

ZFB[®] RENHE[®]

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和创未来

浙江宁和精密轴承有限公司

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**ZHEJIANG NINGHE PRECISION
BEARING CO., LTD**

浙江宁和精密轴承有限公司

精益求精 匠心独具

Striving for excellence with
unique craftsmanship

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FOCUSING ON BEARING MANUFACTURING AND RESEARCH AND DEVELOPMENT 专注轴承制造与研发

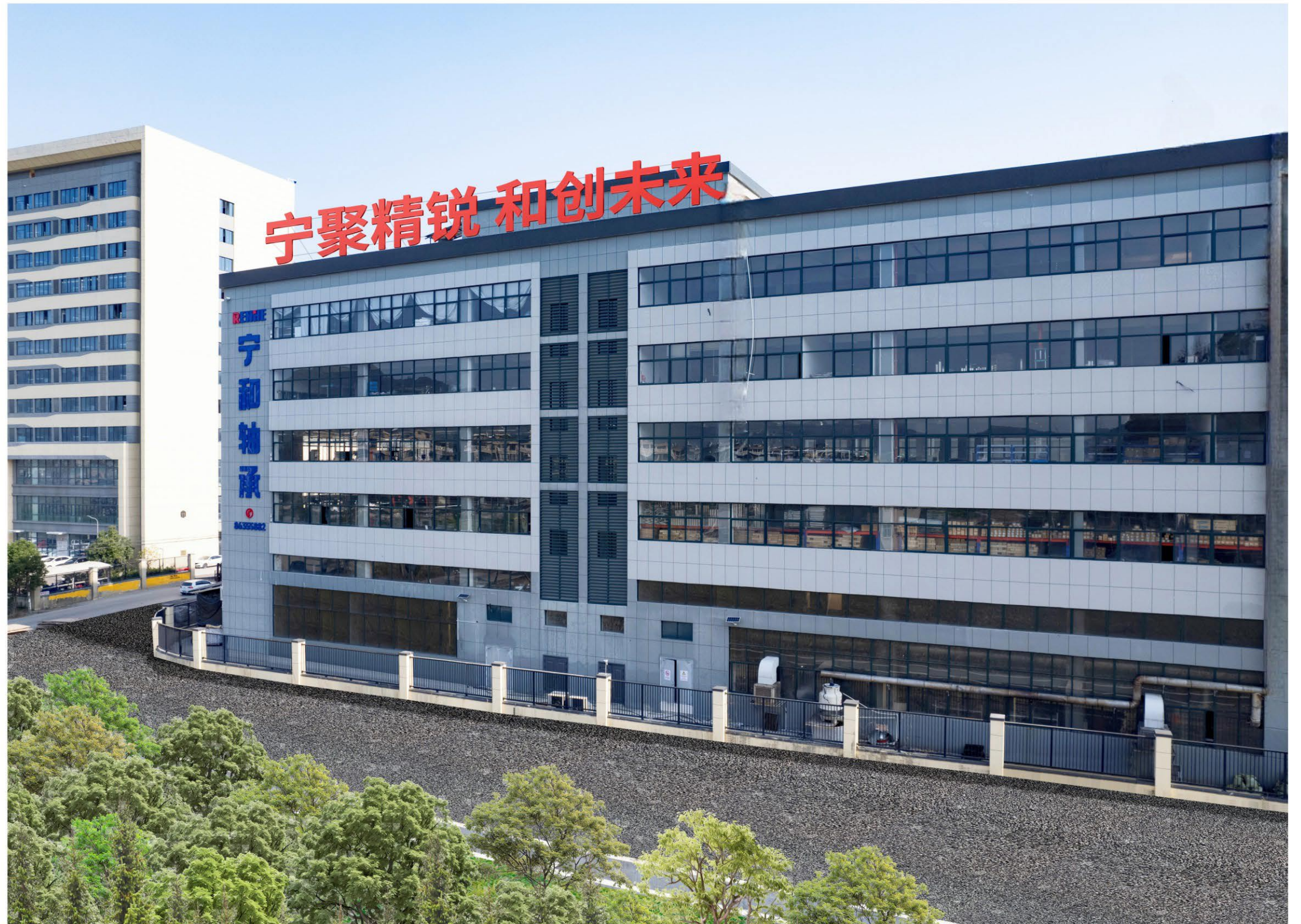
ZFB® RENHE®

浙江宁和精密轴承有限公司（原浙江人和轴承）位于浙江省温岭市。成立于2004年，公司建筑面积10000平方米。专注于研发电机轴承、防水轴承、发电机轴承等领域的制造。宁和轴承采用世界领先级别的制造工艺和结构，专业生产内孔32mm-内孔100mm的低噪音电机轴承和高温高速轴承，精度可达到P5级别，产品稳定达到Z3/V3以上水平。本公司引进目前国际上先进的全自动磨装生产线及在线缺陷检测设备，严控材料进厂标准，为生产长寿命、低噪音电机轴承提供坚强的保障。

公司凭借科学的品质管控和完善的检测体系，始终坚持“用匠心塑造价值”的核心理念，经过多年的努力，产品可以达到同类进口产品的质量水平，已为众多的国内外客户提供了优质产品，产品质量得到客户一致认可。我们相信在客户的支持和帮助下，宁和全体员工将更加努力，为客户提供可靠放心的产品。

Zhejiang Ninghe Precision Bearing Co., Ltd. (formerly known as Zhejiang Renhe Bearing) is located in Wenling City, Zhejiang Province. Established in 2004, the company has a construction area of 10000 square meters. Focusing on the manufacturing of motor bearings, waterproof bearings, generator bearings, and other fields. Ninghe Bearing adopts world-class manufacturing technology and structure, specializing in the production of low-noise motor bearings and high-temperature high-speed bearings with inner holes of 32mm to 100mm. The accuracy can reach P5 level, and the product stability can reach Z3/V3 level or above. Our company has introduced advanced fully automatic grinding and assembly production lines and online defect detection equipment from the international market, strictly controlling material entry standards, and providing strong support for the production of long-life, low-noise motor bearings.

The company relies on scientific quality control and a sound testing system, always adhering to the core concept of "shaping value with craftsmanship". After years of effort, the products can reach the quality level of similar imported products, and have provided high-quality products to numerous domestic and foreign customers. The product quality has been unanimously recognized by customers. We believe that with the support and assistance of our customers, all employees of Ninghe will work harder to provide reliable and reliable products for our customers.



权威资质认证
严格的质量管理体系

Authoritative qualification certification
Strict quality management system



REASONS FOR
CHOOSING US
选择我们的理由



宁和轴承到底好在哪里？
What are the advantages of Ninghe bearings?

<p>选用兴澄、大冶优质钢胚 确保轴承寿命 Selecting high-quality steel billets from Xingcheng and Daye Ensure bearing life</p>	<p>盐浴淬火,保护环境提高产品硬度和耐磨性 减少表面粗糙度 Salt bath quenching, protecting the environment, improving product hardness and wear resistance, reducing surface roughness</p>	<p>东阿海鸥高精度刚球 Dong'a Seagull High Precision Ball</p>	<p>材料、工序检验严格,震动双面六点检测,确保每一套轴承品质 Strict material and process inspection, vibration double-sided six point inspection to ensure the quality of each set of bearings</p>
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Five major services and support 五大服务与支持



01

全方位技术支持 Comprehensive technical support

我们拥有经验丰富的技术团队，可以为您提供从产品选择到应用咨询的全方位技术支持。无论是在设计阶段还是在设备运行过程中遇到问题，我们都会及时为您提供专业的解决方案。

We have an experienced technical team that can provide you with comprehensive technical support from product selection to application consulting. Whether encountering problems during the design phase or equipment operation, we will provide you with professional solutions in a timely manner.

02

定制化解决方案 Customized solutions

我们了解每个客户的需求都是独一无二的，因此我们提供定制化的轴承解决方案，以满足您特定的应用需求。无论是在尺寸、材质还是润滑方面，我们都可以根据您的要求进行定制。

We understand that each customer's needs are unique, so we offer customized bearing solutions to meet your specific application needs. We can customize according to your requirements in terms of size, material, and lubrication.

03

质量保证 quality assurance

我们严格按照国际标准进行生产和质量控制，确保每一件产品都符合您的期望。我们的产品经过严格的测试，以确保其性能和可靠性达到最高水平。

We strictly follow international standards for production and quality control, ensuring that every product meets your expectations. Our products undergo rigorous testing to ensure that their performance and reliability reach the highest level.

04

安全库存 safety stock

我们可以根据您的需求进行库存管理，确保您随时可以获得所需的轴承产品，避免因库存不足而导致的生产中断。

We can manage inventory according to your needs to ensure that you can always obtain the required bearing products and avoid production interruptions caused by insufficient inventory.

05

售后服务 after-sale service

我们提供全面的售后服务，包括安装指导、维护培训、故障排查等。无论您在使用过程中遇到什么问题，我们都会尽力为您提供及时的支持和解决方案。

We provide comprehensive after-sales service, including installation guidance, maintenance training, troubleshooting, etc. No matter what problems you encounter during use, we will do our best to provide you with timely support and solutions.



我们深知您对设备性能和可靠性的需求，我们致力于为您提供最优质的服务和支持，以确保您的设备始终保持最佳状态。

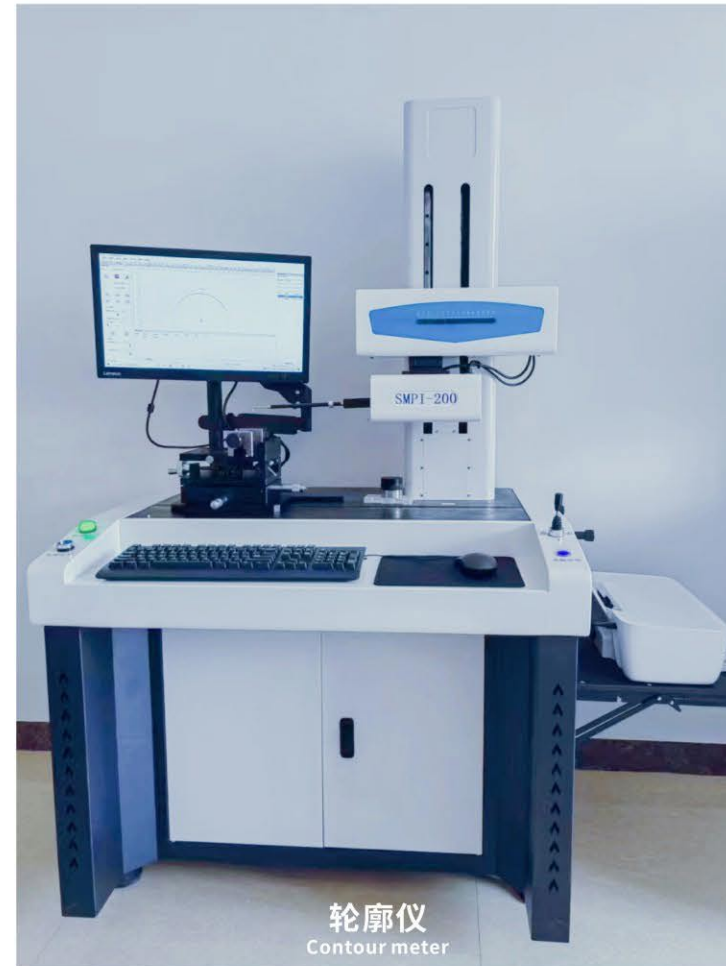
We are well aware of your needs for equipment performance and reliability, and we are committed to providing you with the best High quality service and support to ensure that your device always remains in optimal condition.



