HTB SLIDE
BEARING

浙江禾田滑动轴承股份有限公司

ZHEJIANG HTB SLIDING BEARING CO., LTD.

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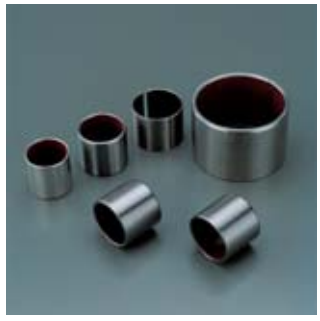
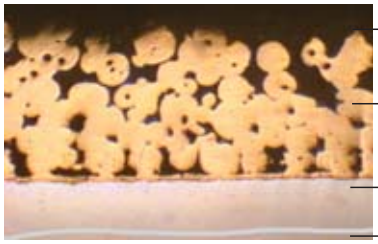


材料组织 MATERIAL STRUCTURE



1. PTFE/Pb 混合物 0.01~0.03mm，一种耐磨材料，运作过程中可形成转移膜以保护对磨轴。
2. 铜粉层0.2~0.35mm提高PTFE/Pb与钢板的结合强度，具有很好的承载能力和耐磨性。同时铜又是一种很好的导热材料，可快速转移轴承运作过程中产生的热量。
3. 低碳钢，提高轴承的承载能力和热转移作用。
4. 铜/锡电镀层0.002mm，使轴承有很好的耐腐蚀功能。

1. PTFE/Pb Composition, 0.01-0.003mm, anti-abrasion material, which will form a lubricating film during operation.
2. Bronze powder layer, 0.2-0.35mm, which further strengthen the combination of the steel plate and PTFE layer and transfer the heat more quickly.
3. Low carbon steel, bear high load transfer heat.
4. Copper/Tin plating layer, anti-corrosion.

主要参数 TECHNICAL DATE

	静承载 Static Load	250N/mm^2		摩擦系数 friction coefficient		0.03~0.20
最大承载 Max Load	低速运转 Low-speed Rotation	140N/mm^2		最大线速度	干摩擦 dry friction	2m/s
	旋转、摇摆运动 Rotation、Oscillation	60N/mm^2		max linear velocity	流体润滑 liquid lubrication	>2m/s
最大PV值 （干摩擦）	间断性运作 intermittent operation	3.6N/mm^2 · m/s		导热系数 Thermal Conductivity		42W(m · k)$^{-1}$
Max PV (Dry Friction)	长期运作 long-time operation	1.8N/mm^2 · m/s		线膨胀系数 Coefficient of thermal expansion		11 × 11^{-6}/k
使用温度 Operation Temp.		-195℃~+280℃				

应用特点 APPLICATION CHARACTER

1. 无油润滑或少油润滑，适用于无法加油或较难加油的场合，可以在使用时不保养或少保养；
2. 耐磨性能好，摩擦系数小，使用寿命长； 3. 可在-195℃～+280℃范围内使用；
4. 走合性能好，低噪音，无污染； 5. 薄壁结构，质量轻，可缩小机械体积；
6. 在运作时能形成转移膜，起到保护对磨轴的作用，无咬轴现象；
7. 对磨轴的硬度要求低，未经调质处理的轴都可使用，从而降低了相关零件的加工难度；
8. 无吸水、吸油性，热膨胀系数小，散热性好，尺寸稳定；
9. 钢背面可电镀多种金属，因此可在腐蚀性介质中使用，不会生锈；

目前已广泛运用于各种机械的滑动部位，如自动化机械设备（伸缩、摇摆、滑动、弯曲、回旋、回转部位）油压气缸导套、齿轮泵浦、纺织机械、自动售货机、塑胶成型机、压铸机、橡胶机械、烟草机、健身器材、办公机械、液压搬运车、汽机车、摩托车、农林机械等。

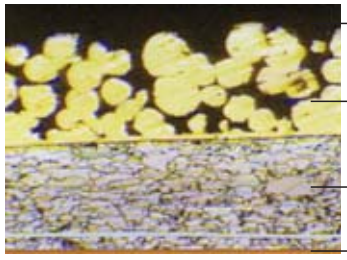
1. Working under oilless or minim oil state, maintenance free or just need a little maintenance.
2. Resist Abrasion, low coefficient of friction long operating life.
3. Operating in -195℃～+280℃
4. Good mending, low-noise, non-pollution
5. Thin wall, light, which can reduce the machine to small
6. Forming a transferred film during operation to protect shaft
7. Low demand to the shaft even no surface hardness treatment, which lower the cost of the mating components
8. No absorption to water/oil, small coefficient of Thermal emption, good thermal conductivity and size stability
9. The back of the steel strip can be plated with various metal, anti-corrosion

The products now are used in sliding components of different machines, such as auto machines, piston pump, gear pump, textile machine, auto-sides machine, Injection Machine, sports Machine office equipment etc.

材料组织 MATERIAL STRUCTURE

1. PTFE/Pb 混合物 0.01~0.03mm，一种耐磨材料，运作过程中可形成转移膜以保护对磨轴。
2. 铜粉层0.2~0.35mm提高PTFE/Pb与钢板的结合强度，具有很好的承载能力和耐磨性。同时铜又是一种很好的导热材料，可快速转移轴承运作过程中产生的热量。
3. 低碳钢，提高轴承的承载能力和热转移作用。
4. 铜/锡电镀层0.002mm，使轴承有很好的耐腐蚀功能。

1. PTFE/Pb Composition, 0.01-0.003mm, anti-abrasion material, which will form a lubricating film during operation.
2. Bronze powder layer, 0.2-0.35mm, which further strengthen the combination of the steel plate and PTFE layer and transfer the heat more quickly.
3. Low carbon steel, bear high load transfer heat.
4. Copper/Tin plating layer, anti-corrosion.

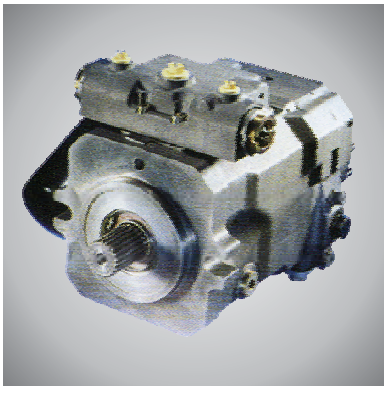


主要参数 TECHNICAL DATE

	静承载 Static Load	250N/mm²		摩擦系数 friction coefficient		0.01~0.05
最大承载 Max Load	低速运转 Low-speed Rotation	140N/mm²		最大线速度 max linear velocity	干摩擦 dry friction	2m/s
	旋转、摇摆运动 Rotation、Oscillation	60N/mm²			流体润滑 liquid lubrication	10m/s
最大PV值（干摩擦）	间断性运作 intermittent operation	3.6N/mm²・m/s		导热系数 Thermal Conductivity		40W(m・k)$^{-1}$
Max PV (Dry Friction)	长期运作 long-time operation	1.8N/mm²・m/s		线膨胀系数 Coefficient of thermal expansion		12×10^{-6}/k
使用温度 Operation Temp.		-195℃~+280℃				

应用特点 APPLICATION CHARACTER

1.在有油润滑条件下摩擦系数小而稳定。
2.耐磨性能好、抗冲击性能好。
3.在流体润滑条件TPV值可达120N/mm²・m/s
4.该产品目前已广泛运用于各种齿轮油泵、柱塞泵、叶片泵等场合，对流体润滑或境界润滑条件下的中高压齿轮泵尤其适用。

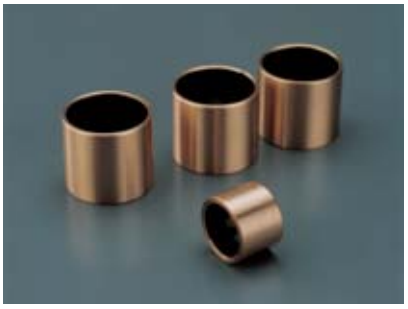


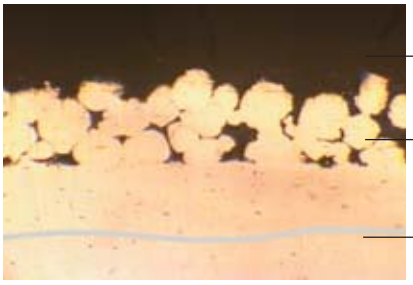
1.Low Friction under oil condition
2.Wea r resistant and anti-impact.
3.At hydrodynamic lubrication，the PV limit reaches to 120N/mm²・m/s
4.It is the best choice for the bushes in various kinds of gea r pumps as well as plunger, vane pumps and so on.

材料组织 MATERIAL STRUCTURE

1. PTFE/Pb混合物 0.01-0.03mm，一种耐磨材料，运作过程中可形成转移膜，以保护对磨轴。
2. 铜粉层，0.20-0.35mm，提高PTFE/Pb与铜板层的结合强度，具有很好的承载能力和耐磨性。较高的导热系数可迅速转移运作过程产生的热量。
3. 铜基板，提高轴承的承载能力和热传递，且有更好的耐腐蚀能力。

1. PTFE/Pb composition, 0.01-0.03mm, anti-abrasion material, which will form a lubricating film during operation.
2. Bronze powder layer, 0.2-0.35mm, which further strengthen the combination of the bronze plate and PTFE layer and transfer the heat more quickly.
3. Bronze plate, bear high load and transfer heat, anti-corrosion.





主要参数 TECHNICAL DATE

	静承载 Static Load	250N/mm^2		摩擦系数 friction coefficient		0.03~0.20
最大承载 Max Load	低速运转 Low-speed Rotation	140N/mm^2		最大线速度	干摩擦 dry friction	2m/s
	旋转、摇摆运动 Rotation、Oscillation	60N/mm^2		max linear velocity	流体润滑 liquid lubrication	>2m/s
最大PV值 （干摩擦）	间断性运作 intermittent operation	3.6N/mm^2 · m/s		导热系数 Thermal Conductivity		70W(m · k)$^{-1}$
Max PV (Dry Friction)	长期运作 long-time operation	1.8N/mm^2 · m/s		线膨胀系数 Coefficient of thermal expansion		17 × 11^{-6}/k
使用温度 Operation Temp.		-195℃~+300℃				

应用特点 APPLICATION CHARACTER

除了与HTB-1相同的优点外，还具有以下特性：

由于铜本身具有其自润性能，所以可用于需长时间工作而无法停机维修的部位，具有比HTB-1更好的抗腐蚀性能。广泛运用于弱酸强碱场合、港口机械、船舶机械、冶金钢铁工业，连铸机方坯滚道、高温炉钢环部位、水泥灌浆泵和螺旋式输送机上。它可以在外部组合钢套，或制成翻边，端面、内孔同时摩擦使用。

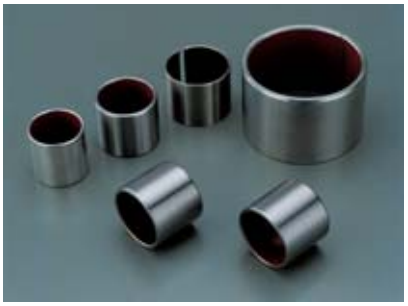
Besides of owns characteristics of HTB-1, HTB-1B is good at the follows:

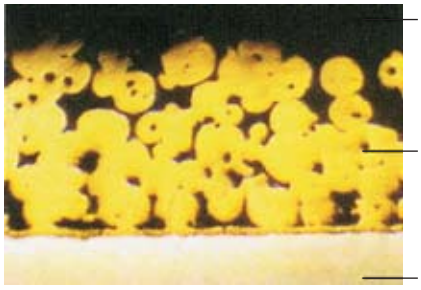
Bronze plate owns self-lubricating performance, which can be used in the components that are difficult to add oil, so that the part owns letter anti-corrosive characteristic that HTB-1. The products can be widely applied in chemical environment or port heavy machine, marine machine steel industry etc. Moreover, it can be mated with steel bushing or be made with flange, and the two surfaces are all do works.

