



● 标准产品规格表 Standard specifications: P128

产品特性 Product features

- 中等载荷的优化材料。适用于运动频率较低和低成本需求
- 连续使用温度: -40°C/+100°C
- 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
- Optimized for middle load applications. It is suitable for low frequency motion and low cost requirement
- Continuous working temperature: -40°C/+100°C
- High load capacity
- Good economic ratio
- Dry operation and maintenance free
- Applicable for various shaft materials

材料数据表 Material properties data table

材料性能 Material properties	测试标准 Standard	单位 Unit	CSB-EPB3G
颜色 Color	-	-	黑色 Black
密度 Density	ISO1183	g/cm ³	1.37
最大吸湿率 Max. moisture absorption, 50%RH	ISO62	%	1.3
最大吸水率 Max. water absorption	ISO62	%	5.5
对钢动摩擦系数 Coefficient of sliding friction(steel)	ITS025	μ	0.05-0.15
极限PV值 Max. PV value	ITS026	N/mm ² × m/s	0.30
弯曲模量 Flexural modulus	ISO178	MPa	7700
弯曲强度 Flexural strength	ISO178	MPa	190
最大静载荷 Max. static load	ITS027	MPa	75
最大动载荷 Max. dynamic load	ITS028	MPa	36
邵氏硬度 Shore hardness	ISO868	D	78
连续运行温度 Long-term application temperature	ITS029	°C	+100
短时运行温度 Short-term application temperature	ITS029	°C	+160
最低运行温度 Lowest application temperature	ITS029	°C	-40
导热性 Thermal conductivity	ISO22007	W/m/K	0.24
线性热膨胀系数 Coefficient of thermal expansion	ISO11359	K ⁻¹ × 10 ⁻⁵	11
阻燃等级 Flammability	UL94	Class	HB
体电阻率 Volume resistance	IEC60093	Ω · cm	>10 ¹²
面电阻率 Surface resistance	IEC60093	Ω	>10 ¹¹

*ITS: CSB内部测试标准 CSB company's internal test standards.

**除非特殊说明测试温度为23°C Test temperatures are 23°C unless otherwise stated.

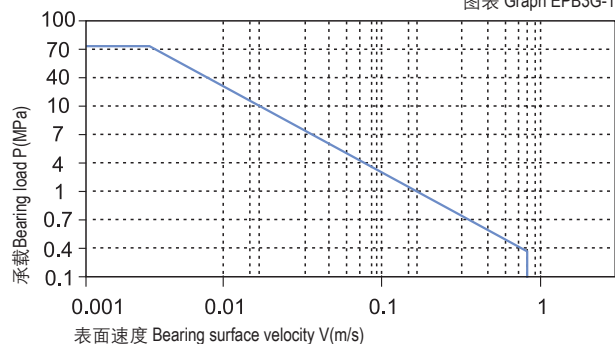
轴承PV值 PV value

CSB-EPB3G塑料轴承最大运行PV值为0.3N/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EPB3G-1。

The max PV value of the CSB-EPB3G plastic bearings is 0.3N/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 (Graph EPB3G-1).

■ PV图表 Permissible PV value for CSB-EPB3G

图表 Graph EPB3G-1



轴承的载荷、速度、温度 Load, speed and temperature

CSB-EPB3G塑料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EPB3G-2，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: 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EPB3G-3。

CSB-EPB3G allows the Max static load of 75Mpa, The max compressive deformation rate under the max load is listed in Graph EPB3G-2, 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: 100℃) which decreases the load capacity of the bearing. Please refer to the Graph EPB3G-3 for such variation.

轴承的摩擦系数、磨损、轴材料 Friction factor, wear and shaft material

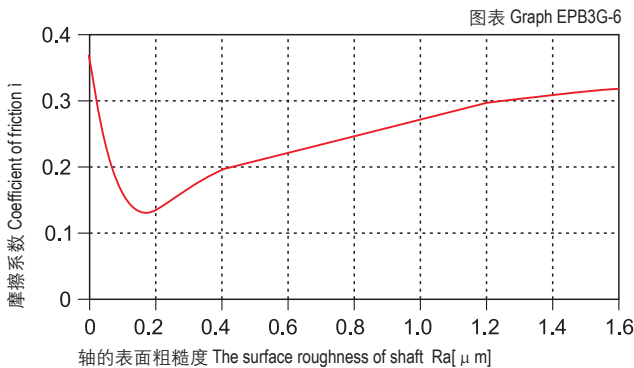
摩擦系数 Friction factor

图表EPB3G-4与图表EPB3G-5表明CSB-EPB3G塑料轴承的摩擦系数会受到运行速度以及轴承载荷影响而发生变化，当轴承载荷在20Mpa以内时，这种表现特别明显。同时图表EPB3G-6显示CSB-EPB3G塑料轴承的摩擦系数还会受到对磨轴表面粗糙度的影响，轴表面太光滑或者太粗糙都会导致轴承的摩擦系数和磨损值增大，我们推荐轴表面粗糙度为Ra0.1~0.3mm最为合适。