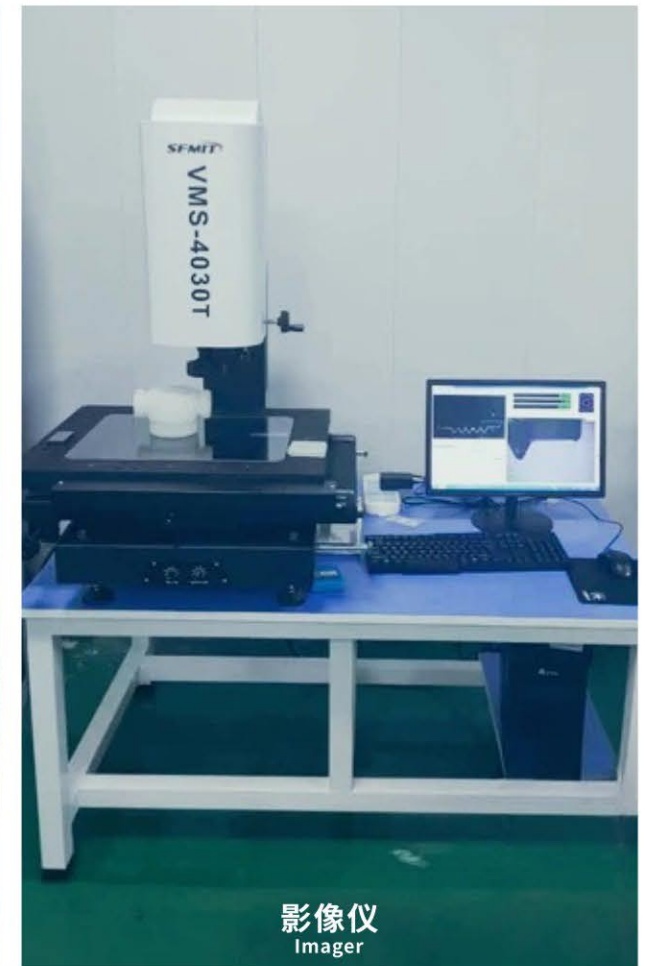
在线双测头测振仪
Online dual head vibration meter



疲劳寿命试验机
Fatigue life testing machine



轮廓仪
Contour meter

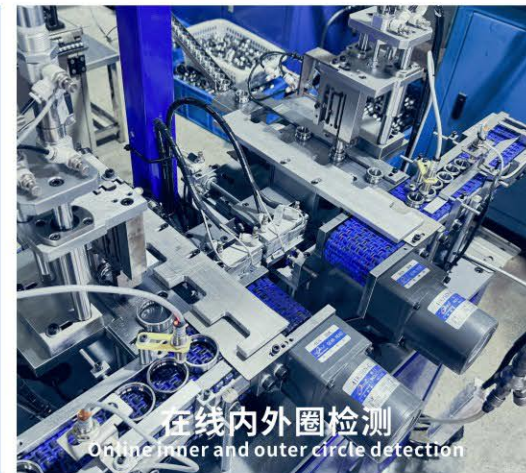


影像仪
Imager

BRAND STRENGTH 品牌实力

二十多年生产经验，拥有成熟的技术、完整的制造体系和强大技术团队，国际先进的流水线生产设备及在线检测设备。

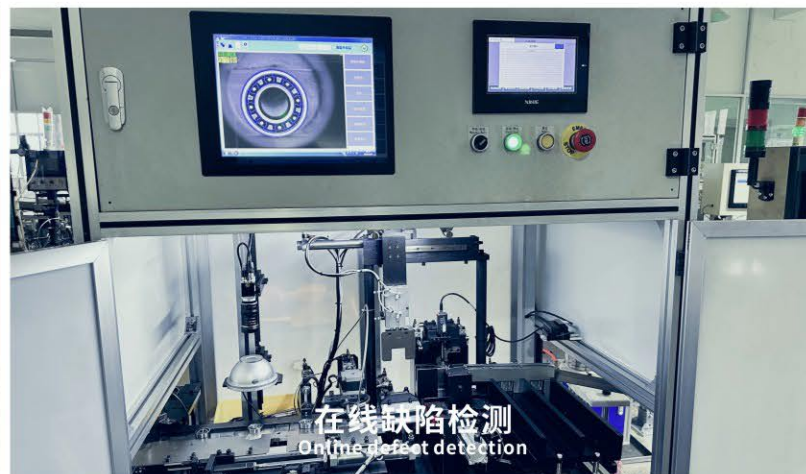
With over 20 years of production experience, we have mature technology, a complete manufacturing system, and a strong technical team, as well as internationally advanced assembly line production equipment and online testing equipment.



在线内外圈检测
Online inner and outer circle detection



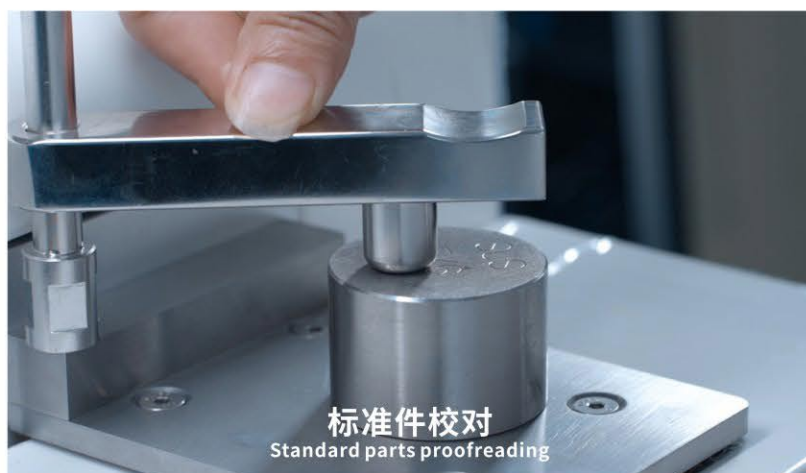
SparkCCD 6500
光谱仪 Spectrograph



在线缺陷检测
Online defect detection



BVT-1S智能型轴承振动测量仪
BVT-1S Intelligent Bearing Vibration Measuring Instrument



标准件校对
Standard parts proofreading



自动合套仪
Automatic fitting instrument

ZFB® RENHE®

用心专业 让转动更持久

Dedicated and professional
Make the rotation more durable

轴承的材料 Material of bearings

- 轴承套圈材料和部件很大程度上决定着轴承的性能和表现, 华成在套圈材料和部件供应商的选择上进行了严格的把关。
- 轴承的套圈材料和部件均来自中国顶级轴承配件的供应商, 从根本上解决了长期存在轴承的材料差异问题。
- 华成拥有一套严格而完备的进货检验体系。每一批钢材和部件在入库之前, 都须通过系统性检验, 包括材料元素分析, 金相分析, 精度检验等等。

The material and components of the bearing ring largely determine the performance and performance of the bearing. Huacheng has strictly controlled the selection of ring material and component suppliers.

The materials and components of the bearing rings are sourced from top suppliers of bearing accessories in China, fundamentally solving the long-standing problem of material differences in bearings.

Huacheng has a strict and complete procurement inspection system. Each batch of steel and components must undergo systematic inspection before being stored, including material element analysis, metallographic analysis, accuracy testing, and so on.

1. 套圈与滚动体的材料 Materials of Ferrules and Rolling Elements

轴承的套圈和滚动体材料主要采用高碳铬轴承钢。下表表示轴承套圈和滚动体材料的成分。
The ring and rolling element materials of the bearing are mainly made of high carbon chromium bearing steel. The following table represents the composition of bearing rings and rolling element materials.

钢材代码 Steel code	化学成分% chemical composition								
	碳 carbon	硅 silicon	锰 manganese	磷 phosphorus	硫 sulfur	铬 chromium	钼 molybdenum	铜 copper	镍 nickel
中国(China) GCr 15 美国(America) SAE52100 德国(Germany) DIN 100 Cr6 日本(Japan) JIS SUJ2 瑞典(Sweden) SKF3	0.95-1.05	0.15-0.35	0.25-0.45	≤0.025	≤0.025	1.40-1.65	-	0.25	0.30

轴承使用高纯度轴承钢, 减少其氧化物和有害非金属杂质。与普通轴承钢材相比, 其强度和品质明显提高。
bearings use high-purity bearing steel to reduce its oxides and harmful non-metallic impurities. Compared with ordinary bearing steel, its strength and quality are significantly improved.



2. 保持架材料 Cage Materials

保持架的材料要有良好的抗磨损性, 尺寸稳定性和金属强度, 因此在选择保持架材料时, 需要重点考虑运行环境。
The material of the cage should have good wear resistance, dimensional stability, and metal strength. Therefore, when selecting the cage material, it is necessary to focus on the operating environment.

• 冲压钢板保持架 Stamped steel plate holder

这些轻质保持架有很高的强度, 经表面通过特殊处理能有效减少摩擦和磨损。下表是冷轧薄钢板材料成分。
These lightweight cages have high strength and can effectively reduce friction and wear through special surface treatment. The following table shows the material composition of cold-rolled steel sheets.