材料组织 MATERIAL STRUCTURE

1. PTFE/Pb混合物 0.01-0.03mm，一种耐磨材料，运作过程中可形成转移膜，以保护对磨轴。
2. 铜粉层，0.20-0.35mm，提高PTFE/Pb与铜板层的结合强度，具有很好的承载能力和耐磨性。较高的导热系数可迅速转移运作过程产生的热量。
3. 不锈钢基板，提高轴承的承载能力和热传递，且有更好的耐腐蚀能力。

1. PTFE/Pb composition, 0.01-0.03mm, anti-abrasion material, which will form a lubricating film during operation.
2. Bronze powder layer, 0.2-0.35mm, which further strengthen the combination of the bronze plate and PTFE layer and transfer the heat more quickly.
3. Bronze plate, bear high load and transfer heat, anti-corrosion.





主要参数 TECHNICAL DATE

	静承载 Static Load	250N/mm^2		摩擦系数 friction coefficient		0.01~0.05
最大承载 Max Load	低速运转 Low-speed Rotation	140N/mm^2		最大线速度 max linear velocity	干摩擦 dry friction	2m/s
	旋转、摇摆运动 Rotation、Oscillation	60N/mm^2			流体润滑 liquid lubrication	10m/s
最大PV值 （干摩擦）	间断性运作 intermittent operation	3.6N/mm^2 · m/s		导热系数 Thermal Conductivity		40W(m · k)$^{-1}$
Max PV (Dry Friction)	长期运作 long-time operation	1.8N/mm^2 · m/s		线膨胀系数 Coefficient of thermal expansion		12 × 10^{-6}/k
使用温度 Operation Temp.		-195℃~+280℃				

应用特点 APPLICATION CHARCTERISTICSS

1. PTFE和亲油性混合物在运动是可形成很好的转移膜保护对磨轴。
2. 耐磨性好，摩擦系数低。
3. 走合性能好，无咬轴现象。
4. 可运行用于旋转、摇摆、往复运动中。
5. 耐腐蚀性能好。
6. 由于不含铅，故可用于食品饮料机械、医药机械等绿色环保设备。
7. 典型用途：主要运用于中酸、强碱场合，例如：化工中酸碱流量计、泵、阀，印染机械、海洋工业耐腐蚀滑动部位。

1. PTFE with oil fibre can protect the shaft, while machine in operation.
2. It is of low friction coefficient, good anti-wear.
3. Good running in property.
4. It fits well in motion of circumgyration, sway and to-and-fro.
5. Good anti-corrosion.
6. It can be used in food machine, pharmaceutical etc, due to lead-free.
7. It is mainly used in the condition of strong acid and alkali, such as chemical Industry, pumps, valves etc.

基材特性 MATERIAL FEATURES

该轴套以CuSn8青铜为基材卷制而成的一种具有承载高，耐磨性能好的经济型轴承。标准的HTB-090产品工作表面布满规则的菱形油穴，起到储油的作用，在起始运动时能较容易的形成油膜从而降低起始摩擦系数。

The bearings are wrapped of a cold formable homogenous bronze (CuSn8), which will obtain exceptional material properties. The standard size are fitted with diamond shaped lubrication indents on the bearing surface. These indents serve as lubricant reservoirs to rapidly build up a lubrication film in the start movement and therewith reduce the start friction.

主要参数 TECHNICAL DATE

最大承载 Max. Load	静承载Static	120N/mm^2		硬度 Hardness	HB 110-150
	动承载Dynamic	40N/mm^2		延伸率 Elongation	40%
最高线速度	Max. Speed	2m/s		使用温度 Temp.	-100℃~+200℃
最大PV	Max. PV	2.8N/mm^2 · m/s		摩擦系数 Friction coefficient	0.08~0.25
抗拉强度	Tensile strength	450N/mm^2		导热系数 Thermal conductivity	60W(m · k)$^{-1}$
屈服强度	Yield point	250N/mm^2		线膨胀系数 Coefficient of thermal expansion	15 × 10^{-6}/k

应用特点 APPLICATION CHARACTER

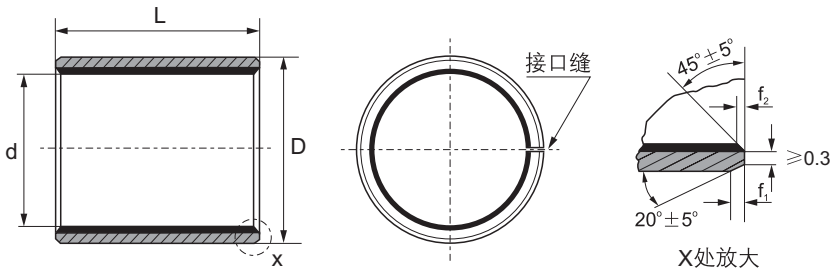
1. 该产品内孔布满菱型油穴、油坑，在使用中可储存大量油脂，延长加油间隔时间；
2. 少油润滑，适用于较难加油或水润滑的场合；
3. 耐磨性能好、摩擦系数小、使用寿命长；
4. 可在-100℃-200℃范围内使用；
5. 走合性能好，低噪音，无污染；
6. 薄壁结构，质量轻，可缩小机械体积；
7. 基体具有密度高、无气缩孔、承载能力大；

目前已广泛运用于各种机械的滑动部位，如：自动化机械设备（伸缩、摇摆、滑动、弯曲、回旋、回转部位）液压气缸导套、纺织机械、塑胶成型机、压铸机、橡胶机械、液压搬运车、汽机车、摩托车工业、港口、水利、工程、农用机械等。

1. The products inside surface is full of diamond oil indention, which can stock grease.
2. Minim oil lubrication, can be applied in water-lubrication environment
3. Good anti-abrasion, low coefficient of friction, long operating life.
4. Can work consecutively at 100℃~+200℃.
5. Good mending, low-noise, non-pollution
6. This wall, light, can reducing the volume of the machine
7. High density, high load no alveoli

The products now are applied in different machine, such as auto machines, pumps, plastic injection machine, auto industry, heavy equipments, etc.

直套轴承 STRAIGHT BUSHING



Unit(单位):mm

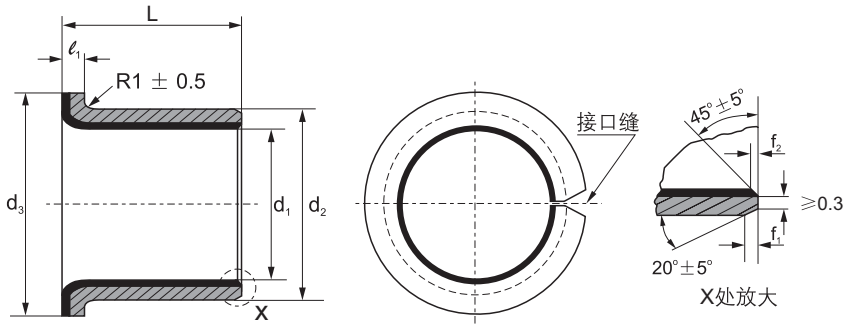
d	D	轴径 Axle	座孔H7 Housing H7	壁厚 Wall Thickness 最小 Min	壁厚 Wall Thickness 最大 Max	f_1	f_2	L $^{0}_{-0.40}$ (d≤φ30 L -0.30 / d>φ30 L -0.40) 6	8	10	12	15	20	25	30	40	50	60
6	8	6 $^{-0.013}_{-0.028}$	8 $^{+0.015}$					0606	0608	0610								
8	10	8 $^{-0.013}_{-0.028}$	10 $^{+0.015}$					0806	0808	0810	0812	0815						
10	12	10 $^{-0.016}_{-0.034}$	12 $^{+0.018}$					1006	1008	1010	1012	1015	1020					
12	14	12 $^{-0.016}_{-0.034}$	14 $^{+0.018}$					1206	1208	1210	1212	1215	1220	1225				
13	15	13 $^{-0.016}_{-0.034}$	15 $^{+0.018}$	0.980	1.005	0.6	0.3			1310			1320					
14	16	14 $^{-0.016}_{-0.034}$	16 $^{+0.018}$							1410	1412	1415	1420	1425				
15	17	15 $^{-0.016}_{-0.034}$	17 $^{+0.018}$							1510	1512	1515	1520	1525				
16	18	16 $^{-0.016}_{-0.034}$	18 $^{+0.018}$							1610	1612	1615	1620	1625				
17	19	17 $^{-0.016}_{-0.034}$	19 $^{+0.021}$							1710	1712		1720					
18	20	18 $^{-0.016}_{-0.034}$	20 $^{+0.021}$							1810	1812	1815	1820	1825				
20	23	20 $^{-0.020}_{-0.041}$	23 $^{+0.021}$							2010	2012	2015	2020	2025	2030			
22	25	22 $^{-0.020}_{-0.041}$	25 $^{+0.021}$	1.475	1.505	0.6	0.4			2210	2212	2215	2220	2225	2230			
24	27	24 $^{-0.020}_{-0.041}$	27 $^{+0.021}$									2415	2420	2425	2430			
25	28	25 $^{-0.020}_{-0.041}$	28 $^{+0.021}$							2510	2512	2515	2520	2525	2530	2540	2550	
28	32	28 $^{-0.020}_{-0.041}$	32 $^{+0.025}$									2815	2820	2825	2830	2840		
30	34	30 $^{-0.020}_{-0.041}$	34 $^{+0.025}$								3012	3015	3020	3025	3030	3040		
32	36	32 $^{-0.025}_{-0.050}$	36 $^{+0.025}$	1.970	2.005	1.2	0.4						3220		3230	3240		
35	39	35 $^{-0.025}_{-0.050}$	39 $^{+0.025}$								3512	3515	3520	3525	3530	3540	3550	
38	42	38 $^{-0.025}_{-0.050}$	42 $^{+0.025}$									3815			3830	3840		
40	44	40 $^{-0.025}_{-0.050}$	44 $^{+0.025}$								4012		4020	4025	4030	4040	4050	

HTB-1、HTB-1B、HTB-1S、HTB-090 无给油轴承标准公制尺寸
OILLESS BEARING STANDARD METRIC SIZE

Unit(单位):mm

d	D	轴径 Axle	座孔H7 Housing H7	壁厚 Wall Thickness 最小 Min	壁厚 Wall Thickness 最大 Max	f_1	f_2	L $^{0}_{-0.40}$ 20	25	30	40	50	60	70	80	100	115
45	50	45 $^{-0.025}_{-0.050}$	50 $^{+0.025}$					4520	4525	4530	4540	4550					
50	55	50 $^{-0.025}_{-0.050}$	55 $^{+0.030}$					5020		5030	5040	5050	5060				
55	60	55 $^{-0.030}_{-0.060}$	60 $^{+0.030}$							5530	5540	5550	5560				
60	65	60 $^{-0.030}_{-0.060}$	65 $^{+0.030}$	2.460	2.505	1.8	0.6			6030	6040	6050	6060	6070			
65	70	65 $^{-0.030}_{-0.060}$	70 $^{+0.030}$							6530	6540	6550	6560	6570			
70	75	70 $^{-0.030}_{-0.060}$	75 $^{+0.030}$								7040	7050	7060	7070	7080		
75	80	75 $^{-0.030}_{-0.060}$	80 $^{+0.030}$							7530	7540	7550	7560	7570	7580		
80	85	80 $_{-0.030}$	85 $^{+0.035}$								8040	8050	8060	8070	8080	80100	
85	90	85 $_{-0.035}$	90 $^{+0.035}$								8540		8560		8580	85100	
90	95	90 $_{-0.035}$	95 $^{+0.035}$								9040	9050	9060		9080	90100	
95	100	95 $_{-0.035}$	100 $^{+0.035}$	2.440	2.490	1.8	0.6					9550	9560		9580	95100	
100	105	100 $_{-0.035}$	105 $^{+0.035}$									10050	10060		10080		100115
105	110	105 $_{-0.035}$	110 $^{+0.035}$										10560		10580		105115
110	115	110 $_{-0.035}$	115 $^{+0.035}$										11060		11080		110115
120	125	120 $_{-0.035}$	125 $^{+0.040}$										12060		12080	120100	
125	130	125 $_{-0.040}$	130 $^{+0.040}$										12560			125100	125115
130	135	130 $_{-0.040}$	135 $^{+0.040}$	2.415	2.465	1.8	0.6						13060		13080	130100	
140	145	140 $_{-0.040}$	145 $^{+0.040}$										14060		14080	140100	
150	155	150 $_{-0.040}$	155 $^{+0.040}$										15060		15080	150100	
160	165	160 $_{-0.040}$	165 $^{+0.040}$										16060		16080	160100	160115
180	185	180 $_{-0.040}$	185 $^{+0.046}$												18080	180100	
190	195	190 $_{-0.046}$	195 $^{+0.046}$	2.415	2.465	1.8	0.6								19080	190100	
200	205	200 $_{-0.046}$	205 $^{+0.046}$										20060		20080	200100	
220	225	220 $_{-0.046}$	225 $^{+0.046}$												22080	220100	
250	255	250 $_{-0.046}$	255 $^{+0.052}$												25080	250100	
260	265	260 $_{-0.052}$	265 $^{+0.052}$	2.415	2.465	1.8	0.6								26080	260100	
280	285	280 $_{-0.052}$	285 $^{+0.052}$												28080	280100	
300	305	300 $_{-0.052}$	305 $^{+0.052}$												30080	300100	

