ZWZ GROUP

Bearing Cradle

ZWZ Culture

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ZWZ

Rolling Bearings

General Catalogue

ZWZ.CB.A.2024.1

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Rolling Bearings General Catalogue

WAFANGDIAN BEARING GROUP CORP.

Foreword

On the release of new edition of **ZWZ** rolling bearing Products Catalogue, thanks to our peers and users for your love for ZWZ products, and we would like to express our most sincere and heartfelt gratefulness.

Welcome to read the **ZWZ** Bearing Catalog. This Catalog is designed to provide you with comprehensive bearing product information and technical guidance, helping you better understand and select the proper bearing solution. As a company specialized in bearing manufacturing, ZWZ is committed to providing high-quality and high-performance bearing products and technical services to meet the demands of customers. Bearing is an indispensable key component in the field of machinery, and plays an important role in various mechanical equipment and devices. In the respect of smaller size, lighter weight, high reliability, maintenance-free, long service life, multi-functions, intelligence, until adaption to high temperature, high-speed, silence and other special environment, we continue to empower new value.

In this Catalog, we provide you with detailed bearing specifications, technical parameters and performance curves to help you better understand the features and application range of each type of bearing. In addition, we also provide technical support such as installation guides, maintenance manuals and troubleshooting methods to help you properly use and maintain bearing so as to extend their service life.

In Part A, we introduce the general technology of each type of bearing around bearing selection. In Part B, the overall dimensions, carrying capacity, ultimate rotating speed, installation dimensions and other data of various types of bearing are provided in detail, and the technical features of relevant type of bearing are supplemented in front of the size table. In Part C, we list the commonly used comparison table of bearing products.

ZWZ bearing products have excellent load carrying capacity, high temperature resistance, low friction, long service life and other features, and they can be widely used in industry, automobile, railway, construction, medical, mining, engineering machinery, aerospace, ships and other fields. For this purpose, ZWZ provides sub-volume catalogs of various fields, which is suitable for the selection of special bearing for different industries and applications.

ZWZ's professional team will wholeheartedly provide you with quality service and technical support. Whether you are a machinery equipment manufacturer, engineer, maintenance personnel or bearing user, we can provide you with a full range of solutions.

Thank you for selecting to read the **ZWZ** bearing catalog. We hope that this Catalog can help you better understand bearing and bring greater convenience to your work and projects.

In order to facilitate your review and bearing selection, if you intend to obtain detailed technical information of bearing, please feel free to contact the ZWZ technicians.

Please continue to support **ZWZ** products, thank you!

※ Due to product improvement and other reasons, the contents of this Catalog may be changed without notice. At the same time, although this Catalog has been reviewed several times, there are still inevitable shortcomings and mistakes. If you have any questions, please feel free to contact us.

No reprinting!

ZWZ

General Catalogue

（ZWZ.CB.A.2024.1）

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WITH HUMAN INTELLIGENCE

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1 Bearing structure and type

1.1 Structure of rolling bearings

The rolling bearings generally include two rings, rolling element, cage and lubricant. Rolling elements are arranged between the inner ring and the outer ring, and rolling elements are separated by a cage to avoid contact, rolling (not sliding) between the parts that withstand loads and move relative to each other, as shown in **Figure 1.1**.

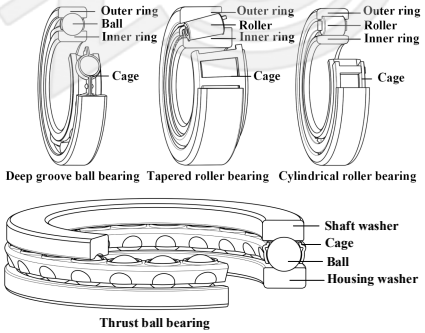


Figure1.1 Structure examples

1.1.1 Ring (inner ring, outer ring)

The part rolled by the rolling element on the ring is called the raceway, whose surface is called the raceway surface, and the raceway of the ball bearing ring is called the raceway groove.

In general, the inner ring and the outer ring are fitted with the shaft and the housing, respectively.

The inner ring and outer ring of thrust bearing are called shaft washer and housing washer, respectively.

1.1.2 Rolling element

The rolling elements include ball and roller. Rollers are classified into cylindrical roller, needle roller (the general length is between 3 and 10 times the diameter (<6mm)), tapered roller, spherical roller etc, whose definitions are shown in **GB/T 6930**.

1.1.3 Cage

Rolling elements can maintain a certain distance between each other by using a cage. The cage also can prevent rolling elements from falling off, guide them, and store the grease.

The cages include pressed cage, machined solid cage, and engineering plastic cage. The shapes generally include ribbon, snap, window and prong, shown in **GB/T 28268** for details. Compared to full complement bearing, the bearings with cages have less friction, so they are suitable for high-speed rotation.

1.1.4 Classification of rolling bearings

The angle α_e between the plane perpendicular to the bearing axial line (radial plane) and the action line (nominal action line) of resultant force Q_e transmitted to the rolling element via the bearing ring/washer is called the contact angle, as shown in **Figure 1.2**. According to the different contact angles, the rolling bearing are mainly divided into radial bearing and thrust bearing.

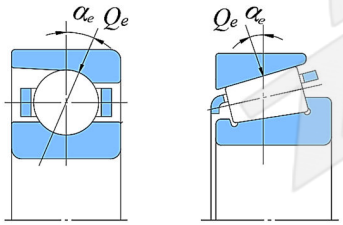


Figure 1.2 Contact angle

- Radial bearing - mainly used to withstand radial load, its nominal contact angle is $0° \le \alpha \le 45°$.
- Thrust bearing - mainly used to withstand axial load, its nominal contact angles $45° < \alpha \le 90°$.

According to the number of rows of rolling elements, the rolling bearings can be divided into single row, double row and multiple-row. In short, the category of rolling bearings is shown in **Figure 1.2** and **Figure 1.3**, please refer to **GB/T 271**, and it is classified by purposes in **Figure 1.4.**

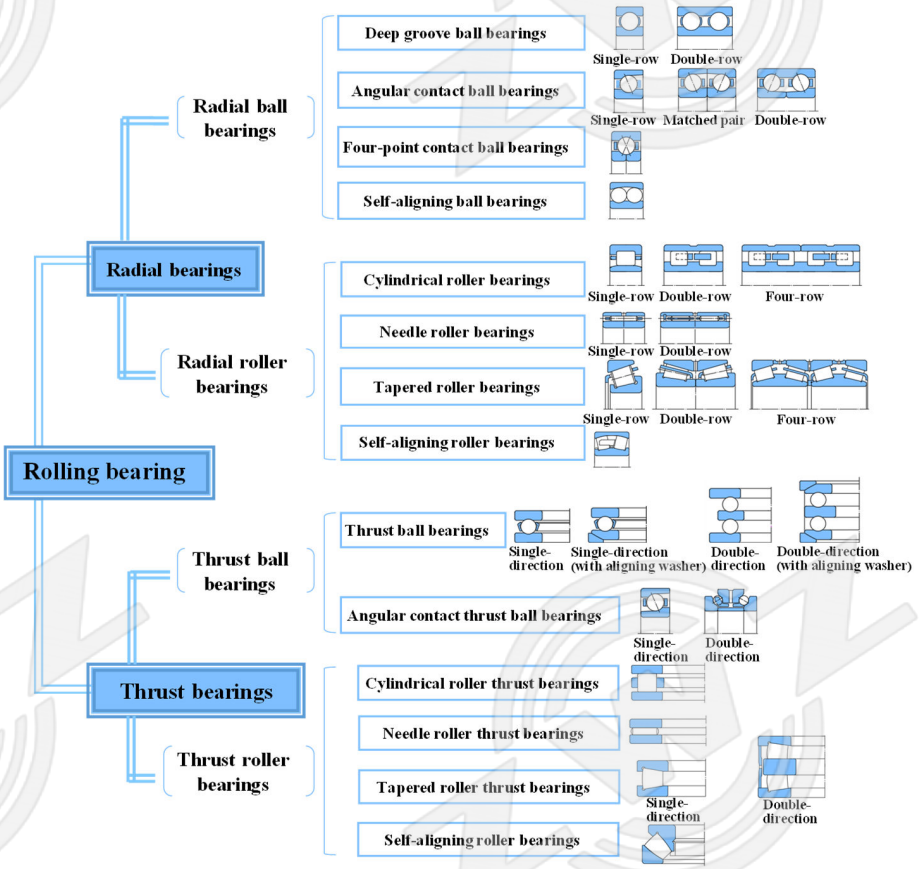


Figure 1.3 Classification of rolling bearings by structures

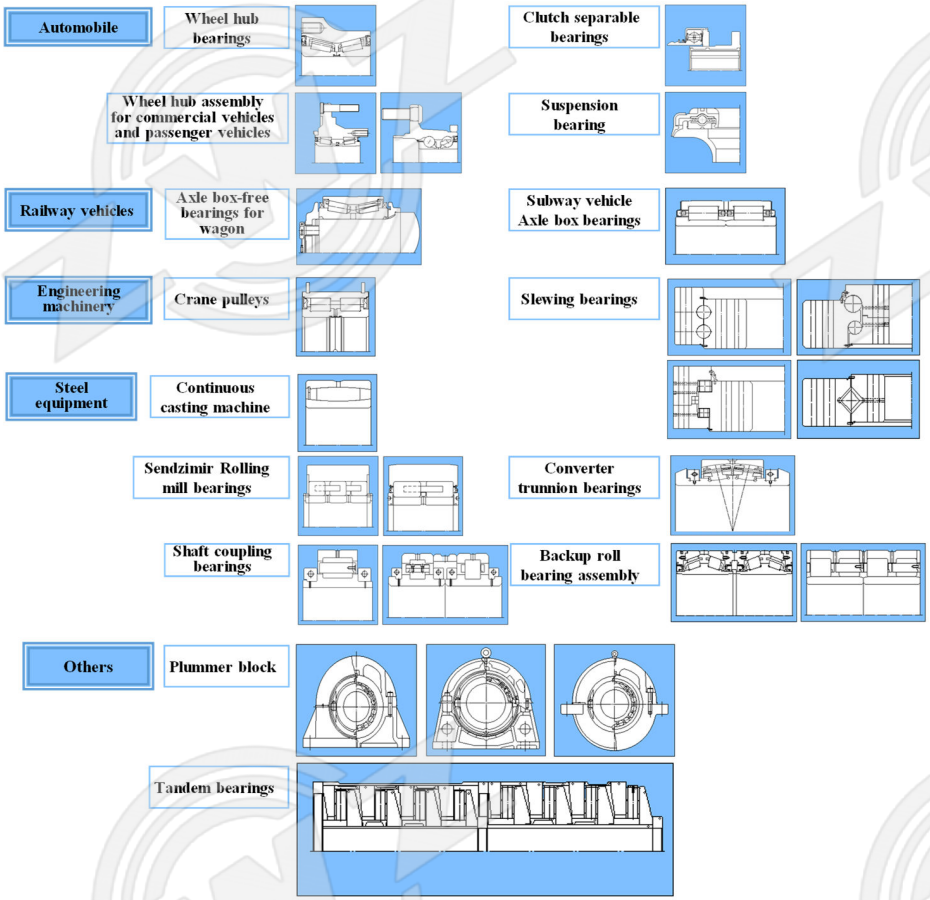


Figure 1.4 Classification of rolling bearings by purposes

1.2 Bearing types

(1) Single-row deep groove ball bearings

They are the most common forms of rolling bearings. Apart from take radial load, it can also take a certain double-direction axial load. It is suitable for high speed, low noise and low vibration due to low friction.

Apart from the open type, these bearings ofen have shields or rubber seals installed on one or both sides and are prelubricated with grease. Also, a snap ring or flange on the outside diameter of outer ring are sometimes used for axial positioning and installation.

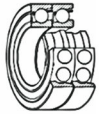
Pressed steel cages, machined copper alloy or phenolic resin cages are offen used.

(2) Single-row angular contact ball bearings

This type can take radial load and unidirectional axial load with contact angles between 0° and 45° (15°, 25°, 30° or 40°). The larger the contact angle, the greater the axial load it can take. The smaller the contact angle, the more favorable for the high-speed.

Usually, paired bearings are used after adjusting the clearance, it adopts copper alloy or phenolic resin machined cage or pressed steel cage. However, the high-accuracy bearing with contact angles less than 30° mainly adopt polyamide forming cage.

(3) Duplex bearings



Duplex bearing pairs radial bearings, usually including the same tapered roller bearing or angular contact ball bearings. The types include the face-to-face (DF), the back-to-back (DB), and both front faces in the same direction (DT).

DF type and DB type paired coupling bearing can bear radial load and double-direction axial load, DT type is used for unidirectional large axial load occasions.

(4) Double-row angular contact ball bearings

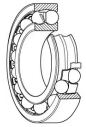
This kind of structure fit the outer rings back-to-back or face-to-face, and the inner ring and outer rings are both the integral structure. In addition, the products without filling slot also have a sealed structure. Bearings with filling slot can withstand radial load and unidirectional axial load, while bearing without filling slot can withstand radial load and double-direction axial load.

(5) Four-point contact ball bearings

This type is a single row angular contact ball bearing with separable inner ring and outer ring, and it is divided into double half inner ring (QJ), double half outer ring (QJF), and single inner/outer ring (QJB). It can take radial load and double-direction axial load, and contact angle between the ball and inner/outer ring generally is 35°. This bearing can substitute the DF type or DB type.

It generally adopts the machined copper alloy cage.

(6) Self-aligning ball bearings



The inner ring has two raceways, and the outer raceway is spherical. The curvature center of the spherical surface is consistent with the bearing center. Therefore, the inner ring, ball and cage can tilt freely relative to the outer ring. This allows automatic adjustment of shaft deviation caused by machining or installation errors.

The tapered bore bearing can be installed by adapter sleeve.

(7) Cylindrical roller bearings

In this type, the cylindrical rollers and raceway are linear contact. They have high load capacity mainly used to take the radial load, and are suitable for high speed.

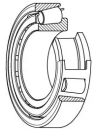
Due to existence of ribs or not, there are NU, N, NUP, N, NF for single-row bearings and NNU and NN for double row bearings, and can also be divided into 4-row and multi-row bearings by the number of rollers.

Their inner and outer ring can axially move relative to each other, used as free-end bearing. Some that inner/outer ring has two ribs while the other has one can take a certain unidirectional axial load.

These bearings have high radial rigidity used in spindles of machine tools.

Generally, it adopts the pressed steel cages, or copper alloy machined cage and polyamide forming cage.

(8) Tapered roller bearings



These bearings use conical rollers guided by the back-face rib of the inner ring.

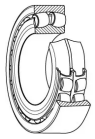
The single one can take radial load and unidirectional axial load, while the double row bearing can take radial load and double-direction axial load having high load capacity and take impact load.

The same as the angular contact ball bearing, two sets of bearing are generally configured for usage. At this time, the appropriate clearance can be obtained by adjusting the size of spacer. Because it is a separable type, the inner ring and the outer ring can be installed separately.

It is divided into ordinary taper angle, medium taper angle and large taper angle type, and according to the number of roller rows, it is divided into single row, double row and four-row tapered roller bearing.

It generally adopts the pressed steel cage.

(9) Spherical roller bearings



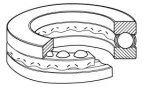
These bearings have barrel-shaped rollers between double inner ring and the outer ring which has one spherical raceway.

The curvature center of the raceway surface of outer ring is consistent with the bearing center, so it has the same aligning function as the self-aligning ball bearing. If the shaft and bearing housing are deflected, it can automatically adjust to prevent bearing overload. It can take the radial load and double-direction axial load.

The outer ring can be provided with oil holes, oil grooves and positioning pin holes.

They have high radial load capacity, so it is suitable for heavy loads and impact load. The bearings owned tapered bore can be installed directly on the tapered shaft, or installed on the cylindrical shaft with adapter sleeves or withdrawal sleeves. Pressed steel and machined brass cage are used.

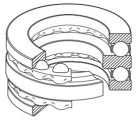
(10) Single-direction thrust ball bearings



This kind of bearings is composed of a washer-like ring with raceway and balls assembly. The ring installed on the shaft is called the shaft washer, and the ring installed on the housing is called the housing washer.

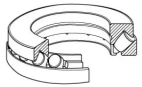
It can withstand the unidirectional axial load, but can't withstand radial load.

(11) Double-direction thrust ball bearings



These bearings install the central washer on the shaft, and double-direction bearing can take double-direction axial load. In order to reduce the impact of installation errors, there are thrust ball bearing whose bearing housing is installed with spherical housing washer. The small size bearing mainly adopt the pressed steel cage. The large size bearing adopt the mechined cage.

(12) Thrust spherical roller bearings



This kind of bearing is a thrust bearing with inclined arrangement of drum rollers. The raceway of the housing washer is spherical, so it has the aligning function.

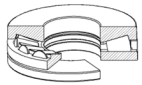
They have high axial load capacity, and it can also take certain radial load while withstanding axial load. It adopts pressed steel cage, or machined copper alloy cages.

(13) Thrust cylindrical roller bearings

This type of bearing is composed of washer-shaped raceway ring (shaft washer, housing washer), cylindrical roller and cage assembly. The cylindrical roller is processed into a convex surface, so the pressure distribution between the roller and the raceway surface is more uniform.

They have high axial load capacity and axial rigidity. The single-direction bearing can take unidirectional axial load, and the double-direction bearing can take double-direction axial load. It mainly adopts machined copper alloy cage.

(14) Thrust tapered roller bearings



This type of bearing is equipped with cone roller, and the roller (whose large end is spherical) is accurately guided by the rib of raceway ring (shaft washer, housing washer).

The single-direction bearing can withstand unidirectional axial load, and the double-direction bearing can withstand double-direction axial load.

The central washer of the double-direction bearing is fitted with the shaft. Because it is a clearance fitting, the shaft sleeve must be used to position the central washer axially. It generally adopts machined copper alloy cage.

2 Bearing selection

2.1 Summary of bearing selection

Selecting suitable bearings for devices. Firstly, it is usually to determine the shaft diameter and then the bearing inner diameter shall be taken as the reference to consider the bearing installation space, the arrangements, the difficulty/ease of installation and disassembly, and the marketability and economy shall also be considered, then the bearing structure is initially decided.

Secondly, the service life required of the mechanical device and the bearing life calculated by the bearing load are analyzed and determine the bearing size.

In selection, only the bearing fatigue life is considered in most cases, but the grease life, wear, noise and so on caused by the aging of grease are also required to be fully studied.

Moreover, the design requirements for bearing accuracy, internal clearance, cage structure, lubricants and so on shall be raised according to different uses.

2.2 General selection procedure

Bearing selection is not a fixed sequence and regulations, and priority shall be given to the conditions and performance required by the bearing. The correct grasp of the use of the bearing in the mechanical device and the operating conditions and environmental conditions are the premise of selecting suitable bearing. The general steps of bearing selection are shown in **Figure 2.1**.

When selecting bearing used in new fields, special operating conditions and special environmental conditions, please contact ZWZ engineers and technicians.

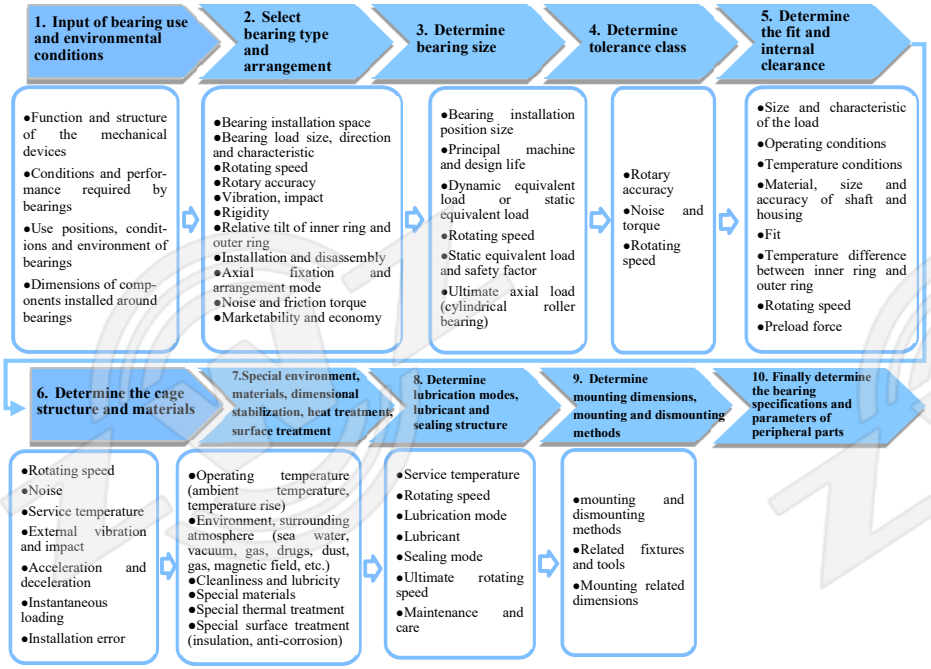


Figure 2.1 General bearing selection procedure

3 Bearing types and arrangement

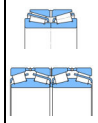
3.1 Selection of bearing types

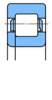
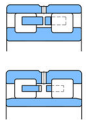
When selecting the bearing type, it is necessary to fully grasp the working environment and operating conditions of the bearings. The main analysis items and bearing selection methods are listed in **Table 3.1**, and the performance comparison of typical types of bearings is listed in **Table 3.2**.

Table 3.1 General principles for bearing type selection

Analysis items		Selection method
1. Bearing installation space	Select the bearing type within the allowed bearing installation space	◆Due to the limited installation space, the bearing type and size must be selected within a certain limit, and both rigidity and strength of the shafting must be taken into account, so the shaft neck is generally determined first, that is, the bearing inner diameter; ◆But rolling bearings have a variety of size series and types, the most suitable bearing type shall be selected.
2. Load	Select the bearing type as per the size, direction and characteristic of the bearing load (the bearing carrying capacity is expressed by the basic rate load, and its value is listed the bearing size table)	◆The bearing load is varied, such as the size of the load, whether it is only radial load, whether the axial load is unidirectional or double-direction, the degree of vibration or impact, and so on. After comprehensively considering these factors, the most suitable bearing type is selected; ◆Generally, the radial carrying capacity of bearings with the same inner diameter progressively increases in the following order. [Deep groove ball bearing<angular contact ball bearing<cylindrical roller bearing<tapered roller bearing <spherical roller bearing]
3. speed	Select the bearing type as per the rotating speed requirement [The threshold value reference of bearing rotating speed is expressed by the ultimate rotating speed, and its value is listed in the bearing size table]	◆The ultimate rotating speed of the bearing depends not only on the bearing type but also on the bearing size, cage type, material, accuracy class, load conditions and lubrication mode, cooling state, etc., so these factors must be considered in selection; ◆Deep groove ball bearing, angular contact ball bearing, and cylindrical roller bearing can be used in high-speed rotation;
4. Rotary accuracy	Select bearing type as per the accuracy requirements (dimensional accuracy and rotary accuracy of bearing have been standardized by bearing type in GB.)	◆The machine tool spindle requires high rotary accuracy, the gas turbine requires high rotating speed and the control instrument requires low friction, and the accuracy class of these bearing shall be above level 5; ◆Deep groove ball bearing, angular contact ball bearing and cylindrical roller bearing are mostly used in the machinery requiring high rotary accuracy.
5. Rigidity	Select the bearing type as per the rigidity requirements [When the bearing is under load, the contact part between the rolling element and the raceway will generate elastic deformation. "High rigidity" means that the deformation amount of this elastic deformation is small]	◆At machine tool spindle and automobile final reducer device and other positions, while improving the rigidity of the shaft, it is also required to improve the rigidity of the bearing; ◆For linear contact cylindrical roller bearing or tapered roller bearing, their rigidity is higher than that of point contact ball bearing, so they are suitable for operating conditions with impact load; ◆For the angular contact ball bearing and tapered roller bearing, their bearing rigidity can be improved by applying preload force;
6. Relative tilt between inner ring and outer ring (aligning characteristic)	Analyze the factors that cause the bearing inner ring and outer ring to generate the relative tilt (such as shaft deflection caused by load, poor accuracy of shaft and shell, or installation error), and select bearing that can adapt to such usage conditions [The allowable tilt angle (or aligning angle) of the bearing is listed in the explanation before the various bearing size tables]	◆If the relative tilt between the inner ring and the outer ring is over-large, the bearing will be damaged due to internal load generated therefrom. Therefore, a bearing type that can withstand this tilt shall be selected. ◆Generally, the allowable tilt angle (or aligning angle) progressively increases in the following order: (cylindrical roller bearing, tapered roller bearing, deep groove ball bearing (angular contact ball bearing), aligning roller (ball) bearing)
7. Installation and disassembly	Frequency and method of installation and disassembly for regularly inspection etc.	◆cylindrical roller bearing, needle roller bearing, and tapered roller bearing (where the inner ring is separable from the outer) are convenient to install and disassemble; ◆Tapered bore self-aligning ball bearing and tapered bore spherical roller bearing are convenient to install and disassemble with fasteners or withdrawal sleeve.

Table 3.2 Characteristics of different rolling bearings types

		Deep Groove Ball Bearings	Angular Contact Ball Bearings			Four-Point Contact Ball Beamgs	Self-Aligning ball Bearings	Tapered Roller Beamgs		Spherical Roller Bearings
			Single-Row	Paired	Double-Row			Single-Row	Double and Multiple-Row	
										
Load Capacity	Radial Loads	☆	☆	★	★	☆	☆	★	★	★
	Axial Loads	☆	★	★	★	★	◇	★	★	◇
	Load Direction	↔	→	↔*	↔*	↔	↔	→	↔	↔
	Combined Loads	☆	☆	★	★	☆	◇	★	★	◇
	Vibration Impact	◇	◇	◇	◇	◇	◇	★	★	★
High Speeds		★	★	★	☆	★	◇	☆	☆	☆
High Accuracy		★	★	★		★		☆		
Low Noise and Torque		★								
Rigidity				☆		☆		☆	★	
Angular Misalignment		☆	◇	×	×	×	★	◇	◇	★
Ring Separability		×	×	×	×	■*	×	■	■	×
Arrangement	Fix-End	■	■	■	■	■	■	■	■	■
	Directions	↔	→	↔*	↔*	↔	↔	→	↔	↔
	Free-End	□		□	□	□	□		□	□
Remarks			Paired bearings in a face-to-face (DB) or back-to-back (DF) arrangement and adjust the clearance. *DT type has only one direction.		*Bearings with filling slot have only one direction.	*There are also non-separable Type.		Configure the front or back of two bearings for use		

		Cylindrical Roller Bearings				Thrust ball Bearings		Double Direction Angular Contact Thrust Ball Beamgs	Thrust Cylindrical Roller Bearings	Thrust Tapered Roller Bearings	Thrust Spherical Roller Bearings
		NU、N	NJ、NF	NUP	NN、NNU	Plain housing washer	with Aligning Seat				
											
Load Capacity	Radial Loads	★	★	★	★	×	×	×	×	×	◇
	Axial Loads	×	◇	◇	×	☆	☆	★	★	★	★
	Load Direction		→	↔		→*	→*	↔	→	→	→
	Combined Loads	×	◇	◇	×	×	×	×	×	×	◇
	Vibration Impact	★	★	★	★	◇	◇	◇	☆	★	★
High Speeds		★	★	★	★	◇	◇	☆	◇	◇	◇
High Accuracy		★			★	☆		★			
Low Noise and Torque		☆									
Rigidity		☆	☆	☆	★			☆	★		★
Angular Misalignment		◇	◇	◇	◇	×	★	×	×	×	★
Ring Separability		■	■	■	■	■	■	■	■	■	■
Arrangement	Fix-End	×	■	■	×						
	Directions		→	↔							
	Free-End	■	□	□	■						
Remarks						*There are also double-directional thrust ball bearings available.					

Notes: Excellent ★ Good ☆ Fair ◇ Impossible × Two directions ↔ Single direction → □ Applicable ■ Applicable, but it is necessary to allow shaft contraction/elongation at fitting surfaces of bearings.

3.2 Selection of bearing arrangements

Usually, the shaft is supported by two or more bearings radially and axially, one of the bearings is used as a fixed-end bearing, which takes both radial and axial load, fixing relative axial motion between the shaft and the housing. The others are used as free-end bearings, which only take radial load, and the axial relative motion is allowed, so as to solve the shaft expansion caused by temperature and the spacing error of installation.

For fixed-end bearing, the selected bearing can prevent axial motion; for free-end bearing, cylindrical roller bearings (type NU, N) with separable inner and outer rings are used, which can move axially. Applying to short shafts, the fixed-end is not much different from the free-end, bearings (such as radial thrust ball bearing) with single-direction fixed axial motion are used.

3.2.1 Bearing arrangement types

Table 3.3 Different bearing arrangement types

	Content	Applicable bearing type
Fixed-end bearing	● Used for axial positioning and fixing of bearing; ● Select bearing that can bear both radial load and axial load; ● In order to withstand the double-direction axial load, it is also necessary to consider the strength in the installation as per the size of the axial load.	Deep groove ball bearing Combined angular contact ball bearing Double row angular contact ball bearing Self-aligning ball bearing Cylindrical roller bearing with rib (type NUP, type NH) Double row tapered roller bearing Spherical roller bearing
Free-end bearing	● It is used to avoid the shaft expansion caused by temperature changes during operation, and to adjust the axial position of the bearing; ● It is advisable to select bearing that only take radial load and the inner ring and outer ring separated; ● When non-separable bearing are used, a clearance fit is generally adopted between the outer ring and the housing, which is used to conduct axial avoidance together in the case of shaft expansion; sometimes the fitting surface between the shaft and the inner ring is also used for axial avoidance.	● Separable type Cylindrical roller bearing (type NU, N) ● Non-separable type Deep groove ball bearing Combined angular contact ball bearing (back combination) Double row angular contact ball bearing Self-aligning ball bearing Double row tapered roller bearing (type 3700) Spherical roller bearing
Regardless of fixed-end and free-end	● When the bearing spacing is small and the influence of shaft expansion is little, the front or back of two angular contact ball bearing or tapered roller bearing that can withstand the axial load can be configured for use; ● Adjust the axial clearance after installation with nuts or spacers.	Deep groove ball bearing Angular contact ball bearing Self-aligning ball bearing Cylindrical roller bearing (type NJ, NF) Tapered roller bearing Spherical roller bearing
Used in vertical shaft	● The bearing that can withstand both radial load and axial load are selected for fixed-end. When the axial load is large, the thrust bearing and radial bearing can be used together. ● Similarly, the bearing that can only withstand radial load are selected for free-end to avoid the shaft expansion.	● Fixed-end Combined angular contact ball bearing (back combination) Double row tapered roller bearing (type 37000) Thrust bearing and radial bearing are used together

3.2.2 Bearing arrangement examples

The shafting preload, stiffness, shaft expansion, etc. have been considered in the typical bearing configuration shown in **Table 3.4**.

Table 3.4 Examples of typical bearing arrangements

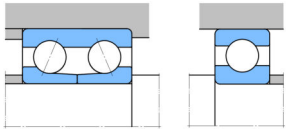
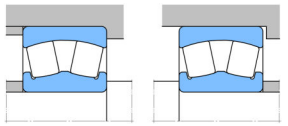
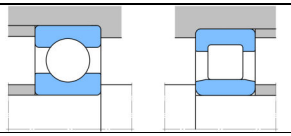
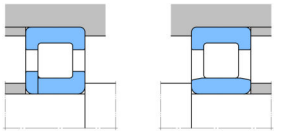
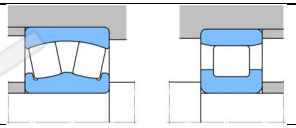
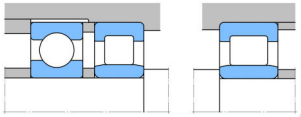
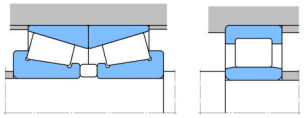
Figures	Bearing arrangements		Applicable summary	Application occasions
	Fixed-end	Fixed-end		
Example 1			◇Suitable for occasions of large axial load and double-direction action; ◇Double row angular contact ball bearings can be replaced by combined angular contact ball bearings at fixed-end.	Worm gear, reducer
Example 2			◇Most suitable for occasions of installation error or shaft deflection; ◇In addition to large radial load, it also can withstand axial load to some extent.	Rolling mill, Reducer for rollers of roll table, Bridge crane, travelling wheel
Example 3			◇Suitable for high-speed rotation, generally widely used; ◇Not suitable for occasions where inconcentricity or shaft deflection may occur between bearings.	Medium motor, Blower
Example 4			◇Suitable for high-speed rotation and large load or impact load; ◇Because the bearing is separable type, it is suitable for occasions where the interference fit is required for inner ring and the outer ring; ◇Not suitable for occasions where inconcentricity or shaft deflection may occur between bearings.	Railway vehicle, main motor
Example 5			◇Suitable for occasions where axial load is not very large; ◇Suitable for occasions where the interference fit is required for both the inner ring and the outer ring.	Papermaking calender rolls, Diesel locomotive, axle
Example 6			◇Suitable for high-speed rotation and large radial load, existing axial load; ◇In order to avoid the deep groove ball bearings from withstanding radial load, there is a clearance between the outer ring and the shell.	Diesel locomotive, gearbox
Example 7			◇Suitable for large load or impact load; ◇This arrangement requires the fixed-end has high rigidity, and the back combination is used and the preload is applied; ◇It is required to improve the accuracy of shaft and shell, and reduce the installation error.	Roll table for rolling mill, Lathe spindle

Table 3.4 Examples of typical bearing arrangements (Continued)

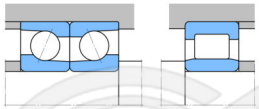
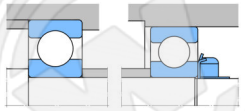
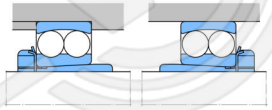
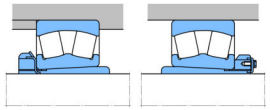
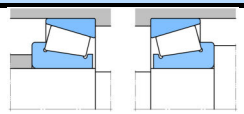
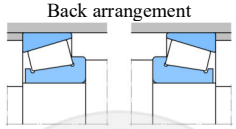
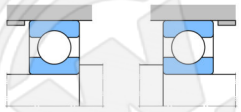
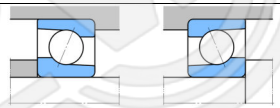
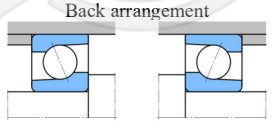
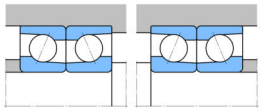
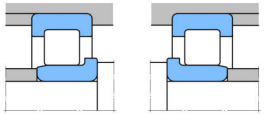
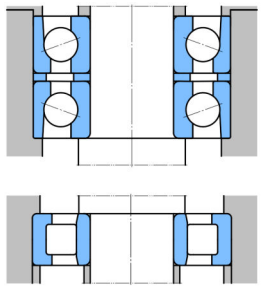
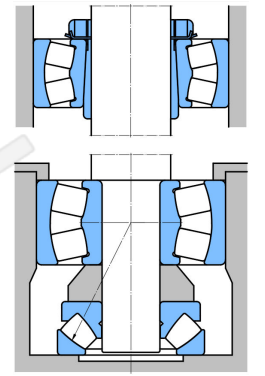
Example 8		◇Suitable for high-speed rotation, axial load less than that of Example 7; ◇Suitable for occasions where the interference fit is required for both the inner ring and the outer ring; ◇Double row angular contact ball bearings can be used on the fixed side to replace the paired angular contact ball bearings.	Motor
Example 9		◇The most commonly used configuration; ◇In addition to radial load, it also can withstand axial load to some extent.	Pump, Automobile gearbox
Example 10		◇Most suitable for installation error or shaft deflection; ◇Fasteners can be used for convenient installation and disassembly, suitable for long shafts without shaft shoulder or thread. ◇Not suitable for withstanding axial load.	General industrial machinery, Countershaft
Example 11		◇Most suitable for occasions of installation error or shaft deflection; ◇Suitable for occasions of load or impact load greater than that of Example 10. ◇In addition to radial load, it also can withstand axial load to some extent.	Roll table
Figures	**Regardless of fixed-end and free-end**	**Applicable summary**	**Application occasions**
Example 12	 Back arrangement  Front arrangement	◇Suitable for occasions of large axial load or impact load ◇Suitable for occasions where the preload force is applied to improve the shaft rigidity ◇Back configuration is suitable for withstanding torque ◇When the interference fit is required for the inner ring, the front configuration is convenient for installation. It is generally suitable for occasions of installation errors ◇When applying preload force, pay attention to the adjustment of preload force	Reducer, Automobile axle
Example 13		◇Most commonly used for occasions of small machinery or withstanding small loads ◇When applying light preload force, the spring or the thickness-ground spacer can be added to the side of the outer ring at one end	Small motor, Small reducer, Small pump
Example 14	 Back arrangement  Front arrangement	◇Suitable for occasions where the preload force is applied to improve the shaft rigidity. Most of them are used at the positions of large axial load and high-speed rotation ◇Back configuration is suitable for taking torque load. ◇When applying preload force, pay attention to the adjustment of preload force.	Machine tool spindle

Table 3.4 Examples of typical bearing arrangements (Continued)

Example 15		◇Suitable for occasions of withstanding light load, high-speed rotation and high accuracy. ◇Suitable for occasions where the preload force is applied to improve the shaft rigidity. ◇In addition to the back combination as shown, the front combination and series combination also can be used.	Machine tool spindle
Example 16		◇It can withstand heavy load and impact load. ◇Suitable for occasions where the interference fit is required for both the inner ring and the outer ring. ◇Pay attention to avoiding the over-small axial internal clearance during operation.。	Construction machinery, Final reducer
Figures	**Used in vertical shaft**	**Applicable summary**	**Application occasions**
Example 17	 Fixed-end Free-end	◇Use combine angular contact ball bearings at the fixed-end, cylindrical roller bearings at the free-end, suitable for high-speed rotation.	Vertical motor, Vertical pump
Example 18	 Free-end Fixed-end	◇Suitable for occasions of low speed, heavy load and axial load greater than radial load. ◇With aligning performance, suitable for occasions where inconcentricity or shaft deflection may occur between bearings.	Central shaft of the crane, Vertical pump

4 Main dimensions and code

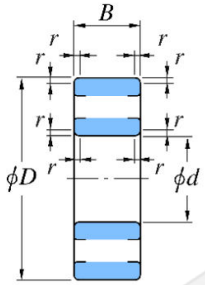
4.1 Main Dimensions

The main dimensions, as shown in **Figure 4.1**, **Figure 4.2**, **Figure 4.3**, refer to the geometric dimensions such as bearing inner diameter, outer diameter, width, height and chamfer that characterize the external appearance of rolling bearings, and are important dimensions for rolling bearings to be installed on shafts or housings. Under the premise of considering the operating conditions, Users must select the appropriate size of bearings as per the actual assembly space, and shall consider the appropriate fitting accuracy according to the actual operating conditions. Usually, the reasonable fitting parameters can ensure the long-term and stable operation of the whole system.

The main dimensions of rolling bearing have been specified by international standards **ISO 15**, **ISO 355** and **ISO 104**. The national standard **GB/T 273.3**, **GB/T 273.1** and **GB/T 273.2** have also been adjusted accordingly. Please view the main overall dimensions of the specific type of bearing in the following product catalog. Unless otherwise stated, the dimensions shown in the figure are nominal dimensions. The chamfer size shown in the figure is the smallest single chamfer size listed in the size table, and the maximum chamfer size is specified in **GB/T 274/ISO 582**.

The symbol representation method of parameters such as size, dimensional tolerance, accuracy, rated load, and service life of rolling bearing has been standardized and is given by **GB/T 7811/ISO 15241**.

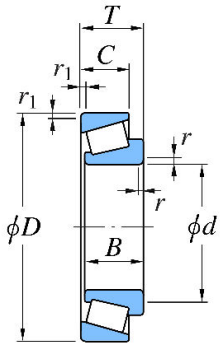
4.1.1 Radial bearings



d: Bearing inner diameter
D: Bearing outer diameter
B: Bearing width
r: Chamfer dimensions[1)]

Figure 4.1 radial bearing (Except tapered roller bearing)

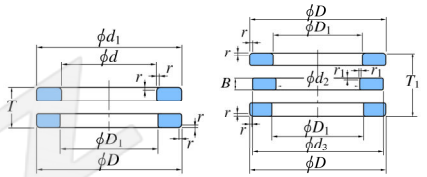
4.1.2 Tapered roller bearings



d: Bearing inner diameter
D: Bearing outer diameter
T: Single-row bearing width (assembly width)
B: Inner ring width of single row bearing
C:Outer ring width of single row bearing
r:Back chamfer dimensions of inner ring [1)]
r_1:Back chamfer dimensions of outer ring [1)]

Figure 4.2 Tapered roller bearing

4.1.3 Thrust bearings



(a)Single-direction (b) Double-direction

Figure 4.3 Plain housing washer thrust bearing

d: Shaft washer nominal bore diameter
d_1: Shaft washer nominal outer diameter [2)]
d_2: Central shaft washer nominal bore diameter
d_3: Central shaft washer nominal outer diameter [2)]
D: Housing washer nominal out diameter
D_1: Housing washer nominal bore diameter[1)]
T: Nominal height of single direction bearing
T_1: Nominal height of double direction bearing
B: Central shaft washer height
r: Shaft washer and housing washer chamfer dimension [1)]
r_1: Central shaft washer chamfer dimension[1)]

[Note]
1). The minimum value is listed in dimension tables
2). The maximum value is listed in dimension tables

In the size table, the bearing inner diameter code, inner diameter size, outer diameter size, width size, height size, chamfer size, etc. are respectively indicated by diameter series and size series.

1) The diameter series is the series of the stepped bearing nominal outer diameter corresponding to the nominal bearing inner diameter, and the size series is the combination of the width/height series and the diameter series.

2) The size series of radial bearing and thrust bearing are shown in Figure 4.4 and Figure 4.5, respectively.

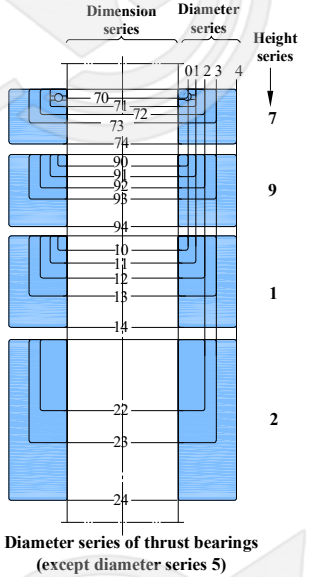


Figure 4.1 Dimension series of radial bearings (except diameter series 5)

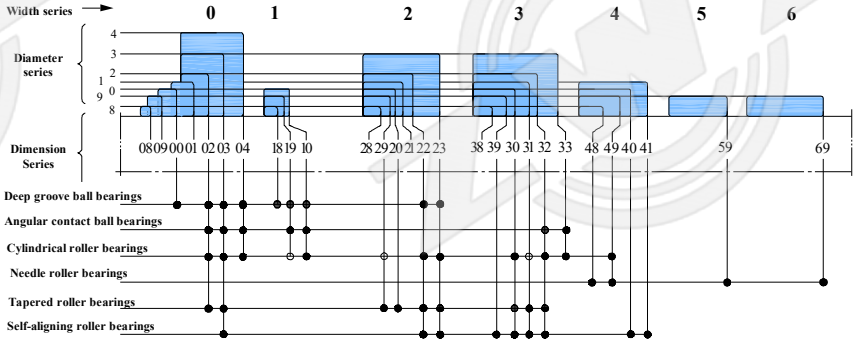


Figure 4.5 Dimension series of radial bearings (except diameter series 7)

4.2 Snap ring groove and snap ring

Refer to **GB/T 305** or **ISO 464** for the dimensions and tolerance values of the snap ring groove and snap ring of radial bearing.

4.3 Bearing code system

The rolling bearing code is generally composed of basic code, prefix code and suffix code.

4.3.1 Basic code

Each **ZWZ** bearing of standard design has a basic code that usually includes three, four, or five digits, or a combination of letters and numbers, as shown in **Figure 4.6**.

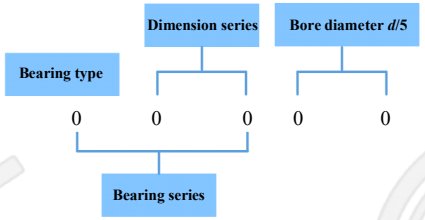


Figure 4.6 Basic code of rolling bearings

The meaning of numbers (or letters and numbers) is as follows:

The first digit, first letter or letter combination of the basic code indicates the type of bearing.

The second and third digits indicate the size series, where the second indicates the width (height) series, and the third indicates the diameter series.

4.3.2 Bore diameter code

The numbers used in inner diameter code of the bearings are specified in **Table 4.1**, and refer to **GB/T 272**.

Table 4.1 Bearing bore diameter code

Bearing nominal bore diameter /mm		Bore diameter code	Examples
0.6~10 (non-integer)		It is indicated directly by the nominal inner diameter in mm, separated by a "/" between it and the size series code	Deep groove ball bearing 617/0.6 d=0,6mm Deep groove ball bearing 618/2.5 d=2.5mm
1~9(integer)		It is indicated directly by the nominal inner diameter in mm, and the diameter series 7, 8, 9 of deep groove ball and angular contact ball bearing are separated by a "/" between the inner diameter and the size series.	Deep groove ball bearing 625 d=5mm Deep groove ball bearing 618/5 d=5mm Angular contact ball bearing 707 d=7mm
10~17	10	00	Deep groove ball bearing 6200 d=10mm
	12	01	Self-aligning ball bearing 1201 d=12mm
	15	02	Cylindrical roller bearing NU202 d=15mm
	17	03	Thrust ball bearing 51103 d=17mm
20~480(except 22,28.32)		The quotient that nominal inner diameter is divided by 5, the quotient is a single digit, and "0" is required to be added to the left of the quotient, such as 08	Spherical roller bearing 22308 d=40mm Cylindrical roller bearing NU1096 d=480mm
≥500 and 22,28.32		It is indicated directly by the nominal inner diameter in mm, separated by a "/" between it and the size series	Spherical roller bearing 230/500 d=500mm Deep groove ball bearing 62/22 d=22mm

4.3.3 Standard bearings

Bearing type code is shown in Table 4.2:

Table 4.2 Bearing Type Code

Code	Bearing type
0	Double-row angular contact ball bearing
1	Self-aligning ball bearing
2	Spherical roller bearing and thrust spherical roller bearing
3	Tapered roller bearing
4	Double-row deep groove ball bearing
5	Thrust ball bearing
6	Deep groove ball bearing
7	Angular contact ball bearing
8	Thrust cylindrical roller bearing
9	Thrust tapered roller bearing
N	Cylindrical roller bearing
NN	Double-row or multiple-row cylindrical roller bearing
U	Insert ball bearing
QJ	Four-point-contact ball bearing
C	Toroidal roller bearing
NA	Needle roller bearing

[Note] Adding letters or numbers after or before the code indicates different structures in this type of bearing, such as: NJ, NU, NUP, etc.

Bearing series code is shown in **Table 4.3**:

Table 4.3 Bearing series code

Bearing type		Bearing series code	Size series code	Bearing series code	Standard number
Double-row angular contact ball bearing		(0)[1]	32	32	GB/T 296
			33	33	
Self-aligning ball bearing		1	39	139	GB/T 281
		1	(1)0	10	
		1	30	130	
		1	(0)2	12	
		(1)	22	22	
		1	(0)3	13	
		(1)	23	23	
Spherical roller bearing		2	38	238	GB/T 288
			48	248	
			39	239	
			49	249	
			30	230	
			40	240	
			31	231	
			41	241	
			22	222	
			32	232	
			03[2]	213	
			23	223	
thrust spherical roller bearing		2	92	292	GB/T 5859
			93	293	
			94	294	
Tapered roller bearing		3	29	329	GB/T 297
			20	320	
			30	330	
			31	331	
			02	302	
			22	322	
			32	332	
			03	303	
			13	313	
			23	323	
Double-row deep groove ball bearing		4	(2)2	42	—
			(2)3	43	
Thrust ball bearing	Thrust ball bearing	5	11	511	GB/T 301
			12	512	
			13	513	
			14	514	
	Double-direction thrust ball bearing	5	22	522	
			23	523	
			24	524	
	thrust ball bearing with spherical housing washer	5	12[3]	532	GB/T 28697
			13[3]	533	
			14[3]	534	
	double-direction thrust ball bearing with spherical housing washer	5	22[4]	542	
			23[4]	543	
			24[4]	544	

Bearing series code is shown in **Table 4.3**:

Bearing type		Bearing series code	Size series code	Bearing series code	Standard number
Deep groove ball bearing		6	17	617	GB/T 276
			37	637	
			18	618	
			19	619	
		16	(0)0	160	
		6	(1)0	60	
			(0)2	62	
			(0)3	63	
			(0)4	64	
Angular contact ball bearing		7	18	718	GB/T 292
			19	719	
			(1)0	70	
			(0)2	72	
			(0)3	73	
			(0)4	74	
Thrust cylindrical roller bearing		8	11	811	GB/T 4663
			12	812	
Cylindrical roller bearing	Cylindrical roller bearing without rib in outer ring	N	10	N 10	GB/T 283
			(0)2	N 2	
			22	N 22	
			(0)3	N 3	
			23	N 23	
			(0)4	N 4	
	Cylindrical roller bearing without rib in inner ring	NU	10	NU 10	
			(0)2	NU 2	
			22	NU 22	
			(0)3	NU 3	
			23	NU 23	
			(0)4	NU 4	
	Cylindrical roller bearing with single rib in inner ring	NJ	(0)2	NJ 2	
			22	NJ 22	
			(0)3	NJ 3	
			23	N 23	
			(0)4	NU 4	
	Cylindrical roller bearing with single rib and loose rib in inner ring	NUP	(0)2	NUP 2	
			22	NUP 22	
			(0)3	NUP 3	
			23	NUP 23	
			(0)4	NUP 4	
	Cylindrical roller bearing with single rib in outer ring	NF	(0)2	NF 2	
			(0)3	NF 3	
			23	NF 23	
	Double-row cylindrical roller bearing	NN	49	NN 49	GB/T 285
			30	NN 30	
	Double row cylindrical roller bearing without rib in inner ring	NNU	49	NNU 49	
			41	NNU 41	
Insert bearing	Insert ball bearing with jackscrew	UC	2	UC 2	GB/T 3882
			3	UC 3	
	Insert ball bearing with eccentric locking collar	UEL	2	UEL 2	
			3	UEL 3	
	Insert ball bearing with tapered bore	UK	2	UK 2	
			3	UK 3	

Bearing type		Bearing series code	Size series code		Bearing series code	Standard number
Four-point-contact ball bearing		QJ	(0)2		QJ 2	GB/T 294
			(0)3		QJ 3	
			10		QJ 10	
Toroidal roller bearing		ZWZ current code is SDB (GB code is C)	29		C 29	–
			39		C 39	
			49		C 49	
			59		C 59	
			69		C 69	
			30		C 30	
			40		C 40	
			50		C 50	
			60		C 60	
			31		C 31	
			41		C 41	
			22		C 22	
			32		C 32	
Needle roller bearing	Needle roller bearing	NA	Represent by size series code and bore diameter code		NA 4800 NA 4900 NA 6900	GB/T 5801
			Size series code	Bore diameter code according to **Table 4.1**		
			48 49 69			
	Open drawn up needle roller bearing	HK	F_wC		HK F_wC	GB/T 290
	Capped drawn up needle roller bearing	BK	F_wC		BK F_wC	

[Note] 1) Numbers enclosed by "()" in the table indicate omissions in the combined code.

2) The size series is actually 03, represented by 13.

3) The size series is actually 12, 13 and 14, represented by 32, 33 and 34.

4) The size series is actually 22, 23, 24, represented by 42, 43 and 44.

4.3.4 Non-standard bearings

In recent years, due to the gradual increase in the types of non-standard bearing, some unique, special and new products have emerged. In order to make these products participate in the international market competition and facilitate the domestic market sales, it is necessary to formulate the code system.

The non-standard bearing code is consists of basic code and prefix & suffix code.

The basic code of the non-standard bearing consists of two parts, one is the bearing type code and the other is indication of dimensions for bearing basic dimension.

The indication of of dimensions according to the two methods as follows:

(1)Type code

Type code is specified in Table 4.2.

(2)Indication of of dimensions

The indication of of dimensions according to two methods as follows.

1) Two methods of size series code represent:

a) The non-standard outer diameter or width (height) dimension shall be the closest diameter series or width (height) series by means of comparison with the standard size or by the rules of extension of the overall dimensions specified in **GB/T 273.2** and **GB/T 273.3**, and shall be indicated by adding letters and numbers after the basic code, see **Table 4.4**.

Table 4.4 Suffix code of non-standard bearing

Letter	Meaning
X1	Non-standard outside diameter
X2	Non-standard width (height)
X3	Non-standard outside diameter and width (height) (Standard bore diameter)

b) The non-standard inner/outer diameter or width/ height dimension can't be represented by means of comparison with the standard size or by the rules of extension of the overall dimensions specified in GB/T 273.2 and GB/T 273.3, and shall be indicated by non-standard series, see Table 4.5. ZWZ bearing non-standard series code is shown in **Table 4.6**.

Table 4.5 Non-standard Series Code

Bearing type	Non-standard Series		Remarks
	Wide (high) series code	Diameter series code	
Radial bearing	0（4）	6	a) Double row angular contact ball bearing non-standard series is 46; b) The "0" is omitted when the non-standard series 06 is combined with the type code (except tapered roller bearing and double row deep groove ball bearing).
Thrust bearing	1	7	Single-direction thrust bearing – non-standard series 17
	2		Double-direction thrust bearing – non-standard series 27

4.6 ZWZ bearing non-standard series code

Bearing type	Bearing basic code
Double row angular contact ball bearing	4600
Self-aligning ball bearing	1600
Spherical roller bearing	20600
Tapered roller bearing	30600
Double-row tapered roller bearing with double-raceway cup Double-row tapered roller bearing with double-raceway cone	350600 370600
Four-row tapered roller bearing	380600
Double-row deep groove ball bearing	40600
Thrust ball bearing	51700
Double-direction thrust ball bearing	52700
Deep groove ball bearing	6600
Angular contact ball bearing	7600
Four-point-contact ball bearing (two-piece bearing inner ring) Four-point-contact ball bearing (two-piece bearing outer ring)	QJ600 QJF600
Thrust angular-contact ball bearing	561700
Double-direction angular contact thrust ball bearing	232700
Thrust cylindrical roller bearing	81700
Double-direction thrust cylindrical roller bearing	82700
Thrust tapered roller bearing Double-direction thrust tapered roller bearing	91700 92700
Cylindrical roller bearing	N600、NU600、NJ600、NF600 NUP600 、NN600、NNU600
Thrust spherical roller bearing	21700

Note: "00" stands for any proper bore diameter code of bearing.

2）Non-standard bearing indicated by bore diameter code, please refer to **Table 4.7** for the bore diameter code of the non-standard bearing.

Table 4.7 Indication method of non-standard bearing bore diameter

Bore diameter	Indication method
Standard dimension	Reference to the present standard.
Nonstandard dimension	Bore diameter is indicated by the quotient divided by 5 if this bore diameter is smaller than 500mm and can be divided by 5. Other bore diameter are indicated with the actual bore diameter value (mm) or additive letter. When the bore diameter value (mm) is integer or with one place decimal, it can be indicated with this dimension directly, but be separated from the dimension series code with "/"; When the actual bore diameter value (mm) is with two or more places decimals, the dimension is indicated with the integral part and expressed with X4. For example, NCF6/27X4V, it indicates the cylindrical roller bearing, non-standard series, with the bore diameter of 27.762 and full filling with rollers.

Example 1:
66/6.4 Deep groove ball bearing, non-standard series, bore diameter is 6.4mm.
Example 2:
61936X1M Deep groove ball bearing, non-standard outside diameter, close to diameter series 9.
Example 3:
62/14.5 Deep groove ball bearing, dimension series 02, bore diameter is 14.5mm.
Example 4:
52706 Double-direction thrust ball bearing, non-standard series, bore diameter is 30mm.
When the code of several non-standard bearings are the same, which belong to the same type but with the slightly different dimensions, they are distinguished by adding "-"mark and add sequence number 1, 2, 3..... after each code name.
For example, 61956X1M
61956X1M-1
61956X1M-2
The prefix and suffix code for non-standard bearing according to the rules of present standard and this system.

4.4 Prefix and suffix

The prefix code of bearing and bearing parts is generally composed of letters and letters & numbers combination, which is placed before the basic code, and the suffix code is generally composed of letters and letters & numbers combination, which is placed after the basic code. The basic prefix code and suffix code are shown in **Figure 4.7**. **For more details about the ZWZ bearing code system and bearing selection, please contact the ZWZ technicians.**

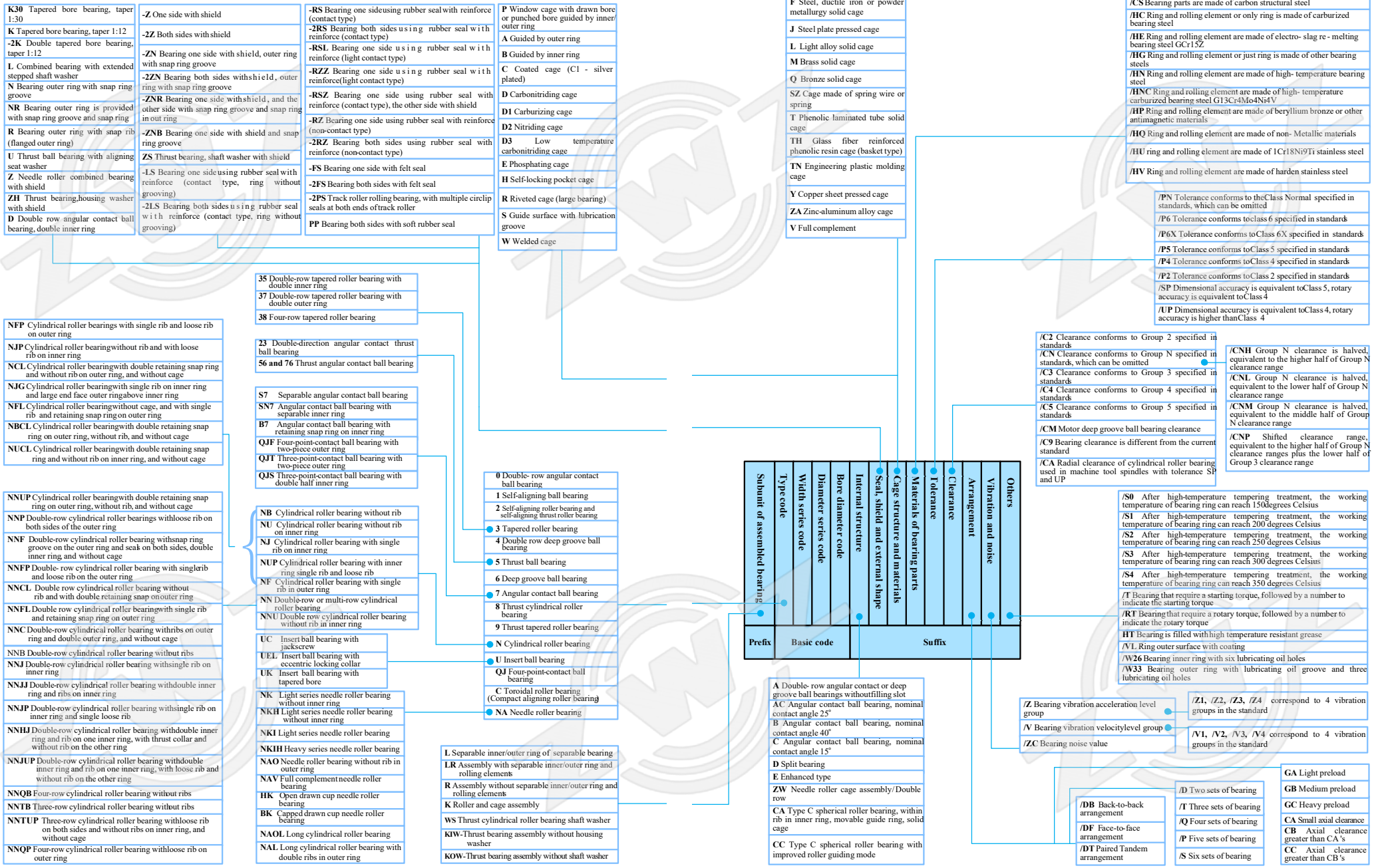


Figure 4.2 Overall code system (GB/T 272)

5 Bearing dimension selection

5.1 Bearing life

Rotating under load, the raceway and the rolling surface of the rolling elements are continuously subjected to alternating loads. Even under normal conditions, the surfaces may occur damages due to material fatigue.

The total number of rotations before the occurrence of such rolling fatigue damage is referred to as the bearing's "(fatigue)" life.

Even if bearings have identical structures, sizes, materials, and production processes, their (fatigue) lives can vary significantly under the same conditions.

This variability arises from the inherent material variability in material fatigue characteristics, necessitating a statistical approach to evaluate bearing life.

Therefore, when a batch of identical bearings is rotated under the same conditions, the total number of revolutions at which 90% of the bearings do not exhibit rolling fatigue damage is called the "**basic rating life of the bearing**" (i.e., the life with 90% reliability).

Rotating at a constant speed, this can also be expressed as the total operating time. In practical service, bearings may suffer from damage other than rolling fatigue, such as wearing, seizure, creep fretting, indentations, and fractures. Such damage can be mitigated through proper bearing selection, installation, and lubrication.

5.1.1 Calculation of bearing life

(1) Basic Dynamic Load Rating *C*

Basic dynamic load rating indicates the fatigue resistant capacity (i.e. load capacity). It indicates that with pure radial load (for radial bearings) applied, and under the condition of inner ring rotating and fixed outer ring (or vice versa), the basic rating life can reach 1 million rotations. The basic load rating for radial bearings and thrust bearing is called radial basic load rating respectively, indicated by $\boldsymbol{C}_r$ and $\boldsymbol{C}_a$, whose values are provided in the bearing dimension tables.

(2) Basic rating life $\boldsymbol{L}_{10}$

L_{10}, the basic rating life with 90% reliability, refers to the bearing standard design, the use of special steel specified in the national standard, and the bearing manufactured by higher production quality.

The relationship between the bearing's basic dynamic load rating, dynamic equivalent load, and basic rating life can be expressed by the following formula (5.1).

The formula (5.1) are not suitable for two cases: Under very large load conditions, (When P exceeds either of the basic static load rating C_0 and $0.5C$) the contact surface between the raceway and the rolling body causes plastic deformation, and the contact surface between the raceway and the rolling body causes relative sliding due to small load conditions. **If these conditions exists, please consult with ZWZ engineering technicians**.

When a bearing rotates at a fixed speed, it is more convenient to express its life in time, as shown in the formula (5.2).

In addition, for railway vehicles or cars, its life is more generally expressed in traveling distance (km), as shown in the formula (5.3).

Total rotation number: $$L_{10} = \left(\frac{C}{P}\right)^P \quad \cdots\cdots(5.1)$$

Time: $$L_{10h} = \frac{10^6}{60n}\left(\frac{C}{P}\right)^P \quad \cdots\cdots(5.2)$$

Distance of movement: $$L_{10s} = \pi D L_{10} \quad \cdots\cdots(5.3)$$

Where,

$\boldsymbol{L}_{10}$: basic rating life, 10^6 revolutions

$\boldsymbol{L}_{10h}$: basic rating life, h

$\boldsymbol{L}_{10s}$: basic rating life, km

P: dynamic equivalent load, N{kgf}

C: basic dynamic load rating, N{kgf}

n: speed, rpm

p: life index

ball bearing·····p=3

roller bearing·····p =10/3

D: wheel or tire diameter, mm

Therefore, as the service conditions of bearings, the dynamic equivalent load is set as P and the speed is set as n, then the basic dynamic load rating C of bearings required to meet the design life can be calculated by the formula(5.4). The bearing dimensions can be determined by selecting the bearing that meets the C value from the bearing dimensions table.

$$C = P\left(L_{10h} \times \frac{60n}{10^6}\right)^{1/p} \quad \cdots\cdots(5.4)$$

The formula expressed in life factor (f_h) and speed factor (f_n) is as follows:

$$L_{10h} = 500 f_h^{\,p} \quad \cdots\cdots(5.5)$$

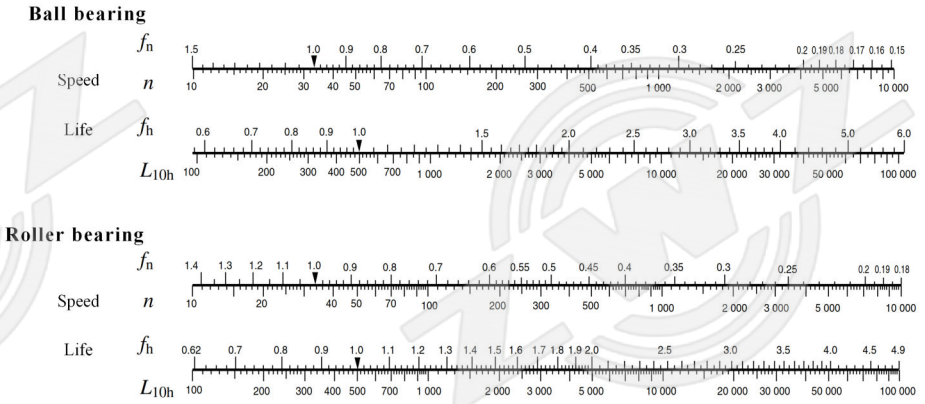
Life factor:

$$f_h = f_n \frac{C}{P} \quad \cdots\cdots(5.6)$$

Speed factor:

$$f_n = \left(\frac{10^6}{500 \times 60n}\right)^{1/p} = (0.03n)^{-1/p} \quad \cdots\cdots(5.7)$$

With the calculated figure [Figure 5.1] f_h, f_n and $\boldsymbol{L}_{10h}$ can be obtained easily.



〔Reference figure 5.1〕 The correlation between the speed n and the speed coefficient (f_n) and the correlation between the life coefficient (f_h) and life L_{10h})

(3) Adjustment of basic dynamic load rating for high temperature use and dimensional stabilizing treatment of bearings

Using at high temperatures, the bearing material structure changes and hardness decreases, causing the basic dynamic load rating to be lower than normal. Once the material structure changes, it will not revert even if the temperature returns to normal, the basic dynamic load rating in the dimensions table must be adjusted by multiplying them by the factor shown in **Table 5.1**.

Table 5.1 temperature factor

Working temperature℃	125	150	175	200	250
Temperature factor（f_t）	1	1	0.95	0.90	0.75

If working over 120℃ for a long period, the dimensions for bearings processed by normal heat treatment shall change greatly, stabilizing the dimensions must be taken.

The codes for dimensional stabilization treatment and the corresponding temperature ranges are shown in **Table 5.2**. However, bearings undergoing treatment may have reduced hardness, and sometimes results in a decrease in the basic dynamic load rating.

Table 5.2 Dimensional stabilization treatment

Code	Temperature range
S0	Over 100℃ to 150℃
S1	Over 150℃ to 200℃
S2	Over 200℃ to 250℃

(4) Adjusted rating life

The formula (5.1) indicates the basic rating life (L_{10}), under general service conditions in ball bearings whose internal design, material, production quality, etc., are standard. However, in practice, factors such as the lubrication and environment often cause significant discrepancies between practical service life and the basic rating life.

Moreover, it is desirable to calculate the life at different reliability levels to more accurately estimate the life under specific lubrication and contamination conditions.

When bearings made from high-quality steel operate under good conditions and work at appropriate Hertz rolling contact stress values that are below the limit of steel fatigue, bearing life can be far exceeding the L_{10}. On the contrary, under poor operating conditions, the life is much lower than the L_{10}.

The standard GB/T 6391 defines a formula to calculate the fatigue life with a systematic approach. In it, the effects of the changes and interactions of various interrelated factors on the life of the system can be considered by the additional stress caused by the rolling contact surface or below.

The standard not only uses the adjusted factor a_1, but also uses the life adjusted factor a_{ISO} based on the systematic approach for life calculation. These factors can be used to adjust the rating life formula:

$$L_{nm} = a_1 a_{ISO} L_{10} \quad \cdots\cdots\cdots(5.8)$$

1) Reliability factor a_1

When calculating the adjusted rating life whereas the reliability factor is no less than 90% (i.e. the failure rate is not more than 10%), **Table 5.3** should be used to select the factor a_1. The adjusted factor a_{ISO} are more complicated, to **check GB/T 6391 and ISO 281 or contact the engineering technician.**

Table 5.3 reliability factor a_1

Reliability，%	L_{nm}	a_1
90	L_{10m}	1
95	L_{5m}	0.64
96	L_{4m}	0.55
97	L_{3m}	0.47
98	L_{2m}	0.37
99	L_{1m}	0.25
99.2	$L_{0.8m}$	0.22
99.4	$L_{0.6m}$	0.19
99.6	$L_{0.4m}$	0.16
99.8	$L_{0.2m}$	0.12
99.9	$L_{0.1m}$	0.093
99.92	$L_{0.08m}$	0.087
99.94	$L_{0.06m}$	0.080
99.95	$L_{0.05m}$	0.077

5) Systematic life of multiple bearings

In devices that use more than two bearings, damage to one bearing in most cases will also lead to the loss of function of the entire device.

When the whole bearing used is regarded as a bearing system, the rating life of the bearing system can be calculated by the following formula.

$$\frac{1}{L^e} = \frac{1}{L_1^e} + \frac{1}{L_2^e} + \frac{1}{L_3^e} + \cdots\cdots \quad \cdots\cdots\cdots(5.9)$$

Where,

L: rating life of the entire bearing system

L_1、L_2、L_s...: rating life of bearings

E: constant

Ball bearing·····e=10/9

Roller bearing·····e=9/8

(Take the average value for mixed use)

[Example] Consider a shaft supported by two roller bearings. Let the rating life of one bearing be 35,000 hours, the other bearing is 30,000 hours, and bring it into the formula (5.9), the rating life of the entire bearing system on this shaft is as follows.

$$\frac{1}{L^{9/8}} = \frac{1}{50000^{9/8}} + \frac{1}{30000^{9/8}}$$

$L \fallingdotseq 17500$ h

That is to say, the rating life of the entire bearing system is shorter than the shortest rating life of a single bearing. This conclusion is extremely important and must be taken into account when considering the life of the entire bearing system for devices using more than two bearings.

(6) The necessary bearing life required by the machinery

When selecting bearings, it is important to reasonably specify the required service life. If the service life requirement is too high, the bearing dimensions will be excessively large, making the machinery bulky and uneconomical. If the service life requirement is too low, frequent replacements will be necessary. Typically, the bearing's service life can be determined based on the major overhaul period of the machinery. Recommended values for bearing service life for various types of machinery or devices are shown in the table below.

Table 5.4 Required Bearing Life (Reference)

Service conditions	Machinery used	Necessary bearing life required (time) (h)
Short or intermittent operation	Household appliances, power tools, agricultural machinery, winches	4000~8000
Infrequently used but requiring reliable operation	Household air conditioner motors, construction machinery, belt conveyors, elevators	8000~12000
Intermittent but long-term operation	Steel mill roll necks, small electric motors, cranes	8000~12000
	Factory general electric motors, general gear devices	12000~20000
	Machine tools, vibrating screens, crushers	20000~30000
	Compressors, pumps, critical gear devices	40000~60000
Frequent or continuous long-term operation for more than 8 hours a day	Escalators	12000~20000
	Centrifugal separators, air conditioning equipment, blowers, woodworking machinery, railway vehicle axles	20000~30000
	Large electric motors, mine hoists, railway vehicle main motors, locomotive axles	40000~60000
	Paper machinery	100000~200000
24-hour continuous trouble-free operation	Water supply equipment, power station equipment, mine drainage equipment	100000~200000

5.1.2 Calculation of bearing load

The loads acting on a bearing include the gravity of the bearing support, the transmitted power from gears or belts, and loads generated during the machinery operation.

Since bearing loads often fluctuate and the extent of these fluctuations is difficult to determine, it is almost impossible to determine bearing loads through simple calculations. Therefore, the calculation of loads generally uses theoretical calculated values multiplied by empirical factors.