钢材代码 Steel code	化学成分% chemical composition						
	碳 carbon	硅 silicon	锰 manganese	磷 phosphorus	硫 sulfur	镍 nickel	铬 chromium
JISG 3141 SPCC	< 0.12	-	< 0.5	< 0.04	< 0.045	-	-

• 合成树脂材料保持架

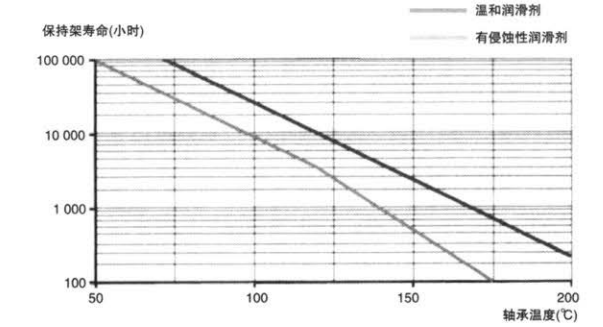
根据轴承的种类和用途, 尼龙保持架的使用也越来越广, 但不宜应用于120°C以上或低于零下40°C的环境, 大多数注塑成形的保持架采用尼龙PA66, 这种材料或有或无玻璃纤维增强, 特点是强度与弹性有良好的结合。

尼龙材料的强度与弹性等机械特性取决于温度, 以及运行条件下的持久改变, 即老化。在这种老化行为中起作用的最重要因素是温度、时间和所接触的介质(润滑剂)。玻璃纤维增强尼龙PA66的老化关系如右图所示。保持架的寿命随着温度上升和润滑剂的侵蚀性而缩短, 因此尼龙保持架是否适合某个具体用途, 取决于运行条件和寿命要求。

The mechanical properties of nylon materials, such as strength and elasticity, depend on temperature and persistent changes under operating conditions, namely aging. The most important factors that play a role in this aging behavior are temperature, time, and the medium (lubricant) in contact. The aging relationship of glass fiber reinforced nylon PA66 is shown in the figure on the right. The lifespan of the cage decreases with increasing temperature and the corrosiveness of the lubricant, so whether the nylon cage is suitable for a specific use depends on operating conditions and lifespan requirements.

Synthetic resin material retainer

According to the types and uses of bearings, the use of nylon cages is becoming increasingly widespread, but it is not suitable for environments above 120 °C or below -40 °C. Most injection molded cages use nylon PA66, which may or may not be reinforced with glass fiber and is characterized by a good combination of strength and elasticity.



玻璃纤维增强尼龙PA66的老化关系

3. 防尘盖和密封圈材料

• 防尘盖材料

宁和精密轴承的防尘盖标准材料是冷轧电镀锡钢板, 有时也会使用AISI-300规格的不锈钢。

• 密封圈材料

宁和精密轴承密封圈主要采用丁腈橡胶作为材料, 针对高温环境, 氟橡胶和硅橡胶也被广泛使用。

3. Dust cover and sealing ring materials

Dust cover material

The standard material for the dust cover of Ninghe Precision Bearings is cold-rolled electroplated tinplate, and sometimes AISI-300 stainless steel is also used.

Sealing ring material

The sealing ring of Ninghe Precision Bearing mainly uses nitrile rubber as the material, and fluorine rubber and silicone rubber are also widely used in high-temperature environments.

类型 type	ASTMD1418 名称 name	温度范围 temperature range	硬度 (Shore A) hardness	特点 characteristic	限制 limit
丁腈橡胶 Nitrile rubber	NBR	(-40°C~120°C)	40~90	低压缩特性, 高延展性; 高耐腐蚀性; 优异的耐油性 Low compression characteristics, high ductility; High corrosion resistance; Superior oil resistance	不适合高温条件, 并且避免阳光直射和化学品的侵蚀 Not suitable for high temperature conditions and avoiding direct sunlight and chemical erosion
硅橡胶 silicon rubber	MQ/PMQ/ VMQ/PVMP	(-70°C~200°C)	25~80	抗高温和干燥性抗阳光和臭氧的老化性 Resistance to high temperature and dryness, aging resistance to sunlight and ozone	表面磨损和抗裂性能较差比较高的耐磨性 Poor surface wear and crack resistance, relatively high wear resistance
氢化(丁腈橡胶) Hydrogenated (nitrile rubber)	HNBR/NEM	(-35°C~165°C)	50~90	抗热、高延展性、抗化学腐蚀 Heat resistance, high ductility, and resistance to chemical corrosion	不适合超低温条件避免阳光直射和化学品侵蚀 Not suitable for ultra-low temperature conditions, avoiding direct sunlight and chemical erosion
氟橡胶 Fluororubber	FKM/FPM	(-28°C~200°C)	50~95	耐高温; 显著的抗腐蚀性 对石油产品具有耐腐蚀性 High temperature resistance; Significant resistance to chemical corrosion has corrosion resistance to petroleum products	不适合低温工作状态 Not suitable for low-temperature working conditions
聚丙烯橡胶 Polypropylene rubber	ACM Rubber	(-18°C~175°C)	40~90	对热油、阳光和臭氧剥蚀有较强的抵抗能力同时具有较强的抗裂性能 Strong resistance to hot oil, sunlight, and ozone erosion, as well as strong crack resistance performance	防水性能差不适合超低温工作状态 Poor waterproof performance not suitable for ultra-low temperature working conditions

警告!

在200°C以下的正常工作条件氟橡胶是安全、无害的, 但是超过300°C的极限温度, 即相当于切割钢管的火光, 氟橡胶就会释放出烟雾。这些烟雾吸入人体是有害的, 包括眼睛, 另外要注意避免与皮肤接触。

Warning! Under normal working conditions below 200 °C, fluororubber is safe and harmless, but above the limit temperature of 300 °C, which is equivalent to cutting steel pipes, fluororubber will release smoke. These fumes are harmful to the human body when inhaled, including the eyes. Additionally, it is important to avoid contact with the skin.

轴承的构造和部件 Construction and components of bearings

1.深沟球轴承 Deep groove ball bearings



宁和精密轴承深沟球轴承基本结构包括两个套圈，钢珠、保持器、润滑脂组成。密封圈和防尘盖是用来防止灰尘等外来物的侵入。使用润滑剂的主要目的是减少摩擦及滚动体的磨损。

•保持架

保持架在运转中会受到摩擦、张力和惯性力的机械作用，同时还会受到某些润滑剂、添加剂、溶剂或散热剂的化学作用。因此保持架的设计和材质对其性能和轴承使用可靠性具有至关重要的作用。

The basic structure of Ninghe Precision Bearing Deep groove Ball Bearing includes two rings, steel balls, retainers, and lubricating grease. Sealing rings and dust covers are used to prevent the intrusion of foreign objects such as dust. The main purpose of using lubricants is to reduce friction and wear of rolling elements.

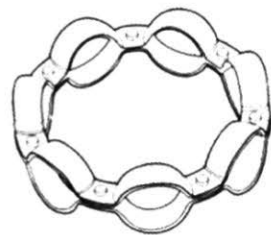
Holder

The cage is subjected to mechanical forces such as friction, tension, and inertia during operation, as well as chemical reactions from certain lubricants, additives, solvents, or heat dissipation agents. Therefore, the design and material of the cage play a crucial role in its performance and bearing reliability.

•宁和精密轴承深沟球轴承的保持架分为以下二种:

The retainer of Ninghe Precision Bearing Deep groove Ball Bearing is divided into the following two types:

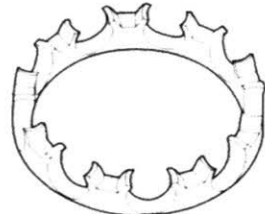
铆钉型保持架
Rivet type holder



由高精度的带钢经冲压成型变为球形兜孔的保持架，并用铆钉将其固定。通常用于中小型深沟球轴承。

The high-precision strip steel is stamped into a spherical pocket hole holder and fixed with rivets. Usually used for small and medium-sized deep groove ball bearings.

合成树脂材料保持架
Synthetic resin material retainer



合成树脂保持架有很多材料混制而成，如拥有玻璃纤维的尼龙 PA66, PA46, PEEK其具有自润滑和低噪音的性能。通常用于特殊应用场合的轴承。

Synthetic resin cages are made from a mixture of many materials, such as nylon PA66, PA46, PEEK with glass fiber, which have self-lubricating and low noise properties. Bearings commonly used in special applications.

•内圈结构 Inner ring structure

宁和精密轴承深沟球轴承内圈常规设计结构有以下二种:

There are two conventional design structures for the inner ring of Ninghe Precision Bearing deep groove ball bearing:



V型槽结构
V-groove structure



平板结构
Flat structure

•防尘盖和密封圈 Dust cover and sealing ring

密封性能对轴承的清洁度和使用寿命起着重要作用，轴承内部密封结构必须能够禁止异物侵入和润滑剂外泄。在轴承外部无法密封的情况下，通常使用具有密封结构的轴承。

The sealing performance plays an important role in the cleanliness and service life of bearings, and the internal sealing structure of bearings must be able to prevent foreign objects from entering and lubricant from leaking out. In cases where the outside of the bearing cannot be sealed, bearings with a sealed structure are usually used.

•不同内圈结构相对应的密封形式 Sealing forms corresponding to different inner ring structures

V型槽系列 V-groove series



平板系列 Tablet series



注:

- 1、以上密封圈结构仅作参考，以实物为准。
- 2、密封圈和防尘盖材料可以根据客户要求变更。
- 3、以上列举的华城W&M主要形式密封圈，特殊用途有特殊结构的设计，需要时请与技术部联系。

Note:

1. The above sealing ring structure is for reference only, and the actual product shall prevail.
2. The sealing ring and dust cover materials can be changed according to customer requirements.
3. The main forms of Huacheng W&M sealing rings listed above have special structural design for special purposes. Please contact the technical department if needed.

内部游隙 Internal clearance

径向游隙 Radial clearance

•深沟球轴承径向游隙(在无载荷的情况下)标准:GB/T4604.1-2012/SO 5753.1:2009, 下表是这5深沟球轴承径向游隙可以分成5组, 分别为C2组, CN组, C3组, C4组和C5组,其中CN是标准游隙。个组的规格数值。

The standard for radial clearance of deep groove ball bearings (under no load) is GB/T4604.1-2012/SO 5753.1:2009. The table below shows that the radial clearance of these 5 deep groove ball bearings can be divided into 5 groups, namely C2 group, CN group, C3 group, C4 group, and C5 group, where CN is the standard clearance. The specification values of each group.

游隙值单位: 微米

内径 毫米 internal diameter millimeter		Gr									
		2组 2 groups		N组 N groups		3组 3 groups		4组 4 groups		5组 5 groups	
超过 exceed	包括 include	最小值 Min value	最大值 Max value	最小值 Min value	最大值 Max value	最小值 Min value	最大值 Max value	最小值 Min value	最大值 Max value	最小值 Min value	最大值 Max value
2.5	6	0	7	2	13	8	23	-	-	-	-
6	10	0	7	2	13	8	23	14	29	20	37
10	18	0	9	3	18	11	25	18	33	25	45
18	24	0	10	5	20	13	28	20	36	28	48
24	30	1	11	5	20	13	28	23	41	30	53
30	40	1	11	6	20	15	33	28	46	40	64
40	50	1	11	6	23	18	36	30	51	45	73
50	65	1	15	8	28	23	43	38	61	55	90
65	80	1	15	10	30	25	51	46	71	65	105
80	100	1	18	12	36	30	58	53	84	75	120
100	120	2	20	15	41	36	66	61	97	90	140
120	140	2	23	18	48	41	81	71	114	105	160

轴承的精度 Accuracy of bearings

轴承精度包括尺寸精度和旋转精度, 由ISO或JIS标准(滚动轴承精度)来判定。尺寸精度表示轴承安装到轴或轴承座上所必需的精度标准。旋转精度表示轴承在运转过程中所允许的跳动的极限。

复测尺寸公差和跳动精确性, 宁和精密轴承深沟球轴承的精度等级分P0到P4不等。P0是标准等级, P6、P5、P4等级较高, 这些公差等级是根据国际标准ISO492设定的, 其他标准等级对应如下:

Bearing accuracy includes dimensional accuracy and rotational accuracy, which are determined by ISO or JIS standards (rolling bearing accuracy). Dimensional accuracy represents the necessary accuracy standard for installing bearings on the shaft or bearing housing. The rotational accuracy represents the maximum allowable runout of the bearing during operation.

