HSB SHIFT- The Future

嘉善华盛滑动轴承有限公司

JIASHAN HUASHENG SLIDING BEARINGS CO., LTD.

ISO/TS 16949:2009

JIASHAN HUASHENG BEARING

新型无铅绿色材料应对环境要求

华盛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。

Huasheng actively respond to the requirements of environmental protection, through years of efforts in various application fields has been successfully developed to meet different materials of lead-free requirements.

RoHS

产品可以满足 RoHS要求的标志
A symbol of the products can meet RoHS requirements

企业简介 Company Introduction

华盛滑动轴承有限公司是中国专业致力于生产自润轴承、滑动轴承、复合轴承、无油轴承、干式轴承、免维护轴承的实体企业之一，产品质量及性能已达到国外同行企业的水准。所谓自润滑免维护是指无需加油（干式）或减少加油次数（国外类似产品有DU、DX、500#SP、DEVA等等）。其优点：体积小、重量轻、摩擦系数小、高承载、耐高温、价格低、无污染。为用户企业改良了产品设计的合理性、也节省了许多费用，更符合当前绿色环保的需要。

多年来HSB一直致力于自润滑轴承和新材料的研究开发与新产品新领域的推广与应用。公司具备完善的系统研发能力，机械加工能力，检验测试能力，以及完备高效的服务。生产的产品严格按ISO/TS16949所规定的工艺技术、流程制作。尤其近年来广泛地和国外企业OEM合作配套后大大地提升了自身产品的层次以及企业管理档次。勇于开拓的"华盛"人在力求自我发展的同时以超前意识连横合纵的有效手段愿和合作伙伴一起强强联手，用最优秀的产品配套客户，使大家的产品更上一个台阶。面对WTO以及全球竞争的新世纪，HSB一定以雄厚的研发实力和永求卓越的精神，敬业务实的作风和团队合作的理念与所有合作伙伴一起携手成为现代企业的翘楚。

Huasheng Sliding Bearings Company is one of professional enterprises engaged in producing self lubricate bearings, sliding bearings, composite bearings, oil free bearings, dry type bearings, maintenance-free bearings. The quality and performance of products are all reach to the level of foreign company of this industry field. Self lubricate and maintenance-free means the bearings do not need any oil as been using (bearings as DU、DX、500#SP、DEVA etc). The advantages are: small volume, light weight, small friction coefficient, high loading, high temperature resistance, low price, no pollution. It saves many costs and meets the requirement of green and no pollution.

HSB always engaged in research and create the self lubricate bearings and new materials in the new fields these years. The company holds perfect system for raise the ability of R&D, machinery processing, inspection and high effect equipment. All process is all doing according to ISO/TS16949. These years, since cooperated with foreign companies on OEM, the company raises the product quality level and the company's management level with a great step. Face to the new century of WTO and global competition, HSB will do their best to be the top of the modern enterprise.

目录
INDEX

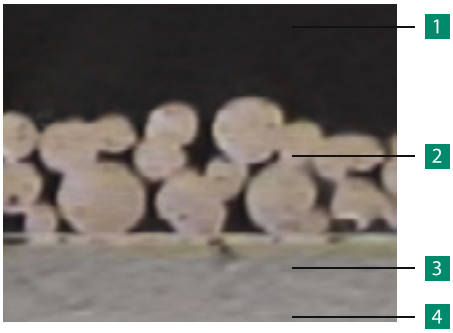
HSB-100 产品介绍
HSB-100 Brief Description

HSB-100 产品介绍
HSB-100 Brief Description

HSB-100是用碳钢基材、青铜粉、聚四氟乙烯、纤维等材料经过特殊工艺制造而成的自润滑产品，具有环保的特点。它不仅具有一定的化学性能，同时具有良好的物理性能和机械性能，可应用在各种机械的滑动、转动、摆动及直线往复运动部位，工作时具有自润滑、耐磨损、摩擦系数低、走合性能好、噪音低等特点。

HSB-100 tri-layer maintanence-free bushing have a base of lower carbon steel, onto which a porous bronze layer is sintered. PTFE mixtures are impregnated into the intersice of this bronze layer after rolling process completed. HSB-100 has good physical & mechanical properties, also has certainly chemical properties. It is suitable for rotary, oscillating movement with performance of self-lub. Anti-wear, lower firction, lower noise.

HSB-100 产品结构及工作机理
HSB-100 Structure



1 自润滑层，厚度为0.01~0.03mm，是聚四氟乙烯与纤维等减摩材料的混合物，通过制板工艺进入铜粉组织内部和覆在铜层表面。作为工作面，工作中形成转移膜，可以显著地降低摩擦系数及很好的保护对磨部件。
2 青铜粉层，作为自润滑层的附着体。
3 低碳钢层，工作中起到良好的承载和散热作用。
4 镀铜/锡层，具有良好的耐腐蚀性。

1 Self-lub. Layer PTFE Mixture 0.01-0.03mm.
After rolling process completed, PTFE mixtures are filled in intersice of bronze layer. Under normal operation, Part of PTFE mixture on top layer will be removed and transferred on the mating surface, forms a physically lubricating film, which will reduced the firction coe. and protect the mating shaft.
2 Porous Bronze layer;
The layer provides bonded strength of Self-Lub. Layer.
3 Steel Backing
The layer provides load & thermal conductivity
4 Copper / Tin layer

HSB-100 产品技术参数
HSB-100 Material Characteristics

最大承载 P	**Max. Load Capacity**		
静载	Static Load	N/mm^2	250
动载	Dynamic Load	N/mm^2	140
最高线速度 V	**Max. Speed**		
干式运行	Dry Running	m/s	2.0
液体运行	Hydrodynamic Operation	m/s	>2
最高PV值(干摩擦)	**Max. PV Value**		
短期	Short-Term Operation	$N/mm^2 \cdot m/s$	3.6
连续	Continuous Operation	$N/mm^2 \cdot m/s$	1.8
摩擦系数	**Coefficient of Friction**	μ	0.03~0.25
使用温度	**Operation Temperature Range**	℃	-195~280
导热系数	**Thermal Conductivity**	$W(m \cdot k^{-1})$	42
热膨胀系数	**Coefficient of Thermal HSB-2pansion**	λ_{ST}	$11 \cdot 10K^{-1}$

HSB-100 产品介绍
HSB-100 Brief Description

HSB-100 产品类别
HSB-100 Materiace Category

三层复合轴套
Tri-layer Bushing Series

HSB-200 低维护系列轴套
HSB-200 Tri-layer Low Maintenance Free Bushing Series

HSB-100 免维护系列轴套
HSB-100 Tri-layer Maintenan ce Free Bushing Series

HSB-103 304/316
不锈钢基板免维护轴套
HSB-103 304/316
Tri-layer Maintenance Free Bushing Stainless Steel Backing

HSB-100 钢基免维护轴套
HSB-100 Tri-layer Maintenance Free Bushing Steel Backing

HSB-101 铜基免维护轴套
HSB-101 Tri-layer Maintenance Free Bushing Copper Backing

HSB-100H 液压用轴套
HSB-100H Hydraulic Application

HSB-100S 减震器用轴套
HSB-100S Shock Absorber Application

HSB-100B 齿轮泵用轴套
HSB-100B Gear pump Application

HSB-100 产品耐化学性能表
HSB-100 Material Chemical Characteristic

轴承型号 Type	淡水 Water	海水 Sea Water	空气 Air	碱溶液 Alkaline Solutions	中性溶剂 NHSB-1tral Solutions	油润滑 Fuels & Lubricatis	强酸 Strong Acid	弱酸 Weak Acid
HSB-100	□	▲	□	□	★	★	▲	▲
HSB-100G	□	▲	□	□	★	★	▲	▲
HSB-100H	□	▲	□	□	★	★	▲	▲
HSB-100S	□	▲	□	□	★	★	▲	▲
HSB-100B	□	□	□	□	★	★	□	□
HSB-100 304/316	□	□	□	□	★	★	□	□
HSB-200	□	□	□	□	★	★	▲	▲

★ 良好 Good　□ 一般 Common　▲ 差 Poor

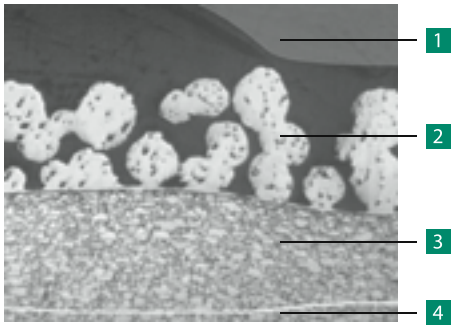
HSB-200 产品介绍
HSB-200 Brief Description

HSB-200 产品介绍
HSB-200 Brief Description

HSB-200 是用碳钢基材、青铜粉、改性聚甲醛等其它润滑剂材料经过特殊工艺制造而成的边界无铅自润滑产品，具有环保的特点。它不仅具有一定的化学性能，同时具有良好的物理性能和机械性能，可应用在各种低速中载，取代传统轴承的滑动、转动、摆动及直线往复运动部位，因减磨层表面有储油孔便于装配前涂抹油脂，工作时具有摩擦系数低、走合性能好、耐磨损等特点。

HSB-200 tri-layer low maintanence plain bushing have a base of lower carbon steel, onto which a porous bronze layer is sintered. Acetalcopolyer (POM) is impregnated into the intersice of this bronze layer after rolling process completed. Lubrication indents are stamped into this layer. HSB-200 has good physical & mechanical properties, also has certainly chemical properties. This material has good machining performance if required.

HSB-200 产品结构及工作机理
HSB-200 Structure



1 减摩层，厚度为0.3~0.5mm，是聚甲醛与润滑剂等减摩材料的混合物，通过制板工艺进入铜粉组织内部和覆在铜层表面。工作面表层有储油孔，可以显著地降低摩擦系数及很好的保护对磨部件。
2 青铜粉层，作为自润滑层的附着体。
3 低碳钢层，工作中起到良好的承载和散热作用。
4 镀铜层，具有良好的耐腐蚀性。

1 Self-lub. Layer POM 0.3-0.5mm.
After rolling process completed, POM are filled in intersice of bronze layer, lubrication indents are stamped, which are full of oil grease, which will be removed and transferred on the mating surface, forms a physically lubricating film, which will reduced the firction coe. and protect the mating shaft.
2 Porous bronze layer;
The layer provides bonded strength of self-lub. Layer.
3 Steel Backing
The layer provides load & thermal conductivity
4 Copper / Tin layer.

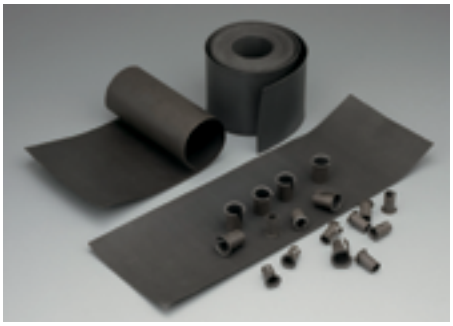
HSB-200 产品技术参数
HSB-200 Material Characteristics

最大承载 P	**Max. Load Capacity**		
静载	Static Load	N/mm^2	250
动载	Dynamic Load	N/mm^2	140
最高线速度 V	**Max. Speed**		
预润滑	Pre-Lubricated	m/s	2.0
油脂润滑连续	Oil Grease Lubrication Continuous Operation	m/s	>2.0
最高PV值(干摩擦)	**Max. Pv Value**	$N/mm^2 \cdot m/s$	2.8
摩擦系数	**Coefficient of Friction**	μ	0.05~0.20
使用温度	**Operation Temperature Range**	℃	-40~110
导热系数	**Thermal Conductivity**	$W(m \cdot k^{-1})$	42
热膨胀系数	**Coefficient of Thermal HSB-2pansion**	λ_{ST}	$11 \cdot 10K^{-6}$

※ 推荐在装配时内孔涂润滑油脂 Initial pre-lubrication at assembly is necessary.

HSB-FR 产品介绍
HSB-FR Brief Description

HSB-FR 铜网基无给油轴承产品介绍
HSB-FR Dry Bearings Brief Description



该产品以青铜丝网为基体，通过特殊工艺，表面轧制聚四氟乙烯和亲油性纤维。它具有较低的摩擦系数、较好的耐磨性以及柔软性好。产品广泛应用于纺织机械关节轴承、汽车门铰链、汽车操纵杆等场合。

HSB-FR is two-layer structure, which consists of a bronze mesh Laminated with PTFE Tape. The weight of fininal products is lighter and easy to install due to advantages of this structure. Automotive door hinges is one of typical applications.

HSB-FR 产品技术参数
HSB-FR Material Characteristics

最大承载 P	**Max. Load Capacity**		
静载	Static Load	N/mm^2	80
动载	Dynamic Load	N/mm^2	40
最高线速度 V	**Max. Speed**		
干式运行	Dry Running	m/s	1
液体运行	Hydrodynamic Operation	m/s	>1
摩擦系数	**Coefficient of Friction**	μ	0.03~0.25
使用温度	**Operation Temperature Range**	℃	-195~260

HSB-AL 铝基无给油轴承产品介绍
HSB-AL Dry Bearings Brief Description

HSB-AL以铝板为基体通过胶粘表面覆着一层以PTFE为主的耐磨材料，由于PTFE层的厚度达到0.20mm以上，因此轴承在压装后可以对PTFE层进行再次挤压以获得更好的配合间隙，同时厚壁耐磨层可以降低轴承运行噪音。产品广泛运用于办公事物机械、轻量化运动车避震器等。

HSB-AL is a composite material of PTFE compound tape on aluminum shell, the PTFE tape up to 0.20mm thickness enable the bearing can be sized after fixed, meanwhile the thick PTFE layer isolates noise. The bearing is widely applied in OA machinery, shock absorber for light design bicycle.

HSB-AL 产品技术参数
HSB-AL Material Characteristics

最大承载 P	**Max. Load Capacity**		
静载	Static Load	N/mm^2	80
动载	Dynamic Load	N/mm^2	40
最高线速度 V	**Max. Speed**		
干式运行	Dry Running	m/s	1
液体运行	Hydrodynamic Operation	m/s	>1
摩擦系数	**Coefficient of Friction**	μ	0.03~0.20
使用温度	**Operation Temperature Range**	℃	-195~+260

HSB-800 产品介绍
HSB-800 Brief Description

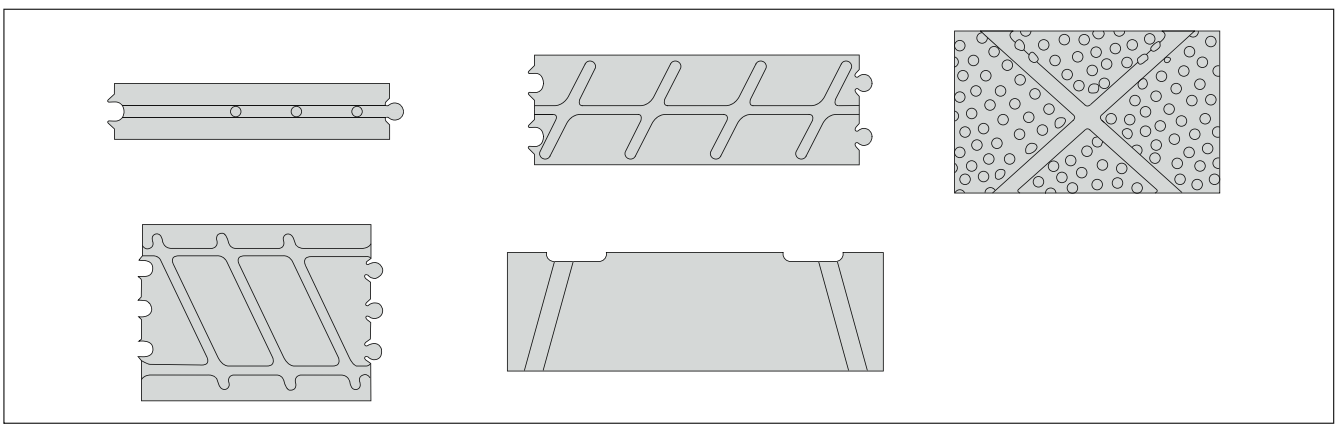
HSB-800 双金属轴承技术参数
HSB-800 Bimetallic Material Characteristics

HSB-800 双金属系列产品是用碳钢为基材，表面烧结青铜粉或轧制铝锡合金。工作表面可以设计排布油槽或油穴以适应有油条件下润滑工作。HSB-800双金属可以代替一般滑动部件的铜套，具有薄壁，重量轻的特点,有较好的耐疲劳强度和承载能力。

HSB-800 bi-metallic bushing is formed from steel strips with alloy lining material. The alloy lined surface can be machined oil grooves, holes, formed Indentations etc according to different application. It is suitable for high load, lower speed oscillation & rotation movement.

