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# 金属免维护自润滑轴承 HTB Metallic Self-lubricating Maintenance-free Bearings



浙江禾田滑动轴承股份有限公司  
ZHEJIANG HTB SLIDING BEARING CO., LTD.



**HTB SLIDE  
BEARING**



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BEARING

# Introduction

## 公司简介



浙江禾田滑动轴承股份有限公司是生产各类滑动轴承的专业性实体企业。在多年生产实践中，始终坚持管理和技术的创新，十分注重学习和借鉴国内外同行经验，并与国内大专院校，科研机构建立密切联系，坚持以科技为先导，以质量求发展，建立了严格的质量保证体系，企业的技术水平和产品质量不断提高。企业以“为客户创造价值是我们的宗旨；客户的需求是我们服务的目标；客户的信任是我们工作的责任。”为经营宗旨，努力为客户提供一流的产品和服务。

Zhejiang HTB Sliding Bearings Co., Ltd. is a professional enterprise specialized in the production of various sliding bearings. Through years of production and experience, the enterprise has been committed to the innovation on management and technology. It is of great importance to the acquisition of experience from its colleagues from both home and abroad. Meanwhile, it has established ties with domestic universities and institutions so as to seek development opportunities based upon quality while led by the science and technology, establishing a strict quality assurance system. Therefore, the technical level and quality of the products are constantly improved. Committed to the operational motto of "creating values for our clients and taking the requirement of the clients as our target in the service, and winning clients' trust is the liability of our work". The aim of our is to provide enterprise the clients with top-class products and service.



HTB-3



HTB-3F



HTB-3W



HTB-3FA



HTB-3FB



HTB-3FC



HTB-3FD



HTB-3FE



HTB-3FF



HTB-3B



HTB-3C



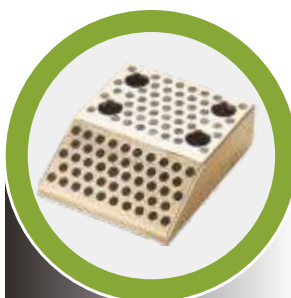
HTB-3QJ



HTB-3P



HTB-3PA



HTB-3PN



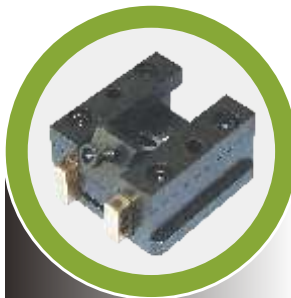
HTB-3PL



HTB-3PO



HTB-3PT



HTB-JOCU



HTB-FZ

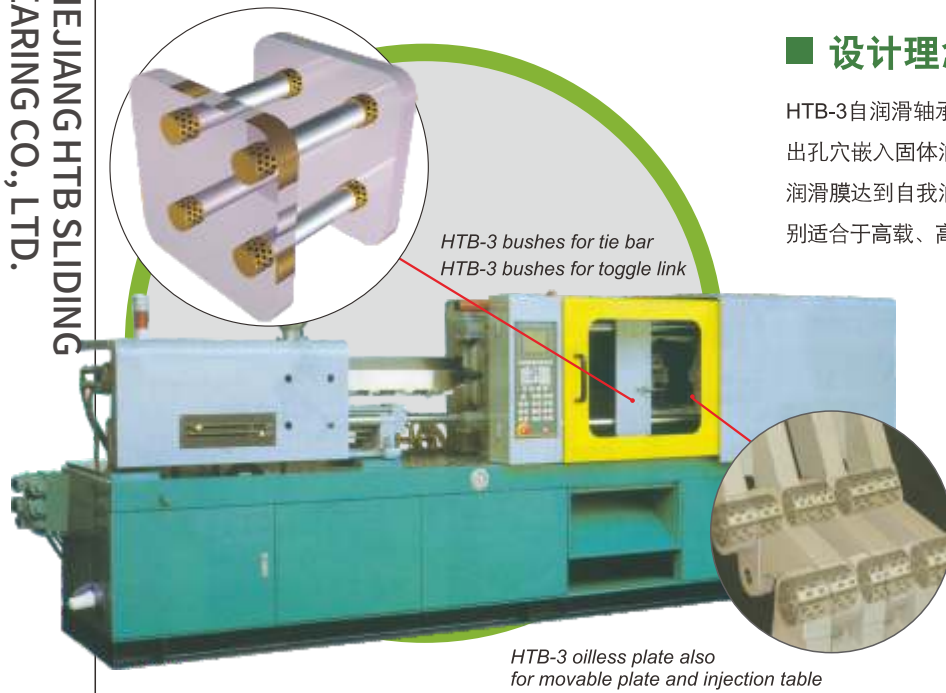
# HTB-3 系列自润轴承及典型用途 Oilless bushes

## 设计理念

HTB-3自润滑轴承以高强度铜合金做为基础材料，并在其工作面上钻出孔穴嵌入固体润滑剂，以使其能在摩擦过程中释放和生成一层固体润滑膜达到自我润滑的目的。其材料结合了金属与非金属的优点，特别适合于高载、高温、低速等无法加油的工作场合。

## Design Idea

HTB-3 Self-lubricating Bushes use high grade metal alloys as their base material and have finely finished surface with holes in which a specially formulated solid lubricant is embedded. The lubricant cover up to 25-30% of the working surface. During operation the lubricant film is deposited automatically over the complete moving surface.



