding bearing field.

CSB Bearing R&D

CSB产品研发

CSB始终坚持“不断创新，永求卓越”的发展理念，以自润滑材料科学为核心，充分利用先进的研发检测设备，并与科研院所和国外科技联合创新。CSB拥有先进的材料性能检测设备和最全面的自润滑轴承摩擦磨损性能专业检测设备，CSB新产品开发工程师每年通过各种检测设备进行材料性能检测和研发试验近万次。CSB每年自主研发以及为特殊客户研发的新产品近百种，并通过新材料新技术的不断探索提升现有产品性能，满足了各种行业对自润滑轴承性能提出的新要求。

CSB insists on the theory of going on creation and pursuing excellence and established the system concentrating on the self-lubricating material technology, making full use of the advanced research and testing equipment, joint innovation with research institutes and foreign technology. CSB has advanced performance testing equipments for materials and the most comprehensive tribological properties professional testing equipments for lubricating bearings. There are thousands of tests on the materials and equipments that CSB engineers will execute each year. Hundreds of new materials and products are developed by CSB to meet the continuously changing requests from the market.

CSB检测中心
CSB inspection center

光谱仪（德国）
Optical Spectrometer(German)

圆度仪(英国)
Roundness measurement instrument (UK)

原子吸收分光分度计(中国)
Atomic absorption spectrophotometer (China)

电子万能材料试验机(美国)
Instron 5567 material testing system(USA)

能谱仪（美国）
Energy dispersive spectrometry (EDS)

热机械分析仪(德国)
Thermo-mechanical analysis(German)

摆锤式冲击测试机(美国)
Dynatup pendulum impact machine (USA)

摇摆试验机(CSB)
Oscillation test machine

PV试验机(CSB)
High load PV testing

CSB-EPB Typical Application

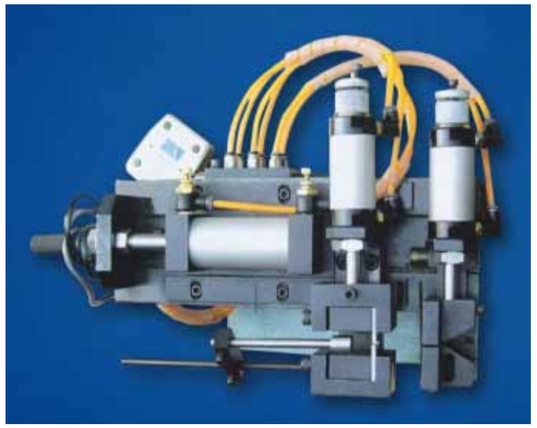
CSB-EPB系列典型运用

汽机车上的应用 For Automobile Industries

行李箱盖铰链用轴套	Bushes for trunk hinges
踏板用轴套	Bushes for pedals
门铰链用轴套	Bushes for shift lever
横直拉杆及球头用轴套	Bushes for door hinges
汽车座椅用轴套	Bushes for suspension ball joint
雨刮器电机用轴套	Bushes for chair
引擎轴套	Bushes for winscreen wiper motor
反光镜调节机构轴套	Transmission Bushes
玻璃升降器轴套	Carburetor bushes
化油器轴套	Bushes for seat belt system...
中央门锁中等	

CSB-EPB3 应用于高压开关
CSB-EPB3 used in high voltage switches

CSB-EPB7 应用于输送系统
CSB-EPB7 used in tranmission system



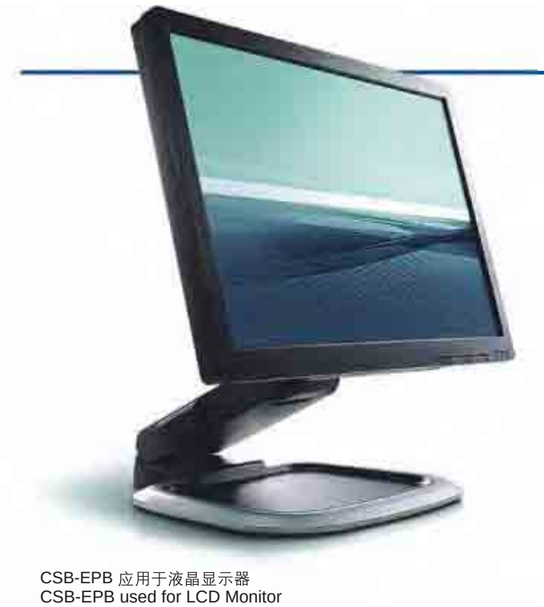
CSB-EPB13 应用于气缸
CSB-EPB13 used in cylinder blocks

CSB-EPB 应用于纺织机械
CSB-EPB used in textile machinery

CSB-EPBH 应用于门铰链
CSB-EPBH used in door hinges

CSB-EPB7 应用于脚踏板
CSB-EPB7 used in bicycle pad

CSB-EPB4/EPB9 应用于复印机
CSB-EPB4/EPB9 used in photocopier



CSB-EPB 应用于液晶显示器
CSB-EPB used for LCD Monitor

CSB-EPB 应用于箱包脚轮
CSB-EPB used for luggage trolley

CSB-EPB 应用于踏步机摆杆
CSB-EPB used for stepper swing rod

CSB-EPB 应用于骑马机
CSB-EPB used for ride machine

CSB-EPB4 应用于化工行业
CSB-EPB4 used for chemical industry

CSB-EPB3 应用于汽车转向系统
CSB-EPB3 used for steeling system

CSB-EPB Technical Reference

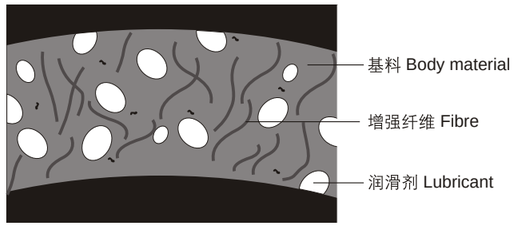
CSB-EPB系列塑料轴承技术

CSB-EPB系列材料结构特点 Material Features of CSB-EPB series

CSB-EPB系列材料之所以具有优秀的自润滑性和耐磨性主要是CSB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。

CSB engineers are dedicated on the performance improvement on the self-lubricating materials derives the result that CSB-EPB Series Materials are with excellent self-lubricating features and wear resistance characteristics. High-strength fibers used in the engineering plastics fantastically improve the material load (Illustration 1). Special grease immersion in the plastic can decrease the friction coefficient of the material therefore to prolong the bearing service life.
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 friction coefficient for a better self-lubricating performance.

图表1　CSB-EPB系列材料内部结构示意图
Illustration 1　CSB-EPB inner structure



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

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

传统复合轴承表层润滑剂工作后极易剥落而失效
Metal bearing lubricating layer is easy to be failed.

CSB-EPB系列塑料轴承与传统复合轴承 CSB-EPB Series Bearing vs Metal Bearings

由于CSB-EPB系列轴承润滑脂包含在整体材料中，所以无论轴承工作时间多长润滑脂都会不断的从摩擦面渗出起到长期润滑作用，而传统的金属复合轴承起润滑作用的仅为烧结在金属表面上0.03mm层，由于结合强度不够牢固润滑层很容易在工作中脱落或磨损，此时就宣告轴承的有效使用寿命结束（图表2）。

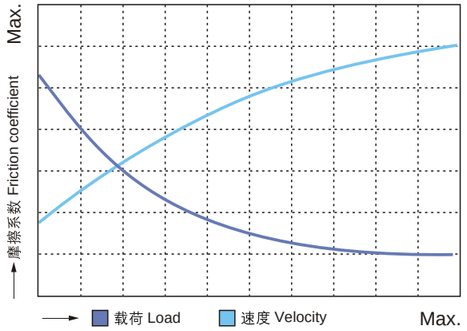
Because the grease immersed in the solid plastic material, the lubricating will be valid continuously no matter how long the bearings are working. Comparing to the traditional metal composite bearing that the lubricating layer is around 0.03mm thick whose service life will be terminated whenever the lubricating layer peer off or wear off, the plastic bearing is a better option for longer lubricating service (Illustration 2).

CSB-EPB系列塑料轴承摩擦系数 CSB-EPB Series Bearing Friction Coefficient

CSB-EPB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 CSB-EPB bearing is achieved by adding solid lubricants and functional fibers into the body material and the friction coefficient is decreased by the solid lubricate grease immersion. 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 Illustration3). Please refer to Illustration 3 for the relation between the friction coefficient and shaft roughness.

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

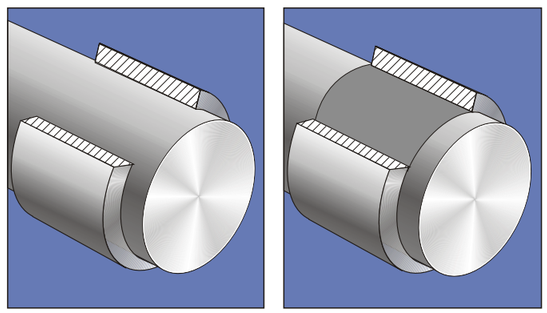


CSB-EPB系列塑料轴承磨损 The Initial Run-in Wear of CSB-EPB Series

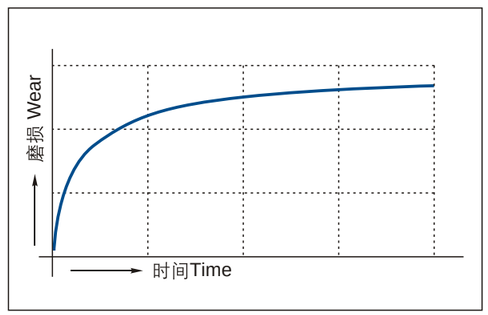
任何自润滑轴承只要一在载荷下工作，轴承就会产生细微磨损。CSB-EPB系列轴承同样如此，在启动阶段，当细微磨损发生时润滑脂就会渗出逐渐填满摩擦面和转移到对磨轴表面(图表4)，当对磨轴工作区域被润滑脂布满后便形成一层很薄的润滑隔离膜，此时轴承的起始磨损几乎结束，在后期长时间的工作中轴承的磨损速率大大降低且较稳定(图表5)。

Slightly wear off will occur as soon as the self-lubricating bearing is applied with a certain load. It is the same to the CSB-EPB 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 (Illustration 4) and 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 maintains the further operation stable (Illustration 5).

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



图表5　轴承磨损随工作时间变化曲线图
Illustration 5　Wear against operation time



轴承的载荷 The Bearing Load

载荷计算方法 Load capacity calculation

◇ 直套、翻边产品 Cylidrncal bushes, flange bushes

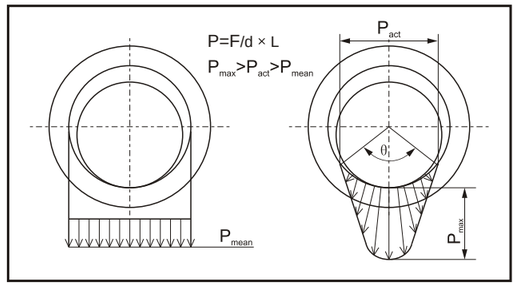
$$P=\frac{F}{d\times L}(N/mm^2)$$

F=轴承承载值 Load （N）
d=轴径 Shaft （mm）
L=轴承长度 Bearing Length （mm）

◇ 止推垫片 Thrust washer

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

F=垫片承载值 Load （N）
D=垫片外径 Washer OD （mm）
d=垫片内径 Washer ID （mm）



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}）。

As the factor of clearance, bushes chamfer, oil groove ect., The actually load (P_{act}) is higher than theory of calculation (P_{mean}).

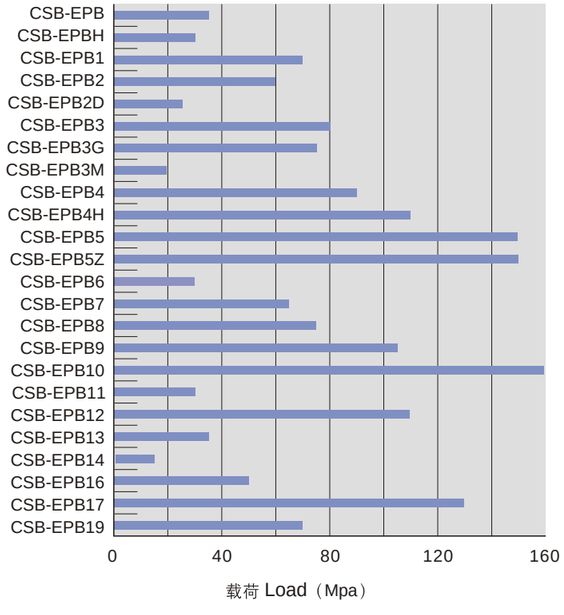
最大表面静载荷 Maximum surface static load

轴承实际工作动载荷 (图表6) 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。此值适用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）。

The actual dynamic load (Illustration 6) 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 shaft is not moving or the operating speed is less than 0.01m/s. The value could also be applicable for a short run (shorter than 3 minutes) condition.

图表6: CSB系列塑料轴承最大静载荷分布图

Illustration 6: Max static load Matrix

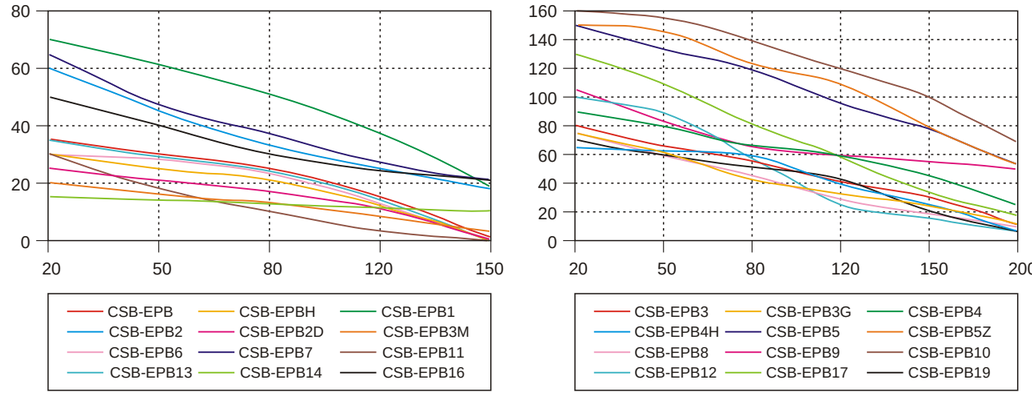


载荷与温度、速度的关系 The load, temperature and speed

轴承的载荷会随着轴承工作温度的升高而逐步降低，当运行温度超过最大使用温度后轴承的承载能力会急剧下降(图表7)。
轴承的载荷会随着轴承运行速度的加快而逐步降低，当运行速度加快后会导致轴承的摩擦温度逐步上升，而载荷会随着轴承温度的不断上升而逐渐降低。

The load capacity will be decreased along with the temperature increase. Load capacity may sharply decrease when the operating temperature is higher than the recommended maximum temperature (Illustration 7).
The load capacity will be decreased along with the speed increase. Speed increase will result into a temperature increase that decreases the load capacity.

图表7: 载荷随温度变化曲线图 Illustration 7: Load vs Temperature



轴承的速度 Bearing Speed

对于滑动轴承来说，运行速度是个关键性参数，由于滑动轴承工作时与轴之间发生的是相对滑动摩擦而不是滚动摩擦，所以最大运行速度滑动轴承要远低于滚动轴承。这里所说的速度是指轴与轴承之间运行的相对线速度而不是转速。

The operating speed is one of the key parameters for the sliding bearings. The friction between the sliding bearing and the shaft is a linear friction. So the operating speed of sliding bearing is much less than that of a rolling bearing where the friction is a rotation method. The speed here is the relative linear speed between the bearing and the shaft but not a rotation speed.

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=转数/分 Rpm

◇ 往复运动 Reciprocating motion

$$V=\frac{2s\times c}{60}(m/s)$$

s=行程长度 Stoke distance（m）
c=往复频率（次数/分） frequency

◇ 摇摆运动 Oscillating 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

CSB-EPB Technical Reference

CSB-EPB系列塑料轴承技术

轴承的速度 Bearing Speed

CSB-EPB系列轴承所允许的最大速度见图表8。这些数值是在轴承载荷极小时取得的极限速度，实际运用中这些速度是很难达到的，因为轴承在工作中不可避免的要承受工作载荷，当轴承载荷加大时所允许的运行速度就会减小。由于轴承的速度与轴承的运行温度成反比关系，所以轴承不同的运行方式所允许的最大速度也不同。

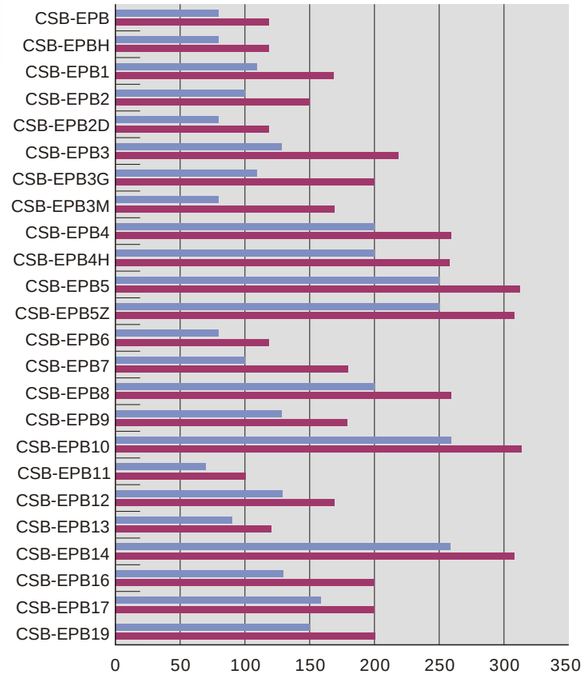
The maximum operating speed: Rotation, Oscillating, Linear indicates the maximum allowable speed (Illustration 8).

The value in the datasheet is calculated under the condition of a very low load. So the actual allowable speed will be limited against different load and other conditions. The higher the load, the lower the speed will be. The speed and the temperature is in a inverse proportion relation, the maximum speed allowable will be different depending on different operation method of the bearings.