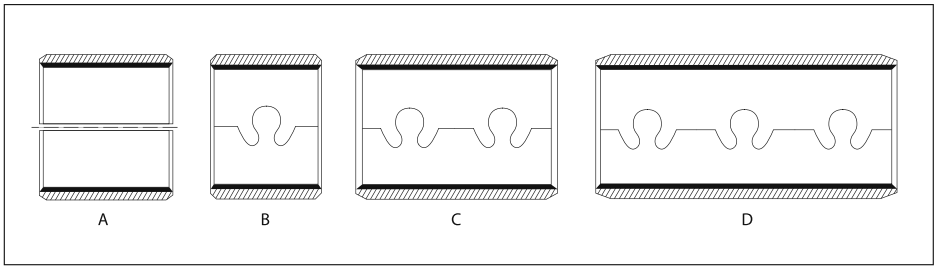
技术参数 Data	型号 Part No	HSB-800	HSB-20
HSB-800 产品结构 HSB-800 Structure			
		钢 **Steel** + **$CuPb_{10}Sn_{10}$**	钢 **Steel** + **$AlSn_{20}Cu$**
相应代号	**Corresponding Code**	SAE-792(SAE797). JIS-LBC3.	SAE-783. JIS-AJL.
		Clevite F100. GGB-SY. Daido L10. Federal Mogul HF-2F. Glyco 66.	Federal Mogul TR-20. Glyco 74.
最大承载压力P	**Max Load Capacity P**	150N/mm^2	100N/mm^2
脂润滑	**Greaes Lubrication**		
最大线速度V	Max Speed	2.5m/s	
最高PV值	Maximum PV Value	2.8N/mm^2 · m/s	
摩擦系数u	Coefficient of friction	0.05~0.15	
流体(油)润滑	**(Oil)Lubrication**		
最大线速度V	Max Speed	10m/s	25m/s
最高PV值	Maximum PV Value	10N/mm^2 · m/s	6N/mm^2 · m/s
摩擦系数u	Coefficient of friction	0.05~0.12	0.06~0.17
最高温度	**Max Working Temperature**		
脂润滑	Greaes Lubrication	150℃	150℃
流体润滑	Lubrication	250℃	250℃
合金硬度	Alloy Hardness	60~100HB	30~40HB

HSB-800 产品润滑设计
HSB-800 Lubrication Design



HSB-800 产品介绍
HSB-800 Brief Description

HSB-800 产品搭口形式
HSB-800 Split Gap Design



HSB-800 产品油孔设计
HSB-800 Oil Hole Design

在产品设计中，如使用以下推荐油孔，能使HSB-800产品在使用中得到充分的油润滑。如无特殊要求，此油孔设计亦可适用。

Oil Hole is necessary to design if HSB-800 have lubricated sufficiently; the following oil hole design is recommended, which is also suitable for HSB-800 series without special requirements.

轴套外经 (D) Bushing O.D. (D)	Φ14 > D ≤ 22	Φ22 > D ≤ 40	Φ40 > D ≤ 50	Φ50 > D ≤ 100	Φ100 > D ≤ 180
油孔直径 (mm) Oil Hole Diameter (mm)	3	4	5	6	7

油孔的位置应避开接缝和承载区域，并应有利于进油。

Oil hole location should keep away from the split gap & loading area, and in favor of oil-taking.

HSB-800 产品运用
HSB-800 Application

HSB-800 $CuPb_{10}Sn_{10}$	有很高的耐疲劳强度，高承载能力，高的抗冲击能力及耐磨损，适用于中载，中到高速的场合如齿轮箱，摇臂轴套，主梢，传动装置，普通轴套等 Advantageous in high load carrying capacity, anti-impact, lower wear. Suitable for Mid-load capacity & Mid-higher Sliding velocitie . Bushings for Gearbox, Rocker arm, King Pin, transmission etc.
HSB-801 $CuPb_{24}Sn_{4}$	有较高的抗疲劳强度、承载能力及抗冲击力、有较好的表面滑动性能，产品适用于中速、中载。表面镀软合金时可用于高速内燃机主轴套和连杆轴套。 Higher fatige strength & load carrying capacity, goos running characteristics at higher sliding velocities. Suitable for Mid-load capacity & Mid-Sliding velocitie. Bushings for lubricating oil pumps. After surface specifical treatment, Bushings for Main bushes of high speed internal-combustion engine, Connecting Rod etc .
HSB-802 $CuPb_{30}$	有很好的滑动性能，良好的抗咬性。是一种特殊的材料，表面不适加工油槽和油穴，一般需镀镀软合金。适用于高速中低载荷的内燃机主轴套和连杆轴套轴套，也可用于液压泵，自动齿轮箱等。 Very Good sliding Characteristics, good anti-seizure property, special material, Punched oil grooves & oil pockets are not feasible. Bushings suitable for hydraulic Pump, automatic gearbox. After surface specifical treatment, bushings for main bushes of high speed, medium-low load internal-combustion engine, Connecting Rod etc.
HSB-20 $AlSn_{20}Cu$	有中等疲劳强度和承载能力，较好的滑动性能，产品适用于高速低载内燃机轴瓦、空压机、制冷机、准双曲面齿轮箱、液压泵、齿轮箱等。 Mid fatige strength & load carrying capacity, very good fatige strength & load carrying capacity, very good sliding characteristics. Bushings for half-bearing of high speed, lower load internal-combushtion engine, aircomressor, refrigerator, hypoid gearbox, hydraulic pump, gearbox etc.

HSB-090/092 产品介绍
HSB-090/092 Brief Description

HSB-090/HSB-092 产品介绍
HSB-090/HSB-092 Brief Description

HSB-090青铜卷制轴承，以锡青铜合金CuSn8为材料，表面轧制菱形油穴，起储存油脂作用，它具有良好的抗疲劳强度和承载能力、耐腐蚀、抗磨损。广泛运用于农业机械、建筑机械、工程机械等高载低速场合。

HSB-092青铜卷制轴承，以锡青铜合金CuSn8为材料，工作表面按一定角度、密度均匀排布着润滑通孔，在启动时容易形成油膜，从而降低启动摩擦系数。它具有良好的抗疲劳强度的承载能力、耐腐蚀、抗磨损。该系列产品广泛运用于农业机械、建筑机械、工程机械等高载低速场合。

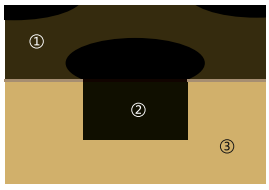
HSB-090 wrapped bronze bearing is made of tin-bronze CuSn8 with its surface punched with diamond oil sockets which are preserved for oil saving. It has good anti-fatigue, anti-erosion anti-abrasion and load capacity. The products are widely applied in conditions of heavy load but low running velocity, such as on agricultural, buiding and engineering machines.

HSB-092 wrapped bronze bearing is made of tin-bronze CuSn8 that is of high density, its surface is punched with oil apertures by certain angle and density therefore its easier to form an oil film when the bushing works. It has good anti-fatigue and load, anti-erosion anti-abrasion and load capacity. The products are widely applied in conditions of heavy load but low running velocity, such as on agricultural, buiding and engineering machines.

HSB-500# 产品介绍
HSB-500# Brief Description

HSB-500#铜合金镶嵌式固体润滑剂自润滑轴承，结合了铜合金的耐磨性及固体润滑剂的自润滑性能，使其在使用过程中无需加油维护。产品被广泛用于高载、间歇性或摇摆运动，如汽机车生产流水线、水轮机、水库工作/事故门、塑胶机械等。根据使用的工况，华盛可以提供各种类型的铜合金

材料组织 Material Structure



①固体润滑膜
Solid lubricant film
②固体润滑剂
Solid lubricant plug
③铜合金基体
Bronze backing

This material provides a maintenance free and low friction bearing solution, particularly for high load and intermittent oscillating motion. Solid lubricants within the bronze combine the strength of the bronze with the wear resistance of the graphite. Applications covered are automotive production lines, water industry, dam gates, plastic moulding machinery etc. Different types of bronze alloy can be offered according to the application.

HSB-090/092 产品介绍
HSB-090/092 Brief Description

HSB-090/HSB-092 产品化学成分
HSB-090/HSB-092 Chemical Composition

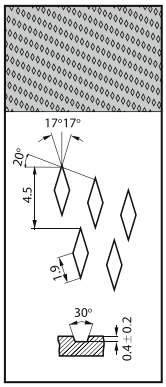
型号 Part No	材料 Material	铜 Cu	锡 Sn	磷 P	铅 Pb	锌 Zn
HSB-090	CuSn8	91.3%	8.5%	0.2%	/	/
HSB-092	CuSn8	91.3%	8.5%	0.2%	/	/

HSB-090/HSB-092 产品技术参数
HSB-090/HSB-092 Material Characteristics

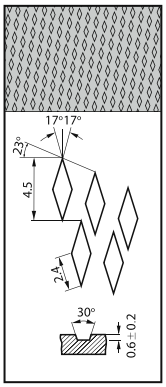
最大承载 P	**Max. Load Capacity**		
静载	Static Load	N/mm^2	120
动载	Dynamic Load	N/mm^2	40
最高线速度 V	**Max. Speed**		
HSB-090		m/s	2.0
E92		m/s	>2.5
最高PV值	**Max. PV Value**	$N/mm^2 \cdot m/s$	2.8
抗拉强度	Tensile Strength	$N/mm^2 \cdot m/s$	450
抗压强度	Yiled Point	$N/mm^2 \cdot m/s$	250
硬　　度	Hardness	HB	90-120
延 伸 率	Elongation		40%
摩擦系数	**Coefficient of Friction**	μ	0.08~0.25
使用温度	**Operation Temperature Range**	℃	-100~200
导热系数	**Thermal Conductivity**	W/(m · k)	60
热膨胀系数	**Coefficient of Thermal HSB-2pansion**	k^{-1}	15×10^{-6}

HSB-090/HSB-092 标准油穴/油孔
HSB-090/HSB-092 Oil Indentations/Holes

HSB-090

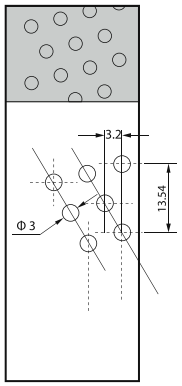


菱形油穴内孔<Φ22
Diamond Indentations
Inter Diameter <Φ22

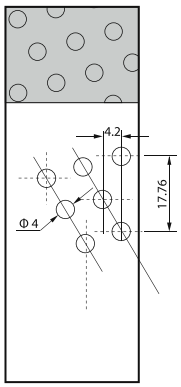


菱形油穴内孔≥Φ22
Diamond Indentations
Inter Diameter ≥Φ22

HSB-092



圆形油孔内孔≤Φ25
Spherical Holes
Inter Diameter ≤Φ25



圆形油孔内孔>Φ25
Spherical Holes
Inter Diameter >Φ25

产品应用
Application

HSB-100 产品应用
HSB-100 Application

由于材料的特性和性能的结合，HSB-100产品比一般的自润轴承得到了更广泛的应用和推广。薄壁结构，体积小，重量轻，使HSB-100轴套方便使用。基于耐磨层PTFE混合物的材料特性，HSB-100产品适用于难维护的无法加油或难加油，无油润滑和少油润滑的场合。在使用过程中，PTFE混合物形成转移膜保护对磨轴从而避免咬轴现象。PTFE混合物具有出色的耐磨性能和低磨擦系数，还有适量的弹塑性，能将应力分布在较宽的接触面上，从而提高HSB-100产品的承载能力(见)，所以HSB-100产品适用于旋转，摇摆，轴向滑动等场合。

Base on the combinations of properties & performance capabilities; HSB-100 has greater application range than other self-lubricating bearings. Thin-wall compact, lightweight, HSB-100 bearings are economic & convenient to use. HSB-100's PTFE-based bushing surface permits smooth, low coefficient of friction, low wear rate operation with no lubricant, no maintenance & dry running. During operation, the transfer film created will protect the mating shaft surface. HSB-100 bearings has great capacity of load & wild range of operation temperatures from-190 to 280, can be suitable for rotary, oscillating and axial sliding motion.

具体的应用。

Detailed application.

下列是有关HSB-100轴承的部分具体应用

The following list covers some of the many types of HSB-100 bearing applications.

农业机械和食品机械
Agricultural Machinery/Equipments

拖拉机、联合收割机、(干草、稻草等的）打包机；压捆机、肉类加工设备、土豆收获机、喷雾机、谷物干燥机、栽{种}植设备、酿造设备等。

Tractors, combine harvesters, balers, meat processing equipment, potato harvesters, crop sprayers, grain dryers, planting apparatus, brewing equipment, etc.

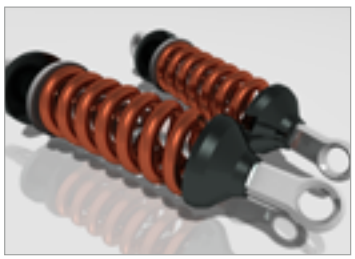
汽车工业
Automotive

在这个行业的典型的应用包括:

油门、制动、离合器踏板、反光镜调节机构、雨刮器、玻璃窗提升机构、天窗机构、操纵杆、安全带张紧机构、座椅调节机构、减震器、引擎减震、化油器、车门铰链、行李箱、引擎盖铰链、横直拉杆及球头、节流阀、驾驶杆、转向装置等。

Typical applicaiton in this area include:

accelerator linkages, brake, clutch foot pedal, reflector control, windscreen wipers, windscreen lift system, roof window system, gear level, door hinges, door lock, seat belt system, seating system, shock absorbers, engin absorbers, carburetor, trunk & bonnet hinges, suspension ball joint, throttle valves, steering columns, steering rods, king-pin assemblies etc.



产品应用
Application

HSB-100 产品应用
HSB-100 Application

家用电器、商业电器、医院设备
Home Appliances, Hospital Equipments

空调、吸尘器、洗碗机、缝纫机、洗衣机、冰箱、复印机、打印机、扫描仪、邮件处理系统、信件分类装置、牙科设备、X射线设备、手术台等。

Air conditioners, cleaners, dish-washing machine, sewing machines, clothes washing machines, refrigerator, copy machines, auttomatic print machines, scanner, mail processing machinery, mail sorters, dental equipment, x-ray equipment, operating table etc.

液压行业
Hydraulics

齿轮泵、水泵、活塞泵、球阀、蝶阀、混合阀、控制阀、往复式空压机、液压制动器、离心式压缩机、液压油缸等。

Gear pump, water pump, piston pump, ball valves, butterfiy valves, mixing valves, pilot valve, reciprocating air compressors, hydraulic actuators, centrifugal compressors, hydraulic cylinder etc.

工程机械、机械行业
Construction Equipments

挖掘机、液压升降机、混凝土搅拌机、叉式提升搬运车、液压缸、传动带张紧装置、起重机、砂浆车、托盘叉式起重车、气力升降机、推土机、自动扶梯、自动行人道、重型挂车、液体灌输设备、侧向装卸机等。

HSB-2cavator hydraulic lifts, concrete mixers, fork lift trucks, hydraulic cylinders, tensioning pulleys, crane, mortar vehicles, pallet fork lift trucks, pnHSB-1matic lifts, graders, escalators, moving walkways, heavy-duty trailers, Liquid filling equipment, side loader roller assemblies, power take-off units etc.

其它应用
Other Applications

自行车、摩托车、工具、蒸纱机、往复锯、割绒机、 纺织机、编织机、纽扣机、包装系统、钉装机械设备、玻璃制造设备等。

Bike, motobicyle, hand tools, yarn & wool machinery, reciprocating saws, cutting machines, spinning machines, knitting machines, button machines, packaging system, bookbinding equipment, glass manufacturing equipments etc.

产品应用
Application

HSB-200 产品应用
HSB-200 Application

HSB-200轴套通常被推荐用于间断运行和边界润滑的环境中，特别是轴套内孔的油穴设计，很好的适用于不能连续不断或重复加油的场合，但在无润滑条件下，HSB-2轴套的工作长短取决于承载，表面速度，具体的环境温度等的相互作用。同时，轴套内表面的塑料层可以在加工成型前留有余量，在装入座孔后可加工到更好的装配尺寸。

HSB-200 bushings have been recommended for application involving intermittent operation or boundary lubrication. Base on the unique lubrication-retaining pockets on surface, HSB-200 bushings are well suitable for application, where lubricant can not be supplied continuously or repeated. Under the no lubrication, the HSB-200 operating life depends on interaction of the specific load, surface velocity and temperature etc. HSB-200 bushings can be supplied as machining allowance on POM, it can be machined to Better assembly dimensions after installed into housing.

具体的应用。

Detailed application.

下列是有关HSB-200轴承的部分具体应用

The following list covers some of the many types of HSB-200 bushing applications.

机床制造工业
Machine Tool Building Industry

磨床、铣床、钻机主轴、精密磨床的偏心驱动单元等。

Grinding machines, milling machines, spindles in drill; Eccentric drive unit in precision grinding machines etc

汽车工业
Automotive

悬挂系统、悬挂接头、大王销主件、汽车驱动联合铰链、转向及连杆机构、转向及关节接头、后部底盘铰链、轴铰链等。

Suspension system, suspension joints, king-pin assemblies, automobile driving joint hinges, steering and other linkages, steering and articulation joints, rear chassis hinges, axis hinge, hood hinge, trunk hinge etc.

农业机械
Agricultural Machinery/Equipments

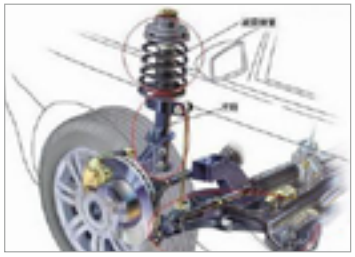
齿轮箱、离合器、收割机主销轴承、前桥支点轴承、转向托辊轴承箱、拖拉机的配件中的起重齿轮、播种设备等。

Gearbox, clutch, kingpin bearings for harvesters, front axle pivot bearings, steering idler box bearings, seeding equipment, etc.

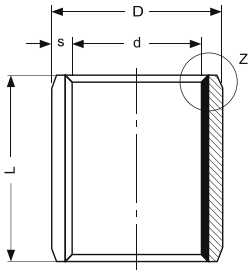
其它应用
Other Applications

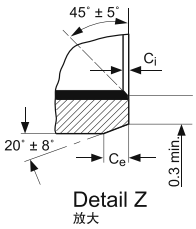
油齿轮泵、旋转器支持轴承、液压泵变量斜盘耳轴轴承、液压缸和气动缸活塞杆导承、叉车变速箱、起重机变速箱和传输托链链轮、车输送机、蜗杆传动齿轮等。

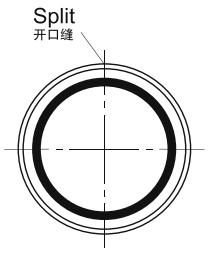
Oil gear pumps, support bearings in rotary actuators; variable swash plate trunnion bearings in hydraulic pumps, piston rod guide in hydraulic and pnHSB-1matic cylinders; Transfer gearbox for forklift trucks, gearbox and in idler chain sprockets for crane transmissions, car conveyors, worm drive gear, etc.