HTB-3 bushes for tie bar  
HTB-3 bushes for toggle link

HTB-3 oilless plate also  
for movable plate and injection table

## 特点

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

## Features

- 1.Able to work for long time under none-oil-lubricating Conditions.
- 2.More suitable for heavy-duty and low-speed working conditions, with excellent anti-abrasion performance and abrasion coefficient.
- 3.Suitable to be used in applications where rotary, back-and-forth and intermittent movements prevail.
- 4.Featured in anti-corrosion and chemical resistance.
- 5.Suitable to be used in a scope between -40℃~+300℃.
- 6.Maintenance free, with long Service time.

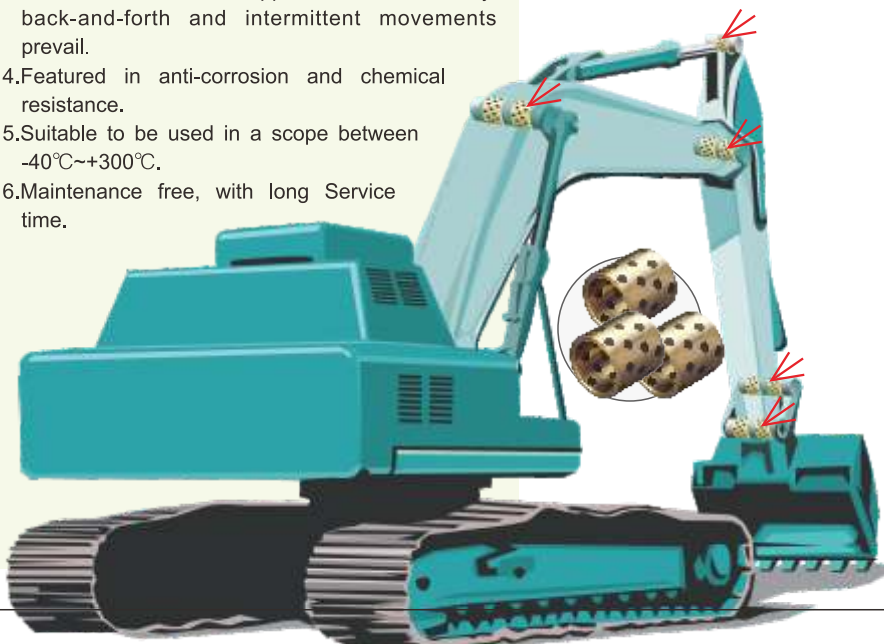
## 典型用途

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



## Application

- 1.Heavy-duty and low-speed mechanism. Such as the hinge bearings, accidental gate bearings and turbine bearings for dam gates, etc.
- 2.Suitable to be used in high-temperature circumstances, such as steel works, metallurgical equipment, rolling machines, conveying rollers, high-temperature blowers and baking furnaces, etc.
- 3.Suitable to be used in automobile industry, stamped molds of coven, assembly streamlines and conveying belts, etc.
- 4.Other industrial bearings, such as engineering machineries, plastic jet machines, various high-precision molds, etc. The product is also suitable for applications where corrosion resistance and submerging in water takes place, or heavy-duty and low-speed functioning where oiling is impossible to conduct. For instance, the chemical machineries, foodstuff machineries, papermaking machineries and textile printing and dyeing machineries.