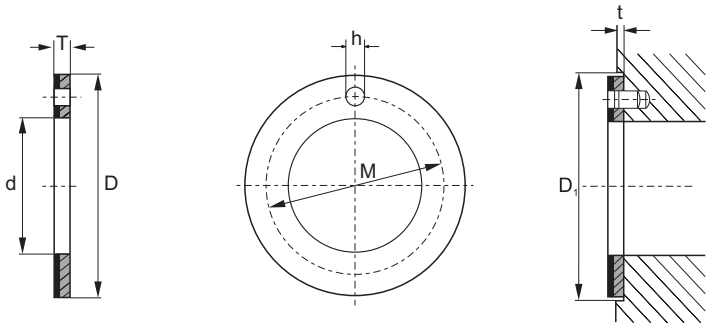
翻边轴承 FLANGE BUSHES



Unit(单位):mm

轴径 Axle	座孔H7 Housing H7	代号 Code number	尺寸Size d_1	d_2	d_3±0.5	L±0.25	ℓ_1-0.2	f_1	f_2
6 -0.013 -0.028	8 +0.015	06040	6	8	12		1	0.6	0.3
		06070				7			
8 -0.013 -0.028	10 +0.015	08055	8	10	15	5.5			
		08075				7.5			
10 -0.016 -0.034	12 +0.018	10070	10	12	18	7			
		10090				9			
		10120				12			
12 -0.016 -0.034	14 +0.018	12070	12	14	20	7			
		12090				9			
		12120				12			
14 -0.016 -0.034	16 +0.018	14120	14	16	22	12			
		14170				17			
15 -0.016 -0.034	17 +0.018	15090	15	17	23	9			
		15120				12			
		15170				17			
16 -0.016 -0.034	18 +0.018	16120	16	18	24	12			
		16170				17			
18 -0.016 -0.034	20 +0.021	18120	18	20	26	12			
		18170				17			
		18200				20			
20 -0.020 -0.041	23 +0.021	20115	20	23	30	11.5	1.5	0.6	0.4
		20165				16.5			
		20215				21.5			
22 -0.020 -0.041	25 +0.021	22150	22	25	32	15			
		22200				20			
25 -0.020 -0.041	28 +0.021	25115	25	28	35	11.5			
		25165				16.5			
		25215				21.5			
30 -0.025 -0.050	34 +0.025	30160	30	34	42	16	2	1.2	0.4
		30260				26			
35 -0.025 -0.050	39 +0.025	35160	35	39	47	16			
		35260				26			
40 -0.025 -0.050	44 +0.025	40260	40	44	53	26			
		40400				40			

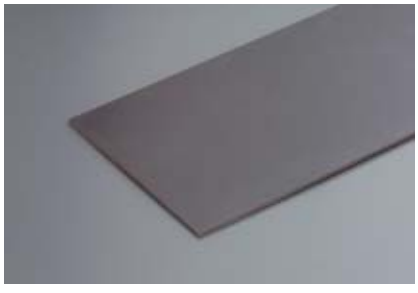
HTB-WC止推垫片 THRUST WASHER

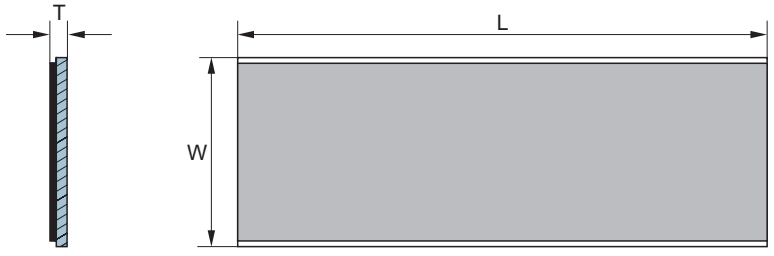


Unit(单位):mm

轴径 Axle	代号 Code number	垫片尺寸Washer size				安装尺寸 Install size		
		d +0.25	D -0.25	T -0.05	M ±0.125	$h^{+0.4}_{+0.1}$	t±0.2	D_1+0.12
8	WC10	10	20		15	1.5		20
10	WC12	12	24		18			24
12	WC14	14	26		20			26
14	WC16	16	30		23	2		30
16	WC18	18	32		25			32
18	WC20	20	36	1.5	28		1	36
20	WC22	22	38		30	3		38
22	WC24	24	42		33			42
24	WC26	26	44		35			44
26	WC28	28	48		38			48
30	WC32	32	54		43			54
36	WC38	38	62		50			62
40	WC42	42	66		54	4		66
46	WC48	48	74		61			74
50	WC52	52	78	2	65		1.5	78
60	WC62	62	90		76			90

HTB-1SP 板材 STRIP



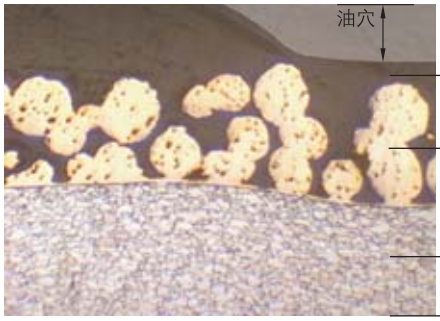


Unit(单位):mm

代号 Code number	长度(L)±1	宽度(W)±1	壁厚(T) -0.05
SP	500	150	1.0
SP	500	150	1.5
SP	500	150	2.0
SP	500	150	2.5

材料组织 MATERIAL STRUCTURE

1. POM 0.30-0.50mm改性聚甲醛，具有很高的耐磨性能，甚至在瞬间缺油的情况下也具有较低的摩擦系数。轴承表面有排布规律的带有螺旋角度的储油坑，装配时，必须涂满润滑油脂。
2. 铜粉层0.2~0.35mm，具有很好的承载能力和耐磨性，良好的导热性能可及时转移轴承运作过程中产生的热量。复合材料可渗入到铜粉球的间隙中，提高了结合强度。
3. 低碳钢，提高轴承的承载能力和热转移作用。
4. 铜/锡电镀层0.002mm，使轴承有很好的耐腐蚀功能。



1. POM 0.03-0.50mm, anti abrasion, low friction coefficient even no oil given. The inside of the bearing are full of indentions, which need to be filled with grease before installing.
2.Bronze powder layer, 0.2-0.35mm, high load capacity and anti-abrasion, good thermal conductivity, which also further strengthen the combination of the POM layer and steel plate.
3. Low carbon steel, which improved, load capacity & thermal conductivity.
4. Copper/Tin plating layer, 0.002mm, anti-corrosion.

主要参数 TECHNICAL DATE

	静承载 Static load	250N/mm^2		使用温度 Operation temp.		-40℃~130℃
最大承载 Max load	低速运转 Low-speed rotation	140N/mm^2		最大线速度	脂润滑 Grease lubrication	2m/s
	旋转、摇摆运动 Rotation、oscillation	70N/mm^2		Max Linear Velocity	持续给油 Keep to supplying oil	>2m/s
最大PV值 Max PV		3N/mm^2 · m/s		导热系数 Thermal conductivity		4W(m · k)$^{-1}$
线膨胀系数 Coefficient of thermal expansion		11 × 10^{-6}/k		摩擦系数 Friction coefficient		0.05~0.20

最初装配时必须在油穴中涂满润滑油脂The grease must be fill in the house at first installation

应用特点 APPLICATION CHARACTER

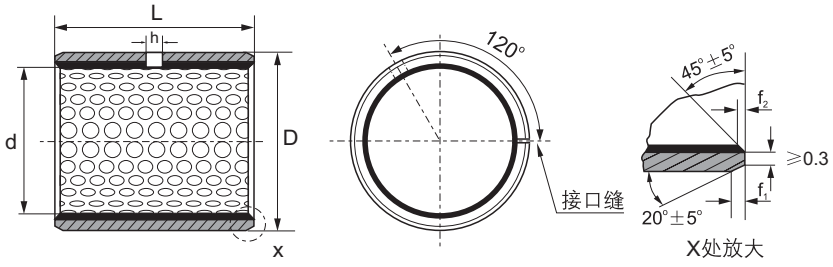
特别适用于重载低速下的旋转运动，摇摆运动以及经常在载荷下启闭而不易形成流体润滑的部位；在边界润滑条件下可以长期使用而不用加油保养，而过程中加油可使轴承的使用寿命得以更多的延长；其表面的塑料层在轴套成型加工时可留有一定的余量，压入开孔后可自行加工，以达到更好的装配尺寸。

目前主要运用于冶金机械、矿山机械、水利机械、汽车底盘、建筑机械、农用机械、轧钢机械等。

The product can be used under high load with low speed, rotation, oscillation, and also can be applied in no liquid lubricants environment that switches frequently with load; the part can work with out oil, and will have a long operating life if oil giver; the POM layer can be machined during installing, which does benefit to the mating.

The products now mainly used in metallurgy machine mine industry, irrigation machine, agriculture machine etc.

直套轴承 STRAIGHT BUSHING



Unit(单位):mm

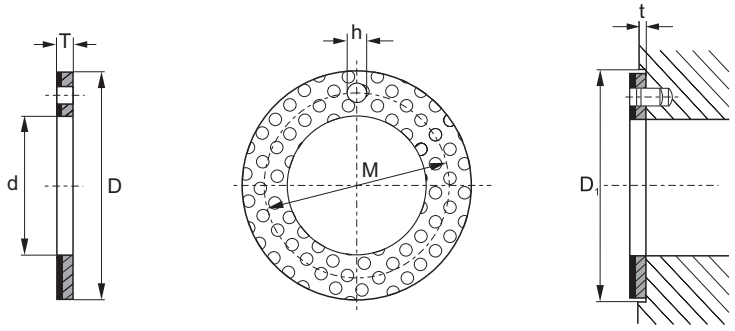
d	D	轴径h8 Axle h8	座孔H7 Housing H7	壁厚 Wall Thickness 最小 Min	壁厚 Wall Thickness 最大 Max	h 油孔 Oil bore	f_1	f_2	L $^{0}_{-0.40}$ 10	15	20	25	30	35	40	45	50	60
10	12	$10_{-0.022}$	$12^{+0.018}$						1010	1015	1020							
12	14	$12_{-0.027}$	$14^{+0.018}$						1210	1215	1220							
14	16	$14_{-0.027}$	$16^{+0.018}$	0.955	0.980		0.6	0.3		1415	1420							
15	17	$15_{-0.027}$	$17^{+0.018}$			4				1515	1520	1525						
16	18	$16_{-0.027}$	$18^{+0.018}$							1615	1620	1625						
18	20	$18_{-0.027}$	$20^{+0.021}$							1815	1820	1825						
20	23	$20_{-0.033}$	$23^{+0.021}$							2015	2020	2025	2030					
22	25	$22_{-0.033}$	$25^{+0.021}$	1.445	1.475		0.6	0.4		2215		2225						
25	28	$25_{-0.033}$	$28^{+0.021}$							2515	2520	2525	2530					
28	32	$28_{-0.033}$	$32^{+0.025}$			6					2820		2830					
30	34	$30_{-0.033}$	$34^{+0.025}$	1.935	1.970		1.2	0.4			3020	3025	3030	3035	3040			
35	39	$35_{-0.039}$	$39^{+0.025}$								3520		3530	3535	3540			
40	44	$40_{-0.039}$	$44^{+0.025}$								4020		4030	4035	4040		4050	
45	50	$45_{-0.039}$	$50^{+0.025}$								4520		4530		4540	4545	4550	
50	55	$50_{-0.039}$	$55^{+0.030}$	2.415	2.460	8	1.8	0.6					5030		5040		5050	5060
55	60	$55_{-0.046}$	$60^{+0.030}$										5530		5540		5550	5560
60	65	$60_{-0.046}$	$65^{+0.030}$										6030		6040		6050	6060