(1) Loading factor

Although the radial or axial loads acting on a bearing can be calculated using general mechanical methods, the actual loads on the bearing are often greater than the calculated values due to mechanical vibrations or impacts. Therefore, in calculations, the theoretical calculated values are typically multiplied by a load coefficient related to mechanical vibrations or impacts, as shown in the following formula:

$$F = f_w \cdot F_C \qquad \cdots\cdots\cdots(5.10)$$

Where,

F: actual load, N

F_c: theoretical load, N

f_w: loading factor（Table 5.5）

Table5.5 Loading factor f_w

Service conditions	Cases	f_w
Almost no vibration or impact	Electric motors Machine tools Instruments	1.0~1.2
General operation (mild impact)	Railway vehicles Automobiles Paper machinery Blowers Compressors Agricultural machinery	1.2~2.0
With strong vibration or impact	Rolling mills Crushers Construction machinery Vibrating screens	2.0~3.0

(2) Loads for the belt or chain drive

The theoretical load acting on the belt pulley shaft during belt drive can be obtained by calculating the effective drive of the belt. However, when calculating the actual load, it is also necessary to multiply the theoretical load by the above load coefficient (f_w) and a belt coefficient related to the belt tension (f_b).

In addition, it is also necessary to multiply a chain factor equivalent to the belt coefficient, as shown in the formula(5.11).

$$F_b = \frac{2M}{D_p} \cdot f_w \cdot f_b = \frac{19.1\times10^6 W}{D_p n} \cdot f_w \cdot f_b \quad (5.11)$$

Where,

F_b: actual load of the belt pulley shaft or the chain shaft, N

M: torque of the belt pulley or chain pulley, mN·m

W: transmitted power, kW

D_p: belt pulley or tire diameter, mm

n: speed, rpm

f_w: loading factor (Table 5.5)

f_b: belt (chain) coefficient (Table 5.6)

Table 5.1 Belt (Chain) factor f_b

Type of belts	f_b
Synchronous belts (toothed timing belts)	1.3~2.0
Vee belts	2.0~2.5
Flat belts (with tension pulleys)	2.5~3.0
Flat belts	4.0~5.0
Chains	1.2~1.5

(3) Loads during gear drive

1) Loads and gear coefficients acting on gears

In the case of gear transmission, loads transmitted by gearing are theoretically classified into three types: tangential load (K_t), radial load (K_r) and axial load (K_a).

According to the driving force and categories of the gear, these loads can be calculated by the mechanics methods (using equations ⓐ , ⓑ and ⓒ , described in section(2)).

However, when calculating the actual load, it is also necessary to multiply the theoretical load by the load factor (f_w **Table 5.7**) and a gear coefficient related to the gear accuracy (f_g **Table 5.7**).

Table 5.7 Gear factor f_g

Type of gears	f_g
Precision gears (The tooth spacing error and tooth shape error are less than 0.02mm)	1.0~1.1
General gears (The tooth spacing error and tooth shape error are less than 0.1mm)	1.1~1.3

2) Gear load calculation

ⓐTangential load (tangential force) K_t

[spur gears, helical gears, herringbone gears, straight bevel gears, spiral bevel gears]

$$K_t = \frac{2M}{D_p} = \frac{19.1\times10^6 W}{D_p n} \qquad \cdots\cdots(5.12)$$

In ⓐ-ⓒ,

K_t: tangential load of gears, N

K_r: radial load of gears, N

K_a: axial load of gears, N

M: torque of gears, mN·m

D_p: pitch cone diameter, mm

W: transmitted power, kW

n: speed, rpm

α: gear pressure angle, deg（°）

β: gear helix angle, deg（°）

δ: bevel gear pitch cone angle, deg（°）

Table 5.8 Gear load calculation formula

	ⓑradial load (separating force)K_r	ⓒaxial load(axial force)K_a
spur gears	$K_r = K_t \tan\alpha$ .....(5.13)	0
helical gears	$K_r = K_t \frac{\tan\alpha}{\cos\beta}$ .....(5.14)	$K_a = K_t \tan\beta$ .....(5.15)
herringbone gears	$K_r = K_t \frac{\tan\alpha}{\cos\beta}$ .....(5.16)	0

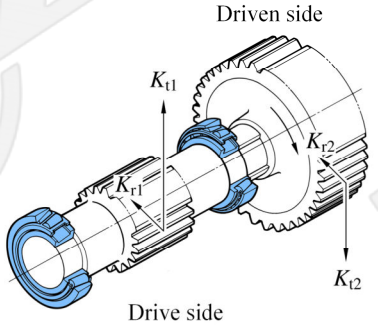


Figure 5.2 loads acting on spur gears

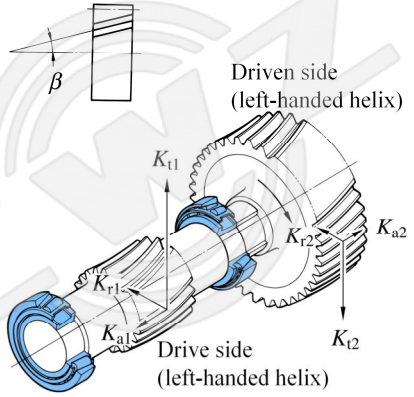


Figure 5.3 loads acting on helical gears

Table 5.8(Continued)

		ⓑradial load (separating force)K_r	ⓒaxial load(axial force)K_a
straight bevel gears[1)]	Driver	$K_{r1}=K_t\tan\alpha\cos\delta_1$ ……(5.17)	$K_{a1}=K_t\tan\alpha\sin\delta_1$ ……(5.18)
	Driven pulley	$K_{r2}=K_t\tan\alpha\cos\delta_2$ …(5.19)	$K_{a2}=K_t\tan\alpha\sin\delta_2$ ……(5.20)
spiral bevel gears[1)、2)]	Driver	$K_{r1}=\frac{K_t}{\cos\beta}(\tan\alpha\cos\delta_1\pm\sin\beta\sin\delta_1)$ ……(5.21)	$K_{a1}=\frac{K_t}{\cos\beta}(\tan\alpha\sin\delta_1\mp\sin\beta\cos\delta_1)$ ……(5.22)
	Driven pulley	$K_{r2}=\frac{K_t}{\cos\beta}(\tan\alpha\cos\delta_2\mp\sin\beta\sin\delta_2)$ ……(5.23)	$K_{a2}=\frac{K_t}{\cos\beta}(\tan\alpha\sin\delta_2\pm\sin\beta\cos\delta_2)$ ……(5.24)

[Notes] 1) Subscript 1 represents the gear of the driver, and subscript 2 represents the gear of the driven pulley.

2) Differences of the plus and minus symbols

{Symbols in upper row: clockwise rotation with right-handed spiral or counterclockwise rotation with left-handed spiral
Symbols in lower row: conterclockwise rotation with right-handed spiral or clockwise rotation with left-handed spiral}

[Notes] The direction of rotation refers to the direction viewed from the opposite side of the vertex of the pitch cone.

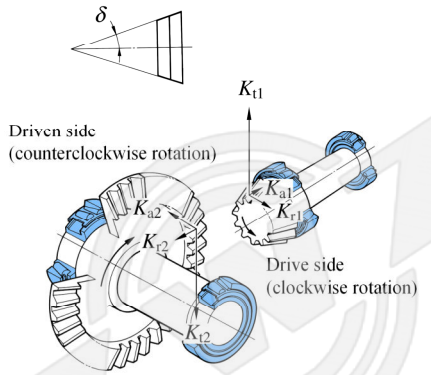


Figure 5.4 loads acting on straight bevel gears

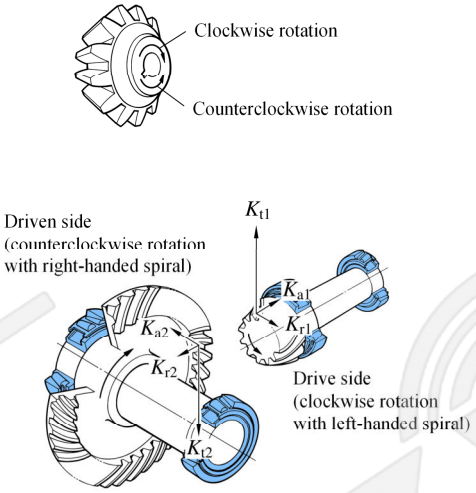


Figure 5.5 loads acting on spiral bevel gears

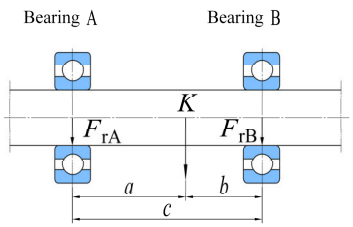
(4) Load distribution on bearings

To distribute the loads acting on the shaft system to each supporting bearing, first determine the radial component of each load, and then calculate their vector sum based on the direction of the components.

An example of radial load distribution is as follows:

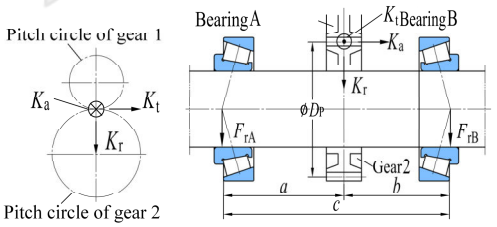
In Example 1 to Example 5,
F_{rA}: bearing A's radial load N
F_{rB}: bearing B 's radial load N
K: radial load of the shaft system N
K_1, K_r, K_a: gear load N
D_p: pitch cone diameter mm
⊙: to express the load direction (perpendicular to the paper, outward)
⊗: to express the load direction (perpendicular to the paper, inward)

Example 1 Basic(1)



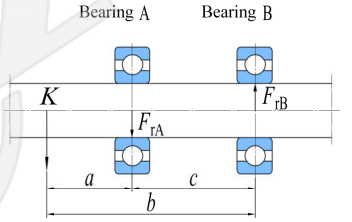
$$F_{rA}=\frac{b}{c}K \quad \cdots\cdots$$
$$F_{rB}=\frac{a}{c}K \quad (5.25)$$

Example 3 distribution of gear loads(1)



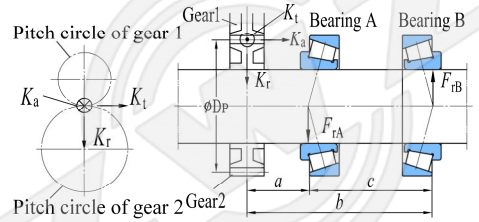
$$F_{rA}=\sqrt{\left(\frac{b}{c}K_t\right)^2+\left(\frac{b}{c}K_r-\frac{D_p}{2c}K_a\right)^2} \quad \cdots\cdots (5.26)$$
$$F_{rB}=\sqrt{\left(\frac{a}{c}K_t\right)^2+\left(\frac{a}{c}K_r+\frac{D_p}{2c}K_a\right)^2}$$

Example 2 Basic(2)



$$F_{rA}=\frac{b}{c}K \quad \cdots\cdots (5.27)$$
$$F_{rB}=\frac{a}{c}K$$

Example 4 distribution of gear loads(2)



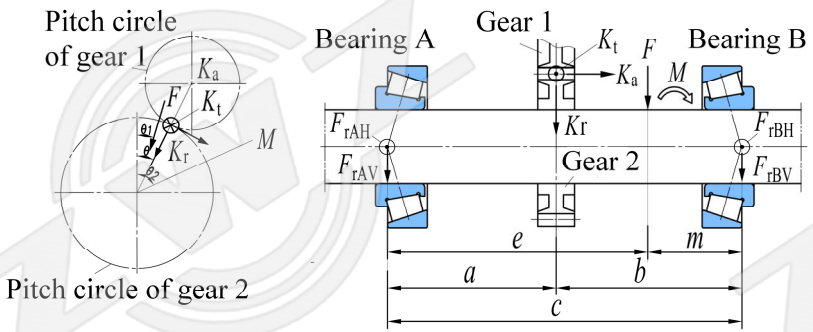
$$F_{rA}=\sqrt{\left(\frac{b}{c}K_t\right)^2+\left(\frac{b}{c}K_r-\frac{D_p}{2c}K_a\right)^2} \quad \cdots\cdots (5.28)$$
$$F_{rB}=\sqrt{\left(\frac{a}{c}K_t\right)^2+\left(\frac{a}{c}K_r-\frac{D_p}{2c}K_a\right)^2}$$

[Notes]

The bearings of Example 3 to Example 5 are subjected to external (gear) axial loads (K_a) and axial components of radial loads.

Refer to Section 5.1.4 for the calculation of axial loads in this case.

Example 5 Gear loads acting simultaneously with other loads



(engaging angle θ between gear 1 and gear 2, θ_1 and θ_2 the angle of action respectively for the external load force F and the torque M)

●The radial component of the horizontal direction (perpendicular to the paper)

$$F_{rAH}=\frac{b}{c}(K_r\sin\theta-K_t\cos\theta)-\frac{D_p}{2c}K_a\sin\theta+\frac{m}{c}F\sin\theta_1-\frac{M}{c}\sin\theta_2$$

$$F_{rBH}=\frac{a}{c}(K_r\sin\theta-K_t\cos\theta)+\frac{D_p}{2c}K_a\sin\theta+\frac{e}{c}F\sin\theta_1+\frac{M}{c}\sin\theta_2$$

●The radial component of the perpendicular direction (horizontal to the paper)

$$F_{rAV}=\frac{b}{c}(K_r\cos\theta+K_t\sin\theta)-\frac{D_p}{2c}K_a\cos\theta+\frac{m}{c}F\cos\theta_1-\frac{M}{c}\cos\theta_2$$

$$F_{rBV}=\frac{a}{c}(K_r\cos\theta+K_t\sin\theta)+\frac{D_p}{2c}K_a\cos\theta+\frac{e}{c}F\cos\theta_1+\frac{M}{c}\cos\theta_2$$

●Combined radial load

$$F_{rA}=\sqrt{F_{rAV}{}^2+F_{rAH}{}^2}$$

$$F_{rB}=\sqrt{F_{rBV}{}^2+F_{rBH}{}^2} \quad \cdots\cdots\cdots\cdots (5.29)$$

●when θ, F and M are all 0, the result is the same as Example 3.

5.1.3 Dynamic equivalent load *P*

Most bearings endure a combined load of radial and axial forces, and the load conditions are various, such as changes in magnitude, among others.

Therefore, it is not feasible to directly compare the actual load on the bearing with its basic rated dynamic load.

In such cases, the actual load is converted into an imaginary load passing through the center of the bearing and having a certain magnitude and direction for analysis and comparison. The bearing under this imaginary load has the same lifespan as under the actual load and speed conditions.

This converted imaginary load is termed the dynamic equivalent load, denoted as *P*.

(1) Dynamic equivalent load calculation

1) The equivalent dynamic load of radial bearings and thrust bearings ($\alpha\neq90°$) , which endure a combined load of specific magnitude and direction, can be calculated using the following formula:

$$P=XF_r+YF_a \quad \cdots\cdots\cdots(5.30)$$

Where:

P: dynamic equivalent load,N{kgf}
For radial bearings, it is expressed in the equivalent dynamic radial load Pr
For thrust bearings, it is expressed in the equivalent dynamic axial load Pa

F_r: radial load,N{kgf}

F_a: axial load,N{kgf}

X: radial load factor

Y: axial load coefficient

(The load coefficients X and Y are listed in the bearing dimensions table)

For the single-row radial bearings, when $\frac{F_a}{F_r}\leq e$, take X=1、Y=0。

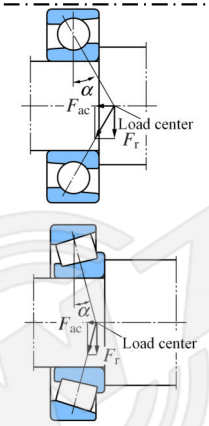
Therefore, at this time, the equivalent dynamic load is P_r=F_r

[*e* indicates the threshold value of $\frac{F_a}{F_r}$, listed in the bearing dimensions table.]

2）For single-row angular contact ball bearings and tapered roller bearings, as shown in the figure below, both bearings are configured on the front or back sides because of the axial component force (F_{ac}) generated when subjected to radial loads.

The axial component force can be calculated by the following formula.

$$F_{ac}=\frac{F_r}{2Y} \quad \cdots\cdots\cdots(5.31)$$



[Position dimensions of the point of operation are shown in the bearing dimensions table]

Figure 5.6 Axial component force

The calculation method of the equivalent dynamic load of this type of bearing under radial load and external axial load (Ka) is shown in Table 5.9.

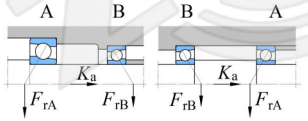
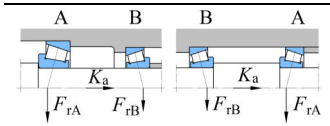
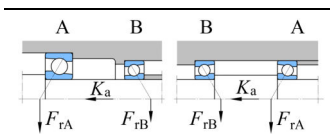
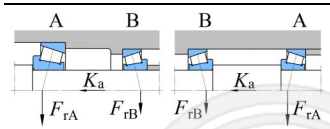
3)The thrust ball bearing which contact angle is $\alpha=90°$ only bears axial load, therefore, the dynamic equivalent load $P_a = F_a$.

$$P_a = F_a + 1.2F_r \quad \cdots\cdots(5.32)$$

where, $F_r/F_a \le 0.55$ 。

4）The equivalent dynamic load of the self-aligning thrust roller bearing is calculated by the following formula.

Table 5.9 Calculation of the equivalent dynamic load of two single-row angular contact ball bearings or tapered roller bearings in face-to-face or back-to-back configuration

Baring configuration DB type	Baring configuration DF type	load conditions	No.	Axial load	Dynamic equivalent load
		$\frac{F_{rB}}{2Y_B} + K_a \ge \frac{F_{rA}}{2Y_A}$	A	$\frac{F_{rB}}{2Y_B} + K_a$	$P_A = XF_{rA} + Y_A\left[\frac{F_{rB}}{2Y_B} + K_a\right]$ when $P_A < F_{rA}$, $P_A = F_{rA}$
			B	——	$P_B = F_{rB}$
		$\frac{F_{rB}}{2Y_B} + K_a < \frac{F_{rA}}{2Y_A}$	A	——	$P_A = F_{rA}$
			B	$\frac{F_{rA}}{2Y_A} - K_a$	$P_B = XF_{rB} + Y_B\left[\frac{F_{rA}}{2Y_A} - K_a\right]$ when $P_B < F_{rB}$, $P_B = F_{rB}$
		$\frac{F_{rB}}{2Y_B} \le K_a + \frac{F_{rA}}{2Y_A}$	A	——	$P_A = F_{rA}$
			B	$\frac{F_{rA}}{2Y_A} + K_a$	$P_B = XF_{rB} + Y_B\left[\frac{F_{rA}}{2Y_A} + K_a\right]$ when $P_B < F_{rB}$, $P_B = F_{rB}$
		$\frac{F_{rB}}{2Y_B} > K_a + \frac{F_{rA}}{2Y_A}$	A	$\frac{F_{rB}}{2Y_B} - K_a$	$P_A = XF_{rA} + Y_A\left[\frac{F_{rB}}{2Y_B} - K_a\right]$ when $P_A < F_{rA}$, $P_A = F_{rA}$
			B	——	$P_B = F_{rB}$

[Notes]

1. It is suitable for the occasions when the internal clearance and preload are 0 during operation

2. When the radial load is opposite to the direction of the arrow in the above diagram, it is still considered positive.

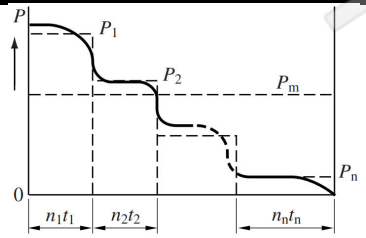
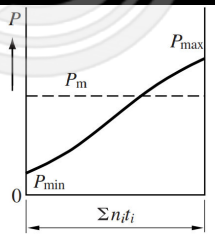
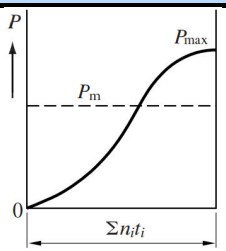
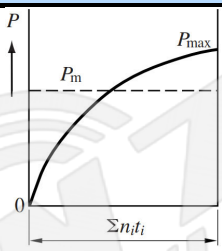
(2) Average equivalent dynamic load during load changes

When the bearing takes loads that change in magnitude or direction, it is necessary to calculate the mean dynamic equivalent load that makes the bearing have the same length of service life as that under the actual load fluctuation.

The calculation method of the dynamic equivalent load P_m under various equivalent variation conditions is shown as follows **Table 5.10**.

In addition, as shown in **Figure 5.7**, the average equivalent dynamic load when the static load and rotating load act at the same time can be calculated by the formula (5.38).

Table 5.10 The average dynamic equivalent load when the load changes

1) Step change	2)Monotone change
	
$P_m = \sqrt[p]{\frac{P_1^p n_1 t_1 + P_2^p n_2 t_2 + \ldots\ldots + P_n^p n_n t_n}{n_1 t_1 + n_2 t_2 + \ldots\ldots + n_n t_n}}$ $\cdots\cdots(5.33)$	$P_m = \frac{P_{min} + 2P_{max}}{3}$ $\cdots\cdots(5.34)$
3)Sinusoidal change	**4) Sinusoidal change（1/4 period of the sine curve）**
	
$P_m = 0.68\ P_{max}$ $\cdots\cdots(5.35)$	$P_m = 0.75\ P_{max}$ $\cdots\cdots(5.36)$

In 1)~4),

P_m: average dynamic equivalent load, N{kgf}

P_1: dynamic equivalent load when the speed is, and the effect time is,N{kgf}

P_2: dynamic equivalent load when the speed is, and the effect time is, N{kgf}

P_n: dynamic equivalent load when the speed is, and the effect time is, N{kgf}

P_{min}: minimum equivalent dynamic load, N{kgf}

P_{max}: maximum equivalent dynamic load, N{kgf}

$\sum n_i t_i$： $t_1+ t_2+\cdots\cdots t_n$ Total revolutions within a set time

P: life index

Ball bearing·····P=3

Roller bearing·····P=10/3

（(Reference) The average speed n_m can be calculated by the following formula,

$$n_m = \frac{n_1 t_1 + n_2 t_2 + \ldots\ldots n_n t_n}{t_1 + t_2 + \ldots\ldots t_n} \quad \cdots\cdots(5.37)$$

5) Simultaneous action of both static load and rotating load

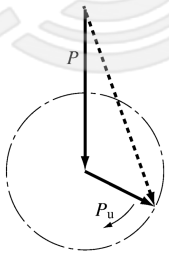


Figure 5.7

$$P_m = f_m(P + P_u) \quad \cdots\cdots(5.38)$$

where,

P_m: average equivalent dynamic load, N{kgf}

f_m: factor（figure 5.8）

P: static load, N{kgf}

P_u: rotating load, N{kgf}

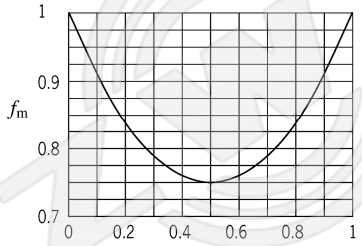


Figure 5.8 Factor f_m

5.1.4 Basic static load rating C_0

Working under excessive static loads or taking impact loads under very low speeds, the localized permanent deformation can occur at the rolling contact surface. The deformation amount increases with loads, and if it exceeds a certain limit, it can affect normal rotation.

The basic static load rating is the static load that responds to the calculated contact stress shown below at the contact center between the raceway and the rolling element which receives the maximum load.

Self-aligning ball bearings…4600MPa{469kgf/mm²}

Other ball bearings …4200MPa{429kgf/mm²}

Roller bearings ……4000MPa{408kgf/mm²}

Under these stresses, the total permanent deformation is about 0.0001 times the diameter of the rolling element. The basic static loads rating for radial bearings and thrust bearings are referred to as the **basic radial/axial static load rating**, respectively. These are denoted as C_{0r} and C_{0a}, and their values are in the dimensions table.

5.1.5 Static equivalent load P_0

This load is a theoetical load, calculated when the bearing is stationary or rotating at extremely low speed. Under actual load conditions, the same contact stress generated at the contact center between the raceway and the rolling element which receives the maximum load. For radial bearings, the radial load passing through the bearing center is used for the calculation; for thrust bearings, the axial load in a direction along the bearing axis is used. The static equivalent load can be calculated by the following formula:

[Radial bearing]……

Take the larger value calculating by follows,

$$P_{0r} = X_0 F_r + Y_0 F_a \quad \cdots\cdots(5.39)$$

$$P_{0r} = F_r \quad \cdots\cdots(5.40)$$

[Thrust bearings]

（$\alpha \neq 90^o$）

$$P_{0a} = X_0 F_r + F_a \quad \cdots\cdots(5.41)$$

(But when $F_a < X_o F_r$ the accuracy decreased)

（$\alpha = 90^o$）

$$P_{0a} = F_a \quad \cdots\cdots(5.42)$$

where,

P_{0r} : static equivalent radial load,N{kgf}

P_{0a} : equivalent static axial load, N{kgf}

F_r: radial load, N{kgf}

F_a : axial load, N{kgf}

X_0 : static radial load factor

Y_0 : static axial load factor(the static radial load factor X_0 and Y_0 are listed in the bearing dimensions table)

5.1.6 Load capacity and life

In bearing applications, the basic dynamic load rating is typically parameter of bearing load capacity, which's defined as the load that a bearing can endure when the basic rating life is exactly one million revolutions. This value can be found in the catalog.

The dynamic load bearing capacity of rolling bearings is determined by the fatigue characteristics of materials. The dynamic load capacity is defined by the basic rated dynamic load and the basic rating life. The rating life, as a fatigue cycle, is determined by the following factors: load, operating speed, and the statistical probability of the first occurrence of failure. Service life refers to the actual life of a set of rolling bearings, which may have a significant deviation from the calculated basic rating life. Possible causes of wear and/or fatigue are:

1. Deviation from operating conditions;
2. Misalignment between shaft and housing;
3. Excessive or insufficient operational clearance;
4. Contamination;
5. Inadequate lubrication;
6. Excessive operating temperature;
7. Bearing oscillation with a small angle (fretting);
8. Severe vibration and fretting;
9. Extremely high impact loads (static overload);
10. Pre-assembly damage.

Using life to select bearings requires consideration of parameters related to bearing load capacity. Bearings operate at very low speeds (n < 10 r/min) under load and require only a short life (In this case, if a given equivalent load P is used, the life equation will yield a very low required basic dynamic load rating C. Therefore, bearings selected based on life will be severely overloaded during actual operation); Bearings rotate and must withstand heavy impact loads in addition to normal operating loads.

Static equivalent load: The static load must be calculated based on its corresponding radial and axial loads to determine the static equivalent load. The static equivalent load refers to the maximum load acting on the bearings will cause the same maximum load of rolling elements as the actual load.

The static equivalent load P_0 can be obtained from the following general formula:

$$P_0=X_0F_r+Y_0F_a$$

In the formula, when calculating P_o, the maximum possible load should be taken and the corresponding radial and axial loads should be substituted into the above formula. If the static load acts on the bearing in different directions, the magnitude of the corresponding radial and axial loads will change. In these cases, the corresponding radial and axial loads that produce the maximum static equivalent load P_0 should be used.

P_0=equivalent static load, kN

F_r=actual radial load, kN

F_a=actual axial load, kN

X_0=radial load factor

Y_0=axial load factor

For bearings operating in rotation (experiencing dynamic stress) or in a static state, even under short-term applied loads, it is necessary to check their corresponding safety factor, including impact loads or maximum loads.

The basic static load rating, as per the **GB/T 4662** standard, corresponds to the center position of contact between the heaviest loaded rolling element and the raceway. The calculated contact stress is determined as follows:

4600MPa for self-aligning ball bearings

4200MPa for all the other ball bearings

4000MPa for all the roller bearings

These stresses cause permanent deformation of the rolling element and raceway, about 0.0001 of the diameter of the rolling element. For radial bearings, the load is pure radial load.

5.1.7 Safety factors

The permissible static equivalent load of a bearing is determined not only by the basic static load rating but also by the bearing's usage limits, which are determined by the aforementioned permanent deformation (localized indentation). These limits vary depending on the performance requirements and operating conditions of the bearing.

The permissible load is not determined by material fatigue but by the degree of permanent deformation caused by the load on raceways. Loads applied to stationary or slowly oscillating bearings, or impact loads, result in surface flattening of the rolling elements and indentation of the raceways. The extent of these changes and their impact on the bearing's performance depends on the specific requirements during use. The distribution of indentations on the raceways may be irregular or may correspond uniformly to the positions of the rolling elements. If the load is maintained over several rotations, the indentations will be evenly distributed across the entire raceway.

The permanent deformation leads to vibration, noise and increased friction. This may also increase internal clearance, or change the fit between components. Therefore, to meet any of the above requirements, it is necessary to ensure that permanent deformation does not occur or only reaches a very limited extent. Therefore, the selected bearing must have a sufficiently high static load capacity: high reliability, quiet operation, vibration-free operation, constant friction torque, and low starting friction under load.

Thus, to analyze the safety margin of the basic static load rating and select bearing sizes based on static load capacity, a given safety factor S_0 is used. This safety factor represents the relationship between the basic static load rating C_0 and the static equivalent load P_0. The safety factor is determined empirically by the following formula:

$$f_s = \frac{C_0}{P_0} \quad \cdots\cdots(5.43)$$

where,

f_s: safety factor (Table 5.11)

C_0: basic static load rating, N{kgf}

P_0: static equivalent load, N{kgf}

Table 5.11 safety factor f_s

Service conditions		f_s (minimum)	
		Ball bearing	Roller bearing
General Rotating	Requiring high rotating accuracy	2	3
	General service conditions	1	1.5
	With impact load	1.5	3
Uncommonly Rotating (Sometimes oscillating)	General service conditions	0.5	1
	Impact load or unevenly distributed loads	1	2

Notes: for the self-aligning thrust roller bearing, take$f_s \geq 4$

5.1.8 Allowable axial load of cylindrical roller bearings

When both the inner and outer rings of cylindrical roller bearings are equipped with ribs or retaining rings, they can withstand a certain degree of axial load in addition to radial loads. The axial load capacity in this case depends on factors such as the end face condition of the rollers, the load capacity of the ribs, lubrication conditions, and rotational speed.

Although bearings for special purposes can be designed to achieve high axial load capacities, in general, the allowable axial load can be calculated using the following empirical formula.

$$F_{ap} = 9.8 f_a \cdot f_b \cdot f_p \cdot d_m^{\,2} \quad \cdots\cdots(5.44)$$

where,

F_{ap}: maximum allowed axial load, N

f_a: related factors of the load conditions (**Table 5.12**)

f_b: series of related factors with the diameter (**Table 5.13**)

f_p: allowed surface pressure correlation factor of the rib (**Figure 5.9**)

d_m: arithmetic mean value of the bearing inner diameter d and outer diameter D

$$\left(\frac{d+D}{2}\right), \text{ mm}$$

Table 5.2 Related factors of the load conditions f_a

Service conditions	f_a
Constant load	1
Intermittent load	2
Transient load	3

Table 5.13 Related factors of diameter series f_b

Diameter series	f_b
series 9	0.6
series 0	0.7
series 2	0.8
series 3	1
series 4	1.2

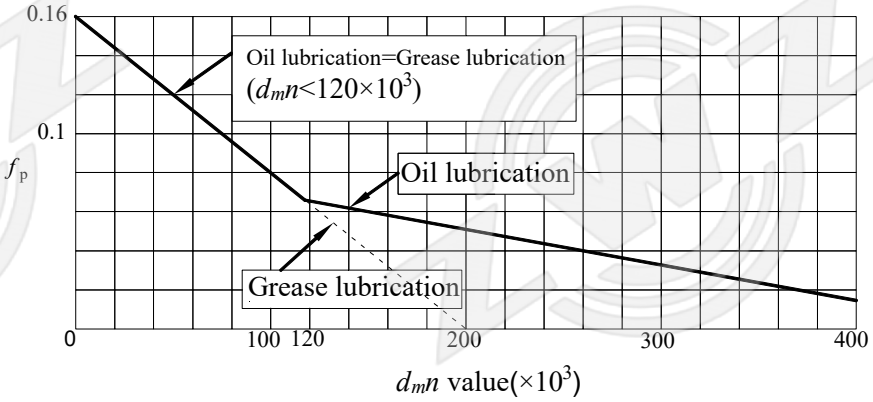
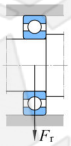


图 5.2 Relation between related factors of allowed surface pressure correlation factor of the rib $f_p$and $d_m n$（n:speed，r/min）

5.2 Examples of application calculation

(1) Bearing life (time) calculation

(conditions)
Deep groove ball bearing
6310
Radial load Fr=5000N
No axial load （Fa=0）
Speed n=600min^{-1}



① The basic dynamic radial load rating is obtained from the bearing dimensions table: C_r=61.8kN

② The rated dynamic radial load can be calculated by the formula (5.30):

$P_r=F_r$=5000N

③ The basic rating life of the bearing can be calculated by the formula(5.2):

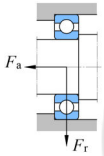
$$L_{10h}=\frac{10^6}{60n}\left(\frac{C}{P}\right)^p$$

$$=\frac{10^6}{60\times600}\times\left(\frac{61.8\times10^3}{5000}\right)^3$$

$$\approx 52550\ \text{h}$$

(2) Bearing life (time) calculation in which the reliability is 96%

(conditions)
Deep groove ball bearings
6310
Radial load F_r=5000N
Axial load F_a=1000N
Speed n=600min^{-1}



① According to the bearing dimensions table

- Basic radial dynamic (static) load rating (C_r, C_{0r}) and coefficient (f_0)

C_r=61.8kN, f_0=13.04, C_{0r}=37.8 kN

- According to the specific value of the $\frac{f_0F_a}{C_{0r}}$, the e value can be calculated by the interpolation method to compare withF_a/F_r to obtain the load coefficients X and Y:

$$\frac{f_0F_a}{C_{0r}}=\frac{13.04\times1500}{37.8\times10^3}=0.517$$

$$e=0.22+(0.26-0.22)\times\frac{(0.517-0.345)}{(0.689-0.345)}$$

$$=0.24$$

$$\frac{F_a}{F_r}=\frac{1500}{5000}=0.30>e$$

Therefore,

$$X=0.56$$

$$Y=1.99-(1.99-1.71)\times\frac{(0.517-0.345)}{(0.689-0.345)}=1.85$$

② The rated dynamic radial load can be calculated by the formula (5.30):

$$P_r=XF_r+YF_a$$

$$=(0.56\times5000)+(1.85\times1500)=5575\,\text{N}$$

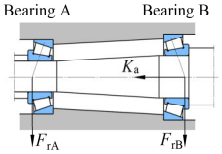
③ Use the formula (5.2) to calculate the service life in which the reliability is 90% .

$$L_{10h}=\frac{10^6}{60n}\left(\frac{C}{P}\right)^p$$

$$=\frac{10^6}{60\times600}\times\left(\frac{61.8\times10^3}{5575}\right)^3\approx37900\,\text{h}$$

(3) Bearing life (total revolutions) calculation

(conditions)
Tapered roller bearings
Bearing A 32209
Bearing B 32210
Radial load F_{rA}=6000N,
F_{rB}=6500N
Axial load K_a=2000N



① Obtain the following parameters according to the bearing dimensions table

	Basic dynamic radial load rating（C_r）	e	$X^{1)}$	$Y^{1)}$
Bearing A	87.6kN	0.40	0.40	1.48
Bearing B	89.8kN	0.42	0.40	1.43

（Notes）1) indicates the value when $F_a/F_r>e$, X=1, Y=0.
When $F_a/F_r\le e$, X=1, Y=0.

② Considering the axial component force of tapered roller bearing under radial load, it is necessary to calculate the axial load acting on shaft system (formula (5.31), **Table 5.9**);

$$\frac{F_{rA}}{2Y_A}+K_a=\frac{6000}{2\times1.48}+2000=4027\text{kN}$$

$$\frac{F_{rB}}{2Y_B}=\frac{6500}{2\times1.43}=2273\ \text{N}$$

Therefore, the axial load acting on the Bearing B is:

$$\left(\frac{F_{rA}}{2Y_A}+K_a\right)$$

③ The equivalent radial dynamic load can be calculated by **Table 5.9**:

$$P_{rA}=F_{rA}=6000\text{N}$$

$$P_{rB}=XF_{rB}+Y_B\left(\frac{F_{rA}}{2Y_A}+K_a\right)$$

$$=0.4\times6500+1.43\times4027=8358\ \text{N}$$

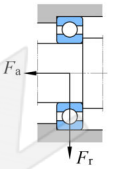
④ The basic rating life of all bearings can be calculated by the formula (5.1):

$$L_{10A}=\left(\frac{C_{rA}}{P_{rA}}\right)^{10/3}=\left(\frac{87.6\times10^3}{6000}\right)^{10/3}\approx7610\times10^6\ \text{r}$$

$$L_{10B}=\left(\frac{C_{rB}}{P_{rB}}\right)^{10/3}=\left(\frac{89.8\times10^3}{8358}\right)^{10/3}\approx2740\times10^6\ \text{r}$$

(4) Bearing dimensions selection

(conditions)
Deep groove ball bearings 62 Series
Requiring bearing life (time)
10000h and above
Radial load F_r=3000N
Axial load F_a=500N
Speed n=1200min^{-1}



① The preliminary calculation shows that the equivalent radial dynamic load (P_r)F_a/F_r=500/3000=0.167, less than the minimum e value, therefore, X=1, Y=0, therefore $P_r=F_r$=3000N;

② Therefore, use the formula (5.4) to calculate the required basic rated dynamic radial load (C_r):

$$C_r=P_r\left(L_{10h}\times\frac{60n}{10^6}\right)^{1/p}$$

$$=3000\times\left(10000\times\frac{60\times1200}{10^6}\right)^{1/3}$$

$$=26890\ \text{N}$$

③ According to the bearing dimensions table, the 62 Series Bearing 6308 of 40mm inner diameter in which $C_r\ge$26890N can be selected;

④ Calculate the e value of 6208 and check the equivalent radial dynamic load of ①:
6208'S C_{0r} value is 18.8kN, $f_0$is 13.8, therefore:

$$\frac{f_0F_a}{C_{0r}}=\frac{13.8\times500}{18.8\times10^3}=0.367$$

Calculate the e value with the interpolation method,

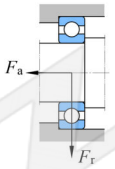
$$e=0.22+(0.26-0.22)\times\frac{(0.367-0.345)}{(0.689-0.345)}$$

$$=0.223$$

Since F_a/F_r=0.167<e, it can be known that $P_r=F_r$, therefore, the bearing is appropriate.

(5) Bearing dimensions selection

(conditions)
Deep groove ball bearings 63 Series
Requiring bearing life (time)
18000h and above



Radial load F_r=3500N
Axial load F_a=1500N
Speed n=800min^{-1}

①The equivalent radial dynamic load is preliminarily calculated (P_r)

F_a/F_r=1500/3500=0.429, the specific value is large, close to the upper limit of e value, which can be seen that the equivalent dynamic load is affected by the axial load.

Therefore, suppose X=0.56, Y=1.6 (the average of Y), **according to the formula(5.30),**

$$P_r = XF_r + YF_a = 0.56\times3500 + 1.6\times1500 = 4360\text{N}$$

②Use the **formula(5.4)** to calculate the required basic rated dynamic radial load:

$$C_r = P_r(L_{10h}\times\frac{60n}{10^6})^{1/p}$$

$$= 4360\times(18000\times\frac{60\times1000}{10^6})^{1/3}$$

$$= 44733\text{N}$$

③According to the bearing dimensions table, the 63 Series Bearing 6309 of 45mm inner diameter in which C_r≥44733N can be selected;

④Calculate the e value of 6309 to check equivalent radial dynamic load and the basic rating life;

$$\frac{f_0F_a}{C_{0r}} = \frac{13.04\times1500}{31.8\times10^3} = 0.615$$

According to the interpolation method, it can be obtained that e=0.251, Y=1.77, since F_a/F_r=0.429>e, therefore

$$P = XF_r + YF_a = 0.56\times3500 + 1.77\times1500 = 4615\text{N}$$

$$L_{10h} = \frac{10^6}{60n}(\frac{C_r}{P_r})^p$$

$$= \frac{10^6}{60\times800}\times\left(\frac{52.9\times10^3}{4615}\right)^3 \approx 31400\text{h}$$

⑤With the same method, it can be obtained that the basic rating life of 6308 is L_{10h}≈16300h, failing to reach the bearing life required by the conditions, therefore, it's appropriate to select Bearing 6309.

(6) Calculation of the allowed axial load of cylindrical roller bearings

(conditions)
Single-row cylindrical roller bearings
NJ306
Speed n=2000min^{-1}
Oil lubricating
Bearing intermittent axial load

① According to the dimensions of the bearing dimensions table, to solve NJ306's d_m;

$$d_m = \frac{d+D}{2} = \frac{30+72}{2} = 51\text{mm}$$

② Calculate various coefficients in **formula (5.44)**.

According to **Table 5.12** and the related coefficients of the load conditions f_a=2

According to **Table 5.13** and the related coefficients of the diameter series f_b=1

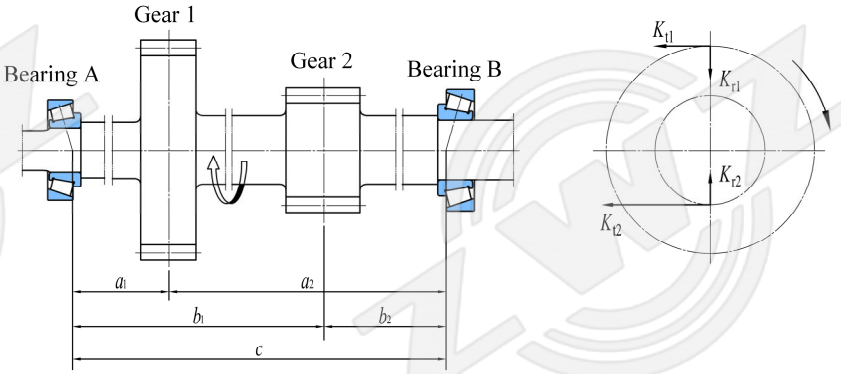
According to **Figure 5.9**

For $d_m n$=51×2000=102×10^3, the related coefficients of the allowed rib surface pressure f_p=0.08

③Use the **formula(5.44)** to calculate the allowed axial load F_{ap}

$$F_{ap}=9.8f_a\cdot f_b\cdot f_p\cdot d_m^2$$
$$=9.8\times2\times1\times0.08\times51^2$$
$$\approx4080\text{N}$$

(7) Spur gear bearing life (time) calculation



(conditions)
Tapered roller bearings
Bearing A 32310
Bearing B 32311
Type of gears: spur gears (general machining)
Gear pressure angle: $\alpha_1=\alpha_2=20°$
Pitch cone diameter: D_{p1}=320mm
D_{p2}=160mm
Transmitted power: W=120kW
Speed: n=1200min^{-1}

Load conditions: with impact
Installation position a_1=90mm
a_2=240mm
b_1=230mm
b_2=100mm
c=330mm

① Use the **formula (5.12)** and **formula (5.13)** to calculate the theoretical load acting on the gears (tangential load K_t, radial load K_r);

〔Gear 1〕

$$K_{t1} = \frac{19.1\times10^6 W}{D_p n} = \frac{19.1\times10^6\times120}{320\times1200}$$
$$= 5969\text{ N}$$
$$K_{r1} = K_{t1}\tan\alpha_1 = 2173\text{N}$$

〔Gear 2〕

$$K_{t2} = \frac{19.1\times10^6\times120}{160\times1200}$$
$$= 11938\text{ N}$$
$$K_{r2} = K_{t2}\tan\alpha_2 = 4345\text{ N}$$

Calculate the axial load acting on the bearing.

According to **Table 5.5**, take the load factor f_w=1.5
According to **Table 5.7**, take the gear factor f_g=1.2

②

〔Bearing A〕

Based on K_{t1} and K_{t2}, the load produced is

$$K_{tA} = f_w f_g(\frac{a_2}{c}K_{t1} + \frac{b_2}{c}K_{t2})$$
$$= 1.5\times1.2\times(\frac{240}{330}\times5969 + \frac{100}{330}\times11938)$$
$$= 14326\text{ N}$$

Based on K_{r1} and K_{r2}, the load produced is

$$K_{rA} = f_w f_g(\frac{a_2}{c}K_{r1} - \frac{b_2}{c}K_{r2})$$
$$= 1.5\times1.2\times(\frac{240}{330}\times2173 - \frac{100}{330}\times4345)$$
$$= 475\text{ N}$$

The radial load F_{rA} acting on Bearing A is the combined load of K_{tA} and K_{rA}

$$F_{rA} = \sqrt{K_{tA}^2 + K_{rA}^2}$$
$$= \sqrt{14326^2 + 475^2} = 14334\text{ N}$$

〔Bearing B〕

Based on K_{t1} and K_{t2}, the load produced is

$$K_{tB} = f_w f_g\left(\frac{a_1}{c}K_{t1} + \frac{b_1}{c}K_{t2}\right)$$

$$= 1.5\times1.2\times\left(\frac{90}{330}\times5969 + \frac{230}{330}\times11938\right)$$

$$= 17907\ \text{N}$$

Based on K_{r1} and K_{r2}, the load produced is

$$K_{rB} = f_w f_g\left(\frac{a_1}{c}K_{r1} - \frac{b_1}{c}K_{r2}\right)$$

$$= 1.5\times1.2\times\left(\frac{90}{330}\times2173 - \frac{230}{330}\times4345\right)$$

$$= -4384\ \text{N}$$

The radial load F_{rB} acting on Bearing B can be obtained by the same method as Bearing A

$$F_{rB} = \sqrt{K_{tB}^{\ 2} + K_{rB}^{\ 2}}$$

$$= \sqrt{17907^2 + (-4384)^2} = 18436\ \text{N}$$

③Obtain the following parameters according to the bearing dimensions table

	Basic dynamic radial load rating (C_r)	e	$X^{1)}$	$Y^{1)}$
Bearing A	182.8KN	0.35	0.40	1.74
Bearing B	209.3KN			

〔Notes〕1) indicates the value when $Fa/Fr>e$; when $Fa/Fr\le e$, $X=1$, $Y=0$.

④Even without the action of external axial load, the axial load needs to be calculated because the tapered roller bearing will produce an axial component force when subjected to radial load (Table 5.8).

$$\frac{F_{rB}}{2Y_B} = \frac{18436}{2\times1.74} > \frac{F_{rA}}{2Y_A} = \frac{14334}{2\times1.74}$$

Therefore, the axial component force of Bearing B ($F_{rB}/2Y_B$) acts on Bearing A as the axial load of the shaft system

⑤In **Table 5.9**, let $K_a=0$, the equivalent radial dynamic load can be calculated

$$P_{rA} = XF_{rA} + Y_A\frac{F_{rB}}{2Y_B}$$

$$= 0.4\times14334 + 1.74\times\frac{18436}{2\times1.74}$$

$$= 14952\ \text{N}$$

$$P_{rB} = F_{rB} = 18436\ \text{N}$$

⑥ Use the **formula(5.2)**to calculate the basic rating life of bearings

〔Bearing A〕

$$L_{10hA} = \frac{10^6}{60n}\left(\frac{C_{rA}}{P_{rA}}\right)^p$$

$$= \frac{10^6}{60\times1200}\times\left(\frac{182.8\times10^3}{14952}\right)^{\frac{10}{3}}$$

$$\approx 58500\ \text{h}$$

$$L_{10hB} = \frac{10^6}{60n}\left(\frac{C_{rB}}{P_{rB}}\right)^p$$

$$= \frac{10^6}{60\times1200}\times\left(\frac{209.3\times10^3}{18436}\right)^{10/3}$$

$$\approx 45700\ \text{h}$$

Use the **formula(5.9)** to calculate the rating life of the dual bearing system

$$L_{10hs} = \frac{1}{\left(\frac{1}{L_{10hA}^{\ e}} + \frac{1}{L_{10hB}^{\ e}}\right)^{1/e}}$$

$$= \frac{1}{\left(\frac{1}{58500^{9/8}} + \frac{1}{45700^{9/8}}\right)^{8/9}}$$

$$\approx 27700\ \text{h}$$

6 Bearing tolerances

6.1 Tolerance standards

The tolerances for variation & deviation (inner diameter, outer diameter, rolling element diameter, width, etc.) and rotary accuracy (radial runout, axial runout) of rolling bearing have been standardized, and the accuracy tolerance is divided into six levels as per the ISO standard, including ordinary level, level 6X (tapered roller bearing), level 6 (non-tapered roller bearing), level 5, level 4 and level 2.

The accuracy progressively increases from the ordinary level, and the ordinary level is suitable for general use. However, when used in the conditions or occasions shown in **Table 6.1,** with the increase of application conditions such as rotary speed, each micron of parallelism, runout, surface contour change will affect the service life of the product and the stable operation of the system, at this time, the bearing products at ordinary level are no longer applicable, and the bearing products with accuracy at level 5 or higher are required to be selected.

The above accuracy is prepared on the basis of ISO standards, and **GB/T 307.1** and **GB/T 307.4** correspond to the tolerance values of radial bearing and thrust bearing, respectively, which are prepared on the basis of **ISO 492** and **ISO 199**. Internationally, the accuracy class of the national standards will be different, and the accuracy class applicable to various bearing types and the delineation of the tolerance level in various national standards are listed in Table 6.2.

Table 6.1 Application Examples of Precision Bearings

Performance requirements	Application examples	Applicable accuracy class code
The rotary element is required to have high run-out accuracy	Audio, video machine spindle (VCR, Recorder)	P5，P4
	Radar, parabolic antenna rotary axis	P4
	Machine tool spindle	P5，P4，P2，ABEC 9
	Electronic computer, magnetic disk spindle	P5，P4，P2, ABEC 9
	Aluminum foil roll neck	P5
	Multistage mill support bearing	P4
High-speed rotation	Precision burr drill bearing	P2，ABMA 5P, ABMA 7P
	Supercharger	P5，P4
	Jet engine spindle, auxiliary engine	P5，P4
	Centrifugal separator	P5，P4
	Liquefied natural gas pump	P5
	Turbo molecular pump spindle, protective bearing	P5，P4
	Machine tool spindle	P5，P4，P2，ABEC 9
	Tensioning pulley	P5，P4
Friction and small change in friction are required	Control machine (synchronous motor, servo motor, gyro steering frame)	P4
	Measuring instrument	P5
	Machine tool spindle	P5，P4，P2，ABEC 9
Low vibration, low noise [1)]	Machine tool spindle	P5，P4，P2
	Precision motor	P5，P4，P2

[Note]:1) Bearing vibration technical conditions refer to GB/T 32325 and GB/T 32333.

➢ **Overall dimensional tolerance (items related to shaft and bearing housing installation)**

- Deviation of inner diameter, outer diameter, width and height
- Variation of inner diameter, outer diameter, width and height
- Deviation of inner diameter and outer diameter in rolling element group
- Threshold value of the chamfer size
- Allowable deviation and allowable variation of the tapered bore

➢ **Form & position and rotary accuracy (items related to rotary element runout)**

- Radial runout and axial runout of inner ring and outer ring
- Asynchronous radial runout of inner ring in assembled bearing
- Parallelism of the inner and outer raceways against the end face
- Perpendicularity of the inner ring end face against the inner bore, and perpendicularity of outer ring outer surface against the end face
- Thickness variation between inner raceway and inner bore, and thickness variation between outer raceway and outer surface
- Variation of raceway thickness of thrust bearing

Table 6.2 Bearing types and tolerance classes

Bearing types			Standards	Applicable tolerance classes						Reference tables
Deep groove ball bearings			GB/T 307.1	Normal	–	Class 6	Class 5	Class 4	Class 2	Table
Angle contact ball bearings				Normal	–	Class 6	Class 5	Class 4	Class 2	
Cylindrical roller bearings				Normal	–	Class 6	Class 5	Class 4	Class 2	
Tapered roller bearings	Metric series (Single-row)		GB/T 307.1	Normal	Class 6X	–	Class 5	Class 4	Class 2	Table 6.1
	Metric series (Double-row and four-row)		JB/T 5389.2	Normal	–	Class 6	Class 5	Class 4 (Double-row)	–	Table 6.2
	Inch series		ABMA std.19	Class 4	–	Class 2	Class 3	Class 0	Class 00	Table Table 6.3
Thrust bearing			GB/T 307.4	Normal	–	Class 6	Class 5	Class 4	–	Table 6.4
Thrust spherical roller bearings			JB/T 7750	Normal	–	–	–	–	–	Table 6.5
Comparison with foreign standard classes	ISO (International)	Radial bearings	IS0 492	Class Normal	Class 6X	Class 6	Clas 5	Class 4	Class 2	–
		Thrust bearings	1S0 199	Class Normal	–	Class 6	Class 5	Class 4	–	–
	DIN (Germany)	Radial bearing	DIN 620-2	PN	P6X	P6	P5	P4	P2	–
		Thrust bearings	DIN 620-3	PN	–	P6	P5	P4	–	–
	ANSI/ ABMA (The USA)	Radial bearing	ABMA std.20	ABEC 1 RBEC 1	– –	ABEC3 RBEC3	ABEC5 RBEC5	ABEC7 –	ABEC9 –	–
		Thrust bearings	ABMA std.24	Class Normal	–	Class6	Class5	Class4	–	–
	JIS B (Japan)	Radial bearing	JIS B 1514-1	Class 0	Class 6X	Class 6	Class 5	Class 4	Class 2	–
		Thrust bearings	JIS B 1514-2	Class 0	–	Class 6	Class 5	Class 4	–	–

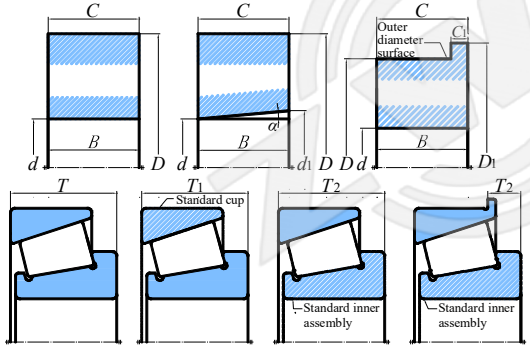
6.2 Tolerance symbols

Bearing size and tolerance symbol (GB/T 7811), as shown in the table

Symbol	Parameter name	Symbol	Parameter name
d	Nominal bore diameter of bearing	Δ_{ds}	Diameter deviation in single inner bore
d_1	Basic diameter of the basic tapered bore at the theoretical large end	Δ_{dmp}	Average diameter deviation in single plane (For tapered bore, it refers to the theoretical small end of the inner bore only)
D	Nominal outer diameter of bearing	Δ_{d1mp}	Average inner diameter deviation of the basic tapered bore at the theoretical large end
D_1	Nominal outer diameter of outer ring flange	Δ_{Ds}	Single outer diameter deviation
B	Nominal width of inner ring	Δ_{Dmp}	Average outer diameter deviation in single plane
α	Nominal half-taper angle type	Δ_{D1s}	Single outer diameter deviation of outer ring flange
C	Nominal width of outer ring	Δ_{Bs}	Single width deviation of inner ring
C_1	Nominal width of outer ring flange	Δ_{Cs}	Single width deviation of outer ring
T	Nominal width of bearing	Δ_{C1s}	Single width deviation of outer ring flange
	Nominal width of bearing (assembled)		Actual width deviation of bearing (assembled)
T_1	Nominal width of the bearing composed of the inner assembly and the standard outer ring (Tapered roller bearing, as shown in the figure)	Δ_{Ts}	deviation of the actual bearing height
T_2	Nominal width of the bearing composed of the outer ring and the standard inner assembly (Tapered roller bearing, as shown in the figure)	Δ_{T1s}	Actual deviation of T_1. (Tapered roller bearing)
V_{dp}	Variation in inner diameter of single radial plane	Δ_{T2s}	Actual deviation of T_2. (Tapered roller bearing)
V_{dmp}	Average inner diameter variation (for cylindrical bore only)	V_{Dmp}	Average outer diameter variation
V_{Dp}	Variation in outer diameter of single radial plane	V_{Bs}	Width variation of inner ring
V_{Cs}	Width variation of outer ring	V_{C1s}	Width variation of outer ring flange
K_{ia}	Radial runout of the inner ring of assembled bearing	K_{ea}	Radial runout of the outer ring of assembled bearing

Bearing rotary accuracy, as shown in the table

Symbol	Parameter name	Symbol	Parameter name
K_{ia}	Radial runout of the inner ring of assembled bearing	K_{ea}	Radial runout of the outer ring of assembled bearing
S_d	Perpendicularity of the inner ring end face against the inner bore	S_D	Perpendicularity of the outer ring outer surface against the end face
S_{D1}	Perpendicularity of the outer ring outer surface against the back of flange	S_{ia}	Axial runout of inner ring of assembled bearings (Groove radial ball bearing)
			Axial runout of inner ring of assembled bearing. (Tapered roller bearing)
S_{ea}	Axial runout of outer ring of assembled bearings (Groove radial ball bearing)	S_{ea1}	Axial runout of the back of the outer ring flange of assembled bearing. (Groove radial ball bearing)
	Axial runout of outer ring of assembled bearing. (Tapered roller bearing)		Axial runout of the back of the outer ring flange of assembled bearing. (Tapered roller bearing)
Si	Parallelism of the inner ring raceway against the end face	Se	Parallelism of the outer ring raceway against the end face
	Thickness variation between the raceway and the back of the shaft washer. (Thrust bearing)		Thickness variation between the raceway and the back of the housing washer. (Thrust bearing)



Boundary dimension symbols and tapered roller bearing additional symbols

Table 6.3 Tolerances of radial bearings except tapered roller bearings (GB/T 307.1)

(1) Inner rings (bore diameter)

Units:μm

d mm		Δ_{dmp}										Δ_{ds} 2)				V_{dp}		
		Class N		Class 6		Class 5		Class 4		Class 2		Class 4		Class 2		Diameter series 7, 8, 9		
																Class		
Over	Incl.	U	L	U	L	U	L	U	L	U	L	U	L	U	L	N	6	5
																max		
0.6[1]	2.5	0	-8	0	-7	0	-5	0	-4	0	-2.5	0	-4	0	-2.5	10	9	5
2.5	10	0	-8	0	-7	0	-5	0	-4	0	-2.5	0	-4	0	-2.5	10	9	5
10	18	0	-8	0	-7	0	-5	0	-4	0	-2.5	0	-4	0	-2.5	10	9	5
18	30	0	-10	0	-8	0	-6	0	-5	0	-2.5	0	-5	0	-2.5	13	9	6
30	50	0	-12	0	-10	0	-8	0	-6	0	-2.5	0	-6	0	-2.5	15	10	8
50	80	0	-15	0	-12	0	-9	0	-7	0	-4	0	-7	0	-4	19	13	9
80	120	0	-20	0	-15	0	-10	0	-8	0	-5	0	-8	0	-5	25	15	10
120	150	0	-25	0	-18	0	-13	0	-10	0	-7	0	-10	0	-7	31	19	13
150	180	0	-25	0	-18	0	-13	0	-10	0	-7	0	-10	0	-7	31	23	13
180	250	0	-30	0	-22	0	-15	0	-12	0	-8	0	-12	0	-8	38	28	15
250	315	0	-35	0	-25	0	-18	–	–	–	–	–	–	–	–	44	31	18
315	400	0	-40	0	-30	0	-23	–	–	–	–	–	–	–	–	50	38	23
400	500	0	-45	0	-35	–	–	–	–	–	–	–	–	–	–	56	44	–
500	630	0	-50	0	-40	–	–	–	–	–	–	–	–	–	–	63	50	–
630	800	0	-75	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
800	1000	0	-100	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1000	1250	0	-125	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1250	1600	0	-160	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1600	2000	0	-200	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

		Diameter series 0, 1				Diameter series 2, 3, 4				For all	V_{dmp}					d mm	
	Class 4	Class				Class				Class 2	Class						
		N	6	5	4	N	6	5	4		N	6	5	4	2		
		max				max				max	max					Over	Incl.
	4	8	7	4	3	6	5	4	3	2.5	6	5	3	2	1.5	0.6[1]	2.5
	4	8	7	4	3	6	5	4	3	2.5	6	5	3	2	1.5	2.5	10
	4	8	7	4	3	6	5	4	3	2.5	6	5	3	2	1.5	10	18
	5	10	8	5	4	8	6	5	4	2.5	8	6	3	2.5	1.5	18	30
	6	12	10	6	5	9	8	6	5	2.5	9	8	4	3	1.5	30	50
	7	19	15	7	5	11	9	7	5	4	11	9	5	3.5	2	50	80
	8	25	19	8	6	15	11	8	6	5	15	11	5	4	2.5	80	120
	10	31	23	10	8	19	14	10	8	7	19	14	7	5	3.5	120	150
	10	31	23	10	8	19	14	10	8	7	19	14	7	5	3.5	150	180
	12	38	28	12	9	23	17	12	9	8	23	17	8	6	4	180	250
	–	44	31	14	–	26	19	14	–	–	26	19	9	–	–	250	315
	–	50	38	18	–	30	23	18	–	–	30	23	12	–	–	315	400
	–	56	44	–	–	34	26	–	–	–	34	26	–	–	–	400	500
	–	63	50	–	–	38	30	–	–	–	38	30	–	–	–	500	630
	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	630	800
	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	800	1000
	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1000	1250
	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1250	1600
	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1600	2000

(2) Inner rings (rotary accuracy and width)

Units:μm

d mm		K_{ia}					S_d			S_{ia} 3)			Δ_{Bs}					
		Class					Class			Class			Class					
		N	6	5	4	2	5	4	2	5	4	2	N		6		5	
Over	Incl.	max					max			max			U	L	U	L	U	L
0.6[1]	2.5	10	5	4	2.5	1.5	7	3	1.5	7	3	1.5	0	-40	0	-40	0	-40
2.5	10	10	6	4	2.5	1.5	7	3	1.5	7	3	1.5	0	-120	0	-120	0	-40
10	18	10	7	4	2.5	1.5	7	3	1.5	7	3	1.5	0	-120	0	-120	0	-80
18	30	13	8	4	3	2.5	8	4	1.5	8	4	2.5	0	-120	0	-120	0	-120
30	50	15	10	5	4	2.5	8	4	1.5	8	4	2.5	0	-120	0	-120	0	-120
50	80	20	10	5	4	2.5	8	5	1.5	8	5	2.5	0	-150	0	-150	0	-150
80	120	25	13	6	5	2.5	9	5	2.5	9	5	2.5	0	-200	0	-200	0	-200
120	150	30	18	8	6	2.5	10	6	2.5	10	7	2.5	0	-250	0	-250	0	-250
150	180	30	18	8	6	5	10	6	4	10	7	5	0	-250	0	-250	0	-250
180	250	40	20	10	8	5	11	7	5	13	8	5	0	-300	0	-300	0	-300
250	315	50	25	13	–	–	13	–	–	15	–	–	0	-350	0	-350	0	-350
315	400	60	30	15	–	–	15	–	–	20	–	–	0	-400	0	-400	0	-400
400	500	65	35	–	–	–	–	–	–	–	–	–	0	-450	0	-450	–	–
500	630	70	40	–	–	–	–	–	–	–	–	–	0	-500	0	-500	–	–
630	800	80	–	–	–	–	–	–	–	–	–	–	0	-750	–	–	–	–
800	1000	90	–	–	–	–	–	–	–	–	–	–	0	-1000	–	–	–	–
1000	1250	100	–	–	–	–	–	–	–	–	–	–	0	-1250	–	–	–	–
1250	1600	120	–	–	–	–	–	–	–	–	–	–	0	-1600	–	–	–	–
1600	2000	140	–	–	–	–	–	–	–	–	–	–	0	-2000	–	–	–	–

		Δ_{Bs} 4)								V_{Bs}					d mm	
	Class 4, 2	Class								Class						
		N		6		5		4、2		N	6	5	4	2		
		U	L	U	L	U	L	U	L	max					Over	Incl.
	0	-40	-	-	-	-	0	-250	0	-250	12	12	5	2.5	1.5	0.6[1]	2.5
	0	-40	0	-250	0	-250	0	-250	0	-250	15	15	5	2.5	1.5	2.5	10
	0	-80	0	-250	0	-250	0	-250	0	-250	20	20	5	2.5	1.5	10	18
	0	-120	0	-250	0	-250	0	-250	0	-250	20	20	5	2.5	1.5	18	30
	0	-120	0	-250	0	-250	0	-250	0	-250	20	20	5	3	1.5	30	50
	0	-150	0	-380	0	-380	0	-250	0	-250	25	25	6	4	1.5	50	80
	0	-200	0	-380	0	-380	0	-380	0	-380	25	25	7	4	2.5	80	120
	0	-250	0	-500	0	-500	0	-380	0	-380	30	30	8	5	2.5	120	150
	0	-250	0	-500	0	-500	0	-380	0	-380	30	30	8	5	4	150	180
	0	-300	0	-500	0	-500	0	-500	0	-500	30	30	10	6	5	180	250
	–	–	0	-500	0	-630	0	-500	–	–	35	35	13	–	–	250	315
	–	–	0	-630	–	–	0	-630	–	–	40	40	15	–	–	315	400
	–	–	–	–	–	–	–	–	–	–	50	45	–	–	–	400	500
	–	–	–	–	–	–	–	–	–	–	60	50	–	–	–	500	630
	–	–	–	–	–	–	–	–	–	–	70	–	–	–	–	630	800
	–	–	–	–	–	–	–	–	–	–	80	–	–	–	–	800	1000
	–	–	–	–	–	–	–	–	–	–	100	–	–	–	–	1000	1250
	–	–	–	–	–	–	–	–	–	–	120	–	–	–	–	1250	1600
	–	–	–	–	–	–	–	–	–	–	140	–	–	–	–	1600	2000

[Note] 1)0.6mm is included

2) Class 4 is only suitable for diameter series of 0, 1, 2, 3 and 4.

3)Only suitable for deep groove bearings.

4)Suitable for inner and outer ring of a single bearing in matched pair or stacking mount.

Table 6.3 (continued) Tolerances of radial bearings except tapered roller bearings

(3)Outer rings (outside diameter)

Units:μm

D mm		Δ_{Dmp}										Δ_{Ds} 2)				V_{Dp}			
		Class										Class				Diameter series 7, 8, 9			
		N		6		5		4		2		4		2		Class			
Over	Incl	U	L	U	L	U	L	U	L	U	L	U	L	U	L	N 3)	6 3)	5	4
																max			
2.5 1)	6	0	-8	0	-7	0	-5	0	-4	0	-2.5	0	-4	0	-2.5	10	9	5	4
6	18	0	-8	0	-7	0	-5	0	-4	0	-2.5	0	-4	0	-2.5	10	9	5	4
18	30	0	-9	0	-8	0	-6	0	-5	0	-4	0	-5	0	-4	12	10	6	5
30	50	0	-11	0	-9	0	-7	0	-6	0	-4	0	-6	0	-4	14	11	7	6
50	80	0	-13	0	-11	0	-9	0	-7	0	-4	0	-7	0	-4	16	14	9	7
80	120	0	-15	0	-13	0	-10	0	-8	0	-5	0	-8	0	-5	19	16	10	8
120	150	0	-18	0	-15	0	-11	0	-9	0	-5	0	-9	0	-5	23	19	11	9
150	180	0	-25	0	-18	0	-13	0	-10	0	-7	0	-10	0	-7	31	23	13	10
180	250	0	-30	0	-20	0	-15	0	-11	0	-8	0	-11	0	-8	38	25	15	11
250	315	0	-35	0	-25	0	-18	0	-13	0	-8	0	-13	0	-8	44	-25	18	13
315	400	0	-40	0	-28	0	-20	0	-15	0	-10	0	-15	0	-10	50	-28	20	15
400	500	0	-45	0	-33	0	-23	–	–	–	–	–	–	–	–	56	-33	23	–
500	630	0	-50	0	-38	0	-28	–	–	–	–	–	–	–	–	63	-38	28	–
630	800	0	-75	0	-45	0	-35	–	–	–	–	–	–	–	–	94	-45	35	–
800	1000	0	-100	0	-60	–	–	–	–	–	–	–	–	–	–	125	-60	–	–
1000	1250	0	-125	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1250	1600	0	-160	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1600	2000	0	-200	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
2000	2500	0	-250	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

D mm		V_{Dmp}												D mm	
		Diameter series 0, 1				Diameter series 2, 3, 4				For all	Capped bearings Diameter series 2, 3, 4	Capped bearings Diameter series 0, 1, 2, 3, 4	Class		
		Class				Class				Class 2	Class N. 3)	Class 6 3)	N 3)	6 3)	5	4	2		
		N 3)	6 3)	5	4	N 3)	6 3)	5	4										
		max				max				max	max		max						
		8	7	4	3	6	5	4	3	2.5	10	9	6	5	3	2	1.5	2.5 1)	6
		8	7	4	3	6	5	4	3	2.5	10	9	6	5	3	2	1.5	6	18
		9	8	5	4	7	6	5	4	4	12	10	7	6	3	2.5	2	18	30
		11	9	5	5	8	7	5	5	4	16	13	8	7	4	3	2	30	50
		13	11	7	5	10	8	7	5	4	20	16	10	8	5	3.5	2	50	80
		19	16	8	6	11	10	8	6	5	26	20	11	10	5	4	2.5	80	120
		23	19	8	7	14	11	8	7	5	30	25	14	11	6	5	2.5	120	150
		31	23	10	8	19	14	10	8	7	38	30	19	14	7	5	3.5	150	180
		38	25	11	8	23	15	11	8	8	–	–	23	15	8	6	4	180	250
		44	31	14	10	26	19	14	10	8	–	–	26	19	9	7	4	250	315
		50	35	15	11	30	21	15	11	10	–	–	30	21	10	8	5	315	400
		56	41	17	–	34	25	17	–	–	–	–	34	25	12	–	–	400	500
		63	48	21	–	38	29	21	–	–	–	–	38	29	14	–	–	500	630
		94	56	26	–	55	34	26	–	–	–	–	55	34	18	–	–	630	800
		125	75	–	–	75	45	–	–	–	–	–	75	45	–	–	–	800	1000
		–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1000	1250
		–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1250	1600
		–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1600	2000
		–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2000	2500

(4) Outer rings (rotary accuracy and width)

Units:μm

D mm		K_{ea}					S_D			S_{ea} 4)			Δ_{Cs}	V_{Cs}			
		Class					Class			Class			Class	Class			
		N	6	5	4	2	5	4	2	5	4	2	N, 6, 5, 4, 2	N, 6	5	4	2
Over	Incl.	max					max			max			U L	max			
2.5 1)	6	15	8	5	3	1.5	4	2	0.75	8	5	1.5			5	2.5	1.5
6	18	15	8	5	3	1.5	4	2	0.75	8	5	1.5			5	2.5	1.5
18	30	15	9	6	4	2.5	4	2	0.75	8	5	2.5			5	2.5	1.5
30	50	20	10	7	5	2.5	4	2	0.75	8	5	2.5			5	2.5	1.5
50	80	25	13	8	5	4	4	2	0.75	10	5	4			6	3	1.5
80	120	35	18	10	6	5	4.5	2.5	1.25	11	6	5	Same as the V_{Bs} of the same bearing inner ring	Same as the Δ_{Bs} of the same bearing inner ring	8	4	2.5
120	150	40	20	11	7	5	5	2.5	1.25	13	7	5			8	5	2.5
150	180	45	23	13	8	5	5	2.5	1.25	14	8	5			8	5	2.5
180	250	50	25	15	10	7	5.5	3.5	2	15	10	7			10	7	4
250	315	60	30	18	11	7	6.5	4	2.5	18	10	7			11	7	5
315	400	70	35	20	13	8	6.5	5	3.5	20	13	8			13	8	7
400	500	80	40	23	–	–	7.5	–	–	23	–	–			15	–	–
500	630	100	50	25	–	–	9	–	–	25	–	–			18	–	–
630	800	120	60	30	–	–	10	–	–	30	–	–			20	–	–
800	1000	140	75	–	–	–	–	–	–	–	–	–			–	–	–
1000	1250	160	–	–	–	–	–	–	–	–	–	–			–	–	–
1250	1600	190	–	–	–	–	–	–	–	–	–	–			–	–	–
1600	2000	220	–	–	–	–	–	–	–	–	–	–			–	–	–
2000	2500	250	–	–	–	–	–	–	–	–	–	–			–	–	–

(5) Tolerances of flanged outer ring diameter

Units:μm

D_1 mm		Δ_{D1S}			
		Mounting flange		Non-mounting flange	
Over	Incl.	U	L	U	L
–	10	0	-36	220	-36
10	18	0	-43	270	-43
18	30	0	-52	330	-52
30	50	0	-62	390	-62
50	80	0	-74	460	-74
80	120	0	-87	540	-87
120	180	0	-100	630	-100
180	250	0	-115	720	-115
250	315	0	-130	810	-130
315	400	0	-140	890	-140
400	500	0	-155	970	-155
500	630	0	-175	1100	-175
630	800	0	-200	1250	-200
800	1000	0	-230	1400	-230
1000	1250	0	-260	1650	-260
1250	1600	0	-310	1950	-310
1600	2000	0	-370	2300	-370
2000	2500	0	-440	2800	-440

[Note]:

1) 2.5mm is included.