图表8: 轴承最大运行速度
Illustration 8: Max Operating Speed

材料 Material	旋转 Rotation	摆动 Oscillating	直线 Linear
CSB-EPB	1	0.7	3
CSB-EPBH	0.8	0.6	2.5
CSB-EPB1	1	0.7	3
CSB-EPB2	1	0.7	3
CSB-EPB2D	1.5	1.1	5
CSB-EPB3	1	0.7	4
CSB-EPB3G	0.8	0.6	3.5
CSB-EPB3M	0.8	0.6	2.5
CSB-EPB4	1	0.7	3
CSB-EPB4H	1	0.7	1
CSB-EPB5	1.5	1.1	5
CSB-EPB5Z	1.5	1.1	5
CSB-EPB6	1	0.7	3
CSB-EPB7	1	0.7	4
CSB-EPB8	1.2	0.8	4
CSB-EPB9	0.8	0.6	3
CSB-EPB10	1.5	1.1	5
CSB-EPB11	0.5	0.4	1
CSB-EPB12	1	0.7	5
CSB-EPB13	1.5	1.1	8
CSB-EPB14	2	1.4	10
CSB-EPB16	1	0.7	3
CSB-EPB17	1	0.7	4
CSB-EPB19	1.5	1.1	8

图表9: 轴承最高运行温度
Illustration 9:Max Operating Temperature



轴承的温度 Bearing Temperature

CSB-EPB系列轴承都限定了最低和最高使用温度。最低使用温度是指轴承材料会变脆的临界温度(图表10)，最高使用温度是指轴承耐磨性能不会改变的临界温度，短期运行最高温度是指轴承材料会变软的临界温度(图表9)。如轴承经常在高温和低温下交替使用，轴承有可能发生脱落现象，所以此时必须借助于辅助装置确保轴承正常运行。

There is a limited temperature range that CSB-EPB Series bearings could be used. The lowest temperature is the one the material will become brittle under that value (Illustration 10) and the highest temperature is the one the bearing material wear resistance feature will start to change (Illustration 9). If the bearings are used under the conditions of alternatively changing high and low temperature, the bearing feature will be considerably affected and thus shorten the bearing service life.

图表10: 轴承最低运行温度 Illustration 10: Min Operating Temperature

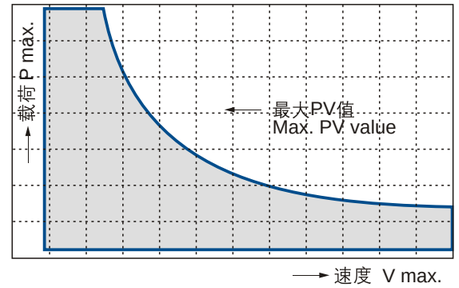
材料 Material	最低温度 Min Temperature	材料 Material	最低温度 Min Temperature	材料 Material	最低温度 Min Temperature
CSB-EPB	-40	CSB-EPB4	-40	CSB-EPB10	-100
CSB-EPBH	-40	CSB-EPB4H	-40	CSB-EPB11	-40
CSB-EPB1	-50	CSB-EPB5	-100	CSB-EPB12	-40
CSB-EPB2	-50	CSB-EPB5Z	-100	CSB-EPB13	-50
CSB-EPB2D	-40	CSB-EPB6	-40	CSB-EPB14	-200
CSB-EPB3	-40	CSB-EPB7	-40	CSB-EPB16	-40
CSB-EPB3G	-40	CSB-EPB8	-40	CSB-EPB17	-40
CSB-EPB3M	-40	CSB-EPB9	-40	CSB-EPB19	-40

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11)，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 service life (Illustration 11). So it is recommended to consider a lower design PV value during the bearing selection.

图表11: 轴承PV Illustration 11: PV Value



轴承的磨损 The Bearing Wear

由于轴承的耐磨性能受到很多因素的影响，所以很难准确描述轴承的磨损或寿命。通过无数次的试验表明影响轴承耐磨性或寿命的因素有：载荷、速度、运动方式、轴材料与粗糙度、环境温度与灰尘、外界润滑介质类别等等。

轴承的耐磨性一般随着载荷、速度、温度的增加而逐渐降低，当有外界润滑介质存在时轴承的耐磨性会成倍提高。CSB推荐使用轴的粗糙度为Ra0.4 ~ Ra1.6，轴过于粗糙或太光滑都会导致磨损加剧，轴过于粗糙就像刮刀一样刮伤轴承的摩擦面，轴太光滑会在摩擦面与轴承表面发生胶合导致磨损增大。

对于轴的材料CSB-EPB系列轴承没有特别限定，但由于各种轴材料对轴承的磨损影响程度不同，故CSB推荐使用较为通用的表面镀硬铬轴材料，对轴的硬度同样没有限定，但CSB推荐使用HRC35以上的轴材料，以避免轴承起始工作阶段轴的磨损。

As the bearings wear resistance affected by many factors, it is difficult to accurately describe bearing wear and life span. Through numerous experiments we can conclude that the main factors affect the anti-wear property are the load, moving method, speed, roughness of mating surfaces, ambient temperature and dust and type of the outside lubricating medium, etc. When the load, speed and temperature increase, the wear resistance of bearings gradually reduced; when there is outside lubrication medium, the wear resistance could be doubled; CSB recommend the roughness of axis to be Ra0.4 ~ Ra1. 6. If the shaft is too rough or too smooth, it might increase the wear. Although there is no special restriction on the using of shaft material for the CSB-EPB series bearings, CSB recommend the use of hard chrome plated shaft material. The recommended shaft hardness is over HRC35 in order to avoid the initial wear off on the shaft.

CSB-EPB Technical Reference

CSB-EPB系列塑料轴承技术

轴承抗UV性能 Bearing UV- resistance Performance

滑动轴承用于户外设备时就会经常暴露在各种恶劣的环境中。抗UV性能是各种轴承材料抵抗UV射线破坏能力的一个重要指标。CSB-EPB系列塑料轴承抗UV性能对照表见图表12。

Bearings used for outdoor equipments are constantly exposed to different critical environment. Anti-UV property is one of the most important indexes of a variety of bearing materials to resist UV-ray damage.
CSB-EPB Series plastic bearing UV-resistance reference (Illustration 12).

轴承化学抗性 Bearings Chemical Resistibility

CSB-EPB系列塑料轴承常常被用于有化学介质接触的场合，此时轴承的抗化学腐蚀性能就显得尤为重要。由于化学介质可能会导致轴承材料在结构成份上发生变化，这种变化主要取决于化学介质的种类、温度、暴露时间以及轴承的载荷与运动方式，有时化学介质充当了有效的润滑剂从而会延长轴承的使用寿命。在所有的塑料轴承产品中，CSB-EPB5、EPB5Z以及EPB10的化学抗性最突出，几乎能抵抗所有化学介质。详细见图表12。

CSB-EPB series plastic bearings are usually used under the conditions where chemical media exist. Therefore the chemical resistance feature is very important for such a critical application. The existing chemical media may cause deep changes to the performance of the bearing material depending on the different conditions such as the chemical kinds, temperature, and the contacting period to the bearing materials as well as the load and operation speed. Sometimes chemical medium act as an effective lubricant and thus will extend the service life of bearings. Plastic bearings in all products, CSB-EPB5, EPB5Z and EPB10 of the most striking characteristics of chemical-resistant, resistant to virtually all chemical media (Illustration 12).

图表12：轴承抗UV性能和化学抗性
Illustration 12: Bearing UV- resistance vs Chemical resistance

型号 Type	弱酸 Thin Acid	弱碱 Thin Alkal	酒精 Alcohol	溶液 Impregnant	抗UV性能 UV Resistibility
CSB-EPB	Y	Y	X to N	Y	★★★★★★
CSB-EPBH	Y	Y	X to N	Y	★★★★★★
CSB-EPB1	N	Y	X	X	★★★★★★
CSB-EPB2	N	Y	X	X	★★★★★★
CSB-EPB2D	Y	Y	X to N	Y	★★★★★★
CSB-EPB3	Y	Y	X to N	Y	★★★★★★
CSB-EPB3G	Y	Y	X to N	Y	★★★★★★
CSB-EPB3M	Y	Y	X to N	Y	★★★★★
CSB-EPB4	Y	Y	Y to X	Y	★★★
CSB-EPB4H	Y	Y	Y to X	Y	★
CSB-EPB5	Y	Y	Y	Y	★★★★★★
CSB-EPB5Z	Y	Y	Y	Y	★★★
CSB-EPB6	Y	Y	X to N	Y	★★★★★★
CSB-EPB7	Y	Y	X to N	Y	★★★
CSB-EPB8	Y	Y	Y to X	Y	★★★★★★
CSB-EPB9	Y	Y	X to N	Y	★★★★★★
CSB-EPB10	Y	Y	Y	Y	★★★★★★
CSB-EPB11	Y	Y	X to N	Y	★
CSB-EPB12	Y	Y	X to N	Y	★★
CSB-EPB13	Y	Y	X to N	Y	★★★
CSB-EPB14	Y	Y	Y	Y	★★★★★★
CSB-EPB16	N	Y	X	X	★★★★★★
CSB-EPB17	X to N	X to N	X to N	Y	★★★★
CSB-EPB19	Y	Y	X to N	Y	★★★★★

★★★★★★ 非常好 Very Good　★ 一般 Generality

Y: 完全抵抗Resistant
X: 部分抵抗Limited Resistant
N: 没有抵抗Not Resistant

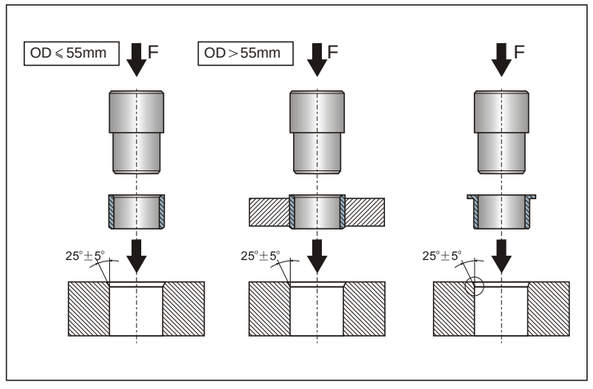
Bearing Installation

轴承安装

■ **座孔：**CSB-EPB系列塑料轴承配合座孔的材料无特别限定，但座孔一端必须倒角25°以避免轴承压入时刮伤外径，压装时应该采用阶梯芯轴缓慢压入，禁止直接击打端面，以免变形影响轴承尺寸，CSB-EPB系列产品内径公差均是压入H7标准孔后所得到。

■ **轴：**CSB-EPB系列塑料轴承配合轴的材料无特别限定，但CSB推荐使用镀铬硬轴。为了使轴在装配过程中更简单且不损伤轴承内摩擦面，轴的端面必须有倒角圆滑过渡。另外轴表面粗糙度对轴承的摩擦系数有较大影响，轴太光滑摩擦面会产生爬行现象或产生尖叫声，轴表面太粗糙会加快轴承磨损。CSB推荐使用轴表面粗糙度为Ra0.4~1.6，轴承摩擦系数与表面粗糙度关系见图表15。

图表13：压装图 Illustration 13: Assembly example



CSB-EPB系列轴承配合公差按照ISO 3547-1标准设计制造见图表14。虽然CSB-EPB系列产品设计为自润滑产品，但在装配时在摩擦面上涂上适量的外部润滑剂（比如油脂）会缩短轴承的磨合期从而延长轴承的使用寿命。

■ **粘接剂：**CSB-EPB系列塑料轴承装配时一般不需要使用粘接剂，但是如果需要使用粘接剂轴承在高温下工作，要选用同等耐高温的胶粘剂，CSB建议对这种情况进行必要的测试。

■ **Housing:** The bearing housing and the fitting tools must be kept clean during the assembling. A chamfer of 25° on the housing should be ensured for an easy assembling. A stepped press pin is recommended to be used for the assembling. The inner diameter of the CSB-EPB series product is measured after the bushing is fitted into the H7 housing

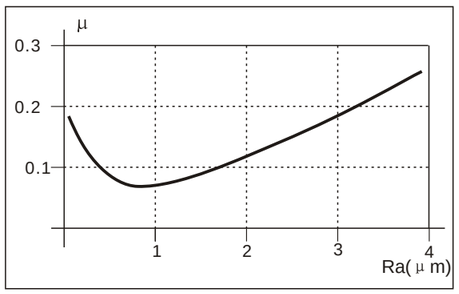
■ **Shaft:** There is no critical requirement for the shaft material but chrome plated shaft is recommended for better operation. Rounded chamfer is required on the shaft for easy assembling. CSB recommend the shaft roughness to be in the range of Ra0.4~1.6. Please refer to Illustration 15 for the relation between the surface roughness and bearing friction coefficient.
CSB-EPB series products are designed according to ISO 3547 Standard(Illustration 14). Although the CSB-EPB bearings are designed for self-lubricating purpose, but the initial lubricating helps the assembling and the future operation of the bearings.

■ **Adhesive agent:** CSB-EPB series plastic bearing assembly generally needn't use glue, in case the glue is necessary, please consider the used glue can also work properly at the required temperature. Relative testing is recommended in this case.

图表14：CSB-EPB系列轴承配合公差
Illustration 14: The Interfit Tolerance

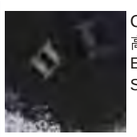
直径 mm d	压装后公差 E10 Tolerance after fit	安装孔径H7 Fit Housing	配合轴径 h9 Fit Shaft
>0～3	+0.014～+0.054	0～+0.010	0～-0.025
>3～6	+0.020～+0.068	0～+0.012	0～-0.030
>6～10	+0.025～+0.083	0～+0.015	0～-0.036
>10～18	+0.032～+0.102	0～+0.018	0～-0.043
>18～30	+0.040～+0.124	0～+0.021	0～-0.052
>30～50	+0.050～+0.150	0～+0.025	0～-0.062
>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

图表15 摩擦系数 μ 与轴表面粗糙度Ra的关系
Illustration 15 Friction coefficient μ & surface roughness Ra



CSB-EPB Series Material Characteristics

CSB-EPB系列塑料轴承

基本功能 Basic Function						
通用型 Normal Type	 CSB-EPB 通用性最强 The most common material P 18-19	 CSB-EPB1 特别适合用于卡车尾箱铰链 Especially suitable for truck hinges P 20-21	 CSB-EPB3 增强型 高承载 Enhanced type P 24-25	 CSB-EPB6 干净型 Clean type P 36-37	 CSB-EPB7 高耐磨性，电梯行业应用，适合软轴 High wear resistance, Used in lift industry, Suitable for flexible shaft P 38-39	 CSB-EPB13 适合快慢速 适合软轴 Suitable for high and low speed with flexible shaft P 48-49	 CSB-EPB16 低吸水率，适合高载 Lower moisture absorption Suitable for high load P 50-51
高载型 High load	 CSB-EPB5 耐高温，抗化学性极佳 High temperature Excellent chemical resistance P 32-33	 CSB-EPB5Z 特别适合摇摆运动 Especially suitable for oscillation P 34-35	 CSB-EPB9 抗静电性能，适合高载低速 Antistatic, Suitable for high load and slow speed P 42-43	 CSB-EPB10 耐高温，高强度 抗化学性极好 High temperature Excellent chemical resistance P 44-45	 CSB-EPB12 特别适合摇摆运动 Especially suitable for oscillation P 46-47	 CSB-EPB17 适合极限高载摇摆运动 Suitable for high load oscillation P 52-53	
耐高温 High temperature	 CSB-EPB5 耐温250℃、高化学抗性 Work consecutively at 250℃, Good chemical resistance P 32-33	 CSB-EPB5Z 耐温250℃、特别适合摆动，化学抗性好 Work consecutively at 250℃, Good chemical resistance, Especially suitable for oscillation P 34-35	 CSB-EPB10 耐温250℃，高强度 Work consecutively at 250℃ High strength P 44-45	 CSB-EPB14 耐温260℃，较低的摩擦系数 适合高速运动，优越的抗化学性能 CSB-EPB14 Work consecutively at 260℃, Lower friction coefficient, Suitable for high speed, Good chemical resistance			
低摩擦系数 Low friction coefficient	 CSB-EPB 适合各种轴材料 耐磨性好 Applicable for various materials Excellent wear resistance P 18-19	 CSB-EPB5Z 耐温250℃ 适合高速运动 Work consecutively at 250℃ Suitable for high speed P 34-35	 CSB-EPB7 适合高速运动 高耐磨性 Suitable for high speed High wear resistance P 38-39	 CSB-EPB11 不含PTFE和硅，轻载耐磨性极好，高抗冲击性，适合软轴 Not contain PTFE and silicon. Good wear resistance and impact resistance. Suitable for flexible shaft	 CSB-EPB13 快慢速下保持较低的摩擦系数 Maintain low friction coefficient either at high or low speed P 48-49	 CSB-EPB14 适合轻载高速，耐高温260℃，低温-200℃，化学抗性好 Good for low load and high speed. Working temperature range from -200℃ to 260℃ with outstanding chemical resistance	 CSB-EPB19 极低的摩擦系数，高承载能力，适合温度150℃下高速运动 Very low friction coefficient High load, Capacity P 54-55
耐腐蚀 Anti-corrosion	 CSB-EPB4 耐温200℃ Work consecutively at 200℃ P 30-31	 CSB-EPB5 耐温250℃，耐腐蚀最强 Work consecutively at 250℃ Highest corrosion resistance P 32-33	 CSB-EPB5Z 耐温250℃ Work consecutively at 250℃ P 34-35	 CSB-EPB8 耐温200℃，水下运行专用 Work consecutively at 200℃, Specialized underwater operation P 40-41	 CSB-EPB10 耐温250℃，高抗压强度 Work consecutively at 250℃, High compressive strength P 44-45	 CSB-EPB14 耐温260℃ 较低的摩擦系数 几乎能抵抗所有的化学介质 Work consecutively at 260℃. Lower Friction Coefficient	
潮湿环境 Humid environment	 CSB-EPB2 高性价比 High performance-cost ratio P 22-23	 CSB-EPB4 高强度，耐化学腐蚀 High strength Good chemical resistance P 30-31	 CSB-EPB8 适合水下运行 Underwater operation P 40-41	 CSB-EPB16 适合高载荷 Suitable for high load P 50-51			
经济型 Economic	 CSB-EPBH 经济通用 General Type	 CSB-EPB2 适合潮湿环境 Good for Humidity condition P 22-23	 CSB-EPB2D 低摩擦系数，低成本 Low Friction coefficient Low cost	 CSB-EPB3G 高强度 High strength P 26-27	 CSB-EPB3M 承受边缘载荷，耐冲压，适合低速运动 Good for Marginal Load, Impact resistance, suitable for low speed operation P 28-29		
特殊材料 Special material	 CSB-M63 高耐磨性，较好的韧性，塑料拖链专用 Excellent wear resistance, Good toughness; Specially applicable for plastic towline. P 63			 CSB-M323 高耐磨性，抗压性能好 CVT滚珠等高耐磨部件专用 Excellent ware resistance; Good compression resistance. Specially designed for CVT ball P 63		 CSB-M3 高抗冲击性能，高耐磨性 转向器支撑套专用 High impact resistance, anti-wear bushing Specially for Steeling system P 63	