According to dimensional tolerances and runout accuracy, the accuracy level of Ninghe Precision Bearing's deep groove ball bearing ranges from P0 to P4. P0 is the standard level, while P6, P5, and P4 have higher levels. These tolerance levels are set according to the international standard ISO492, and the corresponding standard levels are as follows:

•各工业标准精度等级对照表

Comparison table of precision levels for various industrial standards

标准 standard	应用标准 Application standards	精度等级 Accuracy level			
		P ₀	P ₆	P ₅	P ₄
中国 China	GB307.1	P ₀	P ₆	P ₅	P ₄
美国 America	ANSI/ABMA Std.20	ABEC-1	ABEC-3	ABEC-5	ABEC-7
日本 Japan	JIS B 1514	Class0.6X	Class 6	Class 5	Class 4
国际标准组织 International Organization for Standardization	ISO 492	Class0.6X	Class 6	Class 5	Class 4
德国 Germany	DIN 620	P ₀	P ₆	P ₅	P ₄
瑞典 Sweden	SKF	P ₀	P ₆	P ₅	P ₄

深沟球轴承振动等级 Vibration level of deep groove ball bearings

•深沟球轴承振动(速度)技术条件 GB/T32325-2015

轴承的振动和噪声都反映轴承的动态性能。轴承的振动噪声采用仪器

S910振动(加速度)检测时, 用Z1,Z2,Z3,Z4来表示。采用仪器 BVT振动

(速度)检测时, 用V1,V2,V3,V4来表示。

Technical conditions for vibration (speed) of deep groove ball bearings GB/T32325-2015

The vibration and noise of bearings reflect their dynamic performance. The vibration noise of bearings is represented by Z1,Z2, Z3, and Z4 when using instrument S910 for vibration (acceleration) detection. When using the instrument BVT for vibration (velocity) detection, V1, V2, V3, V4 are used to represent.

公称外径 nominal external diameter (mm)	单个轴承振动(速度)限值(<) Single bearing vibration (speed) limit (<)																
	超过 exceed	包括 include	V ¹⁾			V1			V2			V3			V4		
			低频 Low frequency	中频 intermediate frequency	高频 high frequency	低频 Low frequency	中频 intermediate frequency	高频 high frequency	低频 Low frequency	中频 intermediate frequency	高频 high frequency	低频 Low frequency	中频 intermediate frequency	高频 high frequency	低频 Low frequency	中频 intermediate frequency	高频 high frequency
10	15	110	60	60	80	40	40	55	28	28	40	18	18	28	12	12	
15	20	145	70	70	100	50	50	65	30	30	45	18	18	32	12	12	
20	25	185	85	95	120	55	60	80	35	35	52	20	20	35	12	12	
25	30	225	100	125	145	65	75	95	40	45	60	25	25	38	15	15	
30	40	265	120	170	170	75	100	110	50	65	70	32	35	45	20	20	
40	50	310	140	220	195	90	130	125	60	86	80	38	50	50	25	30	
50	60	360	160	270	225	105	165	145	70	105	90	45	65	55	30	40	
60	70	410	185	320	255	120	200	165	80	125	105	52	80	65	35	50	
70	80	460	210	37	285	135	235	185	90	145	120	60	95	75	40	60	
80	90	510	240	430	320	155	270	205	100	170	135	68	110	85	45	70	
90	100	560	270	490	355	175	310	225	110	195	150	75	125	95	50	80	
100	110	610	300	550	390	195	350	250	120	220	165	82	140	105	55	90	
110	120	660	330	610	425	215	390	275	130	245	180	90	155	115	60	100	
120	130	710	360	670	460	235	430	300	140	270	200	98	170	130	65	110	
130	140	760	390	730	500	255	470	330	155	295	220	105	190	145	70	120	
140	150	810	420	790	540	275	510	360	170	325	240	115	210	160	75	135	
150	1160	860	450	850	580	295	550	390	185	355	260	125	230	175	80	150	
160	170	920	480	910	620	315	590	420	200	385	280	135	150	190	85	165	
170	180	980	510	970	660	335	635	450	215	415	300	145	170	205	90	180	
180	190	1040	540	1030	705	355	680	480	230	445	320	155	190	220	100	195	
190	200	1100	570	1100	750	375	730	510	250	480	345	165	210	235	110	210	

1)的代号中不表示 1) The code does not represent

●深沟球轴承振动(速度)技术条件 GB/T32325-2015

Technical conditions for vibration (speed) of deep groove ball bearings GB/T32325-2015

公称外径 nominal external diameter (mm)		单个轴承振动(速度)限值(<) Single bearing vibration (speed) limit (<)														
		直径系列(0) Diameter series (0)					直径系列(2) Diameter series (2)					直径系列(3) Diameter series (3)				
超过 exceed	包括 include	Z	Z1	Z2	Z3	Z4	Z	Z1	Z2	Z3	Z4	Z	Z1	Z2	Z3	Z4
10	15	36	33	30	27	24	36	33	30	27	24	41	37	33	29	25
15	20	37	34	31	28	25	37	34	31	28	25	42	38	34	30	26
20	25	38	35	32	29	26	40	37	33	29	26	43	39	35	31	27
25	30	39	36	33	30	27	41	38	34	30	27	44	40	36	31	27
30	40	41	38	35	32	29	42	39	36	33	30	46	42	38	33	29
40	50	43	40	37	34	31	44	41	38	35	32	48	44	40	35	31
50	60	45	42	39	36	33	46	43	40	37	34	50	46	42	37	33
60	70	48	45	42	38	35	49	46	42	39	36	52	48	44	39	35
70	80	50	47	44	40	37	51	48	44	41	38	54	50	46	41	37
80	90	52	49	46	42	39	53	50	46	43	40	57	53	48	43	39
90	100	54	51	48	44	41	55	52	48	45	42	59	55	50	45	41
100	110	56	53	50	46	43	58	54	50	47	44	61	57	52	47	43
110	120	58	55	52	48	45	60	56	52	49	46	63	59	54	49	45
120	130	60	58	54	50	47	62	58	54	51	48	65	61	56	51	47
130	140	63	60	56	52	49	64	60	56	53	50	67	63	58	53	49
140	150	65	62	58	54	51	67	63	59	55	53	69	65	60	55	51
150	160	67	64	60	56	53	69	65	62	57	54	71	67	62	57	53
160	170	69	66	62	58	55	71	67	63	69	56	73	69	64	59	55
170	180	71	68	64	60	57	73	69	65	61	58	75	71	66	61	57
180	190	73	70	66	62	59	76	71	67	63	60	77	73	68	63	59
190	200	77	74	70	64	61	78	74	69	65	62	79	75	70	65	61

轴承的使用 ▶
USE OF BEARINGS

安装前的准备

滚动轴承是精密零部件，为保持其精度，务必慎重、仔细地使用。保持轴承的清洁度，避免强烈冲击以及防止生锈等均是使用轴承时需要特别加以注意的事项：

- ①不到使用时请不要打开包装，也不要打开包装后放置。
- ②使用环境要保持清洁。
- ③要使用规定的装配用的工具和夹具，并要保持工夹具的清洁。
- ④不得使用会产生布屑的布，也不得使用脏布。
- ⑤要对四周的零件进行清洁工作后才可以进行装配。
- ⑥不要用手直接接触轴承。
- ⑦不要对轴承施加冲击和高负载。

轴承在装入轴或外壳(座)时，如果装配面有毛边灰尘等异物，轴承无法正确发挥性能，在运转时也可能发生异常振动或噪音。

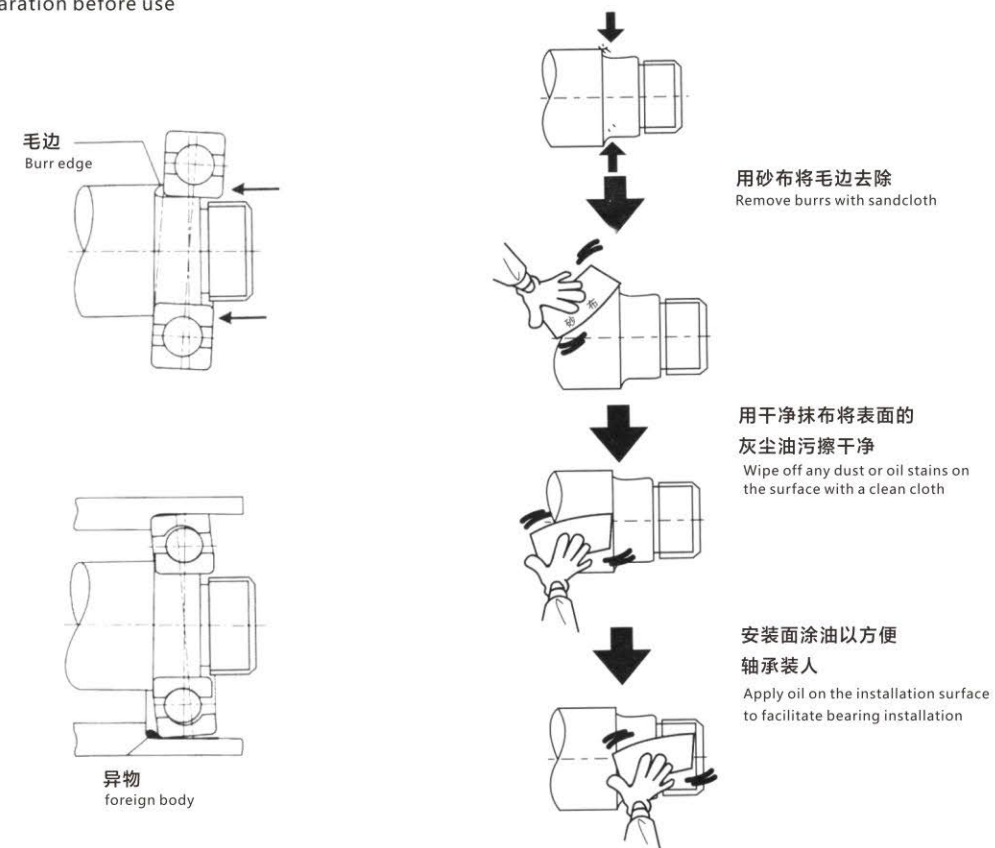
Preparation before installation

Rolling bearings are precision components, and to maintain their accuracy, they must be used with caution and care. Maintaining the cleanliness of bearings, avoiding strong impacts, and preventing rust are all special precautions that need to be taken when using bearings.