# 主要材料推荐 Main Materials Recommendation

## 合金材质 Metal type

HTB-3 Standard HTB-3 标准	HTB-31 Strong cast bronze 高力黄铜	HTB-31S1 cast bronze 高力黄铜	HTB-32 Copper alloy 铜合金	HTB-31S2 Copper alloy 铜合金	HTB-31S3 Copper alloy 铜合金	HTB-31S4 strong cast bronze 特硬高力黄铜	HTB-34 Cast iron 铸铁	HTB-35 20# steel
Cu%	65	65	85	80	88	65		
Sn%			5		12			
Pb%			5					
Zn%	25	25	5			25		
Ni%				5				
Al%	6	6		10		6		
Fe%				5				
Mn%	4	4				4		
Density 密度	8.0	8.0	8.8	7.6	8.8	8.0	7.3	7.8
Hardness HB 硬度	>210	>180	>70	>150	>80	>250	>160	HRC>58
Tensile strength 抗拉强度 N/mm <sup>2</sup>	>750	>550	>200	>500	>360	>800	>250	>1500
Elongation%伸长率	>12	>12	15	>10	>8	>4		
Coefficient of linear expansion 热胀系数	$1.9 \times 10^{-5}/^{\circ}\text{C}$	$1.9 \times 10^{-5}/^{\circ}\text{C}$	$1.8 \times 10^{-5}/^{\circ}\text{C}$	$1.6 \times 10^{-5}/^{\circ}\text{C}$	$1.8 \times 10^{-5}/^{\circ}\text{C}$	$1.9 \times 10^{-5}/^{\circ}\text{C}$	$1.0 \times 10^{-5}/^{\circ}\text{C}$	$1.1 \times 10^{-5}/^{\circ}\text{C}$
Limit Temp. 温度	300°C	300°C	400°C	400°C	400°C	300°C	400°C	300°C
Max. Load N/mm <sup>2</sup> 最大动承载	100	80	60	50	70	150	10	200
Max. Speed m/min 最大线速度	15	15	10	20	10	10	15	5
Max. PV 最大PV N/mm <sup>2</sup> *m/min	200	200	200	200	200	200	40	150
压缩永久变形量 400N/mm <sup>2</sup>	<0.01	<0.01	<0.05	<0.04	<0.05	<0.005	<0.015	<0.002

As special request HTB-3 also can supply the strong cast bronze of special high hardness HB>270, HB>300  
同时HTB-3 可以根据客户的特别要求提供HB>270及HB>300的特高硬铜材料

Lubricant 固体润滑剂	Features 特性	Typical application 典型用途
SL1 Graphite+add 高纯石墨+添加剂	Excellent resistance against chemical attacks and low friction. Temp limit 400°C 很好的耐磨性和化学稳定性, 使用温度<400°C	Suite for general machines and under atmosphere 适用于一般机械, 在大气中使用。
SL4+MOS <sub>2</sub> PTFE+MOS <sub>2</sub> +CF	Lowest in friction and good of water lubrication, Temp. limit 300°C 极低的摩擦系数和很好的水润滑性, 使用温度<300°C	Ship, hydraulic turbine, gas turbine etc. 适用于水、海水润滑, 如船舶, 水工弧门, 水轮机, 制药饮料机械等。

# HTB Sliding Bearing

## HTB-3 | Oilless Cylindrical Bushes 自润轴套

运动方向 Sliding directions  
对偶轴 Coupled shafts  
轴套 Bearing  
轴套座 Bearing housing

轴  $\phi d$ : 一般用 (高负荷) For common use (high load)  
e7: 一般用 (低负荷) For common use (low load)  
f7: 高精度用 For high precision use

HTB-3W

材质	高力黄铜+石墨
Material	CuZn25Al6Mn4 + Graphite



## HTB-3F | Oilless Flange Bushes 自润翻边轴套

运动方向 Sliding directions  
对偶轴 Coupled shafts  
法兰轴套 Flange Bearing  
轴套座 Bearing housing

轴  $\phi d$ : 一般用 (高负荷) For common use (high load)  
e7: 一般用 (低负荷) For common use (low load)  
f7: 高精度用 For high precision use

a: 凸缘下端倒角 (mm)  
Chamfered at the lower end

$\phi d$	~1.6	~55	~160
a	R0.3	R0.5	R1

材质	高力黄铜+石墨
Material	CuZn25Al6Mn4 + Graphite



## HTB-3W | Oilless Thrust Washers 自润止推垫片

运动方向 Sliding directions

a: 端面倒角 (mm)  
Chamfered at the end face

$\phi d$	~10.2	~18.2	~35.2	~45.2	~55.3	~100.5	~120.5
a	1.5	2	2.5	3	4	5	4
b	0.3	0.4	0.4	0.5	0.6	0.8	0.8

材质	高力黄铜+石墨
Material	CuZn25Al6Mn4 + Graphite



# HTB Sliding Bearing

## HTB-3FA | Oilless Flange Bushes 自润翻边轴套

运动方向  
Sliding directions

对偶轴  
Coupled shafts

法兰轴套  
Flange Bearing

轴套座  
Bearing housing

轴 d8: 一般用 (高负荷) For common use (high load)  
e7: 一般用 (低负荷) For common use (low load)  
f7: 高精度用 For high precision use

- 能在旋转，摇动以及往复运动中使用。
- 同一个轴套能用是承受径向与轴向负荷。
- 法兰厚度的高精度化能使机械精度提高。
- Able to be used in rotary, shaking and back-and-forth movements
- One single bushing can bear loads both axial and radial
- The high precision of the flange's thickness elevates the machinery precision.

材质	高力黄铜 + 石墨
Material	CuZn25Al6Mn4 + Graphite



## HTB-3FB | Oilless Flange Bushes 自润翻边轴套

运动方向  
Sliding directions

对偶轴  
Coupled shafts

法兰轴套  
Flange Bearing

轴套座  
Bearing housing

轴 d8: 一般用 (高负荷) For common use (high load)  
e7: 一般用 (低负荷) For common use (low load)  
f7: 高精度用 For high precision use

- 能在旋转，摇动以及往复运动中使用。
- 同一个轴套能用是承受径向与轴向负荷。
- 法兰厚度的高精度化能使机械精度提高。
- Able to be used in rotary, shaking and back-and-forth movements
- One single bushing can bear loads both axial and radial
- The high precision of the flange's thickness elevates the machinery precision.