CSB-EPB Series product Performance Data Sheet

CSB-EPB系列主要性能数据表

一般性能 Common Capability	试验方法 Testing Method	单位 Unit	CSB-EPB	CSB-EPBH	CSB-EPB1	CSB-EPB2	CSB-EPB2D	CSB-EPB3	CSB-EPB3G	CSB-EPB3M	CSB-EPB4	CSB-EPB4H	CSB-EPB5	CSB-EPB5Z	CSB-EPB6	CSB-EPB7	CSB-EPB8	CSB-EPB9	CSB-EPB10	CSB-EPB11	CSB-EPB12	CSB-EPB13	CSB-EPB14	CSB-EPB16	CSB-EPB17	CSB-EPB19
密度 Density	ISO1183	g/cm^3	1.46	1.45	1.51	1.29	1.40	1.46	1.37	1.15	1.65	1.70	1.44	1.40	1.45	1.25	1.60	1.24	1.40	1.05	1.40	1.48	2.39	1.58	2.93	1.32
颜色 Color			深灰 Dark Grey	深灰 Dark Grey	红棕 Red Brown	橄榄绿 Olive	绿色 Green	深灰 Dark Grey	黑色 Black	深灰 Dark Grey	黑色 Black	棕色 Brown	黑色 Black	棕色 Brown	白色 White	乳白色 Cream	灰色 Grey	黑色 Black	黑色 Black	红色 Red	黑色 Black	黄色 Yellow	红色 Red	黑色 Black	棕色 Brown	深灰 Dark Grey
对钢的动摩擦系数 Dynamic friction /steel(dry)			0.05-0.15	0.05-0.20	0.08-0.20	0.07-0.20	0.05-0.20	0.08-0.18	0.05-0.15	0.09-0.30	0.07-0.20	0.10-0.30	0.09-0.25	0.05-0.15	0.05-0.18	0.09-0.20	0.07~0.18	0.10-0.40	0.10-0.25	0.05-0.12	0.05-0.20	0.05-0.15	0.03-0.12	0.06-0.20	0.05-0.25	0.05-0.15
最大P.V值 Max. PV (dry)		N/mm^2*m/s	0.4	0.3	0.6	0.5	0.3	0.5	0.3	0.2	1.4	0.7	1.5	1.0	0.3	0.5	0.8	0.3	1.8	0.2	0.6	0.4	0.3	0.4	1.2	0.7
最大旋转速度值 Max. rotating velocity		m/s	1.0	0.8	1.0	1.0	1.5	1.0	0.8	0.8	1.0	1.0	1.5	1.5	1.0	1.0	1.2	0.8	1.5	0.5	1.0	1.5	2.0	1.0	1.0	1.5
最大摇摆速度值 Max. oscillating velocity		m/s	0.7	0.6	0.7	0.7	1.1	0.7	0.6	0.6	0.7	0.7	1.1	1.1	0.7	0.7	0.8	0.6	1.1	0.4	0.7	1.1	1.4	0.7	0.7	1.1
最大直线速度值 (20℃) Max. linear velocity		m/s	3.0	2.5	3.0	3.0	5.0	4.0	3.5	2.5	3.0	1.0	5.0	5.0	3.0	4.0	4.0	3.0	5.0	1.0	5.0	8.0	10	3.0	4.0	8.0
抗拉强度 Tensile strength	ISO527	MPa	80	75	80	80	75	200	190	110	180	210	170	90	75	120	135	250	240	45	115	75	n.d	120	109	100
抗压强度 (轴向) Compressive strength(Axial)	ISO527	MPa	65	60	75	70	60	80	75	50	80	105	100	65	65	65	80	100	105	35	95	60	n.d	65	97	75
弹性模量 E-module	ISO527	MPa	2300	2200	2500	2400	2000	7700	7500	2500	12000	10000	7900	4500	2300	3500	11000	11000	23000	1000	4300	2400	n.d	5300	5000	3500
允许最大表面静压力 Max. static pressure of the surface, 20℃		MPa	35	30	70	60	25	80	75	20	90	110	150	150	30	65	75	105	160	30	100	35	15	50	130	70
洛氏硬度 Rockwell hardness	ISO2039-2	HRR	108	108	115	111	107	112	112	107	118	122	120	122	108	108	115	110	121	105	117	107	78	112	115	112
连续工作温度 Continuous work temperature		℃	-40/80	-40/80	-50/110	-50/100	-40/80	-40/130	-40/110	-40/80	-40/200	-40/200	-100/250	-100/250	-40/80	-40/100	-40/200	-40/130	-100/260	-40/70	-40/130	-50/90	-200/260	-40/130	-40/160	-40/150
短时运行温度 Short-time work temperature		℃	-40/120	-40/120	-50/170	-50/150	-40/120	-40/220	-40/200	-40/170	-40/260	-40/260	-100/315	-100/310	-40/120	-40/180	-40/260	-40/180	-100/315	-40/100	-40/170	-50/120	-200/310	-40/200	-40/200	-40/200
导热性 Thermal conductivity	ASTME1461	W / m*k	0.2	0.2	0.3	0.25	0.25	0.25	0.25	0.25	0.6	0.25	0.6	0.6	0.2	0.2	0.5	0.6	0.7	0.3	0.25	0.25	0.25	0.25	0.6	0.25
线性热膨胀系数 Linear coef. of thermal expansion	ASTMD696	K^{-1}*10^{-5}	10	10	8	10	11	9	11	10	4	4	5	4	10	9	5	11	2	12	5	9	13	4	4	5
RH50/23℃时的吸湿性 Moisture absorption RH50/23℃	ASTMD570	%	0.2	0.2	0.1	0.1	0.3	0.7	0.9	1.4	0.04	0.05	0.1	0.1	0.3	1.3	0.05	1.8	0.1	0.01	0.9	0.3	0.01	0.2	0.7	0.9
燃烧性能 Flammability	UL94		HB	HB	HB	HB	HB	HB	HB	HB	V0	V0	V0	V0	HB	HB	V0	HB	V0	HB	HB	HB	V0	HB	HB	HB
体电阻率 Volume resistivity	IEC60093	Ωcm	>10^{12}	>10^{12}	>10^{14}	>10^{14}	>10^{13}	>10^{13}	>10^{13}	>10^{12}	>10^{4}	>10^{15}	>10^{8}	>10^{11}	>10^{12}	>10^{12}	>10^{5}	<10^{3}	<10^{5}	>10^{15}	>10^{15}	>10^{13}	>10^{15}	>10^{13}	>10^{7}	>10^{15}
面电阻率 Surface resistivity	IEC60093	Ω	>10^{15}	>10^{15}	>10^{15}	>10^{15}	>10^{12}	>10^{11}	>10^{11}	>10^{11}	>10^{5}	>10^{14}	>10^{7}	>10^{11}	>10^{15}	>10^{12}	>10^{5}	<10^{3}	<10^{5}	>10^{15}	>10^{12}	>10^{12}	>10^{12}	>10^{12}	>10^{6}	>10^{12}

CSB-EPB Plastic Bearings

CSB-EPB 塑料轴承

产品特性 Product Characteristics

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。

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 Capability	试验方法 Testing Method	单位 Unit	CSB-EPB
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*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) Compressive strength (Axial)	ISO527	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 work temperature		℃	-40/120
导热性 Thermal conductivity	ASTME1461	W / m*k	0.2
线性热膨胀系数 Linear coef. of thermal expansion	ASTMD696	K^{-1}*10^{-5}	10
RH50/23℃时的吸湿性 Moisture absorption RH50/23℃	ASTMD570	%	0.2
燃烧性能 Flammability	UL94		HB
体电阻率 Volume resistivity	IEC60093	Ωcm	>10^{12}
面电阻率 Surface resistivity	IEC60093	Ω	>10^{15}

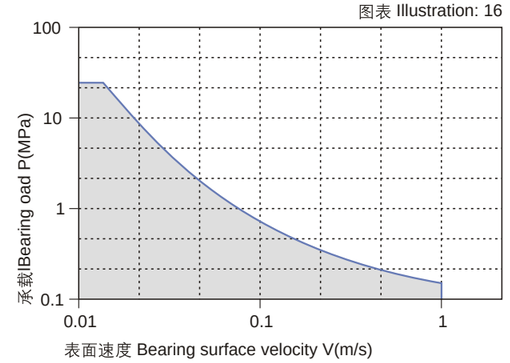
轴承PV值 PV Value of Bearings

CSB-EPB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, 详细查阅图表16。

The max PV value of the CSB-EPB series bearing is 0.4N/mm^2*m/s which determines the load capacity of bearing is inversely proportional to the speed. Please refer to the chart for more detailed information (Illustration 16).

PV图表 Permissible PV value for CSB-EPB

图表 Illustration: 16



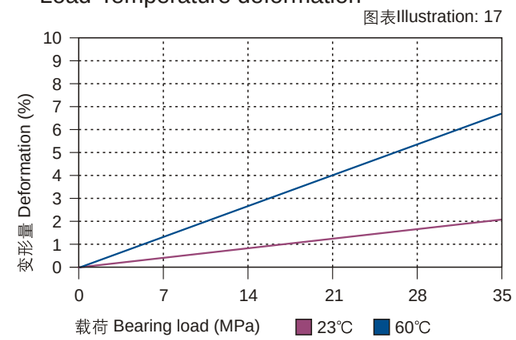
轴承的载荷、速度、温度 The Relation of Load, Speed and Temperature

CSB-EPB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17, 轴承实际工作载荷略小于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18。

CSB-EPB allows the Max static load of 35Mpa, The max compressive deformation rate under the max load is listed in Illustration 17, The actual load capacity 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 temperature (Tmax: 80℃) which decreases the load capacity of the bearing. Please refer to the Illustration 18 for such variation.

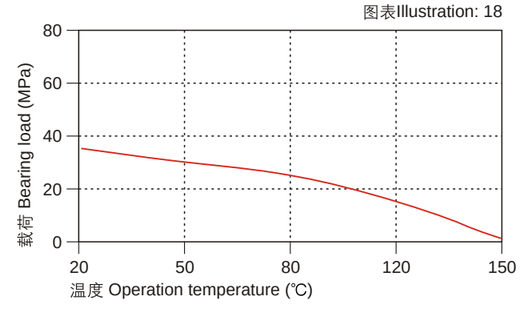
载荷-温度-变形量图表
Load-Temperature deformation

图表Illustration: 17



载荷-温度图表
Load-Temperature diagrams

图表Illustration: 18



CSB-EPB1 Plastic Bearings

CSB-EPB1 塑料轴承

产品特性 Product Characteristics

连续使用温度：-50℃～110℃；
适合多数中高载荷场合；
适合干运行、免维护；
特殊材料优异的热传导性；
适合低速运动。

Continuous working temperature: -50℃～110℃;
Suitable for medium and high load operation;
Maintenance-free dry operation;
Excellent thermol conductivity;
Good for low speed operation.

主要性能数据表 The Material Data Sheet

一般性能 Common Capability	试验方法 Testing Method	单位 Unit	CSB-EPB1
密度 Density	ISO1183	g/cm^3	1.51
颜色 Color			红棕Red Brown
对钢的动摩擦系数 Dynamic friction /steel(dry)			0.08-0.20
最大P.V值 Max. PV (dry)		N/mm^2*m/s	0.6
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) Compressive strength (Axial)	ISO527	MPa	75
弹性模量 E-module	ISO527	MPa	2500
允许最大表面静压力 (20℃) Max. static pressure of the surface, 20℃		MPa	70
洛氏硬度 Rockwell hardness	ISO2039-2	HRR	115
连续工作温度 Continuous work temperature		℃	-50/110
短时运行温度 Short-time work temperature		℃	-50/170
导热性 Thermal conductivity	ASTME1461	W / m*k	0.3
线性热膨胀系数 Linear coef. of thermal expansion	ASTMD696	K^{-1}*10^{-5}	8
RH50/23℃时的吸湿性 Moisture absorption RH50/23℃	ASTMD570	%	0.1
燃烧性能 Flammability	UL94		HB
体电阻率 Volume resistivity	IEC60093	Ωcm	>10^{14}
面电阻率 Surface resistivity	IEC60093	Ω	>10^{15}

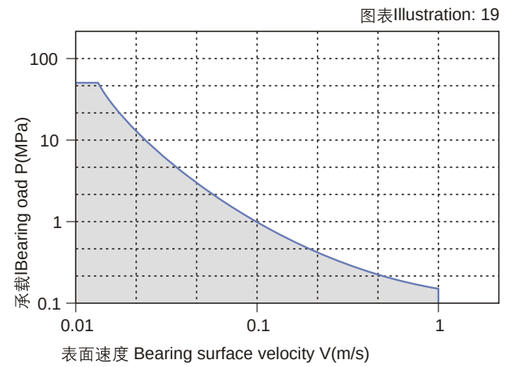
轴承PV值 PV Value of Bearings

CSB-EPB1系列轴承最大运行PV值为0.6N/mm^2*m/s；由此决定轴承所承受的载荷与速度成反比，详细查阅图表19。

The max PV value of the CSB-EPB1 series bearing is 0.6N/mm^2*m/s which determines the load capacity of bearing is inversely proportional to the speed. Please refer to the chart for more detailed information (Illustration 19).

PV图表 Permissible PV value for CSB-EPB1

图表Illustration: 19



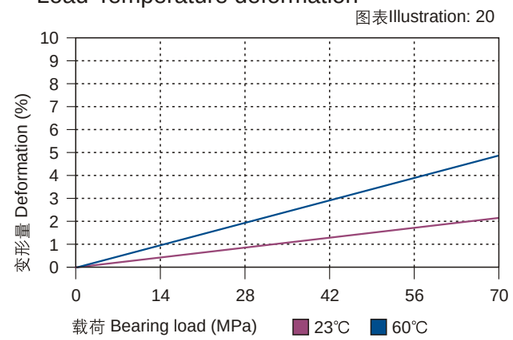
轴承的载荷、速度、温度 The Relation of Load, Speed and Temperature

CSB-EPB1系列轴承可承受最大静载荷为70Mpa，在此载荷下轴承的最大压缩变形量参考图表20，轴承实际工作载荷略小于70Mpa，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: 110℃) 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21。

CSB-EPB1 allows the Max static load of 70Mpa, The max compressive deformation rate under the max load is listed in Illustration 20, The actual load capacity of bearing is slightly less than 70Mpa, The bearing load is variable against the speed and temperature, Fast speed (Vmax: 1.0m/s) results into higher temperature (Tmax: 110℃) which decreases the load capacity of the bearing. Please refer to the Illustration 21 for such variation.

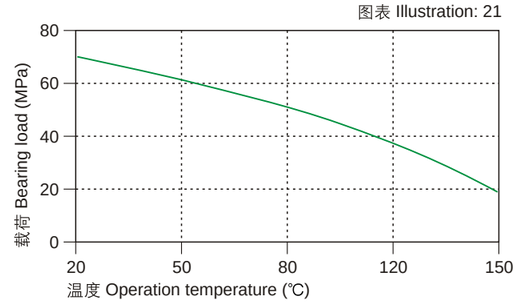
载荷-温度-变形量图表
Load-Temperature deformation

图表Illustration: 20



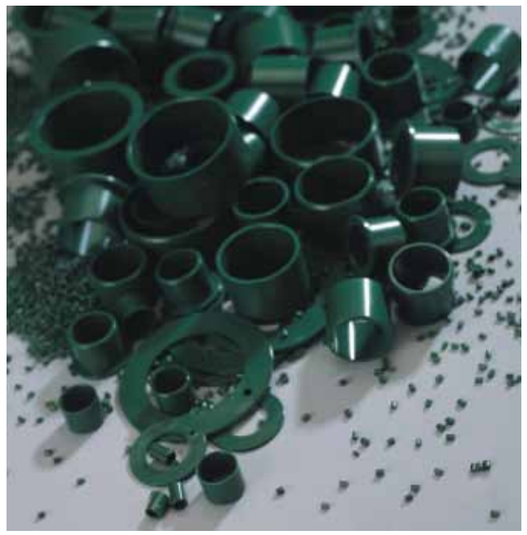
载荷-温度图表
Load-Temperature diagrams

图表 Illustration: 21



CSB-EPB2 Plastic Bearings

CSB-EPB2 塑料轴承



产品特性 Product Characteristics

连续使用温度：-50℃～100℃；
适合多数中高载荷场合；
适合干运行、免维护；
特殊材料优异的热传导性；
适合低速运动。

Continuous working temperature: -50℃～100℃;
Suitable for medium and high load operation;
Maintenance-free dry operation;
Excellent thermol conductivity;
Good for low speed operation.

主要性能数据表 The Material Data Sheet

一般性能 Common Capability	试验方法 Testing Method	单位 Unit	CSB-EPB2
密度 Density	ISO1183	g/cm^3	1.29
颜色 Color			橄榄绿Olive
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*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	3.0
抗拉强度 Tensile strength	ISO527	MPa	80
抗压强度 (轴向) Compressive strength (Axial)	ISO527	MPa	70
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	60
洛氏硬度 Rockwell hardness	ISO2039-2	HRR	111
连续工作温度 Continuous work temperature		℃	-50/100
短时运行温度 Short-time work temperature		℃	-50/150
导热性 Thermal conductivity	ASTME1461	W / m*k	0.25
线性热膨胀系数 Linear coef. of thermal expansion	ASTMD696	K^{-1}*10^{-5}	10
RH50/23℃时的吸湿性 Moisture absorption RH50/23℃	ASTMD570	%	0.1
燃烧性能 Flammability	UL94		HB
体电阻率 Volume resistivity	IEC60093	Ωcm	>10^{14}
面电阻率 Surface resistivity	IEC60093	Ω	>10^{15}

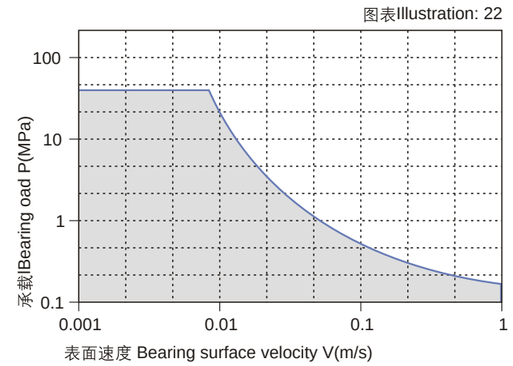
轴承PV值 PV Value of Bearings

CSB-EPB2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，详细查阅图表22。

The max PV value of the CSB-EPB2 series bearing is 0.5N/mm^2*m/s which determines the load capacity of bearing is inversely proportional to the speed. Please refer to the chart for more detailed information (Illustration 22).