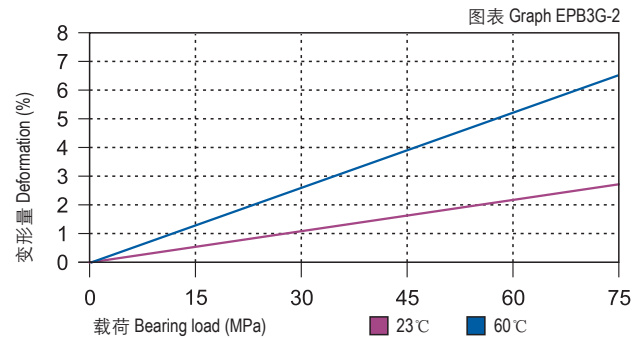
Graph EPB3G-4 and Graph EPB3G-5 show that the friction factor of CSB-EPB3G is variable along with the changing of the operation speed and bearing loading especially when the bearing loading is within 20Mpa. In the mean while the Graph EPB3G-6 shows that the friction factor of CSB-EPB3G is also affected by the shaft surface roughness. Too rough shaft surface or too fine shaft surface will increase the wearing and friction factor. The recommended shaft surface roughness is Ra0.1-0.3.

摩擦系数与轴表面粗糙度关系图表

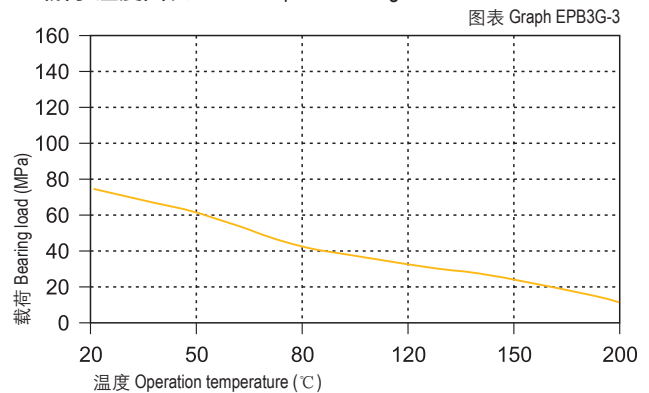
Coefficient of friction & the surface roughness of shaft



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

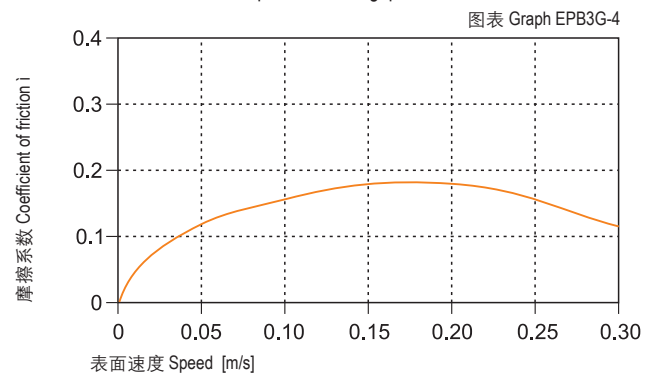


载荷-温度图表 Load-Temperature diagrams



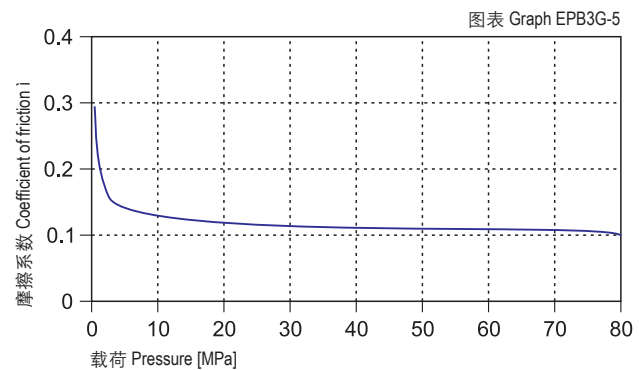
摩擦系数与速度变化关系图表 P=2MPa

Coefficient of friction & the speed of bearing, p = 2 MPa



摩擦系数与载荷变化关系图表 v=0.2m/s

Coefficient of friction & the pressure of bearing, v = 0.2 m/s



CSB-EPB3G	干运行 Dry	油脂 Grease	油 Oil	水 Water
摩擦系数 μ Friction coef.	0.05~0.15	0.09	0.04	0.04

磨损与轴材料 Wearing and shaft material

图表EPB3G-7与图表EPB3G-8表明CSB-EPB3G塑料轴承无论是在普通轴上运行还是在硬质轴上运行磨损值基本相当，根据图表显示CSB-EPB3G塑料轴承最适合的轴材料为硬化轴和硬铬钢轴；根据图表EPB3G-7显示CSB-EPB3G塑料轴承在摆动运动下的磨损值会略优越于旋转运动下的磨损值。

Graph EPB3G-7 and Graph EPB3G-8 show that the wearing of CSB-EPB3G is similar either against the normal shaft or hardened shaft. The most suitable shaft materials for CSB-EPB3G are hardened steel and hardened chrome steel. Graph EPB3G-7 shows that the wearing feature is better in oscillation operation than in rotation operation.