材质	高力黄铜 + 石墨
Material	CuZn25Al6Mn4 + Graphite



## HTB-3FC | Oilless Flange Bushes 自润翻边轴套

运动方向  
Sliding directions

对偶轴  
Coupled shafts

法兰轴套  
Flange Bearing

轴套座  
Bearing housing

轴 d8: 一般用 (高负荷) For common use (high load)  
e7: 一般用 (低负荷) For common use (low load)  
f7: 高精度用 For high precision use

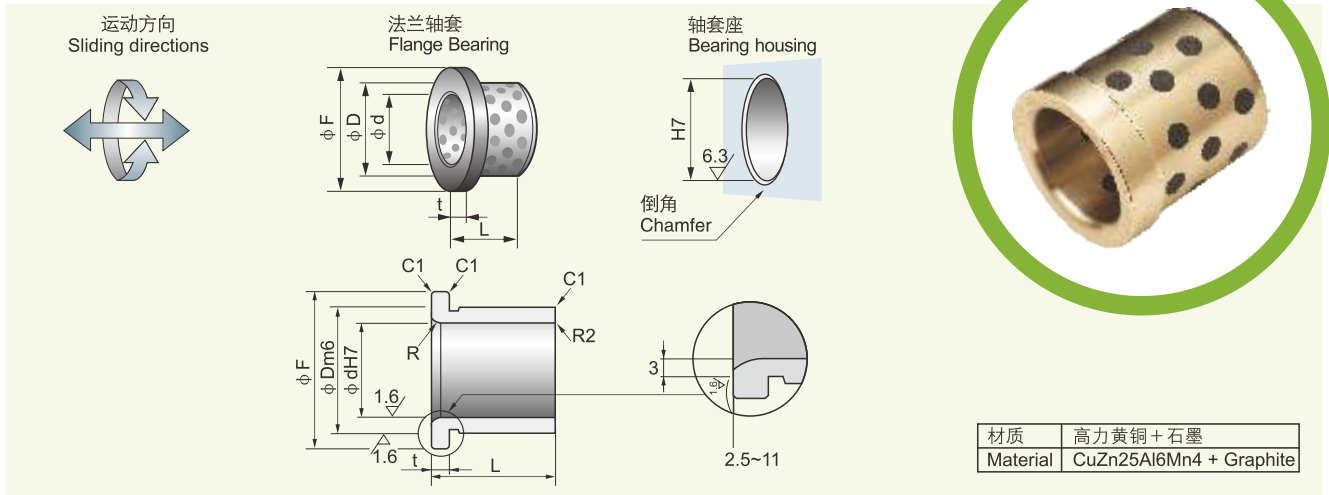
- 能在旋转，摇动以及往复运动中使用。
- 同一个轴套能用是承受径向与轴向负荷。
- 法兰厚度的高精度化能使机械精度提高。
- Able to be used in rotary, shaking and back-and-forth movements
- One single bushing can bear loads both axial and radial
- The high precision of the flange's thickness elevates the machinery precision.