PV图表 Permissible PV value for CSB-EPB2

图表Illustration: 22



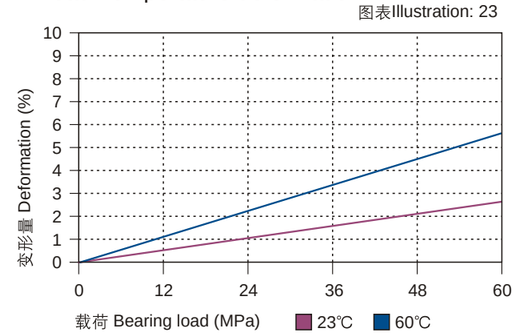
轴承的载荷、速度、温度 The Relation of Load, Speed and Temperature

CSB-EPB2系列轴承可承受最大静载荷为60Mpa，在此载荷下轴承的最大压缩变形量参考图表23，轴承实际工作载荷略小于60Mpa，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：100℃) 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24。

CSB-EPB2 allows the Max static load of 60Mpa, The max compressive deformation rate under the max load is listed in Illustration 23, The actual load capacity of bearing is slightly less than 60Mpa, The bearing load is variable against the speed and temperature, Fast speed (Vmax: 1.0m/s) results into higher temperature (Tmax: 100℃) which decreases the load capacity of the bearing. Please refer to the Illustration 24 for such variation.

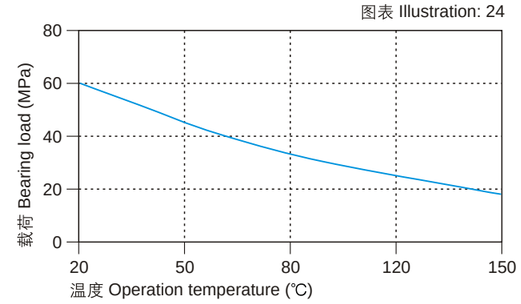
载荷-温度-变形量图表 Load-Temperature deformation

图表Illustration: 23



载荷-温度图表 Load-Temperature diagrams

图表 Illustration: 24



CSB-EPB3 Plastic Bearings

CSB-EPB3 塑料轴承

产品特性 Product Characteristics

连续使用温度: -40℃～130℃;
适合中高载荷，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。

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 Capability	试验方法 Testing Method	单位 Unit	CSB-EPB3
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*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) Compressive strength (Axial)	ISO527	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 work temperature		℃	-40/220
导热性 Thermal conductivity	ASTME1461	W / m*k	0.25
线性热膨胀系数 Linear coef. of thermal expansion	ASTMD696	K^{-1}*10^{-5}	9
RH50/23℃时的吸湿性 Moisture absorption RH50/23℃	ASTMD570	%	0.7
燃烧性能 Flammability	UL94		HB
体电阻率 Volume resistivity	IEC60093	Ωcm	>10^{13}
面电阻率 Surface resistivity	IEC60093	Ω	>10^{11}

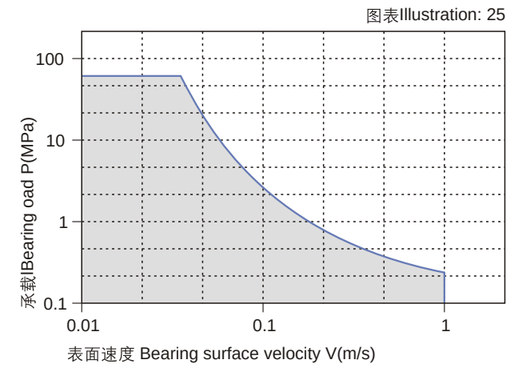
轴承PV值 PV Value of Bearings

CSB-EPB3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，详细查阅图表25。

The max PV value of the CSB-EPB3 series bearing is 0.5N/mm^2*m/s which determines the load capacity of bearing is inversely proportional to the speed. Please refer to the chart for more detailed information (Illustration 25).

PV图表 Permissible PV value for CSB-EPB3

图表Illustration: 25



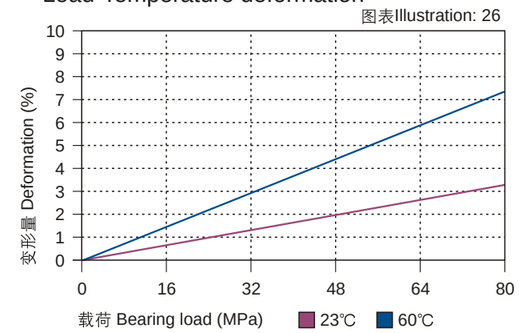
轴承的载荷、速度、温度 The Relation of Load, Speed and Temperature

CSB-EPB3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26，轴承实际工作载荷略小于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27。

CSB-EPB3 allows the Max static load of 80Mpa, The max compressive deformation rate under the max load is listed in Illustration 26, The actual load capacity 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 temperature (Tmax: 130℃) which decreases the load capacity of the bearing. Please refer to the Illustration 27 for such variation.

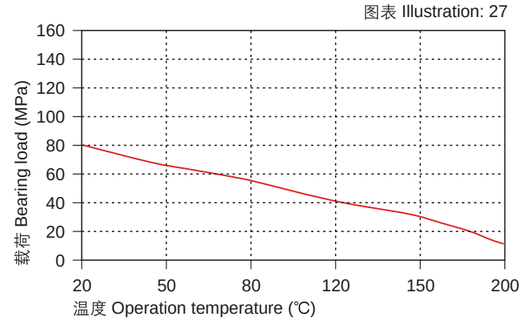
载荷-温度-变形量图表
Load-Temperature deformation

图表Illustration: 26



载荷-温度图表
Load-Temperature diagrams

图表 Illustration: 27



CSB-EPB3G Plastic Bearings

CSB-EPB3G 塑料轴承

产品特性 Product Characteristics

连续使用温度：-40℃～110℃；
承受较高的载荷；
经济性强；
干运行、免维护；
适用于不同轴材料。

Continuous working temperature: -40℃～110℃;
High load capacity;
Good economic ratio;
Dry operation and maintenance free;
Applicable for various shaft materials.

主要性能数据表 The Material Data Sheet

一般性能 Common Capability	试验方法 Testing Method	单位 Unit	CSB-EPB3G
密度 Density	ISO1183	g/cm^3	1.37
颜色 Color			黑色Black
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*m/s	0.3
最大旋转速度值 Max. roatating velocity		m/s	0.8
最大摇摆速度值 Max. oscillating velocity		m/s	0.6
最大直线速度值 Max. linear velocity		m/s	3.5
抗拉强度 Tensile strength	ISO527	MPa	190
抗压强度 (轴向) Compressive strength (Axial)	ISO527	MPa	75
弹性模量 E-module	ISO527	MPa	7500
允许最大表面静压力 (20℃) Max. static pressure of the surface, 20℃		MPa	75
洛氏硬度 Rockwell hardness	ISO2039-2	HRR	112
连续工作温度 Continuous work temperature		℃	-40/110
短时运行温度 Short-time work temperature		℃	-40/200
导热性 Thermal conductivity	ASTME1461	W / m*k	0.25
线性热膨胀系数 Linear coef. of thermal expansion	ASTMD696	K^{-1}*10^{-5}	11
RH50/23℃时的吸湿性 Moisture absorption RH50/23℃	ASTMD570	%	0.9
燃烧性能 Flammability	UL94		HB
体电阻率 Volume resistivity	IEC60093	Ωcm	>10^{13}
面电阻率 Surface resistivity	IEC60093	Ω	>10^{11}

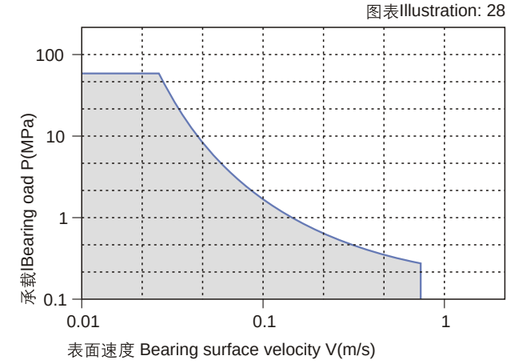
轴承PV值 PV Value of Bearings

CSB-EPB3G系列轴承最大运行PV值为0.3N/mm^2*m/s；由此决定轴承所承受的载荷与速度成反比，详细查阅图表28。

The max PV value of the CSB-EPB3G series bearing is 0.3N/mm^2*m/s which determines the load capacity of bearing is inversely proportional to the speed. Please refer to the chart for more detailed information (Illustration 28).

PV图表 Permissible PV value for CSB-EPB3G

图表Illustration: 28



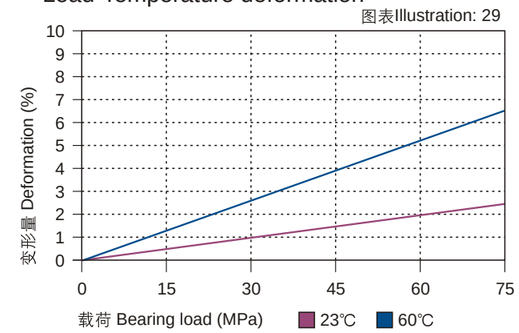
轴承的载荷、速度、温度 The Relation of Load, Speed and Temperature

CSB-EPB3G系列轴承可承受最大静载荷为75Mpa，在此载荷下轴承的最大压缩变形量参考图表29，轴承实际工作载荷略小于75Mpa，载荷还受到运行速度以及温度的影响，速度越快 (Vmax：0.8m/s) 会导致摩擦温度上升，而温度上升 (Tmax：110℃) 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30。

CSB-EPB3G allows the Max static load of 75Mpa, The max compressive deformation rate under the max load is listed in Illustration 29, The actual load capacity of bearing is slightly less than 75Mpa, The bearing load is variable against the speed and temperature, Fast speed (Vmax: 0.8m/s) results into higher temperature (Tmax: 110℃) which decreases the load capacity of the bearing. Please refer to the Illustration 30 for such variation.

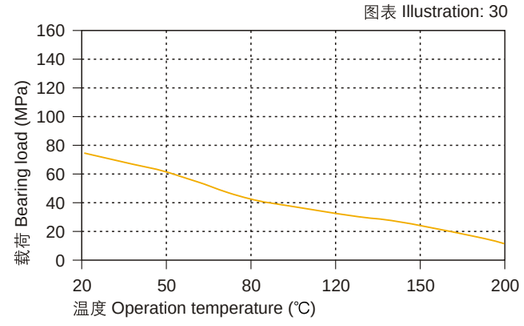
载荷–温度–变形量图表
Load-Temperature deformation

图表Illustration: 29



载荷–温度图表
Load-Temperature diagrams

图表 Illustration: 30



CSB-EPB3M Plastic Bearings

CSB-EPB3M 塑料轴承

产品特性 Product Characteristics

连续使用温度：-40℃～80℃；
承受较高的载荷，耐冲压；
经济性强；
干运行、免维护；
承受边缘载荷；
适合低速运动。

Continuous working temperature: -40℃～80℃;
High load capacity, Impact resistance;
Good economic ratio;
Dry operation and maintenance free;
Good for Marginal Load;
Suitable for low speed operation.

主要性能数据表 The Material Data Sheet

一般性能 Common Capability	试验方法 Testing Method	单位 Unit	CSB-EPB3M
密度 Density	ISO1183	g/cm^3	1.15
颜色 Color			深灰Dark Grey
对钢的动摩擦系数 Dynamic friction /steel(dry)			0.09-0.30
最大P.V值 Max. PV (dry)		N/mm^2*m/s	0.2
最大旋转速度值 Max. roatating velocity		m/s	0.8
最大摇摆速度值 Max. oscillating velocity		m/s	0.6
最大直线速度值 Max. linear velocity		m/s	2.5
抗拉强度 Tensile strength	ISO527	MPa	110
抗压强度 (轴向) Compressive strength (Axial)	ISO527	MPa	50
弹性模量 E-module	ISO527	MPa	2500
允许最大表面静压力 (20℃) Max. static pressure of the surface, 20℃		MPa	20
洛氏硬度 Rockwell hardness	ISO2039-2	HRR	107
连续工作温度 Continuous work temperature		℃	-40/80
短时运行温度 Short-time work temperature		℃	-40/170
导热性 Thermal conductivity	ASTME1461	W / m*k	0.25
线性热膨胀系数 Linear coef. of thermal expansion	ASTMD696	K^{-1}*10^{-5}	10
RH50/23℃时的吸湿性 Moisture absorption RH50/23℃	ASTMD570	%	1.4
燃烧性能 Flammability	UL94		HB
体电阻率 Volume resistivity	IEC60093	Ωcm	>10^{12}
面电阻率 Surface resistivity	IEC60093	Ω	>10^{11}

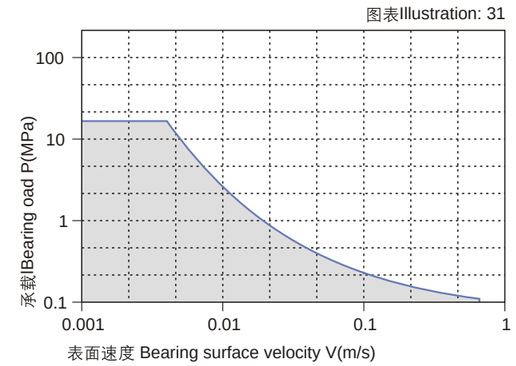
轴承PV值 PV Value of Bearings

CSB-EPB3M系列轴承最大运行PV值为0.2N/mm^2*m/s；由此决定轴承所承受的载荷与速度成反比，详细查阅图表31。

The max PV value of the CSB-EPB3M series bearing is 0.2N/mm^2*m/s which determines the load capacity of bearing is inversely proportional to the speed. Please refer to the chart for more detailed information (Illustration 31).

PV图表 Permissible PV value for CSB-EPB3M

图表Illustration: 31



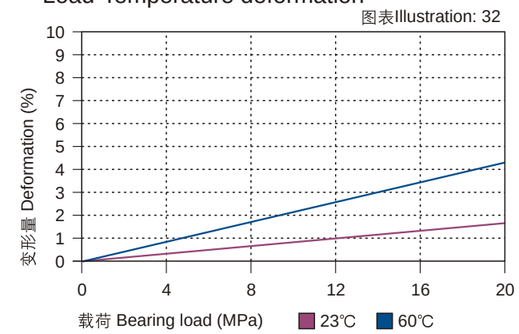
轴承的载荷、速度、温度 The Relation of Load, Speed and Temperature

CSB-EPB3M系列轴承可承受最大静载荷为20Mpa，在此载荷下轴承的最大压缩变形量参考图表32，轴承实际工作载荷略小于20Mpa，载荷还受到运行速度以及温度的影响，速度越快 (Vmax：0.8m/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33。

CSB-EPB3M allows the Max static load of 20Mpa, The max compressive deformation rate under the max load is listed in Illustration 32, The actual load capacity of bearing is slightly less than 20Mpa, The bearing load is variable against the speed and temperature, Fast speed (Vmax: 0.8m/s) results into higher temperature (Tmax: 80℃) which decreases the load capacity of the bearing. Please refer to the Illustration 33 for such variation.

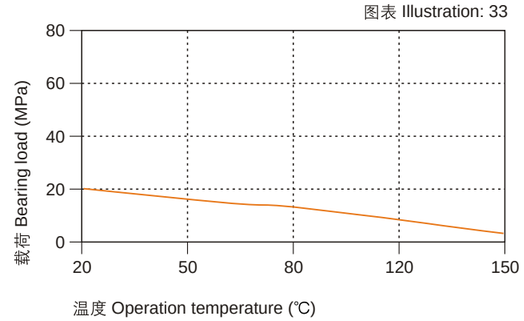
载荷-温度-变形量图表
Load-Temperature deformation

图表Illustration: 32



载荷-温度图表
Load-Temperature diagrams

图表 Illustration: 33



CSB-EPB4 Plastic Bearings

CSB-EPB4 塑料轴承

产品特性 Product Characteristics

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。

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 Capability	试验方法 Testing Method	单位 Unit	CSB-EPB4
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*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) Compressive strength (Axial)	ISO527	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 work temperature		℃	-40/260
导热性 Thermal conductivity	ASTME1461	W / m*k	0.6
线性热膨胀系数 Linear coef. of thermal expansion	ASTMD696	K^{-1}*10^{-5}	4
RH50/23℃时的吸湿性 Moisture absorption RH50/23℃	ASTMD570	%	0.04
燃烧性能 Flammability	UL94		V0
体电阻率 Volume resistivity	IEC60093	Ωcm	>10^4
面电阻率 Surface resistivity	IEC60093	Ω	>10^5

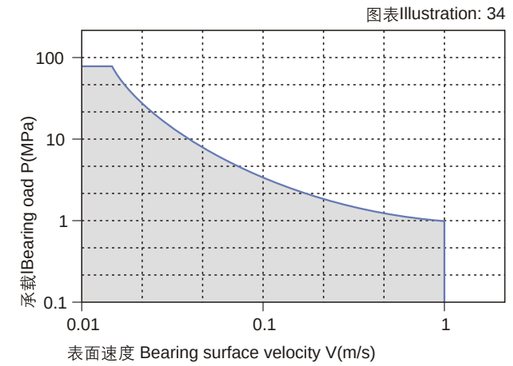
轴承PV值 PV Value of Bearings

CSB-EPB4系列轴承最大运行PV值1.4N/mm^2*m/s；由此决定轴承所承受的载荷与速度成反比，详细查阅图表34。

The max PV value of the CSB-EPB4 series bearing is 1.4N/mm^2*m/s which determines the load capacity of bearing is inversely proportional to the speed. Please refer to the chart for more detailed information (Illustration 34).