HTB-2 边界润滑轴承标准公制尺寸
HTB-2 MARGINAL-LUBRICATION BEARING STANDARD METRIC SIZE

Unit(单位):mm

d	D	轴径h8 Axle h8	座孔H7 Housing H7	壁厚 Wall Thickness 最小 Min	壁厚 Wall Thickness 最大 Max	h 油孔 Oil bore	f_1	f_2	L $^{0}_{-0.40}$ 40	50	60	80	90	95	100	110	120
65	70	$65_{-0.046}$	$70^{+0.030}$						6540		6560						
70	75	$70_{-0.046}$	$75^{+0.030}$	2.415	2.460	8	1.8	0.6	7040	7050		7080					
75	80	$75_{-0.046}$	$80^{+0.030}$						7540		7560	7580					
80	85	$80_{-0.046}$	$85^{+0.035}$						8040		8060	8080					
85	90	$85_{-0.054}$	$90^{+0.035}$						8540		8560	8580					
90	95	$90_{-0.054}$	$95^{+0.035}$						9040		9060	9080	9090				
100	105	$100_{-0.054}$	$105^{+0.035}$				1.8	0.6		10050		10080		10095			
105	110	$105_{-0.054}$	$110^{+0.035}$			9.5					10560	10580		10595		105110	
110	115	$110_{-0.054}$	$115^{+0.035}$								11060	11080		11095		110110	
120	125	$120_{-0.054}$	$125^{+0.040}$								12060	12080				120110	
125	130	$125_{-0.063}$	$130^{+0.040}$								12560					125110	
130	135	$130_{-0.063}$	$135^{+0.040}$							13050	13060	13080			130100		
140	145	$140_{-0.063}$	$145^{+0.040}$							14050	14060	14080			140100		
150	155	$150_{-0.063}$	$155^{+0.040}$	2.385	2.450					15050	15060	15080			150100		
160	165	$160_{-0.063}$	$165^{+0.040}$							16050	16060	16080			160100		
170	175	$170_{-0.063}$	$175^{+0.040}$							17050		17080			170100		
180	185	$180_{-0.063}$	$185^{+0.046}$			9.5	1.8	0.6		18050	18060	18080			180100		
190	195	$190_{-0.072}$	$195^{+0.046}$							19050	19060	19080			190100		190120
200	205	$200_{-0.072}$	$205^{+0.046}$							20050	20060	20080			200100		200120
220	225	$220_{-0.072}$	$225^{+0.046}$							22050	22060	22080			220100		220120
240	245	$240_{-0.072}$	$245^{+0.046}$							24050	24060	24080			240100		240120
250	255	$250_{-0.072}$	$255^{+0.052}$			9.5				25050	25060	25080			250100		250120
260	265	$260_{-0.081}$	$265^{+0.052}$							26050	26060	26080			260100		260120
280	285	$280_{-0.081}$	$285^{+0.052}$							28050	28060	28080			280100		280120
300	305	$300_{-0.081}$	$305^{+0.052}$							30050	30060	30080			300100		300120

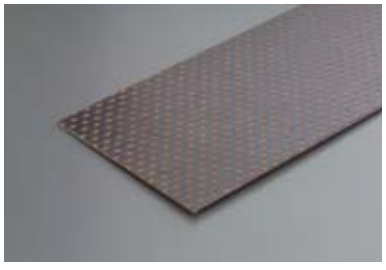
HTB–2WC 止推垫片 METRIC THRUST WASHER

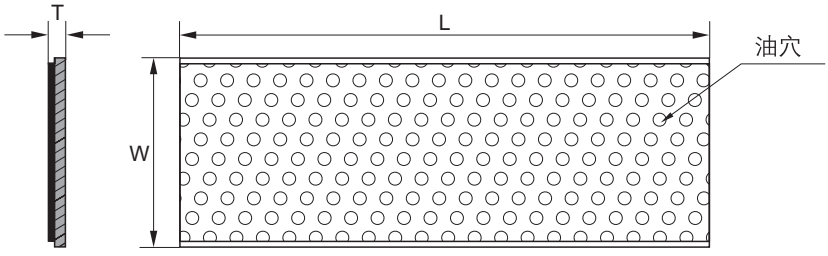


Unit(单位):mm

轴径 Axle	代号 Code number	垫片尺寸 Washer size				安装尺寸 Install size		
		d +0.25	D -0.25	T -0.05	M ±0.125	$h^{+0.4}_{+0.1}$	t ±0.2	D_1 +0.12
8	WC10	10	20		15	1.5		20
10	WC12	12	24		18			24
12	WC14	14	26		20			26
14	WC16	16	30		23	2		30
16	WC18	18	32		25			32
18	WC20	20	36		28			36
20	WC22	22	38	1.5	30	3	1	38
22	WC24	24	42		33			42
24	WC26	26	44		35			44
26	WC28	28	48		38			48
30	WC32	32	54		43			54
36	WC38	38	62		50			62
40	WC42	42	66		54	4		66
46	WC48	48	74		61			74
50	WC52	52	78	2	65		1.5	78
60	WC62	62	90		76			90

HTB-2P 板材 STRIP





Unit(单位):mm

代号 Code number	长度(L) ± 1	宽度(W) ± 1	壁厚(T) -0.05
P	500	150	1.0
P	500	150	1.5
P	500	150	2.0
P	500	150	2.5

HTB 双金属板材厚度尺寸及公差
THICKNESS OF THE HTB DOUBLE LAYER METAL AND THEIR TOLERANCES

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

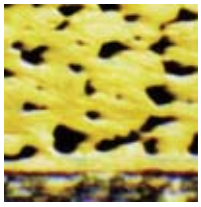
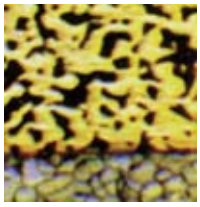
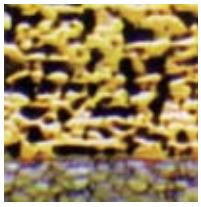
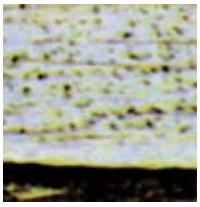
HTB 双金属板材厚度尺寸及公差
THICKNESS OF THE HTB DOUBLE LAYER METAL AND THEIR TOLERANCES

公差厚度 Nominal Thickness	HTB-800	HTB-720	HTB-700	HTB-20
Cu	余量 Remainder	余量 Remainder	余量 Remainder	0.7~1.3
Pb	9.0~11.0	21.0~27.0	26.0~33.0	——
Sn	9.0~11.0	3.0~4.5	0.5	17.5~22.5
Zn	0.5	0.5	0.5	——
P	0.1	0.1	0.1	
Fe	0.7	0.7	0.7	0.7
Ni	0.5	0.5	0.5	0.1
Sb	0.2	0.2	0.2	——
Ai	——	——	——	余量 Remainder
Si	——	——	——	0.7
Mn	——	——	——	0.7
Ti	——	——	——	0.2
其它 Other	0.5	0.5	0.5	0.5

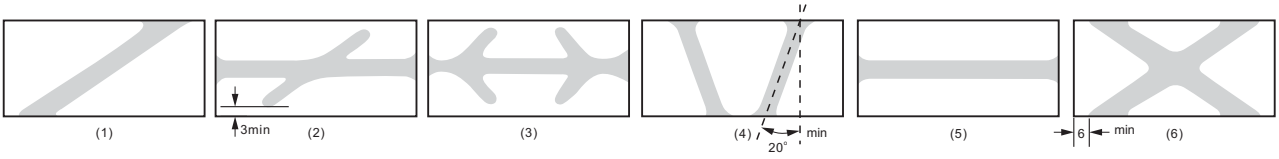
HTB 双金属板材厚度尺寸及公差
THICKNESS OF THE HTB DOUBLE LAYER METAL AND THEIR TOLERANCES

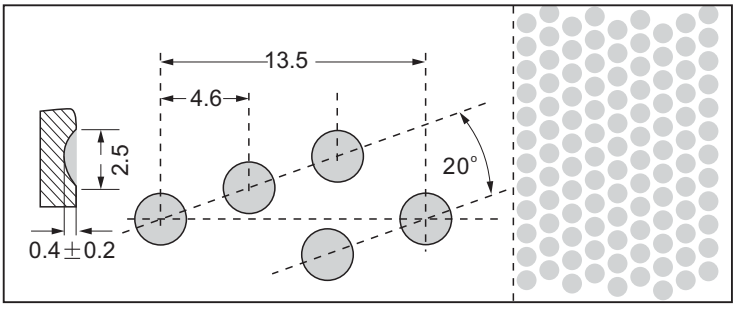
物理性能 Physical performance		HTB-800	HTB-720	HTB-700	HTB-20
最高静承载压力 N/mm^2 Load limit		150	130	120	100
拉伸强度 N/mm^2 Tensile strength		150	150	200	200
最高速度（油） m/s Speed limit v max.		5	10	15	25
摩擦系数（油） Friction coefficient(oil)		0.06~0.14	0.06~0.16	0.08~0.16	0.08~0.17
允许PV值 PV limit N/mm^2 m/s	脂 Grease	2.8	2.8	2.5	——
	油 oil	10	10	8	6
“蓝宝石”疲劳级 Mpa "Sapphire"fatigue class		125	115	105	85

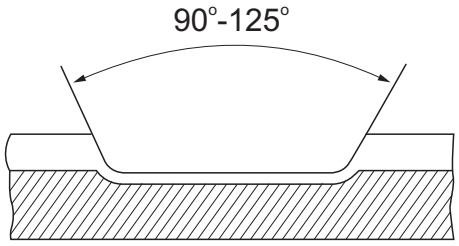
HTB 双金属合金的技术标准
SPECIEICATIONS FOR HTB STEEL –LEAD BRONZE ALLOYS

材料型号 Material type	HTB-800	HTB-720	HTB-700	HTB-20
铜合金牌号 Specification of bronze	CuPb10Sn10	CuPb24Sn4	CuPb30	AlSn20Cu
相关代号 Equivalent standard code	美国(USA)：SAE-797 德国(GERMANY): GLYCO 66 日本(JAPAN):JIS-LBC3	美国(USA)：SAE-799 德国(GERMANY): GLYCO 68 日本(JAPAN):JIS-LBC6	美国USA：SAE-48 日本(JAPAN):JIS-KJ3	美国(USA)：SAE-783 德国(GERMANY): GLYCO 74 日本(JAPAN):JIS-AJL
金相组织图 Metallographies				
合金层硬度 Hardness of bronze alloy HB	70~100	45~70	30~45	30~40
最大荷载 Maz.dynamic Load N/mm_2	65	38	25	30
	53 HRC	50 HRC	270 HB	250 HB
最高使用温度 Max.temperature °C	260	200	170	150
	属铜铅合金中最强的一种，应用场合十分广泛，最适合于承受高冲击震动载荷的轴衬、推动垫圈多种类的用途。 The strongest type, wide application field, most suitable for high impact vibrating load bushes and Washers.	有较高的疲劳强度和承载能力，较好的滑动性能。易受润滑油的腐蚀。适用于中载中速。表面镀软合金时，可用于高速内燃机主轴套、连杆轴套。 Relative high fatigue strength & load capacity, good sliding performance. poor oil corrosion resistance. Fit for middle load, middle speed. Normally applied in main bushes of Inner-combustion engine. Connecting rod when plated.	有良好的抗咬性异物埋没性，工作表面需镀软合金属。常用于高速中低荷载的内燃机主轴套、连杆轴套。 Good seizuring resistance good capacity to submerge foreign, overlayer plated normally applied in main bearings of high speed, low to morderate load inner-combustion engine & connecting rod bearing.	有中等的疲劳强度和承载能力，良好的抗腐性能，较好的轴承滑动性能。常用于高速低载的内燃机轴瓦、气压机制冷机铀承。 Moderate fatigue strength & load capacity good corrosion resistance, relative good sliding performance. Normally applied in half bushs of high speed, low load inner combustion engine aircompressor, refigerator bearings.