- ① Please do not open the packaging before use, and do not place it after opening the packaging.
- ② The usage environment should be kept clean.
- ③ Use the specified assembly tools and fixtures, and keep the fixtures clean.
- ④ Do not use cloths that will produce cloth scraps, nor do you use dirty cloths.
- ⑤ The surrounding parts need to be cleaned before assembly can proceed.
- ⑥ Do not touch the bearings directly with your hands.
- ⑦ Do not apply impact and high loads to the bearings.

When the bearing is installed into the shaft or housing (seat), if there are foreign objects such as burrs and dust on the assembly surface, the bearing cannot function properly, and abnormal vibration or noise may also occur during operation.

●使用前的准备 Preparation before use

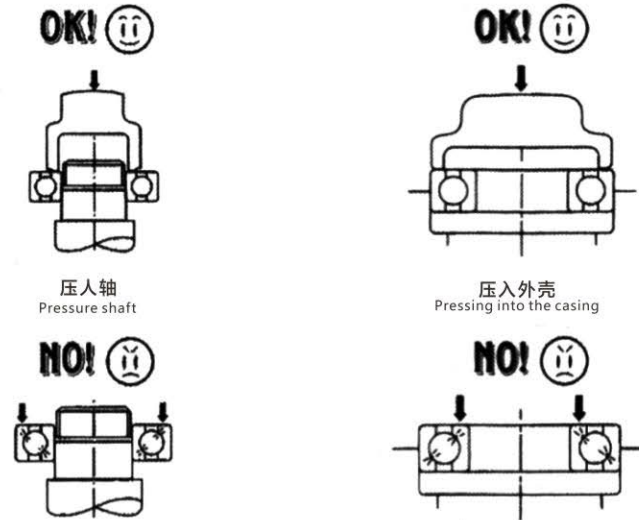


轴承的安装 Installation of bearings

据统计, 大约有18%的轴承失效是由于不正确的安装方法造成的。当轴承装入轴或轴承座的时候, 不要用锤子等物品直接敲击, 请看以下图示:

According to statistics, approximately 18% of bearing failures are caused by incorrect installation methods. When installing the bearing into the shaft or bearing seat, do not directly hit it with a hammer or other objects. Please refer to the following diagram:

深沟球轴承的安装方法 Installation method of deep groove ball bearings



深沟球轴承安装时的注意事项 Precautions for installation of deep groove ball bearings

① 避免强冲击力

由于轴承滚道面与滚动体间的接触面近似于点接触, 过大冲击力会造成接触面压痕, 因此敲击或掉落必须避免发生。

① Avoid strong impact force

Due to the fact that the contact surface between the bearing raceway surface and the rolling element is similar to point contact, excessive impact force can cause indentation on the contact surface. Therefore, knocking or falling must be avoided.



② 避免灰尘进入轴承

轴承使用中内部如遭灰尘侵入, 会造成滚道面及滚动体表面受损, 造成轴承异响及回转不良情形。

② Prevent dust from entering the bearings

If dust invades the interior of the bearing during use, it can cause damage to the raceway surface and rolling element surface, resulting in abnormal noise and poor rotation of the bearing.



轴承的预紧 Pre tightening of bearings

预紧的目的

轴承在使用时, 一般带有适当的工作游隙。但对于微型电机轴承, 为减小振动, 有时预先对轴承施加轴向负荷, 使其带有负的内部游隙, 这种做法称为预紧。

Purpose of preloading

Bearings generally have appropriate working clearance when in use. But for micro motor bearings, in order to reduce vibration, sometimes axial loads are applied to the bearings in advance, causing them to have negative internal clearance. This method is called pre tightening.

预紧的方法

>提高径向或轴向定位精度, 同时减少轴承的跳动, 提高旋转精度
>防止振动及共振引起的轴承异响

Pre tightening method

> Improve radial or axial positioning accuracy while reducing bearing runout and improving rotational accuracy > prevent bearing noise caused by vibration and resonance

预压方法及特点 Pre pressing method and characteristics

方法 method	基本方法 Basic methods	适用轴承 Applicable bearings	预压目的 Purpose of preloading	特点 characteristic
定位预压 Positioning preloading		深沟球轴承 Deep groove ball bearing	定压预紧特点:一种使用螺旋式弹簧、波形垫圈等弹性零件给轴承施加预紧的构造。优点是受温度变化影响小。缺点是增加了结构零件、降低刚性的特点。 Characteristics of fixed pressure preloading: A structure that applies preloading to bearings using elastic components such as spiral springs and waveform washers. The advantage is that it is less affected by temperature changes. The disadvantage is the addition of structural components and the reduction of rigidity.	定位预紧特点:一种通过机械位置的关系获得预紧的方法。优点是结构零件简单、刚性较高。缺点是预压因温度变化其变化量大、因磨损使预压消退等。 Positioning pre tightening feature: a method of obtaining pre tightening through the relationship between mechanical positions. The advantage is that the structural components are simple and have high rigidity. The disadvantage is that the preloading changes greatly due to temperature changes, and the preloading disappears due to wear.
		圆锥轴承 Tapered bearing		
定位预压 Positioning preloading		深沟球轴承 Deep groove ball bearing		

定位预紧与定压预紧的比较

① 预紧力量相等的情况, 定位预紧力有效于增加轴承刚性, 即定位预紧力对于轴承载荷的变位最小。
② 定位预紧力, 在运转中, 由于轴与外壳的温度差而造成的轴向延伸率差、内圈外圈温度差而造成的径向热膨胀差及负荷而造成的变形等影响, 使预紧负荷量发生变化。在定压预紧力的情况下, 由于轴伸缩而造成的弹簧上重(弹簧负荷)很少, 所以可以不用去考虑预紧力的变化。由此而得知, 一般定位预紧力适用于提高刚性之目的, 定压预紧力适用于高速旋转, 需要防止轴向振动, 水平轴使用推力轴承的情况。

Comparison between positioning preloading and fixed pressure preloading

① When the pre tightening force is equal, the positioning pre tightening force is effective in increasing the rigidity of the bearing, that is, the positioning pre tightening force has the smallest effect on the displacement of the bearing load.
② Positioning pre tightening force: During operation, the axial elongation difference caused by the temperature difference between the shaft and the casing, the radial thermal expansion difference caused by the temperature difference between the inner and outer rings, and the deformation caused by the load cause changes in the pre tightening load. In the case of fixed pressure preloading force, the weight on the spring (spring load) caused by shaft expansion and contraction is very small, so there is no need to consider changes in preloading force. From this, it can be concluded that general positioning preloading is suitable for improving rigidity, while fixed pressure preloading is suitable for high-speed rotation and needs to prevent axial vibration. In the case of using thrust bearings for horizontal shafts.

预紧力 Pre tightening force

预紧力并不是随意决定的, 应根据轴承大小来抉择, 预紧力取得过大, 会缩短使用寿命, 而且摩擦扭矩也变。预紧力取得过小, 又会增大振动、刚性变差, 造成滚道面的微振磨损, 因此, 在使用轴承时, 正确的设定预紧力是非常重要的。

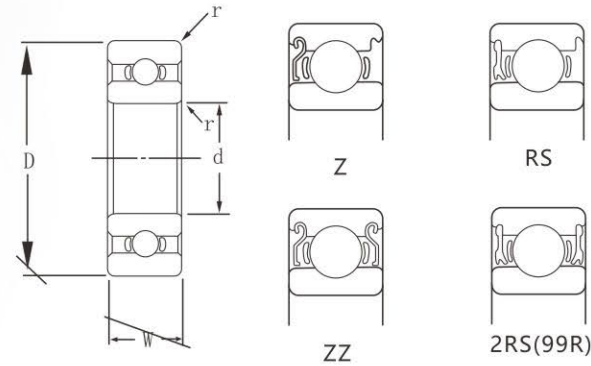
The preload force is not arbitrarily determined and should be selected based on the size of the bearing. If the preload force is too large, it will shorten the service life and also change the friction torque. If the preload force is too small, it will increase vibration and rigidity, causing slight vibration and wear on the raceway surface. Therefore, it is very important to set the preload force correctly when using bearings.

预紧 Preload	预紧力 Preload force	特点 characteristic
轻预紧 Light pre tightening	$\leq 1.0\% C$	不考虑轴刚性、重视低摩擦扭矩 Neglecting shaft rigidity and valuing low friction torque
中预紧 Medium preload	$\leq 1.5\% C$	需考虑轴刚性及低摩擦扭矩 Consider shaft rigidity and low friction torque
重预紧 Heavy preloading	$\leq 2.0\% C$	需考虑轴刚性及低摩擦扭矩 Emphasize shaft rigidity and slightly increase low friction torque

C: 轴承的基本额定载荷, KN C: The basic rated load of the bearing, KN

预紧力的大致选择标准 Rough selection criteria for preload force

在要求低起动扭矩的场合中, 通常选择轻预紧; 在有刚性要求的场合中, 通常选用中预紧, 当用于高速旋转的场合中, 一般选用重预紧或者与宁和精密轴承工程师联系, 更周密的选择预紧力。
In situations where low starting torque is required, light preloading is usually chosen; In situations with rigid requirements, medium preloading is usually used. When used for high-speed rotation, heavy preloading or contacting Ninghe Precision Bearing Engineers is generally used for more careful selection of preloading force.