PV图表 Permissible PV value for CSB-EPB4

图表Illustration: 34



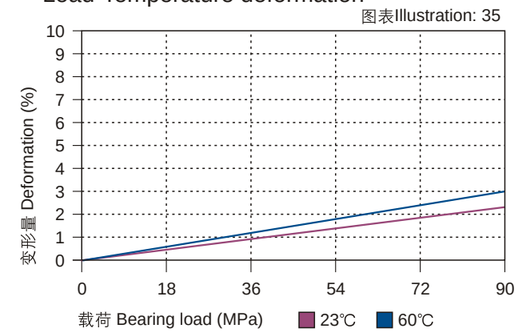
轴承的载荷、速度、温度 The Relation of Load, Speed and Temperature

CSB-EPB4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35，轴承实际工作载荷略小于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36。

CSB-EPB4 allows the Max static load of 90Mpa, The max compressive deformation rate under the max load is listed in Illustration 35, The actual load capacity 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 temperature (Tmax: 200℃) which decreases the load capacity of the bearing. Please refer to the Illustration 36 for such variation.

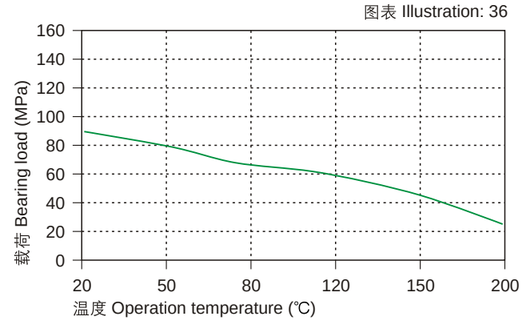
载荷-温度-变形量图表
Load-Temperature deformation

图表Illustration: 35



载荷-温度图表
Load-Temperature diagrams

图表 Illustration: 36



CSB-EPB5 Plastic Bearings

CSB-EPB5 塑料轴承

产品特性 Product Characteristics

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。

Continuous working temperature: -100℃～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 Capability	试验方法 Testing Method	单位 Unit	CSB-EPB5
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*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) Compressive strength (Axial)	ISO527	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 work temperature		℃	-100/315
导热性 Thermal conductivity	ASTME1461	W / m*k	0.6
线性热膨胀系数 Linear coef. of thermal expansion	ASTMD696	K^{-1}*10^{-5}	5
RH50/23℃时的吸湿性 Moisture absorption RH50/23℃	ASTMD570	%	0.1
燃烧性能 Flammability	UL94		V0
体电阻率 Volume resistivity	IEC60093	Ωcm	>10^8
面电阻率 Surface resistivity	IEC60093	Ω	>10^7

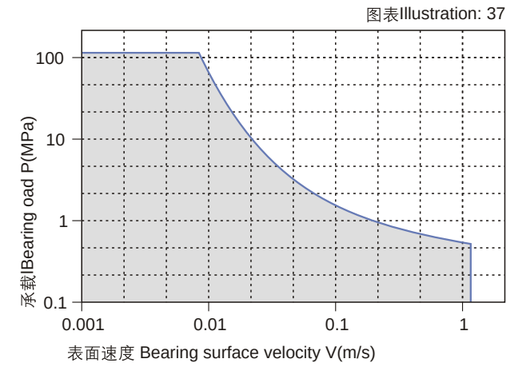
轴承PV值 PV Value of Bearings

CSB-EPB5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，详细查阅图表37。

The max PV value of the CSB-EPB5 series bearing is 1.5N/mm^2*m/s which determines the load capacity of bearing is inversely proportional to the speed. Please refer to the chart for more detailed information (Illustration 37).

PV图表 Permissible PV value for CSB-EPB5

图表Illustration: 37



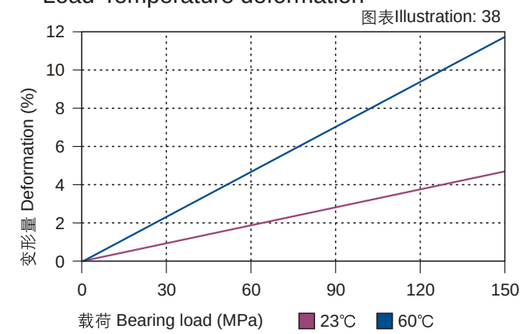
轴承的载荷、速度、温度 The Relation of Load, Speed and Temperature

CSB-EPB5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38，轴承实际工作载荷略小于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39。

CSB-EPB5 allows the Max static load of 150Mpa, The max compressive deformation rate under the max load is listed in Illustration 38, The actual load capacity 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 temperature (Tmax: 250℃) which decreases the load capacity of the bearing. Please refer to the Illustration 39 for such variation.

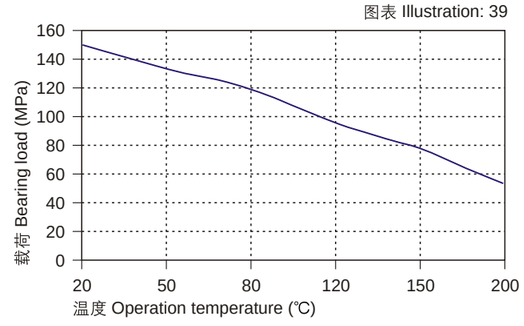
载荷-温度-变形量图表
Load-Temperature deformation

图表Illustration: 38



载荷-温度图表
Load-Temperature diagrams

图表 Illustration: 39



CSB-EPB5Z Plastic Bearings

CSB-EPB5Z 塑料轴承

产品特性 Product Characteristics

连续使用温度: -100℃ ~ 250℃;
适合高载荷运动;
允许较高的运行速度;
允许边界压力;
摆动运行性能尤为出色。

Continuous working temperature: -100℃ ~ 250℃;
High load capacity;
Higher speed is permissible;
Marginal pressure is permissible;
Best performance for oscillating movement.

主要性能数据表 The Material Data Sheet

一般性能 Common Capability	试验方法 Testing Method	单位 Unit	CSB-EPB5Z
密度 Density	ISO1183	g/cm^3	1.40
颜色 Color			棕色Brown
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*m/s	1.0
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	90
抗压强度 (轴向) Compressive strength (Axial)	ISO527	MPa	65
弹性模量 E-module	ISO527	MPa	4500
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	122
连续工作温度 Continuous work temperature		℃	-100/250
短时运行温度 Short-time work temperature		℃	-100/310
导热性 Thermal conductivity	ASTME1461	W / m*k	0.6
线性热膨胀系数 Linear coef. of thermal expansion	ASTMD696	K^{-1}*10^{-5}	4
RH50/23℃时的吸湿性 Moisture absorption RH50/23℃	ASTMD570	%	0.1
燃烧性能 Flammability	UL94		V0
体电阻率 Volume resistivity	IEC60093	Ωcm	>10^{11}
面电阻率 Surface resistivity	IEC60093	Ω	>10^{11}

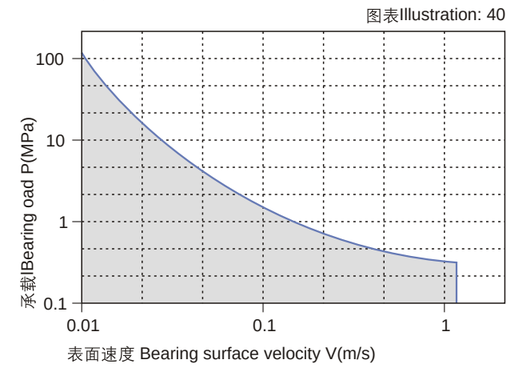
轴承PV值 PV Value of Bearings

CSB-EPB5Z系列轴承最大运行PV值为1.0N/mm^2*m/s; 由此决定轴承所承受的载荷与速度成反比, 详细查阅图表40。

The max PV value of the CSB-EPB5Z series bearing is 1.0N/mm^2*m/s which determines the load capacity of bearing is inversely proportional to the speed. Please refer to the chart for more detailed information (Illustration 40).

PV图表 Permissible PV value for CSB-EPB5Z

图表Illustration: 40



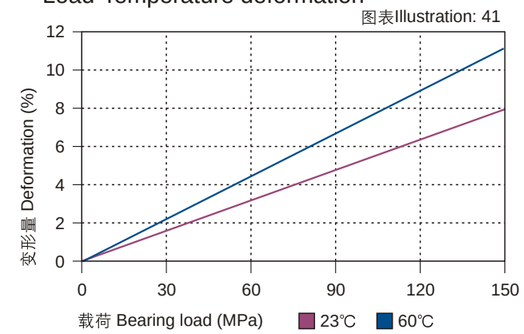
轴承的载荷、速度、温度 The Relation of Load, Speed and Temperature

CSB-EPB5Z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41, 轴承实际工作载荷略小于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42。

CSB-EPB5Z allows the Max static load of 150Mpa, The max compressive deformation rate under the max load is listed in Illustration 41, The actual load capacity 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 temperature (Tmax: 250℃) which decreases the load capacity of the bearing. Please refer to the Illustration 42 for such variation.

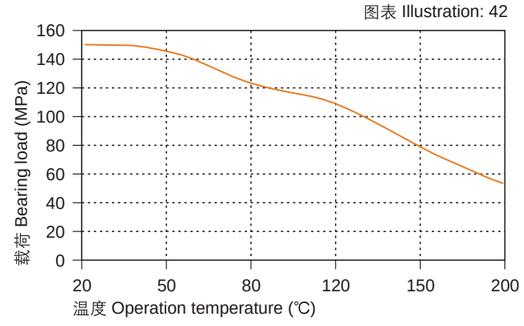
载荷-温度-变形量图表
Load-Temperature deformation

图表Illustration: 41



载荷-温度图表
Load-Temperature diagrams

图表 Illustration: 42



CSB-EPB6 Plastic Bearings

CSB-EPB6 塑料轴承

产品特性 Product Characteristics

连续使用温度：-40℃～80℃；
对轴表面粗糙度要求低;
较低的摩擦系数;
适用于软轴。

Continuous working temperature: -40℃～80℃;
No special requirement on the surface roughness;
Low friction coefficient;
Applicable for flexible shaft.

主要性能数据表 The Material Data Sheet

一般性能 Common Capability	试验方法 Testing Method	单位 Unit	CSB-EPB6
密度 Density	ISO1183	g/cm^3	1.45
颜色 Color			白色White
对钢的动摩擦系数 Dynamic friction /steel(dry)			0.05-0.18
最大P.V值 Max. PV (dry)		N/mm^2*m/s	0.3
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	75
抗压强度 (轴向) Compressive strength (Axial)	ISO527	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	30
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 work temperature		℃	-40/120
导热性 Thermal conductivity	ASTME1461	W / m*k	0.2
线性热膨胀系数 Linear coef. of thermal expansion	ASTMD696	K^{-1}*10^{-5}	10
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	Ωcm	>10^{12}
面电阻率 Surface resistivity	IEC60093	Ω	>10^{15}

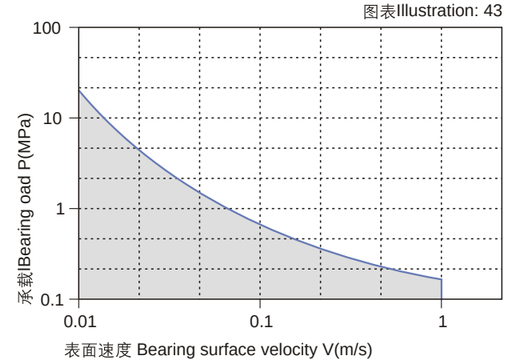
轴承PV值 PV Value of Bearings

CSB-EPB6系列轴承最大运行PV值为0.3N/mm^2*m/s；由此决定轴承所承受的载荷与速度成反比，详细查阅图表43。

The max PV value of the CSB-EPB6 series bearing is 0.3N/mm^2*m/s which determines the load capacity of bearing is inversely proportional to the speed. Please refer to the chart for more detailed information (Illustration 43).

PV图表 Permissible PV value for CSB-EPB6

图表Illustration: 43



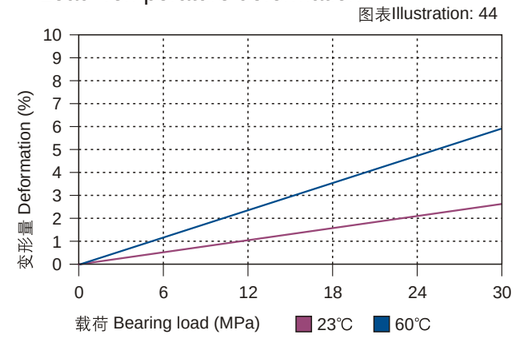
轴承的载荷、速度、温度 The Relation of Load, Speed and Temperature

CSB-EP6系列轴承可承受最大静载荷为30Mpa，在此载荷下轴承的最大压缩变形量参考图表44，轴承实际工作载荷略小于30Mpa，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45。

CSB-EPB6 allows the Max static load of 30Mpa, The max compressive deformation rate under the max load is listed in Illustration 44, The actual load capacity of bearing is slightly less than 30Mpa, The bearing load is variable against the speed and temperature, Fast speed (Vmax: 1.0m/s) results into higher temperature (Tmax: 80℃) which decreases the load capacity of the bearing. Please refer to the Illustration 45 for such variation.

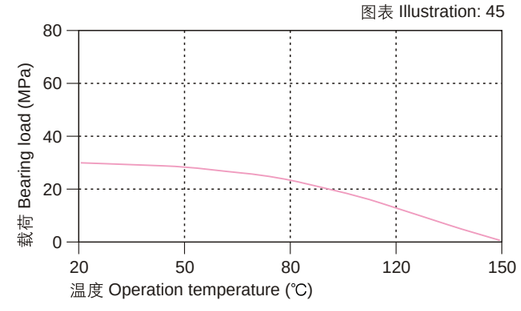
载荷-温度-变形量图表 Load-Temperature deformation

图表Illustration: 44



载荷-温度图表 Load-Temperature diagrams

图表 Illustration: 45



CSB-EPB7 Plastic Bearings

CSB-EPB7 塑料轴承

产品特性 Product Characteristics

连续使用温度: -40℃～100℃;
非常耐磨长寿命;
适合在灰尘中运行;
对轴表面粗糙度要求低;
较低的摩擦系数;
适用于软轴。

Continuous working temperature: -40℃～100℃;
Good wear resistance with long service life;
Suitable for operation in dusty environment;
No special requirement on the surface roughness;
Low friction coefficient;
Applicable for flexible shaft.

主要性能数据表 The Material Data Sheet

一般性能 Common Capability	试验方法 Testing Method	单位 Unit	CSB-EPB7
密度 Density	ISO1183	g/cm^3	1.25
颜色 Color			乳白色Cream
对钢的动摩擦系数 Dynamic friction /steel(dry)			0.09-0.20
最大P.V值 Max. PV (dry)		N/mm^2*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	120
抗压强度 (轴向) Compressive strength (Axial)	ISO527	MPa	65
弹性模量 E-module	ISO527	MPa	3500
允许最大表面静压力 (20℃) Max. static pressure of the surface, 20℃		MPa	65
洛氏硬度 Rockwell hardness	ISO2039-2	HRR	108
连续工作温度 Continuous work temperature		℃	-40/100
短时运行温度 Short-time work temperature		℃	-40/180
导热性 Thermal conductivity	ASTME1461	W / m*k	0.2
线性热膨胀系数 Linear coef. of thermal expansion	ASTMD696	K^{-1}*10^{-5}	9
RH50/23℃时的吸湿性 Moisture absorption RH50/23℃	ASTMD570	%	1.3
燃烧性能 Flammability	UL94		HB
体电阻率 Volume resistivity	IEC60093	Ωcm	>10^{12}
面电阻率 Surface resistivity	IEC60093	Ω	>10^{12}

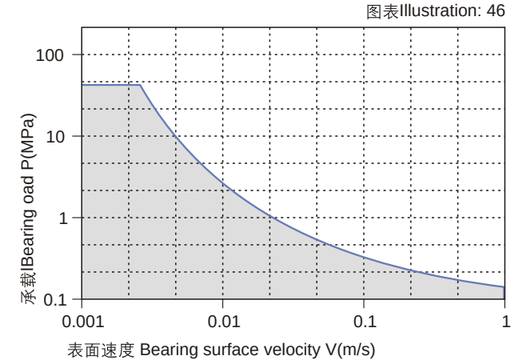
轴承PV值 PV Value of Bearings

CSB-EPB7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，详细查阅图表46。

The max PV value of the CSB-EPB7 series bearing is 0.5N/mm^2*m/s which determines the load capacity of bearing is inversely proportional to the speed. Please refer to the chart for more detailed information (Illustration 46).

PV图表 Permissible PV value for CSB-EPB7

图表Illustration: 46



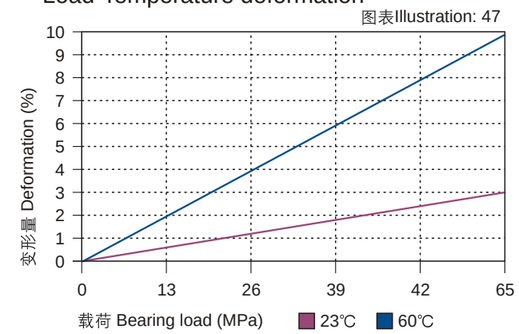
轴承的载荷、速度、温度 The Relation of Load, Speed and Temperature

CSB-EPB7系列轴承可承受最大静载荷为65Mpa，在此载荷下轴承的最大压缩变形量参考图表47，轴承实际工作载荷略小于65Mpa，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: 100℃) 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48。

CSB-EPB7 allows the Max static load of 65Mpa, The max compressive deformation rate under the max load is listed in Illustration 47, The actual load capacity of bearing is slightly less than 65Mpa, The bearing load is variable against the speed and temperature, Fast speed(Vmax: 1.0m/s) results into higher temperature (Tmax: 100℃) which decreases the load capacity of the bearing. Please refer to the Illustration 48 for such variation.

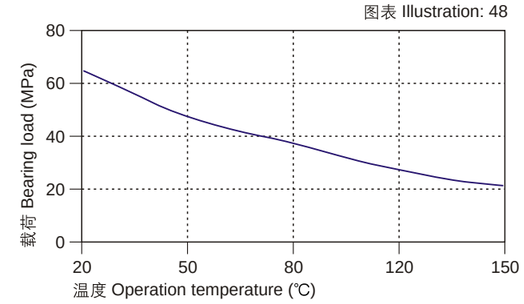
载荷-温度-变形量图表
Load-Temperature deformation

图表Illustration: 47



载荷-温度图表
Load-Temperature diagrams

图表 Illustration: 48



CSB-EPB8 Plastic Bearings

CSB-EPB8 塑料轴承

产品特性 Product Characteristics

连续使用温度: -40℃～200℃;
重载下耐磨性较好;
适合水下运行、免维护;
化学抗性好。

Continuous working temperature: -40℃～200℃;
Good wear resistance under high load;
Suitable for underwater operation;
Good chemical resistance.