2) Class 4 is only suitable for diameter series of 0, 1, 2, 3 and 4.

3) Suitable for the situation that inner or outer snap ring is not mounted or dismounted

4) Only applicable for deep groove bearings.

Table 6.1 Tolerances for metric tapered roller bearing and tapered bore (GB/T 307.1)

(1) Inner rings

Units:μm

d mm		Δ_{dmp}				Δ_{ds}				V_{dp}				V_{dmp}			
		Class				Class				Class				Class			
		N, 6X		5		4		2		N, 6X	5	4	2	N, 6X	5	4	2
Over	Incl.	U	L	U	L	U	L	U	L	max				max			
10	18	0	-12	0	-7	0	-5	0	-4	12	5	4	2.5	9	5	4	1.5
18	30	0	-12	0	-8	0	-6	0	-4	12	6	5	2.5	9	5	4	1.5
30	50	0	-12	0	-10	0	-8	0	-5	12	8	6	3	9	5	5	2
50	80	0	-15	0	-12	0	-9	0	-5	15	9	7	4	11	6	5	2
80	120	0	-20	0	-15	0	-10	0	-6	20	11	8	5	15	8	5	2.5
120	180	0	-25	0	-18	0	-13	0	-7	25	14	10	7	19	9	7	3.5
180	250	0	-30	0	-22	0	-15	0	-8	30	17	11	7	23	11	8	4
250	315	0	-35	0	-25	0	-18	0	-8	35	19	12	8	26	13	9	5
315	400	0	-40	0	-30	–	–	–	–	40	23	–	–	30	15	–	–
400	500	0	-45	0	-35	–	–	–	–	45	28	–	–	34	17	–	–
500	630	0	-60	0	-40	–	–	–	–	60	35	–	–	40	20	–	–
630	800	0	-75	0	-50	–	–	–	–	75	45	–	–	45	25	–	–
800	1000	0	-100	0	-60	–	–	–	–	100	60	–	–	55	30	–	–
1000	1250	0	-125	0	-75	–	–	–	–	125	75	–	–	65	37	–	–
1250	1600	0	-160	0	-90	–	–	–	–	160	90	–	–	80	45	–	–
1600	2000	0	-200	–	–	–	–	–	–	200	–	–	–	100	–	–	–

	K_{ia}				S_d			S_{ia}		Δ_{Bs}								d mm	
	Class				Class			Class		Class									
	N, 6X	5	4	2	5	4	2	4	2	N		6X		5		4, 2			
	max				max			max		U	L	U	L	U	L	U	L	Over	Incl.
	15	5	3	2	7	3	1.5	3	2	0	-120	0	-50	0	-200	0	-200	10	18
	18	5	3	2.5	8	4	1.5	4	2.5	0	-120	0	-50	0	-200	0	-200	18	30
	20	6	4	2.5	8	4	2	4	2.5	0	-120	0	-50	0	-240	0	-240	30	50
	25	7	4	3	8	5	2	4	3	0	-150	0	-50	0	-300	0	-300	50	80
	30	8	5	3	9	5	2.5	5	3	0	-200	0	-50	0	-400	0	-400	80	120
	35	11	6	4	10	6	3.5	7	4	0	-250	0	-50	0	-500	0	-500	120	180
	50	13	8	5	11	7	5	8	5	0	-300	0	-50	0	-600	0	-600	180	250
	60	13	9	6	13	8	5.5	9	6	0	-350	0	-50	0	-700	0	-700	250	315
	70	15	–	–	15	–	–	–	–	0	-400	0	-50	0	-800	–	–	315	400
	80	20	–	–	17	–	–	–	–	0	-450	0	-50	0	-900	–	–	400	500
	90	25	–	–	20	–	–	–	–	0	-500	–	–	0	-1100	–	–	500	630
	100	30	–	–	25	–	–	–	–	0	-750	–	–	0	-1600	–	–	630	800
	115	37	–	–	30	–	–	–	–	0	-1000	–	–	0	-2000	–	–	800	1000
	130	45	–	–	40	–	–	–	–	0	-1250	–	–	0	-2000	–	–	1000	1250
	150	55	–	–	50	–	–	–	–	0	-1600	–	–	0	-2000	–	–	1250	1600
	170	–	–	–	–	–	–	–	–	0	-2000	–	–	–	–	–	–	1600	2000

(2) Outer rings

Units:μm

D mm		Δ_{Dmp}				Δ_{Ds}				V_{Dp}				V_{Dmp}			
		Class				Class				Class				Class			
		N, 6X		5		4		2		N, 6X	5	4	2	N, 6X	5	4	2
Over	Incl.	U	L	U	L	U	L	U	L	max				max			
18	30	0	-12	0	-8	0	-6	0	-5	12	6	5	4	9	5	4	2.5
30	50	0	-14	0	-9	0	-7	0	-5	14	7	5	4	11	5	5	2.5
50	80	0	-16	0	-11	0	-9	0	-6	16	8	7	4	12	6	5	2.5
80	120	0	-18	0	-13	0	-10	0	-6	18	10	8	5	14	7	5	3
120	150	0	-20	0	-15	0	-11	0	-7	20	11	8	5	15	8	6	3.5
150	180	0	-25	0	-18	0	-13	0	-7	25	14	10	7	19	9	7	4
180	250	0	-30	0	-20	0	-15	0	-8	30	15	11	8	23	10	8	5
250	315	0	-35	0	-25	0	-18	0	-9	35	19	14	8	26	13	9	5
315	400	0	-40	0	-28	0	-20	0	-10	40	22	15	10	30	14	10	6
400	500	0	-45	0	-33	–	–	–	–	45	26	–	–	34	17	–	–
500	630	0	-50	0	-38	–	–	–	–	50	30	–	–	38	20	–	–
630	800	0	-75	0	-45	–	–	–	–	80	38	–	–	55	25	–	–
800	1000	0	-100	0	-60	–	–	–	–	100	50	–	–	75	30	–	–
1000	1250	0	-125	0	-80	–	–	–	–	130	65	–	–	90	38	–	–
1250	1600	0	-160	0	-100	–	–	–	–	170	90	–	–	100	50	–	–
1600	2000	0	-200	0	-125	–	–	–	–	210	120	–	–	110	65	–	–
2000	2500	0	-250	–	–	–	–	–	–	265	–	–	–	120	–	–	–

	K_{ea}				S_D 1)			S_{ea}		Δ_{Cs}						D mm	
	Class				Class			Class		Class							
	N, 6X	5	4	2	5	4	2	4	2	N		6X		5, 4, 2			
	max				max			max		U	L	U	L	U	L	Over	Incl.
	18	6	4	2.5	4	2	1.5	5	2.5	0	-120	0	-100			18	30
	20	7	5	2.5	4	2	2	5	2.5	0	-120	0	-100			30	50
	25	8	5	4	4	2	2.5	5	4	0	-150	0	-100			50	80
	35	10	6	5	4.5	2.5	3	6	5	0	-200	0	-100			80	120
	40	11	7	5	5	2.5	3.5	7	5	0	-250	0	-100			120	150
	45	13	8	5	5	2.5	4	8	5	0	-250	0	-100	Same as the Δ_{Bs} of the same bearing inner ring		150	180
	50	15	10	7	5.5	3.5	5	10	7	0	-300	0	-100			180	250
	60	18	11	7	6.5	4	6	10	7	0	-350	0	-100			250	315
	70	20	13	8	6.5	5	7	13	8	0	-400	0	-100			315	400
	80	24	–	–	8.5	–	–	–	–	0	-450	0	-100			400	500
	100	30	–	–	10	–	–	–	–	0	-500	–	–			500	630
	120	36	–	–	12.5	–	–	–	–	0	-750	–	–			630	800
	140	43	–	–	15	–	–	–	–	0	-1000	–	–			800	1000
	160	52	–	–	19	–	–	–	–	0	-1250	–	–			1000	1250
	180	62	–	–	25	–	–	–	–	0	-1600	–	–			1250	1600
	200	73	–	–	32.5	–	–	–	–	0	-2000	–	–			1600	2000
	220	–	–	–	–	–	–	–	–	–	–	–	–			2000	2500

[Note] 1) No suitable for bearings with flanged outer ring.

Table 6.1 (continued) Tolerances of metric tapered roller bearing and tapered bore

(3)Assembled width and effective width

Units:μm

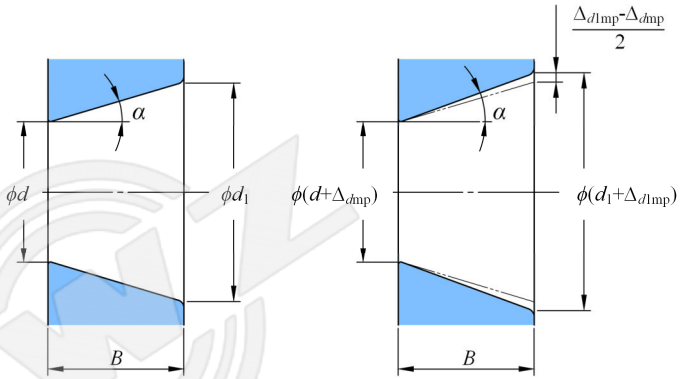
d mm		Δ_{Ts}										Δ_{T1s}				Δ_{T2s}										d mm	
		Normal		Class 6X		Class 5		Class 4		Class 2		Normal		Class 6X	Class 5	Class 4		Class 2		Normal		Class 6X		Class 5		Class 4		Class 2			
Over	Incl.	U	L	U	L	U	L	U	L	U	L	U	L	U L	U	L	U	L	U	L	U	L	U	L	U	L	U	L	Over	Incl.
10	18	+200	0	+100	0	+200	-200	+200	-200	+200	-200	+100	0	+50 0	+100	-100	+100	-100	+100	-100	+100	0	+50	0	+100	-100	+100	-100	+100	-100	10	18
18	30	+200	0	+100	0	+200	-200	+200	-200	+200	-200	+100	0	+50 0	+100	-100	+100	-100	+100	-100	+100	0	+50	0	+100	-100	+100	-100	+100	-100	18	30
30	50	+200	0	+100	0	+200	-200	+200	-200	+200	-200	+100	0	+50 0	+100	-100	+100	-100	+100	-100	+100	0	+50	0	+100	-100	+100	-100	+100	-100	30	50
50	80	+200	0	+100	0	+200	-200	+200	-200	+200	-200	+100	0	+50 0	+100	-100	+100	-100	+100	-100	+100	0	+50	0	+100	-100	+100	-100	+100	-100	50	80
80	120	+200	-200	+100	0	+200	-200	+200	-200	+200	-200	+100	-100	+50 0	+100	-100	+100	-100	+100	-100	+100	-100	+50	0	+100	-100	+100	-100	+100	-100	80	120
120	180	+350	-250	+150	0	+350	-250	+350	-250	+200	-250	+150	-150	+50 0	+150	-150	+200	-100	+100	0	+200	-100	+200	-100	+100	-150	120	180				
180	250	+350	-250	+150	0	+350	-250	+350	-250	+200	-300	+150	-150	+50 0	+150	-150	+200	-100	+100	0	+200	-100	+200	-100	+100	-150	180	250				
250	315	+350	-250	+200	0	+350	-250	+350	-250	+200	-300	+150	-150	+100 0	+150	-150	+200	-100	+100	0	+200	-100	+200	-100	+100	-150	250	315				
315	400	+400	-400	+200	0	+400	-400	–	–	–	–	+200	-200	+100 0	+200	-200	+200	-200	+100	0	+200	-200	–	–	–	–	315	400				
400	500	450	-450	+200	0	+450	-450	–	–	–	–	+225	-225	+100 0	+225	-225	+225	-225	+100	0	+225	-225	–	–	–	–	400	500				
500	630	500	-500	–	–	+500	-500	–	–	–	–	–	–	– –	–	–	–	–	–	–	–	–	–	–	–	–	500	630				
630	800	600	-600	–	–	+600	-600	–	–	–	–	–	–	– –	–	–	–	–	–	–	–	–	–	–	–	–	630	800				
800	1000	750	-750	–	–	+750	-750	–	–	–	–	–	–	– –	–	–	–	–	–	–	–	–	–	–	–	–	800	1000				
1000	1250	900	-900	–	–	+750	-750	–	–	–	–	–	–	– –	–	–	–	–	–	–	–	–	–	–	–	–	1000	1250				
1250	1600	1050	-1050	–	–	+900	-900	–	–	–	–	–	–	– –	–	–	–	–	–	–	–	–	–	–	–	–	1250	1600				
1600	2000	1200	-1200	–	–	–	–	–	–	–	–	–	–	– –	–	–	–	–	–	–	–	–	–	–	–	–	1600	2000				

Tolerances for tapered bores:

Δ_{dmp}— Single plane mean bore diameter deviation in theoretical diameter of smaller end of bore.

Δ_{SL}— Deviation of taper slope, expressed by the deviation of actual average diameter of tapered bore at both ends, that is, the extreme deviation of the taper slope height(Δ_{d1mp}-Δ_{dmp}).

V_{dsp}—Diameter variation tolerance, indicated by maximum value of inner diameter variation on any radial plain of tapered bore.



Theoretical tapered bore **Tapered bore with actual mean diameter and its deviation**

Taper 1:12: Nominal half taper angle α=2°23′9.4″=2.38594°=0.041643 radian

Basic diameter of theoretical large end of tapered bore $d_1 = d + \frac{1}{12}B$

Taper 1:30: Nominal half taper angle α=0°57′17.4″=0.95484°=0.01667 radian

Basic diameter of theoretical large end of tapered bore $d_1 = d + \frac{1}{30}B$

(4)Tapered bore

Units:μm

d mm		Δ_{dmp}				Δ_{SL}				V_{dsp} 1)2)	
		Taper 1:12		Taper 1:30		Taper 1:12		Taper 1:30		Taper 1:12	Taper 1:30
Over	Incl.	U	L	U	L	U	L	U	L	max	max
–	10	+22	0	–	–	+15	0	–	–	9	–
10	18	+27	0	–	–	+18	0	–	–	11	–
18	30	+33	0	–	–	+21	0	–	–	13	–
30	50	+39	0	–	–	+25	0	–	–	16	–
50	80	+46	0	+15	0	+30	0	+30	0	19	19
80	120	+54	0	+20	0	+35	0	+35	0	22	22
120	180	+63	0	+25	0	+40	0	+40	0	40	40
180	250	+72	0	+30	0	+46	0	+46	0	46	46
250	315	+81	0	+35	0	+52	0	+52	0	52	52
315	400	+89	0	+40	0	+57	0	+57	0	57	57
400	500	+97	0	+45	0	+63	0	+63	0	63	63
500	630	+110	0	+50	0	+70	0	+70	0	70	70
630	800	+125	0	–	–	+80	0	–	–	–	–
800	1000	+140	0	–	–	+90	0	–	–	–	–
1000	1250	+165	0	–	–	+105	0	–	–	–	–
1250	1600	+195	0	–	–	+125	0	–	–	–	–

[Note]: 1) Suitable for any single radial plane of bore.

2) Not suitable for diameter series 7 and 8.

Table 6.2 Metric series (double-row, four-row) tapered roller bearing extreme deviation and tolerance values (JB/T 5389.2)

(1) Inner ring tolerances of class 0, 6, 5

Units:μm

d mm		Δ_{dmp}			V_{dsp}			V_{dmp}			K_{ia}			$d_{1mp\ max} - d_{2mp\ min}$	
		Class													
		0, 6, 5	0	6, 5	0	6	5	0	6	5	0	6	5	0	6, 5
Over	Incl.	U	L		max										
80	120	0	-20	-15	20	15	11	15	11	8	30	13	8	10	8
120	180	0	-25	-18	25	18	14	19	14	9	35	18	11	13	9
180	250	0	-30	-22	30	22	17	23	16	11	50	20	13	15	11
250	315	0	-35	-25	35	25	19	26	19	13	60	30	13	18	13
315	400	0	-40	-30	40	30	23	30	23	15	70	35	15	20	15
400	500	0	-45	-35	45	35	26	34	26	18	70	40	18	23	18
500	630	0	-50	-40	50	40	30	38	30	20	85	50	20	25	20
630	800	0	-75	-50	75	50	38	56	38	25	100	60	20	38	25
800	1000	0	-100	-60	100	60	45	75	45	30	120	75	23	50	30

(2) Outer ring tolerances of class 0, 6, 5

Units:μm

D mm		Δ_{Dmp}			V_{Dsp}			V_{Dmp}			K_{ea}			$D_{1mp\ max} - D_{2mp\ min}$	
		Class													
		0, 6, 5	0	6, 5	0	6	5	0	6	5	0	6	5	0	6, 5
Over	Incl.	U	L		max										
120	150	0	-20	-15	20	15	11	15	11	8	40	20	11	10	8
150	180	0	-25	-18	25	18	14	19	14	9	45	23	13	13	9
180	250	0	-30	-20	30	20	15	23	15	10	50	25	15	15	10
250	315	0	-35	-25	35	25	19	26	19	13	60	30	18	18	13
315	400	0	-40	-28	40	28	22	30	22	14	70	35	20	20	14
400	500	0	-45	-33	45	33	25	34	25	17	80	40	23	23	17
500	630	0	-50	-38	50	38	29	38	29	19	100	50	25	25	19
630	800	0	-75	-45	75	45	34	55	34	23	120	60	30	38	23
800	1000	0	-100	-60	100	60	45	75	45	30	140	75	35	50	30
1000	1250	0	-125	-75	125	75	56	84	56	38	165	85	40	65	38
1250	1600	0	-160	-90	160	90	71	120	68	48	190	95	40	80	48

[Note] The width deviation of the bearing shall conform to the provisions of JB/T10336-2017.

Table 6.3 Tolerances of inch tapered roller bearings（ABMA std.19）

(1) Inner ring tolerances

Units:μm

Bearing types	d mm		Δ_{ds}									
			CL4		CL2		CL3		CL0		CL00	
	Over	Incl.	U	L	U	L	U	L	U	L	U	L
Single row and double row	0	76.2	+13	0	+13	0	+13	0	+13	0	+8	0
	76.2	304.8	+25	0	+25	0	+13	0	+13	0	+8	0
	304.8	609.6	+51	0	+51	0	+25	0	–	–	–	–
	609.6	914.4	+76	0	–	–	+38	0	–	–	–	–
	914.4	1219.2	+102	0	–	–	+51	0	–	–	–	–
	1219.2	1828.8	+127	0	–	–	+76	0	–	–	–	–

(2) Outer ring tolerances and radial runout of cone and cup

Units:μm

Bearing types	D mm		Δ_{DS}										K_{ia}、K_{ea}				
			CL 4		CL 2		CL 3		CL 0		CL 00		CL 4	CL 2	CL 3	CL 0	CL 00
	Over	Incl.	U	L	U	L	U	L	U	L	U	L	max	max	max	max	max
Single row and double row	0	304.8	+25	0	+25	0	+13	0	+13	0	+8	0	51	38	8	4	2
	304.8	609.6	+51	0	+51	0	+25	0	–	–	–	–	51	38	18	4	–
	609.6	914.4	+76	0	+76	0	+38	0	–	–	–	–	76	51	51	–	–
	914.4	1219.2	+102	0	–	–	+51	0	–	–	–	–	76	–	76	–	–
	1219.2	2133.6	+127	0	–	–	+76	0	–	–	–	–	76	–	76	–	–

(3) Tolerances of overall bearing width

Units:μm

Bearing types	d mm		D mm		Δ_{TS}							
					CL4		CL2		CL3		CL0		CL00	
	Over	Incl.	Over	Incl.	U	L	U	L	U	L	U	L	U	L
Single row	0	101.6	0	2133.6	+203	0	+203	0	+203	-203	+203	-203	+203	-203
	101.6	304.8	0	2133.6	+356	-254	+203	0	+203	-203	+203	-203	+203	-203
	304.8	609.6	0	508.0	+381	-381	+381	-381	+203	-203	–	–	–	–
	304.8	609.6	508.0	2133.6	+381	-381	+381	-381	+381	-381	–	–	–	–
	609.6	1828.8	0	2133.6	+381	-381	–	–	+381	-381	–	–	–	–
Double row	0	101.6	0	2133.6	+406	0	+406	0	+406	-406	+406	-406	406	-406
	101.6	304.8	0	2133.6	+711	-508	+406	-203	+406	-406	+406	-406	406	-406
	304.8	609.6	0	508.0	+762	-762	+762	-762	+406	-406	–	–	–	–
	304.8	609.6	508.0	2133.6	+762	-762	+762	-762	+762	-762	–	–	–	–
	609.6	1828.8	0	2133.6	+762	-762	–	–	+762	-762	–	–	–	–

[Note]

1) The maximum inner diameter of inner ring corresponding to CL2 shall not exceed 609.6mm.

2) The maximum outer diameter of outer ring corresponding to CL0 shall not exceed 304.8mm.

3) The maximum outer diameter of outer ring corresponding to CL00 shall not exceed 266.7mm.

Table 6.4 Tolerances of thrust bearings (GB/T 307.4)

(1) Tolerances of class normal for shaft washer, spacer and bearing height

Units:μm

D&d_2 mm		Δ_{dmp}, Δ_{d2mp}		V_{dsp} V_{d2sp}	S_i	Δ_{Ts}		Δ_{T1s}	
Over	Incl.	U	L	max	max	U	L	U	L
–	18	0	-8	6	10	+20	-250	+150	-400
18	30	0	-10	8	10	+20	-250	+150	-400
30	50	0	-12	9	10	+20	-250	+150	-400
50	80	0	-15	11	10	+20	-300	+150	-500
80	120	0	-20	15	15	+25	-300	+200	-500
120	180	0	-25	19	15	+25	-400	+200	-600
180	250	0	-30	23	20	+30	-400	+250	-600
250	315	0	-35	26	25	+40	-400	–	–
315	400	0	-40	30	30	+40	-500	–	–
400	500	0	-45	34	30	+50	-500	–	–
500	630	0	-50	38	35	+60	-600	–	–
630	800	0	-75	55	40	+70	-750	–	–
800	1000	0	-100	75	45	+80	-1000	–	–
1000	1250	0	-125	95	50	+100	-1400	–	–
1250	1600	0	-160	120	60	+120	-1600	–	–
1600	2000	0	-200	150	75	+140	-1900	–	–
2000	2500	0	-250	190	90	+160	-2300	–	–

[Note]: For double direction bearings, the tolerances are only suitable for bearings with $d_2 \leqslant 190$mm.

(2) Tolerances of class normal for housing washer

Units:μm

D mm		Δ_{Dmp}		V_{Dsp}	S_e
Over	Incl.	U	L	max	max
10	18	0	-11	8	Same as shaft washer's S_i value of the same bearing
18	30	0	-13	10	
30	50	0	-16	12	
50	80	0	-19	14	
80	120	0	-22	17	
120	180	0	-25	19	
180	250	0	-30	23	
250	315	0	-35	26	
315	400	0	-40	30	
400	500	0	-45	34	
500	630	0	-50	38	
630	800	0	-75	55	
800	1000	0	-100	75	
1000	1250	0	-125	95	
1250	1600	0	-160	120	
1600	2000	0	-200	150	
2000	2500	0	-250	190	
2500	2850	0	-300	225	

[Note]: For double direction bearings, the tolerances are only suitable for bearings with $D \leq 360$mm.

(3) Tolerances of class 6 for shaft washer, spacer and bearing height

Units:μm

D&d_2 mm		Δ_{dmp}, Δ_{d2mp}		V_{dsp} V_{d2sp}	S_i	Δ_{Ts}		Δ_{T1s}	
Over	Incl.	U	L	max	max	U	L	U	L
–	18	0	-8	6	5	+20	-250	+150	-400
18	30	0	-10	8	5	+20	-250	+150	-400
30	50	0	-12	9	6	+20	-250	+150	-400
50	80	0	-15	11	7	+20	-300	+150	-500
80	120	0	-20	15	8	+25	-300	+200	-500
120	180	0	-25	19	9	+25	-400	+200	-600
180	250	0	-30	23	10	+30	-400	+250	-600
250	315	0	-35	26	13	+40	-400	–	–
315	400	0	-40	30	15	+40	-500	–	–
400	500	0	-45	34	18	+50	-500	–	–
500	630	0	-50	38	21	+60	-600	–	–
630	800	0	-75	55	25	+70	-750	–	–
800	1000	0	-100	75	30	+80	-1000	–	–
1000	1250	0	-125	95	35	+100	-1400	–	–
1250	1600	0	-160	120	40	+120	-1600	–	–
1600	2000	0	-200	150	45	+140	-1900	–	–
2000	2500	0	-250	190	50	+160	-2300	–	–

[Note]: For double direction bearings, the tolerances are only suitable for bearings with $d_2 \leq 190$mm.

(4)Tolerances of class 6 for housing washer

Units:μm

D mm		Δ_{Dmp}		V_{Dsp}	S_e
Over	Incl.	U	L	max	Incl.
Same as the tolerance of class normal for housing washer		Same as the tolerance of class normal for housing washer			Same as shaft washer's S_i value of the same bearing

[Note]: For double direction bearings, the tolerances are only suitable for bearings with $D \leq 360$mm.

(5) Tolerances of class 5 for shaft washer, spacer and bearing height

Units:μm

D&d_2 mm		Δ_{dmp}, Δ_{d2mp}		V_{dsp} V_{d2sp}	S_i	Δ_{Ts}		Δ_{T1s}	
Over	Incl.	U	L	max	max	U	L	U	L
–	18	0	-8	6	3	+20	-250	+150	-400
18	30	0	-10	8	3	+20	-250	+150	-400
30	50	0	-12	9	3	+20	-250	+150	-400
50	80	0	-15	11	4	+20	-300	+150	-500
80	120	0	-20	15	4	+25	-300	+200	-500
120	180	0	-25	19	5	+25	-400	+200	-600
180	250	0	-30	23	5	+30	-400	+250	-600
250	315	0	-35	26	7	+40	-400	–	–
315	400	0	-40	30	7	+40	-500	–	–
400	500	0	-45	34	9	+50	-500	–	–
500	630	0	-50	38	11	+60	-600	–	–
630	800	0	-75	55	13	+70	-750	–	–
800	1000	0	-100	75	15	+80	-1000	–	–
1000	1250	0	-125	95	18	+100	-1400	–	–
1250	1600	0	-160	120	25	+120	-1600	–	–
1600	2000	0	-200	150	30	+140	-1900	–	–
2000	2500	0	-250	190	40	+160	-2300	–	–

[Note]: For double direction bearings, the tolerances are only suitable for bearings with $d_2 \leq 190$mm.

(6) Tolerances of class 5 for housing washer

Units:μm

D mm		Δ_{Dmp}		V_{Dsp}	S_e
Over	Incl.	U	L	Over	Incl.
10	18	0	-11	8	Same as shaft washer's S_i value of the same bearing
18	30	0	-13	10	
30	50	0	-16	12	
50	80	0	-19	14	
80	120	0	-22	17	
120	180	0	-25	19	
180	250	0	-30	23	
250	315	0	-35	26	
315	400	0	-40	30	
400	500	0	-45	34	
500	630	0	-50	38	
630	800	0	-75	55	
800	1000	0	-100	75	
1000	1250	0	-125	95	
1250	1600	0	-160	120	
1600	2000	0	-200	150	
2000	2500	0	-250	190	
2500	2850	0	-300	225	

[Note]: For double direction bearings, the tolerances are only suitable for bearings with D≤360mm.

(7) Tolerances of class 4 for shaft washer, spacer and bearing height

Units:μm

$D\&d2$ mm		Δ_{dmp}, Δ_{d2mp}		V_{dsp} V_{d2sp}	S_i	Δ_{TS}		Δ_{T1S}	
Over	Incl.	U	L	max	max	U	L	U	L
–	18	0	-7	5	2	+20	-250	+150	-400
18	30	0	-8	6	2	+20	-250	+150	-400
30	50	0	-10	8	2	+20	-250	+150	-400
50	80	0	-12	9	3	+20	-300	+150	-500
80	120	0	-15	11	3	+25	-300	+200	-500
120	180	0	-18	14	4	+25	-400	+200	-600
180	250	0	-22	17	4	+30	-400	+250	-600
250	315	0	-25	19	5	+40	-400	–	–
315	400	0	-30	23	5	+40	-500	–	–
400	500	0	-35	26	6	+50	-500	–	–
500	630	0	-40	30	7	+60	-600	–	–
630	800	0	-50	40	8	+70	-750	–	–

[Note]: For double direction bearings, the tolerances are only suitable for bearings with d_2≤190mm.

(8) Tolerances of class 4 for housing washer

Units:μm

D mm		Δ_{Dmp}		V_{Dsp}	S_e
Over	Incl.	U	L	max	Incl.
10	18	0	-7	5	Same as shaft washer's S_i value of the same bearing
18	30	0	-8	6	
30	50	0	-9	7	
50	80	0	-11	8	
80	120	0	-13	10	
120	180	0	-15	11	
180	250	0	-20	15	
250	315	0	-25	19	
315	400	0	-28	21	
400	500	0	-33	25	
500	630	0	-38	29	
630	800	0	-45	34	
800	1000	0	-60	45	

[Note]: For double direction bearings, the tolerances are only suitable for bearings with D≤360mm.

Table 6.5 Tolerances of thrust spherical roller bearings(JB/T 7750)

(1) Tolerances for bore diameters of shaft washer and height

Units:μm

d mm		Δ_{dmp},		V_{dsp}	Δ_{TS}	
Over	Incl.	U	L	max	U	L
50	80	0	-15	11	+20	-400
80	120	0	-20	15	+25	-400
120	180	0	-25	19	+25	-500
180	250	0	-30	23	+30	-500
250	315	0	-35	26	+40	-700
315	400	0	-40	30	+40	-700
400	500	0	-45	34	+50	-900
500	630	0	-50	38	+60	-1200
630	800	0	-75	55	+70	-1400
800	1000	0	-100	75	+80	-1800
1000	1250	0	-125	95	+100	-2400

(2) Tolerances of housing washer

Units:μm

D mm		Δ_{Dmp}		V_{Dsp}
Over	Incl.	U	L	max
80	120	0	-22	17
120	180	0	-25	19
180	250	0	-30	23
250	315	0	-35	26
315	400	0	-40	30
400	500	0	-45	34
500	630	0	-50	38
630	800	0	-75	55
800	1000	0	-100	75
1000	1250	0	-125	95
1250	1600	0	-160	120

Table6.6 Limit dimension of chamfer (GB/T 274)

(1) Radial bearings (except tapered roller bearings)

Units:mm

r(min.)	Nominal bore diameter of the bearing d mm		r(max)	
	Over	Incl.	Radial	Axial
0.05	–	–	0.1	0.2
0.08	–	–	0.16	0.3
0.1	–	–	0.2	0.4
0.15	–	–	0.3	0.6
0.2	–	–	0.5	0.8
0.3	–	40	0.6	1
	40	–	0.8	1
0.6	–	40	1	2
	40	–	1.3	2
1	–	50	1.5	3
	50	–	1.9	3
1.1	–	120	2	3.5
	120	–	2.5	4
1.5	–	120	2.3	4
	120	–	3	5
2	–	80	3	4.5
	80	220	3.5	5
	220	–	3.8	6
2.1	–	280	4	6.5
	280	–	4.5	7
2.5	–	100	3.8	6
	100	280	4.5	6
	280	–	5	7
3	–	280	5	8
	280	–	5.5	8
4	–	–	6.5	9
5	–	–	8	10
6	–	–	10	13
7.5	–	–	12.5	17
9.5	–	–	15	19
12	–	–	18	24
15	–	–	21	30
19	–	–	25	38

(2) Metric tapered roller bearing

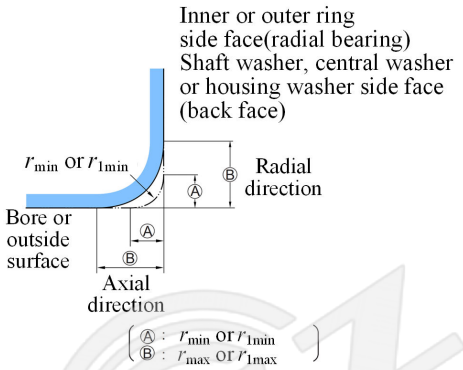
Units:mm

r(min.)	Bearing nominal bore diameter d or outer diameter D mm		r(max)	
	Over	Incl.	Radial	Axial
0.3	–	40	0.7	1.4
	40	–	0.9	1.6
0.6	–	40	1.1	1.7
	40	–	1.3	2
1	–	50	1.6	2.5
	50	–	1.9	3
1.5	–	120	2.3	3
	120	250	2.8	3.5
	250	–	3.5	4
2	–	120	2.8	4
	120	250	3.5	4.5
	250	–	4	5
2.5	–	120	3.5	5
	120	250	4	5.5
	250	–	4.5	6
3	–	120	4	5.5
	120	250	4.5	6.5
	250	400	5	7
	400	–	5.5	7.5
4	–	120	5	7
	120	250	5.5	7.5
	250	400	6	8
	400	–	6.5	8.5
5	–	180	6.5	8
	180	–	7.5	9
6	–	180	7.5	10
	180	–	9	11

(3) Thrust bearings

Units:mm

r(min.) or r_1(min.)	r(max.) or r_1(max)
	Radial and axial
0.05	0.1
0.08	0.16
0.1	0.2
0.15	0.3
0.2	0.5
0.3	0.8
0.6	1.5
1	2.2
1.1	2.7
1.5	3.5
2	4
2.1	4.5
3	5.5
4	6.5
5	8
6	10
7.5	12.5
9.5	15
12	18
15	21
19	25

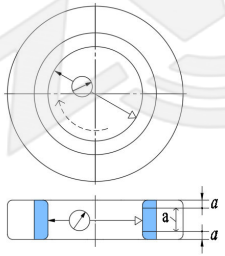


6.3 Measuring and gauging principles and methods

The measuring instrument of suitable accuracy shall be used, and the dimensions shall be determined by comparison with standard parts or measuring blocks (which shall be calibrated).It is recommended to measure at room temperature of 20℃. The parts and measuring instrument shall be isothermal, and components (such as seals and grease that may affect measurement results) shall be removed. The rust prevention shall be performed immediately after measurement. See GB/T 307.2 for more details about the main measuring methods listed below.

(1) Measuring the accuracy of inner/outer diameter and rolling element

Measurement of single inner diameter (d)



a is the measurement area, which is a non-chamfer area (over 1.2 times of chamfer dimensions).

This method is applicable to the rings, shaft washers and central washers of all types of rolling bearing.

This method is also suitable for measuring the inner diameter of outer ring of separable cylindrical roller bearing or needle roller bearing, but the measuring point shall avoid the raceway guide chamfer. In the measurement area, the maximum and minimum single inner diameter d_{spmax} and d_{spmin} are measured and recorded. The maximum and minimum single inner diameters of single ring are $d_{smax}$and d_{smin}.

The following can be obtained from the measured values of d_{spmax} and d_{spmin}:

① Average diameter of single plane: $d_{mp}=\dfrac{d_{spmax}+d_{spmin}}{2}$

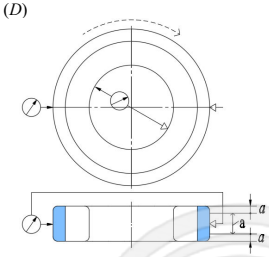
② Average inner diameter deviation of single plane: $\Delta_{dmp}=d_{mp}-d$

③ Inner diameter variation of single plane: $V_{dsp}=d_{spmax}-d_{spmin}$

④ Variation of average inner diameter in plane: $V_{dmp}=d_{mpmax}-d_{mpmin}$

⑤ Deviation of single inner diameter: $\Delta_{ds}=d_s-d$

Measurement of single outer diameter (D)



a is the measurement area, which is a non-chamfer area (over 1.2 times of chamfer dimensions).

This method is applicable to rings, shaft washers and housing washers of all types of rolling bearing.

In the measurement area, the maximum and minimum single inner diameter D_{spmax} and D_{spmin} are measured and recorded. The maximum and minimum single inner diameters of single ring are D_{smax} and D_{smin}.

The following can be obtained from the measured values of D_{spmax} and D_{spmin}:

① Average diameter of single plane: $D_{mp}=\dfrac{D_{spmax}+D_{spmin}}{2}$

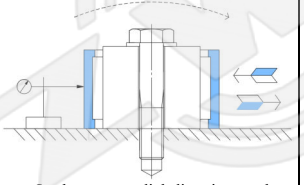
② Average outer diameter deviation of single plane: $\Delta_{Dmp}=D_{mp}-D$

③ Outer diameter variation of single plane: $V_{Dsp}=D_{spmax}-D_{spmin}$

④ Variation of average outer diameter in plane: $V_{Dmp}=D_{mpmax}-D_{mpmin}$

⑤ Deviation of single outer diameter: $\Delta_{Ds}=D_s-D$

Measurement of general single inner diameter of rolling element (F_w)



In the same radial direction as the indicator, the sufficient radial load is applied to the outer ring so as to measure the radial movement amount of the outer ring.

This method is applicable to all cylindrical roller bearing without inner ring, the needle roller bearing and drawn outer ring needle roller bearing.

The total single inner diameter F_{ws} of the rolling element is equal to the measured value plus the standard gauge diameter.

Record the indicator reading at the radial limit position of the outer ring. Rotate the bearing, and repeatedly measure at several different angular positions to determine maximum and minimum readings F_{wsmax} and F_{wsmin}.

The following can be obtained from F_{wsmax} and F_{wsmin} measurements:

① Deviation of single diameter of roller in-circle: $\Delta_{F_w}=(d_G+\delta_{1\bar{3}m})-F_w$

② Deviation of single minimum diameter of roller in- circle:

$$\Delta_{Fw\,min}=(d_G+\delta_{1min})-F_w$$

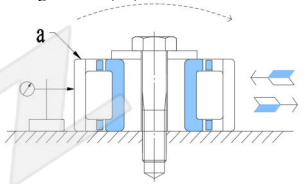
d_G: outside diameter of the master gauge

$\delta_{1\bar{3}m}$: arithmetical mean value of the amount of movement of the outer ring

δ_{1min} :minimum value of the amount of movement of the outer ring

(2) Dimensional accuracy measurement of rolling element and width/height

Measurement of single outer diameter of rolling element (E_w)



In the same radial direction as the indicator, the radial movement amount of the ring gauge is measured.

This method is applicable to cylindrical roller bearing without outer ring and needle roller bearing.

The total single outer diameter E_{ws} of the rolling element is equal to the inner diameter of ring gauge minus the measured value. Record the indicator reading at the radial limit position of the ring gauge. The measurement is repeated at several different angular positions of the bearing to determine the maximum and minimum readings E_{ws} and E_{wsmin}.

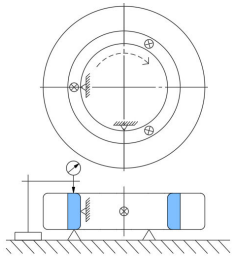
The following can be obtained from E_{ws} and E_{wsmin} measurements:

① Deviation of average outer diameter of single plane: $\Delta_{Ew}=(D_G+\delta_{2\bar{3}m})-E_w$

D_G: bore diameter of the master gauge

$\delta_{2\bar{3}m}$:arithmetical mean value of the amount of movement of the master gause

Measurement of single width of ring (B_s or C_s)



This method is applicable to the inner and outer rings of all types of rolling bearing.

Rotate the ring for one turn, measure and record the maximum and minimum single width of the ring B_{smax} and B_{smin} (C_{smax} and C_{min}).

The single width of the ring B_s or C_s is the measured value at any point in the ring.

The following can be obtained from the inner or outer ring single width B_s or C_s:

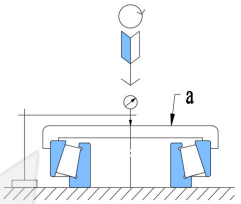
① Deviation of single width of inner ring: $\Delta_{Bs}=B_s-B$

② Variation of width of inner ring: $V_{Bs}=B_{smax}-B_{smin}$

③ Deviation of single width of outer ring: $\Delta_{Cs}=C_s-C$

④ Variation of width of outer ring: $V_{Cs}=C_{smax}-C_{smin}$

Measurement of actual bearing width (T)



a is the flat plate.

This method is the main method for measuring the actual width of the radial and angular contact bearing whose widths are defined by an inner ring end face and an outer ring end face.

This measurement method does not include the influence of the flatness of the ring end face.

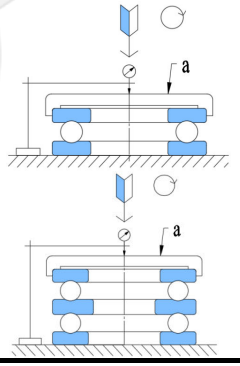
A flat plate of known height is placed on the reference end face of the outer ring, a stable central axial load is applied, and the indicator is placed in the center of the flat plate. Rotate the outer ring for several times, make sure to reach the minimum width, and read the indicator.

The actual bearing width T_s is equal to the indicator reading minus the known flat plate height.

The following can be obtained from the measured values of T_s:

① Deviation of assembly width: $\Delta_{Ts}=T_s-T$

Measurement of actual width of thrust bearing (T)



This method is applicable to all types of thrust bearing, including thrust ball bearing, thrust cylindrical roller bearing and thrust tapered roller bearing.

Rotate the bearing for several times, make sure to reach the minimum height, and read the indicator. The actual bearing height T_s is equal to the indicator reading minus the known flat plate height.

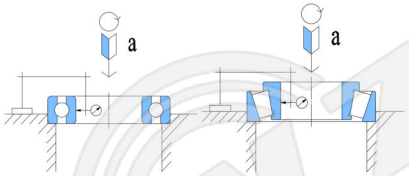
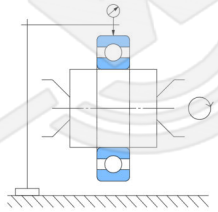
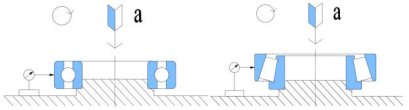
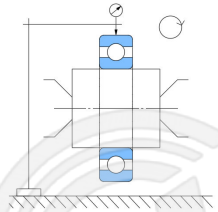
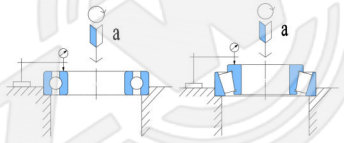
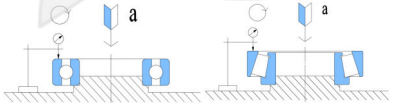
This measurement method does not include the influence of the flatness of the washer end face.

The following can be obtained from the measured values of T_s:

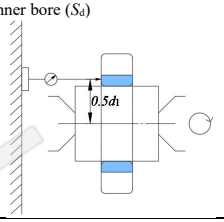
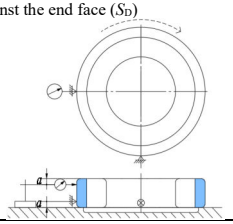
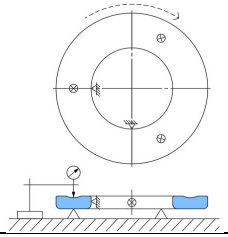
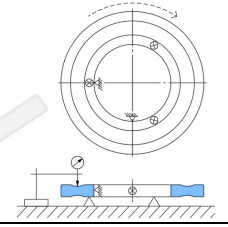
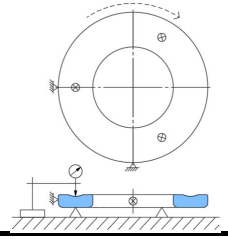
① Deviation of single-direction bearing height: $\Delta_{Ts}=T_s-T$

② Deviation of single-direction bearing height: $\Delta_{T1s}=T_{1s}-T_1$

(3) Measurement of bearing radial and axial runout accuracy

Measurement of inner ring radial runout (K_{ia})  a is the load on the inner ring	This method is applicable to radial ball bearing (including single row angular contact ball bearing), four-point-contact ball bearing and tapered roller bearing. The radial runout K_{ia} of the inner ring of assembled bearing is the difference between the maximum reading and minimum reading of the indicator. The radial runout of the inner ring of assembled bearing is the result of many factors (such as rolling element diameter variation, raceway defects and corrugation, contact angle variation, reference end face/surface flatness and lubricant impurities), which is difficult to measure accurately, especially when the bearing has a high precision.
Measurement of inner ring radial runout (K_{ia}) 	This method is applicable to radial ball bearing (except single row angular contact ball bearing), cylindrical roller bearing, spherical roller bearing and needle roller bearing. The radial runout K_{ia} of the inner ring of assembled bearing is the difference between the maximum reading and minimum reading of the indicator. Rotate the mandrel for one turn to read the indicator. The radial runout of the inner ring of assembled bearing is the result of many factors (such as rolling element diameter variation, raceway defects and corrugation, contact angle variation, reference end face/surface flatness and lubricant impurities), which is difficult to measure accurately, especially when the bearing has a high precision. Use a precision mandrel with taper of approximately 1:5000.
Measurement of outer ring radial runout (K_{ea})  a is load on the outer ring	This method is applicable to radial ball bearing (including single row angular contact ball bearing), four-point-contact ball bearing and tapered roller bearing. The radial runout K_{ea} of the outer ring of assembled bearings is the difference between the maximum reading and minimum reading of the indicator. The indicator is placed on the outer surface of outer ring and as close as possible to the middle of the outer ring raceway. Rotate the outer ring for one turn to read the indicator.
Measurement of outer ring radial runout (K_{ea}) 	This method is applicable to radial ball bearing (except single row angular contact ball bearing), cylindrical roller bearing, spherical roller bearing and needle roller bearing. The radial runout K_{ea} of the outer ring of assembled bearing is the difference between the maximum reading and minimum reading of the indicator. The inner ring is kept static. Rotate the outer ring for one turn to read the indicator. The radial runout of the outer ring of assembled bearing is the result of many factors (such as rolling element diameter variation, raceway defects and corrugation, contact angle variation, reference end face/surface flatness and lubricant impurities), which is difficult to measure accurately, especially when the bearing has a high precision. Use a precision mandrel with taper of approximately 1:5000.
Measurement of inner ring axial runout (S_{ia})  a is the load on the inner ring	This method is applicable to radial ball bearing (including single row angular contact ball bearing), four-point-contact ball bearing and tapered roller bearing. The axial runout S_{ia} of the inner ring of assembled bearings is the difference between the maximum reading and minimum reading of the indicator. The indicator is placed on the reference end face of the inner ring. Rotate the inner ring for one turn to read the indicator.
Measurement of outer ring axial runout (S_{ea})  a is load on the outer ring	This method is applicable to radial ball bearing (including single row angular contact ball bearing), four-point-contact ball bearing and tapered roller bearing. The axial runout S_{ea} of the outer ring of assembled bearing is the difference between the maximum reading and minimum reading of the indicator. The indicator is placed on the reference end face of the outer ring. Rotate the outer ring for one turn to read the indicator.

(4) Measurement of bearing surface perpendicularity and thickness variation

Measurement of perpendicularity of inner ring end face against the inner bore (S_d)  	This method is applicable to radial bearing and their inner rings, and it is most applicable to the inner rings whose ratio of inner diameter to width is less than 4. Use a precision mandrel with taper of approximately 1:5000. The perpendicularity S_d of the inner ring end face against the inner bore is the difference between the maximum reading and minimum reading of the indicator. Rotate the inner ring for one turn to read the indicator. d_1 -- Average diameter of inner ring end face.
Measurement of perpendicularity of outer ring outer surface against the end face (S_D) 	This method is applicable to all types of radial bearing and their outer rings, and it is most applicable to large rings, or outer rings whose ratio of inner diameter to width is not less than 4. At this time, the bearing weight affects the measurement. The perpendicularity SD of the outer ring outer surface against the end face is the difference between the maximum reading and minimum reading of the indicator. Rotate the outer ring for one turn to read the indicator.
Measurement of thickness variation between raceway and back of bearing (S_i) 	This method is applicable to shaft washers with the flat raceways/formed raceways and the flat back faces. The thickness variation S_i between the raceway and the back of the shaft washer is the difference between the maximum reading and minimum reading of the indicator. The shaft washer contacts the pivot. Rotate the shaft washer for one turn to read the indicator.
Measurement of thickness variation between the raceway and the back of central washer (S_i) 	This method is applicable to central washers which have formed raceway on each end face. The thickness variation S_i between the raceway and the back of central washer is the difference between the maximum reading and minimum reading of the indicator. The central washer contacts the pivot. Rotate the central washer for one turn to read the indicator. Measure the other raceway repeatedly. The thickness variation of each back against raceway is measured independently.
Measurement of thickness variation between the raceway and the back of housing washer (S_c) 	This method is applicable to housing washers with the flat raceways/formed raceways and the flat back faces. The thickness variation S_c between the raceway and the back of housing washer is the difference between the maximum reading and minimum reading of the indicator. The housing washer contacts the pivot. Rotate the housing washer for one turn to read the indicator.

7 Bearing clearance and fit

7.1 Bearing clearance

The radial (axial) clearance of bearing (without preload and not taking any external load) is the arithmetic mean of radial (axial) distances, which is one ring moves from one radial (axial) eccentric limit position to the opposite radial (axial) limit position relative to the other ring in different angles. This average value includes the relative displacement of rings in different angles and the displacement of the rolling element group relative to rings in different angular positions.

The running clearance (called working clearance) is an important parameter. Excessive working clearance can reduce the internal load area and operating accuracy, increase maximum contact stress and vibration and noise, resulting in a shortened life. Due to too small clearance, negative clearance, increased friction may occur, and consequently, a reduction in effective clearance or an increase in interference fit may occur. This could potentially result in accidents such as seizing or shaft breakage.

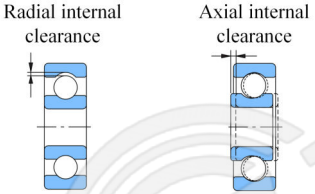


Figure 7.1 Inner clearances of bearings

When measuring clearances, a specified measuring load is generally applied to obtain stable measured values.Therefore, measured values obtained are larger than the actual clearance (called theoretical clearance), as they include the elastic deformation caused by the measuring load.

However, for roller bearings, this elastic deformation is usually negligible due to its small magnitude. The internal clearance of bearings before installation is typically represented by the theoretical clearance.

7.1.1 Clearance selection

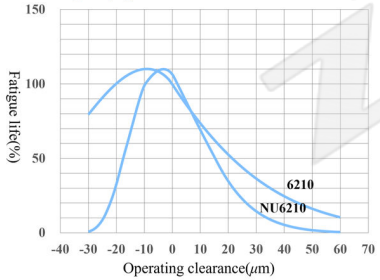
The clearance selection is crucial as it is a significant factor determining whether the rolling bearing can function properly. Selecting the appropriate clearance enables the rational distribution of loads between rolling elements, restricts axial and radial displacement of the shaft (or housing), ensures the rotational accuracy of the shaft, allows operate normally at specified temperatures, reduces vibration and noise, and contributes to increasing the service life.

The “installation clearance” is obtained by subtracting the expansion or contraction of the rings due to interference fit when the bearing is installed on the shaft or in the housing from the theoretical clearance.

The “effective clearance” is the clearance obtained by adding or subtracting the dimensional changes due to temperature differences inside the bearing upon considering the installation clearance.

The clearance during rotation of the bearing when installed on the machine and subjected to certain loads is referred to as the “working clearance”. It is calculated by adding the elastic deformation caused by the bearing load to the effective clearance.

As shown in Figure 2, when the working clearance is a slight negative value, the fatigue life of the bearing is maximized. However, with the increase of negative clearance, the fatigue life significantly decreases. Therefore, when selecting the clearance of the bearing, it is generally preferable to have the working clearance at zero or slightly positive.



When selecting the bearing clearance, the following aspects should be considered:

1. The operating conditions of the bearing, such as load, temperature, speed, etc.;
2. Requirements for the performance (rotational accuracy, friction torque, vibration, noise);
3. The interference fit between the bearing and the shaft or housing hole leading to a reduction in bearing clearance;
4. The temperature difference between the inner and outer rings during operation leading to a reduction in bearing clearance;
5. The differential thermal expansion factors of the shaft and housing materials resulting in a reduction or increase in bearing clearance.

Based on experiences, ball bearings are best suited to have a clearance close to zero, while roller bearings should maintain a small working clearance. For components requiring good rigidity in support, bearings are allowed to have a certain preload. Under normal operating conditions, it is advisable to prioritize the use of the basic group, which ensures appropriate working clearance. When the basic group cannot meet requirements, auxiliary clearance group should be selected. The large auxiliary clearance group is suitable for bearings with an interference fit between the bearing and the shaft or housing. The small auxiliary clearance group is suitable for applications requiring higher rotational accuracy, strict control of axial displacement of the housing, and the reduction of vibration and noise.

Additionally, when it is necessary to improve the rigidity of the bearing or reduce noise, the working clearance should be further reduced to a negative value. Conversely, when the bearing temperature rises sharply, the working clearance should be further increased to a positive value, etc. Specific analysis must also be conducted according to the operating conditions.

7.1.2 Working clearance

The working clearance calculation method of steel bearings with steel shaft and steel housing is as follows. The clearance changes are shown as **Figure 7.2**.

The amount of clearance reduction caused by interference fit between the bearing and the hollow shaft,

$$\Delta_s = \Delta_{Is}\left(\frac{d_i}{d_s}\right)\frac{\left[\left(\frac{d_s}{d_c}\right)^2 - 1\right]}{\left[\left(\frac{d_i}{d_c}\right)^2 - 1\right]} \quad \cdots\cdots(7.1)$$

where:

Δ_{Is}: amount of interference fit assembly between the bearing and the shaft, mm

d_i: inner ring raceway diameter, mm

d_s: bearing diameter, mm

d_c: hollow shaft diameter, mm

The amount of clearance reduction caused by interference fit between the bearing and the solid shaft,

$$\Delta_s = \Delta_I\left(\frac{d_s}{d_i}\right) \quad \cdots\cdots(7.2)$$

The amount of clearance reduction caused by interference fit between the bearing and the housing,

$$\Delta_h = \Delta_{Ih}\left(\frac{D_o}{D_i}\right)\frac{\left[\left(\frac{D_h}{D_o}\right)^2 - 1\right]}{\left[\left(\frac{D_h}{D_i}\right)^2 - 1\right]} \quad \cdots\cdots(7.3)$$

where:

Δ_{Ih}: amount of interference fit assembly between the bearing and the housing, mm

D_i: outer ring raceway diameter, mm

D_o: bearing outer ring diameter, mm

D_h: housing outer ring diameter, mm

If the dimension of the housing is relatively large relative to the ring dimension, the approximate calculation formula:

$$\Delta_h \approx \Delta_{Ih}\left(\frac{D_i}{D_o}\right) \quad \cdots\cdots(7.4)$$

The bearing clearance changes caused by temperature rise,

$$\Delta_T = \alpha\left[D_i(T_o - T_a) - d_i(T_i - T_a) - 2D_r(T_r - T_a)\right] \quad \cdots(7.5)$$

where:

α: the factor of linear expansion of bearing steel（12.5×10^{-6}）1/℃

D_r: roller element diameter, mm
T_o: outer ring temperature, ℃
T_i: inner ring temperature, ℃
T_a: ambient temperature, ℃
T_r: rolling element temperature, ℃

Working clearence,

$$C = \Delta_0 - \Delta_s - \Delta_h + \Delta_T \quad \cdots\cdots(7.6)$$

Where:

Δ_0 is the theoretical clearance, mm

Before the installation of various bearings, see **Table 7.2-Table 7.9** for the clearance data. See **Table 7.10** for the clearance selection cases.

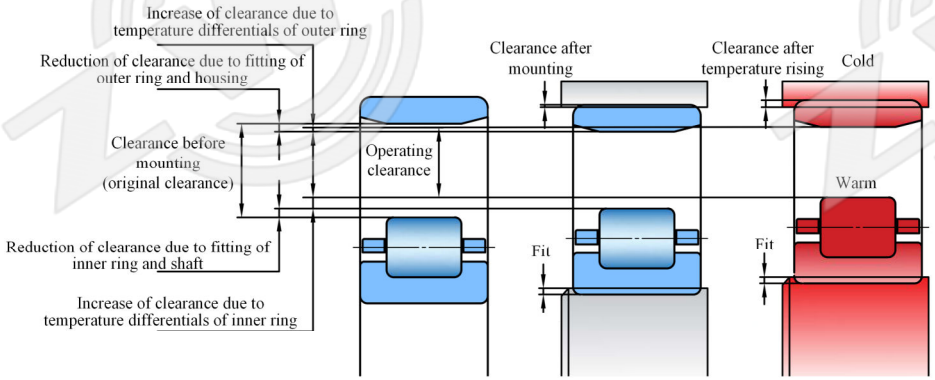


Figure 7.2 Schematic diagram of clearance variation

Table 7.1 relationship between radial internal clearance and axial internal clearance

Deep groove ball bearings	$\Delta_a = \sqrt{\Delta_r\left(4m_o - \Delta_r\right)}$
Double-row angular contact ball bearings	$\Delta_a = 2\sqrt{m_o^2 - \left(m_o\cos\alpha - \frac{\Delta_r}{2}\right)^2} - 2m_o\sin\alpha$
Combined angular contact ball bearings	$\Delta_a = 2m_o\sin\alpha - 2\sqrt{m_o^2 - \left(m_o\cos\alpha + \frac{\Delta_r}{2}\right)^2}$
Double-row, four-row, and combined tapered roller bearings	$\Delta_a = \Delta_r\cot\alpha \approx \frac{1.5}{e}\Delta_r$

Symbol description:

Δ_a: axial internal clearance, mm
Δ_r: radial internal clearance, mm
α: nominal contact angle
e: boundary of F_a/F_r (Refer to the bearing dimension table)

$m_o = r_c + r_i - D_w$
where,
r_c: outer ring raceway curvature radius, mm
r_i: inner ring raceway curvature radius, mm
D_w: Ball diameter, mm

Table 7.2 Radial clearance of deep groove ball bearings (cylindrical bore) (GB/T 4604.1)

Units:μm

Nominal bore diameter d mm		Clearance									
		Group 2		Group N		Group 3		Group 4		Group 5	
Over	Incl.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
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
140	160	2	23	18	53	46	91	81	130	120	180
160	180	2	25	20	61	53	102	91	147	135	200
180	200	2	30	25	71	63	117	107	163	150	230
200	225	2	35	25	85	75	140	125	195	175	265
225	250	2	40	30	95	85	160	145	225	205	300
250	280	2	45	35	105	90	170	155	245	225	340
280	315	2	55	40	115	100	190	175	270	245	370
315	355	3	60	45	125	110	210	195	300	275	410
355	400	3	70	55	145	130	240	225	340	315	460
400	450	3	80	60	170	150	270	250	380	350	520
450	500	3	90	70	190	170	300	280	420	390	570
500	560	10	100	80	210	190	330	310	470	440	630
560	630	10	110	90	230	210	360	340	520	490	700
630	710	20	130	110	260	240	400	380	570	540	780
710	800	20	140	120	290	270	450	430	630	600	860
800	900	20	160	140	320	300	500	480	700	670	960
900	1000	20	170	150	350	330	550	530	770	740	1040
1000	1120	20	180	160	380	360	600	580	850	820	1150
1120	1250	20	190	170	410	390	650	630	920	890	1260
1250	1400	30	200	190	440	420	700	680	1000	—	—
1400	1600	30	210	210	470	450	750	730	1060	—	—

Table 7.3 Radial clearance of cylindrical roller bearings and needle roller bearings (GB/T 4604.1)

(1) Cylindrical roller bearings with cylindrical bore and needle roller bearings Units:μm

d mm		Clearance									
		Group 2		Group N		Group 3		Group 4		Group 5	
Over	Incl.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
—	10	0	25	20	45	35	60	50	75	—	—
10	24	0	25	20	45	35	60	50	75	65	90
24	30	0	25	20	45	35	60	50	75	70	95
30	40	5	30	25	50	45	70	60	85	80	105
40	50	5	35	30	60	50	80	70	100	95	125
50	65	10	40	40	70	60	90	80	110	110	140
65	80	10	45	40	75	65	100	90	125	130	165
80	100	15	50	50	85	75	110	105	140	155	190
100	120	15	55	50	90	85	125	125	165	180	220
120	140	15	60	60	105	100	145	145	190	200	245
140	160	20	70	70	120	115	165	165	215	225	275
160	180	25	75	75	125	120	170	170	220	250	300
180	200	35	90	90	145	140	195	195	250	275	330
200	225	45	105	105	165	160	220	220	280	305	365
225	250	45	110	110	175	170	235	235	300	330	395
250	280	55	125	125	195	190	260	260	330	370	440
280	315	55	130	130	205	200	275	275	350	410	485
315	355	65	145	145	225	225	305	305	385	455	535
355	400	100	190	190	280	280	370	370	460	510	600
400	450	110	210	210	310	310	410	410	510	565	665
450	500	110	220	220	330	330	440	440	550	625	735
500	560	120	240	240	360	360	480	480	600	—	—
560	630	140	260	260	380	380	500	500	620	—	—
630	710	145	285	285	425	425	565	565	705	—	—
710	800	150	310	310	470	470	630	630	790	—	—
800	900	180	350	350	520	520	690	690	860	—	—
900	1000	200	390	390	580	580	770	770	960	—	—
1000	1120	220	430	430	640	640	850	850	1060	—	—
1120	1250	230	470	470	710	710	950	950	1190	—	—
1250	1400	270	530	530	790	790	1050	1050	1310	—	—
1400	1600	330	610	610	890	890	1170	1170	1450	—	—
1600	1800	380	700	700	1020	1020	1340	1340	1660	—	—
1800	2000	400	760	760	1120	1120	1480	1480	1840	—	—

(2) Cylindrical roller bearings with tapered bore Units:μm

d mm		Clearance							
		Group 2		Group N		Group 3		Group 4	
Over	Incl.	min.	max.	min.	max.	min.	max.	min.	max.
—	10	15	40	30	55	40	65	50	75
10	24	15	40	30	55	40	65	50	75
24	30	20	45	35	60	45	70	55	80
30	40	20	45	40	65	55	80	70	95
40	50	25	55	45	75	60	90	75	105
50	65	30	60	50	80	70	100	90	120
65	80	35	70	60	95	85	120	110	145
80	100	40	75	70	105	95	130	120	155
100	120	50	90	90	130	115	155	140	180
120	140	55	100	100	145	130	175	160	205
140	160	60	110	110	160	145	195	180	230
160	180	75	125	125	175	160	210	195	245
180	200	85	140	140	195	180	235	220	275
200	225	95	155	155	215	200	260	245	305
225	250	105	170	170	235	220	285	270	335
250	280	115	185	185	255	240	310	295	365
280	315	130	205	205	280	265	340	325	400
315	355	145	225	225	305	290	370	355	435
355	400	165	255	255	345	330	420	405	495
400	450	185	285	285	385	370	470	455	555
450	500	205	315	315	425	410	520	505	615
500	560	230	350	350	470	455	575	560	680
560	630	260	380	380	500	500	620	620	740
630	710	295	435	435	575	565	705	695	835
710	800	325	485	485	645	630	790	775	935
800	900	370	540	540	710	700	870	860	1030
900	I000	410	600	600	790	780	970	960	1150
1000	1120	455	665	665	875	865	1075	1065	1275
1120	1250	490	730	730	970	960	1200	1200	1440
1250	I400	550	810	810	1070	1070	1330	1330	1590
1400	1600	640	920	920	1200	1200	1480	1480	1760
1600	I800	700	1020	1020	I340	1340	1660	1660	1980
1800	2000	760	1120	1120	1480	1480	1840	1840	2200

Table 7.4 Toroidal roller bearings (GB/T 4604.1)

(1) Toroidal roller bearings with cylindrical bore

Units:μm

d mm		Clearance									
		Group 2		Group N		Group 3		Group 4		Group 5	
Over	Incl.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
18	24	15	30	25	40	35	55	50	65	65	85
24	30	15	35	30	50	45	60	60	80	75	95
30	40	20	40	35	55	55	75	70	95	90	120
40	50	25	45	45	65	65	85	85	110	105	140
50	65	30	55	50	80	75	105	100	140	135	175
65	80	40	70	65	100	95	125	120	165	160	210
80	100	50	85	80	120	120	160	155	210	205	260
100	120	60	100	100	145	140	190	185	245	240	310
120	140	75	120	115	170	165	215	215	280	280	350
140	160	85	140	135	195	195	250	250	325	320	400
160	180	95	155	150	220	215	280	280	365	360	450
180	200	105	175	170	240	235	310	305	395	390	495
200	225	115	190	185	265	260	340	335	435	430	545
225	250	125	205	200	285	280	370	365	480	475	605
250	280	135	225	220	310	305	410	405	520	515	655
280	315	150	240	235	330	330	435	430	570	570	715
315	355	160	260	255	360	360	485	480	620	620	790
355	400	175	280	280	395	395	530	525	675	675	850
400	450	190	310	305	435	435	580	575	745	745	930
450	500	205	335	335	475	475	635	630	815	810	1015
500	560	220	360	360	520	510	690	680	890	890	1110
560	630	240	400	390	570	560	760	750	980	970	1220
630	710	260	440	430	620	610	840	830	1080	1070	1340
710	800	300	500	490	680	680	920	920	l200	1200	1480
800	900	320	540	530	760	750	1020	1010	1330	1320	1660
900	1000	370	600	590	830	830	1120	l120	l460	1460	1830
1000	1120	410	660	660	930	930	1260	1260	1640	1640	2040
1120	1250	450	720	720	1020	1020	1380	l380	l800	1800	2240
1250	1400	490	800	800	1130	1130	1510	1510	1970	1970	2460
1400	1600	570	890	890	1250	1250	1680	l 680	2200	2200	2740
1600	1800	650	1010	1010	1390	1390	1870	1870	2430	2430	3000

(2) Toroidal roller bearings with tapered bore

Units:μm

d mm		Clearance									
		Group 2		Group N		Group 3		Group 4		Group 5	
Over	Incl.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
18	24	15	35	30	45	40	55	55	70	65	85
24	30	20	40	35	55	50	65	65	85	80	100
30	40	25	50	45	65	60	80	80	100	100	125
40	50	30	55	50	75	70	95	90	120	115	145
50	65	40	65	60	90	85	115	110	150	145	185
65	80	50	80	75	110	105	140	135	180	175	220
80	100	60	100	95	135	130	175	170	220	215	275
100	120	75	115	115	155	155	205	200	255	255	325
120	140	90	135	135	180	180	235	230	295	290	365
140	160	100	155	155	215	210	270	265	340	335	415
160	180	115	175	170	240	235	305	300	385	380	470
180	200	130	195	190	260	260	330	325	420	415	520
200	225	140	215	210	290	285	365	360	460	460	575
225	250	160	235	235	315	315	405	400	515	510	635
250	280	170	260	255	345	340	445	440	560	555	695
280	315	195	285	280	380	375	485	480	620	615	765
315	355	220	320	315	420	415	545	540	680	675	850
355	400	250	350	350	475	470	600	595	755	755	920
400	450	280	385	380	525	525	655	650	835	835	1005
450	500	305	435	435	575	575	735	730	915	910	1115
500	560	330	480	470	640	630	810	800	1 010	1000	1230
560	630	380	530	530	710	700	890	880	l 110	1110	1350
630	710	420	590	590	780	770	990	980	1 230	1230	1490
710	800	480	680	670	860	860	l100	1100	l380	1380	1660
800	900	520	740	730	960	950	1220	1210	1530	1520	1860
900	1000	580	820	810	1040	1040	1340	1340	1670	1670	2050
1000	1120	640	900	890	1170	1160	1500	1490	l880	1870	2280
1120	1250	700	980	970	1280	1270	1640	1630	2060	2050	2500
1250	1400	770	1080	1080	1410	1410	1790	1780	2250	2250	2740
1400	1600	870	1200	1200	1550	1550	1990	1990	2500	2500	3050
1600	1800	950	1320	1320	1690	1690	2180	2180	2730	2730	3310

Table 7.5 Radial clearance of Self-aligning rolling bearings (GB/T 4604.1)

(1) Self-aligning rolling bearings with cylindrical bore

Units:μm

d mm		Clearance									
		Group 2		Group N		Group 3		Group 4		Group 5	
Over	Incl.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
14	18	10	20	20	35	35	45	45	60	60	75
18	24	10	20	20	35	35	45	45	60	60	75
24	30	15	25	25	40	40	55	55	75	75	95
30	40	15	30	30	45	45	60	60	80	80	100
40	50	20	35	35	55	55	75	75	100	100	125
50	65	20	40	40	65	65	90	90	120	120	150
65	80	30	50	50	80	80	110	110	145	145	180
80	100	35	60	60	100	100	135	135	180	180	225
100	120	40	75	75	120	120	160	160	210	210	260
120	140	50	95	95	145	145	190	190	240	240	300
140	160	60	110	110	170	170	220	220	280	280	350
160	180	65	120	120	180	180	240	240	310	310	390
180	200	70	130	130	200	200	260	260	340	340	430
200	225	80	140	140	220	220	290	290	380	380	470
225	250	90	150	150	240	240	320	320	420	420	520
250	280	100	170	170	260	260	350	350	460	460	570
280	315	110	190	190	280	280	370	370	500	500	630
315	355	120	200	200	310	310	410	410	550	550	690
355	400	130	220	220	340	340	450	450	600	600	750
400	450	140	240	240	370	370	500	500	660	660	820
450	500	140	260	260	410	410	550	550	720	720	900
500	560	150	280	280	440	440	600	600	780	780	1000
560	630	170	310	310	480	480	650	650	850	850	1100
630	710	190	350	350	530	530	700	700	920	920	1190
710	800	210	390	390	580	580	770	770	1010	1010	1300
800	900	230	430	430	650	650	860	860	1120	1120	1440
900	1000	260	480	480	710	710	930	930	1220	1220	1570

(2) Self-aligning rolling bearings with tapered bore

Units:μm

d mm		Clearance									
		Group 2		Group N		Group 3		Group 4		Group 5	
Over	Incl.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
18	24	15	25	25	35	35	45	45	60	60	75
24	30	20	30	30	40	40	55	55	75	75	95
30	40	25	35	35	50	50	65	65	85	85	105
40	50	30	45	45	60	60	80	80	100	100	130
50	65	40	55	55	75	75	95	95	120	120	160
65	80	50	70	70	95	95	120	120	150	150	200
80	100	55	80	80	110	110	140	140	180	180	230
100	120	65	100	100	135	135	170	170	220	220	280
120	140	80	120	120	160	160	200	200	260	260	330
140	160	90	130	130	180	180	230	230	300	300	380
160	180	100	140	140	200	200	260	260	340	340	430
180	200	110	160	160	220	220	290	290	370	370	470
200	225	120	180	180.	250	250	320	320	410	410	520
225	250	140	200	200	270	270	350	350	450	450	570
250	280	150	220	220	300	300	390	390	490	490	620
280	315	170	240	240	330	330	430	430	540	540	680
315	355	190	270	270	360	360	470	470	590	590	740
355	400	210	300	300	400	400	520	520	650	650	820
400	450	230	330	330	440	440	570	570	720	720	910
450	500	260	370	370	490	490	630	630	790	790	1000
500	560	290	410	410	540	540	680	680	870	870	1100
560	630	320	460	460	600	600	760	760	980	980	1230
630	710	350	510	510	670	670	850	850	1090	1090	1360
710	800	390	570	570	750	750	960	960	1220	1220	1500
800	900	440	640	640	840	840	1070	1070	1370	1370	1690
900	1000	490	710	710	930	930	1190	1190	1520	1520	1860

Table 7.6 Radial clearance of self-aligning ball bearings (GB/T 4604.1)

(1) Radial clearance of self-aligning ball bearings with cylindrical bore

Units:μm

d mm		Clearance									
		Group 2		Group N		Group 3		Group 4		Group 5	
Over	Incl.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
2.5	6	1	8	5	15	10	20	15	25	21	33
6	10	2	9	6	17	12	25	19	33	27	42
10	14	2	10	6	19	13	26	21	35	30	48
14	18	3	12	8	21	15	28	23	37	32	50
18	24	4	14	10	23	17	30	25	39	34	52
24	30	5	16	11	24	19	35	29	46	40	58
30	40	6	18	13	29	23	40	34	53	46	66
40	50	6	19	14	31	25	44	37	57	50	71
50	65	7	21	16	36	30	50	45	69	62	88
65	80	8	24	18	40	35	60	54	83	76	108
80	100	9	27	22	48	42	70	64	96	89	124
100	120	10	31	25	56	50	83	75	114	105	145
120	140	10	38	30	68	60	100	90	135	125	175
140	160	15	44	35	80	70	120	110	161	150	210
160	180	15	50	40	92	82	138	126	185	—	—
180	200	17	57	47	105	93	157	144	212	—	—
200	225	18	62	50	115	100	170	155	230	—	—
225	250	20	70	57	130	115	195	175	255	—	—
250	280	23	78	65	145	125	220	200	295	—	—
280	315	27	90	75	165	145	250	230	335	—	—
315	355	32	100	85	185	165	285	260	380	—	—
355	400	35	110	90	205	185	325	295	430	—	—
400	450	38	125	100	230	205	345	315	465	—	—
450	500	40	135	110	255	230	380	345	510	—	—

(2) Radial clearance of self-aligning ball bearing with tapered bore

Units:μm

d mm		Clearance									
		Group 2		Group N		Group 3		Group 4		Group 5	
Over	Incl.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
18	24	7	17	13	26	20	33	28	42	37	55
24	30	9	20	15	28	23	39	33	50	44	62
30	40	12	24	19	35	29	46	40	59	52	72
40	50	14	27	22	39	33	52	45	65	58	79
50	65	18	32	27	47	41	61	56	80	73	99
65	80	23	39	35	57	50	75	69	98	91	123
80	100	29	47	42	68	62	90	84	116	109	144
100	120	35	56	50	81	75	108	100	139	130	170
120	140	40	68	60	98	90	130	120	165	155	205
140	160	45	74	65	110	100	150	140	191	180	240
160	180	50	85	75	127	117	173	161	220	—	—
180	200	55	95	85	143	131	195	182	250	—	—
200	225	63	107	95	160	145	215	200	275	—	—
225	250	70	120	107	180	165	145	230	310	—	—
250	280	78	133	120	200	180	275	255	350	—	—
280	315	87	150	135	225	205	310	280	385	—	—
315	355	97	I65	150	250	220	340	310	430	—	—
355	400	105	I80	160	275	245	375	335	470	—	—
400	450	115	200	170	300	260	400	360	510	—	—
450	500	120	215	180	325	275	425	380	545	—	—

Table 7.7 Axial clearance of four-point contact ball bearings with 35° contact angle (GB/T 4604.2)

Units:μm

d mm		Clearance							
		Group 2		Group N		Group 3		Group 4	
Over	Incl.	min.	max.	min.	max.	min.	max.	min.	max.
10	18	15	65	50	95	85	130	120	165
18	40	25	75	65	110	100	150	135	185
40	60	35	85	75	125	110	165	150	200
60	80	45	100	85	140	125	175	165	215
80	100	55	110	95	150	135	1 90	1 80	235
100	140	70	130	115	175	1 60	220	205	265
140	180	90	155	135	200	185	250	235	300
180	220	105	175	155	225	210	280	260	330
220	260	120	195	175	250	230	305	290	360
260	300	135	215	195	275	255	335	315	390
300	350	155	240	220	305	285	370	350	430
350	400	175	265	245	330	310	400	380	470
400	450	190	285	265	360	340	435	415	510
450	500	210	310	290	390	365	470	445	545
500	560	225	335	315	420	400	505	485	595
560	630	250	365	340	455	435	550	530	645
630	710	270	395	375	500	475	600	580	705
710	800	290	425	405	540	520	655	635	770
800	900	315	460	440	585	570	715	695	840
900	1000	335	490	475	630	615	770	755	910

Table 7.8 Clearance of double-row and four-row tapered roller bearings (JB/T 8236)

Units:μm

d mm		Clearance											
		Group 1		Group 2		Group 0		Group 3		Group 4		Group 5	
Over	Incl.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
-	30	0	10	10	20	20	30	40	50	50	60	70	80
30	40	0	12	12	25	25	40	45	60	60	75	80	95
40	50	0	15	15	30	30	45	50	65	65	80	90	110
50	65	0	15	15	30	30	50	50	70	70	90	90	120
65	80	0	20	20	40	40	60	60	80	80	110	110	150
80	100	0	20	20	45	45	70	70	100	100	130	130	170
100	120	0	25	25	50	50	80	80	110	110	150	150	200
120	140	0	30	30	60	60	90	90	120	120	170	170	230
140	160	0	30	30	65	65	100	100	140	140	190	190	260
160	180	0	35	35	70	70	110	110	150	150	210	210	280
180	200	0	40	40	80	80	120	120	170	170	230	230	310
200	225	0	40	40	90	90	140	140	190	190	260	260	340
225	250	0	50	50	100	100	150	150	210	210	290	290	380
250	280	0	50	50	110	110	170	170	230	230	320	320	420
280	315	0	60	60	120	120	180	180	250	250	350	350	460
315	355	0	70	70	140	140	210	210	280	280	390	390	510
355	400	0	70	70	150	150	230	230	310	310	440	440	580
400	450	0	80	80	170	170	260	260	350	350	490	490	650
450	500	0	90	90	190	190	290	290	390	390	540	540	720
500	560	0	100	100	210	210	320	320	430	430	590	590	790
560	630	0	110	110	230	230	350	350	480	480	660	660	880
630	710	0	130	130	260	260	400	400	540	540	740	740	910
710	800	0	140	140	290	290	450	450	610	610	830	830	1100
800	900	0	160	160	330	330	500	500	670	670	920	920	1240
900	1000	0	180	180	360	360	540	540	720	720	980	980	1300
1000	1120	0	200	200	400	400	600	600	820	-	-	-	-
1120	1250	0	220	220	450	450	670	670	900	-	-	-	-
1250	1400	0	250	250	500	500	750	750	980	-	-	-	-

Table 7.9 Radial clearance of four-row cylindrical roller bearings for rolling mills (cylindrical bore) (JB/T 5389.1)

Units:μm

d mm		Clearance									
		Group 2		Group N		Group 3		Group 4		Group 5	
Over	Incl.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
80	100	15	50	50	85	75	110	105	140	155	190
100	120	15	55	50	90	85	125	125	165	180	220
120	140	15	60	60	105	100	145	145	190	200	245
140	160	20	70	70	120	115	165	165	215	225	275
160	180	25	75	75	125	120	170	170	220	250	300
180	200	35	90	90	145	140	195	195	250	275	330
200	225	45	105	105	165	160	220	220	280	305	365
225	250	45	110	110	175	170	235	235	300	330	395
250	280	55	125	125	195	190	260	260	330	370	440
280	315	55	130	130	205	200	275	275	350	410	485
315	355	65	145	145	225	225	305	305	385	455	535
355	400	100	190	190	280	280	370	370	460	510	600
400	450	110	210	210	310	310	410	410	510	565	665
450	500	110	220	220	330	330	440	440	550	625	735
500	560	120	240	240	360	360	480	480	600	—	—
560	630	140	260	260	380	380	500	500	620	—	—
630	710	145	285	285	425	425	565	565	705	—	—
710	800	150	310	310	470	470	630	630	790	—	—
800	900	180	350	350	520	520	690	690	860	—	—
900	1000	200	390	390	580	580	770	770	960	—	—
1000	1120	220	430	430	640	640	850	850	1060	—	—
1120	1250	230	470	470	710	710	950	950	1190	—	—

Table 7.10 Clearance Selection Cases Beyond General Group Clearance

Service conditions	Cases	Clearance selection cases
Heavy loads or impact loads with large interference fit	Railway vehicle axles	Group 3
Vibration or impact load and interference fit both in inner rings and outer rings	Vibrating screens, Railway vehicle main electric motors, Tractor worm gear reducer	Group 3, Group 4 Group 4 Group 4
Large shaft deflection	Automobile rear wheels	Group 5
Heated shaft and inner rings	Paper dryer, Mill table roller	Group 3, Group 4 Group 3
Interference fit both in inner rings and outer rings	Rolling mill necks	Group 2
Requiring to reduce the noise and vibration during rotating	Micro electric motors	Group 1, Group 2

7.2 Bearing fit

7.2.1 Purpose of fit

The purpose of fit is to securely fix the bearing inner ring or outer ring to the shaft or housing to prevent undesirable circumferential slippage at the fitting surfaces.