化学抗性 Chemical resistance

CSB-EPB3G塑料轴承能抵抗弱碱以及各类润滑油的腐蚀。

CSB-EPB3G is good at chemical resistance against weak acidic medium and various kinds of lubricants.

吸水性 Water absorption

CSB-EPB3G塑料轴承在标准大气中的吸湿率为1.3%。浸泡在水中最高吸水率为5.5%。由于高吸水率的特性，我们必须考虑此轴承的应用环境。

The moisture absorption of CSB-EPB3G plastic plain bearings is 1.3% in standard atmosphere. The max. water absorption is 5.5% in water. The application environment has to be considered due to the high water absorption properties.

抗UV性能 UV resistance

CSB-EPB3G塑料轴承长久暴露在紫外线下颜色基本不会改变。材料性能基本都不会发生改变。

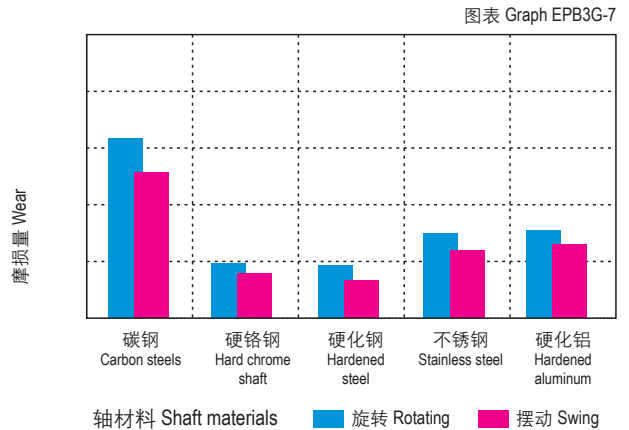
CSB-EPB3G can maintain its color unchanged when it is exposed into the UV ray. The material performance stays stable.

安装公差 Installation tolerances

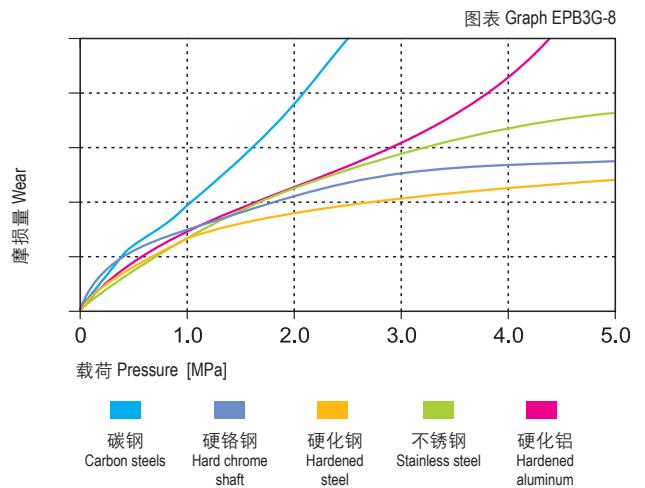
CSB-EPB3G塑料轴承压装后公差 Tolerances after pressfit

直径 Di. [mm]	CSB-EPB3G E10 [mm]	座孔 Housing H7 [mm]	轴 Shaft h9 [mm]
>0 ~ 3	+0.014 ~ +0.054	0 ~ +0.010	0 ~ -0.025
>3 ~ 6	+0.020 ~ +0.068	0 ~ +0.012	0 ~ -0.030
>6 ~ 10	+0.025 ~ +0.083	0 ~ +0.015	0 ~ -0.036
>10 ~ 18	+0.032 ~ +0.102	0 ~ +0.018	0 ~ -0.043
>18 ~ 30	+0.040 ~ +0.124	0 ~ +0.021	0 ~ -0.052
>30 ~ 50	+0.050 ~ +0.150	0 ~ +0.025	0 ~ -0.062
>50 ~ 80	+0.060 ~ +0.180	0 ~ +0.030	0 ~ -0.074
>80 ~ 120	+0.072 ~ +0.212	0 ~ +0.035	0 ~ -0.087
>120 ~ 180	+0.085 ~ +0.245	0 ~ +0.040	0 ~ -0.100

在不同轴材料上旋转时的磨损量 $p=2\text{MPa}$, $v=0.2\text{m/s}$ Wear under rotating with different shaft materials, $p = 2 \text{ MPa}$, $v = 0.2 \text{ m/s}$



旋转磨损随轴材料与压力变化关系 $v=0.2\text{m/s}$ Wear & pressure under rotating with different shaft materials, $v = 0.2 \text{ m/s}$



吸水性的影响

Effect of moisture absorption on EPB3G bearings