HSB-100 直套规格及公差
HSB-100 Sleeve Bushing Specification & Tolerance







尺寸：毫米
All dimensions in mm

尺寸和公差参照ISO 3547
Dimensions and Tolerances according to ISO 3547

内外倒角尺寸表
Inside & Outide Chamfers

壁厚 Wall thickness S	内倒角 Inside Chafmer C_i	外倒角 Outside Chamfer C_e
0.75	0.25 ± 0.15	0.50 ± 0.30
1.00	0.30 ± 0.20	0.60 ± 0.40
1.50	0.40 ± 0.30	0.60 ± 0.40
2.00	0.40 ± 0.30	1.20 ± 0.40
2.50	0.60 ± 0.40	1.80 ± 0.60

直套型号标注方式
Bushing Symbol

直套型号标注方式 Bushes Symbol	HSB-100 - □	× ×	× ×
直套型号 Bushing Type			
直套内径 Bushing I.D.			
直套高度 Bushing Length			

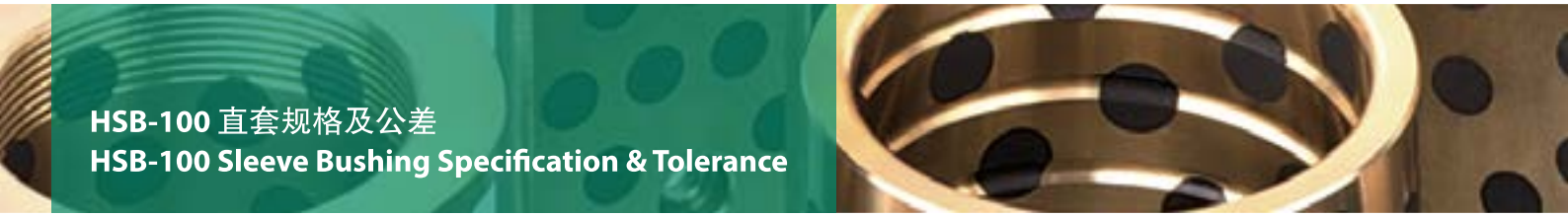
单位Unit: mm

型号 Part No	内径 Internal Diameter (I.D.)			外径 External Diameter (O.D.)			高度 Length	壁厚 Wall Thickness
	内径 d	装配轴径 Shaft-Φd_s	装配后内孔尺寸 Φd_i	外径 D	装配座孔 Housing-ΦD_H	理论外径公差 O.D. ΦD_t	ID<80 L ± 0.25 ID>80 L ± 0.50	S
HSB-100 0404	4	4.000 3.992	4.048 4.000	5.5	5.508 5.500	+0.055 +0.025	4	0.750 0.730
HSB-100 0406							6	
HSB-100 0410							10	
HSB-100 0505	5	4.990 4.978	5.055 4.990	7	7.015 7.000		5	1.005 0.980
HSB-100 0508							8	
HSB-100 0510							10	
HSB-100 0604	6	5.990 5.978	6.055 5.990	8	8.015 8.000		4	
HSB-100 0606							6	
HSB-100 0608							8	
HSB-100 0610							10	
HSB-100 0705	7	6.987 6.972	7.055 6.990	9	9.015 9.000		5	
HSB-100 0710							10	
HSB-100 0806	8	7.987 7.972	8.055 7.990	10	10.015 10.000		6	
HSB-100 0808							8	
HSB-100 0810							10	
HSB-100 0812							12	
HSB-100 1008	10	9.987 9.972	10.058 9.990	12	12.018 12.000	+0.065 +0.030	8	
HSB-100 1010							10	
HSB-100 1012							12	
HSB-100 1015							15	
HSB-100 1020							20	
HSB-100 1208	12	11.984 11.966	12.058 11.990	14	14.018 14.000		8	
HSB-100 1210							10	
HSB-100 1212							12	
HSB-100 1215							1	
HSB-100 1220							20	
HSB-100 1225							25	

HSB-100 直套规格及公差
HSB-100 Sleeve Bushing Specification & Tolerance

单位Unit: mm

型号 Part No	内径 Internal Diameter (I.D.)			外径 External Diameter (O.D.)			高度 Length	壁厚 Wall Thickness
	内径 d	装配轴径 Shaft-Φd_s	装配后内孔尺寸 Φd_t	外径 D	装配座孔 Housing-ΦD_H	理论外径公差 O.D. ΦD_t	ID<80 L ± 0.25 ID>80 L ± 0.50	S
HSB-100 1310	13	12.984 12.966	13.058 12.990	15	15.018 15.000	+0.065 +0.030	10	1.005 0.980
HSB-100 1315							15	
HSB-100 1320							20	
HSB-100 1405	14	13.984 13.966	14.058 13.990	16	16.018 16.000		5	
HSB-100 1410							10	
HSB-100 1412							12	
HSB-100 1415							15	
HSB-100 1420							20	
HSB-100 1425							25	
HSB-100 1510	15	14.984 14.966	15.058 14.990	17	17.018 17.000		10	
HSB-100 1512							12	
HSB-100 1515							15	
HSB-100 1520							20	
HSB-100 1525							25	
HSB-100 1610	16	15.984 15.966	16.058 15.990	18	18.018 18.000		10	
HSB-100 1612							12	
HSB-100 1615							15	
HSB-100 1620							20	
HSB-100 1625							25	
HSB-100 1810	18	17.984 17.966	18.061 17.990	20	20.021 20.000	+0.075 +0.035	10	
HSB-100 1815							15	
HSB-100 1820							20	
HSB-100 1825							25	
HSB-100 2010	20	19.980 19.959	20.071 19.990	23	23.021 23.000		10	1.505 1.475
HSB-100 2015							15	
HSB-100 2020							20	
HSB-100 2025							25	
HSB-100 2030							30	
HSB-100 2215	22	21.980 21.959	22.071 21.990	25	25.021 25.000		15	
HSB-100 2220							20	
HSB-100 2225							25	
HSB-100 2230							30	
HSB-100 2415	24	23.980 23.959	24.071 23.990	27	27.021 27.000		15	
HSB-100 2420							20	
HSB-100 2425							25	
HSB-100 2430							30	
HSB-100 2515	25	24.980 24.959	25.071 24.990	28	28.021 28.000		15	
HSB-100 2520							20	
HSB-100 2525							25	
HSB-100 2530							30	
HSB-100 2540							40	
HSB-100 2550							50	
HSB-100 2815	28	27.980 27.959	28.085 27.990	32	32.025 32.000	+0.085 +0.045	15	2.005 1.970
HSB-100 2820							20	
HSB-100 2825							25	
HSB-100 2530							30	
HSB-100 3010	30	29.980 29.959	30.085 29.990	34	34.025 34.000		10	
HSB-100 3015							15	
HSB-100 3020							20	
HSB-100 3025							25	
HSB-100 3030							30	
HSB-100 3040							40	
HSB-100 3220	32	31.975 31.950	32.085 31.990	36	36.025 36.000		20	
HSB-100 3225							25	
HSB-100 3230							30	
HSB-100 3235							35	
HSB-100 3240							40	



HSB-100 直套规格及公差
HSB-100 Sleeve Bushing Specification & Tolerance

单位Unit: mm

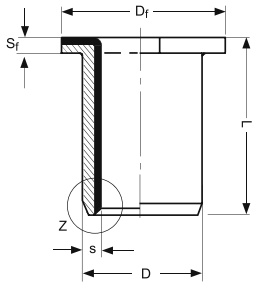
型号 Part No	内径 Internal Diameter(I.D.)			外径 External Diameter(O.D.)			高度 Length	壁厚 Wall Thickness
	内径 d	装配轴径 Shaft-Φd_s	装配后内孔尺寸 Φd_i	外径 D	装配座孔 Housing-ΦD_H	理论外径公差 O.D. ΦD_t	ID<80 L ± 0.25 ID>80 L ± 0.50	S
HSB-100 3520	35	34.975 34.950	35.085 34.990	39	39.025 39.000	+0.085 +0.045	20	2.005 1.970
HSB-100 3530							30	
HSB-100 3535							35	
HSB-100 3540							40	
HSB-100 3550							50	
HSB-100 4012	40	39.975 39.950	40.085 39.990	44	44.025 44.000		12	
HSB-100 4020							20	
HSB-100 4025							25	
HSB-100 4030							30	
HSB-100 4040							40	
HSB-100 4050							50	
HSB-100 4520	45	44.975 44.950	45.105 44.990	50	50.025 50.000		20	2.505 2.460
HSB-100 4530							30	
HSB-100 4540							40	
HSB-100 4545							45	
HSB-100 4550							50	
HSB-100 5020	50	49.975 49.950	50.110 49.990	55	55.030 55.000	+0.100 +0.055	20	
HSB-100 5030							30	
HSB-100 5040							40	
HSB-100 5050							50	
HSB-100 5060							60	
HSB-100 5520	55	54.970 54.940	55.110 54.990	60	60.030 60.000		20	
HSB-100 5525							25	
HSB-100 5530							30	
HSB-100 5540							40	
HSB-100 5550							50	
HSB-100 5555							55	
HSB-100 5560							60	
HSB-100 6020	60	59.970 59.940	60.110 59.990	65	65.030 65.000		20	
HSB-100 6030							30	
HSB-100 6040							40	
HSB-100 6050							50	
HSB-100 6060							60	
HSB-100 6070							70	
HSB-100 6530	65	64.970 64.940	65.110 64.990	70	70.030 70.000		30	2.505 2.460
HSB-100 6550							50	
HSB-100 6570							70	
HSB-100 7040	70	69.970 69.940	70.110 69.990	75	75.030 75.000		40	
HSB-100 7050							50	
HSB-100 7070							70	
HSB-100 7560	75	74.970 74.940	75.110 74.990	80	80.030 80.000		60	
HSB-100 7580							80	
HSB-100 8060	80	80.000 79.946	80.155 80.020	85	85.035 85.000	+0.120 +0.070	60	2.490 2.440
HSB-100 8080							80	
HSB-100 80100							100	
HSB-100 9060	85	85.000 84.946	85.155 85.020	90	90.035 90.000		60	
HSB-100 9080							80	
HSB-100 80100							100	
HSB-100 9060	90	90.000 89.946	90.155 90.020	95	95.035 95.000		60	
HSB-100 9080							80	
HSB-100 90100							100	
HSB-100 9560	95	95.000 94.946	95.155 95.020	100	100.035 100.000		60	
HSB-100 9580							80	
HSB-100 95100							100	

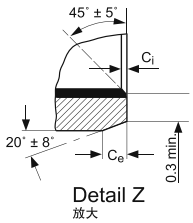
HSB-100 直套规格及公差
HSB-100 Sleeve Bushing Specification & Tolerance

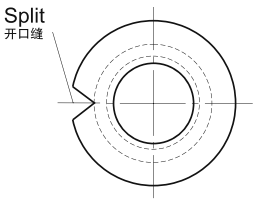
单位Unit: mm

型号 Part No	内径 Internal Diameter(I.D.)			外径 External Diameter(O.D.)			高度 Length	壁厚 Wall Thickness
	内径 d	装配轴径 Shaft-Φd_s	装配后内孔尺寸 Φd_i	外径 D	装配座孔 Housing-ΦD_H	理论外径公差 O.D. ΦD_t	ID<80 L ± 0.25 ID>80 L ± 0.50	S
HSB-100 95100						+0.120 +0.070	100	2.490 2.440
HSB-100 10050	100	100.000 99.946	100.155 100.020	105	105.035 105.000		50	
HSB-100 10060							60	
HSB-100 10080							80	
HSB-100 100100							100	
HSB-100 10560	105	105.000 104.946	105.155 105.020	110	110.035 110.000		60	
HSB-100 10580							80	
HSB-100 105100							100	
HSB-100 11060	110	110.000 109.946	110.155 110.020	115	115.035 115.000		60	
HSB-100 11080							80	
HSB-100 110100							100	
HSB-100 11560	115	115.000 114.946	115.155 115.020	120	120.035 120.000		60	
HSB-100 11570							70	
HSB-100 12050	120	120.000 119.946	120.210 120.070	125	125.040 125.000	+0.170 +0.100	50	2.465 2.415
HSB-100 12060							60	
HSB-100 120100							100	
HSB-100 12560	125	125.000 124.937	125.210 125.070	130	130.040 130.000		60	
HSB-100 12580							80	
HSB-100 125100							100	
HSB-100 13060	130	130.000 129.937	130.210 130.070	135	135.040 135.000		60	
HSB-100 13080							80	
HSB-100 130100							100	
HSB-100 13560	135	135.000 134.937	135.210 135.070	140	140.040 140.000		60	
HSB-100 13580							80	
HSB-100 135100							100	
HSB-100 14060	140	140.000 139.937	140.210 140.070	145	145.040 145.000		60	
HSB-100 14080							80	
HSB-100 140100							100	
HSB-100 15060	150	150.000 149.937	150.210 150.070	155	155.040 155.000		60	
HSB-100 15080							80	
HSB-100 150100							100	
HSB-100 16080	160	160.000 159.937	160.210 160.070	165	165.040 165.000		80	
HSB-100 160100							100	
HSB-100 18080	180	180.000 179.937	180.216 180.070	185	185.046 185.000	+0.210 +0.130	80	
HSB-100 180100							100	
HSB-100 20080	200	200.000 199.928	200.216 200.070	205	205.046 205.000		80	
HSB-100 200100							100	
HSB-100 21080	210	210.000 209.928	210.216 210.070	215	215.046 215.000		80	
HSB-100 210100							100	
HSB-100 22080	220	220.000 219.928	220.216 220.070	225	225.046 225.000		80	
HSB-100 220100							100	
HSB-100 25080	250	250.000 249.928	250.222 250.070	255	255.052 255.000	+0.260 +0.170	80	
HSB-100 250100							100	
HSB-100 28080	280	280.000 279.948	280.222 280.070	285	285.052 285.000		80	
HSB-100 280100							100	
HSB-100 30080	300	300.000 299.919	300.222 300.070	305	305.052 305.000		80	
HSB-100 300100							100	

HSB-100F 翻边轴套规格及公差
HSB-100F Flange Bushing Specification & Tolerance







尺寸：毫米
All dimensions in mm

尺寸和公差参照ISO 3547
Dimensions and Tolerances according to ISO 3547

内外倒角尺寸表
Inside & Outide Chamfers

壁厚 Wall thickness S	内倒角 Inside Chafmer C_i	外倒角 Outside Chamfer C_e
0.75	0.25 ± 0.15	0.50 ± 0.30
1.00	0.30 ± 0.20	0.60 ± 0.40
1.50	0.40 ± 0.30	0.60 ± 0.40
2.00	0.40 ± 0.30	1.20 ± 0.40
2.50	0.60 ± 0.40	1.80 ± 0.60

翻边套型号标注方式
Flange Bushing Symbol

翻边套型号标注方式 Flange Bushing Symbol	HSB-100 - □	F	× ×	× ×

轴承型号 Flange Bushing Type
翻边套 Flange
翻边套内径 Flange Bushing Inner Diameter
翻边套高度 Flange Bushing Length

单位Unit: mm

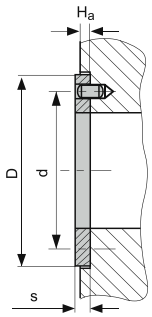
型号 Part No	内径 Internal Diameter			外径 External Diameter			法兰厚度 Flang Wall s_f	法兰外径 Flang Φ D_f	高度 Length	壁厚 Wall Thickness
	内径 d	装配轴径 Shaft Φd_s	装配后内孔尺寸 Φd_i	外径 D	装配座孔 Housing ΦD_H	理论外径公差 O.D. Φ D_t	max. min.	max. min.	L ± 0.25	S
HSB-100F 06040	6	5.990 5.978	6.055 5.990	8	8.015 8.000	+0.055 +0.025	1.050 0.800	12.50 11.50	4	1.005 0.980
HSB-100F 06080									8	
HSB-100F 08055	8	7.987 7.972	8.055 7.990	10	10.015 10.000			15.50 14.50	5.5	
HSB-100F 08075									7.5	
HSB-100F 08095									9.5	
HSB-100F 10070	10	9.987 9.972	10.058 9.990	12	12.018 12.000			18.50 17.50	7	
HSB-100F 10090									9	
HSB-100F 10120									12	
HSB-100F 10170									17	
HSB-100F 12070	12	11.984 11.966	12.058 11.990	14	14.018 14.000	+0.065 +0.030		20.50 19.50	7	
HSB-100F 12090									9	
HSB-100F 12120									12	
HSB-100F 12170									17	