This undesirable circumferential slippage, known as creep, can cause abnormal heating, wear of the fitting surfaces (leading to the ingress of wear debris into the bearing), vibration, and various other issues, preventing the bearing from functioning properly.

Therefore, for bearings that rotate under load, it is generally necessary to apply an interference fit to firmly secure the rings to the shaft or housing.

7.2.2 Tolerance and fit of shafts and housings

The fitting for metric series rolling bearings with shafts and bearing housing bores is standardized according to GB/T 275 "Rolling Bearings - Fits." The appropriate dimensional tolerances can be selected from this standard to determine the fits between the bearing and the shaft or bearing housing bore.

The relationship between the dimensional tolerances of shafts and bearing housing bores and the fit with bearings of accuracy grade 0 is shown in **Figure 7.3**.

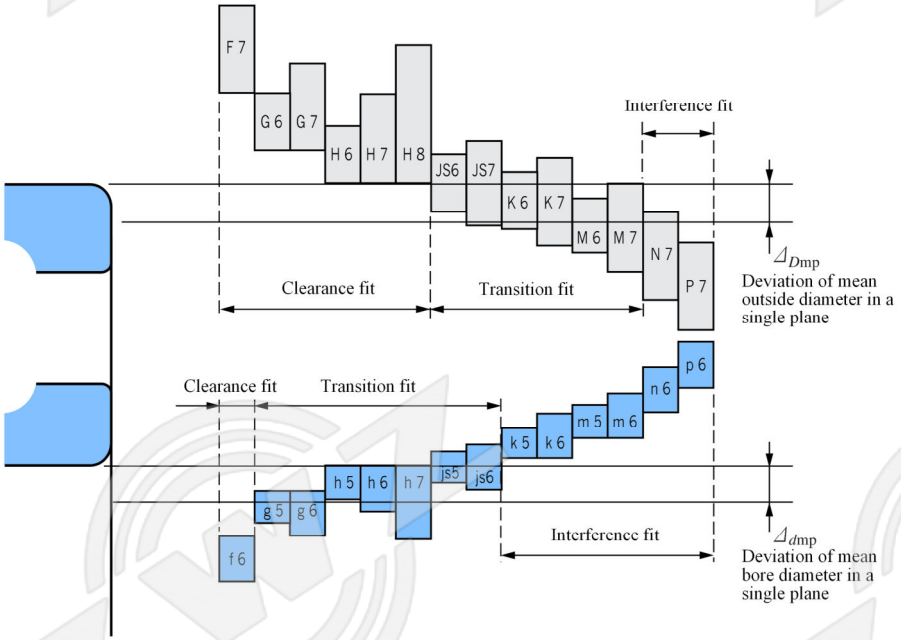


Figure 7.3 Relations between dimension tolerances of shaft and housing bore and fit (Bearings of Class Normal)

7.2.3 Selection of fit

The fit selection is implemented generally by following principles.

Based on the direction, nature of the load acting on the bearing, and the direction towards which inner or outer ring rotates, the load born by each ring can be categorized as rotating load, stationary load, or indeterminate direction load. The rings that bear rotating loads or indeterminate direction loads should be fitted with a stationary fit (interference fit). The rings that bear stationary loads can be fitted with a transition fit or a dynamic fit (clearance fit).

For bearings subjected to heavy loads, vibrations, or impact loads, the interference must be increased. When using hollow shafts, thin-walled housings, or bearing housings made of light alloys or plastics, the amount of interference should also be increased.

To maintain high rotational accuracy, high-precision bearings should be used, and the dimensional accuracy of the shaft and bearing housing should be improved to avoid excessive interference. If the interference is too large, it may affect the geometric accuracy of the shaft or bearing housing, which in turn can impair the geometric shape of the bearing rings and thus harm the bearing's rotational accuracy.

For non-separable bearings (such as deep groove ball bearings) where both the inner and outer rings use a stationary fit, the installation and removal of the bearing can be extremely inconvenient. It is best to use a dynamic fit for one of the rings.

(1) Effects of load characteristics

Bearing load can be divided into inner ring rotating load, outer ring rotating load and indeterminate direction load according to its properties, and the relationship between the bearing load and fit is shown in **Table 7.10**.

Table 7.11 Load characteristics and its relationship with fit

Bearing rotating Conditions	Legend	Load characteristics	Fit mode		Cases
			Inner rings and shafts	Outer rings and shaft housing	
Inner ring: rotating Outer ring: stationary Load direction: fixed	Static load	Rotating load in the inner ring	Interference fit (k,m,n,p,r)	Clearance fit (F,G,H,JS)	Belt drive shaft, Spur gear device, Electric motors
Inner ring: stationary Outer ring: rotating Load direction: rotating simultaneously with the outer ring	Unbalanced load	Static load in the outer ring			Rotary crusher, Wheels with poor dynamic balance
Inner ring: stationary Outer ring: rotating Load direction: fixed	Static load	Static load in the inner ring	Clearance fit (f,g,h,js)	Interference fit (K,M,N,P)	Conveyor roller, Automobile hub bearings, Pulleys with fixed shaft
Inner ring: rotating Outer ring: stationary Load direction: rotating simultaneously with the inner ring	Unbalanced load	Rotating load in the outer ring			Centrifugal machine, Vibrating screens, Vibrating machinery

(2) Effects of load magnitude

Under the action of radial load, the radius direction of the inner ring is both compressed and extended, and the circumference tends to increase slightly, so the initial interference will decrease.

The amount of interference reduction can be calculated by the following formula.

[when $F_r \le 0.25\ C_0$]

$$\Delta d_F = 0.08\sqrt{\frac{d}{B}F_r} \times 10^{-3} \quad \cdots(7.7)$$

[when $F_r > 0.25\ C_0$]

$$\Delta d_F = 0.02\frac{F_r}{B} \times 10^{-3}$$

where,

Δd_F: the amount of interference reduction in the inner ring, mm

d: bearing nominal bore diameter, mm

B: inner ring nominal width, mm

F_r: radial load, N {kgf}

C_0: basic static load rating, N {kgf}

Therefore, when the radial load is heavy load (more than 25% of the C_0 value), the fit must be tighter than when the load is light.

For the impact load, the fit must be tighter.

(3) Effects of the fitting surface roughness

If the plastic deformation of the fit surface is considered, the effective interference after the fit will be affected by the machining quality of the fit surface, which can be approximated by the following formula.

[ground shaft]

$$\Delta deff \approx \frac{d}{d+2}\Delta d \quad \cdots(7.8)$$

[turned shaft]

$$\Delta deff \approx \frac{d}{d+3}\Delta d$$

Where,

$\Delta deff$: effective interference, mm

Δd: nominal interference, mm

d: bearing nominal bore diameter, mm

(4) Effects of temperature

In general, the bearing temperature during operation is higher than the surrounding temperature, and when the bearing rotates under load, the inner ring temperature is higher than the shaft temperature, so the thermal expansion will reduce the effective interference.

The temperature difference between the inner part of the bearing and the surrounding part of the housing is Δt, it may be assumed that the temperature difference between the inner ring and the shaft on the fitting surface is approximately $(0.10 \sim 0.15)\ \Delta t$.

Therefore, the interference reduction $\triangle dt$ caused by the temperature difference can be calculated by the following formula.

$$\Delta dt = (0.10 \sim 0.15)\ \Delta t \bullet \alpha \bullet d \approx 0.0015 \Delta t \bullet d \bullet 10^{-3} \quad \cdots(7.9)$$

where,

Δdt: the amount of interference reduction caused by temperature difference, mm

Δt: temperature difference between the inner part of the bearing and the surrounding part of the housing, ℃

α: linear expansion factor of bearing steel≈(12.5×10^{-6}), 1/℃

d: bearing nominal bore diameter, mm

Therefore, when the bearing temperature is higher than the shaft temperature, the fit must be tight.

Additionally, between the outer ring and the housing, due to temperature differences or differences in the coefficient of linear expansion, the interference fit may increase. Thus, when considering the use of sliding between the outer ring and the housing interface to accommodate the thermal expansion of the shaft, careful attention is required.

(5) Maximum stress inside the bearing caused by fit

When bearings are installed with an interference fit, the races may expand or contract, leading to stress.

In cases of excessive stress, the rings may fracture, requiring attention.

The maximum stress inside the bearing caused by fit can be calculated by formula (7.10) and (7.11). As a reference value, for the safety, the maximum interference is not more than 1/1000 of the shaft diameter, and the maximum stress σ obtained by the calculation formula is not more than 120MPa {12kgf/mm^2}.

Maximum stress of the fit between housing bores and outer rings,

$(D_h \ne \infty)$

$$\sigma = E \cdot \frac{\Delta Deff}{D} \cdot \frac{\left(1-\frac{D^2}{D_h^2}\right)}{\left(1-\frac{D_e^2}{D_h^2}\right)} \quad \cdots(7.10)$$

$(D_h = \infty)$

$$\sigma = E \cdot \frac{\Delta Deff}{D}$$

Maximum stress of the fit between the shaft and inner rings,

(hollow shaft)

$$\sigma = \frac{E}{2} \cdot \frac{\Delta deff}{d} \cdot \frac{\left(1-\frac{d_0^2}{d^2}\right)\left(1+\frac{d^2}{D_i^2}\right)}{\left(1-\frac{d_0^2}{D_i^2}\right)} \quad (7.11)$$

(solid shaft)

$$\sigma = \frac{E}{2} \cdot \frac{\Delta deff}{d} \cdot \left(1+\frac{d^2}{D_i^2}\right)$$

where,

σ: maximum stress, MPa {kgf/mm^2}

d: bearing nominal inner diameter (axle diameter), mm

D_i: inner ring raceway diameter, mm

Ball bearing $D_i \approx 0.2(D+4d)$

Roller bearing $D_i \approx 0.25(D+3d)$

$\Delta deff$: the effective interference of the inner ring, mm

d_0: hollow shaft radius, mm

D_e: outer raceway diameter, mm

Ball bearing $De=0.2(4D+d)$

Roller bearing $De=0.25(3D+d)$

D: bearing nominal outer diameter (housing bore diameter), mm

$\Delta Deff$: the effective interference of the outer ring, mm

D_h: housing outer diameter, mm

E: elasticity modulus, 2.08×10^5MPa {21200kgf/mm^2}

(6) Others

When precision requirements are particularly high, the accuracy of the shaft and housing should be increased. Compared to the shaft, the housing is generally difficult to machine and has lower accuracy. Therefore, it is advisable to relax the fit between the outer ring and the housing.

When using a hollow shaft or thin-walled housing, the fit must be tighter than usual.

When using a split-type housing, the fit with the outer ring should be relaxed. For cast aluminum or light alloy housings, **the fit must be tighter than usual; in this case, please consult with ZWZ designers.**

7.2.4 Selection of tolerance zone

In order to select the appropriate fit, the operating conditions of the bearing, magnitude of load, bearing dimensions, bearing clearance, temperature, rotation accuracy, structure and material of the shaft and housing, installation, and disassembly should be fully considered.

They should be considered with the tolerance zone selection and related fitting surface. See **Table 7.12~Table 7.19**.

Table7.12 Fitting between radial bearing and shaft—shaft tolerance zone (GB/T 275)

Bearings with cylindrical bores							
Load status			Examples	Deep groove ball bearings, self-aligning ball bearings, and angular contact ball bearings	Cylindrical roller bearings and tapered roller bearings	Self-aligning roller bearings	Tolerance zone
				Nominal bore diameter of bearings /mm			
Inner rings subjected to rotating load or indeterminate direction load	Light load		Conveyors, light load gearboxes	≤18 >18~100 >100~200 —	— ≤40 >40~140 >140~200	— ≤40 >40~100 >100~200	h5 j6[a] k6[a] m6[a]
	Normal load		General machinery, electric motors, pumps, internal combustion engines, Spur gear transmission devices	≤18 >18~100 >100~140 >140~200 >200~280 — —	— ≤40 >40~100 >100~140 >140~200 >200~400 —	— ≤40 >40~65 >65~100 >100~140 >140~280 >280~500	j5, js5 k5[b] m5[b] m6 n6 p6 r6
	Heavy load		Railway locomotive axle boxes, traction motors, crushers, etc.	—	>50~140 >140~200 >200 —	>50~100 >100~140 >140~200 >200	n6[c] p6[c] r6[c] r7[c]
Inner ring subjected to fixed load	All loads	Inner rings need to be easily movable axially	Various pulleys on non-rotating shafts	All dimensions			f6 g6
		Inner rings require no easy axial moving	Tension pulleys, rope pulleys				h6 j6
Only axial loads			All dimensions				j6, js6

Bearings with cylindrical bores				
All loads	Railway locomotive axle boxes	Installed on the withdrawal sleeve	All dimensions	h8(IT6)[d,e]
	General mechanical drive	Only on the adapter sleeve	All dimensions	h9(IT7)[d,e]

[a] Whereas the accuracy requirements are high, j5, k5, and m5 should be applied instead of j6, k6, and m6.

[b] The fit of tapered roller bearings and angular contact ball bearings have little effect on the clearance, and k6 and m6 can be used to replace k5 and m5.

[c] Under heavy loads, the number of bearing clearance should be more than N groups.

[d] Whereas the accuracy or speed requirements are high, h7(IT5) should be applied instead of h8(IT6).

[e] IT6 and IT7 indicate the cylindricity tolerance value.

Table 7.13 Fitting between radial bearing and bearing housing bores—bore tolerance zone (GB/T 275)

Load status		Examples	Other circumstances	Tolerance zone[a]	
				Ball bearings	Roller bearings
Outer rings subjected to fixed load	Light, normal, heavy	General machinery, railway locomotive axle boxes	Easily movable axially, split bearing housing preferably	H7, G7[b]	
	Impact		Movable axially, integral or split bearing housing preferably	J7, JS7	
Loads with indeterminate directions	Light, normal	Electric motors, pumps, crankshaft main bearings			
	Normal, heavy		Immovable axially, with an integral bearing housing	K7	
	Heavy, impact	Traction motors		M7	
Outer rings bearing rotating loads	Light	Belt tension pulleys		J7	K7
	Normal	Hub bearings		M7	N7
	Heavy			—	N7, P7

[a] The parallel tolerance zone can be selected from left to right as the dimensions increase. When there are high requirements for rotation accuracy, a tolerance level can be increased accordingly.

[b] Not applicable to the split bearing housing.

Table 7.10 Fitting between thrust bearing and shaft—shaft tolerance zone (GB/T 275)

Load status		Type of bearings	Bearing nominal bore diameter/mm	Tolerance zone
Only axial loads		Thrust ball and cylindrical roller thrust bearings	All dimensions	j6、js6
Radial and axial combined loads	Bearing rings subjected to fixed loads	Self-aligning thrust roller bearings, thrust angular contact ball bearings, thrust tapered roller bearings	≤250 >250	j6 js6
	Bearing rings subjected to rotating loads or indeterminate direction loads		≤200 >200~400 >400	k6[a] m6 n6

[a] Whereas the requirements for interference are low, j6, k6, and m6 can be used respectively to replace k6, m6, and n6.

Table 7.15 Fitting between thrust bearing and bearing housing bores— bore tolerance zone (GB/T 275)

Load status		Types of bearings	Tolerance zone
Only axial loads		Thrust ball bearings	H8
		Thrust cylindrical bearings, tapered roller bearings	H7
		Thrust self-aligning roller bearings	—[a]
Radial and axial combined loads	Bearing rings subjected to fixed loads	Thrust angular contact ball bearings, thrust self-aligning roller bearings, thrust tapered roller bearings	H7
	Bearing rings subjected to rotating loads or indeterminate direction loads		K7[b]
			M7[c]

[a] The clearance between the bearing housing bores and the housing washer is 0.001*D* (*D* indicates the bearing nominal outer diameter).

[b] general working conditions.

[c] existing large axial loads.

Table 7.16 Recommended fit of inch series tapered roller bearings and shafts

●Bearing tolerance: Class4、Class2

Load conditions		Nominal bore diameter *d* mm (1/25.4) Over	Incl.	Deviation of a single bore diameter Δ_{ds}, μm U	L	Dimension limit deviation of the shaft diameter μm U	L	Notes
Inner ring rotating loads	General loads	—	76.2(3.0)	+13	0	+38	+25	
		76.2(3.0)	304.8(12.0)	+25	0	+64	+38	
		304.8(12.0)	609.6(24.0)	+51	0	+127	+76	
		609.6(24.0)	914.4(36.0)	+76	0	+190	+114	
	Heavy loads Impact loads High speed	—	76.2(3.0)	+13	0	Tolerance when the average interference is 0.0005×*d*(mm)		Generally, bearings whose inner clearance is larger than the standard clearance are applied
		76.2(3.0)	304.8(12.0)	+25	0			
		304.8 (12.0)	609.6(24.0)	+51	0			
		609.6 (24.0)	914.4(36.0)	+76	0			
Rotating load in the outer ring	General loads (no impact)	—	76.2(3.0)	+13	0	+13	0	
		76.2 (3.0)	304.8(12.0)	+25	0	+25	0	
		304.8(12.0)	609.6(24.0)	+51	0	+51	0	
		609.6(24.0)	914.4(36.0)	+76	0	+76	0	
	General loads (no impact)	—	76.2(3.0)	+13	0	0	-13	Inner rings can move axially easily
		76.2 (3.0)	304.8(12.0)	+25	0	0	-25	
		304.8 (12.0)	609.6(24.0)	+51	0	0	-51	
		609.6(24.0)	914.4(36.0)	+76	0	0	-76	
	Heavy loads Impact loads High speed	—	76.2(3.0)	+13	0	Tolerance when the average interference is 0.0005×*d*(mm)		Generally, bearings whose inner clearance is larger than the standard clearance are applied.
		76.2 (3.0)	304.8(12.0)	+25	0			
		304.8 (12.0)	609.6(24.0)	+51	0			
		609.6 (24.0)	914.4(36.0)	+76	0			

●Shaft tolerance: Class3、Class0[1)]

Load conditions		Nominal bore diameter *d* mm (1/25.4) Over	Incl.	Deviation of a single bore diameter Δ_{ds}, μm U	L	Dimension limit deviation of the shaft diameter μm U	L	Notes
Inner ring rotating loads	Main shafts of Precision machine tools	—	76.2 (3.0)	+13	0	+30	+18	
		76.2 (3.0)	304.8(12.0)	+13	0	+30	+18	
		304.8(12.0)	609.6(24.0)	+25	0	+64	+38	
		609.6(24.0)	914.4(36.0)	+38	0	+102	+64	
	Heavy loads Impact loads High speed	—	76.2 (3.0)	+13	0	Tolerance when the average interference is 0.0005×*d*(mm)		Generally bearings whose inner clearance is larger than the standard clearance are applied.
		76.2 (3.0)	304.8(12.0)	+13	0			
		304.8(12.0)	609.6(24.0)	+25	0			
		609.6(24.0)	914.4(36.0)	+38	0			
Rotating load in the outer ring	Main shafts of Precision machine tools	—	76.2 (3.0)	+13	0	+30	+18	
		76.2 (3.0)	304.8(12.0)	+13	0	+30	+18	
		304.8(12.0)	609.6(24.0)	+25	0	+64	+38	
		609.6(24.0)	914.4(36.0)	+38	0	+102	+64	

[Notes] 1) The nominal inner diameter *d* for the Class 0 bearing is ≤304.8mm.

Table 7.17 Recommended fit of inch series tapered roller bearings and housing bores

●Bearing tolerance: Class4、Class2

Load conditions		Nominal outer diameter *D* mm (1/25.4) Over	Incl.	Deviation of single outer diameter Δ_{Ds}, μm U	L	Limit deviation of dimensions for bearing housing bores μm U	L	Notes
Inner ring rotating loads	Applied to the free end or fixed end	—	76.2 (3.0)	+25	0	+76	+51	Outer rings are easy to move axially
		76.2 (3.0)	127.0(5.0)	+25	0	+76	+51	
		127.0(5.0)	304.8(12.0)	+25	0	+76	+51	
		304.8(12.0)	609.6(24.0)	+51	0	+152	+102	
		609.6(24.0)	914.4(36.0)	+76	0	+229	+152	
	Outer rings Axial position can be adjusted.	—	76.2(3.0)	+25	0	+25	0	
		76.2 (3.0)	127.0(5.0)	+25	0	+25	0	
		127.0(5.0)	304.8(12.0)	+25	0	+51	0	
		304.8(12.0)	609.6(24.0)	+51	0	+76	+25	
		609.6(24.0)	914.4(36.0)	+76	0	+127	+51	
	Outer rings Axial position cannot be adjusted.	—	76.2 (3.0)	+25	0	-13	-38	Axial restraint of the outer ring
		76.2 (3.0)	127.0 (5.0)	+25	0	-25	-51	
		127.0 (5.0)	304.8(12.0)	+25	0	-25	-51	
		304.8(12.0)	609.6(24.0)	+51	0	-25	-76 -	
		609.6(24.0)	914.4(36.0)	+76	0	-25	102	
Rotating load in the outer ring	Outer rings Axial position cannot be adjusted.	—	76.2 (3.0)	+25	0	-13	-38	Axial restraint of the outer ring
		76.2 (3.0)	127.0(5.0)	+25	0	-25	-51	
		127.0(5.0)	304.8(12.0)	+25	0	-25	-51	
		304.8(12.0)	609.6(24.0)	+51	0	-25	-76	
		609.6(24.0)	914.4(36.0)	+76	0	-25	-102	

●Shaft tolerance: Class3、Class0[1)]

Load conditions		Nominal outer diameter *D* mm (1/25.4) Over	Incl.	Deviation of a single outer diameter Δ_{Ds}, μm U	L	Limit deviation of dimensions for the bearing housing bores μm Over	Incl.	Notes
Inner ring rotating loads	applied to the free end	—	152.4 (6.0)	+13	0	+38	+25	Outer rings are easy to move axially
		152.4 (6.0)	304.8(12.0)	+13	0	+38	+25	
		304.8(12.0)	609.6(24.0)	+25	0	+64	+38	
		609.6(24.0)	914.4(36.0)	+38	0	+89	+51	
	applied to the fixed end	—	152.4 (6.0)	+13	0	+25	+13	Outer rings can move axially
		152.4(6.0)	304.8(12.0)	+13	0	+25	+13	
		304.8(12.0)	609.6(24.0)	+25	0	+51	+25	
		609.6(24.0)	914.4(36.0)	+38	0	+76	+38	
	Outer rings Axial position can be adjusted	—	152.4 (6.0)	+13	0	+13	0	Axial restraint of the outer ring
		152.4(6.0)	304.8(12.0)	+13	0	+25	0	
		304.8(12.0)	609.6(24.0)	+25	0	+25	0	
		609.6(24.0)	914.4(36.0)	+38	0	+38	0	
	Outer rings Axial position cannot be adjusted	—	152.4 (6.0)	+13	0	0	-13 -	
		152.4(.6.0)	304.8(12.0)	+13	0	0	25 -	
		304.8(12.0	609.6(24.0)	+25	0	0	25 -	
		609.6(24.0)	914.4(36.0)	+38	0	0	38	
Rotating load in the outer ring	Outer rings Axial position cannot be adjusted	—	152.4(6.0)	+13	0	-13	-25	Axial restraint of the outer ring
		152.4(6.0)	304.8(12.0)	+13	0	-13	-38	
		304.8(12.0)	609.6(24.0)	+25	0	-13	-38	
		609.6 (24.0)	914.4(36.0)	+38	0	-13	-51	

[Notes] 1) The nominal inner diameter *d* for the Class 0 bearing is ≤304.8mm.

Table 7.18 Geometric tolerances for shafts and bearing housings

Nominal dimensions /mm		Cylindricity /μm				Axial circular runout /μm			
		Shaft neck		Housing bore		Shaft shoulder		Housing bore shoulder	
		Bearing tolerance class							
>	≤	0	6(6X)	0	6(6X)	0	6(6X)	0	6(6X)
—	6	2.5	1.5	4	2.5	5	3	8	5
6	10	2.5	1.5	4	2.5	6	4	10	6
10	18	3	2	5	3	8	5	12	8
18	30	4	2.5	6	4	10	6	15	10
30	50	4	2.5	7	4	12	8	20	12
50	80	5	3	8	5	15	10	25	15
80	120	6	4	10	6	15	10	25	15
120	180	8	5	12	8	20	12	30	20
180	250	10	7	14	10	20	12	30	20
250	315	12	8	16	12	25	15	40	25
315	400	13	9	18	13	25	15	40	25
400	500	15	10	20	15	25	15	40	25
500	630	—	—	22	16	—	—	50	30
630	800	—	—	25	18	—	—	50	30
800	1000	—	—	28	20	—	—	60	40
1000	1250	—	—	33	24	—	—	60	40

Table 7.19 Fit surface and end surface roughness

shaft or housing bore diameter /mm		Diameter tolerance of fitting surface of shaft or housing bore					
		IT7		IT6		IT5	
		Surface roughness *Ra*/μm					
>	≤	Grinded	Machined	Grinded	Machined	Grinded	Machined
—	80	1.6	3.2	0.8	1.6	0.4	0.8
80	500	1.6	3.2	1.6	3.2	0.8	1.6
500	1250	3.2	6.3	1.6	3.2	1.6	3.2
End face		3.2	6.3	6.3	6.3	6.3	3.2

8 Preload of bearing

During operation, bearings typically have a certain amount of internal clearance. Depending on the usage conditions, sometimes to enhance the rigidity or rotational precision of the bearing configuration, a certain axial load is applied to the bearings during installation to create a negative internal clearance. This involves inducing a certain amount of pre-deformation between the rolling elements and the inner and outer rings to maintain a preloaded condition. This method is known as preload and is commonly applied to angular contact ball bearings and tapered roller bearings.

8.1 Purpose of preload

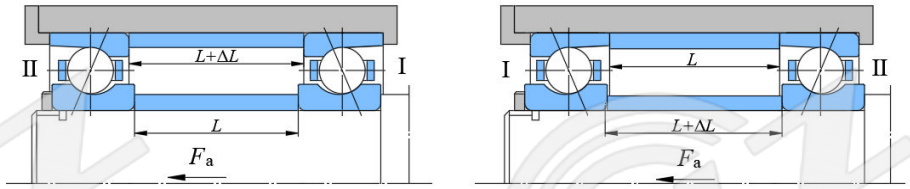
- Improving axial and radial positioning accuracy while reducing shaft runout and enhancing rotational precision.
- Enhancing bearing rigidity to improve gear meshing accuracy.
- Prevent rolling elements from rotating, sliding, or skidding, reducing friction.
- Preventing bearing abnormal noise caused by vibration and resonance.
- Ensuring proper relative positioning of the rolling elements and the raceways.

8.2 Types of preload

Preload can be categorized into **radial preload** and **axial preload** based on the different types of bearings. The axial preload can be further divided into **positional preload** and **constant pressure preload**. The method involves applying a preload to the bearings, typically by applying an axial load between two sets of bearings, causing a relative axial displacement between the inner and outer races.

8.2.1 Position preload

Positional preload refers to an axial preload method in which the axial position of the bearing remains unchanged during use, as shown in **Figure 8.1**, in which a certain amount of preload ΔL can be obtained by adjusting the width of the distance sleeve between two bearings, as shown in **Figure 8.1**.The relative axial position of the bearing is fixed to improve the bearing rigidity, but when the temperature changes, the preload will change.



(a) Back to back (b) Face to face

Figure 8.1 Position preload

8.2.2 Constant-pressure preload

Spring loading can be used to maintain stable preload force even if the position between bearings changes due to temperature rise or load during operation.

Cylindrical rollers: radial preload applied;

Thrust bearings: axial preload applied;

Single-row angular contact ball bearings and tapered roller bearings are generally axially preloaded and paired with another bearing of the same type in a face-to-face or back-to-back configuration.

Deep groove ball bearings are typically axially preloaded as well.

Preload is typically adjusted during installation at ambient temperature (or set according to this temperature). If during operation the temperature rise of the shaft exceeds that of the bearing housing, the preload will increase. Additionally, the preload increase for face-to-face configuration is greater than that for back-to-back configuration.

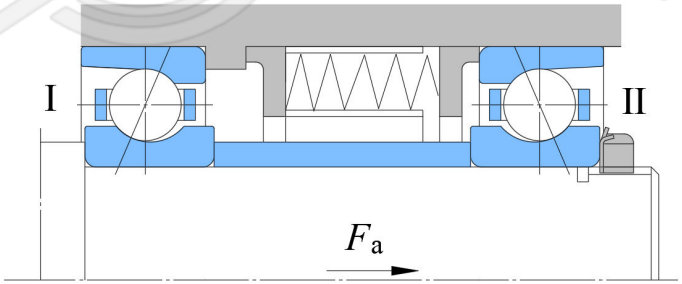


Figure 8.2 Constant-pressure preload

8.2.3 Comparison between position preload and constant-pressure preload

When the preload force is the same, the axial displacement of a bearing with positional preload is smaller, making it easier to achieve high rigidity. Positional preload can apply a larger preload force. Therefore, positional preload is preferable when high rigidity is required.

Compared to positional preload, the increase in axial stiffness of the support system with pressure preload is not significant for the same amount of preload deformation. However, with positional preload, axial length differences caused by temperature differences between the shaft and bearing housing, and radial expansion caused by temperature differences between the inner and outer rings, all affect the preload deformation. In contrast, pressure preload is not affected by these factors.

Pressure preload is suitable for applications requiring high-speed rotation, prevention of axial vibration, and for thrust bearings used in horizontal shafts.

The size of the preload force must be determined based on the different objectives of the preload, within a range that does not adversely damage bearing life, temperature rise, friction torque, etc.

Additionally, when determining the preload force, factors such as the reduction of preload force after running-in, the accuracy of the shaft and housing, installation conditions, and lubrication conditions must be fully considered.

8.3 Selection of minimum axial preload load

The magnitude of the preload force should be determined based on the load conditions and operational requirements. Generally, under high-speed and light-load conditions, or to reduce system vibration and improve rotational precision, a lighter preload force is selected. Under medium-speed and medium-load, or low-speed and heavy-load conditions, and to increase system stiffness, a medium or heavy preload force is selected. However, if the preload force is too large, although the stiffness of the bearing is significantly improved, it may increase the friction torque in the bearing, raise the temperature, and decrease the bearing life. The magnitude of the preload force should generally be determined through calculations combined with empirical data. During positional preload, it's essential to maintain constant contact between the rolling elements and the raceways. At this point, the minimum axial preload can be determined according to the formula listed in Table 8.1.

In practical applications, accurately determining the applied preload can be challenging. Methods such as measuring the starting friction torque of the bearing, measuring the axial displacement of the bearing, measuring the deformation of the preload spring, and measuring the tightening torque of the nut can be used to control the preload amount.

Table 8.1 Minimum axial preload of positioning preload

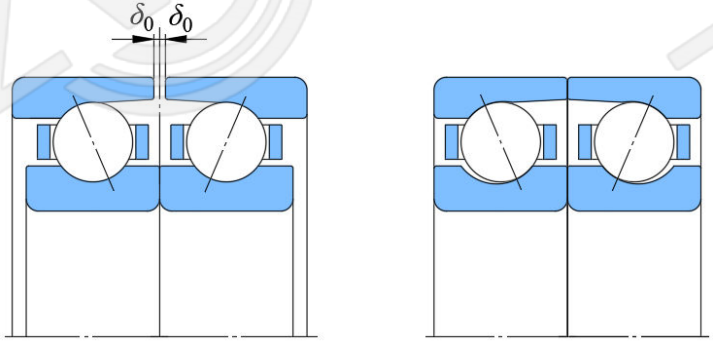
Types of bearings	Load status	Minimum axial preload F_{amin}
Angular contact ball bearings	Pure axial loads	$F_{amin} \geq 0.35F_a$
	Radial and axial combined loads	$\begin{cases} F_{a\,min} \geqslant 1.7Fr_I tg\alpha_I - 0.5Fa \\ F_{a\,min} \geqslant 1.7Fr_{II} tg\alpha_{II} + 0.5Fa \end{cases}$ take the larger one of the two values Where, Fr_I: radial loads that Bearing I withstands Fr_{II}: radial loads that Bearing II withstands α_I: contact angle of Bearing I α_{II}: contact angle of Bearing II
Tapered roller bearings	Pure axial loads	$F_{a\,min} \geqslant 0.5Fa$
	Radial and axial combined loads	$\begin{cases} F_{a\,min} \geqslant 1.9Fr_I tg\alpha_I - 0.5Fa \\ F_{a\,min} \geqslant 1.9Fr_{II} tg\alpha_{II} + 0.5Fa \end{cases}$ take the larger one of the two values

8.4 Radial preload

The purpose of radial preload is to increase the number of rolling elements in the load zone and improve bearing rigidity. In high-speed cylindrical roller bearings, radial preload can reduce the phenomenon of sliding between the rolling elements and the raceway under the action of centrifugal force. For bearings with tapered inner bores, the relative position between the inner ring and the fixed sleeve is adjusted with a locking nut to reduce the radial clearance of the bearing, thereby achieving radial preload.

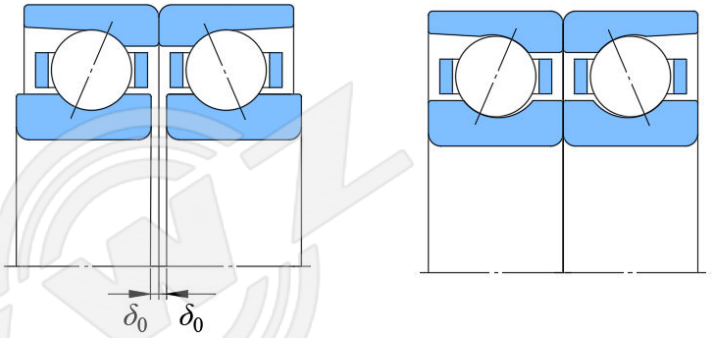
8.5 Preload of paired mounting angular contact ball bearing

In the paired installation of angular contact ball bearings in face-to-face or back-to-back configuration, consideration is given to the axial deformation produced under preload during bearing assembly. A certain amount of preload deformation is ground off the end faces of the inner or outer rings of the two bearings in the matched configuration, so that the protrusion of the non-reference end face of a single bearing exceeds the protrusion of the reference end face of the other ring by δ_0. When the paired bearings are installed onto the shaft and bearing housing, the corresponding end faces are tightened by fastening devices, placing the two bearings in a preloaded state, as shown in **Figure 8.3**.



Before mounting After mounting

(a)Face to face arrangement



Before mounting After mounting

(b)Back to back arrangement

Figure 8.3 Pre-load mounting of paired angular contact ball bearings

8.5.1 Value of axial preload

The **GB/T 32334** and angular contact ball bearing technical conditions define the preload value of the paired angular contact ball bearings. According to the magnitude of the preload, the axial preload is divided into light preload, medium preload and heavy preload, and their values are listed in the table.

In the table, A: indicates light preloaded load, B: indicates medium preloaded load, and C: indicates heavy preloaded load.

Table 8.2 Preloading of paired bearings (DB and DF types) with nominal contact angle α=15°

Units:N

Bore diameter code	(B)71800C			(B)71900 C			(B)7000 C			(B)7200C		
	A	B	C	A	B	C	A	B	C	A	B	C
6	–	–	–	–	–	–	7	13	25	–	–	–
7	–	–	–	–	–	–	9	18	35	12	24	48
8	–	–	–	–	–	–	10	20	40	14	28	56
9	–	–	–	–	–	–	10	20	40	15	30	60
00	10	30	60	10	20	40	15	30	60	20	40	80
01	11	33	66	10	20	40	15	30	60	20	40	80
02	12	36	72	15	30	60	20	40	80	30	60	120
03	12	37	75	15	30	60	25	50	100	35	70	140
04	20	60	120	25	50	100	35	70	140	45	90	180
05	22	66	132	25	50	100	35	70	140	50	100	200
06	23	70	140	25	50	100	50	100	200	90	180	360
07	25	75	150	35	70	140	60	120	240	120	240	480
08	26	78	155	45	90	180	60	120	240	150	300	600
09	27	80	160	50	100	200	110	220	440	160	320	640
10	40	120	240	50	100	200	110	220	440	170	340	680
11	55	165	330	70	140	280	150	300	600	210	420	840
12	70	210	420	70	140	280	150	300	600	250	500	1000
13	71	215	430	80	160	320	160	320	640	290	580	1160
14	73	220	440	130	260	520	200	400	800	300	600	1200
15	76	225	450	130	260	520	200	400	800	310	620	1240
16	78	235	470	140	280	560	240	480	960	370	740	1480
17	115	345	690	170	340	680	250	500	1000	370	740	1480
18	116	350	700	180	360	720	300	600	1200	480	960	1920
19	117	355	710	190	380	760	310	620	1240	520	1040	2080
20	120	360	720	230	460	920	310	620	1240	590	1180	2360
21	130	390	780	230	460	920	360	720	1440	650	1300	2600
22	160	500	1000	230	460	920	420	840	1680	670	1340	2680
24	180	550	1100	290	580	1160	430	860	1720	750	1500	3000
26	210	620	1230	350	700	1400	560	1120	2240	800	1600	3200
28	240	720	1440	360	720	1440	570	1140	2280	–	–	–
30	270	820	1630	470	940	1880	650	1300	2600	–	–	–
32	280	850	1700	490	980	1960	730	1460	2920	–	–	–
34	–	–	–	500	1000	2000	800	1600	3200	–	–	–
36	–	–	–	630	1260	2520	900	1800	3600	–	–	–
38	–	–	–	640	1280	2560	950	1900	3800	–	–	–
40	–	–	–	800	1600	3200	1100	2200	4400	–	–	–
44	–	–	–	850	1700	3400	1250	2500	5000	–	–	–
48	–	–	–	860	1720	3440	1300	2600	5200	–	–	–
52	–	–	–	1050	2110	4220	1550	3100	6200	–	–	–
56	–	–	–	1090	2180	4360	–	–	–	–	–	–
60	–	–	–	1400	2800	5600	–	–	–	–	–	–
64	–	–	–	1400	2800	5600	–	–	–	–	–	–

Table 8.3 Preloading of paired bearings (DB and DF types) with nominal contact angle α=25° and α=40°

Units:N

Bore diameter code	(B)71900 AC			(B)7000 AC			(B)7200 AC			7200 B,7300 B		
	A	B	C	A	B	C	A	B	C	A	B	C
8	–	–	–	20	40	80	–	–	–	–	–	–
9	–	–	–	20	40	80	–	–	–	–	–	–
00	15	30	60	25	50	100	35	70	140	80	330	660
01	15	30	60	25	50	100	35	70	140	80	330	660
02	25	50	100	30	60	120	45	90	180	80	330	660
03	25	50	100	40	80	160	60	120	240	80	330	660
04	35	70	140	50	100	200	70	140	280	120	480	970
05	40	80	160	60	120	240	80	160	320	120	480	970
06	40	80	160	90	180	360	150	300	600	120	480	970
07	60	120	240	90	180	360	190	380	760	160	630	1280
08	70	140	280	100	200	400	240	480	960	160	630	1280
09	80	160	320	170	340	680	260	520	1040	160	630	1280
10	80	160	320	180	360	720	260	520	1040	160	630	1280
11	120	240	480	230	460	920	330	660	1320	380	1500	3050
12	120	240	480	240	480	960	400	800	1600	380	1500	3050
13	120	240	480	240	480	960	450	900	1800	380	1500	3050
14	200	400	800	300	600	1200	480	960	1920	380	1500	3050
15	210	420	840	310	620	1240	500	1000	2000	380	1500	3050
16	220	440	880	390	780	1560	580	1160	2320	380	1500	3050
17	270	540	1080	400	800	1600	600	1200	2400	410	1600	3250
18	280	560	1120	460	920	1840	750	1500	3000	410	1600	3250
19	290	580	1160	480	960	1920	850	1700	3400	410	1600	3250
20	360	720	1440	500	1000	2000	950	1900	3800	410	1600	3250
21	360	720	1440	560	1120	2240	1000	2000	4000	410	1600	3250
22	370	740	1480	650	1300	2600	1050	2100	4200	410	1600	3250
24	450	900	1800	690	1380	2760	1200	2400	4800	410	1600	3250
26	540	1080	2160	900	1800	3600	1250	2500	5000	540	2150	4300
28	560	1120	2240	900	1800	3600	–	–	–	540	2150	4300
30	740	1480	2960	1000	2000	4000	–	–	–	540	2150	4300
32	800	1600	3200	1150	2300	4600	–	–	–	540	2150	4300
34	800	1600	3200	1250	2500	5000	–	–	–	540	2150	4300
36	1000	2000	4000	1450	2900	5800	–	–	–	540	2150	4300
38	1000	2000	4000	1450	2900	5800	–	–	–	940	3700	7500
40	1250	2500	5000	1750	3500	7000	–	–	–	940	3700	7500
44	1300	2600	5200	2000	4000	8000	–	–	–	940	3700	7500
48	1430	2860	5720	2050	4100	8200	–	–	–	940	3700	7500
52	1730	3510	7020	–	–	–	–	–	–	–	–	–
56	1820	3640	7280	–	–	–	–	–	–	–	–	–
60	2200	4400	8800	–	–	–	–	–	–	–	–	–
64	2200	4400	8800	–	–	–	–	–	–	–	–	–

9 Limiting speed of bearings

The speed of bearings is primarily limited by the temperature rise caused by internal friction heating of the bearings. When the speed exceeds a certain limit, the bearings may fail to continue rotating due to burning and other issues.

The limit speed of bearings refers to the boundary value of the speed at which no frictional heating occurs to cause burning and the bearing can rotate continuously.

Therefore, the limit speed of bearings depends on various factors such as the type, size, and precision of bearings, lubrication method, quality and quantity of lubricants, material and type of cage, and load conditions.

The limit speeds for bearings using grease and oil (oil bath lubrication) are separately provided in the respective bearing size tables. These values represent the limit speeds at which standard-designed bearings rotate under general load conditions($P<0.1C$, $F_a/F_r\leq0.25$ approximately).

Additionally, lubricants of different types and grades may have varying performance characteristics, and while some may perform well, they may not be suitable for high-speed rotation.

9.1 Determination method of rolling bearings limiting speed

Due to the many factors affecting the limit speed, it's not feasible to have an exact calculation method to determine the limit speed of various types of bearings. Instead, approximate formulas for calculating the limit speed are proposed based on domestic and international experience and experimental results, along with reasonable usage guidelines. When selecting bearings, the limit speed values listed in the sample should generally not be exceeded.

The limiting speed given in the sample of rolling bearings is determined under certain assumptions: dynamic equivalent load $P<0.1C$ (where C is the dynamic load ratingof the bearing); normal lubrication and cooling conditions; radial bearings only bear radial loads, and thrust bearings only bear axial loads; bearing precision is at P_0 level.

Under the above assumptions, the limit speed of bearings can be calculated using the following formula:

$$n_j=\frac{f_1A}{D_m} \quad \cdots\cdots(9.1)$$

To radial bearings:

$$n_j=\frac{f_1A}{\sqrt{DH}} \quad \cdots\cdots(9.2)$$

where,

n_j: limiting speed of rolling bearings, r/min

D_m: average diameter of bearings,

D_m=0.5（D+d）, mm

d: bearing bore diameter, mm

D: bearing outer diameter, mm

H: thrust bearing height, mm

f_1: The dimensional factor can be found in **Figure 9.1** according to the D_m value of the radial bearing or the $\sqrt{DH}$ value of thrust bearing.

A: The structural coefficient can be found in **Table 9.1**.

The result is rounded to two significant digits. When calculating the limiting speed of needle roller bearings, the D_m of the formula should be replaced by the diameter of the inner raceway.

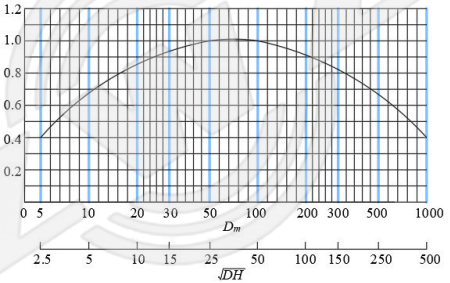


Figure 9.1 Dimension factor f_1

Table 9.1 Structural factor A ($\times 10^4$)

Type of bearings	Grease lubrication	Oil lubrication
Deep groove ball bearings		
Single-row	48	60
Single-row with shield	48	60
Single-row with seal	34	—
Single-row with felt sealing ring	24	—
Single-row with a filling slot	38	48
Dual-row with a filling slot	30	38
Angular contact ball bearings		
Single-row	45	60
Dual-row	32	43
Paired mounting	32	43
Four-point contact ball bearings	36	48
Separable bearings		
Magneto bearings	48	60
Self-aligning ball bearings	38	48
Short cylindrical roller bearings	43	53
Needle roller bearings		
No cage	9	12
With cage	24	36
With cage and drawn cup	20	28
Self-aligning roller bearings	28	34
Tapered roller bearings		
Single-row	30	38
Dual-row	22	28
Four-row	18	22
Thrust ball bearings	9	13
Thrust cylindrical roller bearings	6.7	9
Thrust tapered roller bearings	6.7	9
Thrust self-aligning roller bearings	—	18

9.2 Adjusted rolling bearings limiting speed

9.2.1 Factors affecting limiting speed

There are many factors affecting the limit speed, primarily as follows:

(1) Load magnitude

When the bearing is running at the load conditions of $P>0.1C$, the increase of the contact stress and temperature of the contact surface between rolling elements and raceways will affect the performance of the lubricant, so it is necessary to multiply the limiting speed given by the sample by the load distribution coefficient f_2, as shown in **Figure 9.2**.

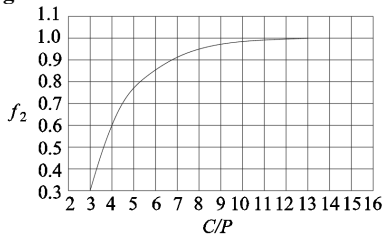


Figure 9.2 Load factor f_2

(2) Types and directions of loads

If the radial bearing is subjected to the combined load of radial load and axial load at the same time, the friction heat is large due to the increase in the number of rolling elements under load, then the limit speed detected by the sample should be multiplied by the load distribution coefficient f_3, as shown in **Figure 9.3**.

Provided that the $P>0.1C$, or the axial load in the combined load is more than 25% of the radial load, it is necessary to correct the limiting speed.

$$n_a = f_2 f_3 n \quad \cdots\cdots(9.3)$$

where,

n_a: adjusted limit speed, rpm

f_2: correction factor (See **Figure 6.2**)

f_3: correction coefficient (See **Figure 9.3**)

n: limiting speed under normal load conditions, rpm (with reference to the bearing dimensions table)

C: basic dynamic load rating, N {kgf}

P: dynamic equivalent load, N {kgf}

Fr: radial load, N {kgf}

Fa: axial load, N {kgf}

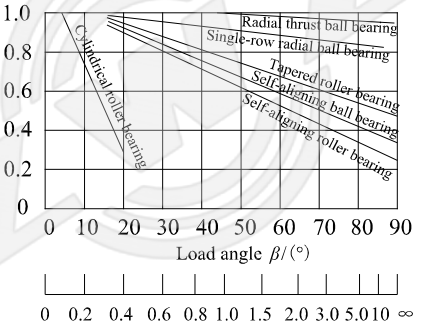


Figure 9.3 Load distribution factor f_3

9.3 Limiting speed of sealed bearings

The limiting speed of ball bearings with contact seal (RS type) is limited by the linear speed of the contact surface of the seal.

The allowable line speed depends on the rubber material of the seal. See **Table 12.5**.

9.4 Notes of high-speed rotation

When bearings are rotating at high speeds, especially when the speed approaches or exceeds the limiting speed recorded in the dimension table, the following points should be considered:

1) Use precision bearings.

2) Analyze the internal clearance of the bearings (consider the reduction in internal clearance due to temperature rise).

3) Analyze the material and the cage type (for high-speed, copper alloy or phenolic resin machined cages are suitable. Additionally, synthetic resin molded cages suitable for high-speed rotation are also available.)

4) Analyze the lubrication method (suitable for high-speed such as circulating lubrication, jet lubrication, oil mist lubrication, and oil-air lubrication).

9.5 Bearing friction and power loss

9.5.1 Friction

Friction causes energy loss and hinders motion. Friction is the main cause of heating of rolling bearings, so it is also a key factor in determining the operating temperature of bearings. The magnitude of friction depends on the load and several other factors, with the most important being the type and size of the bearing, speed, characteristics of the lubricant, and the amount of lubricant used.

There are various sources of friction in bearings, including sliding friction between the rolling elements and the raceways, sliding friction between the rolling elements and the cage, sliding friction between the rolling elements and the cage flanges, and friction generated by seals, among others. Friction in rolling bearings manifests as an increase in temperature, leading to overheating and eventual failure due to excessive temperature rise. Friction in bearings is quantified by the magnitude of the friction torque, which can be determined using numerical calculation methods. The magnitude of the friction torque determines the power consumption and heat generation in bearings. Generally speaking, the greater the bearing friction torque, the higher the temperature rise generated during use.

9.5.2 Approximate calculation of friction torque

In order to facilitate comparison with sliding bearings, the friction torque of rolling bearings can be calculated according to the bearing inner diameter by the following formula.

$$M = \mu P \frac{d}{2} \quad \cdots\cdots(9.4)$$

where,

M: friction torque, mN.m {kgf.mm}

μ: friction coefficient (

P: bearing load, N {kgf}

d: bearing nominal inner diameter, mm

Friction coefficient μ is greatly affected by the bearing type, bearing load, speed and lubrication method.

For sliding bearings, generally μ=0.01~0.02, or sometimes 0.1~0.2.

Table 9.2 Friction factor μ of various bearings

Bearing types	Friction factor μ
Deep groove ball bearings	0.0010~0.0015
Angular contact ball bearings	0.0012~0.0020
Self-aligning ball bearings Cylindrical roller bearings	0.0008~0.0012
Full complement needle roller bearings	0.0025~0.0035
Needle roller bearings with cage	0.020~0.0030
Tapered roller bearings	0.0017~0.0025
Self-aligning roller bearings	0.0020~0.0025
Thrust ball bearings	0.0010~0.0015
Thrust spherical roller bearings	0.0020~0.0025

9.5.3 Power loss

The friction loss of the bearing is almost changed into heat inside the bearing, thus causing the bearing temperature to rise. The power loss caused by friction can be expressed by the following formula:

$$Q = 0.1047 \times 10^{-6} Mn \quad \cdots\cdots(9.5)$$

where,

Q: heat produced kW

M: friction torque Nm

n: bearing speed rpm

When the heat generated equals the heat dissipated, the bearing temperature stabilizes. Typically, the temperature rises sharply during the initial stages of operation but stabilizes once it reaches a normal state. The time it takes to reach this stable state varies depending on factors such as the heat capacity of the bearing housing, cooling surface area, lubricant quantity, ambient temperature, etc. If the temperature never stabilizes and fails to reach a steady state, it indicates an anomaly.

The reasons for abnormal temperature rise include excessive bearing torque load, excessively tight clearance, excessive preload, inadequate or excessive lubrication, contamination, and heat generated by sealing.

10 Bearing materials

The materials include the steel & ceramic used in rings and rolling elements, and the metal and plastic used in cage.

10.1 Rings and rolling elements

The rings and rolling elements are generally made of high carbon chromium bearing steel. Bearing subject to high impact loads and alternating bending stresses is made of carburized steel. The proper material can also be selected by the actual conditions.

The thermal treatment for ZWZ rings and rolling elements can ensure the bearing dimensional stability within 120℃. For bearing working in higher temperature, special thermal treatments need to be used. However, this treatment will lower the hardness of materials and reduce the life. For bearing whose operating temperature is higher than 300°C, it is necessary to use the bearing steel with high thermal hardness and high temperature resistance.

The performance and reliability largely depend on the properties of bearing materials. rolling bearing is required to maintain highly accurate rotation while repeatedly taking large stress on contact surfaces between rings and the rolling elements. Therefore, the ring and rolling element materials are required to possess the mechanical performance indicators on carrying capacity, the rolling fatigue resistance under rolling contact and different lubrication conditions, the wear resistance, and the dimensional stability.

Small bearings are generally fully hardened, that is, the steel has enough hardenability to make the cross section of the entire bearing part become a martensite. This is not the case for large bearing, where the surface layer must be carburized to generate a martensite layer. In addition, large bearing can also be fully hardened by using a higher content of alloying elements to increase the hardenability of the steel. China's bearing steel classification is basically the same as that of ISO, which is divided into high carbon chromium bearing steel, carburized bearing steel, stainless bearing steel and high temperature bearing steel, the corresponding a total of 15 grades such as the standard number GB/T 18254 and YB/T 688.

(1) High-carbon chromium bearing steel

GCr15 as the world's first generation of bearing steel, its chemical composition has not changed much. However, with the increase of bearing size and load capacity, bearing steel is required to have higher strength, better dimensional stability and longer life. Currently, most high carbon chromium bearing steels are optimized for alloying element content based on GCr15 to achieve different performance requirements. This kind of bearing steel is most widely used in rolling bearing, and the integral quenching is used, so both the surface and the core can be hardened. In recent years, due to the continuous improvement of bearing steel quality, the vacuum degassing treatment is used to lower oxygen content and non-metallic inclusions, so the material properties are greatly improved.

For bearing with long life and high reliability, the electroslag redissolved bearing steel with higher purity can also be used.

The commonly used high carbon chromium bearing steel grades and applications are shown in the following table.

Steel grade	Main applications
GCr15	Used in steel ball, roller and ring of internal combustion engines, electric locomotives, machine tools, tractors, mining general machinery and high-speed rotating & high-load mechanical transmission shaft.
GCr15SiMn	Used in large bearing without impact load of heavy machine tools, large machines and rolling mills.
GCr18Mo	Generally subject to bainite isothermal quenching, used in bearing to withstand a certain impact load and higher operating temperature of mining machinery and rolling mills.
GCr15SiMo	Used in oversized bearing to withstand small impact loads of heavy machine tools, large machines and rolling mills.

[Note]: **ZWZ** has special bearing steel grades for some large and heavy applications, please consult ZWZ technicians for details.

(2) Carburized bearing steel

The high carbon content of high carbon chromium bearing steel lowers the impact toughness of steel, while carburized bearing steel reduces the carbon content of bearing steel, and carburizes the surface of steel, so that the surface has higher hardness and good wear resistance, and the steel core has good toughness. Representative steel grades include G20CrMo, G20CrNiMo, G20CrNi2Mo, G20Cr2Ni4, G20Cr2Mn2Mo and so on. The common carburized bearing steel are shown in the following table.

Steel grade	Main applications
G20CrMo G20CrNiMo	Used in medium and small bearing to withstand impact load of cars and tractors.
G20CrNi2Mo	Used in bearing to withstand high impact load.
G20Cr2Ni4	Used in rolling mill bearing and oversized bearing to withstand load impact.

(3) Stainless bearing steel

The typical stainless bearing steels include martensitic stainless steel (9Cr18, 9Cr18Mo, Cr15Mo4), austenitic stainless steel (1Cr18Ni9Ti) and so on. high carbon & high chromium martensitic stainless steel 9Cr18, and 9Cr18Mo .etc has high hardness and wear resistance, and it is often used in the working conditions with high requirements on corrosion resistance and wear resistance. The austenitic stainless bearing steel is often used in such bearing parts that require higher corrosion resistance but take low impact load. This bearing steel has shown good corrosion resistance in most working environments, but due to the characteristics of austenitic structure, it can't be applied in high strength load and wear resistance conditions.

The common stainless bearing steel are shown in the following table.

Steel grade	Main applications
9Cr18 9Cr18Mo	Used in antirust bearing applied in corrosive media such as steam, water, seawater, distilled water and nitric acid.
1Cr18Ni9Ti	Used in antirust bearing requiring high resistance to seawater corrosion or resistance to some chemicals.

(4) High temperature bearing steel

The operating temperature of high temperature bearing steel (8Cr4Mo4V, etc.) can reach 316℃, which can be used for high power equipment such as aircraft engines and gas turbines, and it has high strength, high hardness, oxidation resistance, dimensional stability and corrosion resistance under high temperature environment.

The common high temperature bearing steel are shown in the following table.

Steel grade	Main applications
GCrSiWV	Used to manufacture rings and rolling elements with operating temperature ≤250℃
GCr4Mo4V 8Cr4Mo4V	Used to manufacture rings and rolling elements with operating temperature ≤ 316 ℃
GCr14Mo4	Used to manufacture bearing rings and rolling elements subject to the effect of corrosive media and with operating temperature <330℃

(5) Ceramic materials

Considering the conditions of high temperature resistance, cold resistance, wear resistance, corrosion resistance, electric corrosion resistance, oil-free self-lubrication and high rotating speed, it is necessary to use ceramic bearing or mixed ceramic bearing (namely, some components thereof are made of ceramic materials).

The common ceramic materials and applications are shown in the following table.

Name	Main applications
Silicon nitride Si3N4	High speed, high vacuum, corrosion resistance, heat resistance, non-magnetic, high rigidity
Zirconia ZrO2	High corrosion resistance
Silicon carbide SiC	High corrosion resistance, ultra-high temperature

The mechanical strength is ranked in the following order: silicon carbide < silicon nitride < zirconia;

The corrosion resistance is ranked in the following order: silicon nitride < zirconia < silicon carbide;

The load resistance and rolling life are ranked in the following order (from best to worst,): silicon nitride > Zirconia > Silicon carbide.

Table 10.1 High carbon chromium bearing steel grade and main chemical composition (GB/T 18254)

Grades	Chemical composition (mass fraction)/%				
	C	Si	Mn	Cr	Mo
G8Cr15	0.75~0.85	0.15~0.35	0.20~0.40	1.30~1.65	≤0.10
GCr15	0.95~1.05	0.15~0.35	0.25~0.45	1.40~1.65	≤0.10
GCr15SiMn	0.95~1.05	0.45~0.75	0.95~1.25	1.40~1.65	≤0.10
GCr15SiMo	0.95~1.05	0.65~0.85	0.20~0.40	1. 40~1.70	0.30~0.40
GCr18Mo	0.95~1.05	0.20~0.40	0.25~0.40	1.65~1.95	0.15~0.25

Table 10.1 Carburized bearing steel grade and main chemical composition(GB/T 3203)

Grades	Chemical composition (mass fraction)/%						
	C	Si	Mn	Cr	Ni	Mo	Cu
G20CrMo	0.17~0.23	0.20~0.35	0.65~0.95	0.35~0.65	≤0.30	0.08~0.15	≤0.25
G20CrNiMo	0.17~0.23	0.15~0.40	0.60~0.90	0.35~0.65	0.40~0.70	0.15~0.30	≤0.25
G20CrNi2Mo	0.19~0.23	0.25~0.40	0.55~0.70	0.45~0.65	1.60~2.00	0.20~0.30	≤0.25
G20Cr2Ni4	0.17~0.23	0.15~0.40	0.30~0.60	1.25~1.75	3.25~3.75	≤0.08	≤0.25
G10CrNi3Mo	0.08~0.13	0.15~0.40	0.40~0.70	1.00~1.40	3.00~3.50	0.08~0.15	≤0.25
G20Cr2Mn2Mo	0.17~0.23	0.15~0.40	1.30~1.60	1.70~2.00	≤0.30	0.20~0.30	≤0.25
G23Cr2Ni2Si1Mo	0.20~0.25	1.20~1.50	0.20~0.40	1.35~1.75	2.20~2.60	0.25~0.35	≤0.25

Table 10.2 High carbon chromium stainless bearing steel grade and main chemical composition(GB/T 3086)

Grades	Chemical composition (mass fraction) /%								
	C	Si	Mn	P	S	Cr	Mo	Ni	Cu
G95Cr18 （Old grade 9Cr18）	0.90~1.00	≤0.80	≤0.80	≤0.035	≤0.020	17.0~19.0	–	≤0.25	≤0.25
G65Cr14Mo	0.60~0.70	≤0.80	≤0.80	≤0.035	≤0.020	13.0~15.0	0.50~0.80	≤0.25	≤0.25
G102Cr18Mo (Old grade 9Cr18Mo)	0.95~1.10	≤0.80	≤0.80	≤0.035	≤0.020	16.0~18.0	0.40~0.70	≤0.25	≤0.25

Table 10.3 Austenitic stainless bearing steel grade and main chemical composition (GB/T 20878)

Grades	Chemical composition (mass fraction) /%										
	C	Si	Mn	P	S	Ni	Cr	Mo	Cu	N	Ti
06Cr19Ni10 （Old grade 0Cr18Ni9）	≤0.08	≤1.00	≤2.00	≤0.045	≤0.030	8~11	18~20	–	–	–	–
12Cr18Ni9 （Old grade 1Cr18Ni9）	≤0.15	≤1.00	≤2.00	≤0.045	≤0.030	8~10	17~19	–	–	≤0.10	–
022Cr19Ni10 （Old grade 00Cr19Ni10）	≤0.03	≤1.00	≤2.00	≤0.045	≤0.030	8~12	18~20	–	–	–	–
06Cr18Ni11Ti （Old grade 0Cr18Ni10Ti）	≤0.08	≤1.00	≤2.00	≤0.045	≤0.030	9~13	17~20	–	–	–	0.4~0.7

Table 10.4 high temperature bearing steel grade and main chemical composition (GB/T 38886)

Grades	Chemical composition (mass fraction)/%											
	C	Mn	Si	Cr	Mo	V	W	P	S	Ni	Cu	Co
GW9Cr4V2Mo	0.70~0.80	≤0.40	≤0.40	3.80~4.40	0.20~0.80	1.30~1.70	8.50~10.0	≤0.025	≤0.015	≤0.25	≤0.20	-
GW 18Cr5V	0.70~0.80	≤0.40	0.15~0.35	4.00~5.00	≤0.80	1.00~1.50	17.50~19.00	≤0.025	≤0.015	≤0.25	≤0.20	-
GCr4Mo4V	0.75~0.85	≤0.35	≤0.35	3.75~4.25	4.00~4.50	0.90~1.10	≤0.25	≤0.025	≤0.015	≤0.25	≤0.20	≤0.25
GW6Mo5Cr4 V2	0.80~0.90	0.15~0.40	≤0.45	3.80~4.40	4.50~5.50	1.75~2.20	5.50~6.75	≤0.025	≤0.015	≤0.25	≤0.20	-
GW2Mo9Cr4VCo8	1.05~1.15	0.15~0.40	≤0.65	3.50~4.25	9.0~10.0	0.95~1.35	1.15~1.85	≤0.025	≤0.015	≤0.25	≤0.20	7.75~8.75

Table 10.5 Comparison of Bearing Steel Grades in Various Countries

GB(China)	JIS(Japan)	ASTM/SAE(USA)	ISO(Internation)	
High carbon bearing steel				
GCr15	SUJ2	52100	100Cr6	B1
GCr9 (SiMn)	SUJ3	52100.1，5195	100CrMnSi4-4	B2
GCr15SiMn	SUJ5	52100.2	100CrMnSi6-4	B3
GCr18Mo	–	–	100CrMo7	B5
GCr18MnMo	–	–	100CrMo7-3	B6
	–	–	100CrMo7-4	B7
GCr15SiMo	–	52100.3	–	–
GCr4	–	5090M	–	–
Carburized bearing steel				
G20Cr2Mn2Mo	–	–	17MnCr5	B23
G20CrMo	–	4118H	20MnCrMo4-2	B27
G20CrNiMo	SNCM220	8620H	20MnNiCrMo3-2	B28
G20CrNi2Mo	SNCM420	4320H	20NiCrMo7	B29
G20Cr2Ni4	–	4720H	–	–
G10CrNi3Mo	–	9310H	–	–
Medium carbon bearing steel				
45	S45C	1045	–	–
50	S50C	1050	–	–
55	S55C	1055	C56E2	B40
55Mn	–	–	56Mn4	B41
65Mn	–	1065/5160	70Mn4	B42
42CrMo	SCM440	4140	43CrMo4	B43

Table 10.6 Comparison of Bearing Steel Grades in Various Countries (Continued)

GB(China)	JIS(Japan)	ASTM/SAE(USA)	ISO(Internation)	
stainless bearing steel				
G65Cr14Mo	–	–	X65Cr14	B51
G95Crl8	–	–	X89CrMoV18-1	B52
G102Cr18Mo	SUS440C	440C	X108CrMo17	B53
06Cr19Ni10	SUS304	S30400,304	X5CrNi18-10	–
12Cr18Ni9	SUS302	S30200,302	X10CrNi18-8	–
022Cr19Ni10	SUS304L	S30403,304L	X2CrNi18-9	–
06Cr18Ni11Ti	SUS321	S32100,321	X6CrNiTi18-10	–
high temperature bearing steel				
8Cr4Mo4V	–	M50	80CrMoV42-16	B60
W6Mo5Cr4V2	SKH51	M2	X82WMoCrV6-5-4	B62
W18Cr4V	SKH2	T2	X75WCrV18-4-1	B63

10.2 Cage

The cage materials are required to have the following features: strength to withstand the vibration and impact load during operation, small friction with the ring and the rolling element, lightweight, and adaption to the operating temperature of the bearing.