HTB 型双金属轴套的油槽油穴形式
TYPES FOR HTB BUSH'S GROOVES & INDENTATIONS

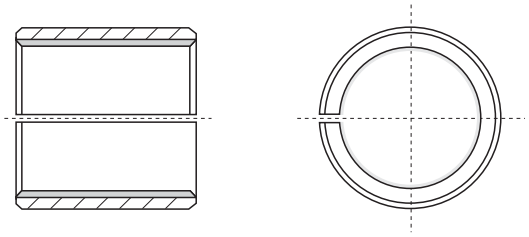




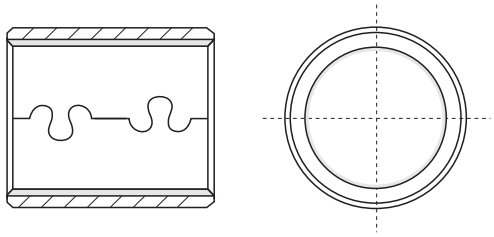


HTB 双金属轴套的接口形式
LOCK TYPES OF HTB WRAPPED BUSHES

a.开口型 Straight Joint



b.互锁搭口型 Inter Locking Joint



HTB型双金属轴套的油孔设计
The Designing of Oil Indentations

为使HTB型双金属轴套在使用中，能得到充分的油润滑，因此推荐如下尺寸的油孔，无特殊要求的按此油孔标准制作。
In order to fully lubricate the bush when in the performance, the indentations with size as follows are recommended. They should be manufactured according to the standard below if without special requirements.

轴承外径 Bush O.D.	大于From 至 To	14~ 22	22~ 40	40~ 50	50~ 100	100~ 180
油孔直径(mm) Lubricating		3	3	3	6	7

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

HTB 双金属轴套的结构及应用 APPLICATIONS

HTB 双金属轴承是以钢基为基体，表面烧结铜、锡合金，经压延而成的卷制滑动轴承，标准的含金材料有: CuPb10Sn10, CuPb24Sn4, CuPb30, CuSn6Zn6Pb3, AlSn20Cu等。由于基板稳定为低碳钢材料, 所以对轴套的外径加工精度有了保障，而且在产品装入座孔后不需要螺钉固定, 依靠过盈配合就能防止走外圆现象。内表合金层化学成份的改变能满足不同承载压力, 不同使用温度、不同滑动速度的要求，摩擦面在生产中设计出不同结构的油槽、油穴能满足不同加油方式的要求，并能防止咬轴现象。

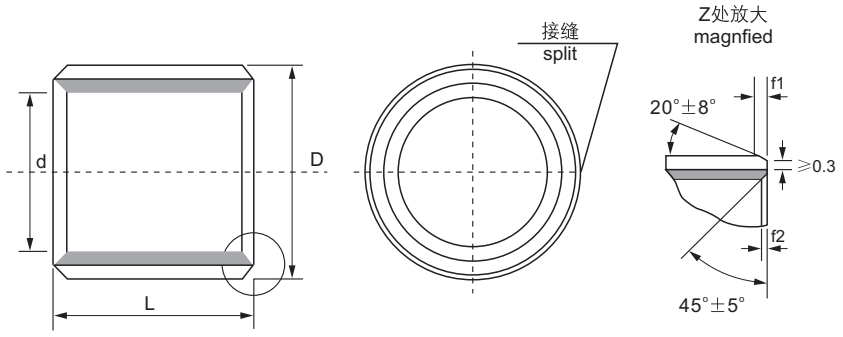
HTB bimetal bearings take steel backing as base. The bearings are sintered with CuPb10Sn10, CuPb24Sn4, CuPb30, CuSn6Zn6Pb3 or AlSn20Cu after press. It can insure the bearings O.D. Precision against the friction between O.D. And housing after pressing it into housing because of mild steel as its base. The chemical changes of inner alloy layer can make the bearings work well under various load presses, different working temperatures and sliding speeds. Different structures of oil grooves and oil Indentations can satisfy different adding oil ways and prevent the bearings from g ripping shaft.

HTB 双金属轴套的加油设计 TECHNICS DESIGN

HTB 双金属轴承的应用，必须设计有油润滑的条件。一般的低速场合加油条件是装配时加油脂全封闭，使用时按周期用油栓加油，例：汽车平衡桥中，弹簧钢板座孔中，制动蹄中；转向节中；运动连杆中；冲床滑动部位；推土机支重轮、引导轮中等。运动中速场合应配置油杯稀油润滑，例：连杆部位、冲剪机转轴部位、输送轮部位等。 高速的场合是浸泡在油中的加油条件，例：齿轮箱体中、油泵中、油缸中、发动机中、离合器中等。

HTB bimetal bearings are widely used in oil lubricating situations. Normally under lowspeed and oil lubricating situations assemble with grease and work with adding oil Periodically, such as suspension, steeping ball joints, brake pedal points, redirector, connecting rod, slide part of punch, construction and earth-moving equipment. etc. Under middle speed work: with oil, such as connecting rod, shaft and transportation parts of cut machine. Under high speed work within oil, such as gear box, fuel pump, engine, clutch. Etc.

直套轴承 STRAIGHT BUSHING



Unit(单位):mm

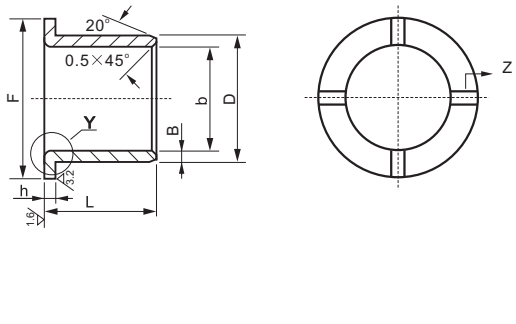
d	D	壁厚 Wall Thickness	外径公差 O.D. Tolerance	内径公差 I.D.(H8) Tolerance	配合座孔 H7 Housing Bore	轴径f7 Journal Diameter	f1	f2	L -0.4									
									10	15	20	25	30	40	50	60	80	90	100
10	12		12 +0.065 +0.030	10 +0.022 +0.000	12 +0.018	10 -0.013 -0.028	0.5	0.3	1010	1015	1020								
12	14		14 +0.065 +0.030	12 +0.027 +0.000	14 +0.018	12 -0.016 -0.034	0.5	0.3	1210	1215	1220								
14	16	1 -0.025	16 +0.065 +0.030	14 +0.027 +0.000	16 +0.018	14 -0.016 -0.034	0.5	0.3	1410	1415	1420								
15	17		17 +0.065 +0.030	15 +0.027 +0.000	17 +0.018	15 -0.016 -0.034	0.5	0.3	1510	1515	1520								
16	18		18 +0.075 +0.035	16 +0.027 +0.000	18 +0.018	16 -0.016 -0.034	0.8	0.4	1610	1615	1620								
18	20		20 +0.075 +0.035	18 +0.033 +0.000	20 +0.021	18 -0.016 -0.034	0.8	0.4	1810	1815	1820	1825							
20	23		23 +0.075 +0.035	20 +0.033 +0.000	23 +0.021	20 -0.020 -0.041	0.8	0.4	1210	1215	1220	1225							
22	25		25 +0.075 +0.035	22 +0.033 +0.000	25 +0.021	22 -0.020 -0.041	0.8	0.4	2210	2215	2220	2225							
24	27	1.5 -0.030	27 +0.075 +0.035	24 +0.033 +0.000	27 +0.021	24 -0.020 -0.041	1.0	0.5	2410	2415	2420	2425	2430						
25	28		28 +0.075 +0.035	25 +0.033 +0.000	28 +0.021	25 -0.020 -0.041	1.0	0.5		2515	2520	2525	2530						
26	30		30 +0.075 +0.035	26 +0.033 +0.000	30 +0.021	26 -0.020 -0.041	1.0	0.5		2615	2620	2625	2630						
28	32		32 +0.085 +0.045	28 +0.033 +0.000	32 +0.025	28 -0.020 -0.041	1.0	0.5		2815	2820	2825	2830	2840					
30	34		34 +0.085 +0.045	30 +0.039 +0.000	34 +0.025	30 -0.020 -0.041	1.2	0.6		3015	3020	3025	3030	3040					
32	36	2 -0.035	36 +0.085 -0.045	32 +0.039 +0.000	36 +0.025	32 -0.025 -0.050	1.2	0.6		3215	3220	3225	3230	3240					
35	39		39 +0.085 +0.045	35 +0.039 +0.000	39 +0.025	35 -0.025 -0.050	1.2	0.6			3520	3525	3530	3540	3550				
38	42		42 +0.085 +0.045	38 +0.039 +0.000	42 +0.025	38 -0.025 -0.050	1.2	0.6			3820	3825	3830	3840	3850				
40	44		44 +0.085 +0.045	40 +0.039 +0.000	44 +0.025	40 -0.025 -0.050	1.2	0.6			4020	4025	4030	4040	4050				

注：内径公差是轴承压入O位座孔时的公差。
Note: I.D tolerance is inspected when bush assembly into housing indicating zero tolerance.