HSB-100F 翻边轴套规格及公差
HSB-100F Flange Bushing Specification & Tolerance

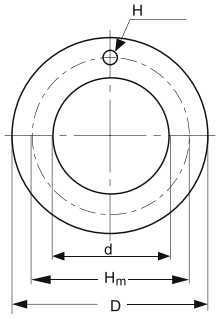
单位Unit: mm

型号 Part No	内径 Internal Diameter			外径 External Diameter			法兰厚度 Flang Wall s_f	法兰外径 Flang Φ D_f	高度 Length	壁厚 Wall Thickness
	内径 d	装配轴径 Shaft Φd_s	装配后内孔尺寸 Φd_i	外径 D	装配座孔 Housing ΦD_H	理论外径公差 O.D. Φ D_t	max. min.	max. min.	L ± 0.25	S
HSB-100F 14120	14	13.984 13.966	14.058 13.990	16	16.018 16.000	+0.065 +0.030	1.050 0.800	22.50 21.50	12	1.005 0.980
HSB-100F 14170									17	
HSB-100F 15090	15	14.984 14.966	15.058 14.990	17	17.018 17.000			23.50 22.50	9	
HSB-100F 15120									12	
HSB-100F 15170									17	
HSB-100F 16120	16	15.984 15.966	16.058 15.990	18	18.018 18.000			24.50 23.50	12	
HSB-100F 16170									17	
HSB-100F 18120	18	17.984 17.966	18.061 17.990	20	20.021 20.000	+0.075 +0.035		26.50 25.50	12	
HSB-100F 18170									17	
HSB-100F 18220									22	
HSB-100F 20115	20	19.980 19.959	20.071 19.990	23	23.021 23.000		1.600 1.300	30.50 29.50	11.5	1.505 1.475
HSB-100F 20165									16.5	
HSB-100F 20215									21.5	
HSB-100F 25115	25	24.980 24.959	25.071 24.990	28	28.021 28.000			35.50 34.50	11.5	
HSB-100F 25165									16.5	
HSB-100F 25215									21.5	
HSB-100F 30160	30	29.980 29.959	30.085 29.990	34	34.025 34.000		2.100 1.800	42.50 41.50	16	2.005 1.970
HSB-100F 30260									26	
HSB-100F 35160	35	34.975 34.950	35.085 34.990	39	39.025 39.000	+0.085 +0.045		47.50 46.50	16	
HSB-100F 35260									26	
HSB-100F 40160	40	39.975 39.950	40.085 39.990	44	44.025 44.000			53.50 52.50	16	
HSB-100F 40260									26	
HSB-100F 45160	45	44.975 44.950	45.105 44.990	50	50.025 50.000		2.600 2.300	58.50 57.50	16	2.505 2.460
HSB-100F 45260									26	

HSB-100WC 垫片规格及公差
HSB-100WC Thrust washer Specification & Tolerance



尺寸：毫米
All dimensions in mm



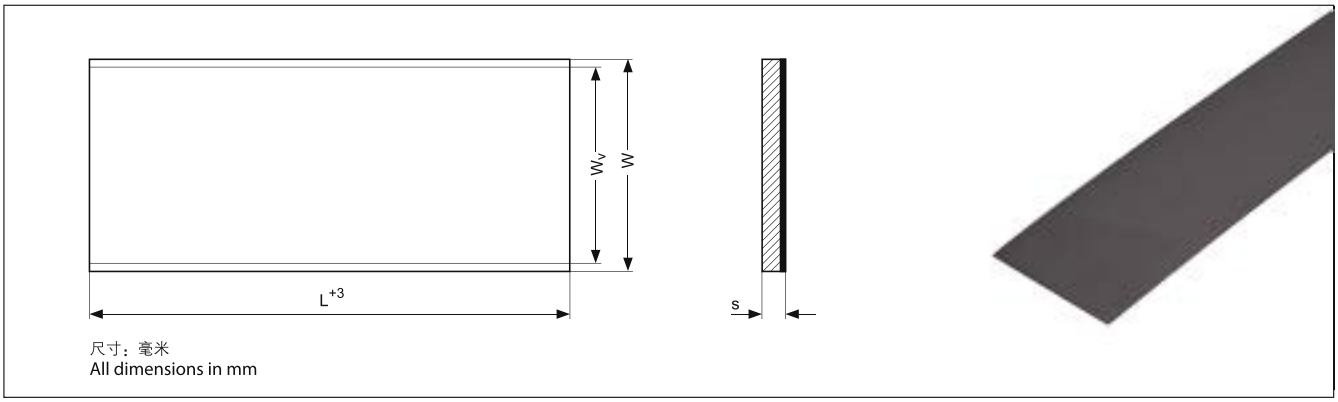
垫片型号标注方式
Washer Symbol

垫片型号标注方式 Washer Symbol	WC	× ×	HSB-100 - □
垫片 Washer			
垫片内径 Washer I. D .			
垫片型号 Washer Type			

单位Unit: mm

型号 Part No	内孔 Internal Diameter Φd		外径 External Diameter Φ D		壁厚 Thickness s	定位孔大小 Dowel Hole Φ H	定位孔中心距 Dowel Hole PCD ΦHm	装配深度 Recess Depth H_a
	min	max	min.	max.	max. min.	max. min.	Φ ±0.125	max. min.
HSB-100WC 10	10.00	10.25	19.75	20.00	1.50 1.45	无孔 No Hole	无孔 No Hole	1.20 0.80
HSB-100WC 12	12.00	12.25	23.75	24.00		1.90 1.60	18	
HSB-100WC 14	14.00	14.25	25.75	26.00		2.40 2.10	20	
HSB-100WC 16	16.00	16.25	29.75	30.00			22	
HSB-100WC 18	18.00	18.25	31.75	32.00			25	
HSB-100WC 20	20.00	20.25	35.75	36.00		3.40 3.10	28	
HSB-100WC 22	22.00	22.25	37.75	38.00			30	
HSB-100WC 24	24.00	24.25	41.75	42.00			33	
HSB-100WC 26	26.00	26.25	43.75	44.00			35	
HSB-100WC 28	28.00	28.25	47.75	48.00		4.40 4.10	38	
HSB-100WC 32	32.00	32.25	53.75	54.00			43	
HSB-100WC 38	38.00	38.25	61.75	62.00			50	
HSB-100WC 42	42.00	42.25	65.75	66.00			54	
HSB-100WC 48	48.00	48.25	73.75	74.00	2.00 1.95		61	1.70 1.30
HSB-100WC 52	52.00	52.25	77.75	78.00			65	
HSB-100WC 62	62.00	62.25	89.75	90.00			76	

HSB-100PS 板材规格及公差
HSB-100PS Strip Specification



尺寸：毫米
All dimensions in mm

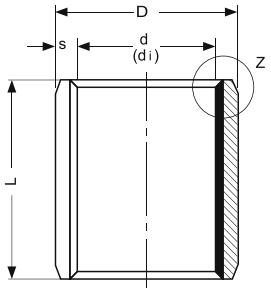
板材标注方式
Strip Symbol

板材标注方式 Strip Symbol	S	× ×	× ×	HSB-100 - □
板材 Strip				
板材厚度 Strip Wall Thickness				
板材宽度 Strip Width				
板材型号 Strip Type				

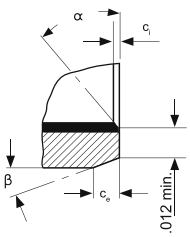
单位Unit: mm

型号 Part No	长度 Length L	宽度 Total Width W	有效宽度 Useable Width W_v	厚度 Thickness S-0.05
HSB-100PS 07150	500	160	150	0.75
HSB-100PS 10215	500	225	215	1.00
HSB-100PS 15245	500	254	245	1.50
HSB-100PS 20245	500	254	245	2.00
HSB-100PS 25245	500	254	245	2.50
HSB-100PS 30245	500	254	245	3.00

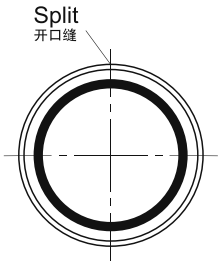
HSB-100 英制直套规格及公差
HSB-100 Inch Sleeve Bushing Specification & Tolerance



尺寸：英寸
All dimensions in inch



Detail Z
放大



内外倒角尺寸表
Inside & Outide Chamfers

壁厚 Wall thickness	内倒角 ID Chamfer		外倒角 OD Chamfer	
	C_i	α	C_e	β
0.0315"	0.008"- 0.024"	30°- 45°	0.004"- 0.012"	30°- 45°
0.0471"	0.020"- 0.040"	20°- 30°	0.005"- 0.025"	40°- 55°
0.0627"-0.0928"	0.020"- 0.040"	15°- 25°	0.005"- 0.025"	40°- 50°

直套型号标注方式
Bushing Symbol

直套型号标注方式 Bushes Symbol	××	HDU - □	××
直套内径 Bushing I. D.			
直套型号 Bushing Type			
直套高度 Bushing Length			

单位Unit: Inch

型号 Part No	内径 Internal Diameter			外径 External Diameter		高度 Length	壁厚 Wall Thickness
	内径 d	装配轴径 Shaft-Φd_s	装配后内孔尺寸 Φd_i	外径 D	装配座孔 Housing-ΦD_H	L ± 0.01"	S
03 HDU 03	3/16	0.1865 0.1858	0.1893 0.1867	1/4	0.2503 0.2497	0.1875	0.0315 0.0305
03 HDU 04						0.2500	
03 HDU 06						0.3700	
04 HDU 04	1/4	0.2490 0.2481	0.2518 0.2492	5/16	0.3128 0.3122	0.2500	
04 HDU 06						0.3750	
05 HDU 06	5/16	0.3115 0.3106	0.3143 0.3117	3/8	0.3753 0.3747		
05 HDU 08						0.5000	
06 HDU 06	3/8	0.3740 0.3731	0.3769 0.3742	15/32	0.4691 0.4684	0.3750	0.0471 0.0461
06 HDU 08						0.5000	
06 HDU 12						0.7500	
07 HDU 08	7/16	0.4365 0.4355	0.4394 0.4367	17/32	0.5316 0.5309	0.5000	
07 HDU 12						0.7500	
08 HDU 06	1/2	0.4990 0.4980	0.5019 0.4992	19/32	0.5941 0.5934	0.3750	0.0471 0.0461
08 HDU 08						0.5000	
08 HDU 10						0.6250	
08 HDU 14						0.8750	

HSB-100 英制直套规格及公差
HSB-100 Inch Sleeve Bushing Specification & Tolerance

单位Unit: Inch

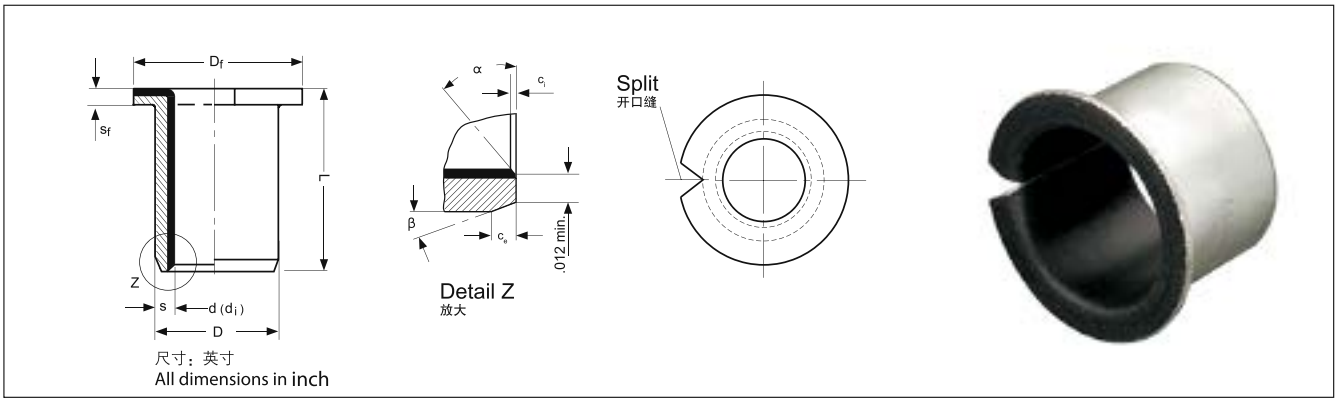
型号 Part No	内径 Internal Diameter			外径 External Diameter		高度 Length	壁厚 Wall Thickness
	内径 d	装配轴径 Shaft-Φd_s	装配后内孔尺寸 Φd_i	外径 D	装配座孔 Housing-ΦD_H	L ± 0.01"	S
09 HDU 08	9/16	0.5615 0.5605	0.5644 0.5617	21/32	0.6566 0.6559	0.5000	0.0471 0.0461
09 HDU 12						0.7500	
10 HDU 08	5/8	0.6240 0.6230	0.6270 0.6242	23/32	0.7192 0.7184	0.5000	
10 HDU 10						0.6250	
10 HDU 12						0.7500	
10 HDU 14						0.8750	
12 HDU 08	3/4	0.7491 0.7479	0.7525 0.7493	7/8	0.8755 0.8747	0.5000	0.0627 0.0615
12 HDU 12						0.7500	
12 HDU 16						1.0000	
14 HDU 12	7/8	0.8741 0.8729	0.8775 0.8743	1	1.0005 0.9997	0.7500	
14 HDU 14						0.8750	
14 HDU 16						1.000	
16 HDU 12	1	0.9991 0.9979	1.0026 0.9992	1 1/8	1.1256 1.1246	0.7500	
16 HDU 16						1.0000	
16 HDU 24						1.5000	
18 HDU 12	1 1/8	1.1238 1.1226	1.1278 1.1240	1 9/32	1.2818 1.2808	0.7500	0.0784 0.0770
18 HDU 16						1.0000	
20 HDU 12	1 1/4	1.2488 1.2472	1.2528 1.2490	1 13/32	1.4068 1.4058	0.7500	
20 HDU 16						1.0000	
20 HDU 20						1.2500	
20 HDU 28						1.7500	
22 HDU 16	1 3/8	1.3738 1.3722	1.3778 1.3740	1 17/32	1.5318 1.5308	1.0000	
22 HDU 22						1.3750	
22 HDU 28						1.7500	
24 HDU 16	1 1/2	1.4988 1.4972	1.5028 1.4990	1 21/32	1.6568 1.6558	1.0000	
24 HDU 20						1.2500	
24 HDU 24						1.5000	
24 HDU 32						2.0000	
26 HDU 16	1 5/8	1.6238 1.6222	1.6278 1.6240	1 25/32	1.7818 1.7808	1.0000	
26 HDU 24						1.5000	
28 HDU 16	1 3/4	1.7487 1.7471	1.7535 1.7489	1 15/16	1.9381 1.9371	1.0000	0.0941 0.0923
28 HDU 24						1.5000	
28 HDU 28						1.7500	
28 HDU 32						2.0000	

HSB-100 英制直套规格及公差
HSB-100 Inch Sleeve Bushing Specification & Tolerance

单位Unit: Inch

型号 Part No	内径 Internal Diameter			外径 External Diameter		高度 Length	壁厚 Wall Thickness
	内径 d	装配轴径 Shaft-Φd_s	装配后内孔尺寸 Φd_i	外径 D	装配座孔 Housing-ΦD_H	L ± 0.01"	S
30 HDU 16	$1\frac{7}{8}$	1.8737 1.8721	1.8787 1.8739	$2\frac{1}{16}$	2.0633 2.0621	1.0000	0.0941 0.0923
30 HDU 30						1.8750	
30 HDU 36						2.2500	
32 HDU 16	2	1.9987 1.9969	2.0037 1.9989	$2\frac{3}{16}$	2.1883 2.1871	1.0000	
32 HDU 24						1.5000	
32 HDU 32						2.0000	
32 HDU 40						2.5000	
36 HDU 32	$2\frac{1}{4}$	2.2507 2.2489	2.2573 2.2509	$2\frac{7}{16}$	2.4377 2.4365	2.0000	0.0928 0.0902
36 HDU 36						2.2500	
36 HDU 40						2.5000	
36 HDU 48						3.0000	
40 HDU 32	$2\frac{1}{2}$	2.5011 2.4993	2.5077 2.5013	$2\frac{11}{16}$	2.6881 2.6869	2.0000	
40 HDU 40						2.5000	
40 HDU 48						3.0000	
40 HDU 56						3.5000	
44 HDU 32	$2\frac{3}{4}$	2.7500 2.7482	2.7566 2.7502	$2\frac{15}{16}$	2.9370 2.9358	2.0000	
44 HDU 40						2.5000	
44 HDU 48						3.0000	
44 HDU 56						3.5000	
48 HDU 32	3	3.0000 2.9982	3.0068 3.0002	$3\frac{3}{16}$	3.1872 3.1858	2.5000	
48 HDU 48						3.0000	
48 HDU 60						3.7500	
56 HDU 40	$3\frac{1}{2}$	3.5000 3.4978	3.5068 3.5002	$3\frac{11}{16}$	3.6872 3.6858	2.5000	
56 HDU 48						3.0000	
56 HDU 60						3.7500	
64 HDU 48	4	4.0000 3.9978	4.0068 4.0002	$4\frac{3}{16}$	4.1872 4.1858	3.0000	
64 HDU 60						3.7500	
64 HDU 76						4.7500	
80 HDU 48	5	4.9986 4.9961	5.0056 4.9988	$5\frac{3}{16}$	5.1860 5.1844	3.0000	
80 HDU 60						3.7500	
96 HDU 48	6	6.0000 5.9975	6.0070 6.0002	$6\frac{3}{16}$	6.1874 6.1858	3.0000	
96 HDU 60						3.7500	
112 HDU 60	7	6.9954 6.9929	7.0026 6.9956	$7\frac{3}{16}$	7.1830 7.1812	3.7500	

HSB-100F 英制翻边规格及公差
HSB-100F Inch Flange Bushing Specification & Tolerance



尺寸：英寸
All dimensions in inch

内外倒角尺寸表
Inside & Outide Chamfers

壁厚 Wall thickness	内倒角 ID Chamfer		外倒角 OD Chamfer	
	C_i	α	C_e	β
0.0315"	0.008"- 0.024"	30°- 45°	0.004"- 0.012"	30°- 45°
0.0471"	0.020"- 0.040"	20°- 30°	0.005"- 0.025"	40°- 55°
0.0627"-0.0928"	0.020"- 0.040"	15°- 25°	0.005"- 0.025"	40°- 50°

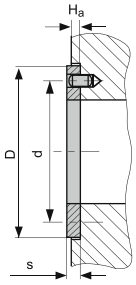
翻边套型号标注方式
Flange Bushing Symbol

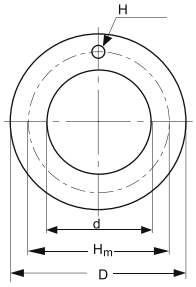
翻边套型号标注方式 Flange Bushing Symbol	× ×	F	HDUF - □	× ×
翻边套内径 Flange Bushing I. D.				
翻边套 Flange				
轴承型号 Flange Bushing Type				
翻边套高度 Flange Bushing Length				

单位Unit: Inch

型号 Part No	内径 d	装配轴径 Shaft-Φd_S	装配座孔 Housing ΦD_H	装配后内孔尺寸 Φd_i	法兰厚度 Flang Wall S_F	法兰外径 Flang Φ D_F	高度 Length L ± 0.01"
06F HDUF 04	3/8	0.3750 0.3740	0.4684 0.4691	0.3752 0.3779	0.047 0.039	11/16	1/4
06F **HDUF** 06							3/8
06F **HDUF** 08							1/2
08F **HDUF** 04	1/2	0.5000 0.4990	0.5934 0.5941	0.5002 0.5029	0.047 0.039	13/16	1/4
08F **HDUF** 06							3/8
08F **HDUF** 08							1/2
10F **HDUF** 06	5/8	0.6250 0.6240	0.7184 0.7192	0.6252 0.6280	0.047 0.039	15/16	3/8
10F **HDUF** 08							1/2
10F **HDUF** 10							5/8
12F **HDUF** 06	3/4	0.7500 0.7488	0.8747 0.8755	0.7502 0.7534	0.063 0.055	1 1/8	3/8
12F **HDUF** 08							1/2
12F **HDUF** 12							3/4
14F **HDUF** 08	7/8	0.8750 0.8738	0.9997 1.0005	0.8752 0.8784	0.063 0.055	1 1/4	1/2
14F **HDUF** 12							3/4
14F **HDUF** 16							1
16F **HDUF** 08	1	1.0000 0.9988	1.1247 1.1255	1.0002 1.0034	0.063 0.055	1 3/8	1/2
16F **HDUF** 12							3/4
16F **HDUF** 16							1

HSB-100WC 英制垫片规格及公差
HSB-100WC Inch Thrust Washer Specification & Tolerance





尺寸：英寸
All dimensions in inch

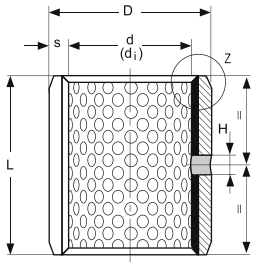
垫片型号标注方式
Washer Symbol

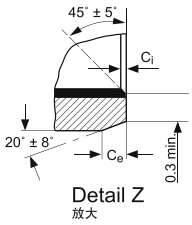
垫片型号标注方式 Washer Symbol	HDU - □	WC	× ×
垫片型号 Washer Type			
垫片 Washer			
垫片内径 Washer I. D .			