ZWZ cages can be generally divided into pressed cages, solid cages and pin cages.

(1) pressed cage

The pressed cage material of ZWZ bearing is commonly made of cold rolled, hot rolled steel plate, see **Table 10.7**. The material of pressed cage is lightweight, and occupies a small bearing space, which facilitates the full entry of lubricants.

Suitable for deep groove ball bearing, self-aligning roller bearing and most tapered roller bearing.

(2) Solid cage

ZWZ solid cages are mostly made of metal, bakelite and engineering plastics.

Metal solid cages are mostly made of carbon steel (grade 08, 10, 15, etc., see Table 10.8), brass (grade H62, etc.) and other materials, see **Table 10.9**.

Generally subject to turning processing, used in the high temperature working occasions requiring high cage strength.

A solid cage can also be used when a land-riding is required. The cages for high-speed with land-riding is commonly made of lightweight materials, such as light alloy, bakelite, etc. to ensure its small inertia force.

(3) Engineering plastic cage

When glass fiber reinforced nylon 66 is used to manufacture solid cages, it can be made by injection molding and customized to the cage shape with the highest load requirements. Nylon 66 material is elastic, lightweight, and it is suitable for vibration impact stress, acceleration/deceleration, or reciprocal tilt of bearing inner and outer ring. This cage has very good sliding and self-lubricating properties. Cages made of nylon 66 are suitable for stable operation at working temperatures not exceeding 120°C. Nylon also loses its elasticity at temperatures below -40°C. PTFE (polytetrafluoroethylene), PEEK (polyether ether ketone) cages are usually used in ceramic bearing, 316 stainless steel bearing, etc. This cage is very corrosion resistant, and has a wide temperature range, while it is suitable for vacuum environment.

Table 10.7 Cold/hot rolled low carbon steel plate(GB/T 5213、GB/T 25053)and carbon steel(GB/T 700) chemical composition

Grades		Chemical composition (mass fraction)/%					
		C	Si	Mn	P	S	Al_t
cold rolled	SPCC(JIS)	≤0.12	–	≤0.50	≤0.035	≤0.025	≥0.020
	DC01	≤0.12	–	≤0.60	≤0.030	≤0.030	≥0.020
hot rolled	SPHC(JIS)	≤0.15	–	≤0.60	≤0.050	≤0.050	–
	HR1	≤0.15	–	≤0.60	≤0.035	≤0.035	–
carbon steel	Q195	≤0.12	≤0.30	≤0.50	≤0.035	≤0.040	–

Table 10.8 Cold/hot rolled high-quality carbon structural steel plate grade and main chemical composition (GB/T 13237, GB/T 711)

Grades	Chemical composition (mass fraction)/%								
	C	Si	Mn	Al_s	P	S	Cr	Ni	Cu[1)]
					≤				
08Al	≤0.10	≤0.03	≤0.45	0.015~0.065	0.030	0.030	0.30	0.10	0.25
08	0.05~0.11	0.17~0.37	0.35~0.65	–	0.035	0.035	0.10	0,30	0.25
10	0.07~0.13	0.17~0.37	0.35~0.65	–	0.035	0.035	0.15	0.30	0.25
15	0.12~0.18	0.17~0.37	0.35~0.65	–	0.035	0.035	0.25	0,30	0.25
20	0.17~0.23	0.17~0.37	0.35~0.65	–	0.035	0.035	0.25	0.30	0.25
25	0.22~0.29	0.17~0.37	0.50~0.80	–	0.035	0.035	0.25	0.30	0.25
30	0.27~0.34	0.17~0.37	0.50~0.80	–	0.035	0.035	0.25	0.30	0.25
40	0.37~0.44	0.17~0.37	0.50~0.80	–	0.035	0.035	0.25	0.30	0.25
45	0.42~0.50	0.17~0.37	0.50~0.80	–	0.035	0.035	0.25	0.30	0.25

Table 10.9 Processed copper and copper alloy grade and main chemical composition (GB/T 5231)

Grades		Chemical composition (mass fraction)/%										
		Cu	Sn	Al	Fe	Pb	P	Mn	Si	Ni	Zn	total impurities
			≤									
common brass	H62	60.5~63.5	–	–	0.15	0.08	–	–	–	–	margin	0.3
	H96	95~97	–	–	0.10	0.03	–	–	–	–	margin	0.2
lead brass	HPB59-1	57~60	–	–	0.5	0.8~1.9	–	–	–	0.5	margin	1
lead bronze	QAl10-3-1.5	margin	0.1	8.5~10	2.0~4.0	0.03	0.01	1.0~2.0	0.1	–	0.5	0.7
silicon bronze	QSil-3	margin	0.1	0.02	0.1	0.15	–	0.1~0.4	0.6~1.1	2.4~3.4	0.2	0.5

Table 10.10 Grade comparison of commonly used metal materials in cage by countries

GB(China)	JIS（Japan）	SAE（USA）	ISO（Internation）
High-quality carbon structural steel			
08	S9CK	1008	–
10	S10C	1010	C101
15	S15C	1015	C15E4
20	S20C	1020	C20E4
25	S25C	1025	C25E4
30	S30C	1030	C30E4
40	S40C	1040	C40E4
45	S45C	1045	C45E4
Processed copper and copper alloys			
H62	C2800	CA280	CuZn40
H96	C2100	CA210	CuZn5
HPB59-1	C3710	–	CuZn39Pb2
QAl10-3-1.5	C6161	–	CuAl10Fe3
QSil-3	–	–	CuNi2Si
Stainless steel			
14Cr17Ni2	SUS431	431	9
Duralumin			
2Al1	2017	CM41A	Al-Cu4-SiMg
2Al2	2024	CM42A	Al-Cu4-Mgl

11 Lubrication

The purpose of bearing lubrication is to isolate the rolling surface or sliding surface, and form an proper oil film on the rolling contact surface of the bearing to prevent direct contact of metal friction pairs, which can reduce friction, mitigate wear, lower contact stress, extend fatigue life in the bearing, eliminate friction heat, prevent dust/rust/corrosion, and eliminate bearing noise.

11.1 Lubricants

Lubrication of bearing is often achieved via lubricant. The accurate selection and correct use of lubricant is an important condition to ensure the normal and durable operation of bearing.

For the selection of lubricants, the following principles shall generally be followed:

(1) Suitable lubricant type.

(2) Good friction performance.

(3) Appropriate viscosity (consistency).

(4) Good chemical stability and thermal stability.

(5) Good compatibility with rubber, plastic and other bearing components.

(6) High degree of purity.

According to the state of the lubricant, it can be divided into solid lubrication, semi-solid lubrication, liquid lubrication and gas lubrication.

In general, a lubricant with lower viscosity/consistency is selected for high speed, and a lubricant with higher viscosity/consistency is selected for high load, but in some special cases, other factors other than the above conditions shall also be considered.

Some performance advantages and disadvantages of the four lubrication methods are listed in Table 11.1, which can be used as a reference when selecting lubricants.

11.2 Oil Lubrication

Lubricating oil is the most familiar and widely used lubricant, which can ensure low friction factor and superior wear resistance, but also has good heat dissipation, high limit speed, good fluidity, good filtration, good repeatability and many other advantages. However, complex sealing and lubrication system are often required in actual use, and there is a risk of leakage.

Table 11.1 Performance Comparison of Four Types of Lubricants

Performance	Solid	Semisolid (grease)	Liquid (oil)	Gas
Fluid lubrication	N/A	+~++	+++	++
Boundary lubrication	++~+++	++~+++	-~+++	-
Cooling	N/A	-	+++	+
Antifriction	-	+	+~++	+++
Retentivity	+++	++	-	+++
Sealing	+~++	+++	-	+++
Atmospheric corrosion protection	-~+	++~+++	+~+++	-
Compatibility	+++	-	++~+++	++
Simple degree of bearing design	-~+	+++	+++	--

Note:+++ Excellent, ++ Good, + Average, - Poor, -- Fairly poor

11.2.1 Composition of lubricating oil

Lubricating oil is generally composed of base oil and additive.

Base oils are mainly divided into mineral base oils and synthetic base oils. The most today are lubricating oils based on mineral. Synthetic oils are generally used in extreme operating conditions or in harsh environmental conditions (temperature, radiation, etc.) where there are special requirements for oil stability.

For some harsh conditions with high temperature, high pressure, high speed, low temperature or ultra-low temperature, simply relying on the base oil is far from meeting the requirements of lubrication, which requires the addition of certain substances in the base oil, although the adding amount of these substances is very small, their effect of improving the performance of the lubricating oil is significant, and these substances are called additives. The effects of additives on the performance of lubricating oil are shown in Table 11.2.

11.2.2 Selection rules of oil lubrication

The selection of lubricating oil shall generally consider the following factors:

(1) Operating temperature.

(2) Motion speed.

(3) Motion characteristic.

(4) Working load.

(5) Structural characteristics.

(6) Environmental condition.

(7) Bearing accuracy.

(8) Bearing hardness.

11.2.3 Selection of lubricating oil viscosity

According to the tribological principle, the lubricating oil forms an extremely thin oil film on the rolling surface, separating the bearing raceway from the rolling element, and the thickness of the oil film mainly depends on the viscosity of base oil and the rotating speed of bearing.

Table 11.2 Types and Functions of Additives

Additive	Functions
Oxidation inhibitor	Prevent premature formation of oxidation products
Corrosion inhibitor	Prevent metal surface corrosion
Detergent	Oxidation removal
Dispersant	Keep insoluble compounds in suspension and prevent their deposition on metal surfaces.
Polar lubricant improver	Reduce friction and wear in mixed friction
Anti-wear and EP additives	Reduce friction and wear during operation, as well as the abrasion tendency
Rust inhibitor	Prevent rust on metal surfaces during downtime
Metal deactivator	Prevent metal particles from becoming catalysts during oxidation
Pour point depressant	Lower pour point
Viscosity index improver	Reduce the degree to which viscosity decreases with increasing temperature
Defoamer	Reduce foaming

Without considering the EP additives, the viscosity of base oil at work can be determined by Figure 11.1, and the lubricating oil grade can be determined by Figure 11.2.

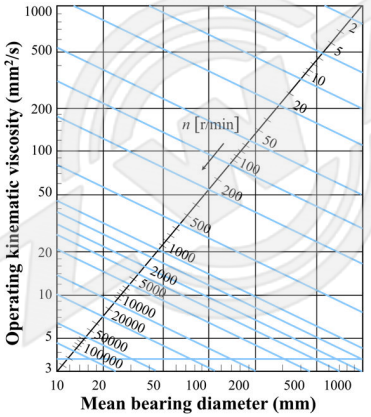


Figure 11.1

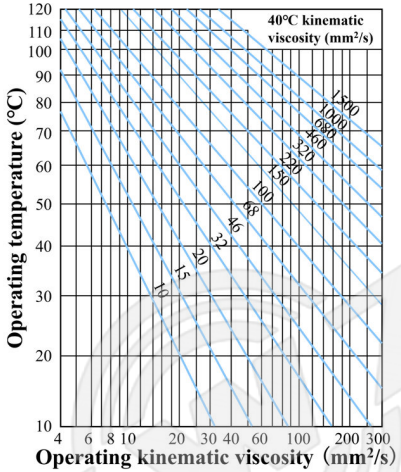


Figure 11.2

11.2.4 Lubricating methods

According to the structure of the lubrication system, oil lubrication is generally divided into the following modes:

(1) Oil cup dripping lubrication.
(2) Oil bath lubrication.
(3) Splash lubrication.
(4) Oil circulation lubrication.
(5) Oil injection lubrication.
(6) Oil mist lubrication.
(7) Oil gas lubrication.

When determining the type and amount of lubricating oil, it shall be selected according to different lubrication modes.

11.3 Grease lubrication

Grease lubrication can achieve that no grease supplementation is required for a long time after filling, and the structure of its sealing device is also simple, so it is widely used.

11.3.1 Composition of grease

Grease is composed of base oil, thickener and additive. Among them, the base oil accounts for about 70% to 95%, the thickener accounts for 5% to 30%, and the additive content is generally less than 5%.

See the "Lubricating Oil" section for the details about the base oil of grease.

The main function of thickener is to thicken the flowing liquid base oil into a non-flowing semi-solid state. Thickener can be divided into four categories: hydrocarbon-based thickener, soap-based thickener (lithium, calcium, sodium and other metal soap as thickener), organic thickener, and inorganic thickener. Among them, soap-based thickener is most widely used.

The type and action mechanism of additives in grease is the same as that of lubricating oil, but because the fluidity of grease is relatively poor, the content of additives is also relatively large.

11.3.2 Factors considered in the selection of grease

(1) Purpose of using grease.
(2) Working temperature of the lubricating sites.
(3) Load on the lubricating sites.
(4) Speed of the lubricating sites.
(5) Environment and contact medium of the lubricating sites.
(6) Filling mode of grease.
(7) Comprehensive economic effect.

Table 11.3 provides common lubricants from the perspective of base oil and thickener combinations. For further requests, please contact ZWZ technicians.

Table 11.3 Advices on Grease Selection

Thickener	Type of base oil	Temperature range, ℃	Water resistance	Load capacity	Remarks
Lithium base	Mineral oil	−35/+130	+++	+	Multipurpose grease
Sodium base	Mineral oil	−30/+100	−	++	Easily emulsified when mixed with water
Lithium base	PAO	−60/+150	+++	++	Used in working conditions with high rotating speed, lower temperature or higher temperature
Lithium base	Ester oil	−60/+130	++	+	Used in working conditions with high rotating speed, low temperature
Composite aluminum base	Mineral oil	−30/+160	+++	+	Multipurpose grease
Composite barium base	Mineral oil	−30/+140	++	++	Multipurpose grease, moisture resistant
Composite calcium base	Mineral oil	−30/+140	++	++	Multipurpose grease, easy to condense
Composite lithium base	Mineral oil	−30/+150	++	++	Multipurpose grease
Composite sodium base	Mineral oil	−30/+130	+	+	Multipurpose grease for working conditions with high temperature
Composite barium base	PAO	−60/+160	+++	+++	Used in working conditions with high rotating speed, lower temperature or higher temperature
Composite calcium base	PAO	−60/+160	+++	+++	Used in working conditions with high rotating speed, low temperature or high temperature
Composite lithium base	PAO	−40/+180	++	+++	Wide operating temperature range
Composite barium base	Ester oil	−60/+130	++	++	Used in low temperature, higher rotating speed, stable load
Composite lithium base	Synthetic oil	−40/+180	++	+	Used in wider operating temperature range
Composite lithium base	Silicone oil	−40/+180	++	−	Used in wider operating temperature range, P/C<0.03
Bentonite	Mineral oil	−20/+150	+++	+	Used in higher temperatures, low speed
Bentonite	PAO	−50/+180	+++	+	Used in wide temperature range
Polyurea base	Mineral oil	−25/+160	+++	++	Used in working conditions with medium rotating speed, higher temperature
Polyurea base	PAO	−30/+200	+++	+++	High temperature grease with long service life
Polyurea base	Silicone oil	−40/+200	+++	−	Used in high or low temperature, low load
Polyurea base	Fluorosilicone oil	−40/+200	+++	+	Used in high or low temperature, medium load
PTFE or FEP	Alkoxy fluorinated oil	−50/+250	+++	++	Both greases are used at extremely high temperatures and extremely low temperatures, with excellent chemical and solvent resistance
PTFE or FEP	Fluorosilicone oil	−40/+230	+++	++	

Note: +++ Excellent, ++ Good, + Average, - Poor

11.3.3 Selection of grease viscosity

The consistency of grease is an indicator to measure the degree of softness and hardness of grease, which is generally expressed by the penetration. The consistency of grease is the first indicator to be considered when selecting grease, and the proper consistency of grease is usually selected according to the working conditions of bearings and the mode of grease injection. Advices on selection of grease consistency under some working conditions of bearing are shown in **Table 11.4**.

Table 11.4 Selection of Grease Consistency

Operating performance	
Low friction, frequent start-up	#1 and #2, whose base oil is synthetic oil with low viscosity
Low operating friction, allowing high start-up friction	#3 and #4, the internal grease filling volume of bearing is about 30%; #2 and #3, the internal grease filling volume of bearing is <20%
Low noise level	#2, high cleanliness
Assembly conditions	
The rotation axis of bearing is inclined or perpendicular to the direction of gravity	#2 and #3, grease with high adhesion
The outer ring of bearing rotates and the inner ring is fixed, or the bearing has a larger centrifugal force	#3 and #4, hard grease, the internal grease filling volume of bearing 20% maximum
Maintenance	
Frequent grease injection	#1 and #2, soft grease
No grease injection for a long time, or no grease supplementation during the life cycle (maintenance free)	#2 and #3, it is necessary to have wear resistance and high durability, and it shall be calculated in accordance with the grease service life formula to confirm whether it meets the requirements
Environmental conditions	
High temperature, full cycle lubrication (maintenance free)	Heat resistant greases using heat resistant thickener and synthetic base oil
High temperature, cyclic grease replacement	Greases that do not produce solid residue at high temperatures, which is required to have a long life at high temperatures
Low temperature	#1 and #2, whose base oil is low viscosity oil and a suitable thickener is required
Sweated environment	#3, hard grease
Splashing water, rushing water	#3, water resistant grease
Vibration impact	#2, containing EP additive lithium-based grease, frequent grease injection For normal impact vibration, #3 lithium-based grease or lithium-based composite grease can be used

Note: The consistency of grease is an indicator to measure the degree of softness and hardness of grease, which is generally expressed by the penetration. The larger the value of penetration (in 0.1mm), the softer the grease is.

Penetration corresponding to consistencies #1, #2, #3 and #4:

#1 between 310 and 340, #2 between 265 and 295, # 3 between 220 and 250, and #4 between 175 and 205.

11.3.4 Volume of grease consumption

The grease filling volume of rolling bearing is generally conducted in accordance with the following principles:

(1) Generally, the bearing inside shall not be fully filled with grease, and it is enough to fill 1/3 to 3/4 bearing cavity.

(2) It is enough to fill 2/3 to 3/4 internal space of horizontal bearing.

(3) It is enough to fill 1/3 to 3/4 internal space of vertically installed bearing.

(4) In an environment prone to be polluted, the space for bearing and bearing housing of low-speed bearings and medium-speed bearings shall be fully filled.

The filling volume of grease can be estimated in accordance with the following formula:

$$Q = 0.01d \cdot B \quad \cdots\cdots(11.1)$$

where,

Q: Filling volume, cm^3;

d: Bearing inner diameter, mm;

B: Bearing width, mm.

11.3.5 Grease replacement cycle

(1) Basic grease replacement cycle T_f

The Figure 11.3 shows the T_f (equivalent to the basic life in ISO 281) of the basic lithium-based grease under normal operating conditions and suitable environmental conditions. Such operating conditions and environment refer to the grease consistency of 2 to 3, the operating temperature of 70°C (outer ring), and the load P/C<0.1.

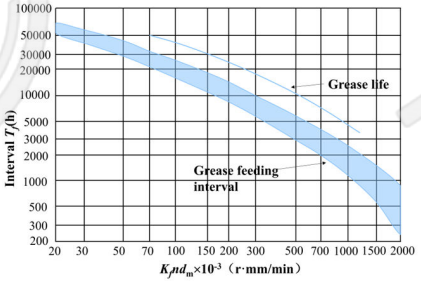


Figure 11.3 Grease replacement cycle

where,

n – Rotary speed, r/min

d_m – Bearing average diameter ($D+d$)/2, mm

K_f – Bearing type parameter (related to sliding friction), whose values are as follows:

Table 11.5 Bearing Type Parameters

Bearing type		K_f
Deep groove ball bearing	Single row	0.9～1.1
	Double row	1.5
Angular contact ball bearing	Single row	1.6
	Double row	2
Main shaft bearing	α=15°	0.75
	α=25°	0.9
Four-point-contact ball bearing		1.6
Self-aligning ball bearing		1.3～1.6
Thrust ball bearing		5～6
Thrust angular contact ball bearing	Double row	1.4
Cylindrical roller bearing	Single row	3.0～3.5*
	Double row	2
	Full complement	25
Thrust cylindrical roller bearing		90
Needle roller bearing		3.5
Tapered roller bearing		4
Drum cylindrical roller bearing (Single row self-aligning roller bearing)		10
Self-aligning roller bearing with split cage		7～9
Self-aligning roller bearing with integrated cage		9～12

Note K_f=2 for load conditions where centripetal and axial load co-exist or change frequently

The parameters in Table 11.5 are basic parameters. Please note that, the values shall be appropriately up-regulated for heavy series (thick series) structure; and the value shall be appropriately down-regulated for light series structured.

(2)Adjusted grease replacement cycle t_{fq}

Poor working environment or load will shorten the grease replacement cycle, and the adjustment formula is as follows:

$$t_{fq} = t_f f_1 f_2 f_3 f_4 f_5 f_6 \quad \cdots\cdots(11.2)$$

Refer to Table 11.6 for the specific explanation on the adjustment coefficients $f_1 \sim f_6$.

Table 11.6 Adjustment Coefficients

There is dust or moisture on the bearing contact surface	
Moderate	f_1=0.9～0.7
Severe	f_1=0.7～0.4
Very severe	f_1=0.4～0.1
Bearing subject to vibration and impact loads	
Moderate	f_2=0.9～0.7
Severe	f_2=0.7～0.4
Very severe	f_2=0.4～0.1
High temperature	
Moderate (up to 75°C)	f_3=0.9～0.6
Severe (75 to 85°C)	f_3=0.6～0.3
Very severe (85 to 120°C)	f_3=0.3～0.1
Heavy load	
P/C=0.10～0.15	f_4=1.0～0.7
P/C=0.15～0.25	f_4=0.7～0.4
P/C=0.25～0.35	f_4=0.4～0.1
There is airflow in the bearing※	
Low flow rate	f_5=0.7～0.5
High flow rate	f_5=0.5～0.1
Bearing shaft is perpendicular to the horizontal plane or centrifugal force exists	
Depend on sealing conditions	f_6=0.7～0.5

Note: For dust cap seals, air flowing over the bearing surface may deteriorate lubrication, affecting grease distribution and blowing in contaminants

In addition to the above factors. Other effects shall also be considered, such as: if the grease viscosity is over-high (greater than 400mm²/s at 40°C), the grease will be difficult to be evenly spread, especially at low temperatures; pollution and water vapor, the impact factors shall also be reconsidered when the bearing has a sealing ring.

Because some special greases can operate normally at high temperatures, and some are designed for heavy loads, in this case, the parameters f3 and f4 have no reference meaning, and 1 can be taken by default. However, f1, f2, f5 and f6 still have reference meaning. **For further requests, please discuss with ZWZ technicians.**

12 Bearing seals

To maintain good lubricating conditions and normal working environment of bearing and give full play to the performance of bearing, the rolling bearing must be provided with an appropriate sealing device to prevent the leakage of lubricants and dust, water, gas or other dirt into the bearing. When selecting the sealing form for bearing, the following factors shall be considered:

1. Type of bearing lubricant (grease or lubricating oil);
2. The working environment of bearing and the size of occupied space;
3. The support structure of shaft, allowable angular deviation;
4. The circular speed of sealing surface;
5. The friction of seal and the resulting temperature rise;
6. Cost.

According to its structure, the sealing device is divided into two categories: contact type and non-contact type, and both are required to meet the following conditions:

1. No abnormal friction (heat);
2. Simple assembly, disassembly and maintenance;
3. Good economy.

When the non-contact seal works, the sealing device and its relative moving parts do not contact, so there is almost no friction heat and no wear in the operation, which is especially suitable for high-speed and high temperature occasions. Non-contact seals are commonly used in a variety of different structural forms such as clearance type, labyrinth type and washer type, which are applied in different occasions.

The radial clearance of non-contact seal in operation has nothing to do with the axial movement of the shaft, so the clearance shall be as small as possible. Taking into account the errors during assembly or work and the deformation of the shaft, the clearance can be selected in accordance with **Table 12.1**.

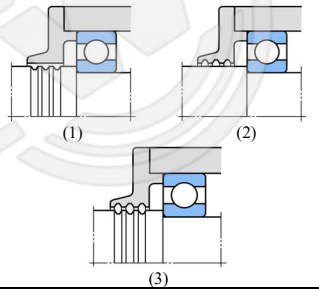
12.1 Non-contact types seals

Table 12.1 Clearance of non-contact sealing devices mm

Journal	Radial clearance	Axial clearance
<50	0.20~0.40	1~2
≥50	0.50~1.00	3~5

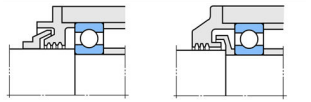
Table 12.2 Non-contact Sealing Device

(1) Oil groove

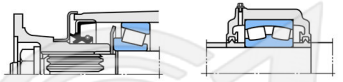


On the mating surface of the end cap, there are more than three grooves with a width of 3 to 5mm and a depth of 4 to 5mm, which is filled with grease to improve the sealing effect, and it is generally used together with other sealing devices.

(2) oil slinger



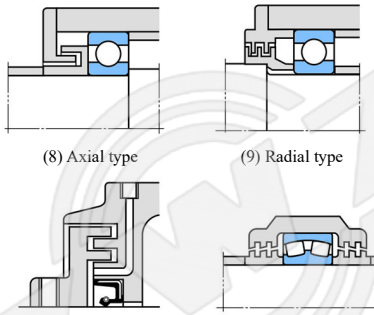
(4) Oil slinger located outside (5) Oil slinger located inside



(6) End-cap type oil slinger (7) Oil retainer

1. Relying on centrifugal force, the oil slinger slings the lubricant or impurities and causes air flow to generate a pumping effect, thereby preventing the leakage of lubricants and the entry of external foreign matters, and it is mostly used together with other sealing devices.
2. When set on the outside (Figure 4), the generated pumping effect is opposite, which is favor to preventing the entry of external foreign matters. When the oil slinger is set inside the end cap (Figure 5), it generates a pumping effect from outside to inside, which is favor to preventing leakage of lubricant.
3. The end-cap type oil slinger (Figure 6) relies on centrifugal force to sling impurities or dust, which is favor to preventing the entry of external foreign matters.
4. The oil retainer (Figure 7) is also a kind of oil slinger. Because the clearance between the shaft and the shell is provided with a convex part, it relies on centrifugal force to prevent the leakage of lubricant.

Table 12.2 (Continued)

(3) Labyrinth seal

(8) Axial type (9) Radial type
(10) Greased-filled axial type (11) Aligning type
1. The labyrinth seal is provided with a concave and convex clearance (labyrinth) between the shaft and the shell, which is especially suitable for preventing oil leakage during high-speed rotation.
2. The axial labyrinth seal (Figure 8) is widely used due to convenient assembly, but its sealing performance is not as good as that of the radial labyrinth seal (Figure 9).
3. Aligning labyrinth seal (Figure11) is suitable for aligning bearing.
4. (Figure 10) and (Figure 11) are required to adopt dual-half shell or end cap.
5. If the clearance of labyrinth seal is filled with grease (Figure 10), it can further improve the sealing effect.

12.2 Contact types seals

As for contact seal, due to the direct contact between the sealing elements and the mating elements, the friction is large in the work, and the heat is also large, so the contact surface is easy to wear, resulting in reduced sealing performance. Therefore, the contact form of contact sealing device, the fitting pressure, the lubrication state, the sliding speed and the surface processing quality at the contact will directly affect the friction torque, the allowable rotating speed and temperature rise of bearing. Contact seals are commonly used in a variety of different structural forms such as synthetic rubber ring seal, synthetic resin, felt ring seal, which are applied in different occasions.

12.2.1 Oil seals

The oil seal is a lip-shaped sealing ring. It prevents water, chemicals, gases, etc. (including lubricants used in machines) from leaking through the "clearance" of the machine, and also prevents foreign matters (such as dust and sediment) from entering from the outside. It is an indispensable sealing device for automotive, aircraft, ship, railway vehicle, engineering machinery, agricultural machinery, petrochemical plant, household appliance and other fields. The names and functions are shown in **Figure 12.1** and **Table 12.3**.

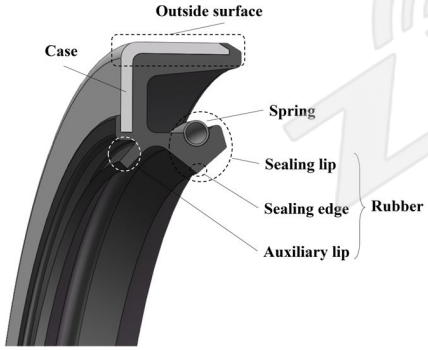
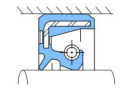
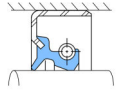
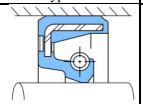
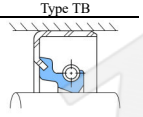
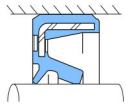
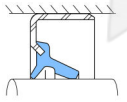
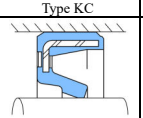
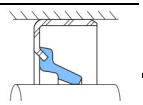


Figure 12.1 Names of each part of oil seal

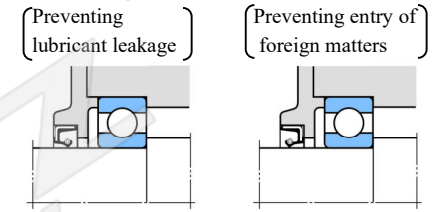
Table 12.3 Functions of Oil Seal

Name	Functions
Lip end	Prevent fluid leakage via frictional contact with the rotating shaft (Apply lubricant between the lip end and the shaft to maintain the formation of oil film for a long time)
Primary lip and spring	By keeping the lip end in proper contact force (maintaining a stable contact state), the spring can improve and maintain the contact force of main lip for a long time
Assembly support	Mate the oil seal with the shell, and prevent fluid leakage at the mating surface (products with metal and rubber outer surfaces)
Frame	Strengthen the oil seal
Secondary lip	Prevent the entry of foreign matters (When used, grease is usually filled between the primary lip and the secondary lip)

Table 12.4 Common Form of Frame Oil Seal

Characteristic / Main purposes		C The outer cladded rubber design, suitable for the assembly environment of various materials, allowing for larger surface roughness	B Outer iron shell design, suitable for steel or cast iron material boring.
T	Double lips with spring Sealed with lubricating oil against dust (maximum pressure 0.03MPa)	 Type TC	 Type TB
S	Single lip with spring Sealed with lubricating oil against dust (maximum pressure 0.03MPa)	 Type SC	 Type SB
K	Double lips without spring Sealed with grease against dust (not allow to use in places where there is pressure)	 Type KC	 Type KB
V	Single lip without spring Sealed with grease against dust (not allow to use in places where there is pressure)	 Type VC	 Type VB

The orientation of primary lip can be changed during installation according to the purpose of oil seal without secondary lip. As shown in Figure 12.2.



(a) Inward (b) Outward

Figure 12.2 Direction of sealing lips and purpose

When there are many external foreign matters or water entry is possible as shown in Figure 12.3. Two oil seals are combined, or double lip oil seal is used and grease is filled between the two lips.

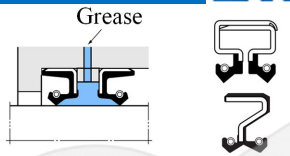


Figure 12.3 Usage method when the external environment is not clean

The oil seal not only seals lubricants. By selecting the appropriate sealing ring material, it can also have a sealing effect on chemicals such as alcohol, acid or alkali. As shown in Table 12.5. The allowable linear speed and use temperature range of various sealing materials are different, and can be selected according to the use.

Table 12.5 Allowable linear speed and operating temperature range of oil seal

Sealing material	Allowable linear speed (m/s)	Operating temperature range (℃)
Nitrile butadiene rubber	15	-40~120
Acrylic rubber	25	-30~150
Silicone rubber	32	-50~170
Fluorinated rubber	32	-20~180

To give full play to the sealing performance of oil seal. Attention should also be paid to the material, surface hardness, surface roughness, etc. of the shaft in contact with the oil seal, and **Table 12.6** is the recommended condition for the shaft.

Table 12.6 Recommended Conditions for Shaft

Material	Mechanical structural steel, low alloy steel, stainless steel
Surface hardness	For low speed: 30HRC or more For high speed: above 50HRC
Surface roughness (Ra)	(When the surface is over-rough, it is easy to cause leakage or wear. On the contrary, when the surface is over-smooth, the oil film is difficult to form, which may cause the burn of seal lip. In addition, the surface shall not have spiral abrasive grain)

12.2.2 Felt seals and others

Felt sealing rings have been used for a long time. However, it is limited to the following purposes. Therefore, it is appropriate to use synthetic rubber oil seal.

- Simple dust proof when using grease lubrication
- Linear speed below 5m/s

Other contact seals include mechanical seals, O-seals, filling seals and so on.

13 Design of shafts and housings

13.1 Notes for shafts and housings design

1) Shaft shall be short and thick. (To reduce axial deformation or bending)

2) Box structure shall have sufficient rigidity. (To reduce deformation caused by load)

[Note] Light alloy box shall be added with steel sleeve to improve rigidity.

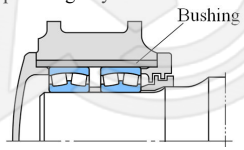


Figure 13.1 Example of light alloy housing

3) The mating surface between the shaft and the box shall achieve the required accuracy and roughness. The shoulder end face shall be perpendicular to the shaft or the center line of fitting surface of the shell hole (refer to **Table 13.1**).

Table 13.1 Recommended Tolerances and Surface Roughness for Shaft and Box

Item level	Bearing accuracy	Shaft	Shell hole
Roundness tolerance	Normal, Class 6	IT3~IT4	IT4~IT5
	Class 5, Class 4	IT2~IT3	IT2~IT3
Cylindricity tolerance	Normal, Class 6	IT3~IT4	IT4~IT5
	Class 5, Class 4	IT2~IT3	IT2~IT3
End face run-out of shoulder	Normal, Class 6	IT3	IT3~IT4
	Class 5, Class 4	IT3	IT3
Roughness of mating surface Ra	Small bearing	0.8	1.6
	Large bearing	1.6	3.2

4) The fillet radius (r_a) shall be less than the bearing chamfer size (Refer to **Table 13.2**, **Table 13.3**).

[Note] It is generally made into a simple circular arc, and the grinding shaft can be provided with a grinding undercut (**Figure 13.2**).

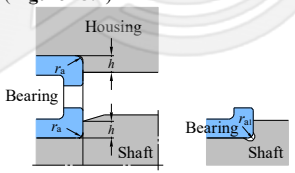
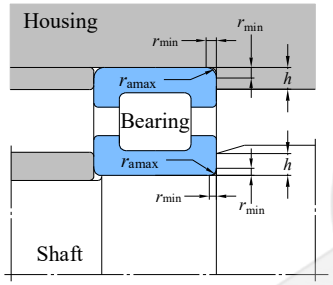


Figure 13.2 fillet radius and grinding undercut

Table 13.1 Shaft/housing fillet radius and shoulder height of radial bearings



Units:mm

The chamfer size of the inner or outer ring r (minimum)	Shaft or box		
	Fillet radius r_a(maximum)	shoulder height h(minimum)	
		General [1] Occasion	General [1] Occasion
0.05	0.05	0.30	0.30
0.08	0.08	0.30	0.30
0.10	0.10	0.40	0.40
0.15	0.15	0.60	0.60
0.20	0.20	0.80	0.80
0.30	0.30	1.25	1.00
0.50	0.50	1.75	1.50
0.60	0.60	2.25	2.00
0.80	0.80	2.75	2.50
1.00	1.00	2.75	2.50
1.10	1.00	3.50	3.25
1.50	1.50	4.25	4.00
2.00	2.00	5.00	4.50
2.10	2.00	6.00	5.50
2.50	2.00	6.00	5.50
3.00	2.50	7.00	6.50
4.00	3.00	9.00	8.00
5.00	4.00	11.00	10.00
6.00	5.00	14.00	12.00
7.50	6.00	18.00	16.00
9.50	8.00	22.00	20.00
12.00	10.00	27.00	24.00
15.00	12.00	32.00	29.00
19.00	15.00	42.00	38.00

Note:

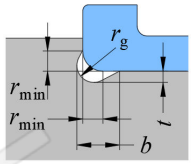
1) When the axial load is large. The shoulder height must be greater than the value listed in the table.

2) Suitable for occasions with small axial load.

However, the values in the table do not apply to tapered roller bearing, angular contact ball bearing and aligning rollers.

3) Fillet radius is also suitable for thrust bearing.

Table 13.3 Fillet tool withdrawal groove size of grinding shaft



Units: mm

Chamfer size of inner ring r(Min.)	Grinding undercut dimensions		
	t	r_g	b
1.0	0.2	1.3	2.0
1.1	0.3	1.5	2.4
1.5	0.4	2.0	3.2
2.0	0.5	2.5	4.0
2.1	0.5	2.5	4.0
3.0	0.5	3.0	4.7
4.0	0.5	4.0	5.9
5.0	0.6	5.0	7.4
6.0	0.6	6.0	8.6
7.5	0.6	7.0	10.0

5) To facilitate the disassembly of bearings, the diameter of shoulder (height h) shall be less than the outer diameter of inner ring, greater than the inner diameter of outer ring. (Figure 13.2, Table 13.2)

6) The fillet radius shall be greater than the bearing chamfer size. When the shoulder height shall be reduced, a spacer shall be added between the inner ring and the shaft shoulder (Figure 13.3), or between the outer ring and the box hole shoulder.

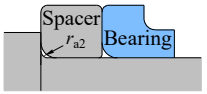


Figure 13.3 Example of shaft with spacer

7) The installation thread and the bearing lock nut arranged on the shaft shall be as perpendicular to the axial line as much as possible, and the thread turning direction shall be appropriately opposite to the rotation direction of the shaft.

8) The fitting surface of dual-half bearing housing shall be carefully processed and provided with an avoidance chamfer inside.

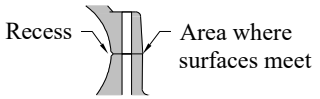


Figure 13.4 Recesses on meeting surfaces

13.2 Tolerances and surface roughness of shafts and housings

Generally, the mating surface between shaft and box can be processed by turning or precision boring, but when the rotary run-out and noise requirements are strict or the load conditions are harsh, grinding processing is required. Recommended tolerances and surface roughness for shaft and box under general use are shown in **Table 13.1**.

13.3 Bearings installation dimensions

The bearing installation dimensions refer to those such as the fillet radius and shoulder height required when the bearing is installed on the shaft or in the box.

The reference values of installation dimensions are shown in **Table 13.2** (please refer to each bearing size table for installation dimensions of various bearings). In addition, the dimensions of the fillet tool withdrawal groove of the grinding processed shaft are shown in **Table 13.3**.

For thrust bearing, Attention shall be paid to the size and perpendicularity of the support surface of the raceway. For thrust ball bearings, the shaft shoulder diameter d_a shall be greater than the pitch diameter of the ball, and the shell hole shoulder diameter d_a shall be less than the pitch diameter of the ball, as shown in **Figure 13.5**.

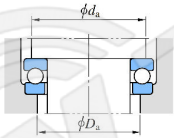


Figure 13.5 Shoulder dimensions of thrust ball bearings

For thrust roller bearing, the contact range of roller shall be fully supported by the shoulder, as shown in **Figure 13.6**.

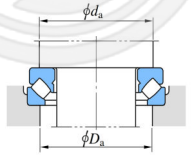


Figure 13.6 Shoulder dimensions of spherical thrust roller bearings

13.4 Design examples of shafts

When the bearing is installed on the shaft, the method of axial positioning must be considered. **Table 13.4** and **Table 13.5** are examples of axial positioning of cylindrical bore bearing and tapered bore bearing, respectively.

Table 13.4 Fixation of cylindrical bore bearings

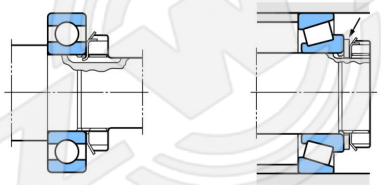
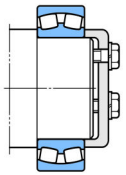
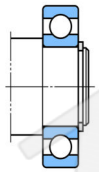
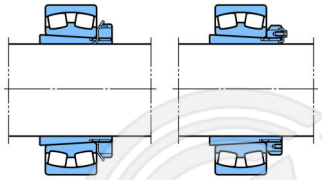
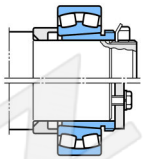
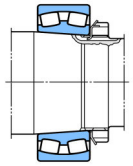
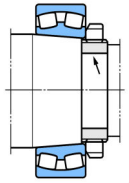
(a) Shaft nut	(b) Retaining cap of shaft end	(c) Positioning retaining ring
		
It is generally to use a stop plate for preventing the nut from loosening. For tapered roller bearing or angular contact ball bearing, when the fit is loose, as shown in the right figure, a washer in the thickness of several mm can be added between the bearing and the stop plate before tightening.	The shaft end has screw hole.	Suitable for machining where installation space is limited or a simplified shaft is required.

Table 13.5 Fixation of Tapered Bore Bearings

(d) Fastener	(e) withdrawal bushing	(f) Shaft nut	(g) Dual-half
			
Install the fastening sleeve on the shaft and tighten the nut. Axial positioning is the simplest. Use a stop plate (axial diameter ≤180mm) or stop block (axial diameter ≥200mm) to prevent the nut from loosening.	Use nut (Figure above) or retaining cap of shaft end (Figure below) Push into the withdrawal sleeve and fix the bearing. Convenient bearing disassembly.	Same as Figure (a). Thread directly on the shaft and fasten the nut to fix.	A shaft neck is provided on the tapered shaft. Clip into the dual-half ring with threaded outer diameter, and fasten the nut to fix. A key is generally used to prevent the nut from loosening or to prevent the dual-half ring from sliding.

14 Applications of bearings

14.1 Notes for usage

As a rotating machinery component, rolling bearing have high accuracy, so they shall be used carefully.

1) Keep the bearing and their surrounding environment clean

2) Use carefully

If the improper operation gives a strong impact to the bearing during use, it will cause cracks, indentation, fracture and other damage to the bearing.

3) Use the proper tools

4) Pay attention to the rust prevention of bearing

Avoid use in wet places, and rubber gloves shall be worn in order not to stain the bearing with sweat.

5) Users shall be familiar with bearing

6) Develop operating specifications for the use of bearing

- Custody of bearings
- Cleaning of bearings and their surroundings
- Inspection of the size and processing quality of the installation sites
- Inspection during installation operation and after installation
- Disassembly operation
- Maintenance/care (regular inspection)
- Lubricant supplement

14.2 Storage of bearings

The storage time of bearing refers to the time period during which bearing can be stored without adversely affecting their operating performance. When delivered, bearing are applied with appropriate amount of anti-rust oil and packed with anti-rust paper, so when they are stored in a good environment and their product packaging is not damaged, bearing can achieve a long-term storage. Of course, the storage time of the bearing also depends on the environmental conditions where they are stored. If the bearing are improperly stored, it will bring certain adverse impact on the operating performance of the bearing, so it is also necessary to protect the bearing in the inventory stage.

When bearing are not installed or used, they shall not be unpacked to take out. If unpacking by mistake, it is recommended to repack them, and the corrosive substances and pollutants shall be avoided to contact with the bearing during such repackaging.

When long-term storage is required, the storage area shall be cool, dry, and properly ventilated, and the dust shall be reduced as much as possible. The relative humidity is to be controlled between 60% and 75%, and the temperature is to be controlled between 20°C and 25°C. It is appropriate to store on the shelf 30cm above the ground or the bearing are stored in accordance with the method recommended by the bearing manufacturer. In addition, the storage place shall be away from direct sunlight or cold wall. The storage warehouse shall be far away from the vibration source. There shall be no airflow, and direct sunlight and bearing drop shall be avoided. Meanwhile, solvents, fuels, lubricants, chemical products, acids, disinfectants, etc. shall not be stored in the same place as bearing.

Large bearing shall be stored horizontally, and they are preferably to be supported along the entire extension for the side of the inner ring and outer ring. If the ring thickness of the vertically stored bearing is relatively small, the weight of the rings and rolling elements may lead to permanent deformation of the bearing.

After long-term storage of bearing with sealing rings or dust caps, the characteristics of grease in bearing will be affected. The maximum storage time of closed bearing depends on the type of lubricant inside them. Grease will deteriorate over time due to aging, condensation and separation of base oil and thickener.

* For open bearing, as long as storage conditions are suitable, the anti-rust oil can provide corrosion protection for about 5 years.

* For bearing with double dust caps, the maximum storage period is recommended to be 2 years.

* For double-sealed bearing, the maximum storage period is recommended to be 3 years.

* It is recommended that the machine in standby state shall be started regularly, so that the grease in the installed grease lubricated bearing can be evenly distributed.

14.3 Installation of bearings

14.3.1 Preparations before bearings mounting

(1) Environment for installation of bearing

bearing shall be installed in a dry, dust-free room as far as possible, and the installation shall be away from metal processing or other equipment that will generate metal debris and dust. When bearing have to be installed in an unprotected environment (it is often the case for large bearing), proper measures must be taken to protect bearing and related components from dust or moisture until installation is complete.

(2) Preparation of bearing

Because the bearing are subject to anti-rust treatment and packed, please do not unpack until installation. In addition, the anti-rust oil applied on the bearing has good lubrication performance, so the bearing for general purposes or bearing filled with grease can be used directly without cleaning. However, the anti-rust oil of bearing used in instrument or bearing used for high-speed rotation shall be washed away with the clean cleaning oil. At this time, the bearing are easy to rust, so they can't be placed for a long time.

(3) Preparation for installation tools

The tools used in the installation shall be mainly wooden or light metal products, and the other things that are easy to generate debris shall be avoided. Tools shall be kept clean.

(4) Inspection of shaft and shell

Clean the shaft and shell to make sure that there are no scars or burrs left by machining. If any, apply a whetstone or fine sandpaper to remove. There shall not be abrasive material (SiC, Al_2O_3, etc.) molding sand, chips, etc., in the shell.

Secondly, check whether the size, shape and processing quality of the shaft and the shell are in line with the drawings.

As shown in **Figure 14.1** and **Figure 14.2**, measure shaft diameter and shell hole diameter in several places. It is also necessary to carefully check the fillet size between bearing and shell as well as the perpendicularity of shoulder. To make the bearing easier to assemble and reduce bump, the mechanical oil shall be applied on the mating surfaces of the inspected shaft and shell before installing the bearing.

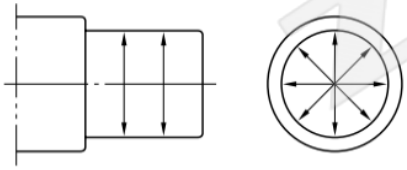


Figure 14.1 measuring position of shaft diameter

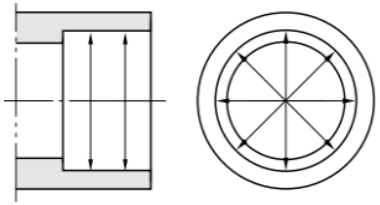


Figure 14.2 measuring position of shell hole diameter

14.3.2 Category of bearings mounting methods

The installation method of bearing varies from the bearing type and matching conditions. Since generally shaft is rotated, the inner ring and the outer ring can respectively use interference fit and gap fit. When the outer ring is rotated, the outer ring uses interference fit. Installation methods for bearings in interference fit can be mainly divided into the following types, as shown in **Figure 14.3** in details.

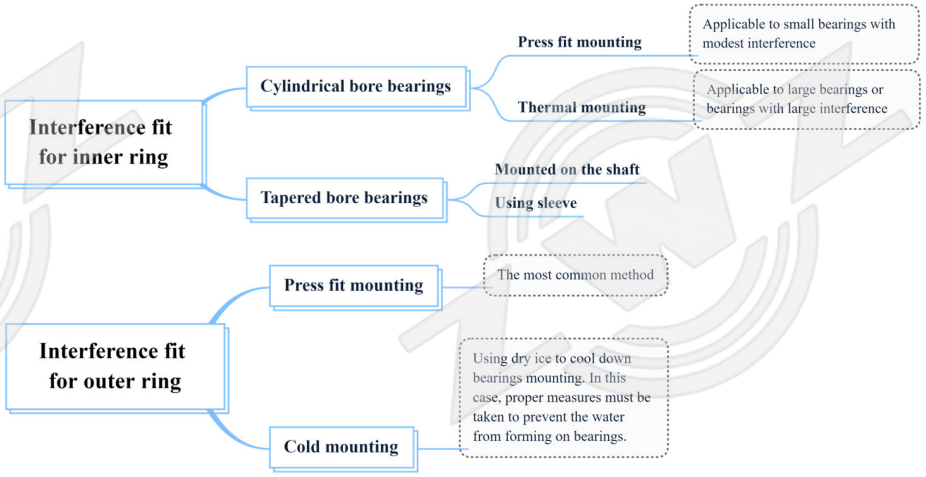
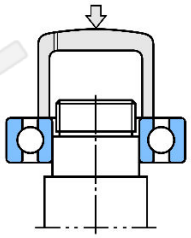


Figure 14.3 bearings mounting methods

14.3.3 Mounting of cylindrical bore bearings

(1) Press-in installation

Press-in installation is generally done by press machine, and also can be done by bolts and nuts, while hand hammers can be used when having no choice.

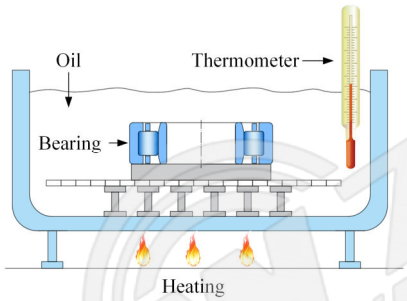


Using hammers

When the bearing with inner ring interference fit are installed on the shaft, the pressure shall be applied to the inner ring of bearing. When the bearing with outer ring interference fit are installed on the shell, the pressure shall be applied to the outer ring of bearing. When the bearing have interference fit on both inner ring and outer ring, the backing plate shall be used, and the pressure must be applied to the inner ring and outer ring of bearing at the same time.

(2) Hot shrinkage installation

The hot shrinkage method (heat the bearing to make them expand and then install on the shaft) can prevent the bearing from being subject to unnecessary external forces, and can complete the installation operation in a short time. The main heating methods are oil bath heating and electric induction heating.



Heating by oil bath

Advantages of electric induction heating:

1)clean and pollution-free;

2) timing, fixed temperature;

3) simple to operate.

After the bearings are heated to the desired temperature (below 120°C), the bearings are taken out and quickly sleeved into the shaft. The bearings will shrink with cooling, and sometimes there will be a clearance between the shoulder and the bearings' end face. Therefore, the bearings are required to be pressed with tools towards the direction of the shoulder.

For bearing with dust cap or sealing ring, because the pre-filled grease or sealing ring material has a certain limit on the temperature, the heating temperature shall not exceed 80°C, and the heating by oil bath can't be used. When heating the bearing, it shall ensure that the bearing are heated evenly, and will not generate local overheating.

14.3.4 Mounting of tapered bore bearings

For bearing with tapered bore as inner hole, their inner rings are mostly installed in the manner of interference fit.

Tapered bore bearing can be directly installed on the tapered shaft, or installed on the cylindrical shaft via the adapter sleeve and the withdrawal sleeve.

The degree of interference is determined by measuring the reduction of bearing' clearance or the axial displacement of inner ring on tapered shaft neck. In some cases, the interference can also be determined by measuring the locking angle of lock nut or by measuring the expansion of inner ring.

For tapered bore bearing, the interference increases and the radial clearance decreases when the inner ring is axially pressed into the tapered shaft, the adapter sleeve or the withdrawal sleeve. The interference can be inferred by measuring the reduction of radial clearance.

14.3.5 Measure reduction of clearance

The use of feelers to measure radial clearance before and after installation is only suitable for medium to extra-large bearing. The measured clearance must be located at the place between the roller that is not subject to load and the outer raceway. Before measuring, the outer ring shall be turned several cycles, and it must ensure that the center line of inner & outer ring mutually overlap with that of roller set. In the first measurement, a feeler leaf slightly thinner than the lowest clearance value shall be selected, and then a thicker feeler leaf shall be selected to measure repeatedly until the feeler feels a certain resistance when moving in the following circumstances.

Before installation - between the outer ring and the highest roller;

After installation - between inner ring/outer ring and lowest roller depending on cage.

14.3.6 Outer ring mounting

When the outer ring is installed on the bearing box with interference fit, the outer ring of small bearing can be pressed in at room temperature. When the interference is over-large, it shall be pressed in via heating bearing box or cooling the outer ring. When using dry ice or other coolants, the moisture in the air will condense on the bearing, so anti-rust measures must be taken accordingly.

14.4 Dismounting of bearing

It is necessary to disassemble the bearing during regular inspection or replacement of parts. Generally, the shaft and the bearing box are almost to be used continuously, and the bearing are often to be used further. Therefore, the following shall be considered in the structural design of machinery: the disassembly of bearing shall not damage bearing, shafts, bearing boxes and other parts, and appropriate disassembly tools shall also be prepared. When disassembling the ring with interference fit, the pulling force can only be applied to the ring, and the ring shall not be pulled via the rolling elements.

14.4.1 Dismounting tools of bearings

The most suitable tool to disassemble the bearing is press machine. When disassembling bearing with press machine, you shall carefully check whether the axial center lines of lifting part of press machine is mutually perpendicular to that of disassembled bearing.

In addition, there are some simple manual disassembly tools for bearing, which are also very convenient to use.

14.4.2 Dismounting method of cylindrical bore bearings

For non-separable bearing, the bearing are first disassembled from the looser mating surface (generally the mating surface between outer ring and the shell hole diameter), and then the bearing are pressed out from the tight mating surface via a press machine.

If the bearing will be used again after disassembly, it is not allowed to transfer the disassembly force via the rolling element, otherwise the rolling element and the ring raceway will be damaged due to pressing.

14.4.3 Dismounting method of tapered bore bearings

The small and medium-sized bearing installed on the tapered shaft neck can be easily disassembled by pulling the inner ring via an ordinary puller. The use of some pullers with automatic aligning design can avoid damaging the surface of shaft neck when pulling out the bearing. The bearing disassembled from a tapered shaft neck will loosen quickly, so some device shall be added to prevent the bearing from falling off the shaft.

For small and medium-sized bearing installed on the cylindrical straight shaft with adapter sleeve, the nut of the adapter sleeve can be loosened for several turns first, and then the bearing can be disassembled by punch knocking the side of bearing with a hammer.

For small and medium-sized bearing leaned against a supporting ring on the stepped shaft with adapter sleeve, they can be disassembled by striking the small end face of adapter sleeve with a hammer via a special sleeve, but again the nut is required to be loosened for several turns first.

It is a simple and practical method to disassemble large bearing installed on adapter sleeve with a hydraulic nut, but it can only be used when the bearing are leaned against a supporting ring. The oil injection method is simpler, but the adapter sleeve with oil passage and oil groove must be used. When disassembling the bearing from the withdrawal sleeve, some axial locking devices (such as lock nuts or end caps) must be removed first. For small and medium-sized bearing, lock nut, hook wrench or impact wrench can be used to disassemble.

14.5 Maintenance of bearings

To make the bearing fully play and maintain their due performance for a long time, regular maintenance/care (regular inspection) must be practically done.

Early detection of faults and prevention of accidents via properly regular inspections are very important for improving productivity and economy.

14.6 Cleaning

When the bearing are disassembled for inspection, the appearance is recorded by means of photography first.

In addition, it is necessary to confirm the volume of remaining lubricant and sample the lubricant before cleaning the bearing.

The cleaning of bearing is divided into coarse cleaning and fine washing, and a metal mesh frame can be placed at the bottom of the container used.

In coarse cleaning, remove grease or adhesion with a brush, etc. in the oil At this time, if the bearing is rotated in the oil, it shall be noted that the rolling surface will be damaged by foreign matters.

In fine cleaning, rotate the bearing slowly in the oil, which must be carefully conducted.

The cleaning agent usually used is neutral and non-aqueous diesel or kerosene, and sometimes warm lye is used as needed.

Whichever cleaning agent is used, it shall be filtered frequently to keep clean.

After cleaning, the anti-rust oil or anti-rust grease shall be applied on the bearing immediately.

14.7 Inspection and evaluation

In order to judge whether the disassembled bearing can be reused, it is necessary to check its dimensional accuracy, rotary accuracy, internal clearance and fitting surface, raceway surface, cage and sealing ring. The inspection results can be judged by those who are familiarized with or proficient in bearing.

The judgement criteria vary from mechanical properties, importance, and inspection cycles. The bearing shall not be reused and must be replaced in the following damages.

- Fracture and defect of bearing parts/components
- Stripping of raceway surface or rolling surface

14.8 Identification of bearings faults

Bearing can't be directly observed during operation, but bearing abnormalities can be detected via noise, vibration, temperature, lubricants, etc. It is very important to identify or predict whether there is a fault in the bearing in operation without disassembly inspection, which is essential to improve productivity and economy.

The main identification methods are as follows:

1) Identify by sound

Abundant experience is required to identify by sound. Adequate training is required to be able to distinguish bearing sound and non-bearing sound.

So, this work shall be conducted by professionals as far as possible. The bearing sound can be clearly heard with a listening gear or a listening rod attached to the shell.

2) Identify by operating temperature

This method is a comparative identification method, which is limited to be used in the occasions where the operating state does not change greatly. So, the continuous temperature recording is necessary.

When a fault occurs, the temperature not only increases, but also changes irregularly.

This method is recommended to be combined with sound identification method.

3) Identify by the state of the lubricant

The lubricant is sampled and analyzed, and it is judged by its degree of dirt and whether it is mixed with foreign matters or metal powder.

This method is especially effective for bearing or large bearing that can't be observed closely.

15 Damages of bearings

There are many reasons for premature bearing failure, and each failure will leave a specific imprint on the bearing.

In most cases, the root cause of the damage or failure can be determined by inspecting the damaged or failed bearing, so that the necessary corrective measures can be taken to prevent the bearing from being damaged or failed again.

In actual operating conditions, the damage or failure of bearing is often the result of the simultaneous action of several mechanisms. Failure may be caused by improper installation or maintenance, or by that the processing quality of the bearing or its adjacent parts/components does not meet the design requirements. In some cases, the failure may also be caused by the compromise design that takes into account economic benefits and unforeseen operating conditions. Because bearing failure is caused by many factors such as design, manufacturing, installation, operation, maintenance, etc., it is often very difficult to determine the main cause of failure. If the bearing is seriously damaged or fails suddenly, evidence may be lost, so it is impossible to determine the main cause of the failure.

In any case, a history of installation & maintenance and understanding of actual operating conditions are essential. The classification of bearing failure is mainly based on the visual features of the rolling element contact surface and other functional surfaces. In order to accurately determine the cause of bearing failure, each feature is required to be considered. Since more than one process can have similar effects on these surfaces, a description of the appearance alone is sometimes inadequate when determining the cause of failure, and the operating conditions is also required to be taken into account.

15.1 Failure types of bearings

The main failure modes classification of rolling bearings is shown in Figure 15.1.

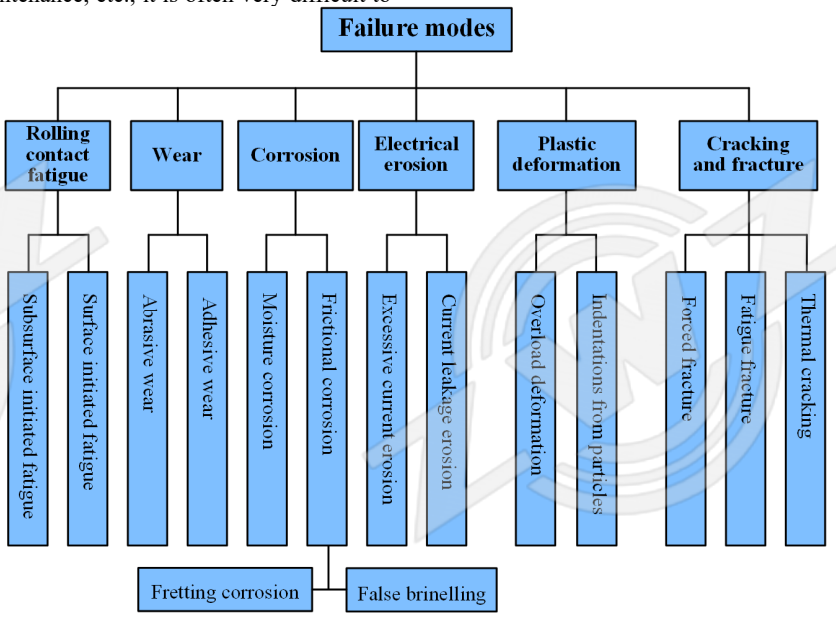
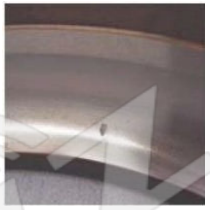


Figure 15.1 Main failure modes classification of rolling bearings (GB/T 24611)

Common damage types and descriptions are shown in the table below.

Damage type	Phenomenon description	Damage example	Cause of failure	Countermeasure & prevention
Crack	The crack in the outer ring of an angular contact ball bearing in the early stage of subsurface origin fatigue (before stripping)		Under heavy load, cyclic load accumulation results in fatigue cracks	Use bearing with higher load carrying capacity
Further stripping	Further stripping on the raceway of angular contact ball bearing outer ring		● Fatigue cracks and extended stripping due to the following reasons: ● Under heavy load, load cycle accumulation results in fatigue cracks: ● Keep running after fatigue cracks appear on raceway surface.	Use bearing with higher load carrying capacity.
Surface origin fatigue	Stripping on the raceway of angular contact ball bearing inner ring		● Entry of foreign particles: ● Water intrusion; ● Inadequate lubrication.	● Improved sealing: ● Check lubrication under operating conditions.
Early stripping	Early stripping on the raceway of angular contact ball bearing outer ring		● Fatigue cracks and initial stripping due to the following reasons; ● Under heavy load, load cyclic accumulation results in fatigue cracks; ● Keep running after fatigue cracks appear	Use bearing with higher load carrying capacity.
Abrasive wear	Abrasive wear on non-rotary raceway of self-aligning roller bearing inner ring		Pollutants entry, resulting in abrasive wear on raceway surface is very serious.	Improve the sealing layout: Improve the lubrication intervals and/or greases: If operating conditions are allowed, use sealed bearing.

Damage type	Phenomenon description	Damage example	Cause of failure	Countermeasure & prevention
Surface origin fatigue	Surface origin fatigue on the raceway of tapered roller bearing inner ring		Grey raceway surface and micro-stripping due to the following reasons: ● Inadequate lubrication; ● Sliding motion: ● Inadequate preload: ● Skew.	● Improve the lubrication: ● Apply the correct preload: ● Ensure the alignment.
Surface origin fatigue	The operation trajectory of surface origin fatigue skew on the raceway of double row angular contact ball bearing inner ring		● Skew during the operation due to the following reasons: ● Shaft deflection deformation: the step surface of the fitting part is not vertical.	● Eliminate the skew; ● Select the appropriate bearing type to adapt to the skew; ● Reduce the flexural deformation of the shaft; ● Check the verticality of the step surface of the fitting parts.
Abrasive wear	Abrasive wear on the raceway and roller of tapered roller bearing inner ring		External particle contamination: Sealed wear ring failure: Particles are embedded into softer cage material.	Eliminate or minimize sources of pollution: Replace seals or upgrade seal layout; Shorten the lubricant replacement cycle; Ensure bearing are properly cleaned before installation.
Adhesive wear	Daub on large end of tapered roller		Inadequate lubrication results in metal-to-metal contact, plastic deformation and thermal damage.	Use suitable lubricants and perform proper maintenance to ensure adequate lubrication volume, quality and oil film thickness: Ensure that the lubrication and distribution systems can meet the speed, load and environmental requirements of the specific application.
Corrosion and rust	Corrosion, sweaty hands (fingerprints)		Improper handling, touching the bearing with sweaty hands without taking protective measures	Avoid touching the bearing with wet (sweaty) hands; Use gloves or protective grease: Clean the surface, use thixotropic agent and repackage properly.

Damage type	Phenomenon description	Damage example	Cause of failure	Countermeasure & prevention
Contact corrosion	Contact corrosion on the raceway of tapered roller bearing inner ring, spacing equal to the pitch of roller		Water or corrosive materials (such as acid) entry; Condensation of moisture in the air: Poor packing and storage conditions.	Improve the sealing effect: Take anti-rust measures when not used for a long time.
Fretting abrasion	Fretting abrasion on the outer diameter surface of self-aligning roller bearing		Under heavy loads, small motion results in fretting abrasion.	Use a special anti-fretting abrasive paste on the bearing support: Apply the special coatings.
Fretting abrasion	Fretting abrasion on the inner diameter surface of ball bearing inner ring		Fretting wear caused by the following reasons: Insufficient fit interference: repeated sliding between the inner ring and the shaft	Increase the fit interference of shaft: Apply a surface coating.
False indentation	False indentation on the raceway of angular contact ball bearing inner ring		The vibration during the bearing transportation causes the relative motion between the inner ring and the outer ring.	Avoid any relative motion between the inner ring and outer ring during transportation; Preload is applied on the bearing (if possible)
False indentation	False indentation on raceway of deep groove ball bearing inner ring		Vibrate during resting.	Reduce the vibration: Apply the preload Apply a coating
Electric corrosion Electric corrosion due to excessive instantaneous current	Annular pit in the groove of deep groove ball bearing outer ring		The current passes through, creating annular pits in the groove and ball.	Check the insulation of the machine or bearing and apply the correct electrical insulation; During the welding operation, the machine shall be properly grounded.

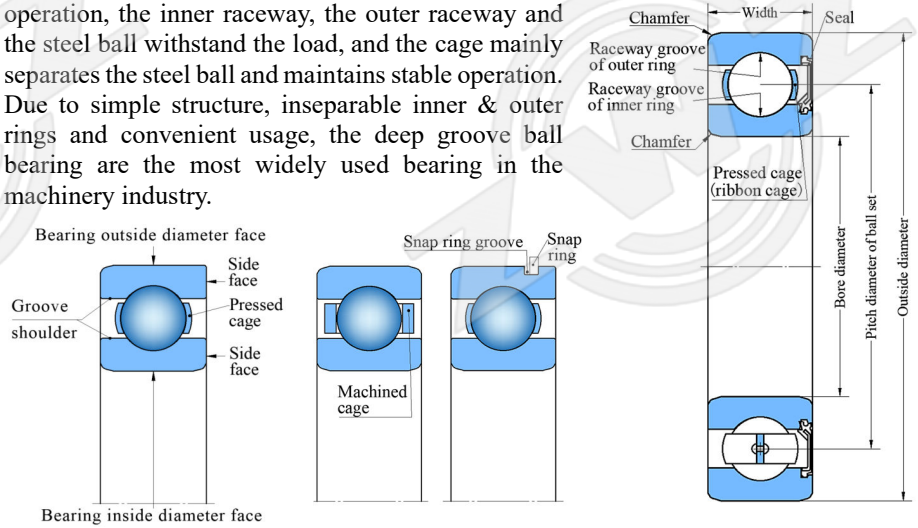
Damage type	Phenomenon description	Damage example	Cause of failure	Countermeasure & prevention
Electric corrosion due to current leakage	The corrugated groove formed on the rolling surface of the spherical roller due to electric corrosion		Current passes through the bearing as it rotates.	Correct grounding: The bearing is insulated from the power supply.
Plastic deformation Overload deformation	Overload deformation on the raceway of self-aligning roller bearing inner ring		Bearing is subject to large impact load at rest or rotating state, and/or improper installation/operation.	Preventive measure. Improved the bearing installation. So that the roller does not press into the raceway: Select bearing that can withstand a known impact load: Eliminate or minimize impact loading sources.
Plastic deformation Overload deformation	The overload deformation on the raceway of cylindrical roller bearing inner ring, which corresponds to the pitch of the roller		Due to the skew in the installation, the roller generates plastic deformation along the edge of the raceway of inner ring.	Follow the installation guideline. Avoid the skew: Use the guide ring.
Particle indentation	Particle indentation on raceway and roller of self-aligning roller bearing		The pollution in large bearing is serious and the particles are rolled, resulting in a large number of indentations.	Improve the oil filtration: Improve the sealing device
Fracture Overload fracture	Overload fracture of self-aligning roller bearing inner ring		The fitting stress is over-large due to the temperature difference between the shaft and the inner ring.	Correct the interference volume: Check the operating conditions
Fracture Overload fracture	Overload fracture on the large rib of tapered roller bearing inner ring		Excessive impact during installation.	Use the appropriate installation tools and program navigation

Deep Groove Ball Bearings

●Deep groove ball bearings

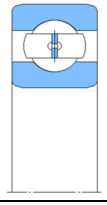
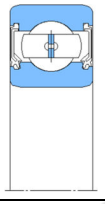
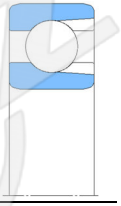
■ Product characteristics

The deep groove ball bearing is the most widely used rolling bearing. Under normal operation, the inner raceway, the outer raceway and the steel ball withstand the load, and the cage mainly separates the steel ball and maintains stable operation. Due to simple structure, inseparable inner & outer rings and convenient usage, the deep groove ball bearing are the most widely used bearing in the machinery industry.



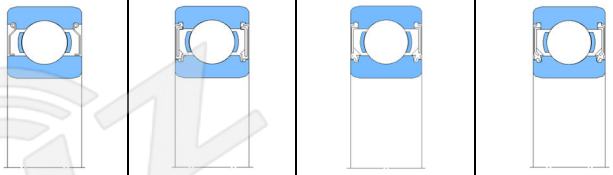
■Product structural types

Table 1 Structural Type of Deep Groove Ball bearing

Structure	Open type	Sealed type	With snap ring groove (ring)	Extended inner (outer) ring	With filling slot type
Figure					
Inner diameter (mm)	10～1720	10～280	10～160	12～600	30～440
Outer diameter (mm)	24～2180	26～480	26～250	38～700	62～600
Width (mm)	5～218	7～80	7～58	13～100	16～74
Load capacity	Mainly radial load, double-direction axial load to some extent				
High speed	★	☆	★	★	×

Note: Excellent★ Good☆ Fair◇ Bad×

Table 2 Performance Comparison of Sealing Structure

Sealing structure	-2Z	-2RZ	-2RT	-2RS
Figure				
Dust prevention	☆	★	★	★
Water prevention	◇	◇	☆	★
Rotating speed	★	☆	☆	◇

Note: Excellent★ Good☆ Fair◇ Bad×

■Basic Information

Accuracy

ZWZ standard deep groove ball bearing are available in accuracy class of ordinary, P6, P5, P4, and P2, which conform to the national standards. Tolerance values are shown in the table in the Preface.

Radial clearance

The radial clearance of ZWZ standard deep groove ball bearing includes C2, CN, C3, C4, and C5, where CN is the clearance of ordinary group, and the CN clearance is default if not marked in the bearing code.
The deep groove ball bearing have axial clearance, which can be calculated with reference to radial clearance, as detailed in the Preface.

Relative tilt

According to the size of the clearance, the inner and outer rings are allowed to be relatively tilted 8' to 16'.

Cage type

According to the material, the deep groove ball bearing cage can be divided into steel plate pressed cage , brass solid cage, cast iron solid cage and nylon cage, which are reflected in the bearing suffix code.

- When the outer diameter is less than 400mm, the steel plate pressed cage is used without a suffix code
- When the outer diameter is greater than 400mm, the brass cage is used without a suffix code.

According to the different usage temperatures, nylon cage selects different materials, and it is required to be reflected in the special suffix code, as detailed in the Preface.