主要性能数据表 The Material Data Sheet

一般性能 Common Capability	试验方法 Testing Method	单位 Unit	CSB-EPB8
密度 Density	ISO1183	g/cm^3	1.60
颜色 Color			灰色Grey
对钢的动摩擦系数 Dynamic friction /steel(dry)			0.07~0.18
最大P.V值 Max. PV (dry)		N/mm^2*m/s	0.8
最大旋转速度值 Max. roatating velocity		m/s	1.2
最大摇摆速度值 Max. oscillating velocity		m/s	0.8
最大直线速度值 Max. linear velocity		m/s	4.0
抗拉强度 Tensile strength	ISO527	MPa	135
抗压强度 (轴向) Compressive strength (Axial)	ISO527	MPa	80
弹性模量 E-module	ISO527	MPa	11000
允许最大表面静压力 (20℃) Max. static pressure of the surface, 20℃		MPa	75
洛氏硬度 Rockwell hardness	ISO2039-2	HRR	115
连续工作温度 Continuous work temperature		℃	-40/200
短时运行温度 Short-time work temperature		℃	-40/260
导热性 Thermal conductivity	ASTME1461	W / m*k	0.5
线性热膨胀系数 Linear coef. of thermal expansion	ASTMD696	K^{-1}*10^{-5}	5
RH50/23℃时的吸湿性 Moisture absorption RH50/23℃	ASTMD570	%	0.05
燃烧性能 Flammability	UL94		V0
体电阻率 Volume resistivity	IEC60093	Ωcm	>10^5
面电阻率 Surface resistivity	IEC60093	Ω	>10^5

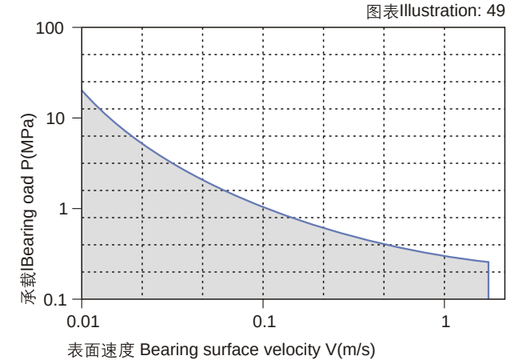
轴承PV值 PV Value of Bearings

CSB-EPB8系列轴承最大运行PV值为0.8N/mm^2*m/s; 由此决定轴承所承受的载荷与速度成反比，详细查阅图表49。

The max PV value of the CSB-EPB8 series bearing is 0.8N/mm^2*m/s which determines the load capacity of bearing is inversely proportional to the speed. Please refer to the chart for more detailed information (Illustration 49).

PV图表 Permissible PV value for CSB-EPB8

图表Illustration: 49



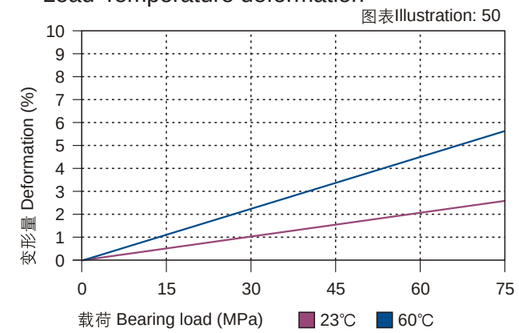
轴承的载荷、速度、温度 The Relation of Load, Speed and Temperature

CSB-EPB8系列轴承可承受最大静载荷为75Mpa，在此载荷下轴承的最大压缩变形量参考图表50，轴承实际工作载荷略小于75Mpa，载荷还受到运行速度以及温度的影响，速度越快 (Vmax: 1.2m/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51。

CSB-EPB8 allows the Max static load of 75Mpa, The max compressive deformation rate under the max load is listed in Illustration 50, The actual load capacity of bearing is slightly less than 75Mpa, The bearing load is variable against the speed and temperature, Fast speed (Vmax: 1.2m/s) results into higher temperature (Tmax: 200℃) which decreases the load capacity of the bearing. Please refer to the Illustration 51 for such variation.

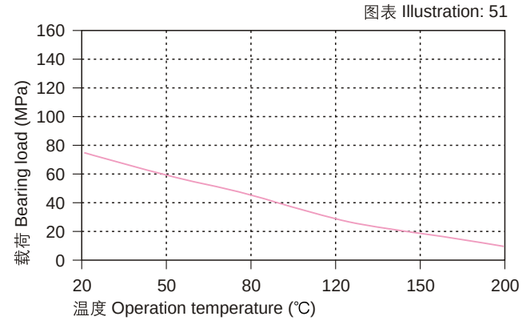
载荷-温度-变形量图表
Load-Temperature deformation

图表Illustration: 50



载荷-温度图表
Load-Temperature diagrams

图表 Illustration: 51



CSB-EPB9 Plastic Bearings

CSB-EPB9 塑料轴承

产品特性 Product Characteristics

连续使用温度: -40℃～130℃;
专用于要求抗静电场合;
适合低速运动;
较高的承载能力。

Continuous working temperature: -40℃～130℃;
Specially use for static electricity existing environment;
Suitable for low speed operation;
Higher load capacity.

主要性能数据表 The Material Data Sheet

一般性能 Common Capability	试验方法 Testing Method	单位 Unit	CSB-EPB9
密度 Density	ISO1183	g/cm^3	1.24
颜色 Color			黑色Black
对钢的动摩擦系数 Dynamic friction /steel(dry)			0.10-0.40
最大P.V值 Max. PV (dry)		N/mm^2*m/s	0.3
最大旋转速度值 Max. roatating velocity		m/s	0.8
最大摇摆速度值 Max. oscillating velocity		m/s	0.6
最大直线速度值 Max. linear velocity		m/s	3.0
抗拉强度 Tensile strength	ISO527	MPa	250
抗压强度 (轴向) Compressive strength (Axial)	ISO527	MPa	100
弹性模量 E-module	ISO527	MPa	11000
允许最大表面静压力 (20℃) Max. static pressure of the surface, 20℃		MPa	105
洛氏硬度 Rockwell hardness	ISO2039-2	HRR	110
连续工作温度 Continuous work temperature		℃	-40/130
短时运行温度 Short-time work temperature		℃	-40/180
导热性 Thermal conductivity	ASTME1461	W / m*k	0.6
线性热膨胀系数 Linear coef. of thermal expansion	ASTMD696	K^{-1}*10^{-5}	11
RH50/23℃时的吸湿性 Moisture absorption RH50/23℃	ASTMD570	%	1.8
燃烧性能 Flammability	UL94		HB
体电阻率 Volume resistivity	IEC60093	Ωcm	<10^3
面电阻率 Surface resistivity	IEC60093	Ω	<10^3

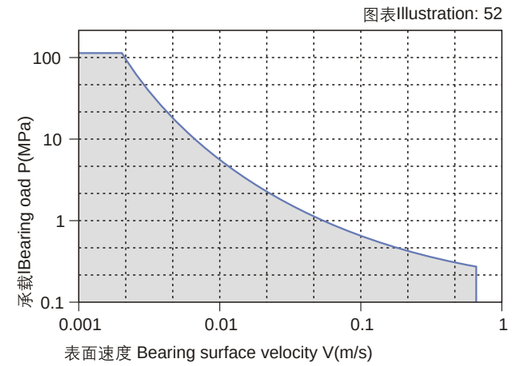
轴承PV值 PV Value of Bearings

CSB-EPB9系列轴承最大运行PV值为0.3N/mm^2*m/s; 由此决定轴承所承受的载荷与速度成反比, 详细查阅图表52。

The max PV value of the CSB-EPB9 series bearing is 0.3N/mm^2*m/s which determines the load capacity of bearing is inversely proportional to the speed. Please refer to the chart for more detailed information (Illustration 52).

PV图表 Permissible PV value for CSB-EPB9

图表Illustration: 52



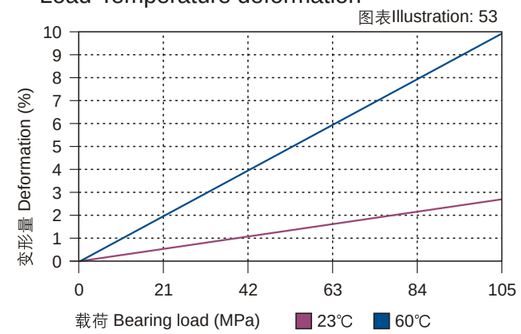
轴承的载荷、速度、温度 The Relation of Load, Speed and Temperature

CSB-EPB9系列轴承可承受最大静载荷为105Mpa, 在此载荷下轴承的最大压缩变形量参考图表53, 轴承实际工作载荷略小于105Mpa, 载荷还受到运行速度以及温度的影响, 速度越快 (Vmax: 0.8m/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54。

CSB-EPB9 allows the Max static load of 105Mpa, The max compressive deformation rate under the max load is listed in Illustration 53, The actual load capacity of bearing is slightly less than 105Mpa, The bearing load is variable against the speed and temperature, Fast speed (Vmax: 0.8m/s) results into higher temperature (Tmax: 130℃) which decreases the load capacity of the bearing. Please refer to the Illustration 54 for such variation.

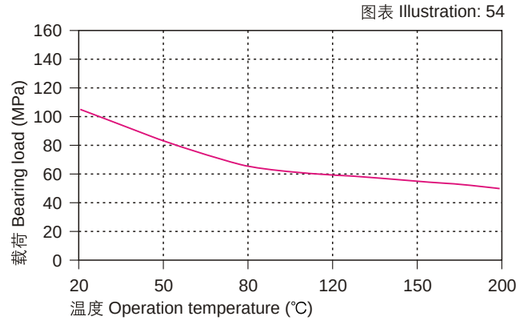
载荷-温度-变形量图表
Load-Temperature deformation

图表Illustration: 53



载荷-温度图表
Load-Temperature diagrams

图表 Illustration: 54



CSB-EPB10 Plastic Bearings

CSB-EPB10 塑料轴承

产品特性 Product Characteristics

连续使用温度：-100℃～260℃；
非常耐磨长寿命；
适合在灰尘中运行；
对轴表面粗糙度要求低；
较低的摩擦系数。

Continuous working temperature: -100℃～260℃;
Good wear resistance with long service life;
Suitable for operation in dusty environment;
No special requirement on the surface roughness;
Low friction coefficient.

主要性能数据表 The Material Data Sheet

一般性能 Common Capability	试验方法 Testing Method	单位 Unit	CSB-EPB10
密度 Density	ISO1183	g/cm^3	1.40
颜色 Color			黑色Black
对钢的动摩擦系数 Dynamic friction /steel(dry)			0.10-0.25
最大P.V值 Max. PV (dry)		N/mm^2*m/s	1.8
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	240
抗压强度 (轴向) Compressive strength (Axial)	ISO527	MPa	105
弹性模量 E-module	ISO527	MPa	23000
允许最大表面静压力 (20℃) Max. static pressure of the surface, 20℃		MPa	160
洛氏硬度 Rockwell hardness	ISO2039-2	HRR	121
连续工作温度 Continuous work temperature		℃	-100/260
短时运行温度 Short-time work temperature		℃	-100/315
导热性 Thermal conductivity	ASTME1461	W / m*k	0.7
线性热膨胀系数 Linear coef. of thermal expansion	ASTMD696	K^{-1}*10^{-5}	2
RH50/23℃时的吸湿性 Moisture absorption RH50/23℃	ASTMD570	%	0.1
燃烧性能 Flammability	UL94		V0
体电阻率 Volume resistivity	IEC60093	Ωcm	<10^5
面电阻率 Surface resistivity	IEC60093	Ω	<10^5

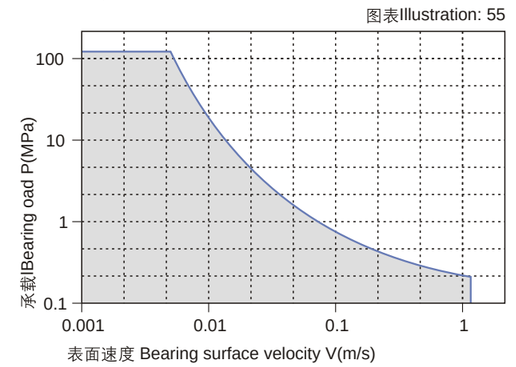
轴承PV值 PV Value of Bearings

CSB-EPB10系列轴承最大运行PV值为1.8N/mm^2*m/s；由此决定轴承所承受的载荷与速度成反比，详细查阅图表55。

The max PV value of the CSB-EPB10 series bearing is 1.8N/mm^2*m/s which determines the load capacity of bearing is inversely proportional to the speed. Please refer to the chart for more detailed information (Illustration 55).

PV图表 Permissible PV value for CSB-EPB10

图表Illustration: 55



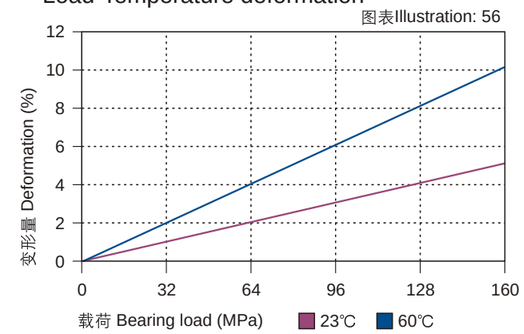
轴承的载荷、速度、温度 The Relation of Load, Speed and Temperature

CSB-EPB10系列轴承可承受最大静载荷为160Mpa，在此载荷下轴承的最大压缩变形量参考图表56，轴承实际工作载荷略小于160Mpa，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: 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57。

CSB-EPB10 allows the Max static load of 160Mpa, The max compressive deformation rate under the max load is listed in Illustration 56, The actual load capacity of bearing is slightly less than 160Mpa, The bearing load is variable against the speed and temperature, Fast speed (Vmax: 1.5m/s) results into higher temperature (Tmax: 260℃) which decreases the load capacity of the bearing. Please refer to the Illustration 57 for such variation.

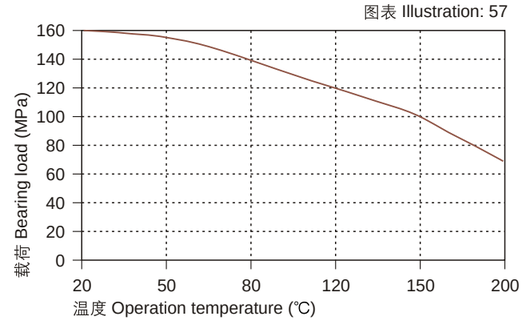
载荷-温度-变形量图表
Load-Temperature deformation

图表Illustration: 56



载荷-温度图表
Load-Temperature diagrams

图表 Illustration: 57



CSB-EPB12 Plastic Bearings

CSB-EPB12 塑料轴承

产品特性 Product Characteristics

连续使用温度: -40℃～130℃;
承受较高载荷;
适合用于摆动场合;
抗冲击性能较好;
抗污垢能力强。

Continuous working temperature: -40℃～130℃;
Suitable for high load operation;
Good for oscillating operation;
Good impact resistance;
Comtainment prevention ability.

主要性能数据表 The Material Data Sheet

一般性能 Common Capability	试验方法 Testing Method	单位 Unit	CSB-EPB12
密度 Density	ISO1183	g/cm^3	1.40
颜色 Color			黑色Black
对钢的动摩擦系数 Dynamic friction /steel(dry)			0.05-0.20
最大P.V值 Max. PV (dry)		N/mm^2*m/s	0.6
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	5.0
抗拉强度 Tensile strength	ISO527	MPa	115
抗压强度 (轴向) Compressive strength (Axial)	ISO527	MPa	95
弹性模量 E-module	ISO527	MPa	4300
允许最大表面静压力 (20℃) Max. static pressure of the surface, 20℃		MPa	100
洛氏硬度 Rockwell hardness	ISO2039-2	HRR	117
连续工作温度 Continuous work temperature		℃	-40/130
短时运行温度 Short-time work temperature		℃	-40/170
导热性 Thermal conductivity	ASTME1461	W / m*k	0.25
线性热膨胀系数 Linear coef. of thermal expansion	ASTMD696	K^{-1}*10^{-5}	5
RH50/23℃时的吸湿性 Moisture absorption RH50/23℃	ASTMD570	%	0.9
燃烧性能 Flammability	UL94		HB
体电阻率 Volume resistivity	IEC60093	Ωcm	>10^{15}
面电阻率 Surface resistivity	IEC60093	Ω	>10^{12}

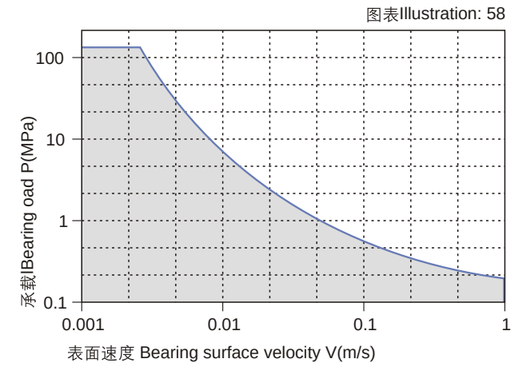
轴承PV值 PV Value of Bearings

CSB-EPB12系列轴承最大运行PV值为0.6N/mm^2*m/s; 由此决定轴承所承受的载荷与速度成反比，详细查阅图表58。

The max PV value of the CSB-EPB12 series bearing is 0.6N/mm^2*m/s which determines the load capacity of bearing is inversely proportional to the speed. Please refer to the chart for more detailed information (Illustration 58).