技术参数 TECHNICAL PARAMETER

轴承型号 Bearing model							外型尺寸 External dimensions (mm)				额定负荷 Rated load (KN)		极限转速 Extreme speed (rpm)		重量 weight (kg)
OPEN	Z	ZZ	RZ	2RZ	RS	2RS	d	D	B	R _{sm}	Cr	Cor	脂润滑 grease	油润滑 oil lubrication	
6000	6000-Z	6000-ZZ	6000-RZ	6000-2RZ	6000-RS	6000-2RS	10	26	8	0.3	4.75	1.96	34000	40000	0.019
6001	6001-Z	6001-ZZ	6001-RZ	6001-2RZ	6001-RS	6001-2RS	12	28	8	0.3	5.40	2.36	30000	38000	0.021
6002	6002-Z	6002-ZZ	6002-RZ	6002-2RZ	6002-RS	6002-2RS	15	32	9	0.3	5.85	2.85	26000	32000	0.030
6003	6003-Z	6003-ZZ	6003-RZ	6003-2RZ	6003-RS	6003-2RS	17	35	10	0.3	6.37	3.25	22000	28000	0.039
6004	6004-Z	6004-ZZ	6004-RZ	6004-2RZ	6004-RS	6004-2RS	20	42	12	0.6	9.95	5.00	19000	24000	0.069
6005	6005-Z	6005-ZZ	6005-RZ	6005-2RZ	6005-RS	6005-2RS	25	47	12	0.6	11.90	6.55	16000	20000	0.080
6006	6006-Z	6006-ZZ	6006-RZ	6006-2RZ	6006-RS	6006-2RS	30	55	13	1.0	13.80	8.30	14000	17000	0.120
6007	6007-Z	6007-ZZ	6007-RZ	6007-2RZ	6007-RS	6007-2RS	35	62	14	1.0	16.80	10.20	12000	15000	0.160
6008	6008-Z	6008-ZZ	6008-RZ	6008-2RZ	6008-RS	6008-2RS	40	68	15	1.0	17.80	11.00	11000	14000	0.200
6009	6009-Z	6009-ZZ	6009-RZ	6009-2RZ	6009-RS	6009-2RS	45	75	16	1.0	22.10	14.60	10000	12000	0.250
6010	6010-Z	6010-ZZ	6010-RZ	6010-2RZ	6010-RS	6010-2RS	50	80	16	1.0	22.90	15.60	9000	11000	0.270
6011	6011-Z	6011-ZZ	6011-RZ	6011-2RZ	6011-RS	6011-2RS	55	90	18	1.1	29.60	21.20	8000	10000	0.400
6012	6012-Z	6012-ZZ	6012-RZ	6012-2RZ	6012-RS	6012-2RS	60	95	18	1.1	30.70	23.20	7500	9500	0.430
6013	6013-Z	6013-ZZ	6013-RZ	6013-2RZ	6013-RS	6013-2RS	65	100	18	1.1	31.90	25.00	7000	9000	0.460
6014	6014-Z	6014-ZZ	6014-RZ	6014-2RZ	6014-RS	6014-2RS	70	110	20	1.1	39.70	31.00	6300	8000	0.640
6015	6015-Z	6015-ZZ	6015-RZ	6015-2RZ	6015-RS	6015-2RS	75	115	20	1.1	41.60	33.50	6000	7500	0.670
6016	6016-Z	6016-ZZ	6016-RZ	6016-2RZ	6016-RS	6016-2RS	80	125	22	1.1	49.60	40.00	5600	7000	0.890
6017	6017-Z	6017-ZZ	6017-RZ	6017-2RZ	6017-RS	6017-2RS	85	130	22	1.1	52.00	43.00	5300	6700	0.940
6018	6018-Z	6018-ZZ	6018-RZ	6018-2RZ	6018-RS	6018-2RS	90	140	24	1.5	60.50	50.00	5000	6300	1.220
6019	6019-Z	6019-ZZ	6019-RZ	6019-2RZ	6019-RS	6019-2RS	95	145	24	1.5	63.70	54.00	4800	6000	1.270
6020	6020-Z	6020-ZZ	6020-RZ	6020-2RZ	6020-RS	6020-2RS	100	150	24	1.5	63.70	54.00	4500	5600	1.320
6021	6021-Z	6021-ZZ	6021-RZ	6021-2RZ	6021-RS	6021-2RS	105	160	26	2.0	76.10	65.50	4300	5300	1.670
6022	6022-Z	6022-ZZ	6022-RZ	6022-2RZ	6022-RS	6022-2RS	110	170	28	2.0	85.20	73.50	4000	5000	2.060
6024	6024-Z	6024-ZZ	6024-RZ	6024-2RZ	6024-RS	6024-2RS	120	180	28	2.0	88.40	80.00	3800	4800	2.200
6026	6026-Z	6026-ZZ	6026-RZ	6026-2RZ	6026-RS	6026-2RS	130	200	33	2.0	112	100	3400	4300	3.360
6028	6028-Z	6028-ZZ	6028-RZ	6028-2RZ	6028-RS	6028-2RS	140	210	33	2.0	111	108	3200	4000	3.570

技术参数 TECHNICAL PARAMETER

轴承型号 Bearing model							外型尺寸 External dimensions (mm)				额定负荷 Rated load (KN)		极限转速 Extreme speed (rpm)		重量 weight (kg)
OPEN	Z	ZZ	RZ	2RZ	RS	2RS	d	D	B	R _{sm}	Cr	Cor	脂润滑 grease	油润滑 oil lubrication	
6200	6200-Z	6200-ZZ	6200-RZ	6200-2RZ	6200-RS	6200-2RS	10	30	9	0.6	5.40	2.36	28000	36000	0.032
6201	6201-Z	6201-ZZ	6201-RZ	6201-2RZ	6201-RS	6201-2RS	12	32	10	0.6	7.28	3.10	26000	32000	0.038
6202	6202-Z	6202-ZZ	6202-RZ	6202-2RZ	6202-RS	6202-2RS	15	35	11	0.6	8.06	3.75	22000	28000	0.046
6203	6203-Z	6203-ZZ	6203-RZ	6203-2RZ	6203-RS	6203-2RS	17	40	12	0.6	9.95	4.75	19000	24000	0.067
6204	6204-Z	6204-ZZ	6204-RZ	6204-2RZ	6204-RS	6204-2RS	20	47	14	1.0	13.50	6.55	17000	20000	0.110
6205	6205-Z	6205-ZZ	6205-RZ	6205-2RZ	6205-RS	6205-2RS	25	52	15	1.0	14.80	7.80	14000	18000	0.130
6206	6206-Z	6206-ZZ	6206-RZ	6206-2RZ	6206-RS	6206-2RS	30	62	16	1.0	20.30	11.20	12000	15000	0.200
6207	6207-Z	6207-ZZ	6207-RZ	6207-2RZ	6207-RS	6207-2RS	35	72	17	1.1	27.00	15.30	10000	13000	0.300
6208	6208-Z	6208-ZZ	6208-RZ	6208-2RZ	6208-RS	6208-2RS	40	80	18	1.1	32.50	19.00	9000	11000	0.380
6209	6209-Z	6209-ZZ	6209-RZ	6209-2RZ	6209-RS	6209-2RS	45	85	19	1.1	35.10	21.60	8500	11000	0.430
6210	6210-Z	6210-ZZ	6210-RZ	6210-2RZ	6210-RS	6210-2RS	50	90	20	1.1	37.10	23.20	8000	10000	0.480
6211	6211-Z	6211-ZZ	6211-RZ	6211-2RZ	6211-RS	6211-2RS	55	100	21	1.5	46.20	29.00	7000	9000	0.640
6212	6212-Z	6212-ZZ	6212-RZ	6212-2RZ	6212-RS	6212-2RS	60	110	22	1.5	55.30	36.00	6300	8000	0.810
6213	6213-Z	6213-ZZ	6213-RZ	6213-2RZ	6213-RS	6213-2RS	65	120	23	1.5	58.50	40.50	6000	7500	1.060
6214	6214-Z	6214-ZZ	6214-RZ	6214-2RZ	6214-RS	6214-2RS	70	125	24	1.5	63.70	45.00	5600	7000	1.140
6215	6215-Z	6215-ZZ	6215-RZ	6215-2RZ	6215-RS	6215-2RS	75	130	25	1.5	68.90	49.00	5300	6700	1.230
6216	6216-Z	6216-ZZ	6216-RZ	6216-2RZ	6216-RS	6216-2RS	80	140	26	2.0	72.80	55.00	4800	6000	1.530
6217	6217-Z	6217-ZZ	6217-RZ	6217-2RZ	6217-RS	6217-2RS	85	150	28	2.0	87.10	64.00	4500	5600	1.880
6218	6218-Z	6218-ZZ	6218-RZ	6218-2RZ	6218-RS	6218-2RS	90	160	30	2.0	101.00	73.50	4300	5300	2.300
6219	6219-Z	6219-ZZ	6219-RZ	6219-2RZ	6219-RS	6219-2RS	95	170	32	2.1	114.00	81.50	4000	5000	2.720
6220	6220-Z	6220-ZZ	6220-RZ	6220-2RZ	6220-RS	6220-2RS	100	180	34	2.1	127.00	93.00	3800	4800	3.280
6221	6221-Z	6221-ZZ	6221-RZ	6221-2RZ	6221-RS	6221-2RS	105	190	36	2.1	140.00	104.00	3600	4500	3.890
6222	6222-Z	6222-ZZ	6222-RZ	6222-2RZ	6222-RS	6222-2RS	110	200	38	2.1	151.00	118.00	3400	4300	4.590
6224	6224-Z	6224-ZZ	6224-RZ	6224-2RZ	6224-RS	6224-2RS	120	215	40	2.1	146.00	118.00	3200	4000	5.350