Equivalent load

Dynamic equivalent load

$P_r = XF_r + YF_a$ [kN]

Static equivalent load (take the larger value)

$P_{0r} = 0.6F_r + 0.5F_a$

$P_{0r} = F_r$

[kN]

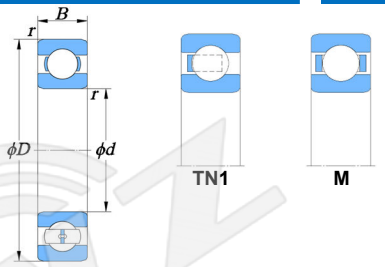
$\frac{f_0F_a}{C_{0r}}$	$\frac{F_a}{F_r} \le e$		$\frac{F_a}{F_r} > e$		e
	X	Y	X	Y	
0.172	1	0	0.56	2.30	0.19
0.345				1.99	0.22
0.689				1.71	0.26
1.030				1.55	0.28
1.380				1.45	0.30
2.070				1.31	0.34
3.450				1.15	0.38
5.170				1.04	0.42
6.890				1.00	0.44

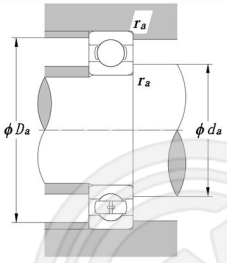
■Supplementary code

Code name	Code description
M	Brass solid cage, guided by steel ball. The digital identifier is added after M for different designs and materials, such as M2.
MA	Brass solid cage, guided by outer ring.
MB	Brass solid cage, guided by inner ring.
N1	There are grooves on the side of the outer ring.
P52	P5+C2
P62	P6+C2
P63	P6+C3
RS1	Bearing has frame rubber seal (contact type) on one side, and the material of sealing ring is vulcanized rubber.
2RS1	Bearing with RS1 seal on both sides.
RS2	Bearing has frame rubber seal (contact type) on one side, and the material of sealing ring is fluorinated rubber.
2RS2	Bearing with RS2 seal on both sides.
ZNBR	Z+NR: With dust cover on the same side of snap ring groove and snap ring.
2ZN	2Z+N: Bearing with dust cover on both sides, the outer ring with snap ring groove.
2ZNR	2Z+NR: Bearing with dust cover on both sides, the outer ring with snap ring groove and snap ring.
TN	Engineering plastic molding cage, digital identification is added after TN for different materials.
TYN	Glass fiber added polyamide 46 cage.
/Y	The combination of Y and another letter (such as YA, YB) is used to identify non-serial changes that can't be expressed with the existing rear code. For bearings with a rear code of Y, you shall contact **ZWZ** for details of the change: YA - Structural change (comprehensive expression); YB - Technical condition change (comprehensive expression).

ZWZ

d 10～25mm



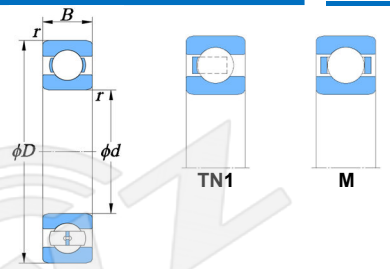


d	Principal dimensions(mm) D	B	rmin	Basic load ratings(kN) Cr	Cor	Factor f0
10	26	8	0.3	4.56	1.96	12.3
	30	9	0.6	5.88	2.61	12.3
12	28	7	0.3	4.63	2.15	13.3
	28	8	0.3	4.63	2.15	13.3
	32	10	0.6	6.91	3.10	12.3
	32	10	0.6	6.84	3.08	12.4
15	24	5	0.3	2.08	1.25	15.8
	28	7	0.3	4.33	2.25	14.3
	32	9	0.3	5.60	2.82	13.8
	35	11	0.6	7.65	3.73	13.1
	42	13	1	10.5	4.94	12.4
15.875	40	12	0.6	9.58	4.79	13.1
17	30	7	0.3	4.60	2.55	14.7
	35	10	0.3	6.81	3.38	13.7
	40	12	0.6	9.58	4.79	13.1
	40	14	1	9.61	4.59	12.9
	47	14	1	13.6	6.57	12.3
	47	15.5	1	13.9	6.34	11.6
20	32	7	0.3	3.49	2.22	15.8
	42	8	0.3	7.92	4.45	14.4
	42	12	0.6	9.39	5.01	13.8
	47	14	1	13.0	6.71	13.1
	47	14	1	13.0	6.71	13.1
	47	14	1	12.8	6.61	13.1
	52	15	1.1	13.8	6.94	13.0
	62	16	1	17.6	10.3	14.1
22	56	16	1.1	18.5	9.30	12.5
23	52	13	1	17.7	9.40	13.0
	56	15	1	18.5	9.30	12.5
25	37	7	0.3	3.69	2.62	16.3
	42	9	0.3	7.32	4.57	15.2
	47	8	0.3	8.35	5.16	15.2
	47	12	0.6	10.1	5.84	14.5
	52	15	1	15.3	8.09	13.3
	52	15	1	14.2	7.95	13.8
	52	15	1	14.2	7.95	13.8
	52	18	1	14.0	7.84	13.8
	62	17	1.1	22.4	11.5	12.4

Designations	Limiting speeds (r/min) Grease	Oil	Abutment and fillet dimensions(mm) damin	Damax	ramax	Mass(kg) (approx.)
6000	24000	30000	13.2	22.8	0.3	0.0191
6200	22000	27000	14	26	0.6	0.0270
16001	22000	27000	15.2	24.8	0.3	0.0197
6001	16000	27000	15.2	24.8	0.3	0.0228
6201TN1	20000	25000	16	28	0.6	0.0198
6201	24000	30000	16	28	0.6	0.0365
61802	22000	28000	18.2	20.8	0.3	0.00758
61902	21000	26000	18.2	24.8	0.3	0.0161
6002	19000	24000	18.2	28.8	0.3	0.0300
6202	19000	26000	19	31	0.6	0.0431
6302	17000	21000	20	37	1	0.0895
6203X4	17000	21000	19.875	36	0.6	0.0923
61903	19000	24000	20.2	26.8	0.3	0.0175
6003	18000	22000	20.6	31.4	0.3	0.0386
6203	17000	21000	21	36	0.6	0.0661
6203X2/YA6	17000	21000	22	35	1	0.0769
6303	15000	19000	22	42	1	0.110
6303X2	17000	19000	22	42	1	0.128
61804	18000	22000	23.2	28.8	0.3	0.0186
16004	16000	19000	23.2	38.8	0.3	0.0510
6004	16000	19000	24	38	0.6	0.0697
6204	16000	18000	25	42	1	0.110
6204TN1	16000	18000	25	42	1	0.104
6204KA	14000	18000	25	42	1	0.111
6304	14000	17000	26	46	1.1	0.151
6304X3	14000	17000	25	57	1	0.266
63/22	13000	16000	28	50	1.1	0.183
62/23	13000	16000	28	47	1	0.117
66/23	13000	16000	28	51	1	0.169
61805	16000	19000	28.2	33.8	0.3	0.0227
61905	17000	21000	28.2	38.8	0.3	0.0415
16005	14000	17000	28.2	43.8	0.3	0.0562
6005	16000	20000	29	43	0.6	0.0780
6205/YA5	13000	16000	30	47	1	0.131
6205	13000	16000	30	47	1	0.134
6205TN1	13000	16000	30	47	1	0.126
62205	13000	16000	30	47	1	0.159
6305	11000	14000	31	56	1.1	0.214

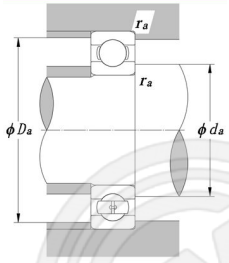
ZWZ

d 25～40mm



TN1

M

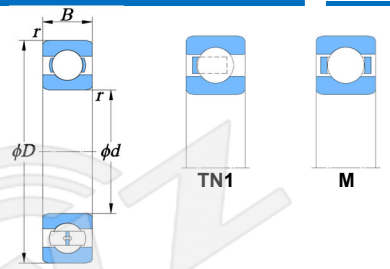


d	Principal dimensions(mm) D	B	r_{min}	Basic load ratings(kN) C_r	C_{or}	Factor f_0
25	62	16	0.4	22.4	11.5	12.4
	62	17	2.2	22.4	11.5	12.4
	68	18	0.6	30.9	15.1	11.1
	68	18	1.1	26.3	12.9	11.8
	80	21	1.5	37.2	19.0	11.4
28	47	8	0.3	7.58	5.07	15.6
	58	18	1.1	25.0	13.9	13.1
	68	18	1.1	25.0	13.9	13.1
28.58	71.425	20.638	1.1	28.1	15.8	13.0
30	47	9	0.3	7.58	5.07	15.6
	55	9	0.3	10.6	6.76	15.2
	55	13	1	13.2	8.30	14.8
	55	13	1	11.9	7.48	14.9
	62	16	1	19.5	11.2	13.8
	72	19	1.1	28.2	15.8	13.1
	72	19	1.1	26.7	15.0	13.2
	72	19	1.1	26.7	15.0	13.2
	75	20	0.3	32.8	17.6	12.3
	90	23	1.5	44.6	22.9	11.5
32	57	12.7	0.3	11.9	7.54	15.1
	75	20	1.5	28.3	16.0	13.2
	80	23	0.3	36.3	19.6	12.3
33	72	17	1.1	22.5	13.6	14.2
35	47	7	0.3	4.90	4.05	16.6
	55	10	0.6	9.38	6.67	15.8
	62	14	1	16.0	10.3	14.9
	64	14	1	16.0	10.3	14.9
	72	17	1.1	25.7	15.3	13.7
	72	17	1.1	25.7	15.3	13.7
	80	21	1.5	33.4	19.2	13.2
	80	21	1.5	33.4	19.2	13.2
	80	21	1.1	33.4	19.2	13.2
	90	21	1.5	37.2	22.1	13.5
	100	25	1.5	51.6	29.0	12.4
40	62	12	0.6	13.0	9.21	15.6
	68	9	0.3	13.6	10.0	15.7
	68	15	1	16.8	11.6	15.3
	80	18	1.1	30.9	18.8	13.8

Designations	Limiting speeds(r/min) Grease	Oil	Abutment and fillet dimensions(mm) d_{amin}	D_{amax}	r_{amax}	Mass(kg) (approx.)
6305TN1	15000	14000	28	59	0.4	0.211
6305/YA6	11000	14000	33	56	2	0.214
6305X3/YA6	11000	15000	32.4	64	0.6	0.298
6305X3	11000	15000	31	62	1.1	0.296
6405	9200	12000	31.6	73.4	1.5	0.530
619/28X3	13000	16000	31.2	43.8	0.3	0.0486
62/28	12000	14000	34	52	1.1	0.301
63/28	10000	13000	34	62	1.1	0.299
66/28X4	9600	12000	34.58	65.425	1.1	0.384
61906	14900	19000	34.2	42.8	0.3	0.0433
16006	12000	15000	34.2	50.8	0.3	0.0827
6006/YA5	12000	15000	36	49	1	0.119
6006	12000	15000	36	49	1	0.121
6206	11000	13000	36	56	1	0.208
6306/YA5	9500	12000	37	65	1.1	0.614
6306TN1	9500	12000	37	65	1.1	0.342
6306	9500	12000	37	65	1.1	0.354
6306X3	9200	12000	34.6	67	0.3	0.477
6406	9100	11000	37.6	82.4	1.5	0.805
60/32X3	11000	14000	36.2	52.8	0.3	0.123
63/32	9000	12000	38.6	68.4	1.5	0.413
63/32X3	9600	11000	36.6	71	0.3	0.534
62/33	9200	12000	40	65	1.1	0.308
61807	12000	15000	39.2	42.8	0.3	0.0287
61907	11000	14000	40	50	0.6	0.0779
6007	10600	13000	41	56	1	0.152
6007X1	6900	13000	41	58	1	0.196
6207	9000	12000	42	65	1.1	0.218
6207KTN1	9000	12000	42	65	1.1	0.278
6307	9100	11000	42.6	72.4	1.5	0.456
6307TN1	9100	11000	42.6	72.4	1.5	0.443
6307KA	8400	11000	42	73	1.1	0.455
6307X1	9100	9700	42.6	82.4	1.5	0.638
6407	7200	8900	42.6	92.4	1.5	0.971
61908	10600	14000	45	57	0.6	0.108
16008	8900	12000	44.2	63.8	0.3	0.128
6008	10100	12000	46	62	1	0.191
6208	9100	11000	47	73	1.1	0.361

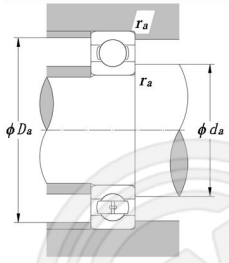
ZWZ

d 40～50mm



TN1

M



d	Principal dimensions(mm) D	B	rmin	Basic load ratings(kN) Cr	Cor	Factor f0	Designations	Limiting speeds(r/min) Grease	Oil	Abutment and fillet dimensions(mm) damin	Damax	ramax	Mass(kg) (approx.)
40	85	23	1.1	43.6	24.0	12.4	6308X1	7700	9700	47	78	1.1	0.672
	90	20	1.5	40.8	24.0	13.2	6308X2	8000	9300	47.6	82.4	1.5	0.600
	90	23	1.5	40.8	24.0	13.2	6308KA	7400	9300	47.6	82.4	1.5	0.640
	90	23	1.5	40.8	24.0	13.2	6308	8000	9300	47.6	82.4	1.5	0.642
	90	23	1.5	40.8	24.0	13.2	6308TN1	8000	9300	47.6	82.4	1.5	0.611
	110	27	2	67.4	36.3	11.4	6408	7200	8100	49	101	2	1.20
41	80	17	1.1	30.9	18.8	13.8	62/41	9100	10000	48	73	1.1	0.342
41.35	80	17	1.1	30.9	18.8	13.8	62/41X4	8000	9900	48.35	73	1.1	0.342
45	58	7	0.3	6.19	5.37	16.2	61809	10100	12000	49.2	53.8	0.3	0.0391
	68	12	0.6	13.5	10.2	15.9	61909	8600	11000	50.6	62.4	0.6	0.129
	75	10	0.6	14.9	11.4	15.9	16009	9600	11000	50.6	69.4	0.6	0.165
	75	16	1	21.1	14.8	15.2	6009/YA5	8100	11000	51	69	1	0.245
	75	16	1	19.9	14.0	15.3	6009	9600	11000	51	69	1	0.246
	85	19	1.1	32.7	20.7	14.2	6209MA	8000	9300	52	78	1.1	0.492
	85	19	1.1	33.2	21.6	14.3	6209/YA5	8000	9300	52	78	1.1	0.413
	85	19	1.1	31.2	20.4	14.4	6209	8000	9300	52	78	1.1	0.428
	85	19	1.1	31.2	20.4	14.4	6209K	8000	9300	52	78	1.1	0.416
	85	19	1.1	31.2	20.4	14.4	6209TN1	7400	9300	52	78	1.1	0.416
	90	20	1.1	40.9	24.3	13.3	6609TN1/YA1	7200	8900	52	83	1.1	0.481
	90	22	1.1	44.6	26.4	13.1	6209X3	7200	8900	52	83	1.1	0.541
	100	21	1.5	48.9	29.5	13.3	6309X2	6700	8300	52.6	92.4	1.5	0.735
	100	25	1.5	52.9	31.8	13.0	6309	6700	8300	52.6	92.4	1.5	0.850
	100	25	1.5	52.9	31.8	13.0	6309TN1	6700	8300	52.6	92.4	1.5	0.811
	127	31.5	1.5	48.9	29.5	13.3	6309X3/YA6	4000	7000	52.6	120	1.5	2.04
	120	29	2	77.4	45.8	12.3	6409	6400	7300	54	111	2	1.69
50	65	7	0.3	6.40	5.83	16.1	61810	8400	11000	54.2	60.8	0.3	0.0531
	72	12	0.6	14.0	11.0	16.2	61910	9100	11000	55.6	66.4	0.6	0.128
	80	10	0.6	15.4	12.3	16.1	16010	9100	11000	55.6	74.4	0.6	0.179
	80	16	1	20.8	15.4	15.5	6010	7400	11000	56	74	1	0.255
	80	22	1	22.0	16.3	15.4	6010X2R	5300	9300	56	74	1	0.357
	90	20	1.1	35.2	23.2	14.4	6210TYN	6900	8600	57	83	1.1	0.460
	90	20	1.1	35.2	23.2	14.4	6210	7600	8600	57	83	1.1	0.504
	90	20	1	35.2	23.2	14.4	6210/C9YA6	7600	8600	56	84	1	0.504
	90	20	1.1	35.2	23.2	14.4	6210TN1	7500	8600	57	83	1.1	0.483
	90	26	1.1	33.1	21.9	14.5	62210X2	7600	8600	57	83	1.1	0.601
	95	20	1.1	44.5	28.1	13.7	6210X1	6700	8300	57	88	1.1	0.542
	110	27	2	61.8	37.9	13.0	6310	6700	7500	59	101	2	1.07
	110	27	2	57.6	35.3	13.2	6310TN1	6700	7500	59	101	2	1.06

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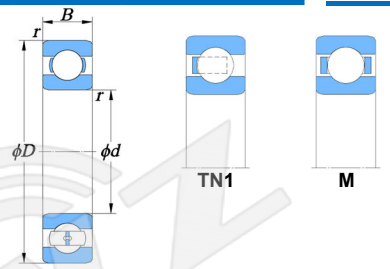
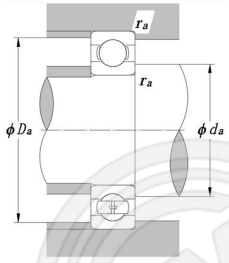
d 50～65mm





d	Principal dimensions(mm) D	B	r_{min}	Basic load ratings(kN) C_r	C_{or}	Factor f_0
50	111	27	2.3	57.6	35.3	13.2
	163	46	2	57.6	35.3	13.2
	130	31	2.1	92.2	55.3	12.3
55	72	9	0.3	8.82	8.09	16.2
	80	13	1	16.0	13.2	16.2
	90	11	0.6	18.6	15.2	16.1
	90	18	1.1	28.3	21.4	15.4
	100	21	1.5	43.5	29.2	14.3
	100	21	1.5	43.5	29.2	14.3
	100	21	1.5	39.1	26.4	14.5
	100	21	1.5	41.6	29.1	14.5
	100	26	1.5	39.1	26.4	14.5
	120	29	2	71.7	44.8	13.1
	120	29	2	71.7	44.8	13.2
	120	29	0.5	71.7	44.8	13.1
	130	31	0.3	76.9	48.8	13.3
	140	33	2.1	100	62.2	12.2
60	85	13	1	16.4	14.3	16.4
	95	11	0.6	19.2	16.4	16.3
	95	18	1.1	30.7	22.8	15.4
	95	18	1.1	29.5	23.2	15.5
	95	18	1.1	25.2	20.0	15.7
	110	22	1.5	52.5	35.9	14.3
	110	22	1.5	47.8	32.9	14.5
	110	22	1.5	47.8	32.9	14.5
	110	22	1.5	47.8	32.9	14.5
	130	31	2.1	81.8	51.9	13.1
	130	31	2.1	81.4	51.5	13.0
	150	35	2.1	109	70.5	12.3
64	120	23	1.5	57.2	40.2	14.5
65	85	10	0.6	13.6	12.9	16.3
	90	13	1	20.0	17.4	16.3
	100	18	1.1	32.1	24.9	15.5
	100	18	1.1	32.1	24.9	15.5
	120	23	1.5	57.2	40.2	14.5
	120	23	1.5	55.7	40.9	14.8
	140	33	2.1	92.8	59.7	13.2
	140	33	3.2	92.8	59.7	13.2

Designations	Limiting speeds(r/min) Grease	Oil	Abutment and fillet dimensions(mm) d_{amin}	D_{amax}	r_{amax}	Mass(kg) (approx.)
6310X1	6700	7500	59	100	2	1.13
6310X3	3200	5600	60	150.8	2	5.81
6410	5400	6700	61	119	2	1.85
61811	9100	11000	59.2	67.8	0.3	0.0845
61911	8500	11000	61.8	73.2	1	0.177
16011	8000	9600	60.6	84.4	0.6	0.255
6011	8000	9600	62	83	1.1	0.381
6211	6700	7800	62.6	92.4	1.5	0.605
6211K	6700	7800	62.6	92.4	1.5	0.595
6211TN1	6700	7800	62.6	92.4	1.5	0.609
6211F2	6700	7800	62.6	92.4	1.5	0.646
62211X2	6700	7800	62.6	92.4	1.5	0.759
6311	6000	6900	64	111	2	1.38
6311TN1	6000	6900	64	111	2	1.31
6311/YA6	6000	6900	64	114.8	0.5	1.37
6611	5700	6500	59.6	119	0.3	1.89
6411	5000	6200	66	129	2	2.36
61912	8000	9600	66.8	78.2	1	0.201
16012	7200	8500	65.6	89.4	0.6	0.270
6012M	7200	8500	67	88	1.1	0.497
6012	7200	8500	67	88	1.1	0.426
6012/YA2	7200	8500	67	88	1.1	0.413
6212/YA5	5700	7100	67.6	102.4	1.5	0.772
6212	5700	7100	67.6	102.4	1.5	0.793
6212/YA6	5700	7100	67.6	101	1.5	0.793
6212K	5700	7100	67.6	102.4	1.5	0.781
6312TN1	5100	6300	71	119	2	1.64
6312	5100	6300	71	119	2	1.71
6412	5100	5700	71	139	2	2.83
62/64R	5300	6600	71.6	112.4	1.5	1.06
61813	7200	8100	70.6	79.4	0.6	0.119
61913	7200	8500	71.8	83.2	1	0.195
6013	6700	8000	72	93	1.1	0.428
6013M	6700	8000	72	93	1.1	0.553
6213	5700	6500	72.6	112.4	1.5	1.00
6213F2	5700	6500	72.6	112.4	1.5	1.06
6313	5100	5900	76	129	2	2.10
6313/YA6	5100	5900	77	128	2.5	2.10

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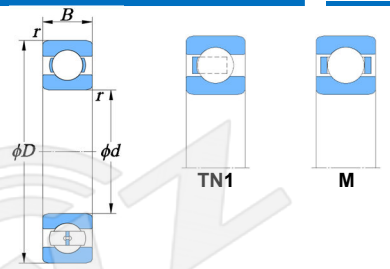
d 65～80mm



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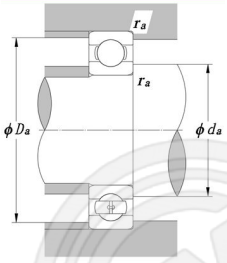
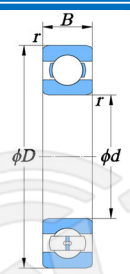
M

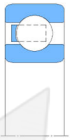


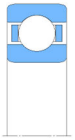
d	Principal dimensions(mm) D	B	rmin	Basic load ratings(kN) Cr	Cor	Factor f0
65	140	33	2.1	92.8	59.7	13.2
	140	33	2.1	87.5	56.4	13.3
	160	37	2.1	118	78.8	12.4
70	90	10	0.6	9.77	10.1	15.9
	100	16	1	27.2	23.4	16.1
	110	13	0.6	20.8	19.8	16.5
	110	20	1.1	33.3	27.2	15.7
	110	20	1.1	33.3	27.2	15.7
	125	24	1.5	62.2	44.0	14.4
	125	24	1.5	60.8	45.1	14.8
	125	48	1.5	143	165	14.9
	150	35	2.1	104	68.0	13.2
	150	35	2.1	104	68.0	13.2
	150	35	3	104	68.0	13.2
	150	28	2	84.3	61.0	14.3
	180	42	3	144	104	12.2
72	110	20	1.1	33.3	27.2	15.7
75	105	16	1	26.8	23.5	16.2
	115	13	1.1	25.0	24.1	16.6
	115	13	0.6	22.0	21.9	16.6
	115	13	0.6	22.0	21.9	16.6
	115	20	1.1	37.8	31.2	15.7
	115	20	1.1	37.8	31.2	15.7
	130	25	1.5	66.2	49.3	14.7
	130	25	1.5	66.2	49.3	14.7
	130	25	1.5	60.7	45.5	14.9
	130	25	1.5	60.7	45.5	14.9
	130	31	1.5	60.7	45.5	14.9
	160	37	2.1	114	77.2	13.2
	160	37	2.1	114	77.2	13.2
	190	45	3	153	114	12.2
77.5	140	26	2	65.9	50.2	15.0
80	100	10	0.6	12.8	13.3	15.9
	110	16	1	27.6	25.3	16.4
	125	14	0.6	32.0	29.5	16.3
	125	22	1.1	47.7	39.7	15.6
	125	22	1.1	47.7	39.7	15.6
	140	26	2	71.6	54.6	14.9

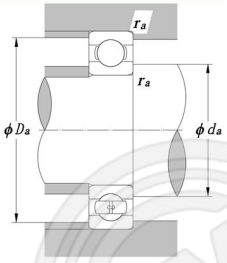
Designations	Limiting speeds(r/min) Grease	Oil	Abutment and fillet dimensions(mm) damin	Damax	ramax	Mass(kg) (approx.)
6313M	5100	5900	76	129	2	2.56
6313F2	5100	5900	76	129	2	2.16
6413	4800	6700	76	149	2	3.21
61814	6000	7500	75.6	84.4	0.6	0.146
61914	6900	8400	76.8	93.2	1	0.335
16014	5400	6700	77	103	0.6	0.458
6014M	6400	7500	77	103	1.1	0.743
6014	6400	7500	77	103	1.1	0.624
6214/YA5	5000	6200	77.6	117.4	1.5	1.10
6214	5000	6200	77.6	117.4	1.5	1.34
6214/DB	3500	6200	77.6	117.4	1.5	2.28
6314	4800	5500	81	139	2	2.57
6314TN1	4800	5500	81	139	2	2.46
6314/YA6	4800	5500	83	139	2.5	2.55
6314X2	4400	5500	79	141	2	2.25
6414	3800	4800	83	167	2.5	4.73
60/72	5300	6600	79	103	1.1	0.584
61915	6000	6700	81.8	98.2	1	0.350
16015/YA6	6000	7200	82	108	1.1	0.476
16015	6000	7200	80.6	109.4	0.6	0.583
16015M	6000	7200	80.6	109.4	0.6	0.546
6015	6000	7200	82	108	1.1	0.630
6015M	6000	7200	82	108	1.1	0.804
6215	5100	5900	82.6	122.4	1.5	1.21
6215K	5100	5900	82.6	122.4	1.5	1.16
6215M	5100	5900	82.6	122.4	1.5	1.46
6215F2	5100	5900	82.6	122.4	1.5	1.16
62215	5100	5900	82.6	122.4	1.5	1.47
6315	4600	5100	86	149	2	3.03
6315M	4600	5100	86	149	2	3.86
6415	3600	4500	88	177	2.5	5.84
62/77.5	4800	5500	86.5	131	2	1.53
61816	6400	7500	85.6	94.4	0.6	0.153
61916	6000	7200	86.8	103.2	1	0.350
16016	5700	6700	85.6	119.4	0.6	0.599
6016	5700	6700	87	118	1.1	0.860
6016M	5700	6700	87	118	1.1	1.08
6216	4800	5500	89	131	2	1.43

d 80～95mm









d	Principal dimensions(mm) D	B	r_{min}	Basic load ratings(kN) C_r	C_{or}	Factor f_0
80	170	39	2.1	123	86.4	13.2
	200	48	3	163	125	12.3
85	120	18	1.1	28.3	27.1	16.6
	130	14	0.6	31.6	29.9	16.5
	130	22	1.1	47.4	40.0	15.7
	130	22	1.1	47.4	40.0	15.7
	150	28	2	83.3	64.1	14.8
	150	28	2	78.2	58.0	14.7
	150	28	2	77.3	59.8	15.0
	150	28	1	77.3	59.8	15.0
	160	30	2	83.0	64.5	14.9
	180	41	3	133	96.4	13.2
	180	41	3	133	96.4	13.2
	210	52	4	173	136	12.3
88.9	127	19.05	1.1	28.9	28.5	16.5
90	115	13	1	19.0	19.7	16.1
	125	18	1.1	32.8	31.7	16.5
	125	18	1.1	32.8	31.7	16.5
	125	18	0.6	32.8	31.7	16.5
	140	16	1	33.6	33.4	16.5
	140	24	1.5	58.2	49.6	15.6
	140	24	1.5	58.2	49.6	15.6
	160	30	2	96.0	71.3	14.4
	190	43	3	143	107	13.3
	190	43	3	143	107	13.3
	190	45	3	143	107	13.3
	225	54	4	193	159	12.3
95	120	13	1	19.3	20.4	16.0
	130	18	1.1	33.7	33.7	16.7
	145	16	1	41.1	39.6	16.4
	145	24	1.5	57.9	49.9	15.7
	170	32	2.1	109	81.7	14.4
	170	32	2.1	109	81.7	14.4
	200	45	3	153	118	13.3
	200	45	3	143	110	13.7
	200	50	3	153	118	13.3
	240	55	4	204	172	12.4
	240	55	4	204	172	12.4

Designations	Limiting speeds(r/min) Grease	Oil	Abutment and fillet dimensions(mm) d_{amin}	D_{amax}	r_{amax}	Mass(kg) (approx.)
6316	3800	4800	91	159	2	3.69
6416	3400	4200	93	187	2.5	6.63
61917	5700	6700	92	113	1.1	0.557
16017	5300	6400	90.6	124.4	0.6	0.636
6017	5300	6400	92	123	1.1	0.935
6017M	5300	6400	92	123	1.1	1.12
6217	4600	5100	95	140	2	1.80
6217M	4600	5100	95	140	2	1.91
6217K	4600	5100	95	140	2	1.81
6217R/YA6	4600	5100	91.8	143.2	1	1.96
6317X3	4600	5300	94	151	2	2.44
6317	4100	4500	98	167	2.5	4.33
6317M	4100	4500	98	167	2.5	4.97
6417	3200	4000	101	194	3	8.12
66/88.9/YA2	4500	5600	95.9	120	1.1	0.690
61818	4700	5900	96.8	108.2	1	0.285
61918	5300	6400	97	118	1.1	0.572
61918M	5300	6400	97	118	1.1	0.680
61918/YA6	5300	6400	96.2	118.8	0.6	0.572
16018M	5100	6000	96.8	133.2	1	0.990
6018	5100	6000	97.6	132.4	1.5	1.16
6018M	5100	6000	97.6	132.4	1.5	1.39
6218	3800	4800	100	150	2	2.19
6318	3400	4200	103	177	2.5	4.97
6318M	3400	4200	103	177	2.5	6.37
6318X2	4300	4200	103	177	2.5	5.30
6418	3000	3700	106	209	3	9.58
61819	5300	6400	101.8	113.2	1	0.288
61919	5100	6000	102	123	1.1	0.610
16019	4800	5700	101.8	138.2	1	0.884
6019	4800	5700	102.6	137.4	1.5	1.14
6219	3600	4500	106	159	2	2.61
6219M	3600	4500	106	159	2	3.26
6319	3200	4000	108	187	2.5	5.84
6319M	3200	4000	108	187	2.5	7.11
6319X2K	3200	4000	108	187	2.5	6.40
6419	3700	3900	111	224	3	13.4
6419M	3700	3900	111	224	3	13.4

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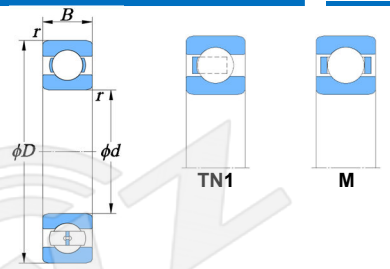
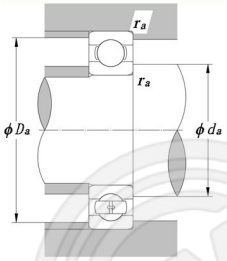
d 100～120mm





Principal dimensions(mm)				Basic load ratings(kN)		Factor	Designations	Limiting speeds(r/min)		Abutment and fillet dimensions(mm)			Mass(kg)
d	*D*	*B*	r_{min}	C_r	C_{or}	f_0		Grease	Oil	d_{amin}	D_{amax}	r_{amax}	(approx.)
100	125	13	1.5	19.7	21.2	16.0	**61820/YA6**	4300	5300	107	118.2	1.5	0.326
	125	13	1.5	19.7	21.2	16.0	**61820**	5100	6000	106.8	118.2	1.5	0.326
	140	20	1.1	34.4	35.2	16.5	**61920M**	4800	5700	107	133	1.1	0.960
	140	20	1.1	34.4	35.2	16.5	**61920**	4800	5700	107	133	1.1	0.850
	150	16	1	43.5	42.4	16.5	**16020**	4600	5300	106.8	143.2	1	0.916
	150	24	1.5	64.5	56.1	15.6	**6020/YA5**	3800	4800	107.6	142.4	1.5	1.26
	150	24	1.5	63.5	55.3	15.7	**6020**	4600	5300	107.6	142.4	1.5	1.17
	150	24	1.5	63.5	55.3	15.7	**6020M**	4600	5300	107.6	142.4	1.5	1.40
	180	28	1.8	116	91.9	14.7	**6220X2**	3400	4200	109.6	170.4	1.8	2.70
	180	34	2.1	122	92.8	14.4	**6220**	3400	4200	111	169	2	3.20
	215	47	3	173	141	13.3	**6320**	3000	3700	113	202	2.5	7.10
	215	47	3	173	141	13.3	**6320M**	3000	3700	113	202	2.5	8.94
	250	58	4	223	196	12.3	**6420**	2600	3700	116	234	3	12.8
	250	58	4	223	196	12.3	**6420M**	2600	3700	116	234	3	15.4
105	130	13	1	20.0	21.9	15.9	**61821M**	4800	5700	111.8	123.2	1	0.468
	130	13	1	20.0	21.9	15.9	**61821**	4800	5700	111.8	123.2	1	0.468
	145	20	1.1	39.6	39.7	16.6	**61921**	3800	4800	112.6	137.4	1.1	0.876
	160	26	2	75.6	66.6	15.6	**6021M/YAB**	4300	5100	115	150	2	1.88
	160	26	2	65.9	60.1	15.9	**6021**	4300	5100	115	150	2	1.65
	160	26	2	65.9	60.1	15.9	**6021M**	4300	5100	115	150	2	1.94
	180	22	1.1	61.4	58.9	16.2	**60121X1M**	4500	5300	112	173	1.1	2.55
	190	36	2.1	133	104	14.3	**6221**	3200	4000	116	179	2	3.66
	190	36	2.1	133	104	14.3	**6221M/CRA9**	3200	4000	116	179	2	4.66
	225	49	3	184	154	13.3	**6321**	2800	3500	118	212	2.5	8.05
110	140	16	1	25.0	28.2	16.0	**61822**	4600	5300	116.8	133.2	1	0.505
	150	20	1.1	43.7	44.8	16.6	**61922**	4300	5100	117	143	1.1	0.888
	150	20	1.1	43.7	44.8	16.6	**61922M**	4300	5100	117	143	1.1	1.01
	170	19	1	53.2	54.2	16.5	**16022**	4100	4800	116.8	163.2	1	1.48
	170	28	2	81.9	72.9	15.6	**6022**	4100	4800	120	160	2	2.09
	170	28	2	81.9	72.9	15.6	**6022M**	4100	4800	120	160	2	2.72
	175	31	2.3	84.2	73.6	15.6	**6022X3**	4100	4800	121	164	2	2.67
	200	38	2.1	144	117	14.3	**6222**	3000	3700	121	189	2	4.55
	200	38	2.1	133	106	14.5	**6222M**	3000	3700	121	189	2	5.46
	240	50	3	205	178	13.1	**6322**	2600	3300	123	227	2.5	9.72
	240	50	3	195	167	13.3	**6322M**	2600	3300	123	227	2.5	11.7
	280	65	4	264	249	12.2	**6422**	2300	3200	126	264	3	18.3
	280	65	4	247	225	12.5	**6422M**	2300	3200	126	264	3	19.0
120	150	16	1	24.4	28.0	15.9	**61824**	4100	4800	126.8	143.2	1	0.565

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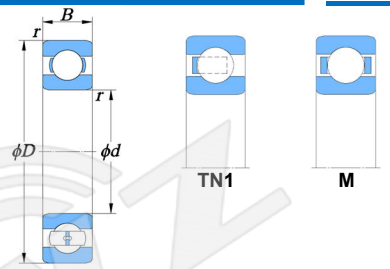
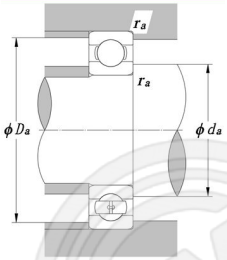
d 120～140mm

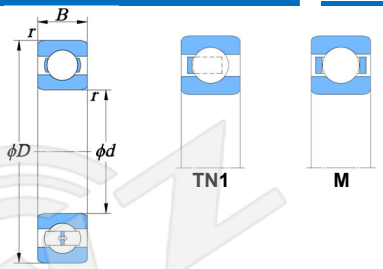


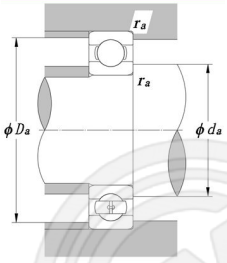


d	Principal dimensions(mm) D	B	r_{min}	Basic load ratings(kN) C_r	C_{or}	Factor f_0
120	160	24	0.6	70.5	76.4	16.3
	165	22	1.1	53.1	54.2	16.6
	165	22	1.1	53.1	54.2	16.6
	180	19	1	54.4	57.1	16.5
	180	19	1	54.4	57.1	16.5
	180	28	2	88.2	79.6	15.7
	180	28	2	85.1	78.8	15.8
	215	40	2.1	155	132	14.5
	215	40	2.1	155	132	14.5
	215	40	2.1	155	132	14.5
	260	55	3	228	207	13.1
	260	55	3	207	185	13.6
120.65	165.1	22.225	1.1	53.1	54.2	16.6
121	165	22	1.1	53.1	54.2	16.6
127	228.6	34.925	2	149	133	15.2
	165	18	1.1	36.9	41.1	16.1
130	165	18	1.1	36.9	41.1	16.1
	165	18	1.1	33.1	37.7	16.0
	180	24	1.5	65.1	67.5	16.5
	180	24	1.5	64.6	68.0	16.6
	190	19	0.7	55.5	60.3	16.6
	190	19	0.7	55.5	60.3	16.6
	200	22	1.1	62.0	67.5	16.5
	200	22	1.1	62.0	67.5	16.5
	200	33	2	102	93.6	15.7
	200	33	2	102	93.6	15.7
	230	40	3	165	148	14.8
	230	40	3	165	148	14.8
	280	58	4	252	241	13.3
	280	58	4	230	215	13.6
140	175	18	1.1	34.0	40.4	15.9
	175	18	1.1	34.0	40.4	15.9
	190	24	1.5	64.3	68.2	16.7
	190	24	1.5	64.3	68.2	16.7
	210	22	1.1	63.3	71.1	16.6
	210	22	1.1	63.3	71.1	16.6
	210	33	2	105	102	16.0
	210	33	2	105	102	16.0

Designations	Limiting speeds(r/min) Grease	Oil	Abutment and fillet dimensions(mm) d_{amin}	D_{amax}	r_{amax}	Mass(kg) (approx.)
61924X3M	3900	4600	125.6	154.4	0.6	1.19
61924	3900	4600	127	158	1.1	1.21
61924M	3900	4600	127	158	1.1	1.54
16024	3700	4300	126.8	173.2	1	1.64
16024M	3700	4300	126.8	173.2	1	1.82
6024	3700	4300	130	170	2	2.09
6024M	3700	4300	130	170	2	2.68
6224M	2800	3400	131	204	2	6.68
6224	2800	3400	131	204	2	5.26
6224M/CRA9	2800	3400	131	204	2	6.63
6324	2400	2900	133	247	2.5	12.2
6324M	2400	2900	133	247	2.5	13.7
619/121X4M	3900	4600	127.65	158.1	1.1	1.48
619/121M	3900	4600	128	158	1.1	1.48
66/127M	2600	3200	137	218.6	2	7.00
61826X5	2300	4000	134	158	1.1	0.850
61826	3900	4600	137	158	1.1	0.781
61826MA	3900	4600	137	158	1.1	0.969
61926M	3700	4300	139	171	1.5	1.92
61926	3700	4300	139	171	1.5	1.56
16026X3M	2900	3600	136	184	0.7	1.91
16026X3	3400	4100	136	184	0.7	1.70
16026M	3400	4100	137	193	1.1	2.32
16026	3400	4100	137	193	1.1	2.19
6026	3400	4100	140	190	2	3.96
6026M	3400	4100	140	190	2	3.96
6226	2800	3400	143	217	2.5	6.04
6226MA	2800	3400	143	217	2.5	7.62
6326	2200	2700	146	264	3	14.9
6326M	2200	2700	146	264	3	18.3
61828M	3700	4300	148	167	1.1	1.00
61828	3700	4300	148	167	1.1	0.822
61928	3400	4100	149	181	1.5	1.72
61928M	3400	4100	149	181	1.5	2.11
16028	3200	3900	-	-	1.1	3.08
16028M	3200	3900	148	202	1.1	3.08
6028	3200	3900	150	200	2	3.47
6028M	3200	3900	150	200	2	4.20

d 140～170mm





d	Principal dimensions(mm) D	B	r_{min}	Basic load ratings(kN) C_r	C_{or}	Factor f_0
140	250	42	3	166	150	14.9
	250	42	3	166	150	14.9
	300	62	4	275	272	13.2
	300	62	4	253	247	13.6
144	185	22	0.7	62.0	67.5	16.5
149	201	33	0.7	105	102	16.0
150	190	20	1.1	44.9	53.3	16.0
	190	20	1.1	44.9	53.3	16.0
	210	28	2	84.8	90.5	16.5
	210	28	2	84.8	90.5	16.5
	225	24	1.1	91.8	98.9	16.5
	225	24	1.1	91.8	98.9	16.5
	225	35	2.1	132	124	15.7
	225	35	2.1	123	117	15.7
	230	35	2.1	123	117	15.8
	270	45	3	189	182	14.9
	270	45	3	176	167	15.1
	320	65	4	299	308	13.2
	320	65	4	277	281	13.6
160	200	20	1.1	49.7	59.0	16.0
	200	20	1.1	48.4	56.8	16.0
	220	28	2	83.9	91.3	16.6
	220	28	2	83.9	91.3	16.6
	229.5	33	3	108	110	16.2
	240	25	1.5	94.1	106	16.7
	240	25	1.5	94.1	106	16.7
	240	38	2.1	144	137	15.7
	240	38	2.1	136	136	16.0
	290	48	3	216	219	14.9
	290	48	3	202	201	15.0
	340	68	4	309	327	13.5
	340	68	4	309	327	13.5
165	250.5	35	2.5	147	142	15.8
170	215	22	1.1	50.3	61.0	15.9
	215	22	1.1	50.3	61.0	15.9
	230	28	2	85.9	95.8	16.5
	230	28	2	85.9	95.8	16.5
	230	28	2	85.9	95.8	16.5

Designations	Limiting speeds(r/min) Grease	Oil	Abutment and fillet dimensions(mm) d_{amin}	D_{amax}	r_{amax}	Mass(kg) (approx.)
6228	2600	3200	153	237	2.5	7.41
6228M	2600	3200	153	237	2.5	9.28
6328	2000	2800	156	284	3	18.5
6328M	2000	2800	156	284	3	21.5
66/144/S2	3900	4300	150	179	0.7	1.07
66/149/S2	3200	3900	155	196.4	0.7	1.79
61830	3200	3900	158	182	1.1	1.16
61830M	3200	3900	158	182	1.1	1.50
61930	3000	3700	160	200	2	3.04
61930M	3000	3700	160	200	2	3.04
16030	2800	3400	158	217	1.1	3.15
16030M	2800	3400	158	217	1.1	3.63
6030	2800	3400	161	214	2	4.07
6030M	2800	3400	161	214	2	4.98
6030X1M	2700	3200	161	219	2	5.37
6230	2100	2600	163	257	2.5	9.96
6230M	2100	2600	163	257	2.5	11.4
6330	1800	2300	166	304	3	22.2
6330M	1800	2300	166	304	3	23.9
61832M	2800	3400	168	192	1.1	1.32
61832	2800	3400	168	192	1.1	1.21
61932	2800	3400	170	210	2	2.71
61932M	2800	3400	170	210	2	3.28
62932X3M/YA6	2700	3300	173	216.5	2.5	4.67
16032	2600	3200	169	231	1.5	3.95
16032M	2600	3200	169	231	1.5	4.60
6032	2600	3200	171	229	2	5.63
6032M	2600	3200	171	229	2	6.41
6232	1900	2400	173	277	2.5	12.2
6232M	1900	2400	173	277	2.5	14.2
6332	2000	2400	176	324	3	25.7
6332M	2000	2400	176	324	3	30.7
6633M	2400	2600	177	238.5	2	6.44
61834	2800	3400	178	207	1.1	1.65
61834M	2800	3400	178	207	1.1	2.03
61934	2600	3200	180	220	2	2.81
61934M	2600	3200	180	220	2	3.36
61934MA	2600	3200	180	220	2	3.40

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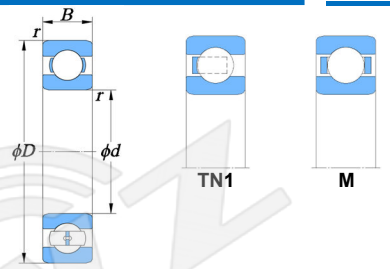
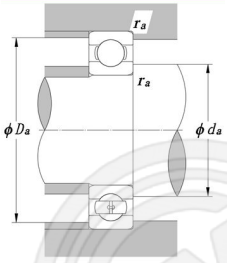
d 170～190mm





d	Principal dimensions(mm) *D*	*B*	r_{min}	Basic load ratings(kN) C_r	C_{or}	Factor f_0
170	230	38	2	85.9	95.8	16.5
	260	28	1.5	119	128	16.4
	260	28	1.5	119	128	16.4
	260	42	2.1	170	171	15.6
	260	42	2.1	170	171	15.6
	260	42	2.1	170	171	15.6
	260	42	2.1	170	171	15.6
	260	42	2.1	152	149	15.8
	310	52	4	242	257	14.9
	310	52	4	228	238	14.9
	360	72	4	336	377	13.9
	360	72	4	336	377	13.9
180	225	22	1.1	53.0	67.5	15.9
	225	22	1.1	53.0	67.5	15.9
	225	22	1.1	53.0	67.5	15.9
	250	33	2	110	120	16.5
	250	33	2	128	136	16.2
	258	52	2	119	128	16.4
	259.5	33	2	128	136	16.2
	259.5	52	2	140	147	16.2
	259.5	52	2	128	136	16.2
	280	31	2	122	137	16.6
	280	46	2.1	195	202	15.4
	280	46	2.1	174	180	15.7
	320	52	4	262	288	14.8
	320	52	4	256	279	14.9
	380	75	4	381	447	13.7
	380	75	4	355	408	13.9
190	240	24	1.5	63.2	78.5	16.0
	240	24	1.5	63.2	78.5	16.0
	259.5	33	2	126	138	16.4
	260	33	2	126	138	16.4
	269.5	33	2	126	138	16.4
	289.5	46	2.1	166	176	16.1
	290	31	2	135	156	16.6
	290	31	2	135	156	16.6
	290	46	2.1	194	204	15.6
	290	46	2.1	181	195	15.9

Designations	Limiting speeds(r/min) Grease	Oil	Abutment and fillet dimensions(mm) d_{amin}	D_{amax}	r_{amax}	Mass(kg) (approx.)
61934X2M	2200	2800	180	220	2	4.26
16034	2400	3000	179	251	1.5	5.01
16034M	2400	3000	179	251	1.5	5.83
6034M	2400	3000	181	249	2	8.23
6034MA	2400	3000	181	249	2	8.31
6034	2400	3000	181	249	2	6.78
6034Q1	2400	3000	181	249	2	7.94
6034F3	2400	3000	181	249	2	7.84
6234	2100	2600	186	294	3	15.1
6234M	2100	2600	186	294	3	17.9
6334	1900	2000	186	344	3	30.9
6334M	1900	2000	186	344	3	34.9
61836	2600	3200	188	217	1.1	1.79
61836M	2600	3200	188	217	1.1	2.05
61836MA	2600	3200	188	217	1.1	2.17
61936	2400	3000	190	240	2	4.06
61936M	2400	3000	190	240	2	5.27
63936X1M-1	2400	3000	190	248	2	8.42
61936X1M	2400	3000	190	249.5	2	6.22
63936X1F3-1	2400	3000	190	249.5	2	8.82
63936X1M	2400	3000	190	249.5	2	8.87
16036M	1900	2300	190	270	2	7.78
6036	2400	2800	191	269	2	8.83
6036M	2400	2800	191	269	2	10.7
6236	2000	2800	196	304	3	15.4
6236M	2000	2800	196	304	3	17.8
6336	1900	2100	196	364	3	38.1
6336M	1900	2100	196	364	3	44.1
61838	2400	3000	199	231	1.5	2.63
61838M	2400	3000	199	231	1.5	2.63
61938X1M-1	2400	3000	200	249.5	2	5.78
61938M	2400	3000	200	250	2	5.85
61938X1M	2400	3000	200	259.5	2	6.87
6038X1M	2200	2800	201	278.5	2	10.8
16038	2200	2800	200	280	2	6.88
16038M	2200	2800	200	280	2	8.11
6038	2200	2800	201	279	2	9.58
6038M	2200	2800	201	279	2	11.1

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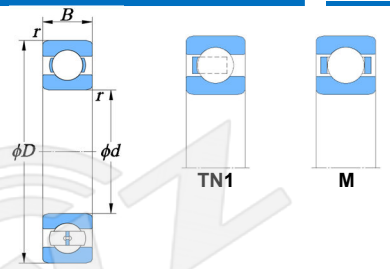
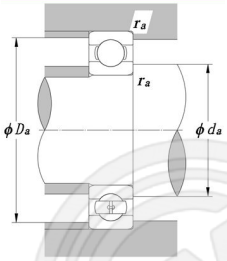
d 190～240mm





d	Principal dimensions(mm) *D*	*B*	r_{min}	Basic load ratings(kN) C_r	C_{or}	Factor f_0	Designations	Limiting speeds(r/min) Grease	Oil	Abutment and fillet dimensions(mm) d_{amin}	D_{amax}	r_{amax}	Mass(kg) (approx.)
190	340	55	4	284	322	14.8	**6238**	1900	2000	206	324	3	18.9
	340	55	4	269	302	14.9	**6238M**	1900	2000	206	324	3	22.2
	400	78	5	382	453	13.8	**6338M**	1400	1700	209	381	4	49.1
	400	78	5	382	453	13.8	**6338F3**	1400	1700	209	381	4	48.4
	400	78	5	355	417	14.2	**6338**	1400	1700	209	381	4	42.5
200	250	20	1.5	38.7	55.0	15.5	**61840X2**	1400	2400	209	241	1.5	2.10
	250	24	1.5	76.3	94.9	16.0	**61840TN1/P49YAD**	1900	2400	209	241	1.5	2.26
	250	24	1.5	65.2	84.0	15.9	**61840**	1900	2400	209	241	1.5	2.28
	250	24	1.5	60.6	75.3	15.9	**61840TN1/P49**	1900	2400	209	241	1.5	2.21
	250	24	1.5	65.2	84.0	15.9	**61840M**	1900	2400	209	241	1.5	2.92
	269.5	51	2.1	130	147	16.6	**61040X1F3**	1800	2300	211	258.5	2	7.91
	269.5	51	2.1	91.2	109	16.2	**61040X1M**	2100	2300	211	258.5	2	8.10
	279.5	38	2.1	125	144	16.5	**61940X1MA-1**	2200	2800	211	268.5	2	7.59
	280	38	2.1	125	144	16.5	**61940M**	2200	2800	211	269	2	7.31
	289.5	38	2.1	125	144	16.5	**61940X1MA**	2200	2800	211	278.5	2	8.89
	310	34	2	157	180	16.5	**16040M**	2100	2600	210	300	2	10.3
	310	51	2.1	222	245	15.5	**6040M**	2100	2600	211	299	2	14.3
	310	51	2.1	222	245	15.5	**6040**	2100	2600	211	299	2	11.7
	360	58	4	288	332	14.9	**6240**	1900	2200	216	344	3	22.3
	360	58	4	269	304	15.1	**6240M**	1900	2200	216	344	3	26.4
	420	80	5	382	463	14.2	**6340**	1700	2000	219	401	4	57.7
205	282	38	2.1	139	158	16.6	**61941X1F3**	1700	2200	216	271	2	7.06
220	270	24	1.5	65.3	86.3	15.8	**61844**	2100	2600	229	261	1.5	2.61
	270	24	1.5	66.8	89.2	15.8	**61844M**	2100	2600	229	261	1.5	3.21
	300	38	2.1	137	164	16.6	**61944M**	2100	2600	231	289	2	8.43
	300	60	2.1	147	170	16.6	**63944M**	2100	2600	231	289	2	11.8
	309.5	38	2.1	137	164	16.6	**61944X1M**	2100	2600	231	298.5	2	9.77
	340	37	2.1	181	217	16.5	**16044**	2000	2400	231	329	2	11.7
	340	56	3	246	292	15.6	**6044**	2000	2400	233	327	2.5	15.6
	340	56	3	246	292	15.6	**6044M**	2000	2400	233	327	2.5	18.8
	400	65	4	298	366	15.4	**6244**	1600	2000	236	384	3	31.2
	400	65	4	298	366	15.4	**6244M**	1600	2000	236	384	3	36.3
	460	88	5	410	528	14.5	**6344**	1400	1700	239	441	4	71.4
230	309.5	40	2.1	146	175	16.6	**6646M-1**	1700	2200	241	298.5	2	9.02
	329.5	40	2.1	191	226	16.3	**6646M**	1700	2200	241	318.5	2	10.4
240	300	28	2	87.0	116	15.9	**61848M**	2000	2400	250.6	289.4	2	4.72
	320	38	2.1	160	190	16.5	**61948MB/YA5**	2000	2400	251	309	2	8.74
	320	38	2.1	154	188	16.6	**61948M**	2000	2400	251	309	2	8.50

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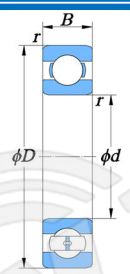
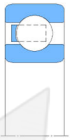
d 240～280mm

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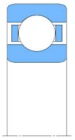
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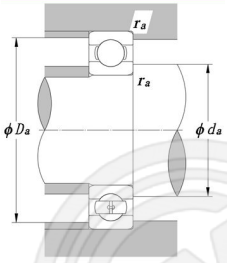

d	Principal dimensions(mm) D	B	rmin	Basic load ratings(kN) Cr	Cor	Factor f0	Designations	Limiting speeds(r/min) Grease	Oil	Abutment and fillet dimensions(mm) damin	Damax	ramax	Mass(kg) (approx.)
240	300	28	2	85.0	112	15.9	61848	1500	1900	250.6	289.4	2	4.05
	329.5	40	2.1	169	202	16.5	61948X3M	1900	2300	251	318.5	2	10.4
	320	38	2.1	154	188	16.6	61948	2000	2400	251	309	2	7.18
	359.5	56	3	245	294	15.8	6048X1M	1900	2200	253	346.5	2.5	20.7
	360	37	2.1	185	228	16.5	16048M	1900	2200	251	349	2	14.6
	360	56	3	245	294	15.8	6048	1900	2200	253	347	2.5	17.6
	360	56	3	245	294	15.8	6048M	1900	2200	253	347	2.5	20.7
	440	72	4	360	474	15.3	6248	1400	1700	256	424	3	51.8
	500	95	5	440	587	14.6	6348F3	1200	1500	259	481	4	95.0
	500	95	5	440	587	14.6	6348F1	1200	1500	259	481	4	95.0
	500	95	5	440	587	14.6	6348M	1200	1500	259	481	4	96.2
246	320	38	2.1	138	169	16.3	66/246M	1400	1800	257	308	2	7.85
260	320	28	2	94.2	128	15.8	61852M	1900	2200	270.6	309.4	2	4.80
	360	46	2.1	212	270	16.5	61952	1700	2100	271	349	2	12.0
	360	46	2.1	212	270	16.5	61952M	1700	2100	271	349	2	14.4
	360	46	2.1	212	270	16.5	61952F3	1700	2100	271	349	2	14.1
	369.5	46	2.1	212	270	16.5	61952X1M	1700	2100	271	358.5	2	16.3
	369.5	60	2.1	230	288	16.2	62952X1M-1	1700	2100	271	358.5	2	20.3
	369.5	60	2.1	220	281	16.4	62952X1F3-2	1700	2100	271	358.5	2	20.9
	369.5	68	2.1	230	288	16.2	62952X3M	1700	2100	271	358.5	2	22.9
	370	46	2.1	209	273	16.7	16052X3M	1600	2000	271	359	2	16.5
	380	56	2.1	253	322	16.1	61952X3	1200	1500	271	369	2	21.7
	380	56	2.1	253	322	16.1	61952X3F3	1200	1500	271	369	2	21.4
	399.5	65	4	294	373	15.6	6052X1F3	1600	2000	276	383.5	3	28.5
	400	44	3	227	300	16.5	16052M	1600	2000	273	387	2.5	22.3
	400	65	4	294	373	15.6	6052M	1600	2000	276	384	3	28.4
	480	80	5	436	600	15.0	6252F1	1200	1500	279	461	4	68.0
	480	80	5	435	596	14.9	6252	1200	1500	279	461	4	68.8
	480	80	5	431	591	14.9	6252F3	1200	1500	279	461	4	67.6
	540	102	6	503	707	14.5	6352F1	1100	1400	283	517	5	120
	540	102	6	503	707	14.5	6352F3	1100	1400	283	517	5	120
271	380	46	2.1	210	272	16.6	619/271M	1200	1500	282	369	2	16.7
280	350	33	2	127	170	16.0	61856	1700	2100	290.6	339.4	2	6.15
	350	33	2	127	170	16.0	61856M	1700	2100	290.6	339.4	2	7.30
	380	46	2.1	217	288	16.7	61956M	1600	2000	291	369	2	16.4
	380	46	2.1	217	288	16.7	61956F3	1600	2000	291	369	2	16.1
	389.5	46	4	217	288	16.7	61956X1M	1600	2000	296	373.5	3	18.3
	390	46	4	217	288	16.7	61956X1M-1	1600	2000	296	374	3	18.4

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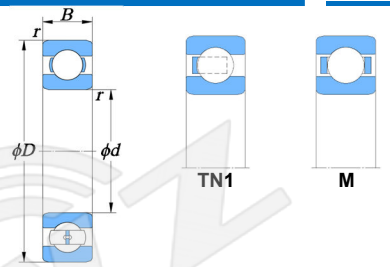
d 280～360mm



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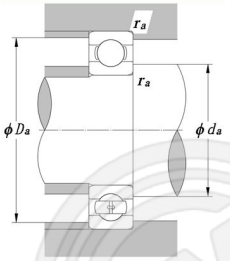

d	Principal dimensions(mm) D	B	r_{min}	Basic load ratings(kN) C_r	C_{or}	Factor f_0
280	420	44	3	217	288	16.7
	420	65	4	306	405	15.8
	500	80	5	424	602	15.4
	580	108	6	424	602	15.4
300	380	38	2.1	152	205	16.0
	419.5	56	3	269	369	16.3
	420	56	3	269	369	16.3
	420	56	3	269	369	16.3
	459.5	74	4	335	474	16.0
	460	50	4	257	365	16.6
	460	68	4	335	474	16.0
	460	74	4	335	474	16.0
	460	74	4	335	474	16.0
	460	74	4	335	474	16.0
320	400	38	2.1	155	213	15.9
	400	38	2.1	158	220	15.9
	412	38	2.5	213	292	16.3
	440	37	2.1	176	244	16.0
	440	56	3	276	396	16.5
	440	65	3	276	396	16.5
	459.5	70	4	309	441	16.2
	460	60	3	275	398	16.6
	460	70	3	309	441	16.2
	479.5	74	4	347	511	16.2
	480	50	4	300	440	16.4
	480	50	4	300	440	16.4
	480	74	4	347	511	16.2
	480	74	4	347	511	16.2
	480	74	4	347	511	16.2
340	420	38	2.1	159	227	15.9
	420	38	2.1	159	227	15.9
	459.5	56	3	283	422	16.7
	460	56	3	283	422	16.7
	460	56	3	283	422	16.7
	520	57	4	335	512	16.4
	520	82	5	404	618	16.0
360	440	38	2.1	161	234	15.8
	440	38	2.1	161	234	15.8

Designations	Limiting speeds(r/min) Grease	Oil	Abutment and fillet dimensions(mm) d_{amin}	D_{amax}	r_{amax}	Mass(kg) (approx.)
16056	1400	1700	283	417	2.5	22.5
6056	1500	1900	296	404	3	32.2
6256	1100	1400	299	481	4	72.9
6356	1100	1300	283	577	5	141
61860M	1500	1900	312	368	2	10.4
61960X1	1500	1900	314	405.5	2.5	20.6
61960	1400	1700	314	406	2.5	20.7
61960MA	1400	1700	314	406	2.5	23.8
6060X1	950	1200	316	443.5	3	48.2
16060	1300	1600	316	444	3	33.1
6060X2F3	1300	1600	316	444	3	41.5
6060	1300	1600	316	444	3	48.4
6060F3	950	1200	316	444	3	46.5
6060MA	950	1200	316	444	3	48.8
61864M	1400	1700	332	388	2	11.4
61864F3	1400	1700	331	388	2	11.1
61864X1	990	1300	332	400	2	12.7
60964MA/C4	950	1200	331	429	2	18.8
61964	1400	1700	334	426	2.5	24.9
61964X2	1400	1700	334	426	2.5	28.4
62964X3-1	910	1200	336	443.5	3	39.9
61964X3	910	1200	334	446	2.5	35.0
62964X3	1400	1700	334	446	2.5	39.9
6064X1	1200	1500	336	463.5	3	50.1
16064M	1200	1400	336	464	3	33.5
16064	1200	1400	336	464	3	34.0
6064	1200	1500	336	464	3	50.3
6064Q1	1200	1500	336	464	3	50.3
6064N1	1200	1500	336	464	3	50.9
61868	1300	1600	352	408	2	11.6
61868MA	1300	1600	352	408	2	11.8
61968X1MA	880	1100	354	445.5	2.5	27.8
61968	1200	1500	354	446	2.5	27.0
61968MA	1200	1500	354	446	2.5	27.6
16068	1100	1300	356	504	3	44.9
6068	1100	1400	359	501	4	63.4
61872	1200	1500	372	428	2	12.4
61872MA	1200	1500	372	428	2	12.5

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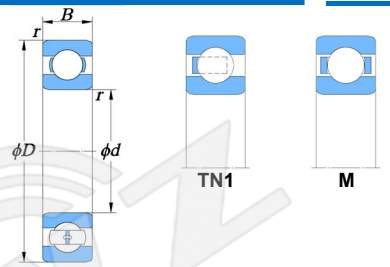
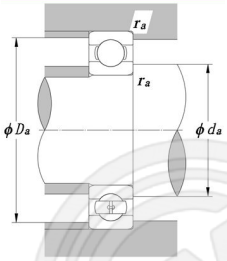
d 360～420mm

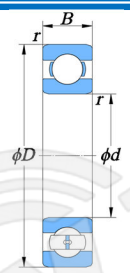


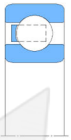


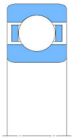
d	Principal dimensions(mm) D	B	r_{min}	Basic load ratings(kN) C_r	C_{or}	Factor f_0
360	480	56	3	289	441	16.5
	480	56	3	289	441	16.5
	480	56	3	289	441	16.5
	509.5	70	3	335	513	16.4
	509.5	76	3	335	513	16.4
	530	82	5	402	622	16.1
	539.5	82	5	402	624	16.1
	540	57	4	345	547	16.6
	540	82	5	402	624	16.1
	540	82	5	402	624	16.1
	540	82	5	402	624	16.1
360.5	540	82	5	402	624	16.1
380	480	46	2.1	215	314	16.0
	480	46	2.1	215	314	16.0
	480	46	2.1	215	314	16.0
	509	65	4	297	456	16.5
	520	44	3	242	365	16.0
	520	65	4	337	539	16.6
	520	65	4	296	464	16.6
	520	65	4	296	464	16.6
	559.5	82	5	415	667	16.2
	560	57	4	342	551	16.7
	560	82	5	415	667	16.2
	560	82	5	415	667	16.2
	560	82	5	415	667	16.2
	560	82	5	415	667	16.2
400	500	46	2.1	211	313	15.9
	500	46	2.1	211	313	15.9
	540	65	4	355	582	16.5
	540	65	4	355	582	16.5
	540	65	4	355	582	16.5
	540	65	4	355	582	16.5
	600	90	5	475	788	16.1
	600	90	5	475	788	16.1
	600	90	5	475	788	16.1
	720	130	6	670	1150	15.3
418.5	599	75	4	408	677	16.4
420	520	46	2.1	246	378	16.0

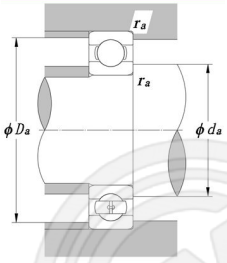
Designations	Limiting speeds(r/min) Grease	Oil	Abutment and fillet dimensions(mm) d_{amin}	D_{amax}	r_{amax}	Mass(kg) (approx.)
61972	1200	1500	374	466	2.5	28.5
61972MA	1200	1500	374	466	2.5	29.3
61972F3	1200	1500	374	466	2.5	27.9
62972X3	1100	1400	374	495.5	2.5	48.0
62972X3-1	780	980	374	495.5	2.5	51.4
6072X1	1100	1400	379	511	4	59.8
6072X11M	750	930	379	520.5	4	65.4
16072	1100	1300	376	524	3	48.4
6072F3	1100	1400	379	521	4	64.7
6072M	1100	1400	379	521	4	65.7
6072F1	1100	1400	379	521	4	64.7
6072X4M	750	930	379.5	521	4	66.3
61876M	800	990	392	468	2	19.3
61876F3	800	990	392	468	2	19.0
61876F1	800	990	392	468	2	19.0
61976X1	760	950	396	493	3	36.4
60976	1100	1400	392	508	2.5	29.2
61976	750	930	396	504	3	39.8
61976F3/YAD	750	930	396	504	3	39.5
61976/YA5	750	930	396	504	3	40.8
6076X1	700	870	399	540.5	4	69.0
16076	1000	1200	396	544	3	51.3
6076F3	1010	1300	399	541	4	65.6
6076N1	1010	1300	399	541	4	69.3
6076	1010	1300	399	541	4	69.3
6076M	1010	1300	399	541	4	66.4
61880	1060	1300	403	497	2	21.0
61880MA	1060	1300	412	488	2	20.2
61980Q1A	1010	1300	416	524	3	44.3
61980	1010	1300	416	524	3	43.6
61980MA	1010	1300	416	524	3	44.3
61980F3	1010	1300	416	524	3	39.4
6080F3	960	1200	419	581	4	86.5
6080M	960	1200	419	581	4	87.9
6080F1	960	1200	419	581	4	86.5
61280X2MA	800	960	423	697	5	250
66/418.5	620	770	434.5	583	3	69.4
61884F3A	1040	1400	432	508	2	22.5

d 420～500mm





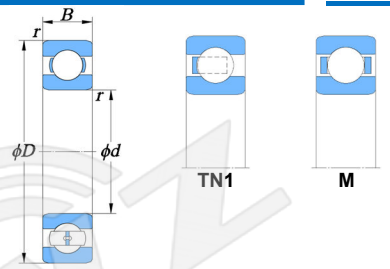


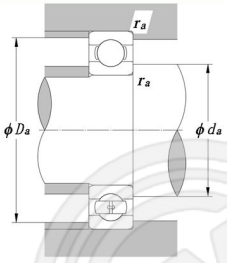


Principal dimensions(mm)				Basic load ratings(kN)		Factor
d	*D*	*B*	r_{min}	C_r	C_{or}	f_0
420	520	46	2.1	246	378	16.0
	520	46	2.1	246	378	16.0
	560	65	4	319	519	16.3
	560	65	4	319	519	16.3
	580	70	4	379	635	16.6
	620	90	5	471	789	16.1
	620	90	5	418	721	16.6
440	540	31	2	197	294	15.7
	540	46	2.1	222	345	15.8
	600	50	4	297	489	16.0
	600	74	4	380	654	16.6
	600	74	4	380	654	16.6
	650	94	6	510	883	16.2
460	580	56	3	268	433	15.9
	580	56	3	268	433	15.9
	580	56	3	268	433	15.9
	580	58	3	268	433	15.9
	600	50	4	288	469	16.0
	620	72	4	408	712	16.5
	620	74	4	408	712	16.5
	620	74	4	390	688	16.6
	620	74	4	390	688	16.6
	620	74	4	390	688	16.6
	680	100	6	591	1070	16.0
	680	100	6	526	942	16.2
	680	100	6	526	942	16.2
	680	100	6	526	942	16.2
480	600	56	3	271	448	15.9
	600	56	3	271	448	15.9
	650	78	5	418	751	16.6
	650	78	5	418	751	16.6
	700	100	6	523	947	16.3
500	620	37	2.1	275	463	15.8
	620	56	3	330	576	16.0
	620	56	3	275	463	15.8
	620	56	3	275	463	15.8
	660	75	5	395	706	16.2
	660	75	5	395	706	16.2

Designations	Limiting speeds(r/min)		Abutment and fillet dimensions(mm)			Mass(kg)
	Grease	Oil	d_{amin}	D_{amax}	r_{amax}	(approx.)
61884	1040	1400	432	508	2	22.2
61884MA	1040	1400	432	508	2	23.0
61984F3	960	1200	436	544	3	41.9
61984MA	960	1200	436	544	3	46.2
6684N1	630	790	436	564	3	75.1
6084M	960	1200	439	601	4	92.0
6084	960	1200	439	601	4	89.3
60888	930	1100	443	537	2	16.5
61888	930	1100	452	528	2	22.3
60988	930	1100	456	584	3	46.1
61988F3	960	1200	456	584	3	60.5
61988	960	1200	456	584	3	61.6
6088	910	1100	463	627	5	108
61892	960	1200	474	566	2.5	34.3
61892Q1	960	1200	474	566	2.5	36.6
61892MA	960	1200	474	566	2.5	34.7
61892X2	1170	750	474	566	2.5	35.7
60992X1	590	730	476	584	3	39.9
61992X2MA	910	1100	476	604	3	62.8
61992MAN1	910	1100	476	604	3	64.1
61992	910	1100	476	604	3	63.0
61992MA	910	1100	476	604	3	64.3
61992F3	910	1100	476	604	3	63.0
6092N1MS	850	1100	483	657	5	126
6092F3	850	1100	483	657	5	121
6092F1	850	1100	483	657	5	121
6092M	850	1100	483	657	5	123
61896MA	930	1200	494	586	2.5	35.8
61896	930	1200	494	586	2.5	35.4
61996	850	1100	499	631	4	75.6
61996F3	850	1100	499	631	4	74.1
6096	790	960	503	677	5	133
608/500	850	1100	503	617	2	20.0
618/500Q1	850	1100	514	606	2.5	37.8
618/500M	850	1100	514	606	2.5	37.3
618/500F3	850	1100	514	606	2.5	36.7
619/500X3F3	800	960	519	641	4	68.8
619/500X3F1	800	960	519	641	4	68.8

d 500～600mm





d	Principal dimensions(mm) *D*	*B*	r_{min}	Basic load ratings(kN) C_r	C_{or}	Factor f_0
500	670	78	5	429	790	16.6
	670	78	5	429	790	16.6
	670	78	5	429	790	16.6
	670	78	5	429	790	16.6
	720	100	6	540	1020	16.4
	720	100	6	540	1020	16.4
	720	100	6	540	1020	16.4
530	650	56	3	278	477	15.8
	650	56	3	278	477	15.8
	650	56	3	278	477	15.8
	650	56	3	278	477	15.8
	710	57	4	286	507	15.7
	710	82	5	471	899	16.6
	710	82	5	471	899	16.6
	710	82	5	471	899	16.6
	710	82	5	471	899	16.6
	758	100	6	580	1130	16.4
	760	100	6	580	1130	16.4
	760	100	6	580	1130	16.4
	780	112	6	680	1300	16.0
	780	112	6	680	1300	16.0
540	800	115	6	644	1270	16.2
560	680	37	2.1	628	1180	16.1
	680	56	3	292	523	15.7
	680	56	3	292	523	15.7
	680	56	3	292	523	15.7
	680	56	3	292	523	15.7
	750	85	5	478	923	16.3
	750	85	5	478	923	16.3
	820	115	6	734	1500	16.1
	820	115	6	666	1370	16.4
	820	115	6	666	1370	16.4
570	799	115	6	642	1270	16.3
600	730	42	3	264	483	15.6
	730	42	3	264	483	15.6
	730	60	3	330	615	15.8
	730	60	3	330	615	15.8
	730	60	3	330	615	15.8