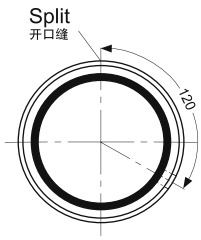
单位Unit: Inch

型号 Part No	内径 Internal Diameter d		外径 External Diameter D		壁厚 Thickness s	定位孔中心 Dowel Hole PCD-Φ H_m ± 0.12	定位孔直径 Dowel Hole-Φ H	Recess Depth H_a
	min.	max.	min.	max.	max. min.	max. min.	± 0.005"	max. min.
HDU WC 06	0.510	0.500	0.865	0.875	0.063 0.061	0.077 0.067	0.6870	0.050 0.040
HDU WC 07	0.572	0.562	0.990	1.000			0.7810	
HDU WC 08	0.635	0.625	1.115	1.125		0.109 0.099	0.8750	
HDU WC 09	0.697	0.687	1.177	1.187			0.9370	
HDU WC 10	0.760	0.750	1.240	1.250			1.0000	
HDU WC 11	0.822	0.812	1.365	1.375			1.0940	
HDU WC 12	0.885	0.875	1.490	1.500		0.140 0.130	1.1870	
HDU WC 14	1.010	1.000	1.740	1.750			1.3750	
HDU WC 16	1.135	1.125	1.990	2.000		0.171 0.161	1.5620	
HDU WC 18	1.260	1.250	2.115	2.125			1.6870	
HDU WC 20	1.385	1.375	2.240	2.250			1.8020	
HDU WC 22	1.510	1.500	2.490	2.500		0.202 0.192	2.0000	
HDU WC 24	1.635	1.625	2.615	2.625			2.1250	
HDU WC 26	1.760	1.750	2.740	2.750			2.2500	
HDU WC 28	2.010	2.000	2.990	3.000	0.093 0.091		2.5000	0.080 0.070
HDU WC 30	2.135	2.125	3.115	3.125			2.6250	
HDU WC 32	2.260	2.250	3.240	3.250			2.7500	

HSB-200 直套规格及公差
HSB-200 Sleeve Bushing Specification & Tolerance







尺寸：毫米
All dimensions in mm

尺寸和公差参照ISO 3547
Dimensions and Tolerances according to ISO 3547

内外倒角尺寸表
Inside & Outide Chamfers

壁厚 Wall thickness S	内倒角 Inside Chafmer C_i	外倒角 Outside Chamfer C_e
1.00	0.30 ± 0.20	0.60 ± 0.40
1.50	0.40 ± 0.30	0.60 ± 0.40
2.00	0.40 ± 0.30	1.20 ± 0.40
2.50	0.60 ± 0.30	1.80 ± 0.60

直套型号标注方式
Bushing Symbol

直套型号标注方式 Bushes Symbol	HSB-200 - □	× ×	× ×
直套型号 Bushing Type			
直套内径 Bushing I.D.			
直套高度 Bushing Length			

单位Unit: mm

型号 Part No	内径 Internal Diameter			外径 External Diameter			高度 Length	壁厚 Wall Thickness	油孔直径 Oil Hole-ΦH
	内径 d	装配轴径 Shaft-Φd_s	装配后内径 Φd_i	外径 D	装配座孔 Housing-ΦD_H	理论外径公差 O.D. ΦD_t	ID<80 L ± 0.25 ID>80 L ± 0.50	S	
HSB-200 1010	10	10.000 9.978	10.108 10.040	12	12.018 12.000	+0.065 +0.030	10	0.980 0.955	3
HSB-200 1012							12		4
HSB-200 1015							15		
HSB-200 1020							20		
HSB-200 1210	12	12.000 11.973	12.108 12.040	14	14.018 14.000		10		3
HSB-200 1212							12		4
HSB-200 1215							15		
HSB-200 1220							20		
HSB-200 1225							25		
HSB-200 1415	14	14.000 13.973	14.108 14.040	16	16.018 16.000		15		
HSB-200 1420							20		
HSB-200 1425							25		
HSB-200 1510	15	15.000 14.973	15.108 15.040	17	17.018 17.000		10		3
HSB-200 1512							12		4
HSB-200 1515							15		
HSB-200 1520							20		
HSB-200 1525							25		
HSB-200 1615	16	16.000 15.973	16.108 16.040	18	18.018 18.000		15		4
HSB-200 1620							20		
HSB-200 1625						+0.075 +0.035	25		
HSB-200 1815	18	18.000 17.973	18.111 18.040	20	20.021 20.000		15		
HSB-200 1820							20		
HSB-200 1825							25		
HSB-200 2010	20	20.000 19.967	20.131 20.050	23	23.021 23.000		10	1.475 1.445	
HSB-200 2015							15		
HSB-200 2020							20		
HSB-200 2025							25		
HSB-200 2030							30		

HSB-200 直套规格及公差
HSB-200 Sleeve Bushing Specification & Tolerance

单位Unit: mm

型号 Part No	内径 Internal Diameter			外径 External Diameter			高度 Length	壁厚 Wall Thickness	油孔直径 Oil Hole-Φ H
	内径 d	装配轴径 Shaft-Φd_s	装配后内径 Φd_1	外径 D	装配座孔 Housing-ΦD_H	理论外径公差 O.D. ΦD_t	ID<80 L ± 0.25 ID>80 L ± 0.50	S	
HSB-200 2215	22	22.000 21.967	22.131 22.050	25	25.021 25.000	+0.085 +0.045	15	1.475 1.445	6
HSB-200 2220							20		
HSB-200 2225							25		
HSB-200 2230							30		
HSB-200 2515	25	25.000 24.967	25.131 25.050	28	28.021 28.000		15		
HSB-200 2520							20		
HSB-200 2525							25		
HSB-200 2530							30		
HSB-200 2820	28	28.000 27.967	28.155 28.060	32	32.025 32.000		20	1.970 1.935	
HSB-200 2825							25		
HSB-200 2830							30		
HSB-200 3020	30	30.000 29.967	30.155 30.060	34	34.025 34.000		20		
HSB-200 3030							30		
HSB-200 3040							40		
HSB-200 3220	32	32.000 31.961	32.155 32.060	36	36.025 36.000		20		
HSB-200 3230							30		
HSB-200 3235							35		
HSB-200 3240							40		
HSB-200 3520	35	35.000 34.961	35.155 35.060	39	39.025 39.000		20		
HSB-200 3530							30		
HSB-200 3535							35		
HSB-200 3540							40		
HSB-200 3550							50		
HSB-200 4020	40	40.000 39.961	40.155 40.060	44	44.025 44.000		20		8
HSB-200 4030							30		
HSB-200 4040							40		
HSB-200 4050							50		
HSB-200 4520	45	45.000 44.961	45.195 45.080	50	50.025 50.000		25	2.460 2.415	
HSB-200 4530							30		
HSB-200 4540							40		
HSB-200 4545							45		
HSB-200 4550							50		
HSB-200 5040	50	50.000 49.961	50.200 50.080	55	55.030 55.000	+0.100 +0.055	40		
HSB-200 5050							50		
HSB-200 5060							60		
HSB-200 5520	55	55.000 54.954	55.200 55.080	60	60.030 60.000		20		
HSB-200 5525							25		
HSB-200 5530							30		
HSB-200 5540							40		
HSB-200 5550							50		
HSB-200 5560							60		
HSB-200 6030	60	60.000 59.954	60.200 60.080	65	65.030 65.000		30		
HSB-200 6040							40		
HSB-200 6060							60		
HSB-200 6070							70		
HSB-200 6540	65	65.000 64.954	65.262 65.100	70	70.030 70.000		40	2.450 2.384	
HSB-200 6550							50		
HSB-200 6560							60		
HSB-200 6570							70		
HSB-200 7040	70	70.000 69.954	70.262 70.100	75	75.030 75.000		40		
HSB-200 7050							50		
HSB-200 7065							65		
HSB-200 7070							70		
HSB-200 7080							80		
HSB-200 7540	75	75.000 74.954	75.262 75.100	80	80.030 80.000		40		9.5
HSB-200 7560							60		
HSB-200 7580							80		

HSB-200 直套规格及公差
HSB-200 Sleeve Bushing Specification & Tolerance

单位Unit: mm

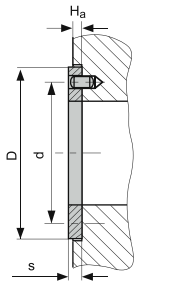
型号 Part No	内径 Internal Diameter			外径 External Diameter			高度 Length	壁厚 Wall Thickness	油孔直径 Oil Hole-ΦH
	内径 d	装配轴径 Shaft-Φd_S	装配后内径 Φd_I	外径 D	装配座孔 Housing-ΦD_H	理论外径公差 O.D. ΦD_t	ID<80 L ± 0.25 ID>80 L ± 0.50	S	
HSB-200 8040	80	80.000 79.954	80.267 80.100	85	85.035 85.000	+0.120 +0.070	40	2.450 2.384	9.5
HSB-200 8060							60		
HSB-200 8080							80		
HSB-200 80100							100		
HSB-200 8530	85	85.000 84.946	85.267 85.100	90	90.035 90.000		30		
HSB-200 8540							40		
HSB-200 8560							60		
HSB-200 8580							80		
HSB-200 85100							100		
HSB-200 9040	90	90.000 89.946	90.267 90.100	95	95.035 90.000		40		
HSB-200 9060							60		
HSB-200 9080							80		
HSB-200 9090							90		
HSB-200 90100							100		
HSB-200 9560	95	95.000 94.946	95.267 95.100	100	100.035 100.000		60		
HSB-295100							100		
HSB-200 10050	100	100.000 99.946	100.267 100.100	105	105.035 105.000		50		
HSB-200 10060							60		
HSB-200 10080							80		
HSB-200 10095							95		
HSB-200 100115							115		
HSB-200 10560	105	105.000 104.946	105.267 105.100	110	110.035 110.000		60		
HSB-200 105110							110		
HSB-200 105115							115		
HSB-200 11060	110	110.000 109.946	110.267 105.100	115	115.035 115.000		60		
HSB-200 110110							110		
HSB-200 110115							115		
HSB-200 11550	115	115.000 114.946	115.267 115.100	120	120.035 120.000		50		
HSB-200 11570							70		
HSB-200 12060	120	120.000 119.946	120.272 120.100	125	125.040 125.000	+0.170 +0.100	60		
HSB-200 120100							100		
HSB-200 120110							110		
HSB-200 12560	125	125.000 124.937	125.272 125.000	130	130.040 130.000		60		
HSB-200 125100							100		
HSB-200 125110							110		
HSB-200 13050	130	130.000 129.937	130.280 130.130	135	135.040 135.000		50	2.435 2.380	
HSB-200 13060							60		
HSB-200 13080							80		
HSB-200 130100							100		
HSB-200 13560	135	135.000 134.937	135.280 138.130	140	140.040 140.000		60		
HSB-200 13580							80		
HSB-200 14050	140	140.000 139.937	140.280 140.130	145	145.040 145.000		50		
HSB-200 14060							60		
HSB-200 14080							80		
HSB-200 140100							100		
HSB-200 15050	150	150.000 149.937	150.280 150.130	155	155.040 155.000		50		
HSB-200 15060							60		
HSB-200 15080							80		
HSB-200 1501003							100		
HSB-200 16050	160	160.000 159.937	160.280 160.130	165	165.040 165.000		50		
HSB-200 16060							60		
HSB-200 16080							80		
HSB-200 160100							100		
HSB-200 17050	170	170.000 169.937	170.280 170.130	175	175.040 175.000		50		
HSB-200 17060							60		
HSB-200 17080							80		
HSB-200 170100							100		

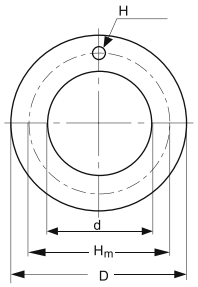
HSB-200 直套规格及公差
HSB-200 Sleeve Bushing Specification & Tolerance

单位Unit: mm

型号 Part No	内径 Internal Diameter			外径 External Diameter			高度 Length	壁厚 Wall Thickness	油孔直径 Oil Hole-Φ H
	内径 d	装配轴径 Shaft-Φd_s	装配后内径 Φd_t	外径 D	装配座孔 Housing-ΦD_H	理论外径公差 O.D. ΦD_t	ID<80 L ± 0.25 ID>80 L ± 0.50	S	
HSB-200 18050	180	180.000 179.937	180.286 180.130	185	185.046 185.000	+0.210 +0.130	50	2.435 2.380	9.5
HSB-200 18060							60		
HSB-200 18080							80		
HSB-200 180100							100		
HSB-200 19050	190	190.000 189.928	190.286 190.130	195	195.046 195.000		50		
HSB-200 19060							60		
HSB-200 19080							80		
HSB-200 190100							100		
HSB-200 190120							120		
HSB-200 20050	5	200.000 199.928	200.286 200.130	205	205.046 205.000		50		
HSB-200 20060							60		
HSB-200 20080							80		
HSB-200 20080	200	200.000 199.928	200.286 200.130	205	205.046 205.000		80		
HSB-200 200100							100		
HSB-200 200120							120		
HSB-200 22050	220	220.000 219.928	220.286 220.130	225	225.046 225.000		50		
HSB-200 22060							60		
HSB-200 22080							80		
HSB-200 220100							100		
HSB-200 220120							120		
HSB-200 24050	240	240.000 239.928	240.286 240.130	245	245.046 245.000		50		
HSB-200 24060							60		
HSB-200 24080							80		
HSB-200 240100							100		
HSB-200 240120							120		
HSB-200 25050	250	250.000 249.928	250.292 250.130	255	255.052 255.000	+0.260 +0.170	50		
HSB-200 25060							60		
HSB-200 25080							80		
HSB-200 250100							100		
HSB-200 250120							120		
HSB-200 26050	260	260.000 259.919	260.292 260.130	265	265.052 265.000		50		
HSB-200 26060							60		
HSB-200 26080							80		
HSB-200 260100							100		
HSB-200 260120							120		
HSB-200 28050	280	280.000 279.919	280.292 280.130	285	285.052 285.000		50		
HSB-200 28060							60		
HSB-200 28080							80		
HSB-200 280100							100		
HSB-200 280120							120		
HSB-200 30050	300	300.000 299.919	300.292 300.130	305	305.052 305.000		50		
HSB-200 30060							60		
HSB-200 30080							80		
HSB-200 300100							100		
HSB-200 300120							120		

HSB-200WC 垫片规格及公差
HSB-200WC Thrust washer Specification & Tolerance





尺寸：毫米
All dimensions in mm

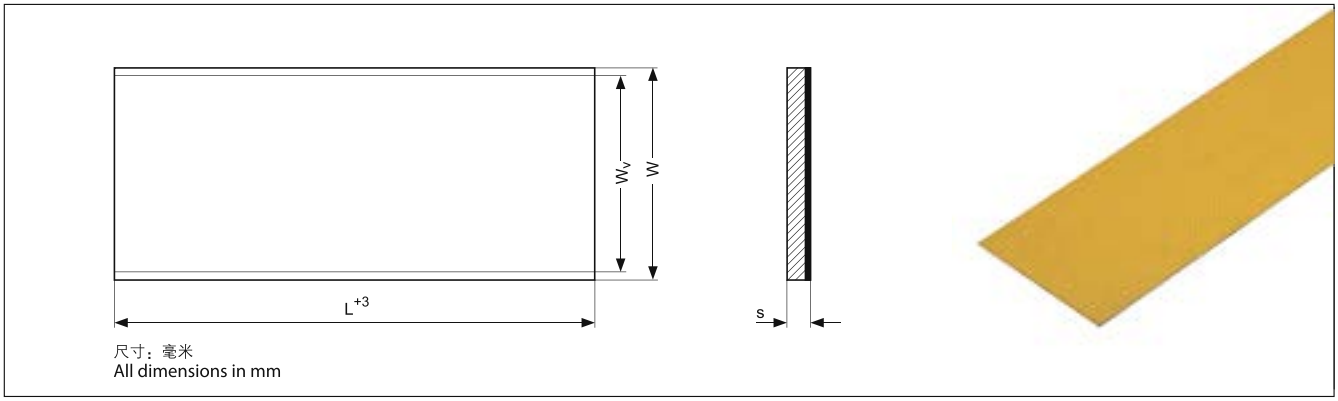
垫片型号标注方式
Washer Symbol

垫片型号标注方式 Washer Symbol	WC	× ×	HSB-200 - □
垫片 Washer			
垫片内径 Washer I. D.			
垫片型号 Washer Type			