PV图表 Permissible PV value for CSB-EPB12

图表Illustration: 58



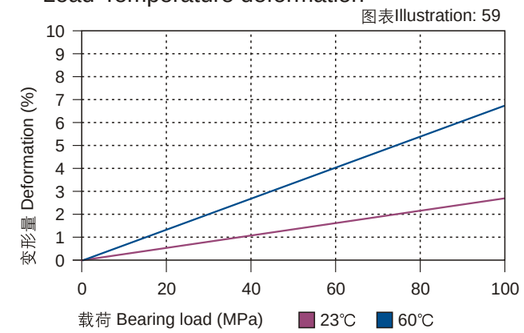
轴承的载荷、速度、温度 The Relation of Load, Speed and Temperature

CSB-EPB12系列轴承可承受最大静载荷为100Mpa，在此载荷下轴承的最大压缩变形量参考图表59，轴承实际工作载荷略小于100Mpa，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60。

CSB-EPB12 allows the Max static load of 100Mpa, The max compressive deformation rate under the max load is listed in Illustration 59, The actual load capacity of bearing is slightly less than 100Mpa, The bearing load is variable against the speed and temperature, Fast speed (Vmax: 1.0m/s) results into higher temperature (Tmax: 130℃) which decreases the load capacity of the bearing. Please refer to the Illustration 60 for such variation.

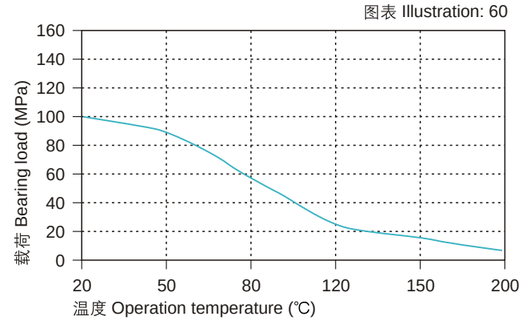
载荷-温度-变形量图表
Load-Temperature deformation

图表Illustration: 59



载荷-温度图表
Load-Temperature diagrams

图表 Illustration: 60



CSB-EPB13 Plastic Bearings

CSB-EPB13 塑料轴承

产品特性 Product Characteristics

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。

Continuous working temperature: -50℃～90℃;
Maintenance-free dry operation;
Small wear off amount against various shaft materials;
Lower friction;
Low water absorption.

主要性能数据表 The Material Data Sheet

一般性能 Common Capability	试验方法 Testing Method	单位 Unit	CSB-EPB13
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)		$N/mm^2*m/s$	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) Compressive strength (Axial)	ISO527	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 work temperature		℃	-50/120
导热性 Thermal conductivity	ASTME1461	W / m*k	0.25
线性热膨胀系数 Linear coef. of thermal expansion	ASTMD696	$K^{-1}*10^{-5}$	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	Ωcm	$>10^{13}$
面电阻率 Surface resistivity	IEC60093	Ω	$>10^{12}$

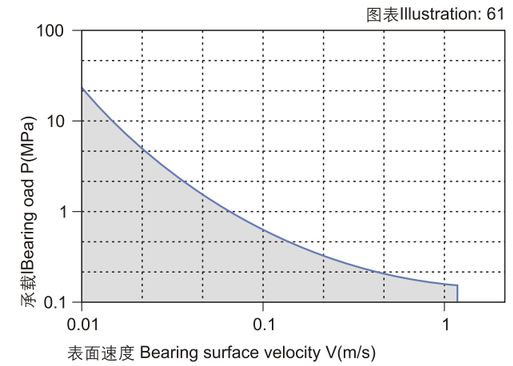
轴承PV值 PV Value of Bearings

CSB-EPB13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，详细查阅图表61。

The max PV value of the CSB-EPB13 series bearing is 0.4N/mm²*m/s which determines the load capacity of bearing is inversely proportional to the speed. Please refer to the chart for more detailed information (Illustration 61).

PV图表 Permissible PV value for CSB-EPB13

图表Illustration: 61



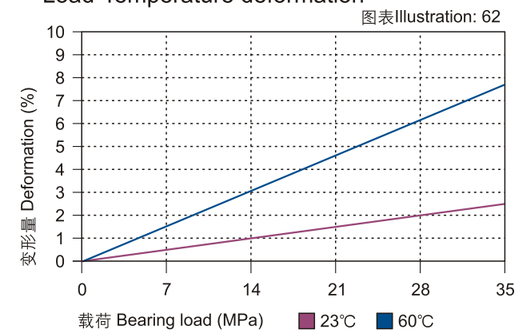
轴承的载荷、速度、温度 The Relation of Load, Speed and Temperature

CSB-EPB13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62，轴承实际工作载荷略小于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63。

CSB-EPB13 allows the Max static load of 35Mpa, The max compressive deformation rate under the max load is listed in Illustration 62, The actual load capacity 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 temperature (Tmax: 90℃) which decreases the load capacity of the bearing. Please refer to the Illustration 63 for such variation.

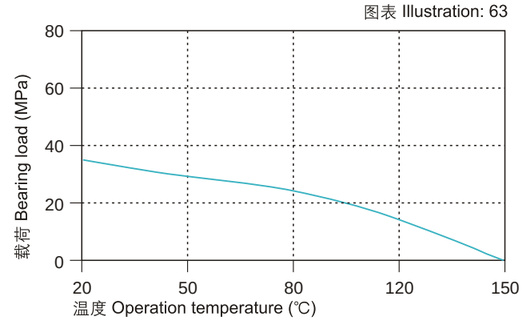
载荷-温度-变形量图表
Load-Temperature deformation

图表Illustration: 62



载荷-温度图表
Load-Temperature diagrams

图表 Illustration: 63



CSB-EPB16 Plastic Bearings

CSB-EPB16 塑料轴承

产品特性 Product Characteristics

连续使用温度：-40℃～130℃；
较高的载荷；
适合干运行、免维护；
吸水率较低；
高载下性价比好。

Continuous working temperature: -40℃～130℃;
Higher load capacity;
Maintenance-free dry operation;
Low water absorption;
Good performance cost ratio under high load.

主要性能数据表 The Material Data Sheet

一般性能 Common Capability	试验方法 Testing Method	单位 Unit	CSB-EPB16
密度 Density	ISO1183	g/cm^3	1.58
颜色 Color			黑色Blank
对钢的动摩擦系数 Dynamic friction /steel(dry)			0.06-0.20
最大P.V值 Max. PV (dry)		N/mm^2*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	120
抗压强度 (轴向) Compressive strength (Axial)	ISO527	MPa	65
弹性模量 E-module	ISO527	MPa	5300
允许最大表面静压力 (20℃) Max. static pressure of the surface, 20℃		MPa	50
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 work temperature		℃	-40/200
导热性 Thermal conductivity	ASTME1461	W / m*k	0.25
线性热膨胀系数 Linear coef. of thermal expansion	ASTMD696	K^{-1}*10^{-5}	4
RH50/23℃时的吸湿性 Moisture absorption RH50/23℃	ASTMD570	%	0.2
燃烧性能 Flammability	UL94		HB
体电阻率 Volume resistivity	IEC60093	Ωcm	>10^{13}
面电阻率 Surface resistivity	IEC60093	Ω	>10^{12}

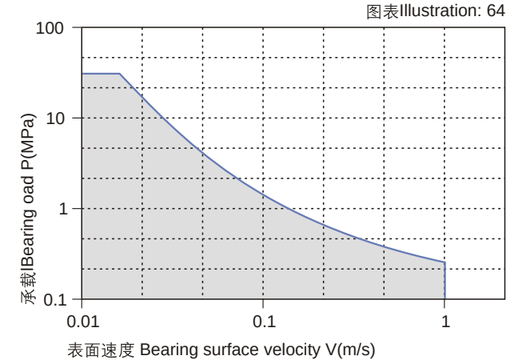
轴承PV值 PV Value of Bearings

CSB-EPB16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，详细查阅图表64。

The max PV value of the CSB-EPB16 series bearing is 0.4N/mm^2*m/s which determines the load capacity of bearing is inversely proportional to the speed. Please refer to the chart for more detailed information (Illustration 64).

PV图表 Permissible PV value for CSB-EPB16

图表Illustration: 64



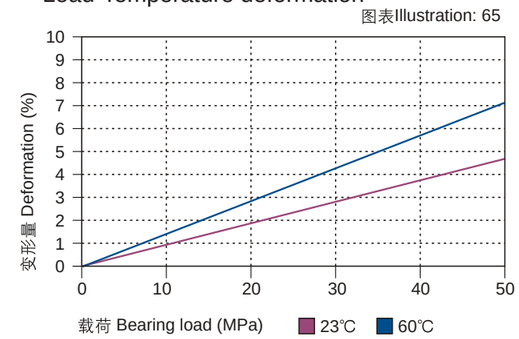
轴承的载荷、速度、温度 The Relation of Load, Speed and Temperature

CSB-EPB16系列轴承可承受最大静载荷为50Mpa，在此载荷下轴承的最大压缩变形量参考图表65，轴承实际工作载荷略小于50Mpa，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66。

CSB-EPB16 allows the Max static load of 50Mpa, The max compressive deformation rate under the max load is listed in Illustration 65, The actual load capacity of bearing is slightly less than 50Mpa, The bearing load is variable against the speed and temperature, Fast speed (Vmax: 1.0m/s) results into higher temperature (Tmax: 130℃) which decreases the load capacity of the bearing. Please refer to the Illustration 66 for such variation.

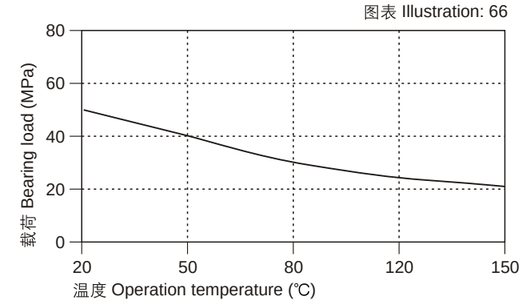
载荷–温度–变形量图表
Load-Temperature deformation

图表Illustration: 65



载荷–温度图表
Load-Temperature diagrams

图表 Illustration: 66



CSB-EPB17 Plastic Bearings

CSB-EPB17 塑料轴承

产品特性 Product Characteristics

连续使用温度：-40℃～160℃；
适合高载下的摆动；
适合干运行、免维护；
较高的抗压强度。

Continuous working temperature: -40℃～160℃;
Applicable for oscillating under high load;
Maintenance-free dry operation;
High pressure resistance.

主要性能数据表 The Material Data Sheet

一般性能 Common Capability	试验方法 Testing Method	单位 Unit	CSB-EPB17
密度 Density	ISO1183	g/cm^3	2.93
颜色 Color			棕色Brown
对钢的动摩擦系数 Dynamic friction /steel(dry)			0.05-0.25
最大P.V值 Max. PV (dry)		N/mm^2*m/s	1.2
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	109
抗压强度 (轴向) Compressive strength (Axial)	ISO527	MPa	97
弹性模量 E-module	ISO527	MPa	5000
允许最大表面静压力 (20℃) Max. static pressure of the surface, 20℃		MPa	130
洛氏硬度 Rockwell hardness	ISO2039-2	HRR	115
连续工作温度 Continuous work temperature		℃	-40/160
短时运行温度 Short-time work temperature		℃	-40/200
导热性 Thermal conductivity	ASTME1461	W / m*k	0.6
线性热膨胀系数 Linear coef. of thermal expansion	ASTMD696	K^{-1}*10^{-5}	4
RH50/23℃时的吸湿性 Moisture absorption RH50/23℃	ASTMD570	%	0.7
燃烧性能 Flammability	UL94		HB
体电阻率 Volume resistivity	IEC60093	Ωcm	>10^7
面电阻率 Surface resistivity	IEC60093	Ω	>10^6

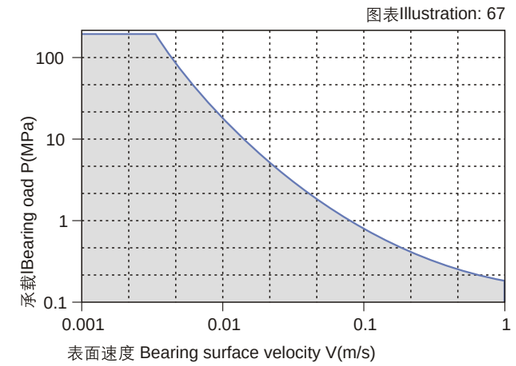
轴承PV值 PV Value of Bearings

CSB-EPB17系列轴承最大运行PV值为1.2N/mm^2*m/s；由此决定轴承所承受的载荷与速度成反比，详细查阅图表67。

The max PV value of the CSB-EPB17 series bearing is 1.2N/mm^2*m/s which determines the load capacity of bearing is inversely proportional to the speed. Please refer to the chart for more detailed information (Illustration 67).

PV图表 Permissible PV value for CSB-EPB17

图表Illustration: 67



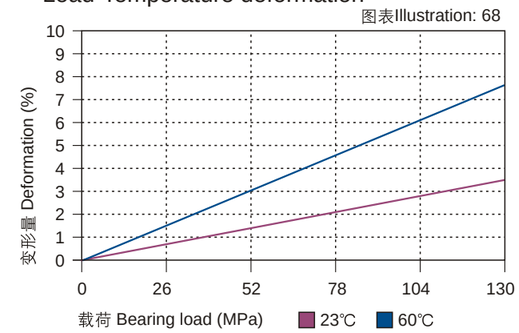
轴承的载荷、速度、温度 The Relation of Load, Speed and Temperature

CSB-EPB17系列轴承可承受最大静载荷为130Mpa，在此载荷下轴承的最大压缩变形量参考图表68，轴承实际工作载荷略小于130Mpa，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: 160℃) 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69。

CSB-EPB17 allows the Max static load of 130Mpa, The max compressive deformation rate under the max load is listed in Illustration 68, The actual load capacity of bearing is slightly less than 130Mpa, The bearing load is variable against the speed and temperature, Fast speed (Vmax: 1.0m/s) results into higher temperature (Tmax: 160℃) which decreases the load capacity of the bearing. Please refer to the Illustration 69 for such variation.

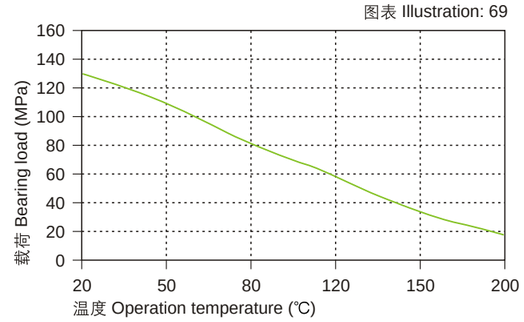
载荷-温度-变形量图表
Load-Temperature deformation

图表Illustration: 68



载荷-温度图表
Load-Temperature diagrams

图表 Illustration: 69



CSB-EPB19 Plastic Bearings

CSB-EPB19 塑料轴承

产品特性 Product Characteristics

连续使用温度：-40℃～150℃；
适合高载下的摆动；
适合干运行、免维护；
较高的抗压强度。

Continuous working temperature: -40℃～150℃;
Applicable for oscillating under high load;
Maintenance-free dry operation;
High pressure resistance.

主要性能数据表 The Material Data Sheet

一般性能 Common Capability	试验方法 Testing Method	单位 Unit	CSB-EPB19
密度 Density	ISO1183	g/cm^3	1.32
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*m/s	0.7
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	100
抗压强度 (轴向) Compressive strength (Axial)	ISO527	MPa	75
弹性模量 E-module	ISO527	MPa	3500
允许最大表面静压力 (20℃) Max. static pressure of the surface, 20℃		MPa	70
洛氏硬度 Rockwell hardness	ISO2039-2	HRR	112
连续工作温度 Continuous work temperature		℃	-40/150
短时运行温度 Short-time work temperature		℃	-40/200
导热性 Thermal conductivity	ASTME1461	W / m*k	0.25
线性热膨胀系数 Linear coef. of thermal expansion	ASTMD696	K^{-1}*10^{-5}	5
RH50/23℃时的吸湿性 Moisture absorption RH50/23℃	ASTMD570	%	0.9
燃烧性能 Flammability	UL94		HB
体电阻率 Volume resistivity	IEC60093	Ωcm	>10^{15}
面电阻率 Surface resistivity	IEC60093	Ω	>10^{12}

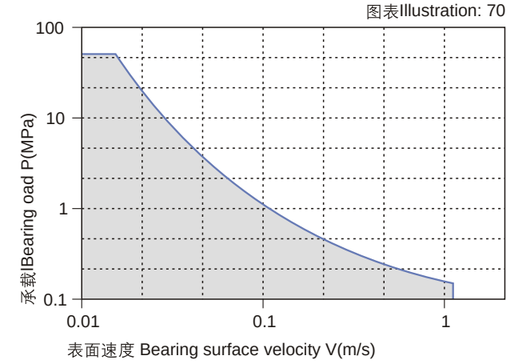
轴承PV值 PV Value of Bearings

CSB-EPB19系列轴承最大运行PV值为0.7N/mm^2*m/s；由此决定轴承所承受的载荷与速度成反比，详细查阅图表70。

The max PV value of the CSB-EPB19 series bearing is 0.7N/mm^2*m/s which determines the load capacity of bearing is inversely proportional to the speed. Please refer to the chart for more detailed information (Illustration 70).

PV图表 Permissible PV value for CSB-EPB19

图表Illustration: 70



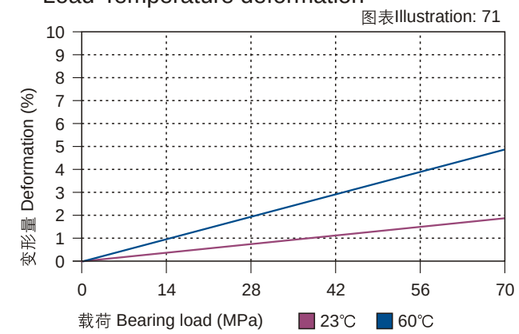
轴承的载荷、速度、温度 The Relation of Load, Speed and Temperature

CSB-EPB19系列轴承可承受最大静载荷为70Mpa，在此载荷下轴承的最大压缩变形量参考图表71，轴承实际工作载荷略小于70Mpa，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: 150℃) 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72。

CSB-EPB19 allows the Max static load of 70Mpa, The max compressive deformation rate under the max load is listed in Illustration 71, The actual load capacity of bearing is slightly less than 70Mpa, The bearing load is variable against the speed and temperature, Fast speed (Vmax: 1.5m/s) results into higher temperature (Tmax: 150℃) which decreases the load capacity of the bearing. Please refer to the Illustration 72 for such variation.