Designations	Limiting speeds(r/min) Grease	Oil	Abutment and fillet dimensions(mm) d_{amin}	D_{amax}	r_{amax}	Mass(kg) (approx.)
619/500N1MAS	810	960	519	651	4	79.8
619/500Q1A	810	960	519	651	4	79.8
619/500F3	810	960	519	651	4	79.7
619/500	810	960	519	651	4	79.0
60/500	800	960	523	697	5	135
60/500F3	800	960	523	697	5	134
60/500N1MAS	800	960	523	697	5	136
618/530F1	800	960	544	636	2.5	41.1
618/530MA	800	960	544	636	2.5	42.1
618/530M	800	960	544	636	2.5	41.7
618/530F3	800	960	544	636	2.5	41.1
609/530	750	910	533	707	3	60.0
619/530F3	750	910	549	691	4	91.6
619/530F1	750	910	549	691	4	91.6
619/530	750	910	549	691	4	88.5
619/530MA	750	910	549	691	4	93.9
60/530X3	730	880	553	735	5	149
60/530X3-1	730	880	553	737	5	153
60/530X3F3-1	450	560	553	737	5	151
60/530N1MA	720	860	553	757	5	185
60/530	720	860	553	757	5	188
60/540X3F3	420	520	563	777	5	208
608/560	760	920	563	677	2	30.0
618/560F3	750	910	574	666	2.5	42.1
618/560F1	750	910	574	666	2.5	42.1
618/560MA	750	910	574	666	2.5	42.7
618/560	750	910	574	666	2.5	42.8
619/560F1	720	850	579	731	4	110
619/560F3	720	850	579	731	4	110
60/560N1MAS	670	800	583	797	5	208
60/560F3	670	800	583	797	5	205
60/560F1	670	800	583	797	5	205
66/570X1M	510	640	593	776	5	181
608/600	720	850	613	717	2.5	41.0
608/600MA	720	850	613	717	2.5	40.0
618/600	720	850	613	717	2.5	52.7
618/600F3	720	850	613	717	2.5	51.9
618/600MA	720	850	613	717	2.5	53.5

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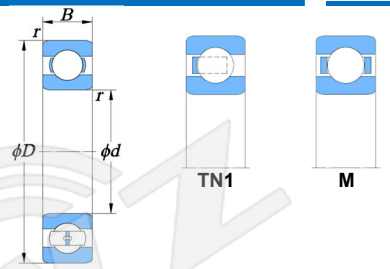
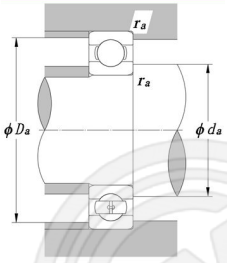
d 600～800mm





d	Principal dimensions(mm) *D*	*B*	r_{min}	Basic load ratings(kN) C_r	C_{or}	Factor f_0
600	800	90	5	537	1080	16.6
	869	110	6	683	1450	16.6
	870	118	6	728	1510	16.2
	870	118	6	683	1450	16.6
	870	118	6	683	1450	16.6
	870	118	6	683	1450	16.6
600.3	819	90	5	564	1140	16.6
	819	90	5	564	1140	16.6
630	780	48	3	366	710	15.8
	780	69	4	391	758	15.9
	780	69	4	391	758	15.9
	780	69	4	391	758	15.9
	850	100	6	628	1330	16.5
	899	128	7.5	721	1520	16.4
	920	128	7.5	747	1630	16.5
650	900	118	6	698	1500	16.6
	920	118	6	746	1630	16.5
670	820	69	4	393	781	15.8
	820	69	4	393	781	15.8
	820	69	4	393	781	15.8
	820	69	4	393	781	15.8
	820	69	4	393	781	15.8
	900	103	6	671	1470	16.6
	980	136	7.5	838	1900	16.4
	980	136	7.5	838	1900	16.4
710	870	74	4	438	906	15.8
	870	74	4	438	906	15.8
	870	74	4	438	906	15.8
	950	106	6	715	1620	16.6
	1030	140	7.5	960	2190	16.1
750	810	50	2.1	135	311	15.1
	920	78	5	517	1110	15.9
	920	78	5	517	1110	15.9
	1000	112	6	785	1820	16.5
	1090	150	7.5	805	1920	16.6
800	980	57	4	407	885	15.6
	980	57	4	407	885	15.6
	980	82	5	531	1190	15.8

Designations	Limiting speeds(r/min) Grease	Oil	Abutment and fillet dimensions(mm) d_{amin}	D_{amax}	r_{amax}	Mass(kg) (approx.)
619/600MA	390	490	619	781	4	133
60/600X3	360	450	623	846	5	219
60/600/HCE-1	640	750	623	847	5	236
60/600	640	750	623	847	5	233
60/600MA	640	750	619	851	5	245
60/600/HC	640	750	623	847	5	233
66/600.3/HCYA13	690	800	619.3	800	4	147
66/600.3	690	800	619.3	800	4	146
608/630	680	810	644	766	2.5	55.3
618/630	670	800	646	764	3	76.5
618/630MA	670	800	646	764	3	77.8
618/630L	670	800	646	764	3	65.7
619/630	640	760	653	827	5	165
60/630X1	340	420	658	871	6	269
60/630F3	590	700	658	892	6	298
66/650X1	330	410	673	877	5	229
66/650N1	590	700	673	897	5	254
618/670	600	720	686	804	3	82.2
618/670F3	600	720	686	804	3	80.8
618/670Q1	600	720	686	804	3	82.8
618/670F1	350	440	686	804	3	80.8
618/670MA	350	440	686	804	3	79.2
619/670MA	570	670	693	877	5	194
60/670F3	530	640	698	952	6	361
60/670N1	530	640	698	952	6	366
618/710F3	570	670	726	854	3	96.1
618/710	570	670	726	854	3	98.1
618/710MA	570	670	726	854	3	96.2
619/710	290	360	733	927	5	218
60/710	270	330	738	1002	6	396
66/750	330	410	762	798	2	22.7
618/750	510	650	769	901	4	114
618/750MA	510	650	769	901	4	113
619/750	520	610	773	977	5	250
60/750	480	570	753	1087	6	490
608/800MA	250	320	816	964	3	102
608/800	250	320	816	964	3	102
618/800MA	460	550	819	961	4	133

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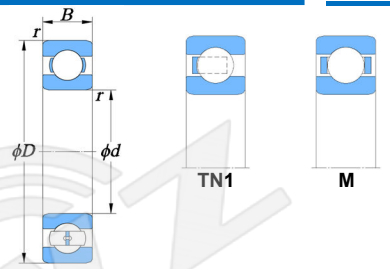
d 800～1120mm



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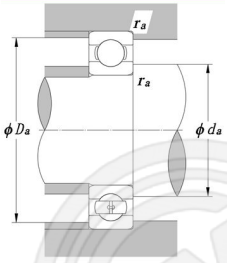
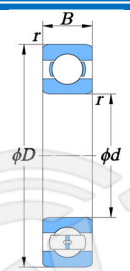
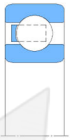


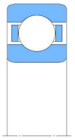
d	Principal dimensions(mm) *D*	*B*	r_{min}	Basic load ratings(kN) C_r	C_{or}	Factor f_0
800	1060	115	6	804	1930	16.6
	1060	115	6	804	1930	16.6
	1060	115	6	804	1930	16.6
	1150	115	7.5	843	2080	16.3
	1150	155	7.5	817	1980	16.3
830	1010	82	5	538	1220	15.8
850	1030	82	5	560	1300	15.8
	1030	82	5	548	1260	15.8
	1030	82	5	560	1300	15.8
	1030	82	5	560	1300	15.8
900	1090	85	5	602	1430	15.8
	1090	85	5	602	1430	15.8
	1180	122	6	856	2160	16.2
	1180	122	6	856	2160	16.2
	1280	170	7.5	869	2240	16.1
950	1150	90	5	659	1610	15.8
	1150	90	5	659	1610	15.8
	1150	90	5	659	1610	15.8
	1150	90	5	659	1610	15.8
	1200	90	5	659	1610	15.8
	1250	132	7.5	935	2430	16.2
	1360	180	7.5	1180	3240	16.5
960	1160	90	5	632	1550	15.8
980	1180	100	6	672	1670	15.8
1000	1220	100	6	682	1720	15.8
	1220	100	6	682	1720	15.8
	1220	100	6	682	1720	15.8
	1320	103	6	706	1830	15.7
	1320	140	7.5	952	2530	16.1
1060	1280	100	6	733	1910	15.8
	1280	100	6	733	1910	15.8
	1400	150	7.5	758	2030	15.7
	1500	195	9.5	1310	3800	16.5
1100	1200	50	2.1	326	819	15.2
1120	1360	106	6	912	2500	15.9
	1360	106	6	912	2500	15.9
	1460	150	7.5	922	2580	15.9
	1580	200	9.5	932	2660	15.8

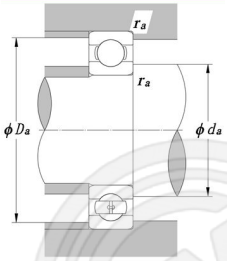
Designations	Limiting speeds(r/min) Grease	Oil	Abutment and fillet dimensions(mm) d_{amin}	D_{amax}	r_{amax}	Mass(kg) (approx.)
619/800	460	530	823	1037	5	280
619/800MA	460	530	823	1037	5	279
619/800F3	460	530	823	1037	5	289
160/800X2F3	530	590	828	1122	6	427
60/800	430	510	803	1147	6	540
618/830X1MA	240	300	849	991	4	137
618/850	480	570	869	1011	4	151
618/850MA	480	570	869	1011	4	141
618/850F1	480	570	869	1011	4	147
618/850F3	480	570	869	1011	4	144
618/900F3	410	480	919	1071	4	155
618/900MA	410	480	919	1071	4	159
619/900Q1	390	470	923	1157	5	375
619/900	390	470	923	1157	5	375
60/900	350	440	903	1277	6	725
618/950	390	460	969	1131	4	191
618/950F1	390	460	969	1131	4	188
618/950F3	390	460	969	1131	4	188
618/950MA	390	460	969	1131	4	196
618/950X1F3	390	460	969	1181	4	252
619/950	180	220	978	1222	6	460
60/950	330	410	978	1332	6	877
66/960MA	390	460	979	1141	4	197
618/980Q1	180	230	1003	1157	5	216
618/1000F1	370	430	1023	1197	5	230
618/1000F3	370	430	1023	1197	5	230
618/1000MA	370	430	1023	1197	5	234
609/1000	350	410	1023	1297	5	405
619/1000	350	410	1028	1292	6	548
618/1060MA	330	380	1083	1257	5	266
618/1060	330	380	1083	1257	5	262
619/1060	310	350	1063	1397	6	615
60/1060	280	340	1093	1467	8	1140
66/1100	170	210	1109	1191	2	58.2
618/1120	310	380	1143	1337	5	310
618/1120M	310	380	1143	1337	5	313
619/1120	290	350	1123	1457	6	640
60/1120	270	320	1123	1577	8	1250

d 1180～1720mm





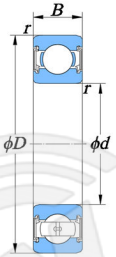


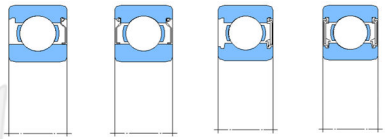


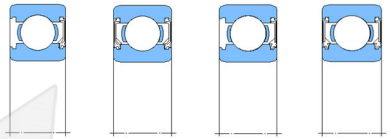
Principal dimensions(mm)				Basic load ratings(kN)		Factor	Designations	Limiting speeds(r/min)		Abutment and fillet dimensions(mm)			Mass(kg)
d	*D*	*B*	r_{min}	C_r	C_{or}	f_0		Grease	Oil	d_{amin}	D_{amax}	r_{amax}	(approx.)
1180	1420	106	6	922	2580	15.9	618/1180M	340	390	1203	1397	5	317
	1420	106	6	922	2580	15.9	618/1180Q1	340	390	1203	1397	5	317
	1420	106	6	922	2580	15.9	618/1180F3	340	390	1203	1397	5	310
1240	1480	112	6	932	2660	15.8	618/1240X1	320	370	1263	1457	5	356
1250	1500	112	6	885	2480	15.8	618/1250M	230	290	1273	1477	5	390
	1750	218	9.5	1600	5070	16.6	60/1250M	220	270	1283	1717	8	1710
	1750	218	9.5	1600	5070	16.6	60/1250F3	220	270	1283	1717	8	1660
1280	1560	150	6	946	2750	15.8	66/1280F1	240	300	1303	1537	5	606
1320	1600	80	6	675	1980	15.4	608/1320X2	140	170	1343	1577	5	354
	1600	122	6	958	2830	15.7	618/1320F3	220	280	1343	1577	5	512
	1600	150	6	958	2830	15.7	618/1320X2F1	220	280	1343	1577	5	520
	1720	128	7.5	1060	3230	15.8	609/1320M	130	160	1348	1692	6	858
	1720	175	7.5	1140	3510	15.9	619/1320	390	480	1348	1692	6	835
	1720	175	7.5	1140	3510	15.9	619/1320F3	390	480	1348	1692	6	1110
1400	1700	132	7.5	977	3000	15.7	618/1400F3	210	250	1428	1672	6	635
	1700	132	7.5	977	3000	15.7	618/1400	210	250	1428	1672	6	620
	1820	185	9.5	1140	2840	16.2	619/1400	200	250	1403	1817	8	1260
1420	1800	175	7.5	1580	5130	16.2	66/1420F3	120	150	1448	1772	6	1080
1500	1820	140	7.5	1210	3890	15.8	618/1500	120	150	1528	1792	6	762
	1820	140	7.5	1210	3890	15.8	618/1500MA	190	230	1528	1792	6	768
	1950	195	9.5	1780	6060	16.2	619/1500	170	210	1503	1947	8	1520
	2000	218	9.5	1850	6370	16.3	619/1500X3	110	140	1533	1967	8	1960
1600	1950	155	7.5	1320	4440	15.8	618/1600	160	200	1628	1922	6	975
	2060	200	9.5	1820	6320	16.2	619/1600	280	320	1633	2027	8	1710
	2060	200	9.5	1820	6320	16.2	619/1600F3	280	320	1633	2027	8	1680
1700	2060	160	7.5	1270	4390	15.7	618/1700MA	140	170	1728	2032	6	1090
	2060	160	7.5	1270	4390	15.7	618/1700Q1	140	170	1728	2032	6	1070
	2180	212	9.5	1900	6860	16.1	619/1700	130	160	1703	2177	8	1930
1720	2090	165	7.5	1270	4380	15.7	618/1720MA	130	150	1748	2062	6	1190

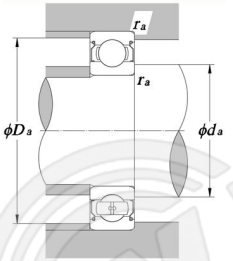
1.2 Deep Groove Ball Bearings with Shield or Seal

d 10～35mm



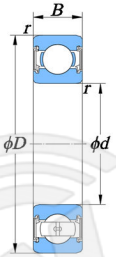


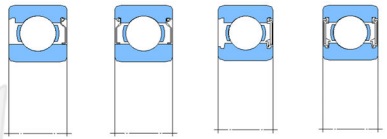


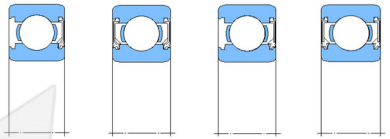


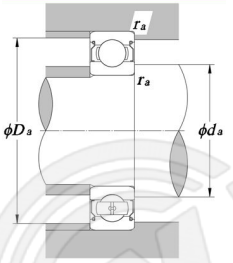
Principal dimensions(mm)				Basic load ratings(kN)		Factor	Limiting speeds(r/min)				Designations				Abutment and fillet dimensions(mm)				Mass(kg) (approx.)
d	*D*	*B*	r_{min}	C_r	C_{or}	f_o	Grease (-Z、-2Z、-RZ、-2RZ)	Grease (-RT、-2RT)	Grease (-RS、-2RS)	Oil (-Z)					d_{amin}	d_{amax}	D_{amax}	r_{amax}	
10	26	8	0.3	4.56	1.96	12.3	24000	21000	17000	30000	6000-2Z	6000-2RS	6000-2RT	6000-2RZ	12.2	13	23.8	0.3	0.0191
	30	9	0.6	5.88	2.61	12.3	27000	24000	19000	33000	6200-2Z	6200-2RS	6200-2RT	6200-2RZ	13	14.7	27	0.6	0.0270
12	28	8	0.3	4.63	2.15	13.3	22000	20000	16000	27000	6001-2Z	6001-2RS	6001-2RT	6001-2RZ	14.2	16.5	25.8	0.3	0.0228
	32	10	0.6	6.84	3.08	12.4	26000	23000	18000	32000	6201-2Z	6201-2RS	6201-2RT	6201-2RZ	15	17	29	0.6	0.0373
15	32	9	0.3	5.60	2.82	13.8	19000	17000	14000	24000	6002-2Z	6002-2RS	6002-2RT	6002-2RZ	17.2	19.1	29.8	0.3	0.0282
	35	11	0.6	7.65	3.73	13.1	24000	22000	17000	30000	6202-2Z	6202-2RS	6202-2RT	6202-2RZ	18	20	32	0.6	0.0450
	42	13	1	10.5	4.94	12.4	21000	19000	15000	26000	6302-2Z	6302-2RS	6302-2RT	6302-2RZ	19	24	38	1	0.0895
17	35	10	0.3	6.81	3.38	13.7	18000	16000	13000	22000	6003-2Z	6003-2RS	6003-2RT	6003-2RZ	19.6	22.4	32.4	0.3	0.0386
	40	12	0.6	9.58	4.79	13.1	22000	20000	16000	27000	6203-2Z	6203-2RS	6203-2RT	6203-2RZ	20	24.8	37	0.6	0.0665
	47	14	1	13.6	6.57	12.3	19000	17000	14000	24000	6303-2Z	6303-2RS	6303-2RT	6303-2RZ	21	26.8	43	1	0.114
20	32	7	0.3	3.49	2.22	15.8	18000	16000	13000	22000	61804-2Z	61804-2RS	61804-2RT	61804-2RZ	22.2	23.8	29.8	0.3	0.0195
	42	12	0.6	9.39	5.01	13.8	21000	19000	15000	26000	6004-2Z	6004-2RS	6004-2RT	6004-2RZ	23	25.9	39	0.6	0.0704
	47	14	1	12.8	6.61	13.1	19000	17000	13500	24000	6204-2Z	6204-2RS	6204-2RT	6204-2RZ	24	26.1	43	1	0.111
	52	15	1.1	13.8	6.94	13.0	18000	16000	12400	22000	6304-2Z	6304-2RS	6304-2RT	6304-2RZ	25	29.5	47	1.1	0.152
	62	16	1	17.6	10.3	14.1	16000	-	-	19000	6304X3-2Z	-	-	-	24	39.3	58	1	0.255
22	56	16	1.1	18.5	9.30	12.5	13000	11000	8700	16000	63/22-2Z	63/22-2RS	63/22-2RT	63/22-2RZ	27	30.7	51	1.1	0.183
23	52	13	1	17.7	9.40	13.0	13000	12000	9000	16000	62/23-2Z	62/23-2RS	62/23-2RT	62/23-2RZ	27	31.8	48	1	0.117
25	37	7	0.3	3.69	2.62	16.3	16000	14000	11000	19000	61805-2Z	61805-2RS	61805-2RT	61805-2RZ	27.2	29.2	34.8	0.3	0.0224
	47	12	0.6	10.1	5.84	14.5	19000	17000	13500	24000	6005-2Z	6005-2RS	6005-2RT	6005-2RZ	28	30.2	44	0.6	0.0783
	52	15	1	14.2	7.95	13.8	18000	16000	12400	22000	6205-2Z	6205-2RS	6205-2RT	6205-2RZ	29	32.3	48	1	0.135
	62	16	0.4	22.4	11.5	12.4	16000	-	10700	19000	6305TN1-2Z	6305TN1-2RS	-	-	27	32.5	60	0.4	0.211
	62	17	1.1	22.4	11.5	12.4	16000	13500	10700	19000	6305-2Z	6305-2RS	6305-2RT	6305-2RZ	30	33.9	57	1.1	0.218
	80	21	1.5	30.0	16.0	12.6	11900	10700	8500	15000	6405-2Z	6405-2RS	6405-2RT	6405-2RZ	30.6	40.9	74.4	1.5	0.563
28	58	16	1.1	16.7	9.50	13.8	12000	10000	7900	14000	62/28-2Z	62/28-2RS	62/28-2RT	62/28-2RZ	33	36.3	53	1.1	0.179
	68	18	1.1	23.6	13.1	13.3	13900	12400	9800	18000	63/28-2Z	63/28-2RS	63/28-2RT	63/28-2RZ	33	40.6	63	1.1	0.292
30	55	13	1	11.9	7.48	14.9	12000	10100	8000	15000	6006-2Z	6006-2RS	6006-2RT	6006-2RZ	34	36.9	51	1	0.118
	62	16	1	19.5	11.2	13.8	16000	13500	10700	19000	6206-2Z	6206-2RS	6206-2RT	6206-2RZ	34	38.8	58	1	0.207
	62	16	1.5	23.4	12.9	13.0	-	-	10700	-	-	6206-2RS3/SHYAB	-	-	35.4	18	56.6	1.5	0.193
	72	19	1.1	26.7	15.0	13.2	13100	11800	9300	17000	6306-2Z	6306-2RS	6306-2RT	6306-2RZ	35	43.4	67	1.1	0.357
	72	19	1.1	28.2	15.8	13.1	13100	-	-	17000	6306TN1-2Z/YA5	-	-	-	35	43.4	67	1.1	0.328
	72	19	0.6	30.0	15.9	12.5	-	-	9300	-	-	6306-2RS3/SHYAB	-	-	33	40.8	65	0.6	0.340
	72	19	1.1	26.7	15.0	13.2	13100	-	-	-	-	-	-	6306KA-RZ	35	43.4	67	1.1	0.339
	75	20	0.3	32.8	17.6	12.3	-	-	9000	-	-	6306X3-2RS	-	-	32.6	42.4	69	0.3	0.477
	90	23	1.5	40.0	21.9	12.4	10700	9600	7600	14000	6406-2Z	6406-2RS	6406-2RT	6406-2RZ	35.6	47	84.4	1.5	0.764
32	75	20	1.5	28.3	16.0	13.2	9000	8100	6400	12000	63/32-2Z	63/32-2RS	63/32-2RT	63/32-2RZ	38.6	44.6	68.4	1.5	0.413
	80	23	0.3	36.3	19.6	12.3	-	-	8500	-	-	63/32X3-2RS	-	-	35.6	45.5	72	0.3	0.534
33	72	17	1.1	22.5	13.6	14.2	9200	8200	6500	12000	62/33-2Z	62/33-2RS	62/33-2RT	62/33-2RZ	39	44.9	66	1.1	0.308
35	62	14	1	16.0	10.3	14.9	9900	8900	7100	13000	6007-2Z	6007-2RS	6007-2RT	6007-2RZ	40	41.8	57	1	0.154
	64	14	1	16.0	10.3	14.9	-	-	10400	-	-	6007X1-2RS/C3	-	-	40	41.8	59	1	0.196
	72	17	1.1	25.7	15.3	13.7	13100	11800	9300	17000	6207-2Z	6207-2RS	6207-2RT	6207-2RZ	41	44.9	66	1.1	0.397

d 35～60mm



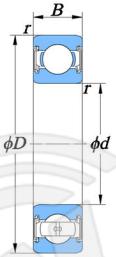


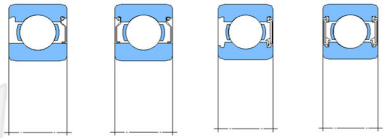


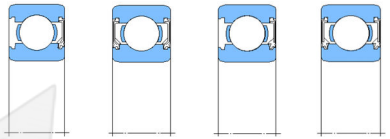


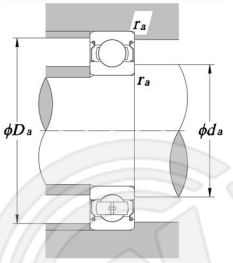
Principal dimensions(mm)				Basic load ratings(kN)		Factor	Limiting speeds(r/min)				Designations				Abutment and fillet dimensions (mm)				Mass(kg) (approx.)
d	*D*	*B*	r_{min}	C_r	C_{or}	f_o	Grease (-Z、-2Z、-RZ、-2RZ)	Grease (-RT、-2RT)	Grease (-RS、-2RS)	Oil (-Z)					d_{amin}	d_{amax}	D_{amax}	r_{amax}	
35	72	17	1.1	25.7	15.3	13.7	13100	-	-	-	-	-	-	6207NKTN1-2RZ	41	43.3	66	1.1	0.278
	80	21	1.5	33.4	19.2	13.2	11900	-	-	15000	6307TN1-2Z/YAB	-	-	-	41.6	48.9	73.4	1.5	0.452
	80	21	1.5	33.4	19.2	13.2	11900	10700	8500	15000	6307-2Z	6307-2RS	6307-2RT	6307-2RZ	41.6	48.9	73.4	1.5	0.476
	100	25	1.5	51.6	29.0	12.4	9600	8600	6800	12000	6407-2Z	6407-2RS	6407-2RT	6407-2RZ	41.6	57	93.4	1.5	0.976
40	68	15	1	16.8	11.6	15.3	8900	8000	6300	12000	6008-2Z	6008-2RS	6008-2RT	6008-2RZ	45	47.3	63	1	0.191
	80	18	1.1	30.9	18.8	13.8	11900	10700	8500	15000	6208-2Z	6208-2RS	6208-2RT	6208-2RZ	46	51.1	74	1.1	0.374
	85	23	1.1	43.6	24.0	12.4	-	-	8000	-	-	6308X1-2RS	-	-	46	48.3	79	1.1	0.672
	90	23	1.5	40.8	24.0	13.2	10700	9600	7600	13300	6308-2Z	6308-2RS	6308-2RT	6308-2RZ	46	51	84	1.5	0.476
	90	23	1.5	40.8	24.0	13.2	10700	-	-	13300	6308TN1-2Z	-	-	-	46	51.1	84	1.5	0.617
	110	27	2	67.4	36.3	11.4	8800	7900	6200	11000	6408-2Z	6408-2RS	6408-2RT	6408-2RZ	48	62.1	102	2	1.20
	110	27	2	56.0	32.1	12.6	8800	7900	6200	-	-	6408-2RS/YA5	6408-2RT/YA5	6408-2RZ/YA5	48	62.1	102	2	1.30
41	80	17	1.1	30.9	18.8	13.8	8000	7200	5700	10000	62/41-2Z	62/41-2RS	62/41-2RT	62/41-2RZ	47	51.1	74	1.1	0.342
45	75	16	1	19.9	14.0	15.3	8100	7200	5700	11000	6009-2Z	6009-2RS	6009-2RT	6009-2RZ	50	52.2	70	1	0.245
	85	19	1.1	31.2	20.4	14.4	11300	10100	8000	14100	6209-2Z	6209-2RS	6209-2RT	6209-2RZ	51	56.9	79	1.1	0.439
	100	25	1.5	52.9	31.8	13.0	9600	8600	6800	12000	6309-2Z	6309-2RS	6309-2RT	6309-2RZ	51.6	61	93.4	1.5	0.850
	120	29	2	73.5	43.0	12.4	8100	7200	5700	10100	6409-2Z	6409-2RS	6409-2RT	6409-2RZ	53	69.2	112	2	1.57
	127	31.5	1.5	48.9	29.5	13.3	-	-	5400	-	-	6309X3-2RS/YA6	-	-	51.6	60.8	121	1.5	2.04
50	65	7	0.3	6.40	5.83	16.1	8400	7500	6000	11000	61810-2Z	61810-2RS	61810-2RT	61810-2RZ	53.2	51	61.8	0.3	0.0585
	72	12	0.6	13.4	11.1	16.2	13100	11800	9300	16400	61910-2Z	61910-2RS	61910-2RT	61910-2RZ	54.6	55.2	67.4	0.6	0.135
	80	16	1	20.8	15.4	15.5	11900	10700	8500	14900	6010-2Z	6010-2RS	6010-2RT	6010-2RZ	55	57.2	75	1	0.257
	80	22	1	22.0	16.3	15.4	-	-	8500	-	-	6010X2R-2RS	-	-	55	55.6	75	1	0.357
	90	20	1.1	35.2	23.2	14.4	10700	9600	7600	13300	6210-2Z	6210-2RS	6210-2RT	6210-2RZ	56	60.4	84	1.1	0.462
	90	20	1.1	35.2	23.2	14.4	10700	-	-	13300	6210TN1-2Z	-	-	-	56	60.4	84	1.1	0.483
	90	33	1.1	33.1	21.9	14.5	-	-	7600	-	-	62210X2-XRS2	-	-	56	58.4	84	1.1	0.727
	110	27	2	57.6	35.3	13.2	8800	7900	6200	11000	6310-2Z	6310-2RS	6310-2RT	6310-2RZ	58	66.6	102	2	1.13
	110	27	2	57.6	35.3	13.2	8800	-	-	11000	6310TN1-2Z/YA7	-	-	-	58	64.6	102	2	1.06
	110	27	2	61.8	37.9	13.0	8800	-	6200	-	-	6310-2RS/HAYA7	-	6310TN1-2RZ	58	66.6	102	2	1.07
	130	31	2.1	87.9	52.5	12.4	7400	6700	5300	9300	6410-2Z	6410-2RS	6410-2RT	6410-2RZ	60	75.7	120	2	1.92
	163	46	2	57.6	35.3	13.2	-	-	4200	-	-	6310X3-2RS	-	-	59	66.6	151.8	2	5.81
55	90	18	1.1	28.3	21.4	15.4	6700	6000	4700	8300	6011-2Z	6011-2RS	6011-2RT	6011-2RZ	61	63.8	84	1.1	0.386
	100	21	1.5	43.5	29.2	14.3	9600	8600	6800	12000	6211-2Z	6211-2RS	6211-2RT	6211-2RZ	61.6	66.9	93.4	1.5	0.639
	100	21	1.5	39.1	26.4	14.5	9600	-	-	12000	6211F2-2Z	-	-	-	61.6	66.9	93.4	1.5	0.631
	120	29	2	71.7	44.8	13.1	8100	7200	5700	10100	6311-2Z	6311-2RS	6311-2RT	6311-2RZ	63	74.7	112	2	1.38
	140	33	2.1	100	62.2	12.2	6900	-	-	8600	6411-2Z	-	-	-	65	79.9	130	2	2.28
	140	33	2.1	88.9	53.7	12.7	6900	6200	4900	-	-	6411-2RS/YA5	6411-2RT/YA5	6411-2RZ/YA5	65	80.7	130	2	2.45
60	85	13	1	16.4	14.3	16.4	6700	-	-	8300	61912-2Z	-	-	-	65.8	66.2	79.2	1	0.198
	95	18	1.1	29.5	23.2	15.5	10100	9100	7200	12700	6012-2Z	6012-2RS	6012-2RT	6012-2RZ	66	68.8	89	1.1	0.417
	110	22	1.5	26.9	23.4	16.1	-	-	6200	-	-	6212/HAC3YAB-2RSZ	-	-	66.6	76.7	103.4	1.5	0.928
	110	22	1.5	47.8	32.9	14.5	8800	7900	6200	11000	6212-2Z	6212-2RS	6212-2RT	6212-2RZ	66.6	70.1	103.4	1.5	0.800
	110	22	1.5	90.9	79.3	14.3	8800	7900	6200	11000	6212-ZNB/HAYAB	6212-2RS2/YA57	6212-2RT/YA57	6212-2RZ/YA57	66.6	69.6	103.4	1.5	0.783

d 60～95mm



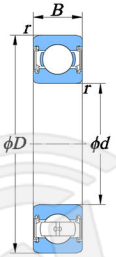


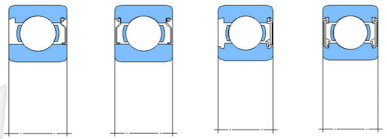


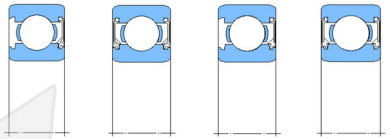


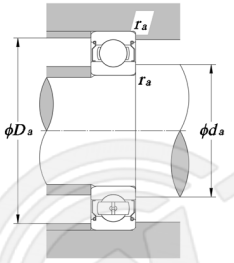
Principal dimensions(mm)				Basic load ratings(kN)		Factor	Limiting speeds(r/min)				Designations				Abutment and fillet dimensions(mm)				Mass(kg) (approx.)
d	D	B	r_{min}	C_r	C_{or}	f_o	Grease (-Z、-2Z、-RZ、-2RZ)	Grease (-RT、-2RT)	Grease (-RS、-2RS)	Oil (-Z)					d_{amin}	d_{amax}	D_{amax}	r_{amax}	
60	130	31	2.1	81.8	51.9	13.1	7400	6700	5300	9300	6312-2Z	6312-2RS	6312-2RT	6312-2RZ	70	79.7	120	2	1.71
	150	35	2.1	109	70.5	12.3	6500	5800	4600	8100	6412-2Z	6412-2RS	6412-2RT	6412-2RZ	70	87	140	2	2.77
65	85	10	0.6	12.0	11.5	16.2	6500	5800	4600	8100	61813-2Z	61813-2RS	61813-2RT	61813-2RZ	67.2	67.2	79.4	0.6	0.123
	90	13	1	16.1	15.1	16.5	10700	9600	7600	13300	61913-2Z	61913-2RS	61913-2RT	61913-2RZ	71.2	71.2	83.2	1	0.212
	100	18	1.1	32.1	24.9	15.5	9600	8600	6800	12000	6013-2Z	6013-2RS	6013-2RT	6013-2RZ	72	73.8	93	1.1	0.431
	120	23	1.5	55.7	40.9	14.8	8100	-	-	10100	6213F2-2Z	-	-	-	72.6	83.5	112.4	1.5	1.06
	120	23	1.5	57.2	40.2	14.5	8100	-	-	10100	6213-2Z	-	-	6213-2RZR/YAB	72.6	83	112.4	1.5	1.06
	140	33	2.1	92.8	59.7	13.2	6900	6200	4900	8600	6313-2Z	6313-2RS	6313-2RT	6313-2RZ	76	86.5	129	2	2.12
	140	33	2.1	87.5	56.4	13.3	6900	-	-	8600	6313F2-2Z	-	-	-	76	86.5	129	2	2.16
	160	37	2.1	118	78.8	12.4	6000	5400	4300	7500	6413-2Z	6413-2RS	6413-2RT	6413-2RZ	76	92	149	2	3.21
70	90	10	0.6	9.77	10.1	15.9	6000	-	-	7500	61814-2Z	-	-	61814-2RZ	72.9	72.9	84.4	0.6	0.147
	110	20	1.1	33.3	27.2	15.7	8800	7900	6200	11000	6014-2Z	6014-2RS	6014-2RT	6014-2RZ	77	80.3	103	1.1	0.625
	125	24	1.5	60.8	45.1	14.8	7700	6900	5500	9700	6214-2Z	6214-2RS	6214-2RT	6214-2RZ	77.6	83	117.4	1.5	1.13
	150	28	2	84.3	61.0	14.3	6500	-	-	8100	6314X2-ZNBR	-	-	6314X2-RZNBR	79	96	141	2	2.25
	150	35	2.1	104	68.0	13.2	6500	5800	4600	8100	6314-2Z	6314-2RS	6314-2RT	6314-2RZ	81	92.2	139	2	2.62
	180	42	3	144	104	12.2	5400	4800	3800	6700	6414-2Z	6414-2RS	6414-2RT	6414-2RZ	83	101	167	2.5	4.73
75	105	16	1	26.8	23.5	16.2	5400	-	-	6700	61915-2Z	-	-	-	81.5	81.5	98.2	1	0.357
	115	20	1.1	37.8	31.2	15.7	8400	7500	6000	10500	6015-2Z	6015-2RS	6015-2RT	6015-2RZ	81.8	85.5	108.2	1.1	0.624
	130	25	1.5	60.7	45.5	14.9	7400	-	-	9300	6215F2-2Z	-	-	-	82.6	92	122.4	1.5	1.16
	130	25	1.5	66.2	49.5	14.8	7400	6700	5300	9300	6215-2Z	6215-2RS	6215-2RT	6215-2RZ	82.6	90	122.4	1.5	1.21
	160	37	2.1	114	77.2	13.2	6000	5400	4300	7500	6315-2Z	6315-2RS	6315-2RT	6315-2RZ	86	99.3	149	2	3.03
	190	45	3	153	114	12.2	5100	4600	3600	6300	6415-2Z	6415-2RS	6415-2RT	6415-2RZ	88	108.6	177	2.5	5.84
80	110	16	1	27.6	25.3	16.4	5100	-	-	6300	61916-2Z	-	-	-	86.3	86.3	103.2	1	0.357
	125	22	1.1	47.7	39.7	15.6	7700	6900	5500	9700	6016-2Z	6016-2RS	6016-2RT	6016-2RZ	87	92	118	1.1	0.848
	140	26	2	71.6	54.6	14.9	6900	6200	4900	8600	6216-2Z	6216-2RS	6216-2RT	6216-2RZ	89	98	131	2	1.44
	170	39	2.1	123	86.4	13.2	5700	5100	4000	7100	6316-2Z	6316-2RS	6316-2RT	6316-2RZ	91	102	159	2	3.69
	200	48	3	163	125	12.3	4800	4300	3400	6000	6416-2Z	6416-2RS	6416-2RT	6416-2RZ	93	116.1	187	2.5	6.63
85	130	22	1.1	47.4	40.0	15.7	4500	4000	3200	5600	6017-2Z	6017-2RS	6017-2RT	6017-2RZ	92	97.2	123	1.1	0.965
	150	28	2	83.3	64.1	14.8	6500	5800	4600	8100	6217-2Z	6217-2RS	6217-2RT	6217-2RZ	95	104.6	140	2	1.79
	180	41	3	133	96.4	13.2	5400	4800	3800	6700	6317-2Z	6317-2RS	6317-2RT	6317-2RZ	98	112.4	167	2.5	4.35
	210	52	4	173	136	12.3	4600	4100	3300	5700	6417-2Z	6417-2RS	6417-2RT	6417-2RZ	101	122.6	194	3	8.12
90	115	13	1	19.0	19.7	16.1	4700	-	-	5900	61818-2Z	-	-	-	95.6	95.6	108.2	1	0.290
	125	18	1.1	32.8	31.7	16.5	7700	-	-	9700	61918-2Z	-	-	-	97	99.3	118	1.1	0.569
	140	24	1.5	58.2	49.6	15.6	6900	6200	4900	8600	6018-2Z	6018-2RS	6018-2RT	6018-2RZ	97.6	103.7	132.4	1.5	1.17
	160	30	2	96.0	71.3	14.4	6000	5400	4300	7500	6218-2Z	6218-2RS	6218-2RT	6218-2RZ	100	109.7	150	2	2.21
	190	43	3	143	107	13.3	5100	-	-	6300	6318M-Z	-	-	-	103	119	177	2.5	6.39
	190	43	3	143	107	13.3	5100	4600	3600	6300	6318-2Z	6318-2RS	6318-2RT	6318-2RZ	103	119	177	2.5	5.07
	190	45	3	143	107	13.3	-	-	3600	-	-	6318X2-2RS	-	-	103	116.4	177	2.5	5.30
	225	54	4	193	159	12.3	4300	3800	3000	5300	6418-2Z	6418-2RS	6418-2RT	6418-2RZ	106	132.8	209	3	9.58
95	130	18	1.1	33.7	33.7	16.7	4300	-	-	5300	61919-Z	-	-	-	102	104.8	123	1.1	0.579

d 95～150mm





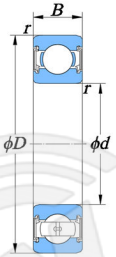


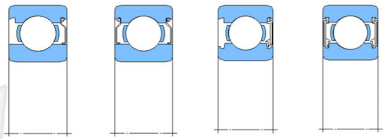


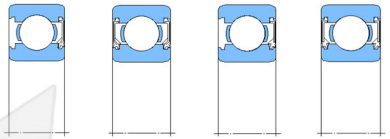
Principal dimensions(mm)				Basic load ratings(kN)		Factor	Limiting speeds(r/min)			
d	*D*	*B*	r_{min}	C_r	C_{or}	f_o	Grease (-Z、-2Z、-RZ、-2RZ)	Grease (-RT、-2RT)	Grease (-RS、-2RS)	Oil (-Z)
95	145	24	1.5	57.9	49.9	15.7	6700	6000	4700	8300
	170	32	2.1	109	81.7	14.4	5700	5100	4000	7100
	200	45	3	153	118	13.3	4800	4300	3400	6000
	200	50	3	153	118	13.3	4800	-	-	6000
	240	55	4	204	172	12.4	4000	3600	2800	5000
100	140	20	1.1	34.4	35.2	16.5	4000	-	-	5000
	150	24	1.5	63.5	55.3	15.7	6500	5800	4600	8100
	180	34	2.1	122	92.8	14.4	5400	4800	3800	6700
	215	47	3	173	141	13.3	4500	4000	3200	5600
	250	58	4	223	196	12.3	3800	3400	2700	4800
105	160	26	2	65.9	60.1	15.9	3600	3200	2600	4500
	190	36	2.1	133	104	14.3	5100	4600	3600	6300
	225	49	3	184	154	13.3	4300	3800	3000	5300
110	140	16	1	25.0	28.2	16.0	3800	3400	2700	-
	150	20	1.1	40.7	41.5	16.5	6500	5800	4600	-
	170	28	2	81.9	72.9	15.6	5700	5100	4000	7100
	175	31	2.3	84.2	73.6	15.6	5500	-	-	6900
	200	38	2.1	133	106	14.5	4800	4300	3400	6000
	240	50	3	205	178	13.1	4000	-	-	5000
	240	50	3	195	167	13.3	4000	3600	2800	-
120	150	16	1	24.4	28.0	15.9	3500	-	-	4400
	165	22	1.1	53.1	54.2	16.6	5900	-	-	7300
	165	22	1.1	48.7	50.6	16.5	5900	5300	4200	-
	180	28	2	88.2	79.6	15.7	5400	4800	3800	6700
	215	40	2.1	155	132	14.5	4500	4000	3200	5600
	260	55	3	228	207	13.1	3700	3300	2600	4600
127	165	18	1.1	36.9	41.1	16.1	-	-	2300	-
130	165	18	1.1	36.9	41.1	16.1	3200	2900	2300	-
	180	24	1.5	64.6	68.0	16.6	5400	-	-	6700
	180	24	1.5	64.6	68.0	16.6	5400	-	-	6700
	200	33	2	102	93.6	15.7	4800	4300	3400	6000
	230	40	3	153	134	14.9	4200	3700	3000	5200
	280	58	4	240	225	13.3	3400	3000	2400	4200
140	175	18	1.1	34.0	40.4	15.9	3000	-	-	3700
	190	24	1.5	64.3	68.2	16.7	5100	-	-	6300
	210	33	2	105	102	16.0	4600	4100	3300	5700
	250	42	3	166	150	14.9	3800	3400	2700	4800
	300	62	4	253	247	13.6	3100	2800	2200	3900
150	190	20	1.1	44.9	53.3	16.0	2700	-	-	3400
	225	35	2.1	123	117	15.7	4300	3800	3000	5300

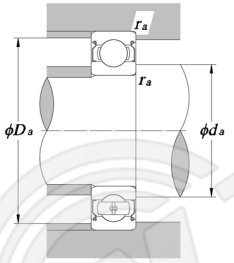
Designations				Abutment and fillet dimensions(mm)				Mass(kg) (approx.)
				d_{amin}	d_{amax}	D_{amax}	r_{amax}	
6019-2Z	6019-2RS	6019-2RT	6019-2RZ	102.6	108.2	137.4	1.5	1.17
6219-2Z	6219-2RS	6219-2RT	6219-2RZ	106	115.5	159	2	2.65
6319-2Z	6319-2RS	6319-2RT	6319-2RZ	108	125.1	187	2.5	5.93
6319X2K-2Z	-	-	-	108	125.1	187	2.5	6.40
6419-2Z	6419-2RS	6419-2RT	6419-2RZ	111	139.8	224	3	13.4
61920-2Z	-	-	-	107	111.8	133	1.1	0.958
6020-2Z	6020-2RS	6020-2RT	6020-2RZ	107.6	112.6	142.4	1.5	1.17
6220-2Z	6220-2RS	6220-2RT	6220-2RZ	111	122.8	169	2	3.26
6320-2Z	6320-2RS	6320-2RT	6320-2RZ	113	133.6	202	2.5	7.14
6420-2Z	6420-2RS	6420-2RT	6420-2RZ	116	146.3	234	3	12.8
6021-2Z	6021-2RS	6021-2RT	6021-2RZ	115	120.2	150	2	1.66
6221-2Z	6221-2RS	6221-2RT	6221-2RZ	116	120.2	179	2	3.79
6321-2Z	6321-2RS	6321-2RT	6321-2RZ	118	139.4	212	2.5	8.15
-	61822-2RS	61822-2RT	61822-2RZ	116.8	116.4	133.2	1	0.517
-	61922-2RS	61922-2RT	61922-2RZ	117	120.9	143	1.1	0.928
6022-2Z	6022-2RS	6022-2RT	6022-2RZ	120	128	160	2	2.14
6022X3M-Z	-	-	-	121	129	164	2	2.67
6222-2Z	6222-2RS	6222-2RT	6222-2RZ	121	137	189	2	4.61
6322-2Z	-	-	-	123	148.2	227	2.5	9.55
-	6322-2RS	6322-2RT	6322-2RZ	123	144.6	227	2.5	9.77
61824-2Z	-	-	-	126.8	127.6	143.2	1	0.566
61924-2Z	-	-	-	127	131.3	158	1.1	1.18
-	61924-2RS	61924-2RT	61924-2RZ	127	131.9	158	1.1	1.20
6024-2Z	6024-2RS	6024-2RT	6024-2RZ	130	131.7	170	2	2.15
6224-2Z	6224-2RS	6224-2RT	6224-2RZ	131	146.3	204	2	5.31
6324-2Z	6324-2RS	6324-2RT	6324-2RZ	133	161.3	247	2.5	12.7
-	61826X5-2RS	-	-	134	136.3	158	1.1	0.850
-	61826-2RS	61826-2RT	61826-2RZ	137	136.3	158	1.1	0.850
61926-Z	-	-	-	139	144	171	1.5	1.57
61926-2Z	-	-	-	139	144	171	1.5	1.55
6026-2Z	6026-2RS	6026-2RT	6026-2RZ	140	150.5	190	2	3.29
6226-2Z	6226-2RS	6226-2RT	6226-2RZ	143	160.9	217	2.5	6.36
6326-2Z	6326-2RS	6326-2RT	6326-2RZ	146	174.4	264	3	15.3
61828-2Z	-	-	-	148	149	167	1.1	0.845
61928-2Z	-	-	-	149	153.2	181	1.5	1.72
6028-2Z	6028-2RS	6028-2RT	6028-2RZ	150	160.6	200	2	3.25
6228-2Z	6228-2RS	6228-2RT	6228-2RZ	153	173.3	237	2.5	7.50
6328-2Z	6328-2RS	6328-2RT	6328-2RZ	156	189.5	284	3	18.9
61830-2Z	-	-	-	158	60.5	182	1.1	1.17
6030-2Z	6030-2RS	6030-2RT	6030-2RZ	161	171.7	214	2	4.16

d 150～280mm





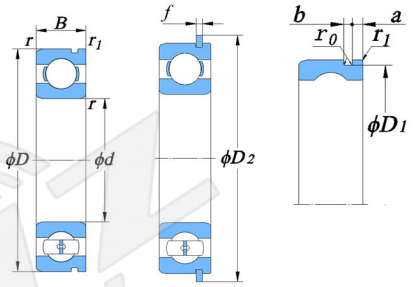




Principal dimensions(mm)				Basic load ratings(kN)		Factor	Limiting speeds(r/min)				Designations				Abutment and fillet dimensions(mm)				Mass(kg) (approx.)
d	*D*	*B*	r_{min}	C_r	C_{or}	f_o	Grease (-Z、-2Z、-RZ、-2RZ)	Grease (-RT、-2RT)	Grease (-RS、-2RS)	Oil (-Z)					d_{amin}	d_{amax}	D_{amax}	r_{amax}	
150	270	45	3	189	182	14.9	3500	3100	2500	4400	6230-2Z	6230-2RS	6230-2RT	6230-2RZ	163	188	257	2.5	10.0
	320	65	4	277	281	13.6	2900	2600	2100	3600	6330-2Z	6330-2RS	6330-2RT	6330-2RZ	166	202.5	304	3	21.0
160	200	20	1.1	48.4	56.8	16.0	2500	-	-	3100	61832-2Z	-	-	-	168	170.5	192	1.1	1.25
	220	28	2	83.9	91.3	16.6	4400	3900	3100	5500	61932-2Z	61932-2RS	61932-2RT	61932-2RZ	170	176	210	2	2.73
	240	38	2.1	139	133	15.7	4000	3600	2800	5000	6032-2Z	6032-2RS	6032-2RT	6032-2RZ	171	141	229	2	5.11
	290	48	3	202	201	15.0	3200	2900	2300	4000	6232-2Z	6232-2RS	6232-2RT	6232-2RZ	173	195	277	2.5	12.4
170	215	22	1.1	50.3	61.0	15.9	2300	-	-	2900	61834M-Z/YA8	-	-	-	178	183	207	1.1	1.89
	230	28	2	85.9	95.8	16.5	4200	-	-	5200	61934-Z	-	-	-	180	186	220	2	2.81
	260	42	2.1	161	160	15.7	3700	3300	2600	4600	6034-2Z	6034-2RS	6034-2RT	6034-2RZ	181	196.1	249	2	6.94
	310	52	4	242	257	14.9	3000	2700	2100	3700	6234-2Z	6234-2RS	6234-2RT	6234-2RZ	186	215.1	294	3	15.1
	360	72	4	336	377	13.9	2500	2300	1800	3100	6334-2Z	6334-2RS	6334-2RT	6334-2RZ	186	237.6	344	3	30.9
180	250	33	2	110	120	16.5	2000	-	-	2500	61936-2Z	-	-	-	190	198.4	240	2	4.06
	280	46	2.1	195	202	15.4	3400	3000	2400	4200	6036-2Z	6036-2RS	6036-2RT	6036-2RZ	191	208.4	269	2	8.83
	320	52	4	242	259	15.0	2900	2600	2100	3600	6236-2Z	6236-2RS	6236-2RT	6236-2RZ	196	224	304	3	15.0
	380	75	4	381	447	13.7	2400	2100	1700	2900	6336-2Z	6336-2RS	6336-2RT	6336-2RZ	196	248.7	364	3	38.1
190	290	46	2.1	194	204	15.6	1800	1600	1300	2200	6038-2Z	6038-2RS	6038-2RT	6038-2RZ	201	217.4	279	2	9.11
200	250	20	1.5	38.7	55.0	15.5	-	-	1400	-	-	61840X2-2RS	-	-	209	212.6	241	1.5	2.10
	250	24	1.5	65.2	84.0	15.9	3800	3400	2700	4800	61840-2Z	61840-2RS	61840-2RT	61840-2RZ	209	213.6	241	1.5	2.29
	310	34	2	157	180	16.5	3000	-	-	3700	16040M-Z	-	-	-	210	237	300	2	10.3
	310	51	2.1	207	225	15.6	3000	2700	2100	3700	6040-2Z	6040-2RS	6040-2RT	6040-2RZ	211	231.3	299	2	11.6
	360	58	4	269	304	15.0	2500	2300	1800	3100	6240-2Z	6240-2RS	6240-2RT	6240-2RZ	216	251	344	3	22.9
	420	80	5	382	463	14.2	2100	1900	1450	2600	6340-2Z	6340-2RS	6340-2RT	6340-2RZ	219	271.8	401	4	57.7
220	270	24	1.5	65.3	86.3	15.8	1700	-	-	2200	61844-2Z	-	-	-	229	234.2	261	1.5	2.62
	340	56	3	230	269	15.7	2700	2400	1900	3400	6044-2Z	6044-2RS	6044-2RT	6044-2RZ	233	260.3	327	2.5	15.8
	400	65	4	298	366	15.4	2200	2000	1540	2800	6244-2Z	6244-2RS	6244-2RT	6244-2RZ	236	281.3	384	3	31.2
	460	88	5	410	528	14.5	1900	1640	1300	2300	6344-2Z	6344-2RS	6344-2RT	6344-2RZ	239	307	441	4	71.4
240	300	28	2	87.0	116	15.9	1500	-	-	1900	61848M-Z/YA8	-	-	-	250.6	257.7	289.4	2	4.64
	300	28	2	85.0	112	15.9	3100	-	-	3900	61848-2Z	-	-	-	250.6	257.7	289.4	2	4.05
	320	38	2.1	154	188	16.6	2900	2600	2100	3600	61948-2Z	61948-2RS	61948-2RT	61948-2RZ	251	263.8	309	2	7.18
	360	56	3	245	294	15.8	2500	2300	1760	3100	6048-2Z	6048-2RS	6048-2RT	6048-2RZ	253	274.3	347	2.5	17.6
	440	72	4	360	474	15.3	2000	1730	1370	2500	6248-2Z	6248-2RS	6248-2RT	6248-2RZ	256	314	424	3	51.8
	500	95	5	440	587	14.6	1640	1470	1170	2100	6348-2Z	6348-2RS	6348-2RT	6348-2RZ	259	329.9	481	4	95.0
260	360	46	2.1	212	270	16.5	1300	1200	880	-	-	61952-2RS	61952-2RT	61952-2RZ	271	288.5	349	2	12.0
	480	80	5	391	536	15.3	1730	-	-	-	-	-	-	6252F3-2RZ	279	335.6	461	4	68.0
	400	65	4	294	373	15.6	2200	2000	1540	2800	6052-2Z	6052-2RS	6052-2RT	6052-2RZ	276	302.3	384	3	28.4
	480	80	5	435	596	14.9	1730	1550	1230	2200	6252-2Z	6252-2RS	6252-2RT	6252-2RZ	279	335.6	461	4	68.8
	540	102	6	503	707	14.5	1490	1330	1060	1860	6352-2Z	6352-2RS	6352-2RT	6352-2RZ	283	356.1	517	5	120
280	350	33	2	127	170	16.0	1300	-	-	1600	61856-2Z	-	-	-	290.6	299.1	339.4	2	6.15
	420	65	4	306	405	15.8	2100	1830	1450	2600	6056-2Z	6056-2RS	6056-2RT	6056-2RZ	296	322	404	3	32.2
	500	80	5	424	602	15.4	1640	1470	1170	2100	6256-2Z	6256-2RS	6256-2RT	6256-2RZ	299	358.7	481	4	72.9
	580	108	6	442	660	15.5	1350	1210	960	1690	6356-2Z	6356-2RS	6356-2RT	6356-2RZ	299	370.8	557	5	141

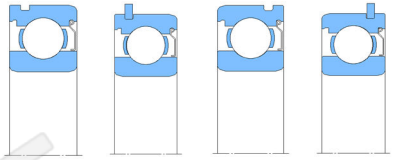
1.3 Deep Groove Ball Bearings with Snap Ring Groove, Snap ring

d 10～40mm

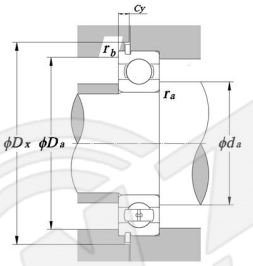


N — Snap ring groove

NR — Snap ring



ZN ZNR ZNB ZNBR

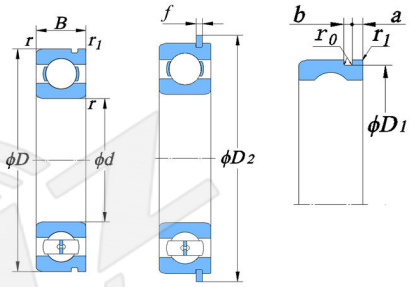


Principal dimensions(mm)					Basic load ratings (kN)		Factor	Limiting speeds(r/min)		Designations	
d	D	B	r_{min}	r_{1min}	C_r	C_{or}	f_o	Grease	Oil		
10	26	8	0.3	0.3	4.56	1.96	12.3	24000	30000	6000N	6000NR
	30	9	0.6	0.5	5.88	2.61	12.3	27000	33000	6200N	6200NR
12	32	10	0.6	0.5	6.84	3.08	12.4	20000	25000	6201N	6201NR
15	28	7	0.3	0.3	4.33	2.25	14.3	21000	26000	61902N	61902NR
	32	9	0.3	0.3	5.60	2.82	13.8	26000	32000	6002N	6002NR
	35	11	0.6	0.5	7.65	3.73	13.1	24000	30000	6202N	6202NR
	42	13	1	0.5	10.5	4.94	12.4	21000	26000	6302N	6302NR
17	30	7	0.3	0.3	4.60	2.55	14.7	19000	24000	61903N	61903NR
	35	10	0.3	0.3	6.81	3.38	13.7	24000	30000	6003N	6003NR
	40	12	0.6	0.5	9.58	4.79	13.1	22000	27000	6203N	6203NR
	47	14	1	0.5	13.6	6.57	12.3	19000	24000	6303N	6303NR
20	32	7	0.3	0.3	3.49	2.22	15.8	18000	22000	61804N	61804NR
	42	12	0.6	0.5	9.39	5.01	13.8	21000	26000	6004N	6004NR
	47	14	1	0.5	13.0	6.71	13.1	19000	24000	6204N	6204NR
	52	15	1.1	0.5	13.8	6.94	13.0	18000	22000	6304N	6304NR
23	52	13	1	0.5	17.7	9.40	13.0	13000	16000	62/23N	62/23NR
25	37	7	0.3	0.3	3.69	2.62	16.3	16000	19000	61805N	61805NR
	42	9	0.3	0.3	7.32	4.57	15.2	21000	26000	61905N	61905NR
	47	12	0.6	0.5	10.1	5.84	14.5	19000	24000	6005N	6005NR
	52	15	1	0.5	14.2	7.95	13.8	18000	22000	6205N	6205NR
	62	17	1.1	0.5	22.4	11.5	12.4	16000	19000	6305N	6305NR
	80	21	1.5	0.5	37.2	19.0	11.4	11900	15000	6405N	6405NR
28	58	18	1.1	0.5	25.0	13.9	13.1	12000	14000	62/28N	62/28NR
	68	18	1.1	0.5	25.0	13.9	13.1	13900	18000	63/28N	63/28NR
30	47	9	0.3	0.3	7.58	5.07	15.6	13000	16000	61906N	61906NR
	55	13	1	0.5	11.9	7.48	14.9	17000	21000	6006N	6006NR
	62	16	1	0.5	19.5	11.2	13.8	16000	19000	6206N	6206NR
	72	19	1.1	0.5	26.7	15.0	13.2	13100	17000	6306N	6306NR
	90	23	1.5	0.5	44.6	22.9	11.5	10700	14000	6406N	6406NR
32	75	20	1.5	0.5	28.3	16.0	13.2	9000	12000	63/32N	63/32NR
33	72	17	1.1	0.5	22.5	13.6	14.2	9200	12000	62/33N	62/33NR
35	47	7	0.3	0.3	4.90	4.05	16.6	12000	15000	61807N	61807NR
	55	10	0.6	0.5	9.38	6.67	15.8	17000	21000	61907N	61907NR
	62	14	1	0.5	16.0	10.3	14.9	15100	19000	6007N	6007NR
	72	17	1.1	0.5	25.7	15.3	13.7	13100	17000	6207N	6207NR
	80	21	1.5	0.5	33.4	19.2	13.2	11900	15000	6307N	6307NR
	100	25	1.5	0.5	51.6	29.0	12.4	9600	12000	6407N	6407NR
40	62	12	0.6	0.5	13.0	9.21	15.6	9500	12000	61908N	61908NR
	68	15	1	0.5	16.8	11.6	15.3	13900	18000	6008N	6008NR
	80	18	1.1	0.5	30.9	18.8	13.8	11900	15000	6208N	6208NR

Snap ring dimensions (mm)		Snap ring groove dimensions (mm)					Abutment and fillet dimensions (mm)					Mass(kg)
D_2	f_{max}	D_{1max}	a_{max}	b_{min}	r_{0max}	d_{amin}	D_{amax}	r_{amax}	D_x	C_y	r_b	(approx.)
29.2	0.7	25.15	1.73	0.8	0.2	12.2	23.8	0.3	30.2	2.43	0.3	0.0191
34.7	1.12	28.17	2.06	1.35	0.4	13	27	0.6	35.7	3.18	0.5	0.0270
36.7	1.12	30.15	2.06	1.35	0.4	15	29	0.6	37.7	3.18	0.5	0.0365
32.8	0.85	28.7	1.3	0.95	0.25	17.2	25.8	0.3	33.8	2.15	0.3	0.0161
36.7	1.12	30.15	2.06	1.35	0.4	17.2	29.8	0.3	37.7	3.18	0.3	0.0300
39.7	1.12	33.17	2.06	1.35	0.4	18	32	0.6	40.7	3.18	0.5	0.0431
46.3	1.12	39.75	2.06	1.35	0.4	19	39	1	47.3	3.18	0.5	0.0895
32.8	0.85	28.7	1.3	0.95	0.25	19.2	27.8	0.3	33.8	2.15	0.3	0.0175
39.7	1.12	33.17	2.06	1.35	0.4	19.6	32.8	0.3	40.7	3.18	0.3	0.0386
44.6	1.12	38.1	2.06	1.35	0.4	20	37	0.6	45.6	3.18	0.5	0.0661
52.7	1.12	44.6	2.46	1.35	0.4	21	43.4	1	53.7	3.58	0.5	0.110
34.8	0.85	30.7	1.3	0.95	0.25	22.2	29.8	0.3	35.8	2.15	0.3	0.0186
46.3	1.12	39.75	2.06	1.35	0.4	23	38.4	0.6	47.3	3.18	0.5	0.0697
52.7	1.12	44.6	2.46	1.35	0.4	24	43.4	1	53.7	3.58	0.5	0.110
57.9	1.12	49.73	2.46	1.35	0.4	25	48.4	1.1	58.9	3.58	0.5	0.151
57.9	1.12	49.73	2.46	1.35	0.4	27	48.4	1	58.9	3.58	0.5	0.117
39.8	0.85	35.7	1.3	0.95	0.25	27.2	34.8	0.3	40.8	2.15	0.3	0.0227
44.8	0.85	40.7	1.7	0.95	0.25	27.2	39.4	0.3	45.8	2.55	0.3	0.0415
52.7	1.12	44.6	2.06	1.35	0.4	28	43.4	0.6	53.7	3.18	0.5	0.0780
57.9	1.12	49.73	2.46	1.35	0.4	29	48.4	1	58.9	3.58	0.5	0.134
67.7	1.7	59.61	3.28	1.9	0.6	30	58.4	1.1	68.7	4.98	0.5	0.214
86.6	1.7	76.81	3.28	1.9	0.6	30.6	76.4	1.5	87.6	4.98	0.5	0.530
74.6	1.7	64.82	3.28	1.9	0.6	33	54.4	1.1	75.6	4.98	0.5	0.301
74.6	1.7	64.82	3.28	1.9	0.6	33	64.4	1.1	75.6	4.98	0.5	0.299
49.8	0.85	45.7	1.7	0.95	0.25	32.2	44.4	0.3	50.8	2.55	0.3	0.0433
60.7	1.12	52.6	2.08	1.35	0.4	34	51.4	1	61.7	3.2	0.5	0.121
67.7	1.7	59.61	3.28	1.9	0.6	34	58.4	1	68.7	4.98	0.5	0.208
78.6	1.7	68.81	3.28	1.9	0.6	35	68.4	1.1	79.6	4.98	0.5	0.354
96.5	2.46	86.79	3.28	2.7	0.6	35.6	86.4	1.5	97.5	5.74	0.5	0.805
81.6	1.7	71.83	3.28	1.9	0.6	38.6	70.4	1.5	82.6	4.98	0.5	0.413
78.6	1.7	68.81	3.28	1.9	0.6	39	67.4	1.1	79.6	4.98	0.5	0.308
49.8	0.85	45.7	1.3	0.95	0.25	38.2	43.4	0.3	50.8	2.15	0.3	0.0287
57.8	0.85	53.7	1.7	0.95	0.25	39	50.4	0.6	58.8	2.55	0.5	0.0779
67.7	1.7	59.61	2.08	1.9	0.6	40	57.4	1	68.7	3.78	0.5	0.152
78.6	1.7	68.81	3.28	1.9	0.6	41	67.4	1.1	79.6	4.98	0.5	0.218
86.6	1.7	76.81	3.28	1.9	0.6	41.6	75.4	1.5	87.6	4.98	0.5	0.456
106.5	2.46	96.8	3.28	2.7	0.6	41.6	95.4	1.5	107.5	5.74	0.5	0.971
64.8	0.85	60.7	1.7	0.95	0.25	44	57.4	0.6	65.8	2.55	0.5	0.108
74.6	1.7	64.82	2.49	1.9	0.6	45	63.4	1	75.6	4.19	0.5	0.191
86.6	1.7	76.81	3.28	1.9	0.6	46	75.4	1.1	87.6	4.98	0.5	0.361

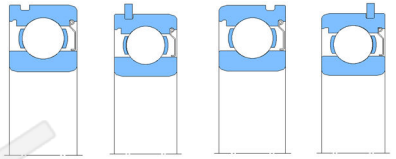
1.3 Deep Groove Ball Bearings with Snap Ring Groove, Snap ring

d 40～75mm

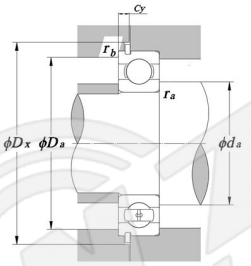


N — Snap ring groove

NR — Snap ring



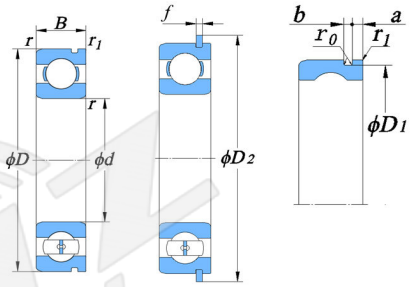
ZN ZNR ZNB ZNBR



Principal dimensions(mm)					Basic load ratings (kN)		Factor	Limiting speeds (r/min)		Designations		Snap ring dimensions (mm)		Snap ring groove dimensions (mm)				Abutment and fillet dimensions (mm)						Mass(kg)
d	D	B	r_{min}	r_{1min}	C_r	C_{or}	f_o	Grease	Oil			D_2	f_{max}	D_{1max}	a_{max}	b_{min}	r_{0max}	d_{amin}	D_{amax}	r_{amax}	D_x	C_Y	r_b	(approx.)
40	90	23	1.5	0.5	40.8	24.0	13.2	10700	13300	6308N	6308NR	96.5	2.46	86.79	3.28	2.7	0.6	46.6	85.4	1.5	97.5	5.74	0.5	0.642
	110	27	2	0.5	67.4	36.3	11.4	8800	11000	6408N	6408NR	116.6	2.46	106.81	3.28	2.7	0.6	48	105.4	2	117.6	5.74	0.5	1.20
41	80	17	1.1	0.5	30.9	18.8	13.8	8000	10000	62/41N	62/41NR	86.6	1.7	76.81	3.28	1.9	0.6	47	75.4	1.1	87.6	4.98	0.5	0.342
45	58	7	0.3	0.3	6.19	5.37	16.2	9400	12000	61809N	61809NR	60.8	0.85	56.7	1.3	0.95	0.25	48.2	54.4	0.3	61.8	2.15	0.3	0.0391
	68	12	0.6	0.5	13.5	10.2	15.9	13900	18000	61909N	61909NR	70.8	0.85	66.7	1.7	0.95	0.25	49.6	63.4	0.6	71.8	2.55	0.5	0.129
	75	16	1	0.5	19.9	14.0	15.3	12700	16000	6009N	6009NR	81.6	1.7	71.83	2.49	1.9	0.6	50	70.4	1	82.6	4.19	0.5	0.246
	85	19	1.1	0.5	31.2	20.4	14.4	11300	14100	6209N	6209NR	91.6	1.7	81.81	3.28	1.9	0.6	51	80.4	1.1	92.6	4.98	0.5	0.428
	100	25	1.5	0.5	52.9	31.8	13.0	9600	12000	6309N	6309NR	106.5	2.46	96.8	3.28	2.7	0.6	51.6	95.4	1.5	107.5	5.74	0.5	0.850
	120	29	2	0.5	77.4	45.8	12.3	8100	10100	6409N	6409NR	129.7	2.82	114.71	4.06	3.1	0.6	53	115.4	2	130.7	6.88	0.5	1.69
50	65	7	0.3	0.3	6.40	5.83	16.1	8400	11000	61810N	61810NR	70.7	1.7	63.7	1.3	0.95	0.6	53.2	61.4	0.3	71.7	3	0.3	0.0531
	72	12	0.6	0.5	14.0	11.0	16.2	13100	16400	61910N	61910NR	74.8	0.85	70.7	1.7	0.95	0.25	54.6	67.4	0.6	75.8	2.55	0.5	0.128
	80	16	1	0.5	20.8	15.4	15.5	11900	14900	6010N	6010NR	86.6	1.7	76.81	2.49	1.9	0.6	55	75.4	1	87.6	4.19	0.5	0.255
	90	20	1.1	0.5	35.2	23.2	14.4	10700	13300	6210N	6210NR	96.5	2.46	86.79	3.28	2.7	0.6	56	85.4	1.1	97.5	5.74	0.5	0.504
	110	27	2	0.5	61.8	37.9	13.0	8800	11000	6310N	6310NR	116.6	2.46	106.81	3.28	2.7	0.6	58	105.4	2	117.6	5.74	0.5	1.07
	130	31	2.1	0.5	92.2	55.3	12.3	7400	9300	6410N	6410NR	139.7	2.82	125.22	4.06	3.1	0.6	60	125.4	2	140.7	6.88	0.5	1.85
55	72	9	0.3	0.3	8.82	8.09	16.2	7600	9500	61811N	61811NR	74.8	0.85	70.7	1.7	0.95	0.25	58.2	68.4	0.3	75.8	2.55	0.3	0.0845
	80	13	1	0.5	16.0	13.2	16.2	11900	14900	61911N	61911NR	84.4	1.12	77.9	2.1	1.3	0.4	60.8	75.4	1	85.4	3.22	0.5	0.177
	90	18	1.1	0.5	28.3	21.4	15.4	10700	13300	6011N	6011NR	96.5	2.46	86.79	2.87	2.7	0.6	61	85.4	1.1	97.5	5.33	0.5	0.381
	100	21	1.5	0.5	43.5	29.2	14.3	9600	12000	6211N	6211NR	106.5	2.46	96.8	3.28	2.7	0.6	61.6	95.4	1.5	107.5	5.74	0.5	0.605
	120	29	2	0.5	71.7	44.8	13.1	8100	10100	6311N	6311NR	129.7	2.82	114.71	4.06	3.1	0.6	63	115.4	2	130.7	6.88	0.5	1.38
	140	33	2.1	0.5	100	62.2	12.2	6900	8600	6411N	6411NR	149.7	2.82	135.23	4.9	3.1	0.6	65	135.4	2	150.7	7.72	0.5	2.36
60	85	13	1	0.5	16.4	14.3	16.4	6700	8300	61912N	61912NR	89.4	1.12	82.9	2.1	1.3	0.4	65.8	80.4	1	90.4	3.22	0.5	0.201
	95	18	1.1	0.5	29.5	23.2	15.5	10100	12700	6012N	6012NR	101.6	2.46	91.82	2.87	2.7	0.6	66	90.4	1.1	102.6	5.33	0.5	0.426
	110	22	1.5	0.5	47.8	32.9	14.5	8800	11000	6212N	6212NR	116.6	2.46	106.81	3.28	2.7	0.6	66.6	105.4	1.5	117.6	5.74	0.5	0.793
	130	31	2.1	0.5	81.4	51.5	13.0	7400	9300	6312N	6312NR	139.7	2.82	125.22	4.06	3.1	0.6	70	125.4	2	140.7	6.88	0.5	1.71
	150	35	2.1	0.5	109	70.5	12.3	6500	8100	6412N	6412NR	159.7	2.82	145.24	4.9	3.1	0.6	70	145.4	2	160.7	7.72	0.5	2.83
65	85	10	0.6	0.5	13.6	12.9	16.3	6500	8100	61813N	61813NR	89.4	1.12	82.9	1.7	1.3	0.4	70.6	79.4	0.6	90.4	2.82	0.5	0.119
	90	13	1	0.5	20.0	17.4	16.3	10700	13300	61913N	61913NR	94.4	1.12	87.9	2.1	1.3	0.4	71.8	84.4	1	95.4	3.22	0.5	0.195
	100	18	1.1	0.5	32.1	24.9	15.5	9600	12000	6013N	6013NR	106.5	2.46	96.8	3.28	2.7	0.6	72	94.4	1.1	107.5	5.74	0.5	0.428
	120	23	1.5	0.5	57.2	40.2	14.5	8100	10100	6213N	6213NR	129.7	2.82	114.71	4.06	3.1	0.6	72.6	114.4	1.5	130.7	6.88	0.5	1.00
	140	33	2.1	0.5	92.8	59.7	13.2	6900	8600	6313N	6313NR	149.7	2.82	135.23	4.9	3.1	0.6	76	134.4	2	150.7	7.72	0.5	2.10
	160	37	2.1	0.5	118	78.8	12.4	6000	7500	6413N	6413NR	169.7	2.82	155.22	4.9	3.1	0.6	76	154.4	2	170.7	7.72	0.5	3.21
70	90	10	0.6	0.5	9.77	10.1	15.9	6000	7500	61814N	61814NR	94.4	1.12	87.9	1.7	1.3	0.4	75.6	84.4	0.6	95.4	2.82	0.5	0.146
	100	16	1	0.5	27.2	23.4	16.1	9600	12000	61914N	61914NR	104.4	1.12	97.9	2.5	1.3	0.4	76.8	94.4	1	105.4	3.62	0.5	0.335
	110	20	1.1	0.5	33.3	27.2	15.7	8800	11000	6014N	6014NR	116.6	2.46	106.81	2.87	2.7	0.6	77	104.4	1.1	117.6	5.33	0.5	0.624
	125	24	1.5	0.5	60.8	45.1	14.8	7700	9700	6214N	6214NR	134.7	2.82	120.22	4.06	3.1	0.6	77.6	119.4	1.5	135.7	6.88	0.5	1.34
	150	35	2.1	0.5	104	68.0	13.2	6500	8100	6314N	6314NR	159.7	2.82	145.24	4.9	3.1	0.6	81	144.4	2	160.7	7.72	0.5	2.57
	180	42	3	0.5	144	104	12.2	5400	6700	6414N	6414NR	192.9	3.1	173.66	5.69	3.5	0.6	83	174.4	2.5	193.9	8.79	0.5	4.73
72	110	20	1.1	0.5	33.3	27.2	15.7	5300	6600	60/72N	60/72NR	116.6	2.46	106.81	2.87	2.7	0.6	79	104.4	1.1	117.6	5.33	0.5	0.584
75	105	16	1	0.5	26.8	23.5	16.2	5400	6700	61915N	61915NR	110.7	1.12	102.6	2.5	1.3	0.4	81.8	99.4	1	111.7	3.62	0.5	0.350