Unit(单位):mm

d	D	壁厚 Wall Thickness	外径公差 O.D. Tolerance	内径公差 I.D.(H8) Tolerance	配合座孔 H7 Housing Bore	轴径f7 Journal Diameter	f1	f2	L -0.4										
									10	15	20	25	30	40	50	60	80	90	100
45	50		50 +0.085 +0.045	45 +0.039 +0.000	50 +0.025	45 -0.025 -0.050	1.5	1.0			4520	4525	4530	4540	4550				
50	55		55 +0.100 +0.050	50 +0.039 +0.000	55 +0.030	50 -0.030 -0.050	1.5	1.0					5030	5040	5050				
55	60		60 +0.100 +0.050	55 +0.046 +0.000	60 +0.030	55 -0.030 -0.050	1.5	1.0					5530	5540	5550	5560			
60	65	2.5 -0.040	65 +0.100 +0.050	60 +0.046 +0.000	65 +0.030	60 -0.030 -0.050	1.5	1.0					6030	6040	6050	6060			
65	70		70 +0.100 +0.050	65 +0.046 +0.000	70 +0.030	65 -0.030 -0.060	1.5	1.0					6530	6540	6550	6560			
70	75		75 +0.100 +0.050	70 +0.046 +0.000	75 +0.030	70 -0.030 -0.060	1.5	1.0					7030	7040	7050	7060	7080		
75	80		80 +0.100 +0.050	75 +0.046 +0.000	80 +0.035	75 -0.030 -0.060	1.5	1.0					7530	7540	7550	7560			
80	85		85 +0.120 +0.070	80 +0.054 +0.000	85 +0.035	80 -0.030 -0.060	1.5	1.0						8040	8050	8060	8080		
84	90		90 +0.120 +0.070	84 +0.054 +0.000	90 +0.035	84 -0.036 -0.071	1.8	1.2						8440	8450	8460	8480		
89	95		95 +0.120 +0.070	89 +0.054 +0.000	95 +0.035	89 -0.036 -0.071	1.8	1.2						8940	8950	8960	8980		
94	100		100 +0.120 +0.070	94 +0.054 +0.000	100 +0.035	94 -0.036 -0.071	1.8	1.2							9450	9460	9480	9490	
99	105	3 -0.045	105 +0.120 +0.070	99 +0.054 +0.000	105 +0.035	99 -0.036 -0.071	1.8	1.2							9950	9960	9980	9990	
104	110		110 +0.120 +0.070	104 +0.054 +0.000	110 +0.035	104 -0.036 -0.071	1.8	1.2							10450	10460	10480		
109	115		115 +0.120 +0.070	109 +0.054 +0.000	115 +0.035	109 -0.036 -0.071	1.8	1.2							10950	10960	10980		
114	120		120 +0.120 +0.070	114 +0.054 +0.000	120 +0.040	114 -0.036 -0.083	1.8	1.2							11450	11460	11480		
119	125		125 +0.170 +0.100	119 +0.054 +0.000	125 +0.040	119 -0.036 -0.083	1.8	1.2							11950	11960	11980		
123	130		130 +0.170 +0.100	123 +0.054 +0.000	130 +0.040	123 -0.043 -0.083	2	1.5							12350	12360	12380		123100
128	135		135 +0.170 +0.100	128 +0.063 +0.000	135 +0.040	128 -0.043 -0.083	2	1.5							12850	12860	12880		128100
133	140		140 +0.170 +0.100	133 +0.063 +0.000	140 +0.040	133 -0.043 -0.083	2	1.5							13350	13360	13380		133100
138	145		145 +0.170 +0.100	138 +0.063 +0.000	145 +0.040	138 -0.043 -0.083	2	1.5								13860	13880		138100
143	150		150 +0.170 +0.100	143 +0.063 +0.000	150 +0.040	143 -0.043 -0.083	2	1.5								14360	14380		143100
148	155	3.5 -0.050	155 +0.170 +0.100	148 +0.063 +0.000	155 +0.040	148 -0.043 -0.083	2	1.5								14860	14880	14890	
153	160		160 +0.170 +0.100	153 +0.063 +0.000	160 +0.040	153 -0.043 -0.083	2	1.5								15360	15380	15390	
158	165		165 +0.170 +0.100	158 +0.063 +0.000	165 +0.040	158 -0.043 -0.083	2	1.5								15860	15880		158100
163	170		170 +0.170 +0.100	163 +0.063 +0.000	170 +0.040	163 -0.043 -0.083	2	1.5								16360	16380		163100
168	175		175 +0.170 +0.100	168 +0.063 +0.000	175 +0.046	168 -0.043 -0.083	2	1.5								16860	16880		168100
173	180		180 +0.170 +0.100	173 +0.063 +0.000	180 +0.046	173 -0.043 -0.083	2	1.5								17360	17380		173100

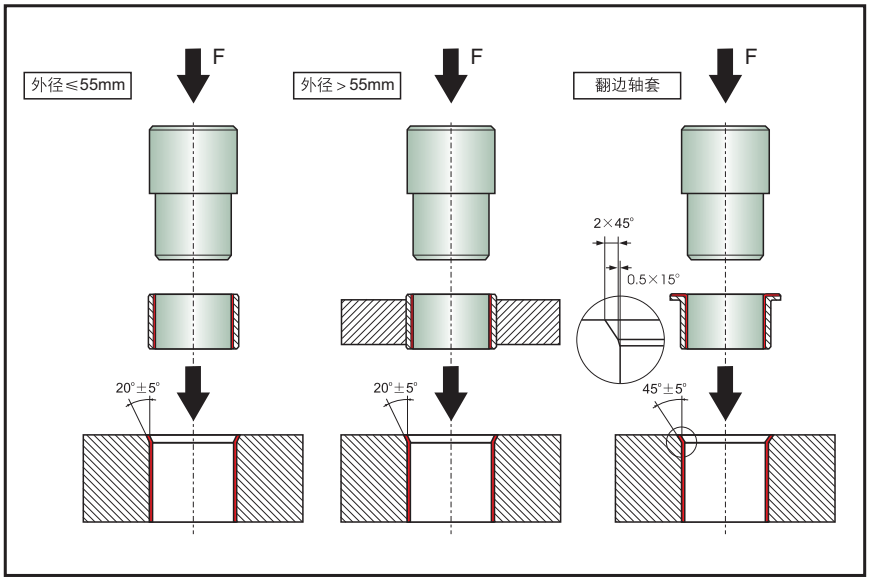
翻边轴承 FLANGE BUSHES

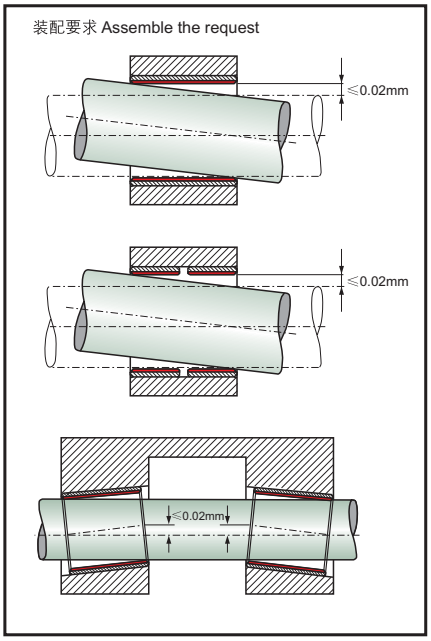


Unit(单位):mm

规格型号 Type	F-0.5	D $^{+0.28}_{+0.20}$	d $^{+0.20}_{+0.15}$	L $^{0}_{-0.04}$	h	B
4040	60	46	40	39.5	3.5	3.0
4035	62	47	40	35	3.5	3.5
4055	68	55	45	55	3.5	5.0
5040A	72	57	50	40	3.5	3.5
5040B	70	57	50	40	3.5	3.5
5050	70	57	50	50	3.5	3.5
5460	92	60.6	54	60	3.5	3.3
6053	83	67	60	53	3.5	3.5
6060	87	67	60	60	3.5	3.5
6065	77	67	60	65	3.5	3.5
6060A	88	68	60	60	4.0	4.0
6060B	87	68	60	60	4.0	4.0
6465	102.6	70.4	63.5	65	3.5	3.5
6473	103	70.8	63.8	73	3.5	3.5
6553	85	72	65	53	3.5	3.5
6564	87	72	65	64	3.5	3.5
6575	108	72	65	75	3.5	3.5
7060	93	77	70	60	3.5	3.5
7090	108	80	70	90	5.0	5.0
7560	100	82	75	60	3.5	3.5
8060	105	87	80	68	3.5	3.5
8580	127	92	85	80	3.5	3.5
85103	128	92.6	85	103.5	3.5	3.8
89126	138	97.5	89.2	126.5	4.2	4.2
95127	144	105	95	127	5.0	5.0

安装方式 INSTALLING METHOD





安装注意事项 INSTALLING ATTENTION

1. 装配前应确保轴套、座孔表面无异物，座孔表面应尽可能光洁以免在装配时划伤。
2. 装配时可在轴套外表面适当涂上润滑油，帮助轴套较方便地安装，但不易过多以免在重载或往复运动时轴套会脱离出来。
3. 装配时应采用芯轴慢慢压入（建议使用油压机），禁止直接敲打轴套以免发生变形。
4. 座孔设计时如需采用易变形材料如铝合金或座孔壁厚较薄时，请予以说明，以免压装时使座孔变形。
5. 为了使装配更简单且不会破坏耐磨层，轴的端面必须有倒角圆滑过度，轴的材质建议为轴承钢表面淬火处理HRC45，表面粗糙度为Rz2-3，表面也可镀硬铬。
6. 装配时有可能的话，请在轴表面涂上油脂以缩短轴套走合期。

1. To keep the bushing, housing dean before installing.
2. The outside surface be covered a little grease or oil during installing, which help the process. And please not too much.
3. The bushing should be pushed into housing slowly with mandrel (oil push machine is recommended), it is for hidden to hammer the part directly.
4. We need your instructions if the housing wall is thin or made from soft metal in order not to destroy it.
5. Zn order to simply the installment and keep the working layer, we recommend that the shaft should own chamfer and HRC45/RZZ-3. Gr plating layer is allowed.
6. Grease and Oil are recommended in order to shorten the mending.

轴套检验方式 CHECKING METHOD

1. 外径：采用环规通(GO)与止(NO GO)方式，环规通端为外径最大尺寸，环规止端为外径最小尺寸。
2. 内径：将轴套压入基准孔（H7中间值公差）用圆柱塞规检验轴套，塞规的通端为轴套内孔最小尺寸，塞规的止端为轴套内孔最大尺寸。一般卷制类轴套内孔的精度等级为H9。
3. 环规、塞规尺寸按DIN1494第一部分。

1. OD, checked by ring gauge with GO/NO GO
2. ID, checked by plug gauge with GO/NO GO. The common wrapped bushing satisfy tolerance H9.
3. The size of ring gauge & plug gauge are in comply with DIN1494 part 1.

HTB-3 应用特点 APPLICATION

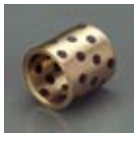
HTB-31是在以高力黄铜的基体上镶嵌固体润滑剂的一新产品，它突破了一般轴承依靠油膜润滑的界限。适用于高温，高载，耐腐蚀或无法加油等场合条件下使用。它的硬度比一般铜套高一倍，耐磨性能也高出一倍。目前广泛运用于冶金连铸机、轧钢设备、矿山机械、船舶、汽轮机、注塑机以及设备生产流水线中。
HTB-31 solid lubricant embedded bushing is a new type made from strong brass and homogeneously embedded with solid lubricant in its body. It breaks through the limit of general bearing whose lubrication depends on oil film. So it is suitable for high temperature. heavy duty, anti-corrosion, or where oil is hard to be introduced. It performance doubles both on hardness and wear-friction. It is now widely applied in successive casting machines, steel rollers in metallography, mineral machine, ships, steam turbine, hydraulic turbines and injection molding machines for plastics.

HTB-32 主要适应低载高温中速的使用场合，例如壁炉门铰链。烘炉滚道、轻工机械、机床工业等。
Suitable for low load position, wear performance worsens greatly when under middle or high load Can be applied in fu rnace door linage, furnace, conveyor, tool machines, light industries, etc.

HTB-33的内材与HTB-32同样，除了具有HTB-32的功能外，还体现了节省成本，提高抗压强度和可以端面与基体焊接安装的作用，适用于建筑机械。冶金机械和输送机械中的不加油润滑部位。
Suitable for low load position wear performance worsens when under middle or high load. The mating layer is same as HTB-32 so that more cost-saving than HTB-32 whereas compression strength increases and weldable. Most suitable for dry position in construction, metallurgical machines, conveyor machines etc.

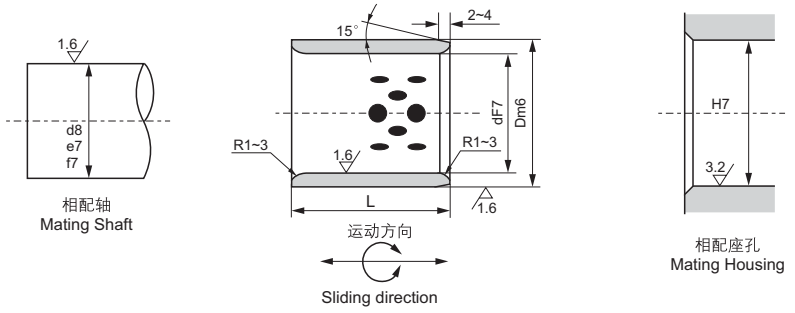
HTB-34是一种典型的省材产品。在机械性能要求不是很高的地方，可作取HTB-34替代材料使用，能大大地降低成本，满足使用要求，例：模具导柱、注塑机模架等。
Very good performance when under low load. Not suitable for middle and high load. Atypical cost saving material. Can substitute HTB-32 to be applied in the position without high requirements such as die guider, plastic injection machines etc.