技术参数 TECHNICAL PARAMETER

轴承型号 Bearing model							外型尺寸 External dimensions (mm)				额定负荷 Rated load (KN)		极限转速 Extreme speed (rpm)		重量 weight (kg)
OPEN	Z	2Z	RZ	2RZ	RS	2RS	d	D	B	Rsmin	Cr	Cor	脂润滑 grease	油润滑 Oil lubrication	
6300	6300-Z	6300-ZZ	6300-RZ	6300-2RZ	6300-RS	6300-2RS	10	35	11	0.6	8.52	3.40	26000	32000	0.053
6301	6301-Z	6301-ZZ	6301-RZ	6301-2RZ	6301-RS	6301-2RS	12	37	12	1.0	10.10	4.15	22000	28000	0.060
6302	6302-Z	6302-ZZ	6302-RZ	6302-2RZ	6302-RS	6302-2RS	15	42	13	1.0	11.90	5.40	19000	24000	0.085
6303	6303-Z	6303-ZZ	6303-RZ	6303-2RZ	6303-RS	6303-2RS	17	47	14	1.0	14.30	6.55	17000	22000	0.120
6304	6304-Z	6304-ZZ	6304-RZ	6304-2RZ	6304-RS	6304-2RS	20	52	15	1.1	15.90	7.80	15000	19000	0.150
6305	6305-Z	6305-ZZ	6305-RZ	6305-2RZ	6305-RS	6305-2RS	25	62	17	1.1	23.40	11.60	13000	16000	0.230
6306	6306-Z	6306-ZZ	6206-RZ	6306-2RZ	6306-RS	6306-2RS	30	72	19	1.1	29.60	16.00	11000	13000	0.360
6307	6307-Z	6307-ZZ	6307-RZ	6307-2RZ	6307-RS	6307-2RS	35	80	21	1.5	35.10	19.00	9500	12000	0.480
6308	6308-Z	6308-ZZ	6308-RZ	6308-2RZ	6308-RS	6308-2RS	40	90	23	1.5	42.30	24.00	8500	11000	0.650
6309	6309-Z	6309-ZZ	6309-RZ	6309-2RZ	6309-RS	6309-2RS	45	100	25	1.5	55.30	31.50	7500	9500	0.870
6310	6310-Z	6310-ZZ	6310-RZ	6310-2RZ	6310-RS	6310-2RS	50	110	27	2.0	65.00	38.00	6700	8500	1.120
6311	6311-Z	6311-ZZ	6311-RZ	6311-2RZ	6311-RS	6311-2RS	55	120	29	2.0	74.10	45.00	6300	8000	1.420
6312	6312-Z	6312-ZZ	6312-RZ	6312-2RZ	6312-RS	6312-2RS	60	130	31	2.1	85.20	52.00	5600	7000	1.780
6313	6313-Z	6313-ZZ	6313-RZ	6313-2RZ	6313-RS	6313-2RS	65	140	33	2.1	97.50	60.00	5300	6700	2.160
6314	6314-Z	6314-ZZ	6314-RZ	6314-2RZ	6314-RS	6314-2RS	70	150	35	2.1	111.00	68.00	5000	6300	2.650
6315	6315-Z	6315-ZZ	6315-RZ	6315-2RZ	6315-RS	6315-2RS	75	160	37	2.1	119.00	76.50	4500	5600	3.170
6316	6316-Z	6316-ZZ	6316-RZ	6316-2RZ	6316-RS	6316-2RS	80	170	39	2.1	130.00	86.50	4300	5300	3.740
6317	6317-Z	6317-ZZ	6317-RZ	6317-2RZ	6317-RS	6317-2RS	85	180	41	3.0	140.00	96.50	4000	5000	4.400
6318	6318-Z	6318-ZZ	6318-RZ	6318-2RZ	6318-RS	6318-2RS	90	190	43	3.0	151.00	108.00	3800	4800	5.130
6319	6319-Z	6319-ZZ	6319-RZ	6319-2RZ	6319-RS	6319-2RS	95	200	45	3.0	159.00	118.00	3600	4500	5.830
6320	6320-Z	6320-ZZ	6320-RZ	6320-2RZ	6320-RS	6320-2RS	100	215	47	3.0	174.00	140.00	3400	4300	7.300

止动环的尺寸和公差
DIMENSIONS AND TOLERANCES OF STOP RINGS

根据客户的需求，已开发了部分带有止动槽和止动环的轴承，具体型号请与业务部联系。
According to the customer's requirements, some bearings with stop grooves and stop rings have been developed. Please contact the business department for specific models.

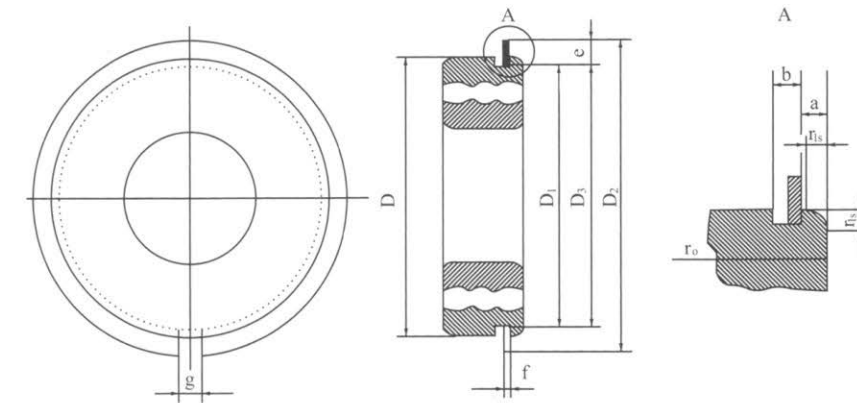


表1 止动槽尺寸
Table 1 Size of stop groove
单位(Unit): mm

D	D ₁		a 直径系列 Diameter series				b		r ₀
	最大 max	最小 min	0		2、3、4		最大 max	最小 min	
			最大 max	最小 min	最大 max	最小 min			
13	12.04	11.91	-	-	1.10	0.95	1.05	0.80	0.2
16	15.16	15.04	-	-	1.20	1.05	1.05	0.80	0.2
19	18.25	18.10	1.73	1.55	1.73	1.55	1.05	0.80	0.2
22	21.11	20.95	1.73	1.55	1.73	1.55	1.05	0.80	0.2
24	23.00	22.85	1.73	1.55	1.73	1.55	1.05	0.80	0.2
26	25.15	25.00	1.73	1.55	1.73	1.55	1.05	0.80	0.2
28	26.7	26.4	1.73	1.55	1.73	1.55	1.20	0.95	0.25
30	28.17	27.91	-	-	2.06	1.90	1.65	1.35	0.4
32	30.15	29.90	2.06	1.90	2.06	1.90	1.65	1.35	0.4
35	33.17	32.92	2.06	1.90	2.06	1.90	1.65	1.35	0.4
37	34.77	34.52	-	-	2.06	1.90	1.65	1.35	0.4
40	38.10	37.85	-	-	2.06	1.90	1.65	1.35	0.4
42	39.75	39.50	2.06	1.90	2.06	1.90	1.65	1.35	0.4
44	41.75	41.50	2.06	1.90	-	-	1.65	1.35	0.4
47	44.60	44.35	2.06	1.90	2.46	2.31	1.65	1.35	0.4
50	47.60	47.35	-	-	2.46	2.31	1.65	1.35	0.4
52	49.73	49.48	2.06	1.90	2.46	2.31	1.65	1.35	0.4
55	52.60	52.35	2.08	1.88	-	-	1.65	1.35	0.4
56	53.60	53.35	-	-	2.46	2.31	1.65	1.35	0.4
58	55.60	55.35	2.08	1.88	2.46	2.31	1.65	1.35	0.4
62	59.61	59.11	2.08	1.88	3.28	3.07	2.2	1.9	0.6
65	62.6	62.1	-	-	3.28	3.07	2.2	1.9	0.6
68	64.82	64.31	2.49	2.29	3.28	3.07	2.2	1.9	0.6
72	68.81	68.3	-	-	3.28	3.07	2.2	1.9	0.6

注:本公司保留修改表中技术规格和其它数据的权利。
Note: Our company reserves the right to modify the technical specifications and other data in the table.

止动槽和止动环的尺寸

DIMENSIONS OF STOP GROOVE AND STOP RING

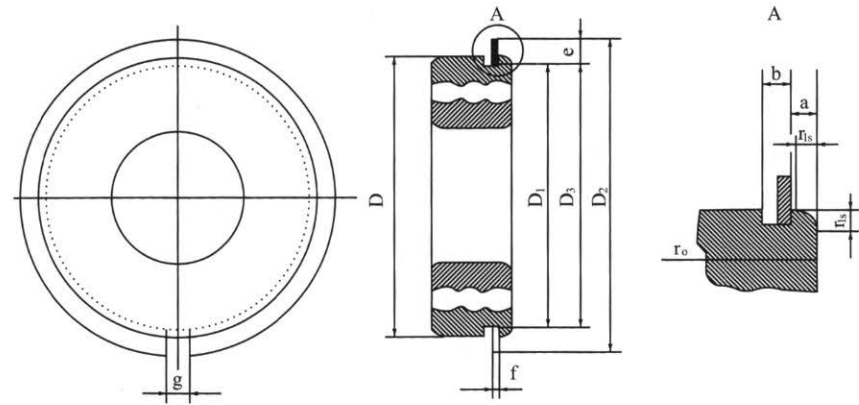


表2 止动槽尺寸
Table 2 Size of stop groove
单位(Unit): mm

D	D ₁		a 直径系列 Diameter series				b		r ₀
	最大 max	最小 min	0		2、3、4		最大 max	最小 min	最大 max
			最大 max	最小 min	最大 max	最小 min			
75	71.83	71.32	2.49	2.29	3.28	3.07	2.2	1.9	0.6
80	76.81	76.30	2.49	2.29	3.28	3.07	2.2	1.9	0.6
85	81.81	81.31	-	-	3.28	3.07	2.2	1.9	0.6
90	86.79	86.28	2.87	2.67	3.28	3.07	3.0	2.7	0.6
95	91.82	91.31	2.87	2.67	-	-	3.0	2.7	0.6
100	96.80	96.29	2.87	2.67	3.28	3.07	3.0	2.7	0.6
110	106.81	106.30	2.87	2.67	3.28	3.07	3.0	2.7	0.6
115	111.81	111.30	2.87	2.67	-	-	3.0	2.7	0.6
120	115.21	114.71	-	-	4.06	3.86	3.4	3.1	0.6
125	120.22	119.71	2.87	2.67	4.06	3.86	3.4	3.1	0.6
130	125.22	124.71	2.87	2.67	4.06	3.86	3.4	3.1	0.6
140	135.23	134.72	3.71	3.45	4.90	4.65	3.4	3.1	0.6
145	140.23	139.73	3.71	3.45	-	-	3.4	3.1	0.6
150	145.24	144.73	3.71	3.45	4.90	4.65	3.4	3.1	0.6
160	155.22	154.71	3.71	3.45	4.90	4.65	3.4	3.1	0.6
170	163.65	163.14	3.71	3.45	5.69	5.44	3.8	3.5	0.6
180	173.66	173.15	3.71	3.45	5.69	5.44	3.8	3.5	0.6
190	183.64	183.13	-	-	5.69	5.44	3.8	3.5	0.6
200	193.65	193.14	5.69	5.44	5.69	5.44	3.8	3.5	0.6
210	203.6	203.1	5.69	5.44	5.69	5.44	3.8	3.5	1
215	208.6	208.1	-	-	5.69	5.44	3.8	3.5	1
225	217.0	216.5	6.5	6.2	6.5	6.2	4.9	4.5	1
230	222.0	221.5	-	-	6.5	6.2	4.9	4.5	1
240	232.0	231.5	6.5	6.2	6.5	6.2	4.9	4.5	1
250	242.0	241.5	-	-	6.5	6.2	4.9	4.5	1

注:不含尺寸系列00、82和83
Note: Excluding size series 00, 82, and 83

止动环的尺寸和公差

DIMENSIONS AND TOLERANCES OF STOP RINGS

根据客户的需求, 已开发了部分带有止动槽和止动环的轴承, 具体型号请与业务部联系。

According to the customer's requirements, some bearings with stop grooves and stop rings have been developed. Please contact the business department for specific models.