单位Unit: mm

型号 Part No	内径 Internal Diameter d		外径 External Diameter D		壁厚 Thickness s	定位孔中心 Dowel Hole PCD-Φ $H_m \pm 0.12$	定位孔直径 Dowel Hole-Φ H	Recess Depth H_a
	min.	max.	min.	max.	max. min.	max. min.	± 0.005"	max. min.
HSB-200WC 10	12.00	12.25	23.75	24.00		18	1.9 1.6	
HSB-200WC 12	14.00	14.25	25.75	26.00		20		
HSB-200WC 14	16.00	16.25	29.75	30.00		22	2.4 2.1	
HSB-200WC 16	18.00	18.25	31.75	32.00		25		
HSB-200WC 18	20.00	20.25	35.75	36.00		28		
HSB-200WC 20	22.00	22.25	37.75	38.00		30	3.4 3.1	
HSB-200WC 22	24.00	24.25	41.75	42.00	1.50 1.45	33		1.20 0.80
HSB-200WC 24	26.00	26.25	43.75	44.00		35		
HSB-200WC 25	28.00	28.25	47.75	48.00		38		
HSB-200WC 30	32.00	32.25	53.75	54.00		43		
HSB-200WC 35	38.00	38.25	61.75	62.00		50	4.4 4.1	
HSB-200WC 40	42.00	42.25	65.75	66.00		54		
HSB-200WC 45	48.00	48.25	73.75	74.00	1.95 2.00	61		1.70 1.30
HSB-200WC 50	52.00	52.25	77.75	78.00		65		

HSB-200PS 板材规格及公差
HSB-200PS Strip Specification & Tolerance



尺寸：毫米
All dimensions in mm

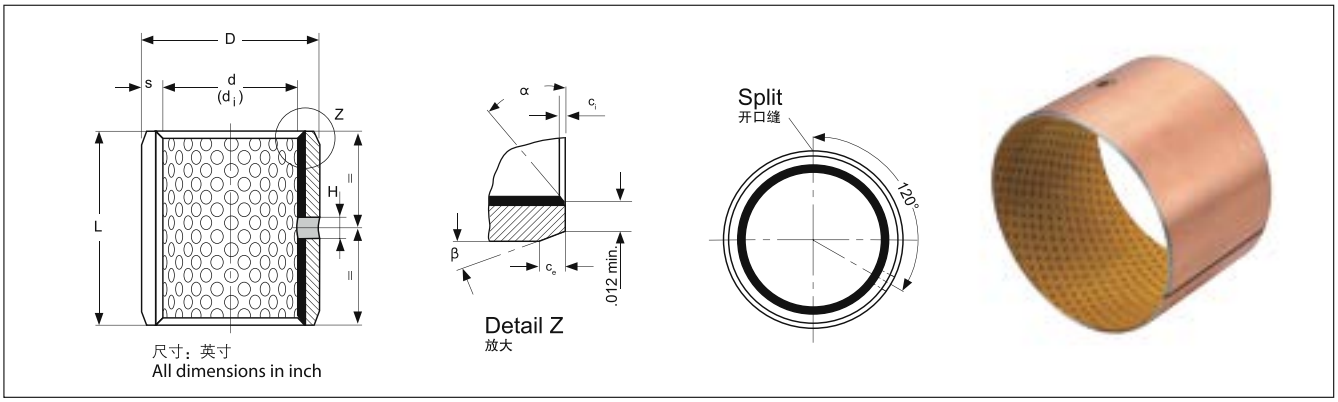
板材标注方式
Strip Symbol

板材标注方式 Strip Symbol	S	× × ×	× × ×	HSB-200 - □
板材 Strip				
板材厚度 Strip Wall Thickness				
板材宽度 Strip Width				
板材型号 Strip Type				

单位Unit: mm

型号 Part No	长度 Length L	宽度 Width W_v	壁厚 Thickness S-0.05
HSB-200PS 100 90	500	130 – 150	1.00
HSB-200PS 152 00		130 – 150	1.50
HSB-200PS 202 00		130 – 150	2.00
HSB-200PS 252 00			2.50

HSB-200 英制直套规格及公差
HSB-200 Inch Sleeve Bushing Specification & Tolerance



尺寸：英寸
All dimensions in inch

内外倒角尺寸表
Inside and Outide Chamfers Unit mm

壁厚 Wall thickness	内倒角 ID Chamfer		外倒角 OD Chamfer	
	C_i	α	C_e	β
0.0315"	0.008"- 0.024"	30°- 45°	0.004"- 0.012"	30°- 45°
0.0471"	0.020"- 0.040"	20°- 30°	0.005"- 0.025"	40°- 55°
0.0627"-0.0928"	0.020"- 0.040"	15°- 25°	0.005"- 0.025"	40°- 50°

直套型号标注方式
BushingSymbol

直套型号标注方式 Bushes Symbol	××	HDX - □	××
直套内径 Bushing I. D.			
直套型号 Bushing Type			
直套高度 Bushing Length			

单位Unit: Inch

型号 Part No	内径 Internal Diameter			外径 MGternal Diameter		高度 Width	壁厚 Wall Thickness	油孔直径 Oil Hole-Φ H
	内径 d	装配轴径 Shaft-Φ d_s	供货内径 Φ d_i	外径 D	装配座孔 D_H	L ± 0.01"	S	
06 HDX 06	3/8	0.3648 0.3639	0.3694 0.3667	15/32	0.4694 0.4687	0.375	0.0510 0.0500	无孔 No hole
06 HDX 08						0.500		5/32
06 HDX 12						0.750		
07 HDX 08	7/16	0.4273 0.4263	0.4319 0.4292	17/32	0.5319 0.5312	0.500		
07 HDX 12						0.750		
08 HDX 06	1/2	0.4897 0.4887	0.4944 0.4917	19/32	0.5944 0.5937	0.375		
08 HDX 08						0.500		
08 HDX 10						0.625		
08 HDX 14						0.875		
09 HDX 08	9/16	0.5522 0.5512	0.5569 0.5542	21/32	0.6569 0.6562	0.500		
09 HDX 12						0.750		
10 HDX 08	5/8	0.6146 0.6136	0.6195 0.6167	23/32	0.7195 0.7187	0.500		
10 HDX 10						0.625		
10 HDX 12						0.750		
10 HDX 14						0.875		
12 HDX 08	3/4	0.7390 0.7378	0.7444 0.7412	7/8	0.8758 0.8750	0.500	0.0669 0.0657	
12 HDX 12						0.750		
12 HDX 16						1.000		
14 HDX 12	7/8	0.8639 0.8627	0.8694 0.8662	1	1.0008 1.0000	0.750	0.0669 0.0657	1/4
14 HDX 14						0.755		
14 HDX 16						1		
16 HDX 12	1	0.9888 0.9876	0.9944 0.9912	1 1/8	1.1258 1.1250	0.750		
16 HDX 16						1		
16 HDX 24						1.500		
18 HDX 12	1 1/8	1.1138 1.1126	1.1202 1.1164	1 9/32	1.2822 1.2812	0.750	0.0824 0.0810	
18 HDX 16						1		
20 HDX 12	1 1/4	1.2387 1.2371	1.2452 1.2414	1 13/32	1.4072 1.4062	0.750		
20 HDX 16						1		
20 HDX 20						1.250		
20 HDX 28						1.750		

HSB-200 英制直套规格及公差
HSB-200 Inch Sleeve Bushing Specification & Tolerance

单位Unit: Inch

型号 Part No	内径 Internal Diameter			外径 HDX ternal Diameter		高度 Width	壁厚 Wall Thickness	油孔直径 Oil Hole-Φ H
	内径 d	装配轴径 Shaft-Φd_s	供货内径 Φd_i	外径 D	装配座孔 D_H	L ± 0.01"	S	
22 HDX 16	$1\frac{3}{8}$	1.3635 1.3619	1.3702 1.3664	$1\frac{17}{32}$	1.5322 1.5312	1	0.0824 0.0810	$\frac{1}{4}$
22 HDX 22						1.375		
22 HDX 28						1.750		
24 HDX 16	$1\frac{1}{2}$	1.4884 1.4868	1.4952 1.4914	$1\frac{21}{32}$	1.6572 1.6562	1		$\frac{5}{16}$
24 HDX 20						1.250		
24 HDX 24						1.500		
24 HDX 32						2		
26 HDX 16	$1\frac{5}{8}$	1.6133 1.6117	1.6202 1.6164	$1\frac{25}{32}$	1.7822 1.7812	1		
26 HDX 24						1.500		
28 HDX 16	$1\frac{3}{4}$	1.7383 1.7367	1.7461 1.7415	$1\frac{15}{16}$	1.9385 1.9375	1	0.0980 0.0962	
28 HDX 24						1.500		
28 HDX 28						1.750		
28 HDX 32						2		
30 HDX 16	$1\frac{7}{8}$	1.8632 1.8616	1.8713 1.8665	$2\frac{1}{16}$	2.0637 2.0625	1.500		
30 HDX 30						1.875		
30 HDX 36						2.250		
32 HDX 16	2	1.9881 1.9863	1.9963 1.9915	$1\frac{3}{16}$	2.1887 2.1875	1		
32 HDX 24						1.500		
32 HDX 32						2		
32 HDX 40						2.500		
36 HDX 32	$2\frac{1}{4}$	2.2378 2.2360	2.2463 2.2415	$2\frac{7}{16}$	2.4387 2.4375	2.010 1.990	0.0980 0.0962	$\frac{5}{16}$
36 HDX 36						2.260 2.240		
36 HDX 40						2.510 2.490		
40 HDX 32	$2\frac{1}{2}$	2.4875 2.4857	2.4963 2.4915	$2\frac{11}{16}$	2.6887 2.6875	2.010 1.990		
40 HDX 40						2.510 2.490		
44 HDX 32	$2\frac{3}{4}$	2.7351 2.7333	2.7457 2.7393	$2\frac{15}{16}$	2.9387 2.9375	2.010 1.990	0.0991 0.0965	
44 HDX 40						2.510 2.490		
44 HDX 48						3.010 2.990		
44 HDX 56						3.510 3.490		
48 HDX 32	3	2.9849 2.9831	2.9959 2.9893	$3\frac{3}{16}$	3.1889 3.1875	2.010 1.990		$\frac{3}{8}$
48 HDX 48						3.010 2.990		
48 HDX 60						3.760 3.740		
56 HDX 40	$3\frac{1}{2}$	3.4844 3.4822	3.4959 3.4893	$3\frac{11}{16}$	3.6889 3.6875	2.510 2.490		
56 HDX 48						3.010 2.990		
56 HDX 60						3.760 3.740		
64 HDX 48	4	3.9839 3.9817	3.9959 3.9893	$4\frac{3}{16}$	4.1889 4.1875	3.010 2.990		
64 HDX 60						3.760 3.740		
64 HDX 76						4.760 4.740		

轴承的选型
Bushing Design

与轴承寿命有关的六个因素:

(1) 载荷 P [N/mm^2] Load

载荷越大，轴承使用寿命越短；载荷波动越大，对轴承寿命的影响也越大，轴承寿命越短；无论在任何情况下，最大载荷不可超过理论最大允许负载值。载荷大小等于实际工作载荷除以轴承的投影面积，公式为P=F/(D*B)。

(2) 速度 V [m/s]与PV 值

Velocity V & PV Value

轴承的工作寿命取决于PV值的大小，即实际负载 P [N/mm^2] 与滑动速度 V [m/s]乘积，PV值越小，轴承寿命越长。

(3) 温度 T [°C]

Tempture

轴承的寿命也取决于轴承使用时的温度，因此在设计选型时应尽量考虑相关部件的散热特性。

(4) 对磨部件的表面粗糙度

Ra [μ m] Roughness of Mating Surface

与轴承对磨的部件接触面粗糙度应在Ra0.2~Ra0.8之间，轴承在装配和使用的过程中不可有锐利的介质损坏轴承的工作表面。

(5) 对磨部件表面材料，对磨部件表面粗糙度是影响轴套使用寿命的一个因素，一般情况下某表面要求达到≤0.4 μ m ka。

(6) 其他因素如轴承座的设计、润滑条件等

Factors of bushing service life:

(1) Operation load is an important factor for bushing service life, and steady load is beneficialful for it. Generially, the specific load determined by the type of loading, and should not HSB-2ceed theorial value. Specifica load obtained from operation load divided by the projected are a of bushing.

(2) Bushing service life determined by PV Valve, PV= PxV.

PV value is samller, service life of bushing is longer.

(3) Environment tempture and Thermal

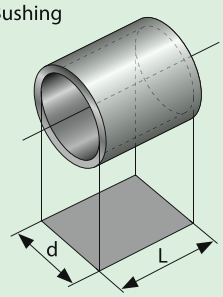
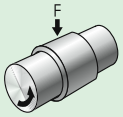
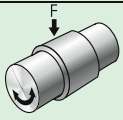
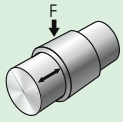
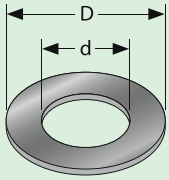
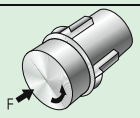
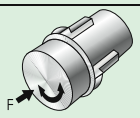
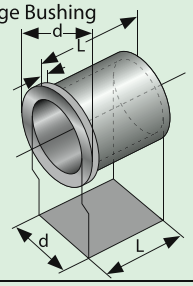
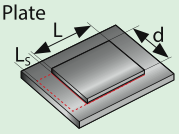
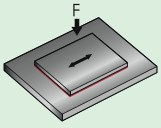
Generated from the different movements like Oscillating, rotary & reciprocating will influence the bushing service life. The resions has higher thermal HSB-2pansion rate with poor thermal conductivity. It is necessary to control the bushing size and clearance.

(4) The roughness of maiting surface should be Ra 0.2-Ra 0.8. During the process of installing, the sharp or burrs etc forbidden to damge the mating surface.

(5) Material of Mating Surface will effected serrice life of bushing the mating surface finish should ≤0.4 μ m ka.

(6) Other Factors like Design of housing, Lubrication condition etc

轴套PV值（承载 P和速度V）
Bushing PV Value (Load P & Velocity V)

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

F：承载 load ..... N {kgf}
N：转速 Rotations ..... S-1{rpm}
c：往复圆周速度或摇摆 Cylindrical velocity of reciprocating or oscillating motion ..... S-1{cpm}
S：往复运动距离 Stroke distance ..... m {mm}
θ：摇摆角度 Oscillating angle ..... rad { }
d：轴套内径 Bushing ID ..... mm {mm}
D：轴套外径 Bushing OD ..... mm {mm}
L：轴套长度 Bushing length ..... mm {mm}
W：板材或滑动宽度 Stirp/Slide way width ..... mm {mm}

卷制类轴承尺寸公差检测方法
Wrapped Bushing Dimensional Inspection

卷制类产品的制造工艺决定了开口缝的存在，使得产品在自由状态下没有很好的圈整度，同时轴套外径和座孔之间为过盈配合，轴套要最大限度地适应座孔的形状，因此不能在自由状态下直接测量产品的内外径而必须使用特殊的测量仪和设备才能检测； ISO3547 标准第 2 部分中对卷制类产品的公差检验作了明确的规定， 包括：

检验方法 A：哈夫规检验外径；

检验方法 B：止通规检验外径；

检验方法 C：止通规检验内径；

检验方法 D：测量尺检验大规格产品外径

以及替代检验方法 C 的壁厚检验方法， 壁厚检验方法和检验方法 C 不能同时使用。

Rolled products in the manufacturing process determine the existence of open joints, making products in the free state not habe a good whole circle shape, while sleeve diameter and the seat for the interference fit between the holes, sleeve adapted to maximize Block hole shape can not be directly measured in the free state the inner/outside diameter of the product only can be by a special measuring instrument; In ISO3547 standards measured Part 2 of the rolled products made clear tolerance test requirements, including :

Test Method A: Huff regulatory test outside diameter;

Test method B: use stop-pass gauge to test the outside diameter;

Test method C: use stop-pass gauge to test the inside diameter;

Test method D: Measure the outer diameter of large scale product and use wall-thickness test to replace test method C. (Wall-thickness test and test method C can not be used at the same time.)