HTB-35是一种加强型的产品，它具有极高的抗压性能，在起重机械的支撑部位特别适应，例：挖土机支撑、卷扬机支撑、吊车支撑等。但由于基体为钢材，所以不宜在水中或酸、碱的场合使用。
Can be used under low, middle and high load. Due to its superb high hardness, when under high load, it over performs than other HTB-35 type. Not suitable for water. Acid, alkali circumstances Most suitable for the supporting position of hoisting machine, e. g. bulldozer supporter, hoister supporter, reeling machine supporter etc.

型号 Type	HTB-31	HTB-32	HTB-33	HTB-34	HTB-35
示意图 Sketch map					
基体材质 Base material	CuZn24Al6	CuSn6Zn6Pb3	钢CuSn6Zn6Pb3	HT-250	CuCr15
基体硬度 Base hardness	Hb230 (Hb270)	HB 90	HB 80	HB 210	HB 60
摩擦系数 Friction coef(μ)	<0.16	<0.15	<0.14	<0.17	<0.17
最高使用温度 Temp limit	300℃	350℃	300℃	400℃	350℃
极限动载荷 Dynamic load limit	100 N/mm^2	60 N/mm^2	70 N/mm^2	60 N/mm^2	250 N/mm^2
lm/mim的极限载荷 Load linit under lm/min	25 N/mm^2	15 N/mm^2	20 N/mm^2	15 N/mm^2	70 N/mm^2
最高滑动速度 Sliding velocity limit	干 0.40 m/s 油 5 m/s	2 m/s	2 m/s	0.5 m/s	0.1 m/s
使用极限PV值 PV limit	3.8 N/mm^2 • m/s	0.5 N/mm^2 • m/s	0.6 N/mm^2 • m/s	0.8 N/mm^2 • m/s	2.5 N/mm^2 • m/s

直套轴承 STRAIGHT BUSHING

材质	高力黄铜 + 石墨
Material	650# + Graphite



Unit(单位):mm

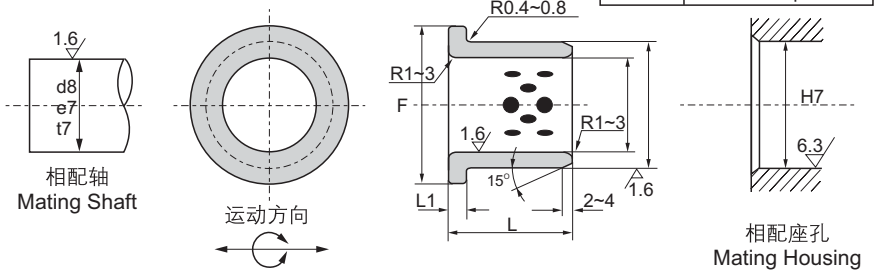
d	D	IDF7		ODm6		L -0.10 -0.30													
						8	10	12	15	16	20	25	30	35	40	50	60	70	80
8	12	8	+0.028 +0.013	12		081208	081210	081212	081215										
10	14	10		14	+0.018 +0.007	101408	101410	101412	101415		101420								
12	18	12		18			121810	121812	121815	121816	121820	121825	121830						
13	19	13		19			131910		131915	131916									
14	20	14	+0.034 +0.016	20			142010	142012	142015		142020	142025	142030						
15	21	15		21	+0.021 +0.008		152110	152112	152115	152116	152120	152125	152130						
16	22	16		22			162210	162212	162215	162216	162220	162225	162230	162235	162240				
18	24	18		24				182412	182415	182416	182420	182425	182430	182435	182440				
20	28	20		28			202810	202812	202815	202816	202820	202825	202830	202835	202840	202850			
22	32	22	+0.041 +0.020	32				223212	223215		223220	223225							
25	33	25		33				253312	253315	253316	253320	253325	253330	253335	253340	253350	253360		
30	38	30		38	+0.025 +0.009			303812	303815		303820	303825	303830	303835	303840	303850	303860		
35	45	35		45							354520	354525	354530	354535	354540	354550	354560		
40	50	40	+0.050 +0.025	50							405020	405025	405030	405035	405040	405050	405060	405070	405080
45	55	45		55	+0.030 +0.011								455530	455535	455540	455550	455560		
50	60	50		60									506030	506035	506040	506050	506060	506070	506080

HTB-3 固体润滑轴承标准公制尺寸
SOLID-LUBRICANTS BEARING STANDARD METRIC SIZE

Unit(单位):mm

d	D	IDF7		ODm6		L $^{-0.10}_{-0.30}$											
						30	35	40	50	60	70	80	100	120	130	140	150
50	62	50	+0.050 +0.025	62		506230	506235	506240	506250	506260	506270						
50	65	50		65		506530		506540	506550	506560	506570	506580	5065100				
55	70	55		70				557040	557050	557060	557070						
60	74	60		74	+0.030 +0.011	607430	607435	607440	607450	607460	607470	607480					
60	75	60		75		607530	607535	607540	607550	607560	607570	607580	6075100				
63	75	63		75						637560	637570	637580					
65	80	65		80					658050	658060	658070	658080					
70	85	70	+0.060 +0.030	85			708535	708540	708550	708560	708570	708580	7085100				
70	90	70		90					709050	709060	709070	709080					
75	90	75		90						759060	759070	759080	7590100				
75	95	75		95	+0.035 +0.013					759560	759570	759580	7595100				
80	96	80		96				809640	809650	809660	809670	809680	8096100	8096120			
80	100	80		100				8010040	8010050	8010060	8010070	8010080	80100100	80100120		80100140	
90	110	90		110		9011030			9011050	9011060	9011070	9011080	90110100	90110120			
100	120	100	+0.071 +0.036	120						10012060	10012070	10012080	100120100	100120120		100120140	
110	130	110		130								11013080	110130100	110130120			
120	140	120		140								12014080	120140100	120140120		120140140	
125	145	125		145									125145100	125145120			
130	150	130		150	+0.040 +0.015								130150100		130150130		
140	160	140	+0.083 +0.043	160									140160100			140160140	
150	170	150		170									150170100				150170150
160	180	160		180									160180100				160180150

翻边轴承 FLANGE BUSHES

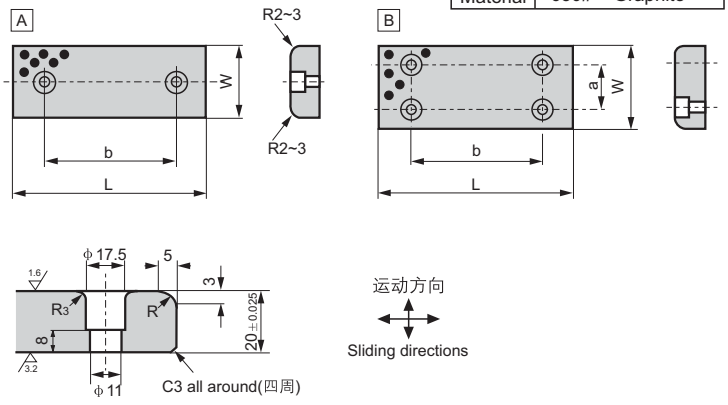


Unit(单位):mm

d	D	IDE7		ODr6		F	L1 -0.10	L -0.10 -0.30									
								15	20	25	30	35	40	50	60	80	100
10	14	10	+0.040 +0.025	14	+0.034 +0.023	22	2	1015	1020								
12	18	12		18		25		1215	1220								
13	19	13		19		26		1315	1320								
14	20	14	+0.050 +0.032	20		27	3	1415	1420								
15	21	15		21	+0.041 +0.028	28		1515	1520	1525	1530						
16	22	16		22		29		1615	1620	1625	1630						
20	30	20		30		40		2015	2020	2025	2030		2040				
25	35	25	+0.061 +0.040	35		45		2515	2520	2525	2530		2540				
30	40	30		40		50			3020	3025	3030	3035	3040	3050			
31.5	40	31.5		40	+0.050 +0.034				3120			3135					
35	45	35		45		60	5		3520		3530		3540	3550			
40	50	40	+0.075 +0.050	50		65			4020		4030		4040	4050			
45	55	45		55		70					4530		4540	4550	4560		
50	60	50		60	+0.060 +0.041	75					5030		5040	5050	5060		
55	65	55		65		80							5540		5560		
60	75	60		75	+0.062 +0.043	90							6040	6050		6080	
63	75	63	+0.090 +0.060	75		85	7.5									6367	
70	85	70		85		105								7050		7080	
75	90	75		90	+0.073 +0.051	110									7560		
80	100	80		100		120									8060	8080	80100
90	110	90		110	+0.076 +0.054	130	10								9060	9080	
100	120	100	+0.107 +0.072	120		150										10080	100100
120	140	120		140	+0.088 +0.063	170										12080	120100

HTB-3P 固体润滑轴承标准公制尺寸
SOLID-LUBRICANTS BEARING STANDARD METRIC SIZE

材质	高力黄铜 + 石墨
Material	650# + Graphite



Unit(单位):mm

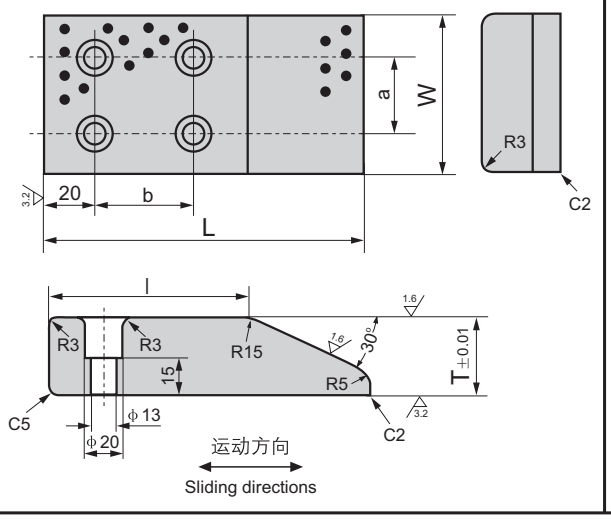
Standard No. 规格	W	L	a	b	Sketch 图示
HTB-3P 28×75		75		45	
HTB-3P 28×100	28	100	–	50	
HTB-3P 28×150		150		100	
HTB-3P 38×75		75		45	
HTB-3P 38×100	38	100	–	50	
HTB-3P 38×150		150		100	
HTB-3P 48×75		75		45	
HTB-3P 48×100		100		50	
HTB-3P 48×125	48	125	–	75	
HTB-3P 48×150		150		100	A
HTB-3P 48×200		200		150	
HTB-3P 58×75		75		45	
HTB-3P 58×100	58	100	–	50	
HTB-3P 58×150		150		100	
HTB-3P 75×75		75		25	
HTB-3P 75×100		100		50	
HTB-3P 75×125	75	125	–	75	
HTB-3P 75×150		150		100	
HTB-3P 75×200		200		150	
HTB-3P 100×100		100		50	
HTB-3P 100×125		125		75	
HTB-3P 100×150	100	150	50	100	
HTB-3P 100×200		200		150	
HTB-3P 100×250		250		200	
HTB-3P 100×300		300		200	
HTB-3P 125×125		125		75	B
HTB-3P 125×150		150		100	
HTB-3P 125×200	125	200	50	150	
HTB-3P 125×250		250		200	
HTB-3P 125×300		300		200	
HTB-3P 125×350		350		200	
HTB-3P 150×150		150		100	
HTB-3P 150×200	150	200	100	150	
HTB-3P 150×250		250		200	