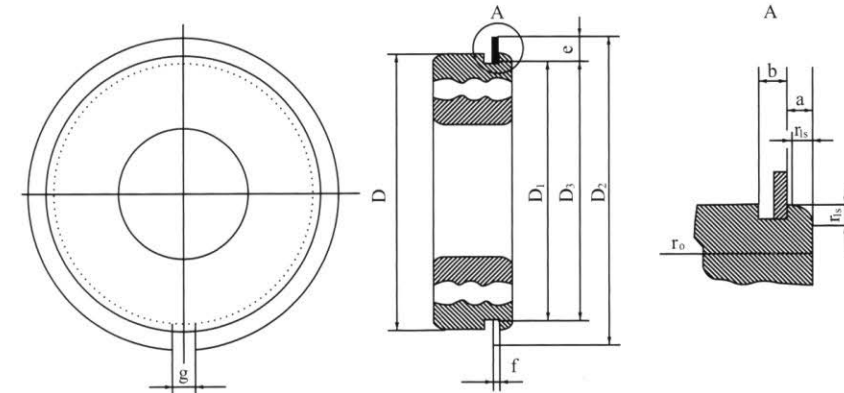


表3 止动环尺寸和公差
Table 3 Stop ring dimensions and tolerances
单位(Unit): mm

D	D ₂ ¹⁾	D ₃	ΔD _{3s}		e		f		g ¹⁾
			上偏差 Upper deviation	下偏差 Lower deviation	最大 max	最小 min	最大 max	最小 min	≈
	13	14.3	11.9	0	-0.3	1.15	1.0	0.7	0.6
16	18.5	15	0	-0.3	1.65	1.5	0.7	0.6	3
19	21.5	18	0	-0.3	1.65	1.5	0.7	0.6	3
22	25.1	20.8	0	-0.4	2.00	1.85	0.7	0.6	3
24	27	22.7	0	-0.4	2.00	1.85	0.7	0.6	3
26	29.2	24.9	0	-0.4	2.00	1.85	0.7	0.6	3
28	30.8	26.4	0	-0.4	2.05	1.90	0.85	0.75	3
30	34.7	27.9	0	-0.4	3.25	3.10	1.12	1.02	3
32	36.7	29.9	0	-0.4	3.25	3.10	1.12	1.02	3
35	39.7	32.9	0	-0.4	3.25	3.10	1.12	1.02	3
37	41.3	34.5	0	-0.4	3.25	3.10	1.12	1.02	3
40	44.6	37.8	0	-0.4	3.25	3.10	1.12	1.02	3
42	46.3	39.5	0	-0.5	3.25	3.10	1.12	1.02	3
44	48.3	41.5	0	-0.5	3.25	3.10	1.12	1.02	3
47	52.7	44.3	0	-0.5	4.04	3.89	1.12	1.02	4
50	55.7	47.3	0	-0.5	4.04	3.89	1.12	1.02	4
52	57.9	49.4	0	-0.5	4.04	3.89	1.12	1.02	4
55	60.7	52.3	0	-0.5	4.04	3.89	1.12	1.02	4
56	61.7	53.2	0	-0.6	4.04	3.89	1.12	1.02	4
58	63.7	55.2	0	-0.6	4.04	3.89	1.12	1.02	4
62	67.7	59.0	0	-0.6	4.04	3.89	1.7	1.6	4
65	70.7	62.0	0	-0.6	4.04	3.89	1.7	1.6	4
68	74.6	64.2	0	-0.6	4.85	4.70	1.7	1.6	5
72	78.6	68.2	0	-0.6	4.85	4.70	1.7	1.6	5

止动槽和止动环的尺寸

DIMENSIONS OF STOP GROOVE AND STOP RING

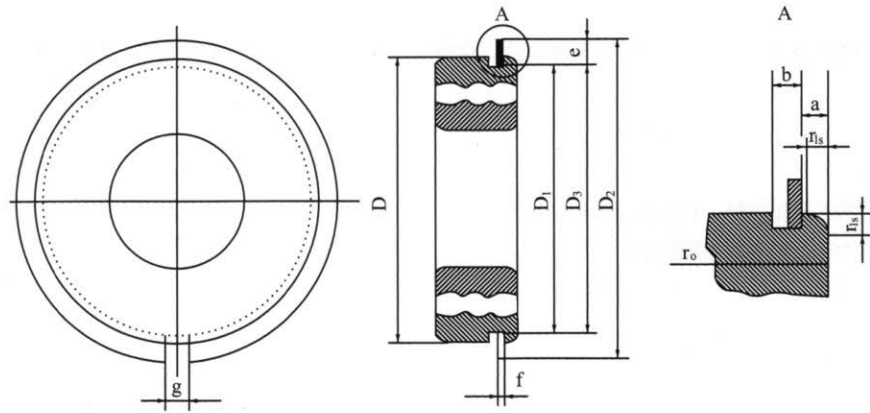


表4 止动环尺寸和公差
Table 4 Stop ring dimensions and tolerances
单位(Unit): mm

D	D ₂ ¹⁾	D ₃	ΔD _{3s}		e		f		g ¹⁾
	最大 max		上偏差 Upper deviation	下偏差 Lower deviation	最大 max	最小 min	最大 max	最小 min	
75	81.6	71.2	0	-0.6	4.85	4.70	1.7	1.6	5
80	86.6	76.2	0	-0.6	4.85	4.70	1.7	1.6	5
85	91.6	81.2	0	-0.6	4.85	4.70	1.7	1.6	5
90	96.5	86.2	0	-0.6	4.85	4.70	2.46	2.36	5
95	101.5	91.2	0	-0.6	4.85	4.70	2.46	2.36	5
100	106.5	96.2	0	-0.8	4.85	4.70	2.46	2.36	5
110	116.6	106.2	0	-0.8	4.85	4.70	2.46	2.36	5
115	121.6	111.2	0	-0.8	4.85	4.70	2.46	2.36	5
120	129.7	114.6	0	-0.8	7.21	7.06	2.82	2.72	7
125	134.7	119.6	0	-0.8	7.21	7.06	2.82	2.72	7
130	139.7	124.6	0	-0.8	7.21	7.06	2.82	2.72	7
140	149.7	132.6	0	-1.2	7.21	7.06	2.82	2.72	7
145	154.7	139.6	0	-1.2	7.21	7.06	2.82	2.72	7
150	159.7	144.5	0	-1.2	7.21	7.06	2.82	2.72	7
160	169.7	154.5	0	-1.2	7.21	7.06	2.82	2.72	7
170	182.9	162.9	0	-1.2	9.60	9.45	3.1	3.0	10
180	192.9	172.8	0	-1.2	9.60	9.45	3.1	3.0	10
190	202.9	182.8	0	-1.4	9.60	9.45	3.1	3.0	10
200	212.9	192.8	0	-1.4	9.60	9.45	3.1	3.0	10
210	222.8	202.7	0	-1.4	9.60	9.45	3.1	3.0	10
215	227.8	207.7	0	-1.4	9.60	9.45	3.1	3.0	10
225	237	216.1	0	-1.4	10.00	9.85	3.5	3.4	10
230	242	221	0	-1.4	10.00	9.85	3.5	3.4	10
240	252	231	0	-1.4	10.00	9.85	3.5	3.4	10
250	262	241	0	-1.4	10.00	9.85	3.5	3.4	10

1)表中所列的D₂和g尺寸为止动环装入止动槽后的尺寸。止动环在止动槽内不应有径向间隙，故在安装状态下尺寸略有胀大。
1) The dimensions of D₂ and g listed in the table are the dimensions after the stop ring is installed in the stop groove. There should be no radial clearance between the stop ring and the stop groove, so the size may slightly increase during installation.

轴承存放注意事项 Precautions for bearing storage



我们对于存储的轴承而言，生锈即意味着轴承报废。
For stored bearings, rusting means the bearings are scrapped.



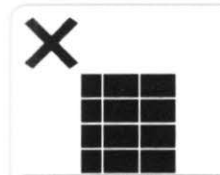
轴承最佳的保存温度在20°C至25°C之间，考虑实际条件的限制，轴承仓库的温度变动量不应超过10°C。
The optimal storage temperature for bearings is between 20 °C and 25 °C. Considering the limitations of actual conditions, the temperature variation in the bearing warehouse should not exceed 10 °C.



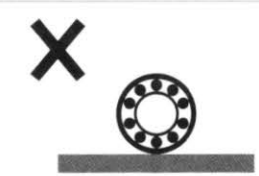
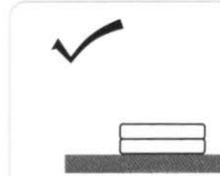
轴承仓库中的空气必须干燥，不含酸和腐蚀性的气体以及水蒸汽。相对湿度在60%和75%之间。
The air in the bearing warehouse must be dry, free of acid, corrosive gases, and water vapor. The relative humidity is between 60% and 75%.



轴承不能和溶剂、燃料、润滑剂、化工产品、酸类、消毒剂等存放在同一个地方。
Bearings cannot be stored in the same place as solvents, fuels, lubricants, chemical products, acids, disinfectants, etc.



轴承不能被直接存放在地上，应该放置在货架或托盘上。
Bearings should not be stored directly on the ground and should be placed on shelves or pallets.



存放时只能平放，如果直立存放，由于内外圈和滚动部件较重，而内外圈壁相对较薄，可能会造成永久变形。箱子堆叠的高度不能超过包装物的支撑能力。
When stored, it can only be placed flat. If stored upright, due to the weight of the inner and outer rings and rolling parts, and the relatively thin inner and outer wall, it may cause permanent deformation. The height of box stacking cannot exceed the support capacity of the packaging.



轴承不能粗暴搬运，抛掷，避免掉落，轴承受到损伤应轻拿轻放。
Bearings should not be rough handled or thrown to avoid falling. If bearings are damaged, they should be handled with care.



轴承领用使用先进先出，出入库方法。
Bearing usage first in, first out, in and out library methods.



原箱未开封的轴承储存期为2年。超过2年的应每年进行一次取样，检查防锈状况。
The unopened bearings in the original box have a storage period of 2 years. Samples should be taken once a year for more than 2 years to check the rust prevention status.

PRODUCTS

Application Field

产品应用领域

广泛应用于家电、新能源汽车、摩托车、电机水泵、风机、电动工具、机床管道泵、永磁电机、无油空压机、电梯、防爆电机、切割机、角磨机、园林机械 等行业。

Widely used in industries such as household appliances, new energy vehicles, motorcycles, motor water pumps, fans, electric tools, machine tool pipeline pumps, permanent magnet motors, oil-free air compressors, elevators, explosion-proof motors, cutting machines, angle grinders, garden machinery, etc.



GLOBAL TRADE

业务遍布全球



50⁺ 国内客户遍布20多个省、直辖市
Domestic customers spread across more than 20 provinces and municipalities directly under the central government

300⁺ 用心服务客户300家
Serve 300 customers with dedication

20 years 20年生产轴承突破5000万套
Over 20 years, the production of bearings has exceeded 50 million sets