材质	高力黄铜 + 石墨
Material	CuZn25Al6Mn4 + Graphite

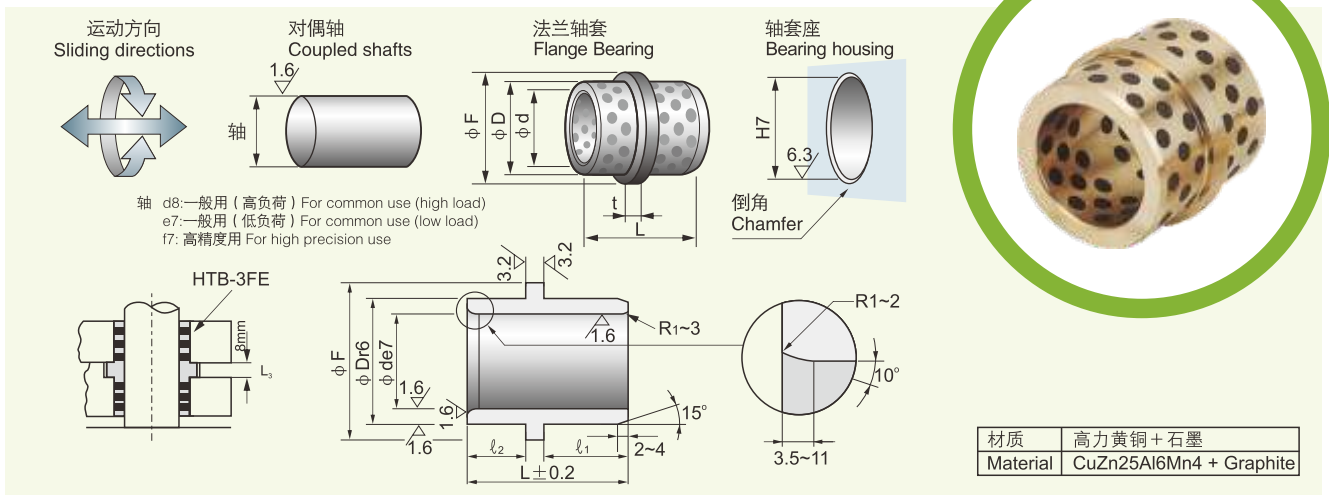


# HTB Sliding Bearing

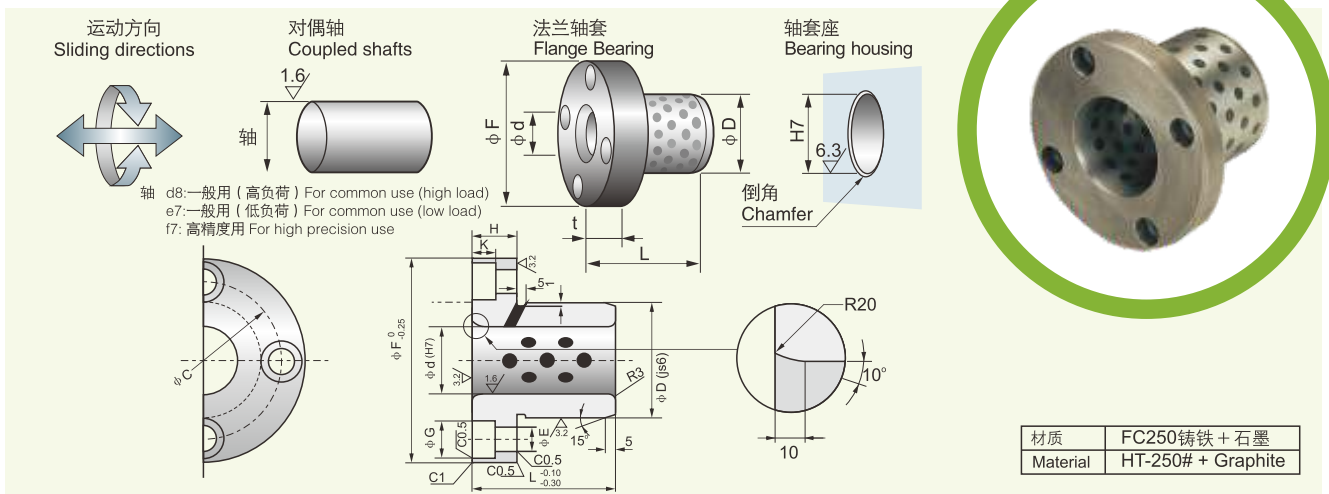
## HTB-3FD | Oilless Flanged Guide Bushes 自润滑翻边导向套