HTB-3PS HTB-34PS 固体润滑轴承标准公制尺寸
SOLID-LUBRICANTS BEARING STANDARD METRIC SIZE

HTB SLIDE BEARING

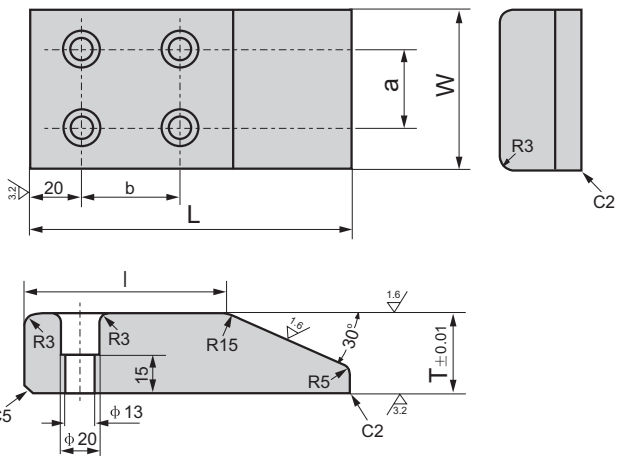
HTB-3PS

材质	高力黄铜＋石墨
Material	650# + Graphite



HTB-34PS

Material材质	45C
Hardness硬度	HRC>45



Unit(单位):mm

Stanard No. 规格	W	L	T	l	a	b
HTB-3PS 75×130	75	130	30	95	40	50
HTB-3PS 75×150		150	45	90		45
HTB-3PS 75×170		170	60			
HTB-3PS 75×200		200		120		75
HTB-3PS 100×130	100	130	30	95	60	50
HTB-3PS 100×150		150	45	90		45
HTB-3PS 100×170		170	60			
HTB-3PS 100×200		200		120		75
HTB-3PS 125×130	125	130	30	95	85	50
HTB-3PS 125×150		150	45	90		45
HTB-3PS 125×170		170	60			
HTB-3PS 125×200		200		120		75
HTB-3PS 150×130	150	130	30	95	110	50
HTB-3PS 150×150		150	45	90		45
HTB-3PS 150×170		170	60			
HTB-3PS 150×200		200		120		75
HTB-3PS 75×130	75	130	30	95	40	50
HTB-3PS 75×150		150	45	90		45
HTB-3PS 75×170		170	60			
HTB-3PS 75×200		200		120		75
HTB-3PS 100×130	100	130	30	95	60	50
HTB-3PS 100×150		150	45	90		45
HTB-3PS 100×170		170	60			
HTB-3PS 100×200		200		120		75
HTB-3PS 125×130	125	130	30	95	85	50
HTB-3PS 125×150		150	45	90		45
HTB-3PS 125×170		170	60			
HTB-3PS 125×200		200		120		75
HTB-3PS 150×130	150	130	30	95	110	50
HTB-3PS 150×150		150	45	90		45
HTB-3PS 150×170		170	60			
HTB-3PS 150×200		200		120		75

产品简述 PRODUCT BRIEF

FZH(铜基)；FZL(铝基)；FZP(树脂基)钢球保持圈，分别以铜合金、硬铝合金、POM树脂为基体，并在其外圆表面上，加工出排列有序、大小适当，形状特殊的孔穴，在其孔穴中镶入滚动轴承钢球。孔口采用最新的沟槽圆周锁球工艺，有效地解决了传统点式锁球和压痕锁球不能完全防止钢球脱落的难题。孔底加工出90°止口使钢球在孔内自由转动而不脱落。由于钢球的直径大于保持圈的壁厚，所以在使用时钢球高出保持圈内、外圆表面，直接与相配的孔与轴接触，使基体(保持圈)浮于中间，并且相配的孔与轴半径之差小于钢球直径，即钢球与之配合为过盈配合，配合精度高，轴与孔相对运动灵活。是保持圈的更新换代产品。

FZH, FZL and FZP ball retainer use bronze, aluminum, POM colophony as its base. They are machined some regular holes and embedded the steel-ball into. The new work-craft will prevent the ball getting out of as old. As the ball diameter is larger than the retainer's thickness, so it will face to face directly with guide bushing, this will bring high precision match. Now the ball retainer series items are designed to rotate on the post, as well as maintain its vertical motion. We believe this will give you the benefit of increasing accuracy.

优点与用途 ADVANTAGES AND APPLICATION SCOPE

传统的具有相对运动的孔与轴是有一定间隙的，并孔与轴之间的运动摩擦系数较大，使用钢球保持圈后，使轴与孔不直接接触，而是中间通过有微量过盈的钢球，因而运动精度高，滚动摩擦代替了滑动摩擦，滚动灵活，摩擦系数小，使用寿命长，在既有转动、又有移动的场合，用无油或加油的轴套与轴相配，虽然能满足，但运动精度较低，用滚动轴承，只能满足轴相对转动的场合，而钢球保持圈，则上述二个条件均满足，目前已广泛应用于冷冲模、滚动模架、独立导柱、冲裁模、级进模以及要求高精度轴向或轴径向同时运动场合。

As the traditional work-craft has some grudge between bushing with posts, and the coefficient of friction is larger. Now we have changed the work-ways to steel-ball directly face to face guide bushing, so the precision is improved. It composes of both active roll and lower friction coefficient, now they have been widely used in punching machine, die machine, high precision machine which need rotation and vertical motion.

相配零件的要求 INSTALLED SPARES REQUESTED

1.导套：材料GCrl5，YB9，热处理，硬度HRC62~66，技术条件按GB/T12446与轴配合应具有0.01~0.02径向过盈量，表面粗糙度为$\overset{0.05}{\nabla}$

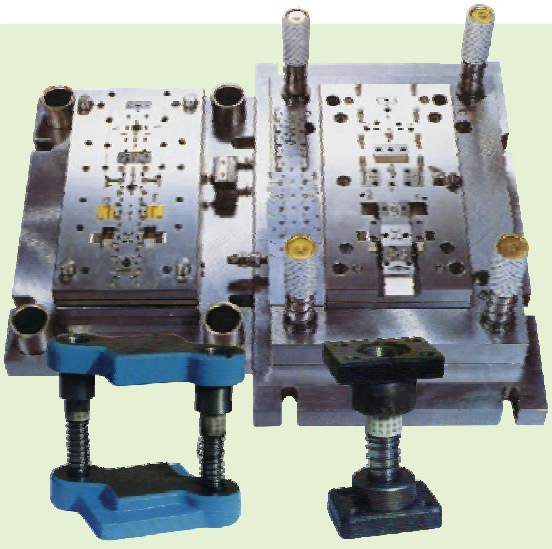
2.轴：材料GCrl5，YB9，热处理，硬度HRC62~66，技术条件按GB/T12446，轴的公差采用h5，表面粗糙度为$\overset{0.05}{\nabla}$

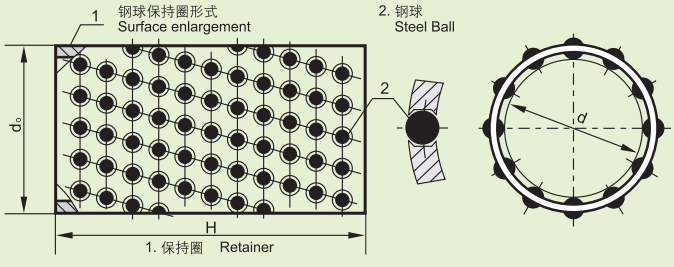
测量：用通用的测量手段（气动量仪，外径千分尺，内径千分表等）测量轴、导套和钢球的尺寸偏差值，即可求出配合后的过盈量，即$Y_{max}=d_{max}+2d'-D_{min}$，要求过盈量为0.01~0.02mm

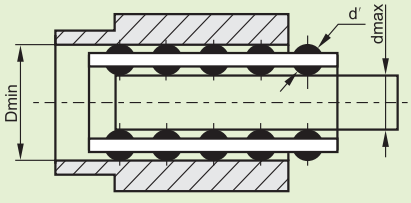
1.GUIDE BUSHING: MATERIAL GCrl5，YB9，HEAT TREAMENT HRC62-66，TECHNIQUE CONDITION ACCORDING TO GB/T12446。THE SURFACE ROUGHNESS IS $\overset{0.05}{\nabla}$

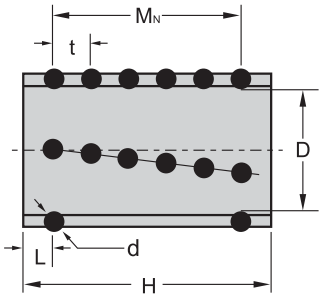
1.GUIDE POSTS: MATERIAL Gcrl5, Yb9, HEAT TREAMENT HRC62-66, THE TOLERANCE OF SHAFT IS h5, THE SURFACE ROUGHNESS IS $\overset{0.05}{\nabla}$

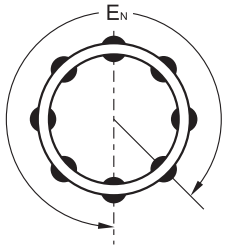
SIZE TEST: IT IS TESTED BY OUTSIDE MICROMETER & DIAL GAUGE AS USUAL. THE Y_{max}($Y_{max}=d_{max}+2d'-D_{min}$)REQUEST 0.01-0.02mm











尺寸规格及技术参数表 SIZE TABLE

(单位)Unit: mm

型号规格/Model	D	H	d	E_N	M_N	球/BALLS	t	L
FZ(*)1950	19	50	3	12	8	96	5.5	5.75
FZ(*)1960	19	60	3	12	10	120	5.5	5.25
FZ(*)2050	20	50	3	12	8	96	5.5	5.75
FZ(*)2060	20	60	3	12	10	120	5.5	5.25
FZ(*)2250	22	50	3	14	8	112	5.5	5.75
FZ(*)2260	22	60	3	14	10	140	5.5	5.25
FZ(*)2360	23	60	3	14	10	140	5.5	5.25
FZ(*)2475	24	75	3	16	13	208	5.45	4.8
FZ(*)2550	25	50	3	16	8	128	5.5	5.75
FZ(*)2560	25	60	3	16	10	160	5.5	5.25
FZ(*)2575	25	75	3	16	13	208	5.45	4.8
FZ(*)2775	27	75	3	16	13	208	5.45	4.8
FZ(*)2860	28	60	4	14	8	112	6.5	7.25
FZ(*)2875	28	75	4	14	11	154	6.5	5.0
FZ(*)3060	30	60	4	14	8	112	6.5	7.25
FZ(*)3075	30	75	4	14	11	154	6.5	5.0
FZ(*)3260	32	60	4	16	8	128	6.5	7.25
FZ(*)3275	32	75	4	16	11	176	6.5	5.0
FZ(*)3290	32	90	4	16	13	208	6.5	6.0
FZ(*)3685	36	85	4	16	12	192	6.5	6.75
FZ(*)3690	36	90	4	16	13	208	6.5	6.0
FZ(*)3870	38	70	5	16	8	128	8.0	7.0
FZ(*)3890	38	90	5	16	11	176	7.9	5.5
FZ(*)4090	40	90	5	16	11	176	7.9	5.5
FZ(*)4590	45	90	5	18	11	198	7.9	5.5
FZ(*)45110	45	110	5	18	13	234	8.0	7.0
FZ(*)5090	50	90	5	20	11	220	7.9	5.5
FZ(*)50110	50	110	5	20	13	260	8.0	7.0
FZ(*)6090	60	90	5	22	11	242	7.9	5.5
FZ(*)60110	60	110	5	22	13	286	8.0	7.0
FZ(*)80130	80	130	5	28	15	420	8.0	9.0

注：FZ(*)为: FZH(铜基)、FZL(铝基)、FZP(树脂基)
Notes: FZ(*): FZH (Bronze based) FZL (Aluminum based) FZP (Resin based)

HTB SLIDE BEARING

HTB公司简介

HTB公司是专业化设计并制造销售无给油滑动系列轴承的实体企业，多年来我们以客户为中心，质量、信誉为生命，锲而不舍创立优质品牌，致力于新产品的研究开发，并立足于国际市场的大力开拓。以ISO9001：2000为质量标准，为您提供一流的产品。真诚欢迎国内外客户朋友来电垂询、光临惠顾！

HTB BRIEF INTRODUCTION

HTB Company is a professional enterprise specialized in the designing, manufacturing and sales of non-oil-feeding sliding bearings. Over the years, we've been customer orientated and taking the quality and creditability as our life. We have been sparing no efforts in establishing an excellent brand name, to provide the first-class products. We are sincerely awaiting customers from both home and abroad to enquire and visit us.

公司的经营理念：

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。

PRINCIPLES:

It is our motto to create value for our customers
It is the objective of our service to meet the customers' demands
It is our duty to live up to the customers' trust

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HTB/CATALOGUE
Print:06/2005