外径检验方法 External diameter test methods

检验方法 A (ISO3547-2: Test A)

采用如右视图的上下两哈夫规对外径进行检验，检验时产品的开口缝朝上哈夫规相向施加检验载荷 Fch， 该载荷使卷制轴套能够按符合要求的方式就位于检验模。 检验中， 由于弹性变形卷制轴套外径会变小但不会产生永久变形。 产品的外径可以通过检验模之间的距离 Z 的变化量 △ Z 来计算。

Test A of ISO 3547 Part 2

Check the outside diameter of a wrapped bush using measuring equipment as shown to the right, with a checking block consisting of upper and lower halves and setting plugs, at a determined checking load of Fch, during the test the outside diameter of the bush is made smaller by the elastic reduction, however it is not a permanent deformation. The bushes outside diameter can be calculated from the difference in the value of z (⊿Z)

检验方法 B (ISO3547-2: Test B)

检验采用两个环规即通规和止规，用手以最大力 250N 可将轴套推入并通过通规；在相同情况下无法进入和通过止规。在某些情况下检验精度可能受到影响，比如轴套不圆或闭合开口缝的力本身已超过 250N，此时建议采用检验方法 A 或测压入力或壁厚相结合的检验方法。

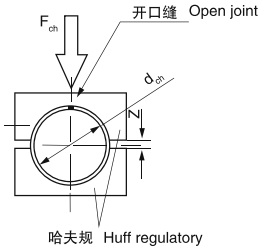
Test B of ISO 3547 Part 2

The test is carried out with two ring gauggs, a Go gauge and a No Go gauge whose diameter Shall be chosen empirically from with Table 6 of ISO3547-1:1999 and agreed upon. It shall be possible to press the bushes into the GO gauge and then push them through with hand pressure (maximum force 250N). On the other hand with the same force, it shall not be possible for them to go into and through the NO GO gauge (See ISO 12307-1)

检验方法 D (ISO3547-2: Test D)
采用精确的测量尺来测量外径， 一般针对大规格的轴套外径检测。

Test D (ISO 3547-2)
The test is carried out by means of a precision measuring tape.

检验方法 A Test A of ISO



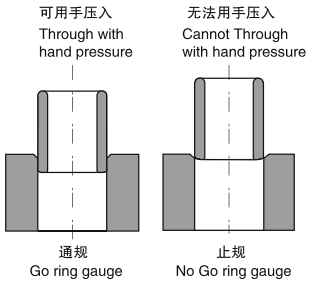
哈夫规和芯棒 d_{ch}=_____mm
Checking block
and setting mandrel

检验压力 F_{ch}=_____N
Torce test

极限值 △ $_z$=___and___mm
Limiting value

外径公差 D_o=___to___mm
OD tolerance

检验方法 B Test B of ISO



卷制类轴承尺寸公差检测方法
Wrapped Bushing Dimensional Inspection

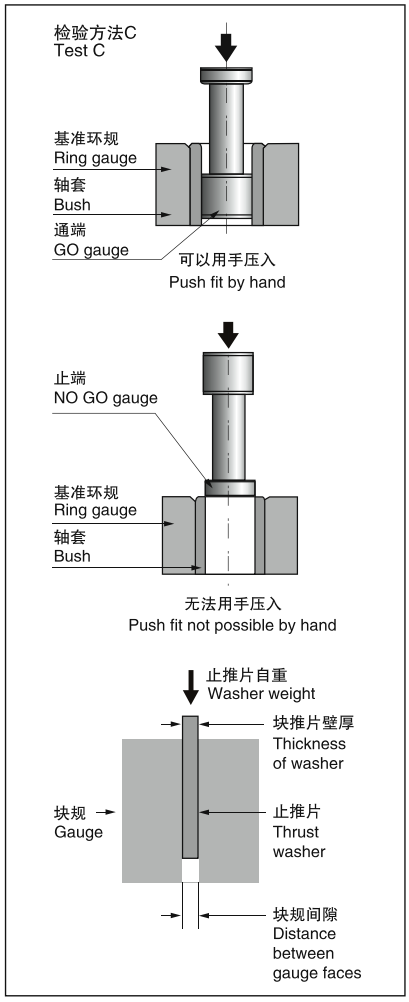
内径检验方法 Internal diameter test methods

检验方法 C (ISO3547-2: Test C)

将轴套压入基准环规后检查轴套的内径，内径的检测可以采用三点测量装置或通、止塞规检验。从实际使用考虑一般建议采用通、止塞规检验，此时在用手最大推力不超过 250N 时通端塞规可以通过轴套内孔，在相同情况下止端塞规应当无法通过轴套内孔。当轴套压入基准环规后，轴套外径可能会引起永久变形而无法正常使用。

Test C (ISO3547-2: Test C)

To check the inside diameter, the bush is to be pressed into a ring gauge, whose nominal diameter corresponds to the dimension specified in ISO3547-1:1999.The inside diameter shall be measured with a 3-point measuring instrument or checked with a GO and NO GO plug gauge. The GO plug gauge shall be inserted by a minimum effort; the NO GO plug gauge shall not be inserted by manual pressure(maximum force 250N). In order to enable the manufacturer and the customer to compare results of this test it should be agreed whether results should be obtained by measuring or by gauging.



止推片检验方法 Thrust washer test method

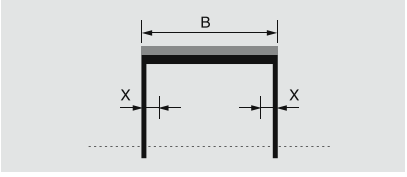
除了厚度公差以外，垫片的平行度对于垫片和对磨件的使用寿命同样重要。我们使用比较有效的检验方法来检测垫片的平行度，让垫片依靠自重来通过两个平行块；当然平行块必须大于垫片本身的规格。

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

壁厚检测方法 Wall Thickness test method

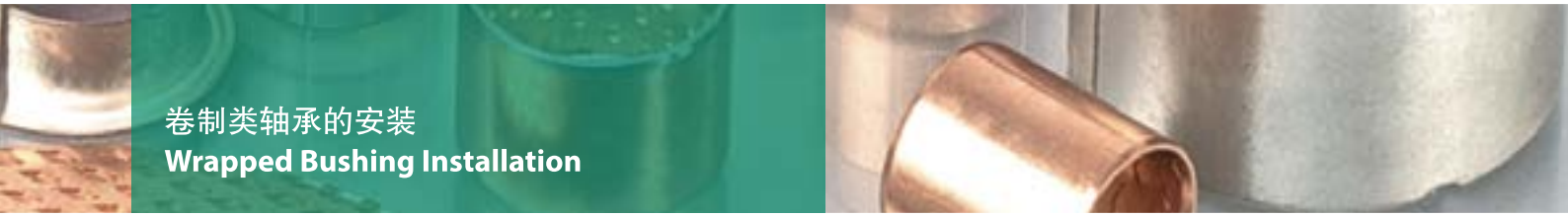
作为检验方法 C 的替代方案两则不能同时使用，壁厚根据轴套尺寸在轴向进行测量。

The wall thickness is measured at once,two or three positions axially according to the bearing dimensions.The wall thickness and the inside diameter shall not be specified together on the same drawing.



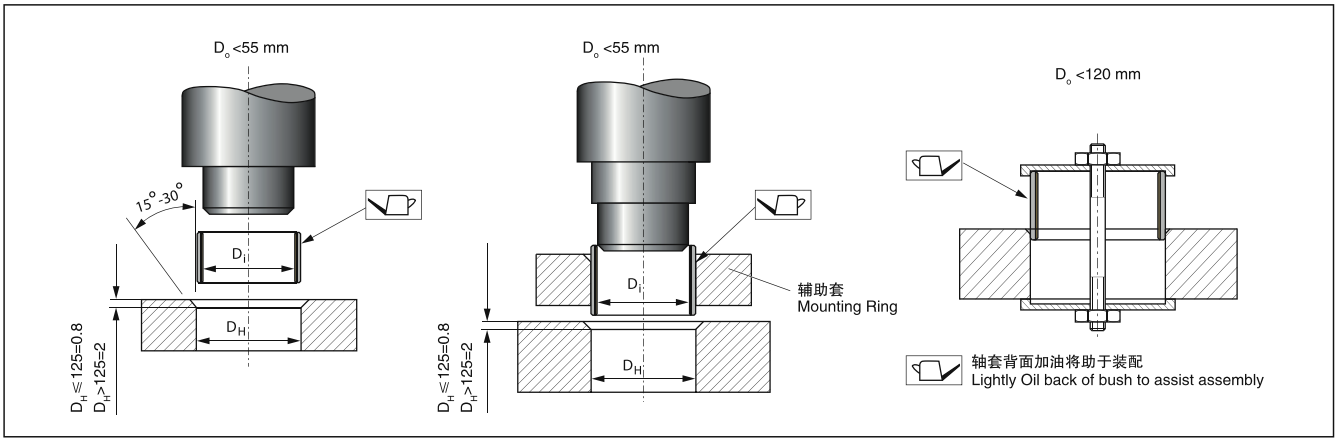
测量点
Measurement position

B[mm]	X[mm]	测量点 measurement position
B≤15	B/2	1
15 < B≤50	4	2
50 < B≤90	6 and B/2	3
B > 90	8 and B/2	3

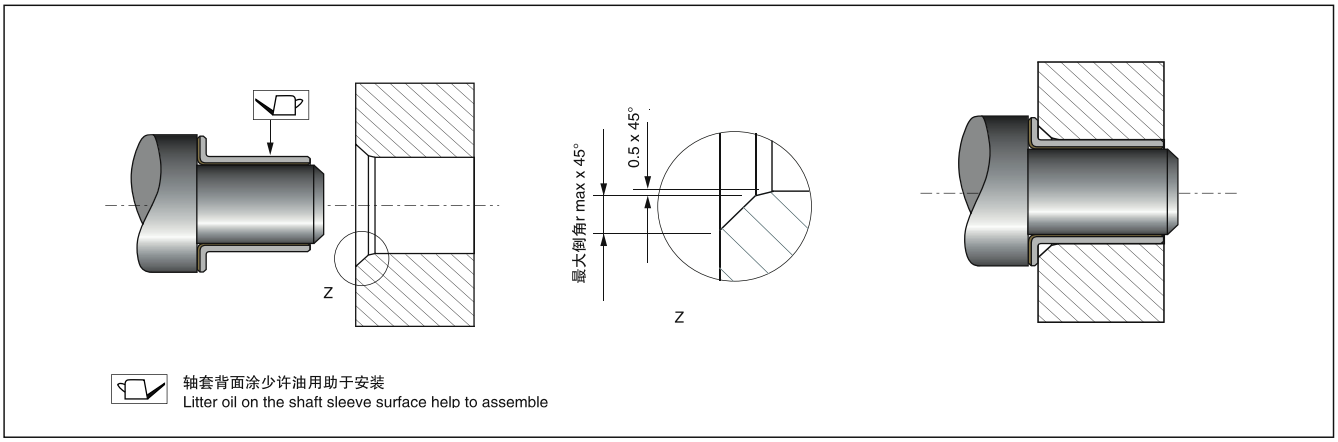


卷制类轴承的安装
Wrapped Bushing Installation

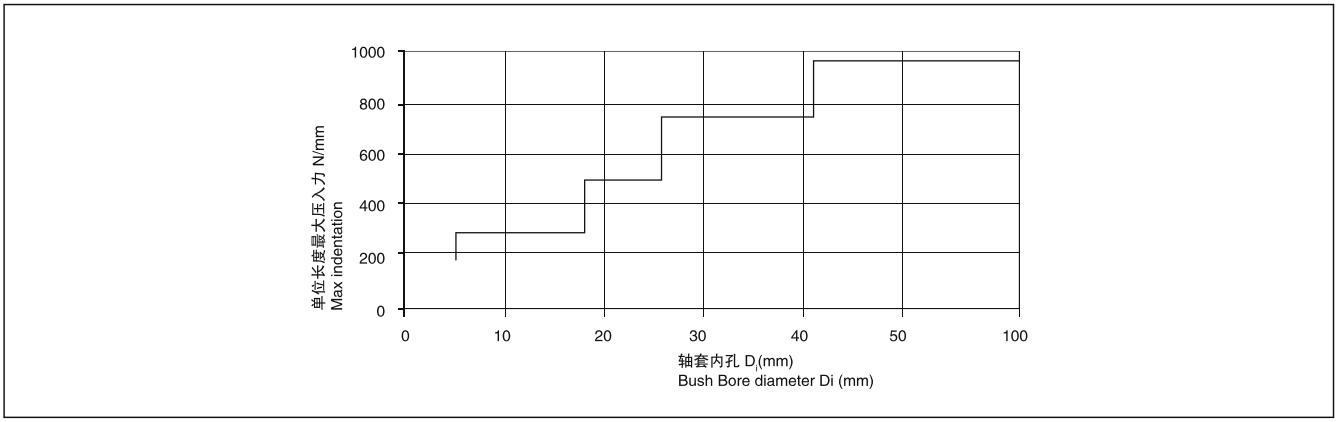
直套安装 Straight set of installation



翻边套安装 Flange set of installation



压入力计算 Indentation Calculation



卷制类轴承的安装
Wrapped Bushing Installation

同轴度 Concentricity

精确的同轴度对于轴承的正常使用非常重要，要求轴套在一个或者两个长度内的不同轴度以及在翻边或止推片直径内的不同轴度控制在 0.02mm 内。

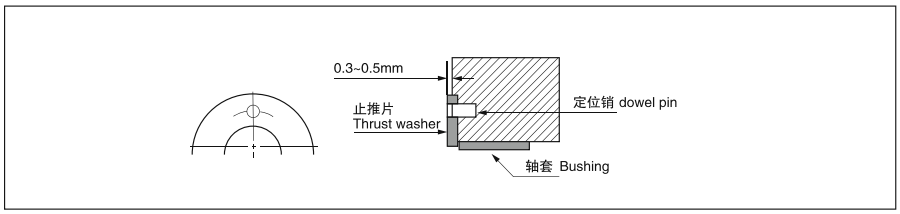
Degree of precision coaxial bearing the normal use for a very important requirement sleeve length in one or two degrees of the different axes and in the flange or thrust washer diameter of the different degree of control shaft within 0.02mm.

垫片和滑板的安装 Thrust washers and sliding plates installation

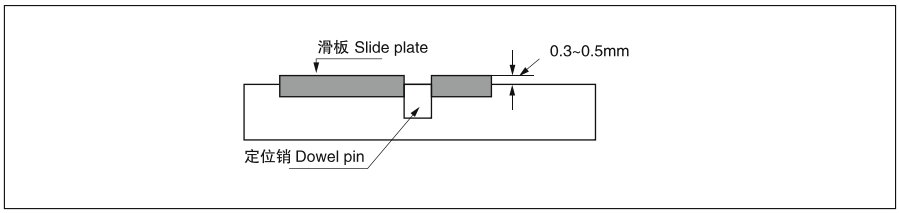
建议垫片和滑板安装在凹陷的座孔内， 为了避免移动，同时建议采用定位销加以固定。

It is reconmmended to install the thrust washers and sliding plates with the hollow indented housing.To avoid the moving of such parts,a Dowel pins is recommended to be installed.

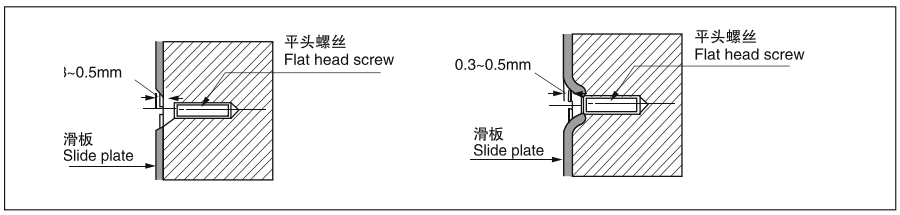
1. 定位销在垫片上的使用 Dowel pin application (thrust waher)

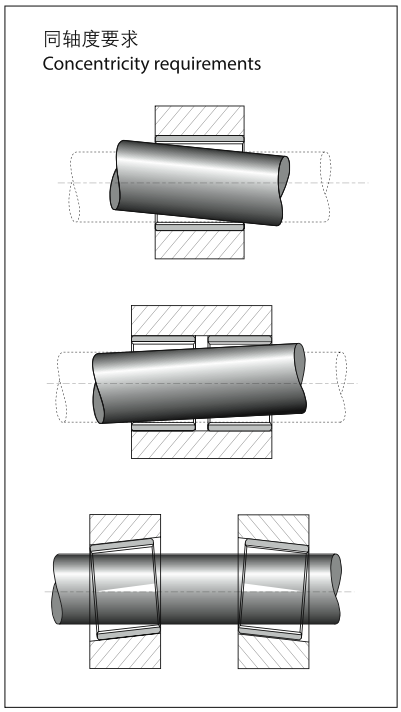


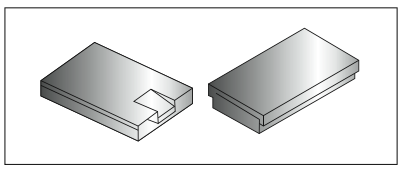
2. 定位销在滑板上的使用 Dowel pin used on slide plate



3. 平头螺丝的使用 Flat head screw application







其他固定方法 Other fixation methods

当无法使用定位销时， 可以采用激光焊接， 粘结剂和钎焊（温度 <320℃）的方法加以固定； 此时必须主意使用的温度不能超过轴承材料本身能够承受的范围， 轴套工作面防止与粘合剂等接触。

When the pin is not available, you can use laser welding, adhesives and brazing (temperature < 320 ℃) method to be fixed; while do in this way, temperature used must not higher then the bearing material itself can be standed, the cleeve face should be prevent from contacting with adhesives.