## HTB-3FE | Oilless Ejector Guide Bushes 射出座导套



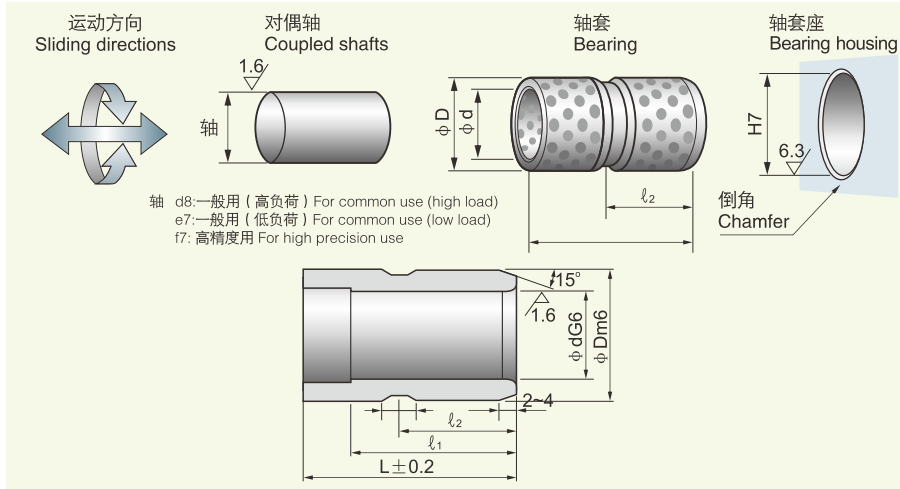
## HTB-3FF | Oilless Guide Bushes 自润导向套



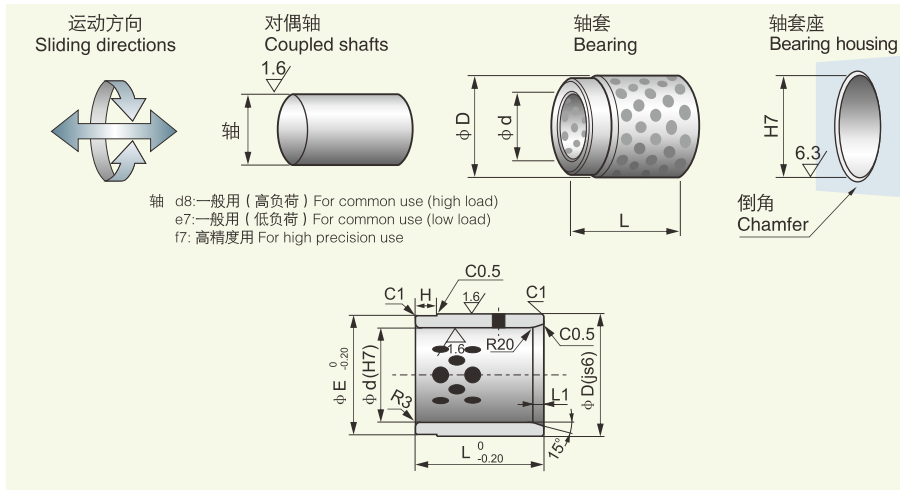


# HTB Sliding Bearing

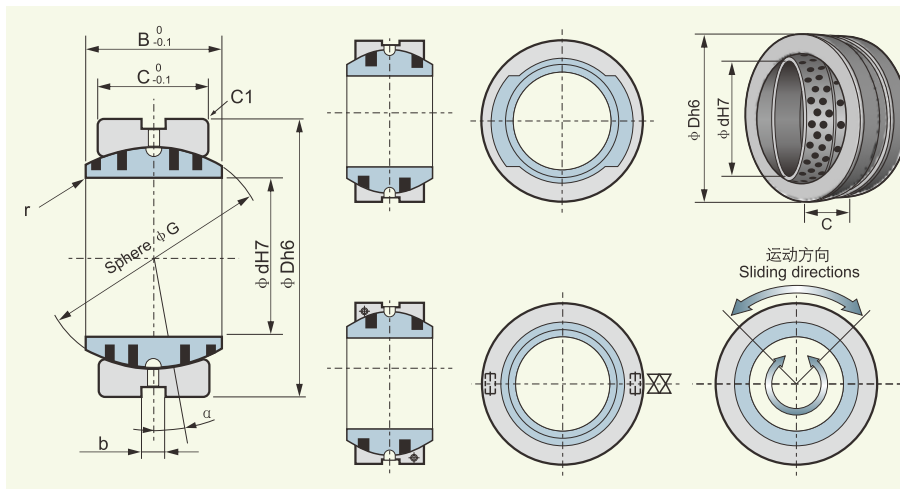
## HTB-3B | Oilless Guide Bushes 自润滑导向套



## HTB-3C | Oilless Guide Bushes 自润导向套

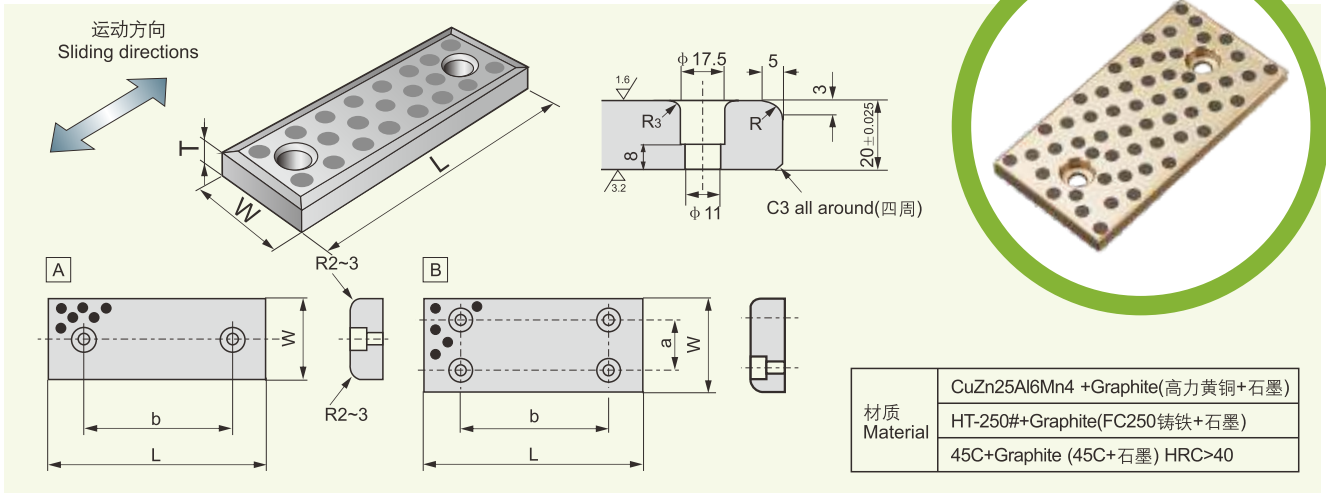


## HTB-3QJ | Oilless spherical plain bearing 自润球铰轴承

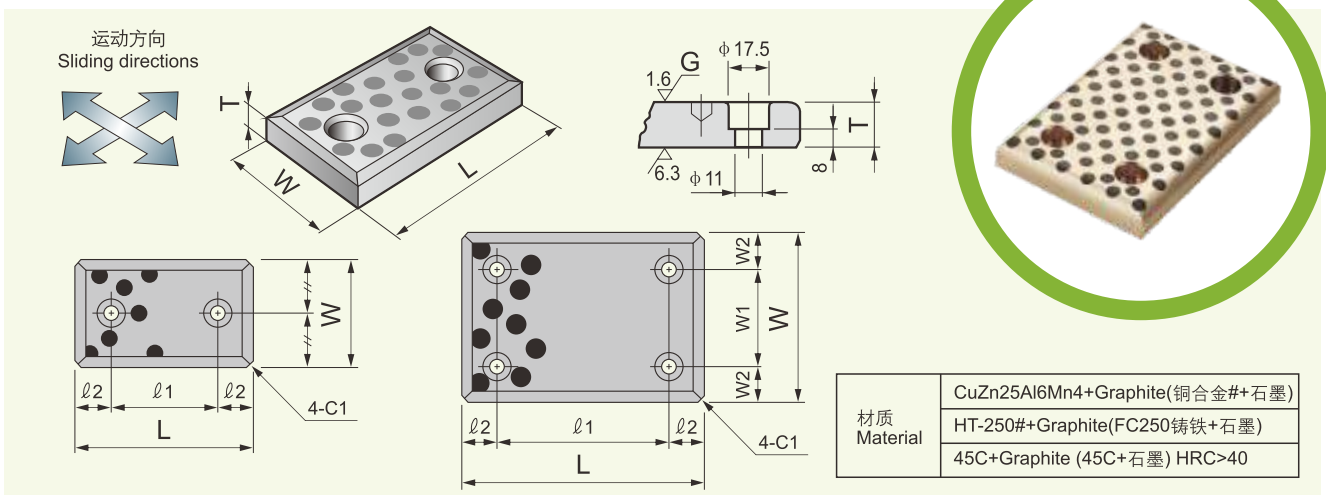


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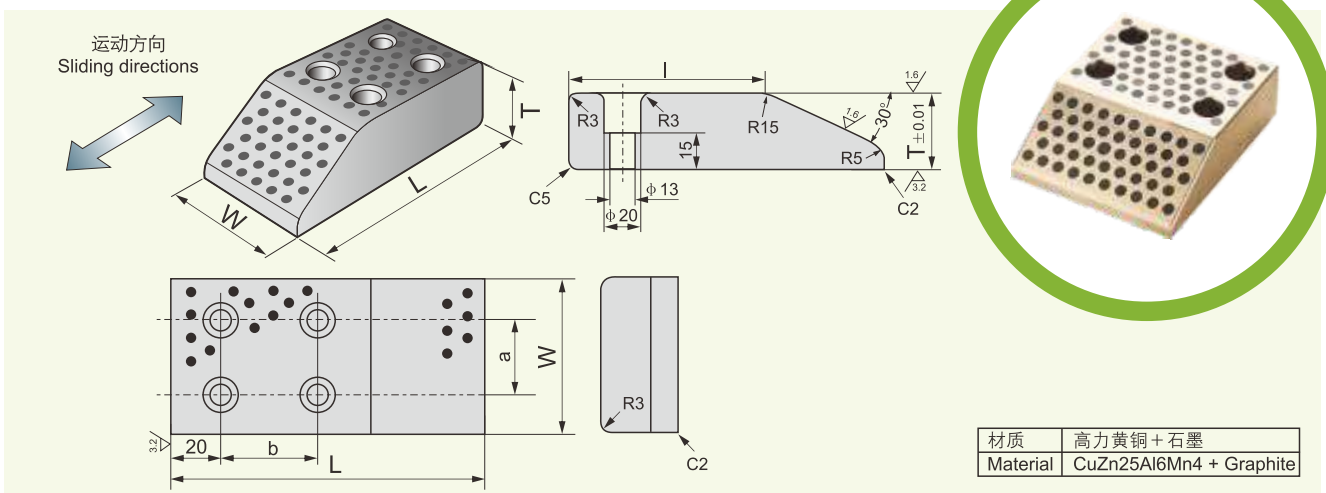
## HTB-3P | Oilless Wear Plate 自润滑板