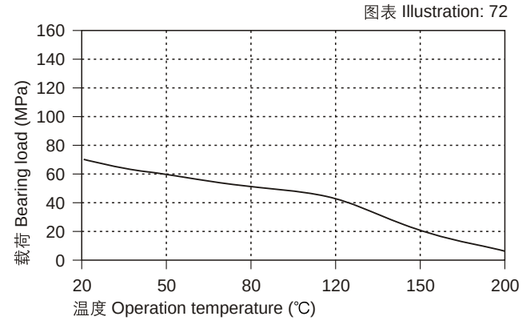
载荷-温度-变形量图表
Load-Temperature deformation

图表Illustration: 71



载荷-温度图表
Load-Temperature diagrams

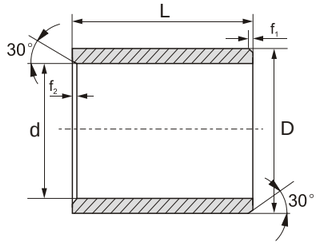
图表 Illustration: 72



CSB-EPB Series Specifications

CSB-EPB 系列塑料轴承尺寸规格表

CSB-EPB 直套 Metric Cylindrical Bushes



推荐安装公差 Recommend fitting tolerance:

座孔 Housing: H7

轴 Shaft: h9

订货型号Order:

EPB4-0608-06

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

型号 Specification	d mm	d-公差 After fitting mm	D mm	L(h13) mm
EPB-0304-05	3	+0.014 +0.054	4.5	5
EPB-0304-06	3	+0.014 +0.054	4.5	6
EPB-0305-05	3	+0.014 +0.054	5.5	5
EPB-0405-04	4	+0.020 +0.068	5.5	4
EPB-0405-06	4	+0.020 +0.068	5.5	6
EPB-0406-06	4	+0.020 +0.068	6	6
EPB-0507-05	5	+0.020 +0.068	7	5
EPB-0507-08	5	+0.020 +0.068	7	8
EPB-0507-10	5	+0.020 +0.068	7	10
EPB-0507-18	5	+0.020 +0.068	7	18
EPB-0608-04	6	+0.020 +0.068	8	4
EPB-0608-05	6	+0.020 +0.068	8	5
EPB-0608-06	6	+0.020 +0.068	8	6
EPB-0608-08	6	+0.020 +0.068	8	8
EPB-0608-10	6	+0.020 +0.068	8	10
EPB-0810-05	8	+0.025 +0.083	10	5
EPB-0810-06	8	+0.025 +0.083	10	6
EPB-0810-08	8	+0.025 +0.083	10	8
EPB-0810-10	8	+0.025 +0.083	10	10
EPB-0810-12	8	+0.025 +0.083	10	12
EPB-0810-15	8	+0.025 +0.083	10	15
EPB-1012-04	10	+0.025 +0.083	12	4
EPB-1012-05	10	+0.025 +0.083	12	5
EPB-1012-06	10	+0.025 +0.083	12	6
EPB-1012-07	10	+0.025 +0.083	12	6
EPB-1012-08	10	+0.025 +0.083	12	8

型号 Specification	d mm	d-公差 After fitting mm	D mm	L(h13) mm
EPB-1012-09	10	+0.025 +0.083	12	6
EPB-1012-10	10	+0.025 +0.083	12	10
EPB-1012-12	10	+0.025 +0.083	12	12
EPB-1012-15	10	+0.025 +0.083	12	15
EPB-1012-18	10	+0.025 +0.083	12	18
EPB-1012-20	10	+0.025 +0.083	12	20
EPB-1214-04	12	+0.032 +0.102	14	6
EPB-1214-06	12	+0.032 +0.102	14	6
EPB-1214-08	12	+0.032 +0.102	14	8
EPB-1214-09	12	+0.032 +0.102	14	9
EPB-1214-10	12	+0.032 +0.102	14	10
EPB-1214-12	12	+0.032 +0.102	14	12
EPB-1214-14	12	+0.032 +0.102	14	12
EPB-1214-15	12	+0.032 +0.102	14	15
EPB-1214-20	12	+0.032 +0.102	14	20
EPB-1214-25	12	+0.032 +0.102	14	25
EPB-1315-07	13	+0.032 +0.102	15	7
EPB-1315-10	13	+0.032 +0.102	15	10
EPB-1315-15	13	+0.032 +0.102	15	15
EPB-1416-08	14	+0.032 +0.102	16	8
EPB-1416-10	14	+0.032 +0.102	16	10
EPB-1416-15	14	+0.032 +0.102	16	15
EPB-1416-20	14	+0.032 +0.102	16	20
EPB-1416-25	14	+0.032 +0.102	16	25
EPB-1517-10	15	+0.032 +0.102	17	10
EPB-1517-12	15	+0.032 +0.102	17	12

型号 Specification	d mm	d-公差 After fitting mm	D mm	L(h13) mm
EPB-1517-15	15	+0.032 +0.102	17	15
EPB-1517-17	15	+0.032 +0.102	17	17
EPB-1517-20	15	+0.032 +0.102	17	20
EPB-1517-25	15	+0.032 +0.102	17	25
EPB-1618-10	16	+0.032 +0.102	18	10
EPB-1618-12	16	+0.032 +0.102	18	12
EPB-1618-15	16	+0.032 +0.102	18	15
EPB-1618-20	16	+0.032 +0.102	18	20
EPB-1618-25	16	+0.032 +0.102	18	25
EPB-1820-10	18	+0.032 +0.102	20	10
EPB-1820-12	18	+0.032 +0.102	20	12
EPB-1820-15	18	+0.032 +0.102	20	15
EPB-1820-20	18	+0.032 +0.102	20	20
EPB-1820-25	18	+0.032 +0.102	20	25
EPB-2022-12	20	+0.040 +0.124	22	12
EPB-2022-15	20	+0.040 +0.124	22	15
EPB-2022-28	20	+0.040 +0.124	22	28
EPB-2023-10	20	+0.040 +0.124	23	10
EPB-2023-15	20	+0.040 +0.124	23	15
EPB-2023-20	20	+0.040 +0.124	23	20
EPB-2023-23	20	+0.040 +0.124	23	23
EPB-2023-25	20	+0.040 +0.124	23	25
EPB-2023-30	20	+0.040 +0.124	23	30
EPB-2225-15	22	+0.040 +0.124	25	15
EPB-2225-20	22	+0.040 +0.124	25	20
EPB-2225-25	22	+0.040 +0.124	25	25
EPB-2225-30	22	+0.040 +0.124	25	30
EPB-2528-10	25	+0.040 +0.124	28	10
EPB-2528-12	25	+0.040 +0.124	28	12
EPB-2528-15	25	+0.040 +0.124	28	15
EPB-2528-20	25	+0.040 +0.124	28	20
EPB-2528-25	25	+0.040 +0.124	28	25
EPB-2528-30	25	+0.040 +0.124	28	30
EPB-2832-15	28	+0.040 +0.124	32	15
EPB-2832-20	28	+0.040 +0.124	32	20

Specification 型号	d mm	d-公差 After fitting mm	D mm	L(h13) mm
EPB-2832-25	28	+0.040 +0.124	32	25
EPB-2832-30	28	+0.040 +0.124	32	30
EPB-3034-15	30	+0.040 +0.124	34	15
EPB-3034-20	30	+0.040 +0.124	34	20
EPB-3034-25	30	+0.040 +0.124	34	25
EPB-3034-30	30	+0.040 +0.124	34	30
EPB-3034-40	30	+0.040 +0.124	34	40
EPB-3236-20	32	+0.050 +0.150	36	20
EPB-3236-25	32	+0.050 +0.150	36	25
EPB-3236-30	32	+0.050 +0.150	36	30
EPB-3236-40	32	+0.050 +0.150	36	40
EPB-3539-20	35	+0.050 +0.150	39	20
EPB-3539-25	35	+0.050 +0.150	39	25
EPB-3539-30	35	+0.050 +0.150	39	30
EPB-3539-40	35	+0.050 +0.150	39	40
EPB-3539-50	35	+0.050 +0.150	39	50
EPB-4044-20	40	+0.050 +0.150	44	20
EPB-4044-30	40	+0.050 +0.150	44	30
EPB-4044-40	40	+0.050 +0.150	44	40
EPB-4044-50	40	+0.050 +0.150	44	50
EPB-4550-30	45	+0.050 +0.150	50	30
EPB-4550-40	45	+0.050 +0.150	50	40
EPB-4550-50	45	+0.050 +0.150	50	50
EPB-5055-20	50	+0.050 +0.150	55	20
EPB-5055-25	50	+0.050 +0.150	55	25
EPB-5055-30	50	+0.050 +0.150	55	30
EPB-5055-40	50	+0.050 +0.150	55	40
EPB-5055-50	50	+0.050 +0.150	55	50
EPB-5560-40	55	+0.060 +0.180	60	40
EPB-5560-50	55	+0.060 +0.180	60	50
EPB-5560-60	55	+0.060 +0.180	60	60
EPB-6065-30	60	+0.060 +0.180	65	30
EPB-6065-40	60	+0.060 +0.180	65	40
EPB-6065-50	60	+0.060 +0.180	65	50
EPB-7580-40	75	+0.060 +0.180	80	40

*d公差为压入标准H7座孔（符合ISO3547-1）后公差

*Tolerance d: after being pressed into housing H7(ISO3547-1)

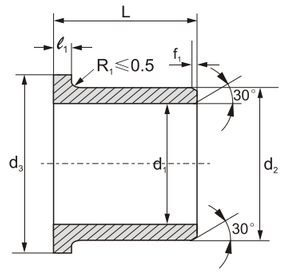
*每种材料可供规格请查询网站: www.csb-ep.com

*Please check: www.csb-ep.com for the standard size of each material

CSB-EPB Series Specifications

CSB-EPB 系列塑料轴承尺寸规格表

CSB-EPB 翻边轴套 Metric Flange Bushes



推荐安装公差 Recommend fitting tolerance:

座孔 Housing: H7

轴 Shaft: h9

订货型号Order:

EPB4F-0608-06

d_1 d_2 L

翻边轴套 Flange bushes

材料 Material

d	f_1
d≤10	0.5
10<d≤30	0.8
30<d	1.2

型号 Specification	d_1 mm	d_1-公差 After fitting mm	d_2 mm	d_3（d13） mm	L(h13) mm	l-0.14 mm
EPBF-0304-05	3	+0.014 +0.054	4.5	7.5	5	0.75
EPBF-0405-04	4	+0.020 +0.068	5.5	9.5	4	0.75
EPBF-0405-06	4	+0.020 +0.068	5.5	9.5	6	0.75
EPBF-0507-04	5	+0.020 +0.068	7	11	4	1
EPBF-0507-05	5	+0.020 +0.068	7	11	5	1
EPBF-0608-04	6	+0.020 +0.068	8	12	4	1
EPBF-0608-05	6	+0.020 +0.068	8	12	5	1
EPBF-0608-06	6	+0.020 +0.068	8	12	6	1
EPBF-0608-08	6	+0.020 +0.068	8	12	8	1
EPBF-0608-10	6	+0.020 +0.068	8	12	10	1
EPBF-0810-05	8	+0.025 +0.083	10	15	5	1
EPBF-0810-07	8	+0.025 +0.083	10	15	7	1
EPBF-0810-09	8	+0.025 +0.083	10	15	9	1
EPBF-0810-10	8	+0.025 +0.083	10	15	10	1
EPBF-0810-12	8	+0.025 +0.083	10	15	12	1
EPBF-1012-05	10	+0.025 +0.083	12	18	5	1
EPBF-1012-06	10	+0.025 +0.083	12	18	6	1
EPBF-1012-07	10	+0.025 +0.083	12	18	7	1
EPBF-1012-08	10	+0.025 +0.083	12	18	8	1
EPBF-1012-09	10	+0.025 +0.083	12	18	9	1
EPBF-1012-10	10	+0.025 +0.083	12	18	10	1
EPBF-1012-12	10	+0.025 +0.083	12	18	12	1
EPBF-1012-15	10	+0.025 +0.083	12	18	15	1
EPBF-1012-17	10	+0.025 +0.083	12	18	17	1
EPBF-1214-04	12	+0.032 +0.102	14	20	4	1
EPBF-1214-05	12	+0.032 +0.102	14	20	5	1
EPBF-1214-06	12	+0.032 +0.102	14	20	6	1
EPBF-1214-07	12	+0.032 +0.102	14	20	7	1
EPBF-1214-10	12	+0.032 +0.102	14	20	10	1
EPBF-1214-12	12	+0.032 +0.102	14	20	12	1
EPBF-1214-13	12	+0.032 +0.102	14	20	13	1
EPBF-1214-15	12	+0.032 +0.102	14	20	15	1
EPBF-1214-17	12	+0.032 +0.102	14	20	17	1
EPBF-1214-20	12	+0.032 +0.102	14	20	20	1
EPBF-1416-06	14	+0.032 +0.102	16	22	6	1
EPBF-1416-08	14	+0.032 +0.102	16	22	8	1
EPBF-1416-10	14	+0.032 +0.102	16	22	10	1
EPBF-1416-12	14	+0.032 +0.102	16	22	12	1
EPBF-1416-17	14	+0.032 +0.102	16	22	17	1
EPBF-1517-05	15	+0.032 +0.102	17	23	5	1
EPBF-1517-09	15	+0.032 +0.102	17	23	9	1
EPBF-1517-12	15	+0.032 +0.102	17	23	12	1
EPBF-1517-17	15	+0.032 +0.102	17	23	17	1
EPBF-1517-20	15	+0.032 +0.102	17	23	20	1
EPBF-1618-09	16	+0.032 +0.102	18	24	9	1
EPBF-1618-12	16	+0.032 +0.102	18	24	12	1
EPBF-1618-17	16	+0.032 +0.102	18	24	17	1
EPBF-1820-06	18	+0.032 +0.102	20	26	6	1
EPBF-1820-12	18	+0.032 +0.102	20	26	12	1
EPBF-1820-17	18	+0.032 +0.102	20	26	17	1
EPBF-1820-20	18	+0.032 +0.102	20	26	20	1
EPBF-2023-11	20	+0.040 +0.124	23	30	11	1.5
EPBF-2023-115	20	+0.040 +0.124	23	30	11.5	1.5
EPBF-2023-16	20	+0.040 +0.124	23	30	16	1.5
EPBF-2023-165	20	+0.040 +0.124	23	30	16.5	1.5
EPBF-2023-21	20	+0.040 +0.124	23	30	21	1.5
EPBF-2023-215	20	+0.040 +0.124	23	30	21.5	1.5
EPBF-2225-115	22	+0.040 +0.124	25	32	11.5	1.5
EPBF-2528-11	25	+0.040 +0.124	28	35	11	1.5
EPBF-2528-115	25	+0.040 +0.124	28	35	11.5	1.5
EPBF-2528-16	25	+0.040 +0.124	28	35	16	1.5
EPBF-2528-165	25	+0.040 +0.124	28	35	16.5	1.5
EPBF-2528-21	25	+0.040 +0.124	28	35	21	1.5
EPBF-2528-215	25	+0.040 +0.124	28	35	21.5	1.5
EPBF-3034-16	30	+0.040 +0.124	34	42	16	2
EPBF-3034-26	30	+0.040 +0.124	34	42	26	2
EPBF-3034-32	30	+0.040 +0.124	34	42	32	2
EPBF-3034-37	30	+0.040 +0.124	34	42	37	2
EPBF-3236-16	32	+0.050 +0.150	36	40	16	2
EPBF-3236-26	32	+0.050 +0.150	36	40	26	2
EPBF-3539-16	35	+0.050 +0.150	39	47	16	2
EPBF-3539-26	35	+0.050 +0.150	39	47	26	2
EPBF-3539-36	35	+0.050 +0.150	39	47	36	2
EPBF-4044-30	40	+0.050 +0.150	44	52	30	2
EPBF-4044-40	40	+0.050 +0.150	44	52	40	2
EPBF-4044-50	40	+0.050 +0.150	44	52	50	2
EPBF-4550-30	45	+0.050 +0.150	50	58	30	2
EPBF-4550-50	45	+0.050 +0.150	50	58	50	2
EPBF-5055-20	50	+0.050 +0.150	55	63	20	2
EPBF-5055-30	50	+0.050 +0.150	55	63	30	2
EPBF-5055-40	50	+0.050 +0.150	55	63	40	2
EPBF-5055-50	50	+0.050 +0.150	55	63	50	2
EPBF-6065-30	60	+0.060 +0.180	65	73	30	2
EPBF-6065-50	60	+0.060 +0.180	65	73	50	2
EPBF-100105-100	100	+0.072 +0.212	105	113	100	2.5

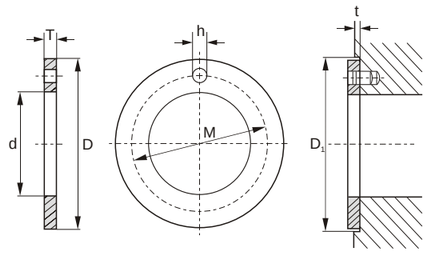
*d_1公差为压入标准H7座孔（ISO3547-1）后公差

*Tolerance d_1: after being pressed into housing H7(ISO3547-1)

*每种材料可供规格请查询网站：www.csb-ep.com

*Please check: www.csb-ep.com for the standard size of each material

CSB-EPB 垫片 Metric Thrust Washer



订货型号 Order:

EPB4W-0818-015

d D T

垫片 Washer

材料 Material

型号 Specification	d+0.25 mm	D-0.25 mm	T-0.05 mm	M+/-0.125 mm	h+0.1/+0.4 mm
EPBW-0818-015	8	18	1.5	13	1.5
EPBW-1018-015	10	18	1.5	15	1.5
EPBW-1224-015	12	14	1.5	18	1.5
EPBW-1426-015	14	26	1.5	20	2
EPBW-1630-015	16	30	1.5	23	2
EPBW-1832-015	18	32	1.5	25	2
EPBW-2036-015	20	36	1.5	28	3
EPBW-2238-015	22	38	1.5	30	3
EPBW-2442-015	24	42	1.5	33	3
EPBW-2644-015	26	44	1.5	35	3
EPBW-2848-015	28	48	1.5	38	4
EPBW-3254-015	32	54	1.5	43	4
EPBW-3862-015	38	62	1.5	50	4
EPBW-4266-015	42	66	1.5	54	4
EPBW-4874-020	48	74	2	61	4
EPBW-5278-020	52	78	2	65	4
EPBW-6290-020	62	90	2	76	4

*每种材料可供规格请查询网站：www.csb-ep.com *Please check: www.csb-ep.com for the standard size of each material