卷制类轴承的安装
Wrapped Bushing Installation

PTFE基轴承的加工和安装注意事项 Processing and installation considerations of PTFE-based bearing

PTFE 基轴承一般都是成品零件，组装后内孔不再进行铰、镗等加工，若座孔按推荐的尺寸加工时，卷制类轴承内径的真圆度完全能满足使用要求;

如果客户可以接受干摩擦性能大幅度降低，可以对 PTFE 基轴承在安装后进行内孔挤压以达到更高的精度，强烈建议对挤压芯棒表面进行热处理（深度 0.6mm，HRC ＞ 55）并抛光处理至 Rz1；

当轴承的比压力小或摆动小而要求运行平稳时，可以增大工作间隙，在高温下使用时，每升高 100℃时建议轴径减少 0.008mm；

若轴承座材质是青铜、铝或锌合金时，建议减少轴承座孔以增加轴承装配过盈量；为保证轴承座的刚性，轴承座外径通常为轴承外径的 1.5 倍，薄壁座孔使用时需要考虑压装和使用过程的产生的变形；

PTFE 轴承需要加工时，为了避免毛刺的产生建议从 PTFE 一侧进行加工或钻孔，在钻孔过程中轴套应当有足够的支撑已确保不会由于钻孔压力导致变形；带材的加工方法可以通过剪切、水切割、激光切割等方法。

PTFE-based bearings are generally finished parts, assembled in the hole without the hinge, and other processing, if the bore size of the recommended process, the rolling type bearings with bore roundness can meet the requirements;

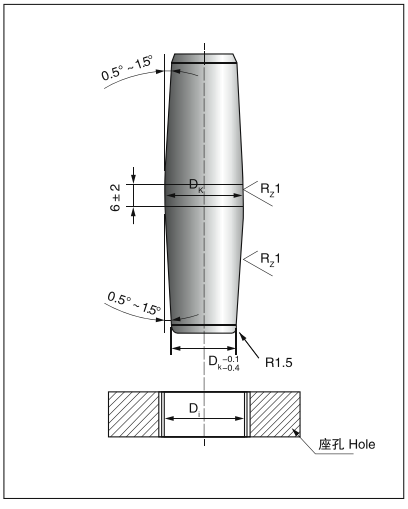
If the client can accept a significant reduction of dry friction, extruding the inner holes on the PTFE-based bearing after the compression to achieve higher accuracy, we strongly recommend the extrusion mandrel surface treatment (depth of 0.6mm, HRC ＞ 55) and polished to Rz1;

When the bearing's specific pressure is small and required to run a smooth swing, you can increase the working space, when used at high temperatures, it is increased by 100 ℃ , the proposed reduction of shaft diameter 0.008mm;

If the material of bearing is bronze, aluminum or zinc alloy, it is recommended to reduce the bearing hole to increase the amount of interference bearing assembly; to ensure the bearing rigidity, The base of bearing's diameter is usually 1.5 times to the bearing's diameter, thin-walled bore with pressure to consider when installed and used in the process of the deformation;

PTFE bearings need processing, in order to avoid the generation of burrs from the PTFE side of the proposed processing or drilling in the drilling process should have sufficient support sleeve has been to ensure that no pressure leads to deformation of the borehole; processing methods strip can cut, water jet cutting, laser cutting and other methods.

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



卷制类轴承的安装
Wrapped Bushing Installation

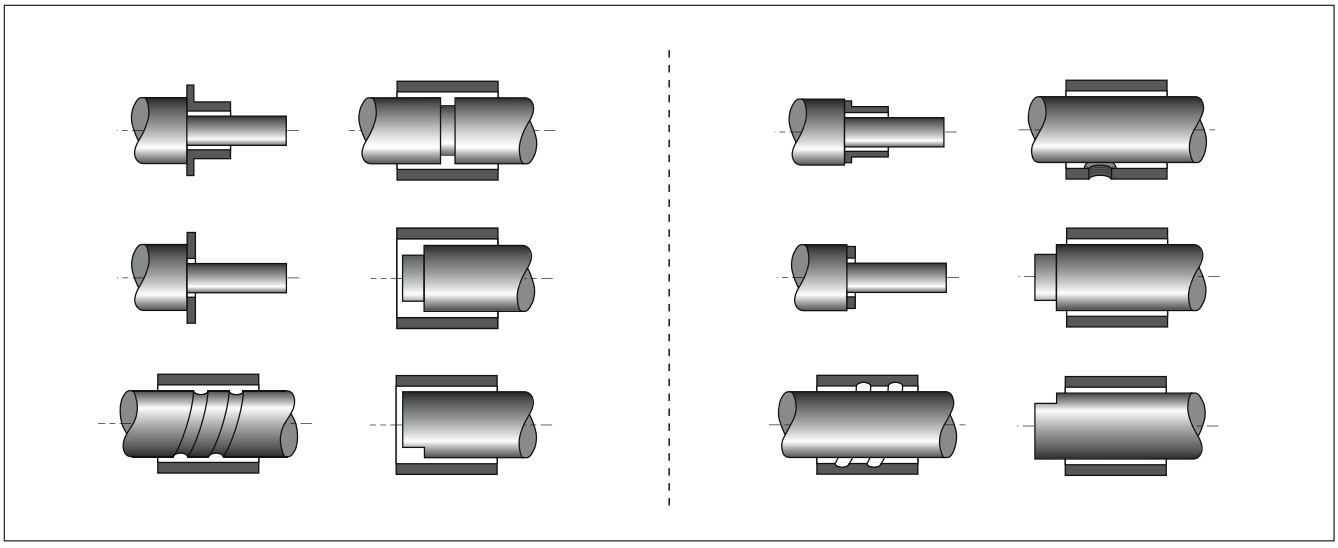
对磨轴 The shaft

对磨件的材料、表面硬度、表面粗糙度以及表面处理方式对于轴承的使用寿命的影响很大，一般情况下我们建议轴的硬度在 HRC ＞ 50，表面粗糙度 Ra0.4 以下；在潮湿或易腐蚀的场合建议使用不锈钢、硬质铬镀层。

Grinding pieces of material, surface hardness, surface roughness and surface treatments have a great impact on the life of bearing, in general, we recommend that the hardness of the shaft HRC ＞ 50, surface roughness below Ra0.4; We suggest using stainless steel, hard chrome plating in the wet or corrosive place.

不正确的设计
Incorrect design

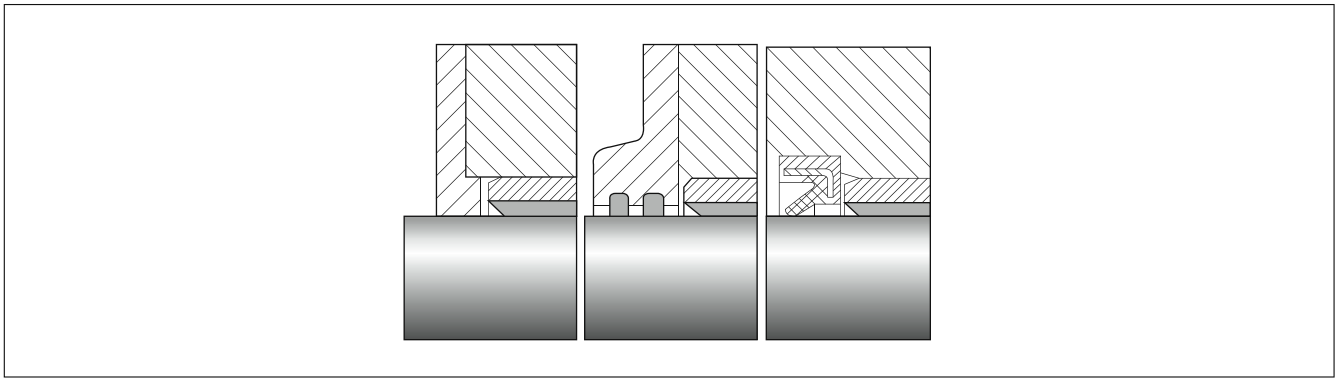
正确的设计
Correct design



密封 Seal

金属塑料基自润滑轴承允许一些不会损害轴承表面材料的异物进入，但当异物的侵入增加或高踝磨型物质进入时应当安装核实的密封圈以提高轴承的使用寿命。

If increased levels of contamination occur or the bearing is used in an aggressive environment, the bearing section should be protected from dust and containment. The normal solution is to re-design the surrounding structure so that the contamination cannot reach the bearing section. If the contamination is critical, a collar of grease or a shaft seal is recommended.



卷制轴套检测
Wrapped Bushing Measurement

在自由状态下，卷制类轴套有一定的开口缝，不能精确的测量外径和内径。所以，卷制类轴承的内外径应有专业的测量工具和设备进行。

In free state, wrapped bushing will not be closed, which is impossble to accurately measure HSB-2ternal diameter & Internal diameter. When wrapped bushing Measured, special gauges and test equipments is necessary.

外径检测
Test HSB-2ternal diameter
ISO 3547-2 TEST B

轴套用力压入环规通规（最大加力250N）通过

Press the bushing into Go ring gange. And push bushing throngh by hand (Max. force 250N)

用上述同样方法和相同力压入环规止端不通过

Use the above same way & press, bushing can not go into No Go ring gauge.

内径检测
Test Internal diameter
ISO 3547-2 TEST C

当轴套压入环规，塞规通端通过用较小力，塞规止端通过用较大力不超过250N

Press the bushing into ring gauge. The Go plug gauge could be inserted by a light pressure. The No Go plug gauge could not be inserted by heary pressure (Max.force 250N)

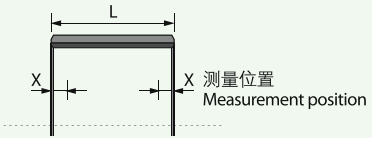
注意：轴套压入环规，轴套外径可能会永久减小

Note: When the bushing is pressed into ring gauge, HSB-2ternal diameter could be permanent reduction.

壁厚测量
Wall thickness Meaurment

轴套壁厚测量: 按轴套高度在轴套轴向上测量一点，两点或三点。

The wall thickness of bushing is measured by profession gauge at one, two, or three positions according to bushing length.



L [mm]	X [mm]	Measurement position
L≤15	L/2	1
15 < L≤50	4	2
50 < L≤90	6 and L/2	3
L > 90	8 and L/2	3

座孔公差表(250)
Housing Tolerance Table (250)

≥	<	B10	C9	D8	E7	E8	F7	G7	H6	H7	H8	JS7	K7	M7	N7	P7	R7	S7	T7
-	3	+180 +140	+85 +60	+34 +20	+24 +14	+28 +14	+16 +6	+12 +2	+6 0	+10 0	+14 0	± 5	0 -10	-2 -12	-4 -14	-6 -16	-10 -20	-14 -24	-
3	6	+188 +140	+100 +70	+48 +30	+32 +20	+38 +20	+22 +10	+16 +4	+8 0	+12 0	+18 0	± 6	+3 -9	0 -12	-4 -16	-8 -20	-11 -23	-15 -27	-
6	10	+208 +150	+116 +80	+62 +40	+40 +25	+47 +25	+28 +13	+20 +5	+9 0	+15 0	+22 0	± 7	+5 -10	0 -15	-4 -19	-9 -24	-13 -28	-17 -32	-
10	14	+200 +150	+138 +95	+77 +50	+50 +32	+59 +32	+34 +16	+24 +6	+11 0	+18 0	+27 0	± 9	+6 -12	0 -18	-5 -23	-11 -29	-16 -34	-21 -39	-
14	18																		
18	24	+244 +160	+162 +110	+98 +65	+61 +40	+73 +40	+41 +20	+28 +7	+13 0	+21 0	+33 0	± 10	+6 -15	0 -21	-7 -28	-14 -35	-20 -41	-27 -48	-
24	30																		-33 -54
30	40	+270 +170	+182 +120	+119 +80	+75 +50	+89 +50	+50 +25	+34 +9	+16 0	+25 0	+39 0	± 12	+7 -18	0 -25	-8 -33	-17 -42	-25 -50	-34 -59	-39 -64
40	50	+280 +180	+192 +130																-45 -70
50	65	+310 +190	+214 +140	+146 +100	+90 +60	+106 +60	+60 +30	+40 +10	+19 0	+30 0	+46 0	± 15	+9 -21	0 -30	-9 -39	-21 -51	-30 -60	-42 -72	-55 -85
65	80	+320 +200	+224 +150														-32 -62	-48 -78	-64 -94
80	100	+360 +220	+257 +170	+174 +120	+107 +72	+125 +72	+71 +36	+47 +12	+22 0	+35 0	+54 0	± 17	+10 -25	0 -35	-10 -45	-24 -59	-38 -73	-58 -93	-78 -113
100	120	+380 +240	+267 +180														-41 -76	-66 -101	-91 -126
120	140	+420 +260	+300 +200	+208 +145	+125 +85	+148 +85	+83 +43	+54 +14	+25 0	+40 0	+63 0	± 20	+12 -28	0 -40	-12 -52	-28 -68	-48 -88	-77 -117	-107 -147
140	160	+440 +280	+310 +210														-50 -90	-85 -125	-119 -159
160	180	+470 +310	+330 +230														-53 -93	-93 -133	-131 -171
180	200	+525 +340	+355 +240	+242 +170	+146 +100	+172 +100	+96 +50	+61 +15	+29 0	+46 0	+72 0	± 23	+13 -33	0 -46	-14 -60	-33 -79	-60 -106	-105 -151	-149 -195
200	225	+565 +380	+375 +260														-63 -109	-113 -159	-163 -209
225	250	+605 +420	+395 +280														-67 -113	-123 -169	-179 -225
250	280	+690 +480	+430 +300	+271 +190	+162 +110	+191 +110	+108 +56	+69 +17	+32 0	+52 0	+81 0	± 26	+16 -36	0 -52	-14 -66	-36 -88	-74 -126	-138 -190	-198 -250
280	315	+750 +540	+460 +330														-78 -130	-150 -202	-220 -272
315	355	+830 +600	+500 +360	+299 +210	+182 +125	+214 +125	+119 +62	+75 +18	+36 0	+57 0	+89 0	± 28	+17 -40	0 -57	-16 -73	-41 -98	-87 -144	-169 -226	-247 -304
355	400	+910 +680	+540 +400														-93 -150	-187 -224	-273 -330
400	450	+1010 +760	+595 +440	+327 +230	+198 +135	+232 +135	+131 +68	+83 +20	+40 0	+63 0	+97 0	± 31	+18 -45	0 -63	-17 -80	-45 -108	-103 -166	-209 -272	-307 -370
450	500	+1090 +840	+635 +480														-109 -172	-229 -292	-337 -400

常规座孔公差建议选用H7
Conventional hole tolerance proposal chooses H7

轴公差表(250)
Shaft Tolerance Table (250)

≥	<	c9	d8	e7	e8	f7	g6	h5	h6	h7	h8	js6	js7	k6	m6	n6	p6	p7	r6	s6
-	3	-60 -85	-20 -34	-14 -24	-14 -28	-6 -16	-2 -8	0 -4	0 -6	0 -10	0 -14	± 3	± 5	+6 0	+8 +2	+10 +4	+12 +6	+16 +6	+16 +10	+20 +14
3	6	-70 -100	-30 -48	-20 -32	-20 -38	-10 -22	-4 -12	0 -5	0 -8	0 -12	0 -18	± 4	± 6	+9 +1	+12 +4	+16 +8	+20 +12	+24 +12	+23 +15	+27 +19
6	10	-80 -116	-40 -62	-25 -40	-25 -47	-13 -28	-5 -14	0 -6	0 -9	0 -15	0 -22	± 4.5	± 7	+10 +1	+15 +6	+19 +10	+24 +15	+30 +15	+28 +19	+32 +23
10	18	-95 -138	-50 -77	-32 -50	-32 -59	-16 -34	-6 -17	0 -8	0 -11	0 -18	0 -27	± 5.5	± 9	+12 +1	+18 +7	+23 +12	+29 +18	+36 +18	+34 +23	+39 +28
18	24	-110 -162	-65 -98	-40 -61	-40 -73	-20 -41	-7 -20	0 -9	0 -13	0 -21	0 -33	± 6.5	± 10	+15 +2	+21 +8	+28 +15	+35 +22	+43 +22	+41 +28	+48 +35
24	30																			
30	40	-120 -182	-80 -119	-50 -75	-50 -89	-25 -50	-9 -25	0 -11	0 -16	0 -25	0 -39	± 8	± 12	+18 +2	+25 +9	+33 +17	+42 +26	+51 +26	+50 +34	+59 +43
40	50	-130 -192																		
50	65	-140 -214	-100 -146	-60 -90	-60 -106	-30 -60	-10 -29	0 -13	0 -19	0 -30	0 -46	± 9.5	± 15	+21 +2	+30 +11	+39 +20	+51 +32	+62 +32	+60 +41	+72 +53
65	80	-150 -224																	+62 +43	+78 +59
80	100	-170 -257	-120 -174	-72 -107	-72 -126	-36 -71	-12 -34	0 -15	0 -22	0 -35	0 -54	± 11	± 17	+25 +3	+35 +13	+45 +23	+59 +37	+72 +37	+73 +51	+93 +71
100	120	-180 -267																	+76 +54	+101 +79
120	140	-200 -300	-145 -208	-85 -125	-85 -148	-43 -83	-14 -39	0 -18	0 -25	0 -40	0 -63	± 12.5	± 20	+28 +3	+40 +15	+52 +27	+68 +43	+83 +43	+88 +63	+117 +92
140	160	-210 -310																	+90 +65	+125 +100
160	180	-230 -330																	+93 +68	+133 +108
180	200	-240 -355	-170 -242	-100 -146	-100 -172	-50 -96	-15 -44	0 -20	0 -29	0 -46	0 -72	± 14.5	± 23	+33 +14	+46 +17	+60 +31	+79 +50	+96 +50	+106 +77	+151 +122
200	225	-260 -375																	+109 +80	+159 +130
225	250	-280 -395																	+113 +84	+169 +140
250	280	-300 -430	-190 -271	-110 -162	-110 -191	-56 -108	-17 -49	0 -23	0 -32	0 -52	0 -81	± 16	± 26	+36 +14	+52 +20	+66 +34	+88 +56	+108 +56	+126 +94	+190 +158
280	315	-330 -460																	+130 +98	+202 +170
315	355	-360 -500	-210 -299	-125 -182	-125 -214	-62 -119	-18 -54	0 -25	0 -36	0 -57	0 -89	± 18	± 28	+40 +4	+57 +21	+73 +37	+98 +62	+119 +62	+114 +108	+226 +190
355	400	-400 -540																	+150 +114	+244 +208
400	450	-440 -595	-230 -327	-135 -198	-135 -232	-68 -131	-20 -60	0 -27	0 -40	0 -63	0 -97	± 20	± 31	+45 +5	+63 +23	+80 +40	+108 +68	+131 +68	+166 +126	+272 +232
450	500	-480 -635																	+172 +132	+292 +252

常规轴尺寸工差建议选择 f7
Conventional axial size difference suggestion choice f7

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