## HTB-3PA | Oilless Thin Wear Plate 自润滑板

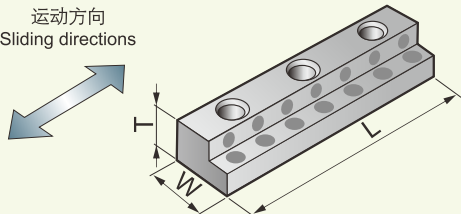
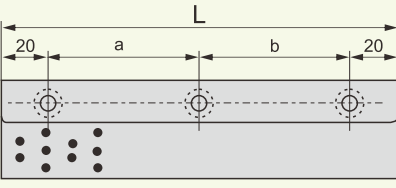



## HTB-3PN | Cam Stroke Plate 凸轮行程滑板



# HTB Sliding Bearing

## HTB-3L | Oilless L Shaped Plate L型自润滑板

**A**

T(20)

11.4

9

φ9

φ14

8 ± 0.1

10<sup>+0.10</sup>/<sub>+0.05</sub>

R < 1

1.6

1.6

**B**

T(30)

11

φ11

10 ± 0.1

15<sup>+0.10</sup>/<sub>+0.05</sub>

R < 1

1.6

**C**

T(45)

14

φ11

φ17.5

22 ± 0.1

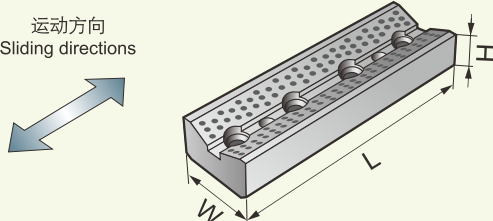
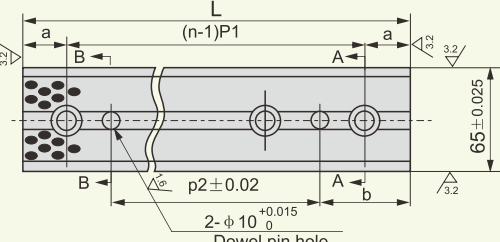

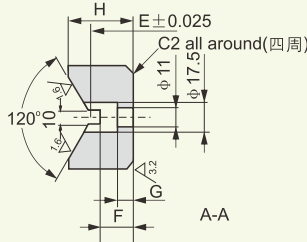
25<sup>+0.10</sup>/<sub>+0.05</sub>

R < 1

1.6

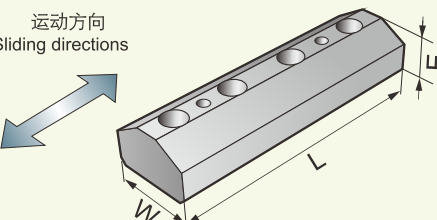
材质	高力黄铜+石墨
Material	CuZn25Al6Mn4 + Graphite

## HTB-3PO | Oilless Cam Bottom Guide Plate 凸轮底部导板

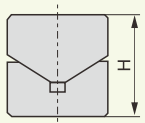





材质	高力黄铜+石墨
Material	CuZn25Al6Mn4 + Graphite

## HTB-3PT | Oilless Cam Bottom Guide Plate 凸轮底部导板

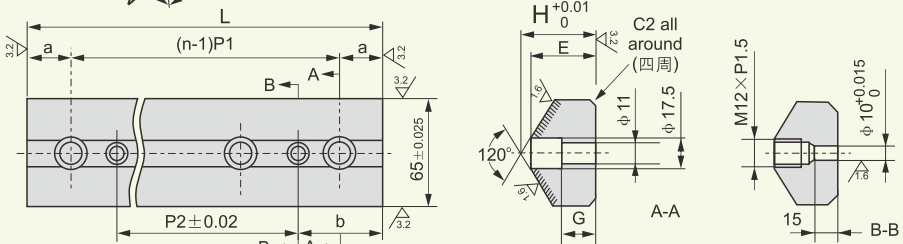


Assembled height  
装配高度



Use this plate together HTB-3PO series.  
与HTB-3PO一起使用

Assembled height of HTB-3PO and HTB-3PT to be H=65  
装配高度H: HTB-3PO+HTB-3PT=65



材质	45C
Hardness	>HRC45



**HTB SLIDE  
BEARING  
禾田轴承**

## 浙江禾田滑动轴承股份有限公司

## ZHEJIANG HTB SLIDING BEARING CO., LTD.

地址: 中国浙江省嘉善县南暑工业区  
电话/Tel: 0573-84161555 (总机) 84163005 84163006  
传真/Fax: 0573-84163007  
邮编: 314100  
E-mail: [htb@htb-bearing.com](mailto:htb@htb-bearing.com)  
Http://[www.htb-bearing.com](http://www.htb-bearing.com)

Add: Nanshu Industry Zone, Jiashan,  
Zhejiang, (314100) P.R.China  
Tel: 0086-0573-84163005 84163006  
Fax: 0086-0573-84163007  
E-mail: [htb@htb-bearing.com](mailto:htb@htb-bearing.com)  
Http://[www.htb-bearing.com](http://www.htb-bearing.com)

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