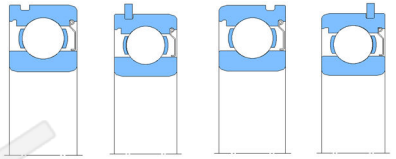
1.3 Deep Groove Ball Bearings with Snap Ring Groove, Snap ring

d 75～110mm

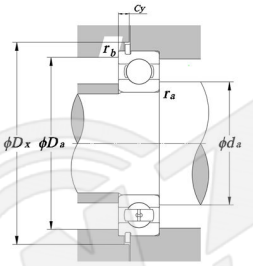


N — Snap ring groove

NR — Snap ring

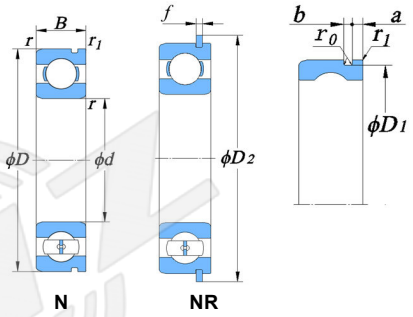


ZN ZNR ZNB ZNBR

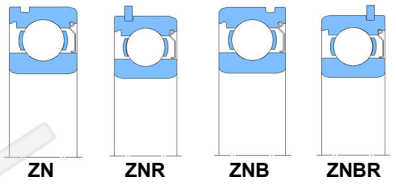


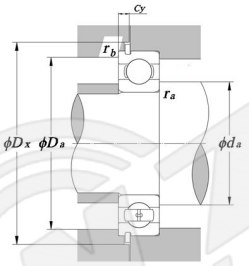
Principal dimensions(mm)					Basic load ratings (kN)		Factor	Limiting speeds (r/min)		Designations		Snap ring dimensions (mm)	Snap ring groove dimensions (mm)				Abutment and fillet dimensions (mm)					Mass(kg)
d	D	B	r_{min}	r_{1min}	C_r	C_{or}	f_o	Grease	Oil			D_2	f_{max}	D_{1max}	a_{max}	b_{min}	r_{0max}	d_{amin}	D_{amax}	r_{amax}	D_x	C_y	r_b	(approx.)
75	115	20	1.1	0.5	37.8	31.2	15.7	8400	10500	6015N	6015NR	121.6	2.46	111.81	2.87	2.7	0.6	82	109.4	1.1	122.6	5.33	0.5	0.630
	130	25	1.5	0.5	66.2	49.3	14.7	7400	9300	6215N	6215NR	139.7	2.82	125.22	4.06	3.1	0.6	82.6	124.4	1.5	140.7	6.88	0.5	1.21
	160	37	2.1	0.5	114	77.2	13.2	6000	7500	6315N	6315NR	169.7	2.82	155.22	4.9	3.1	0.6	86	154.4	2	170.7	7.72	0.5	3.03
	190	45	3	0.5	153	114	12.2	5100	6300	6415N	6415NR	202.9	3.1	183.64	5.69	3.5	0.6	88	184.4	2.5	203.9	8.79	0.5	5.84
80	100	10	0.6	0.5	12.8	13.3	15.9	5400	6700	61816N	61816NR	104.4	1.12	97.9	1.7	1.3	0.4	85.6	94.4	0.6	105.4	2.82	0.5	0.153
	110	16	1	0.5	27.6	25.3	16.4	8800	11000	61916N	61916NR	115.7	1.12	107.6	2.5	1.3	0.4	86.8	104.4	1	116.7	3.62	0.5	0.350
	125	22	1.1	0.5	47.7	39.7	15.6	7700	9700	6016N	6016NR	134.7	2.82	120.22	2.87	3.1	0.6	87	119.4	1.1	135.7	5.69	0.5	0.860
	140	26	2	0.5	71.6	54.6	14.9	6900	8600	6216N	6216NR	149.7	2.82	135.23	4.9	3.1	0.6	89	134.4	2	150.7	7.72	0.5	1.43
	170	39	2.1	0.5	123	86.4	13.2	5700	7100	6316N	6316NR	182.9	3.1	163.65	5.69	3.5	0.6	91	164.4	2	183.9	8.79	0.5	3.69
	200	48	3	0.5	163	125	12.3	4800	6000	6416N	6416NR	212.9	3.1	193.65	5.69	3.5	0.6	93	194.4	2.5	213.9	8.79	0.5	6.63
85	120	18	1.1	0.5	28.3	27.1	16.6	4700	5900	61917N	61917NR	125.7	1.12	117.6	3.3	1.6	0.4	92	114.4	1.1	126.7	4.42	0.5	0.557
	130	22	1.1	0.5	47.4	40.0	15.7	7400	9300	6017N	6017NR	139.7	2.82	125.22	2.87	3.1	0.6	92	124.4	1.1	140.7	5.69	0.5	0.935
	150	28	2	0.5	83.3	64.1	14.8	6500	8100	6217N	6217NR	159.7	2.82	145.24	4.9	3.1	0.6	95	144.4	2	160.7	7.72	0.5	1.80
	180	41	3	0.5	133	96.4	13.2	5400	6700	6317N	6317NR	192.9	3.1	173.66	5.69	3.5	0.6	98	174.4	2.5	193.9	8.79	0.5	4.33
	210	52	4	0.5	173	136	12.3	4600	5700	6417N	6417NR	222.8	3.1	203.6	5.69	3.5	1	101	204.4	3	223.8	8.79	0.5	8.12
90	115	13	1	0.5	19.0	19.7	16.1	4700	5900	61818N	61818NR	120.7	1.12	112.6	2.1	1.3	0.4	96.8	109.4	1	121.7	3.22	0.5	0.285
	125	18	1.1	0.5	32.8	31.7	16.5	7700	9700	61918N	61918NR	130.7	1.12	122.6	3.3	1.3	0.4	97	119.4	1.1	131.7	4.42	0.5	0.572
	140	24	1.5	0.5	58.2	49.6	15.6	6900	8600	6018N	6018NR	149.7	2.82	135.23	3.71	3.1	0.6	97.6	134.4	1.5	150.7	6.53	0.5	1.16
	160	30	2	0.5	96.0	71.3	14.4	6000	7500	6218N	6218NR	169.7	2.82	155.22	4.9	3.1	0.6	100	154.4	2	170.7	7.72	0.5	2.19
	190	43	3	0.5	143	107	13.3	5100	6300	6318N	6318NR	202.9	3.1	183.64	5.69	3.5	0.6	103	184.4	2.5	203.9	8.79	0.5	4.97
	225	54	4	0.5	193	159	12.3	4300	5300	6418N	6418NR	237	3.5	217	6.5	4.5	1	106	219.4	3	238	10	0.5	9.58
95	120	13	1	0.5	19.3	20.4	16.0	4500	5600	61819N	61819NR	125.7	1.12	117.6	2.1	1.6	0.4	101.8	114.4	1	126.7	3.22	0.5	0.288
	130	18	1.1	0.5	33.7	33.7	16.7	7400	9300	61919N	61919NR	135.7	1.12	127.6	3.3	1.3	0.4	102	124.4	1.1	136.7	4.42	0.5	0.610
	145	24	1.5	0.5	57.9	49.9	15.7	6700	8300	6019N	6019NR	154.7	2.82	140.23	3.71	3.1	0.6	102.6	139.4	1.5	155.7	6.53	0.5	1.14
	170	32	2.1	0.5	109	81.7	14.4	5700	7100	6219N	6219NR	182.9	3.1	163.65	5.69	3.5	0.6	106	164.4	2	183.9	8.79	0.5	2.61
	200	45	3	0.5	153	118	13.3	4800	6000	6319N	6319NR	212.9	3.1	193.65	5.69	3.5	0.6	108	194.4	2.5	213.9	8.79	0.5	5.84
	240	55	4	0.5	204	172	12.4	4000	5000	6419N	6419NR	252	3.5	232	6.5	4.5	1	111	234.4	3	253	10	0.5	13.4
100	125	13	1.5	0.5	19.7	21.2	16.0	4300	5300	61820N	61820NR	130.7	1.12	122.6	2.1	1.3	0.4	106.8	119.4	1.5	131.7	3.22	0.5	0.326
	140	20	1.1	0.5	34.4	35.2	16.5	6900	8600	61920N	61920NR	145.7	1.7	137.6	3.3	1.9	0.6	107	134.4	1.1	146.7	5	0.5	0.850
	150	24	1.5	0.5	63.5	55.3	15.7	6500	8100	6020N	6020NR	159.7	2.82	145.24	3.71	3.1	0.6	107.6	144.4	1.5	160.7	6.53	0.5	1.17
	180	34	2.1	0.5	122	92.8	14.4	5400	6700	6220N	6220NR	192.9	3.1	173.66	5.69	3.5	0.6	111	174.4	2	193.9	8.79	0.5	3.20
	215	47	3	0.5	173	141	13.3	4500	5600	6320N	6320NR	227.8	3.1	208.6	5.69	3.5	1	113	209.4	2.5	228.8	8.79	0.5	7.10
	250	58	4	0.5	223	196	12.3	3800	4800	6420N	6420NR	262	3.5	242	6.5	4.5	1	116	244.4	3	263	10	0.5	12.8
105	130	13	1	0.5	20.0	21.9	15.9	4100	5100	61821N	61821NR	135.7	1.12	127.6	2.1	1.3	0.4	111.8	124.4	1	136.7	3.22	0.5	0.468
	145	20	1.1	0.5	39.6	39.7	16.6	6700	8300	61921N	61921NR	150.7	1.7	142.6	3.3	1.9	0.6	112.6	139.4	1.1	151.7	5	0.5	0.876
	160	26	2	0.5	65.9	60.1	15.9	6000	7500	6021N	6021NR	169.7	2.82	155.22	3.71	3.1	0.6	115	154.4	2	170.7	6.53	0.5	1.65
	190	36	2.1	0.5	133	104	14.3	5100	6300	6221N	6221NR	202.9	3.1	183.64	5.69	3.5	0.6	116	184.4	2	203.9	8.79	0.5	3.66
	225	49	3	0.5	184	154	13.3	4300	5300	6321N	6321NR	237	3.5	217	6.5	4.5	1	118	219.4	2.5	238	10	0.5	8.05
110	140	16	1	0.5	25.0	28.2	16.0	3800	4800	61822N	61822NR	145.7	1.7	137.6	3.1	1.9	0.6	116.8	134.4	1	146.7	4.8	0.5	0.505
	150	20	1.1	0.5	43.7	44.8	16.6	6500	8100	61922N	61922NR	155.7	1.7	147.6	3.3	1.9	0.6	117	144.4	1.1	156.7	5	0.5	0.888

d 110～160mm



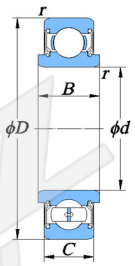
N Snap ring groove　　**NR** Snap ring





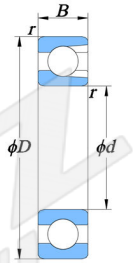
Principal dimensions(mm)					Basic load ratings (kN)		Factor	Limiting speeds (r/min)		Designations		Snap ring dimensions (mm)		Snap ring groove dimensions (mm)					Abutment and fillet dimensions (mm)					Mass(kg)
d	*D*	*B*	r_{min}	r_{1min}	C_r	C_{or}	f_o	Grease	Oil			D_2	f_{max}	D_{1max}	a_{max}	b_{min}	r_{0max}	d_{amin}	D_{amax}	r_{amax}	D_x	C_y	r_b	(approx.)
110	170	28	2	0.5	81.9	72.9	15.6	5700	7100	**6022N**	**6022NR**	182.9	3.1	163.65	3.71	3.5	0.6	120	164.4	2	183.9	6.81	0.5	2.09
	200	38	2.1	0.5	144	117	14.3	4800	6000	**6222N**	**6222NR**	212.9	3.1	193.65	5.69	3.5	0.6	121	194.4	2	213.9	8.79	0.5	4.55
	240	50	3	0.5	205	178	13.1	4000	5000	**6322N**	**6322NR**	252	3.5	232	6.5	4.5	1	123	234.4	2.5	253	10	0.5	9.72
120	150	16	1	0.5	24.4	28.0	15.9	3500	4400	**61824N**	**61824NR**	155.7	1.7	147.6	2.5	1.9	0.6	126.8	144.4	1	156.7	4.2	0.5	0.565
	165	22	1.1	0.5	53.1	54.2	16.6	5900	7300	**61924N**	**61924NR**	171.5	1.7	161.8	3.71	1.9	0.6	127	159.4	1.1	172.5	5.41	0.5	1.21
	180	28	2	0.5	88.2	79.6	15.7	5400	6700	**6024N**	**6024NR**	192.9	3.1	173.66	3.71	3.5	0.6	130	174.4	2	193.9	6.81	0.5	2.09
	215	40	2.1	0.5	155	132	14.5	4500	5600	**6224N**	**6224NR**	227.8	3.1	208.6	5.69	3.5	1	131	209.4	2	228.8	8.79	0.5	5.26
130	165	18	1.1	0.5	36.9	41.1	16.1	3200	4000	**61826N**	**61826NR**	171.5	1.7	161.8	3.3	1.9	0.6	137	159.4	1.1	172.5	5	0.5	0.781
	180	24	1.5	0.5	64.6	68.0	16.6	5400	6700	**61926N**	**61926NR**	186.5	1.7	176.8	3.7	1.9	0.6	139	174.4	1.5	187.5	5.4	0.5	1.56
	200	33	2	0.5	102	93.6	15.7	4800	6000	**6026N**	**6026NR**	212.9	3.1	193.65	5.69	3.5	0.6	140	194.4	2	213.9	8.79	0.5	3.96
	230	40	3	0.5	165	148	14.8	4200	5200	**6226N**	**6226NR**	242	3.5	222	6.5	4.5	1	143	224.4	2.5	243	10	0.5	6.04
140	175	18	1.1	0.5	34.0	40.4	15.9	3000	3700	**61828N**	**61828NR**	181.5	1.7	171.8	3.3	1.9	0.6	148	169.4	1.1	182.5	5	0.5	0.822
	190	24	1.5	0.5	64.3	68.2	16.7	5100	6300	**61928N**	**61928NR**	196.5	1.7	186.8	3.7	1.9	0.6	149	184.4	1.5	197.5	5.4	0.5	1.72
	210	33	2	0.5	105	102	16.0	4600	5700	**6028N**	**6028NR**	222.8	3.1	203.6	5.69	3.5	1	150	204.4	2	223.8	8.79	0.5	3.47
	250	42	3	0.5	166	150	14.9	3800	4800	**6228N**	**6228NR**	262	3.5	242	6.5	4.5	1	153	244.4	2.5	263	10	0.5	7.41
150	190	20	1.1	0.5	44.9	53.3	16.0	2700	3400	**61830N**	**61830NR**	196.5	1.7	186.8	3.3	1.9	0.6	158	184.4	1.1	197.5	5	0.5	1.16
	225	35	2.1	0.5	132	124	15.7	4300	5300	**6030N**	**6030NR**	237	3.5	217	6.5	4.5	1	161	219.4	2	238	10	0.5	4.07
160	200	20	1.1	0.5	48.4	56.8	16.0	2500	3100	**61832N**	**61832NR**	206.5	1.7	196.8	3.3	1.9	0.6	168	194.4	1.1	207.5	5	0.5	1.21
	240	38	2.1	0.5	144	137	15.7	4000	5000	**6032N**	**6032NR**	252	3.5	232	6.5	4.5	1	171	234.4	2	253	10	0.5	5.63

d 12～600mm



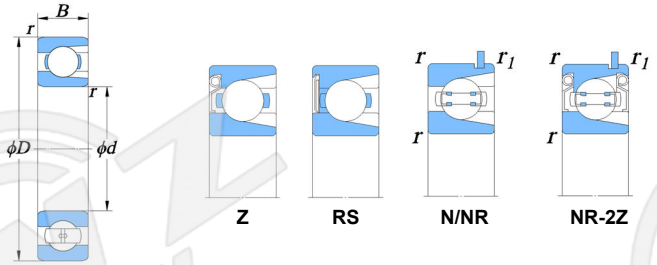
Principal dimensions(mm)					Basic load ratings (kN)		Factor	Designations	Limiting speeds (r/min)		Abutment and fillet dimensions (mm)			Mass(kg)
d	*D*	*B*	*C*	r_{min}	Grease	Oil	f_o		Grease	Oil	d_{amin}	D_{amax}	r_{amax}	(approx.)
12	38	13	10	0.6	6.91	3.10	12.3	6201X1WB-HUP53	18000	22500	15	35	0.6	0.0400
20	47	31.1	14	1	12.8	6.61	13.1	RB204	13900	17400	24	43	1	0.151
25	60	27	19	1.1	21.2	10.8	12.5	6305X3WBTN1-ZN	11200	14000	30	55	1.1	0.255
	65	18	17	1.1	25.0	13.9	13.1	6605WB1-2RS/P63-SAGW	14300	17900	30	60	1.1	0.27
25.995	68	21.55	14.5	2	31.3	16.3	11.9	6605WBTN1	10100	12700	31.495	61	2	0.272
26	68	21.5	14.5	0.2	31.3	16.3	11.9	6605X2WBTN1/HA	10100	12700	28	62	0.2	0.272
	59	13	22	1	13.2	8.29	14.8	1-0005ZC	15600	19600	30	56.4	1	0.307
	59	13	22	1	13.2	8.29	14.8	1-0005	15600	19600	30	56.4	1	0.191
32	72	25	19	1	26.7	15	13.2	66/32WB1-2RSZ/C9	9200	11500	37	68	1	0.408
40	80	27	21	1.1	30.9	18.8	13.8	62208X2WB-2RS	8000	10000	46	74	1.1	0.525
	94	26	31	1.5	40.8	24.0	13.2	6308X3WB1TN1-2RS/YA6	10100	12700	46.6	87.4	1.5	0.817
	100	23	36	1.5	40.8	24.0	13.2	6308/YAD	9600	12000	46.6	96.4	1.5	1.36
	109.5	23	31	1.5	40.8	24.0	13.2	6308X3-2RS/YA6	8700	10900	46.6	102.9	1.5	1.45
40.5	62	34	12	0.5	12.2	8.86	15.7	1-0004	9300	11700	43.5	58.5	0.5	0.160
45	85	27	21	1.1	31.2	20.4	14.4	62209X2WB-2RS	7300	9200	51	79	1.1	0.544
50	90	51.6	24	1.1	33.1	21.9	14.5	UC210	6800	8500	56	85	1.1	0.689
	129	27	34	2.5	62.1	38.3	13.2	CZ5012934-2RS	7400	9300	60	121.5	2	2.09
55	100	55.6	25	1.5	43.5	29.2	14.3	62211WB-2RSZN	6100	7700	61.6	94.4	1.5	1.08
	120	29	54	2	71.7	44.8	13.1	6311WC1TN1-ZP	8000	10000	63	112	2	1.82
	151	33	45	4	72.0	45.5	13.4	CZ5515145-2RS	6300	7900	70	137.8	3	3.94
60	110	36	22	1.5	47.8	32.9	14.5	6212WB-2RS/P53	5600	7000	66.6	103.4	1.5	0.974
	110	65.1	27	1.5	47.8	32.9	14.5	1-0001	8700	10900	66.6	104.4	1.5	1.35
	179	31	45	2.5	82.3	52.8	13.4	CZ6017945-2RS	5300	6600	68	171	2	6.10
63.5	99.5	29	19.4	1	27.8	21.7	15.7	76TM6429	5800	7300	70.5	92.5	1	0.603
76.352	130	33.325	30.15	1.524	66.2	49.3	14.7	66/76X4WB1-2RZ/YA3	4600	5700	84	123.876	1.5	1.46
600	700	100	50	4	341	711	15.6	D66/600	400	500	613	687	3	60.6

d 50～440mm



Principal dimensions(mm)				Basic load ratings(kN)		Factor	Designations	Limiting speeds(r/min)		Abutment and fillet dimensions(mm)			Mass(kg)
d	*D*	*B*	r_{min}	C_r	C_{or}	f_o		Grease	Oil	d_{amin}	D_{amax}	r_{amax}	(approx.)
50	90	20	1.1	50.1	39.4	14.4	**210V**	5400	6800	56	84	1.1	0.502
	110	27	2	85.8	62.1	13.2	**310V**	4700	5900	58	102	2	1.01
60	130	31	2.1	113	84.2	13.1	**312V**	3900	5000	70	120	2	1.82
65	140	33	2.1	128	97.0	13.2	**313V**	3600	4600	75	130	2	2.15
70	125	24	1.5	84.5	72.9	14.6	**214V**	3800	4900	76.6	118.4	1.5	1.19
	150	35	2.1	144	111	13.2	**314V**	3400	4300	80	140	2	2.65
75	160	37	2.1	157	125	13.2	**315V/C9**	3100	4000	85	150	2	3.23
85	180	41	3	183	157	13.2	**6317V**	2700	3500	97	168	2.5	4.16
90	190	43	3	197	174	13.3	**6318V**	2600	3300	102	178	2.5	4.84
107	145	16	1.3	52.3	67.1	16.6	**970921**	2900	3700	114.4	137.6	1.3	0.821
	145	16	1.3	52.3	67.1	16.6	**66/107V**	2900	3700	114.4	137.6	1.3	0.821
170	260	42	3.5	244	294	15.6	**6034V/YA7**	1500	1900	180	250	3	7.11
220	270	24	1.5	99.0	161	15.8	**61844V**	1300	1600	228	262	1.5	2.62
	300	38	2.1	202	294	16.6	**61944V**	1200	1500	230	290	2	7.24
240	300	28	2	130	212	15.9	**61848V**	1100	1400	249.6	290.4	2	4.93
320	412	38	2.5	318	531	16.3	**61864X1V**	700	900	331	401	2	11.8
340	460	56	3	418	756	16.7	**61968V**	600	800	353	447	2.5	25.6
440	600	74	4	563	1180	16.6	**61988V**	400	500	455	585	3	55.6

d 30～165mm



Principal dimensions(mm)					Basic load ratings(kN)		Factor	Designations	Limiting speeds(r/min)		Abutment and fillet dimensions (mm)			Mass (kg)
d	*D*	*B*	r_{min}	r_{1min}	C_r	C_{or}	f_o		Grease	Oil	d_{amin}	D_{amax}	r_{amax}	(approx.)
30	62	16	1	-	20.0	16.0	14.1	**206**	8200	10300	35	57	1	0.217
43	100	25	1.5	0.5	55.2	43.8	13.1	**30/43NR**	5300	6700	49.6	93.4	1.5	0.949
	100	25	1.5	0.5	55.2	43.8	13.1	**30/43NR-2Z/YAD**	5300	6700	49.6	93.4	1.5	0.994
45	85	19	1.1	-	36.1	32.8	14.5	**209**	5800	7300	51	79	1.1	0.492
	100	25	1.5	0.5	55.2	43.8	13.1	**309/YA8**	5200	6600	51.6	93.4	1.5	0.920
	100	25	1.5	0.5	55.2	43.8	13.1	**309N/HAYAB**	5200	6600	51.6	93.4	1.5	0.900
50	110	27	2	-	68.6	56.8	13.0	**310**	4700	5900	58	102	2	1.10
	110	27	2	0.5	60.2	48.5	13.2	**310N/YAD**	4700	5900	58	102	2	1.20
	90	20	1	1	38.3	35.1	14.5	**210-Z/YA6**	5400	6800	55	85	1	0.490
55	140	33	2.1	2.1	112	93.0	11.9	**411N1**	3800	4900	65	130	2	2.75
	140	33	2.1	2.1	108	88.8	12.2	**411N1/YB8**	3800	4900	65	130	2	2.45
60	110	22	1.5	0.5	50.6	46.0	14.5	**212N/YAD**	4400	5600	66.6	103.4	1.5	0.869
65	120	23	1.5	-	66.2	64.0	14.4	**213**	4000	5100	71.6	113.4	1.5	1.01
	120	23	3	0.5	50.3	47.4	14.9	**213N/YAD**	4000	5100	75	113.4	2.5	1.11
	140	33	2.1	-	95.2	88.5	13.8	**313**	3600	4600	75	130	2	2.40
70	180	42	3	3	146	143	13.1	**414N1-RS**	2900	3700	82	168	2.5	4.04
	180	42	3	3	146	143	13.1	**414N1-Z**	2900	3700	82	168	2.5	4.05
	180	42	3	3	154	148	12.1	**414N1-Z/YB8**	2900	3700	82	168	2.5	5.64
75	130	25	1.5	-	71.3	74.6	14.9	**215**	3600	4600	81.6	123.4	1.5	1.32
165	250.5	35	2.5	-	158	203	15.8	**370833**	1600	2000	176	239.5	2	6.56

Angular Contact Ball Bearings

●Angular contact ball bearings

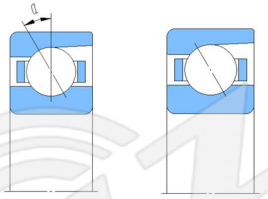
■Product characteristics

The angular contact ball bearing (ACBB) have contact angles, and the raceways can have relative displacement on the horizontal axial line, so they can withstand the combined load.

The ball loading number of ACBB is more than that of deep groove ball bearing of the same size, so ACBB have the maximum rated load, strong rigidity and smooth operation in the ball bearing.

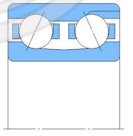
Standard contact angle of **ZWZ** products

Contact angle	Suffix code
15°	C
25°	AC
30°	A
40°	B



Single row angular contact ball bearings

Matched angular contact ball bearings

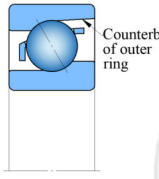


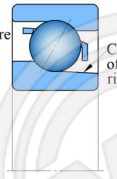
Double row angular contact ball bearings

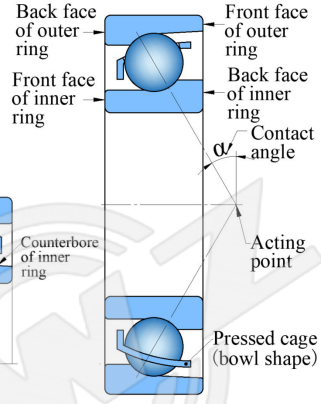
➢Single row angular contact ball bearings

The magnitude of contact angle determines the load capacity. The larger the contact angle is, the larger the axial carrying capacity is. The smaller the contact angle is, the more favorable for high-speed rotation.

The single row ACBBs don't have their own clearance, and they only reach a certain inner clearance after installation, which depends on the adjustment of another bearing used to provide axial positioning in the opposite direction.







➢Matched angular contact ball bearings

The matched angular contact ball bearing have inner clearance. The matched bearing are divided into two ways: preload (pre-tightening load) and pre-clearance (preset clearance)

Preload: GA - Light preload	Pre-clearance: CA - Small axial clearance
GB - Medium preload	CB - Medium axial clearance
GC - Heavy preload	CC - Large axial clearance

ZWZ also produces universal matched angular contact ball bearing which can be matched in any way, such as back-to-back, face-to-face or in series. The universal matched bearing are divided into two ways: preload (pre-tightening load) and pre-clearance (preset clearance). Except for the universal matched bearing, individual bearing in other matched bearing does not have interchangeability.

➢Double row angular contact ball bearing

The double row angular contact ball bearing can withstand the radial load and axial load acting in double direction. The bearing configuration of high rigidity is available, which can withstand the overturning torque.

The angular contact ball bearing are mainly used in the occasions of high rotating speed, high accuracy and small axial load. For example, aircraft engine spindles, machine tool spindles and other high-speed precision machinery spindles. It is also used in high-frequency motors, gas turbines, oil pumps, air compressors, printing machinery, etc., and it is the one of most widely used bearing in the machinery industry.

■Product structural types

Table 1 Single Row angular contact ball bearing

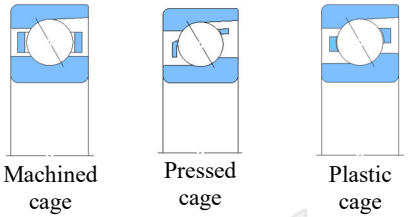
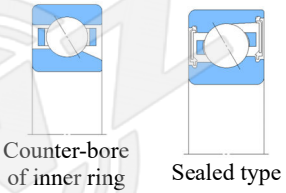
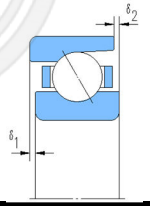
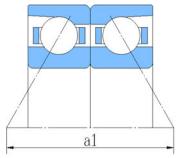
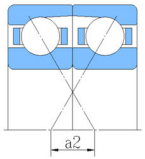
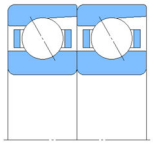
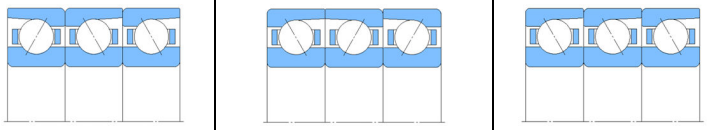
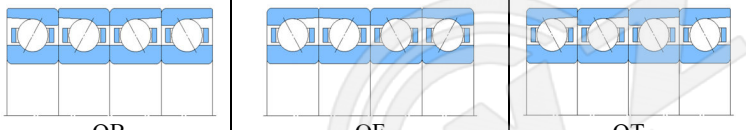
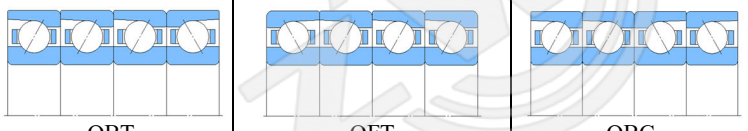
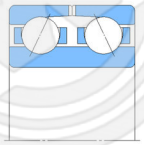
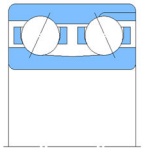
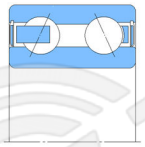
Standard type		● It can withstand radial load and single-direction axial load; ● The machined cage bearing are applicable to high-speed rotation.
Non-standard type		● The sealed bearing have the characteristics of preventing grease from flying, preventing dust entering and high sealing performance.
Universal matched		● The universal matched angular contact ball bearings ($\delta_1=\delta_2$) can be combined in any way.

Table 2 Matched angular contact ball bearing

Back-to-back combination (DB)		● It can withstand radial load and double-direction axial load; ● Its load line is separated on both sides of the bearing and intersects with the axial line, which can withstand large overturning torque and has strong rigidity.
Face-to-face combination (DF)		● It can withstand radial load and double-direction axial load; ● Its load line intersects with the axial line after crossing. Compared with the DB type, its overturning torque is smaller and the stiffness is lower. ● Low sensitivity to coaxial error of bearing housing.
Series combination（DT）		● It can withstand radial load and single-direction axial load; ● It is applicable to the occasions of large single-direction axial load.
Triple combination		
Quadruple combination		
		

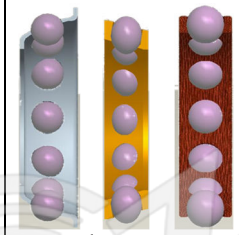
The clearance or preload of matched pair angular contact ball bearing have been properly adjust when delivered form the factory, so the user is not required to adjust.
In addition, **ZWZ** also offers quintuplet combined angular contact ball bearings PBC, PFC, **PT, PBT and PFT, please contact ZWZ technicians for details.**

Table 3 Double Row angular contact ball bearing

Type 0000D with the combination of double-raceway outer ring and two single-raceway inner rings		● The original code is type 86000, whose contact angle is 45°, and in special cases, the contact angle can be 26°, 32°, or 40°. ● It can withstand large radial load, axial load and radial &axial combined load. ● It is mainly used in components that restrict the axial displacement on both sides of the shaft or shell, and its extreme rotating speed is higher.
Type 0000/DC with the combination of double-raceway inner ring and two single-raceway outer rings		● Its contact angle is 40°. ● It can withstand large radial load, axial load and radial &axial combined load. ● It is mainly used in components that restrict the axial displacement on both sides of the shaft or shell, and its extreme rotating speed is higher.
Type 0000 (α=30°) or 0000A with the combination of double-raceway outer ring and double-raceway inner ring		● The original code is type 56000, whose contact angle is 30°, and in special cases, the contact angle can be 26° or 35°. ● Structurally, it is similar to back-to-back combined angular contact ball bearing, but its axial space occupation is small. ● It can withstand large radial load and axial combined load, and it also can withstand large overturning torque. ● It is mainly used in components that restrict the axial displacement on both sides of the shaft or shell, and its extreme rotating speed is higher. ● Generally, there is a ball loading gap at one end, and the copper frame is used for the cage. When the cage is nylon frame, there is no ball loading gap in the ring.
Sealed double row angular contact ball bearing		● It can withstand large radial load, axial load and radial & axial combined load

■Basic Information

Size range	● Single row angular contact ball bearing Inner diameter size range: 20mm～1500mm Outer diameter size range:47mm～1805mm Width size range:14mm～218mm ● Matched angular contact ball bearing Inner diameter size range: 10mm～1400mm Outer diameter size range: 26mm～1800mm Width size range: 16mm～270mm

Size range	● Double row angular contact ball bearing Inner diameter size range: 25mm～530mm Outer diameter size range: 52mm～778mm Width size range: 20.6mm～224mm
accuracy class	● **ZWZ** produces standard series single row angular contact ball bearings, which are mainly produced at ordinary level, but also can offer products of accuracy class P6 and above. ● Tolerance level of individual bearing used in matched bearing Bearings of α=15° and α=25° are offered with accuracy class of P5 and above; Bearings of α=40° are offered with accuracy class of P6 and above. **ZWZ** can also offer the products of P4A, P2A and other special accuracy class; ● ZWZ produces double row angular contact ball bearing, which are mainly produced at ordinary level, but also can offer products of accuracy class P6 and above.
Allowable angular error	● The single row angular contact ball bearing have limited capacity of allowable angular error. In the case of no excessive additional stress on the bearing, the allowable angular error between the inner ring and outer ring depends on the radial clearance of bearing during operation, the size of bearing, the internal design and the forces and torques acting on the bearing. Maximum allowable angular error in single row: 0.0006rad (2') ● Bearings of double row/combined type: no angle error is allowed
Cage type	a- Pressed cage b- Solid cage c- Nylon cage For bearings of non-standard cage, please contact **ZWZ technicians.**  a b c
Preload Pre-clearance	The preload is shown in Table 4, Table 5 and Table 6 The pre-clearance is shown in Table 7
Radial equivalent load - double row angular contact ball bearing	Dynamic equivalent load $P_r = XF_r + YF_a$ Static equivalent load $P_0 = X_0F_r + Y_0F_a$

Contact angle	e	$F_a/F_r \le e$		$F_a/F_r > e$	
		X	Y	X	Y
30°	0.80	1	0.78	0.63	1.24
45°	1.34	1	0.47	0.54	0.81

Contact angle	X_0	Y_0
30°	1	0.66
45°	1	0.44

Radial equivalent load - single row and combined angular contact ball bearing

Dynamic equivalent load

$P_r = XF_r + YF_a$

Static equivalent load

$P_0 = X_0F_r + Y_0F_a$

But for single row or series combination $P_{0r} < F_r$, $P_{0r} = F_r$

Contact angle	F_a/C_{0r}	e	Single row or series combination				Back-to-back, face-to-face combinations			
			$F_a/F_r \le e$		$F_a/F_r > e$		$F_a/F_r \le e$		$F_a/F_r > e$	
			X	Y	X	Y	X	Y	X	Y
15°	0.015	0.38	1	0	0.44	1.47	1	1.65	0.72	2.39
	0.029	0.40				1.40		1.57		2.28
	0.058	0.43				1.30		1.46		2.11
	0.087	0.46				1.23		1.38		2.00
	0.120	0.47				1.19		1.34		1.93
	0.170	0.50				1.12		1.26		1.82
	0.290	0.55				1.02		1.14		1.66
	0.440	0.56				1.00		1.12		1.63
	0.580	0.56				1.00		1.12		1.63
25°	—	0.68	1	0	0.41	0.87	1	0.92	0.67	1.41
30°	—	0.80	1	0	0.39	0.76	1	0.78	0.63	1.24
40°	—	1.14	1	0	0.35	0.57	1	0.55	0.57	0.93

Note：C_{or} is the basic static load rating of single bearing.

Contact angle	Single row or series combination		Back-to-back, face-to-face combination	
	X_0	Y_0	X_0	Y_0
15°	0.5	0.46	1	0.92
25°	0.5	0.38	1	0.76
30°	0.5	0.33	1	0.66
40°	0.5	0.26	1	0.52

Table 4 Preload factor of Multi-combined bearing

Combination type		Factor	Combination type		Factor
TBT	TFT	1.35	DBT	DFT	1.75
QBT	QFT	1.60	PBC	PFC	2.45
QBC	QFC	2			

Table 5 Preload of contact angle 15° Unit (N)

Inside diameter code	(B)71900C			(B)7000C			(B)7200C		
	A	B	C	A	B	C	A	B	C
00	10	20	40	15	30	60	20	40	80
01	10	20	40	15	30	60	20	40	80
02	15	30	60	20	40	80	30	60	120
03	15	30	60	25	50	100	35	70	140
04	25	50	100	35	70	140	45	90	180
05	25	50	100	35	70	140	50	100	200
06	25	50	100	50	100	200	90	180	360
07	35	70	140	60	120	240	120	240	480
08	45	90	180	60	120	240	150	300	600
09	50	100	200	110	220	440	160	320	640
10	50	100	200	110	220	440	170	340	680
11	70	140	280	150	300	600	210	420	840
12	70	140	280	150	300	600	250	500	1000
13	80	160	320	160	320	640	290	580	1160
14	130	260	520	200	400	800	300	600	1200
15	130	260	520	200	400	800	310	620	1240
16	140	280	560	240	480	960	370	740	1480
17	170	340	680	250	500	1000	370	740	1480
18	180	360	720	300	600	1200	480	960	1920
19	190	380	760	310	620	1240	520	1040	2080
20	230	460	920	310	620	1240	590	1180	2360
21	230	460	920	360	720	1440	650	1300	2600
22	230	460	920	420	840	1680	670	1340	2680
24	290	580	1160	430	860	1720	750	1500	3000
26	350	700	1400	560	1120	2240	800	1600	3200
28	360	720	1440	570	1140	2280			
30	470	940	1880	650	1300	2600			
32	490	980	1960	730	1460	2920			
34	500	1000	2000	800	1600	3200			
36	630	1260	2520	900	1800	3600			
38	640	1280	2560	950	1900	3800			
40	800	1600	3200	1100	2200	4400			
44	850	1700	3400	1250	2500	5000			
48	-	-	-	1300	2600	5200			

Table 6 Contact angle 25°, Contact angle 40° Unit (N)

Inside diameter code	(B)71900AC			(B)7000AC			(B)7200AC			7200B、7300B		
	A	B	C	A	B	C	A	B	C	A	B	C
00	15	30	60	25	50	100	35	70	140	80	330	660
01	15	30	60	25	50	100	35	70	140	80	330	660
02	25	50	100	30	60	120	45	90	180	80	330	660
03	25	50	100	40	80	160	60	120	240	80	330	660
04	35	70	140	50	100	200	70	140	280	120	480	970
05	40	80	160	60	120	240	80	160	320	120	480	970
06	40	80	160	90	180	360	150	300	600	120	480	970
07	60	120	240	90	180	360	190	380	760	160	630	1280
08	70	140	280	100	200	400	240	480	960	160	630	1280
09	80	160	320	170	340	680	260	520	1040	160	630	1280
10	80	160	320	180	360	720	260	520	1040	160	630	1280
11	120	240	480	230	460	920	330	660	1320	380	1500	3050
12	120	240	480	240	480	960	400	800	1600	380	1500	3050
13	120	240	480	240	480	960	450	900	1800	380	1500	3050
14	200	400	800	300	600	1200	480	960	1920	380	1500	3050
15	210	420	840	310	620	1240	500	1000	2000	380	1500	3050
16	220	440	880	390	780	1560	580	1160	2320	380	1500	3050
17	270	540	1080	400	800	1600	600	1200	2400	410	1600	3250
18	280	560	1120	460	920	1840	750	1500	3000	410	1600	3250
19	290	580	1160	480	960	1920	850	1700	3400	410	1600	3250
20	360	720	1440	500	1000	2000	950	1900	3800	410	1600	3250
21	360	720	1440	560	1120	2240	1000	2000	4000	410	1600	3250
22	370	740	1480	650	1300	2600	1050	2100	4200	410	1600	3250
24	450	900	1800	690	1380	2760	1200	2400	4800	410	1600	3250
26	540	1080	2160	900	1800	3600	1250	2500	5000	540	2150	4300
28	560	1120	2240	900	1800	3600				540	2150	4300
30	740	1480	2960	1000	2000	4000				540	2150	4300
32	800	1600	3200	1150	2300	4600				540	2150	4300
34	800	1600	3200	1250	2500	5000				540	2150	4300
36	1000	2000	4000	1450	2900	5800				540	2150	4300
38	1000	2000	4000	1450	2900	5800				940	3700	7500
40	1250	2500	5000	1750	3500	7000				940	3700	7500
44	1300	2600	5200	2000	4000	8000				940	3700	7500
48				2050	4100	8200				940	3700	7500

The preload value of the multi-combined matched bearing composed of three or more sets of bearing is calculated by multiplying the preload value of matched pair bearing by the factor specified in Table 7.

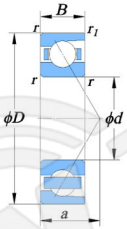
Table 7 Axial Pre-clearance Value of 7200B and 7300B Series Matched Pair bearing (Unit: μm)

D(mm)		CA		CB		CC	
Over	Incl.	min	max	min	max	min	max
-	10	4	12	14	22	22	30
10	18	5	13	15	23	24	32
18	30	7	15	18	26	32	40
30	50	9	17	22	30	40	48
50	80	11	23	26	38	48	60
80	120	14	26	32	44	55	67
120	180	17	29	35	47	62	74
180	250	21	37	45	61	74	90

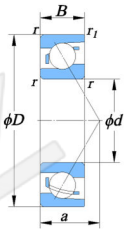
■Supplementary code

Code name	Code description	Code name	Code description
A	Contact angle 30°	F1	Carbon steel solid cage
CX	Axial clearance is non-standard	L3	Zinc base aluminum alloy solid cage
D	Double row angular contact ball bearing, double inner rings, contact angle 45°	N_1	The bearing outer ring has a positioning notch
DC	Double row angular contact ball bearing, double outer ring	P4A	Tolerance level is higher than P4
DBA	Two angular contact ball bearing are installed in series in the same direction	Q1	Aluminum iron manganese bronze solid cage
DBAX	Two angular contact ball bearing are installed in back-to-back pair, with non-standard light preload	Q5	Tin bronze solid cage
DBB	Two angular contact ball bearing are installed in back-to-back pair, with medium preload	TA	Phenolic laminated tube solid cage, guided by outer ring
DBBX	Two angular contact ball bearing are installed in back-to-back pair, with non-standard medium preload	TN_1	Nylon cage
DFA	Two angular contact ball bearing are installed in face-to-face pair, with light preload	TYN	Polyamide resin cage
DTA	Two angular contact ball bearing are installed in series in the same direction and in pair, with light preload	W33A	The bearing outer ring has oil groove and four lubricating oil holes
HA	The ring, rolling element and cage or only the ring and rolling element are made of vacuum smelted bearing steel	/Y	The combination of Y and another letter (such as YA, YB) is used to identify non-serial changes that can't be expressed with the existing rear code. For bearings with a rear code of Y, you shall contact **ZWZ** for details of the change: YA - Structural change (comprehensive expression); YB - Technical condition change (comprehensive expression)

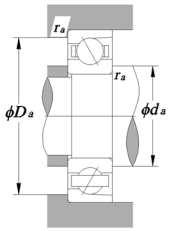
d 10～35mm

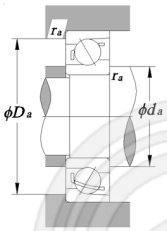


Machined cage



Pressed cage

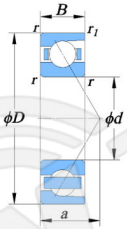




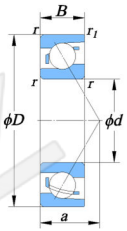
d	Principal dimensions(mm) D	B	r_{min}	r_{1min}	Basic load ratings(kN) C_r	C_{or}	Factor f_o	Designations
10	26	8	0.3	0.3	5.50	2.70	13.0	**7000AC**
12	28	8	0.3	0.3	5.60	2.80	13.6	**7001AC**
17	40	12	0.6	0.6	7.30	4.20	14.4	**7203AC**
20	42	12	0.6	0.6	10.6	6.30	14.3	**7004AC**
	47	14	0.6	0.3	14.9	8.60	13.7	**7204AC**
	52	15	1.1	0.6	14.1	8.50	14.7	**7304BTN1**
25	47	12	0.6	0.3	11.1	7.10	14.9	**7005AC**
	47	12	0.6	0.3	11.7	7.40	14.7	**7005C**
	52	15	1	0.3	15.9	9.80	14.3	**7205AC**
	52	15	1	0.3	15.9	9.50	14.0	**7205C**
	52	15	1	0.3	15.7	9.40	14.0	**7205CTA**
	62	17	1.1	0.6	24.4	14.2	14.0	**7305BM**
	62	17	1.1	0.6	24.4	14.2	14.0	**7305BTN1**
	62	17	1.1	0.6	37.1	15.6	13.0	**7305ACM**
	62	17	1.1	0.6	27.9	16.2	12.7	**7305C**
30	55	13	1	0.3	13.5	9.50	15.3	**7006AC**
	55	13	1	0.3	13.5	9.50	15.3	**7006ACTA**
	55	13	1	0.3	14.2	10.0	15.1	**7006C**
	60	16	1	0.3	18.5	12.3	15.2	**7206BJ**
	62	16	1	0.3	18.5	12.3	15.2	**7206BM**
	62	16	1	0.3	20.5	13.5	14.9	**7206BTN1**
	62	16	1	0.3	21.0	13.8	14.5	**7206AC**
	62	16	1	0.3	21.0	13.8	14.5	**7206ACJ**
	62	16	1	0.3	21.0	13.8	14.5	**7206ACM**
	72	19	1.1	0.6	29.3	18.2	14.3	**7306BM**
	72	19	1.1	0.6	27.5	17.8	14.6	**7306BTN1**
	72	19	1.1	0.6	31.0	19.5	13.8	**7306ACM**
	72	19	1.1	0.6	32.3	20.3	13.5	**7306C**
35	62	14	1	0.3	19.0	13.5	15.4	**7007BTN1**
	62	14	1	0.3	19.1	13.7	15.0	**7007C**
	62	14	1	0.3	19.1	13.7	15.0	**7007C/YA8**
	72	17	1.1	0.6	25.7	16.9	14.9	**7207BM**
	72	17	1.1	0.6	27.1	18.3	14.9	**7207BTN1**
	72	17	1.1	0.6	30.7	20.7	14.2	**7207AC**
	72	17	1.1	0.6	32.1	21.7	14.0	**7207C**
	72	17	1.1	0.6	32.0	21.7	14.0	**7207CM**
	72	17	1.1	0.6	29.5	20.6	14.3	**7207CTN1**
	80	21	1.5	0.6	39.1	24.0	13.6	**7307AQ1**

Limiting speeds(r/min) Grease	Oil	Function point (mm) a	Abutment and fillet dimensions(mm) d_{amin}	D_{amax}	r_{amax}	Mass(kg) (approx.)
32000	43000	8.2	12.4	23.6	0.3	0.0198
30000	40000	8.5	14.4	25.6	0.3	0.0610
25000	33000	11.9	22	35	0.6	0.0735
21000	28000	13.2	25	37	0.6	0.0695
19000	26000	15.0	25	42	0.6	0.105
13000	17000	22.6	27	45	1.1	0.156
19000	25000	14.4	30	42	0.6	0.0758
23000	30000	10.7	30	42	0.6	0.0758
17000	23000	16.4	31	46	1	0.127
21000	28000	12.7	31	46	1	0.140
21000	28000	12.6	31	46	1	0.127
11000	14000	27.1	32	55	1.1	0.277
11000	14000	27.1	32	55	1.1	0.277
16000	21000	18.6	32	55	1.1	0.256
19000	25000	14.3	32	55	1.1	0.224
16000	21000	16.4	36	49	1	0.118
16000	21000	16.4	36	49	1	0.120
19000	26000	12.1	36	49	1	0.118
9800	13000	27.2	36	54	1	0.203
9800	13000	27.2	36	56	1	0.249
9800	13000	27.4	36	56	1	0.200
15000	20000	18.7	36	56	1	0.215
15000	20000	18.7	36	56	1	0.203
15000	20000	18.7	36	56	1	0.240
8900	12000	30.9	37	65	1.1	0.371
8900	12000	30.8	37	65	1.1	0.362
13000	17000	21.6	37	65	1.1	0.413
16000	21000	16.4	37	65	1.1	0.346
9300	13000	27.4	41	56	1	0.155
17000	23000	13.5	41	56	1	0.148
17000	23000	13.5	41	56	1	0.147
8500	12000	30.9	42	65	1.1	0.328
8500	12000	30.9	42	65	1.1	0.285
13000	17000	20.9	42	65	1.1	0.304
16000	21000	15.6	42	65	1.1	0.304
16000	21000	15.6	42	65	1.1	0.337
16000	21000	15.7	42	65	1.1	0.292
11000	14000	27.1	44	71	1.5	0.538

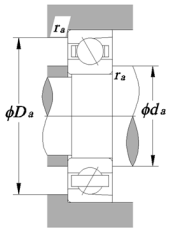
d 35～45mm

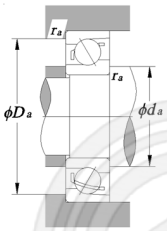


Machined cage



Pressed cage

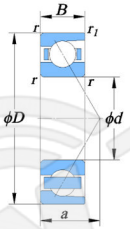




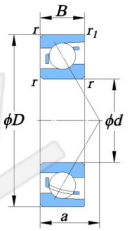
Principal dimensions(mm)					Basic load ratings(kN)		Factor	Designations	Limiting speeds(r/min)		Function point (mm)	Abutment and fillet dimensions(mm)			Mass(kg)
d	*D*	*B*	r_{min}	r_{1min}	C_r	C_{or}	f_o		Grease	Oil	*a*	d_{amin}	D_{amax}	r_{amax}	(approx.)
35	80	21	1.5	0.6	38.4	24.6	14.3	**7307B**	7700	11000	35.0	44	71	1.5	0.551
	80	21	1.5	0.6	38.4	24.6	14.3	**7307BM**	7700	11000	35.0	44	71	1.5	0.551
	80	21	1.5	0.6	38.8	24.9	13.7	**7307AC**	12000	16000	24.1	44	71	1.5	0.454
	80	21	1.5	0.6	38.8	24.9	13.7	**7307ACM**	12000	16000	24.1	44	71	1.5	0.537
	80	21	1.5	0.6	40.4	25.9	13.4	**7307C**	14000	19000	18.3	44	71	1.5	0.454
	100	25	1.5	0.6	69.9	42.4	12.2	**7407AC**	9800	14000	28.3	44	91	1.5	0.977
	100	25	1.5	0.6	69.9	42.4	12.2	**7407ACM**	9800	14000	28.3	44	91	1.5	1.14
	80	21	1.5	0.6	38.4	24.4	14.2	**7307BTN1**	7900	11000	34.5	44	71	1.5	0.470
40	68	15	1	0.3	19.5	15.1	15.6	**7008AC**	13000	17000	20.1	46	62	1	0.188
	68	15	1	0.3	20.6	15.9	15.4	**7008C**	15000	20000	14.7	46	62	1	0.188
	80	18	1.1	0.6	34.7	24.0	14.4	**7208ACM**	12000	15000	22.9	47	73	1.1	0.429
	80	18	1.1	0.6	36.3	25.3	14.2	**7208AC**	14000	18000	17.0	47	73	1.1	0.367
	80	18	1.1	0.6	36.3	25.3	14.2	**7208C**	14000	19000	17.0	47	73	1.1	0.364
	80	18	1.1	0.6	36.3	25.3	14.2	**7208CM**	14000	19000	17.0	47	73	1.1	0.425
	80	18	1.1	0.6	36.3	25.3	14.2	**7208CTN1**	14000	19000	17.0	47	73	1.1	0.312
	90	23	1.5	0.6	46.4	30.4	14.3	**7308B**	7000	9300	38.7	49	81	1.5	0.653
	90	23	1.5	0.6	46.4	30.4	14.3	**7308BM**	7000	9300	38.7	49	81	1.5	0.711
	90	23	1.5	1	40.5	27.6	14.7	**7308BTN1**	7000	9300	38.7	49	81	1.5	0.655
	90	23	1.5	0.6	58.5	31.1	13.7	**7308AC**	11000	14000	26.7	49	81	1.5	0.625
	90	23	1.5	0.6	47.5	31.1	13.7	**7308ACM**	11000	14000	26.7	49	81	1.5	0.743
	90	23	1.5	0.6	49.4	32.4	13.4	**7308C**	13000	17000	20.2	49	81	1.5	0.624
	90	23	1.5	0.6	60.8	32.4	13.4	**7308CM**	13000	17000	20.2	49	81	1.5	0.745
	110	27	2	1	69.2	42.7	13.5	**7408BM**	6100	8100	44.9	50	100	2	1.47
45	75	16	1	0.3	24.5	19.3	15.5	**7009AC**	12000	15000	21.9	51	69	1	0.239
	75	16	1	0.3	24.4	19.3	15.4	**7009C**	14000	19000	16.0	51	69	1	0.240
	75	16	1	0.3	24.4	19.3	15.4	**7009C/YA8**	14000	19000	16.0	51	69	1	0.248
	85	19	1.1	0.6	45.3	24.4	15.2	**7209BM**	7000	9300	36.7	52	78	1.1	0.985
	85	19	1.1	0.6	47.6	26.3	15.2	**7209BTN1**	7000	9300	36.9	52	78	1.1	0.422
	85	19	1.1	0.6	39.0	27.6	14.5	**7209AC**	11000	14000	24.6	52	78	1.1	0.404
	85	19	1.1	0.6	39.0	27.6	14.5	**7209ACM**	11000	14000	24.6	52	78	1.1	0.490
	85	19	1.1	0.6	40.8	28.8	14.2	**7209C**	13000	17000	18.1	52	78	1.1	0.403
	85	19	1.1	0.6	40.8	28.8	14.2	**7209CM**	13000	17000	18.1	52	78	1.1	0.488
	100	25	1.5	0.6	60.0	36.7	14.3	**7309BM**	6300	8300	43.1	54	91	1.5	0.968
	100	25	1.5	0.6	68.1	39.6	14.1	**7309BT**	6300	8300	43.0	54	91	1.5	0.915
	100	25	1.5	0.6	64.0	36.7	14.3	**7309BTN1**	6300	8300	43.0	54	91	1.5	0.850
	100	25	1.5	0.6	42.4	30.9	15.2	**7309BTN1/YA5**	6300	8300	42.8	54	91	1.5	0.891
	100	25	1.5	0.6	75.8	44.2	13.3	**7309AC**	9200	13000	29.3	54	91	1.5	0.860
	100	25	1.5	0.6	66.4	44.2	13.3	**7309ACM**	9200	13000	29.3	54	91	1.5	0.997

ZWZ

d 45～55mm



Machined cage



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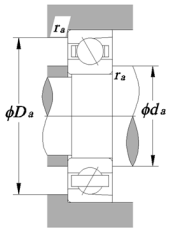
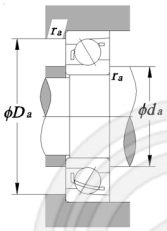
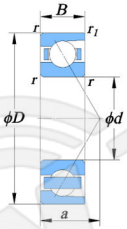




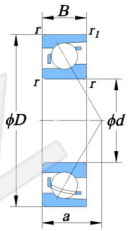
d	Principal dimensions(mm) D	B	r_{min}	r_{1min}	Basic load ratings(kN) C_r	C_{or}	Factor f_o	Designations
45	100	25	1.5	0.6	64.1	42.8	13.2	**7309C**
	120	29	2	1	79.6	52.2	13.8	**7409BM**
	120	29	2	1	79.6	52.2	13.8	**7409BT**
50	80	16	1	0.3	25.2	20.9	15.8	**7010AC**
	80	16	1	0.3	25.2	20.9	15.8	**7010ACM**
	80	16	1	0.3	26.6	21.8	15.5	**7010C**
	80	16	1	0.3	26.6	21.8	15.5	**7010CM**
	90	20	1.1	0.6	37.4	28.5	15.4	**7210B**
	90	20	1.1	0.6	47.1	26.6	15.4	**7210BM**
	90	20	1.1	0.6	40.8	30.3	14.8	**7210AC**
	90	20	1.1	0.6	40.8	30.3	14.8	**7210ACM**
	90	20	1.1	0.6	42.8	31.8	14.6	**7210C**
	90	20	1.1	0.6	42.8	31.8	14.6	**7210C/YB2**
	100	20	1	0.6	51.2	39.2	14.8	**7210X1ATN1**
	110	27	2	1	65.0	44.4	14.0	**7310AQ1**
	110	27	2	1	64.4	44.0	14.4	**7310B**
	110	27	2	1	64.4	44.0	14.4	**7310BM**
	110	27	2	1	69.4	47.1	14.2	**7310BQ1/YAD**
	110	27	2	1	76.5	48.0	14.4	**7310BTN1**
	110	27	2	1	80.9	49.2	13.6	**7310AC**
	110	27	2	1	72.1	49.2	13.6	**7310ACM**
	110	27	2	1	74.9	50.9	13.2	**7310C**
	110	27	2	1	74.9	50.9	13.2	**7310CM**
	130	31	2.1	1.1	95.6	63.5	13.7	**7410BM**
	130	31	2.1	1.1	105	70.2	12.8	**7410AC**
	130	31	2.1	1.1	105	70.2	12.8	**7410ACM**
55	90	18	1.1	1.1	36.0	29.3	15.4	**7011AC**
	90	18	1.1	0.6	46.4	27.1	15.6	**7011ACQ5**
	90	18	1.1	0.6	36.0	29.3	15.4	**7011ACTN1**
	90	18	1.1	0.6	32.8	27.1	15.5	**7011C**
	100	21	1.5	0.6	44.2	33.7	15.4	**7211BM**
	100	21	1.5	0.6	58.3	36.1	15.4	**7211BTN1**
	100	21	1.5	0.6	50.5	38.3	14.8	**7211AC**
	100	21	1.5	0.6	50.5	38.3	14.8	**7211ACM**
	100	21	1.5	0.6	50.5	38.3	14.8	**7211ACTYN**
	100	21	1.5	0.6	52.9	40.0	14.5	**7211C**
	100	21	1.5	0.6	52.9	40.0	14.5	**7211CM**
	100	21	1.5	0.6	52.9	40.0	14.5	**7211CYA8**

Limiting speeds(r/min) Grease	Oil	Function point (mm) a	Abutment and fillet dimensions(mm) d_{amin}	D_{amax}	r_{amax}	Mass(kg) (approx.)
12000	15000	22.3	54	91	1.5	0.834
5500	7300	49.2	55	110	2	1.82
5500	7300	49.2	55	110	2	1.65
11000	14000	23.1	56	74	1	0.254
11000	14000	23.1	56	74	1	0.314
13000	17000	16.6	56	74	1	0.249
13000	17000	16.6	56	74	1	0.309
6500	8600	39.4	57	83	1.1	0.487
6500	8600	39.4	57	83	1.1	0.585
9500	13000	26.3	57	83	1.1	0.460
9500	13000	26.3	57	83	1.1	0.561
12000	16000	19.3	57	83	1.1	0.458
12000	16000	19.3	57	83	1.1	0.458
7900	11000	31.4	56	94	1	0.681
7400	9800	36.7	60	100	2	1.25
5700	7500	47.0	60	100	2	1.05
5700	7500	47.1	60	100	2	1.17
5700	7500	47.2	60	100	2	1.29
5700	7500	46.9	60	100	2	1.14
8300	12000	32.1	60	100	2	1.05
8300	12000	32.1	60	100	2	1.22
11000	14000	24.3	60	100	2	1.04
11000	14000	24.3	60	100	2	1.22
5000	6700	53.2	62	118	2	2.30
7400	9800	36.5	62	118	2	1.95
7400	9800	36.5	62	118	2	2.18
9200	13000	26.1	62	83	1.1	0.331
9200	13000	25.9	62	83	1.1	0.474
9200	13000	25.9	62	83	1.1	0.373
12000	15000	18.6	62	83	1.1	0.386
5900	7800	42.9	64	91	1.5	0.763
5900	7800	42.9	64	91	1.5	0.630
8600	12000	28.5	64	91	1.5	0.600
8600	12000	28.5	64	91	1.5	0.699
8600	12000	28.6	64	91	1.5	0.606
11000	14000	20.8	64	91	1.5	0.600
11000	14000	20.8	64	91	1.5	0.699
11000	14000	20.8	64	91	1.5	0.613

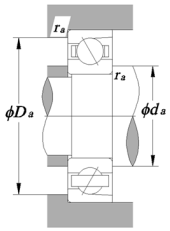
d 55～65mm

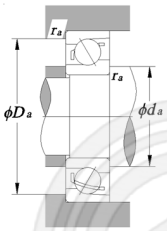


Machined cage



Pressed cage

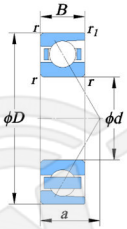




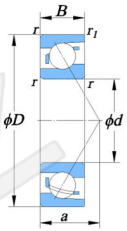
d	Principal dimensions(mm) D	B	r_{min}	r_{1min}	Basic load ratings(kN) C_r	C_{or}	Factor f_o	Designations
55	120	29	2	1	85.7	61.5	13.9	**7311AQ1**
	120	29	2	1	78.8	56.4	14.4	**7311BM**
	120	29	2	1	85.6	56.4	14.4	**7311BTN1**
	120	29	2	1	61.0	45.9	15.1	**7311BTN1/YA5**
	120	29	2	1	88.3	63.0	13.6	**7311AC**
	120	29	2	1	88.3	63.0	13.6	**7311ACM**
	120	29	2	1	88.3	63.0	13.6	**7311ACQ1**
	120	29	2	1	91.8	65.7	13.3	**7311C**
	120	29	2	1	91.8	65.7	13.3	**7311CM**
	140	33	2.1	1.1	121	84.5	12.8	**7411AC**
	140	33	2.1	1.1	121	84.5	12.8	**7411ACM**
60	95	18	1.1	0.6	36.0	29.7	15.6	**7012AC**
	95	18	1.1	0.6	47.6	29.2	15.9	**7012ACTN1**
	95	18	1.1	0.6	35.1	30.5	15.6	**7012C**
	95	18	1.1	0.6	50.3	30.5	15.6	**7012CTN1**
	110	22	1.5	0.6	48.5	37.8	15.5	**7212BM**
	110	22	1.5	0.6	55.6	43.0	14.9	**7212AC**
	110	22	1.5	0.6	55.6	43.0	14.9	**7212ACM**
	110	22	1.5	0.6	58.3	45.2	14.7	**7212C**
	110	22	1.5	0.6	58.3	45.2	14.7	**7212CM**
	130	31	2.1	1.1	84.9	59.9	14.4	**7312B**
	130	31	2.1	1.1	84.9	59.9	14.4	**7312BM**
	130	31	2.1	1.1	89.5	59.9	14.4	**7312BT**
	130	31	2.1	1.1	71.3	54.6	15.1	**7312BTN1/YA5**
	130	31	2.1	1.1	95.3	67.5	13.7	**7312AC**
	130	31	2.1	1.1	95.3	67.5	13.7	**7312ACM**
	130	31	2.1	1.1	99.1	69.8	13.3	**7312CM**
	150	35	2.1	1.1	119	86.3	13.8	**7412BM**
	150	35	2.1	1.1	119	86.3	13.8	**7412BT**
	150	35	2.1	1.1	131	95.1	13.1	**7412AC**
	150	35	2.1	1.1	131	95.1	13.1	**7412ACM**
65	100	18	1.1	0.6	33.9	30.9	16.0	**7013AC**
	100	18	1.1	0.6	38.0	33.6	15.8	**7013ACJ**
	100	18	1.1	0.6	33.9	30.9	16.0	**7013ACM**
	100	18	1.1	0.6	37.1	34.3	15.9	**7013C**
	120	23	1.5	0.6	60.9	49.2	15.4	**7213BM**
	120	23	1.5	0.6	69.7	55.9	14.8	**7213AC**
	120	23	1.5	0.6	69.7	55.9	14.8	**7213AC/YB5**

Limiting speeds(r/min) Grease	Oil	Function point (mm) a	Abutment and fillet dimensions(mm) d_{amin}	D_{amax}	r_{amax}	Mass(kg) (approx.)
6700	8900	39.8	65	110	2	1.63
5200	6900	51.2	65	110	2	1.62
5200	6900	51.4	65	110	2	1.43
5200	6900	51.1	65	110	2	1.47
7600	11000	34.9	65	110	2	1.44
7600	11000	34.9	65	110	2	1.65
7600	11000	34.9	65	110	2	1.64
9300	13000	26.2	65	110	2	1.44
9300	13000	26.2	65	110	2	1.65
6800	9100	39.2	67	128	2	2.38
6800	9100	39.2	67	128	2	2.79
8600	12000	27.0	67	88	1.1	0.392
8600	12000	27.1	67	88	1.1	0.408
11000	14000	19.4	67	88	1.1	0.408
11000	14000	19.4	67	88	1.1	0.408
5300	7100	46.6	69	101	1.5	0.946
7800	11000	30.8	69	101	1.5	0.786
7800	11000	30.8	69	101	1.5	0.945
9600	13000	22.3	69	101	1.5	0.786
9600	13000	22.3	69	101	1.5	0.914
4800	6300	55.5	72	118	2	1.86
4800	6300	55.5	72	118	2	2.14
4800	6300	55.5	72	118	2	1.90
4800	6300	55.3	72	118	2	1.86
7000	9300	37.7	72	118	2	1.80
7000	9300	37.7	72	118	2	2.12
8500	12000	28.1	72	118	2	2.03
4300	5700	61.6	72	138	2	3.42
4300	5700	61.6	72	138	2	3.15
6300	8400	42.0	72	138	2	3.11
6300	8400	42.0	72	138	2	3.65
8100	11000	28.2	72	93	1.1	0.414
8100	11000	28.2	72	93	1.1	0.410
8100	11000	28.2	72	93	1.1	0.504
9900	14000	20.0	72	93	1.1	0.440
4900	6500	50.2	74	111	1.5	1.21
7200	9600	33.1	74	111	1.5	1.02
7200	9600	33.0	74	111	1.5	1.02

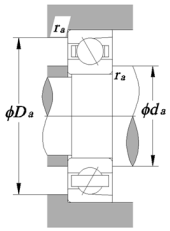
d 65～70mm

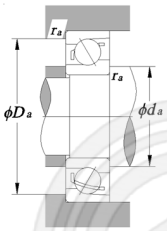


Machined cage



Pressed cage



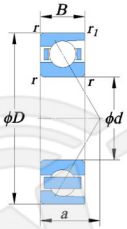


d	Principal dimensions(mm) *D*	*B*	r_{min}	r_{1min}	Basic load ratings(kN) C_r	C_{or}	Factor f_o	Designations
65	120	23	1.5	0.6	69.7	55.9	14.8	**7213ACM**
	120	23	1.5	0.6	78.8	52.2	14.8	**7213ACTN1**
	120	23	1.5	0.6	73.1	58.8	14.6	**7213C**
	120	23	1.5	0.6	73.1	58.8	14.6	**7213CM**
	140	33	2.1	1.1	102	75.6	14.5	**7313B**
	140	33	2.1	1.1	102	75.6	14.5	**7313BM**
	140	33	2.1	1.1	102	75.6	14.5	**7313BM/YB2**
	140	33	2.1	1.1	82.4	64.0	15.1	**7313BTN1/YA5**
	140	33	2.1	1.1	114	84.5	13.7	**7313ACJ**
	140	33	2.1	1.1	114	84.5	13.7	**7313ACM**
	160	37	2.1	1.1	129	96.9	13.9	**7413BM**
70	110	20	1.1	0.6	53.5	36.4	16.2	**7014A**
	110	20	1.1	0.6	44.4	40.9	15.9	**7014AC**
	110	20	1.1	0.6	44.4	40.9	15.9	**7014ACM**
	110	20	1.1	0.6	40.0	37.8	16.1	**7014ACTN1**
	110	20	1.1	0.6	63.5	43.0	15.7	**7014C**
	110	20	1.1	0.6	46.9	43.0	15.7	**7014CM**
	110	20	1.1	1.1	58.9	39.8	15.9	**7014CTN1**
	125	24	1.5	0.6	66.2	54.3	15.5	**7214BM**
	125	24	1.5	0.6	75.8	61.8	14.9	**7214AC**
	125	24	1.5	0.6	75.8	61.8	14.9	**7214ACM**
	125	24	1.5	0.6	88.0	61.8	14.9	**7214ACTA**
	125	24	1.5	0.6	79.5	64.5	14.6	**7214C**
	125	24	1.5	0.6	79.5	64.5	14.6	**7214CM**
	125	24	1.5	0.6	79.5	64.5	14.6	**7214CTN1**
	150	35	2.1	1.1	125	93.9	14.0	**7314A**
	150	35	2.1	1.1	114	86.0	14.5	**7314B**
	150	35	2.1	1.1	114	86.0	14.5	**7314BM**
	150	35	2.1	1.1	114	86.0	14.5	**7314BTN1**
	150	35	2.1	1.1	129	96.1	13.7	**7314AC**
	150	35	2.1	1.1	129	96.1	13.7	**7314ACM**
	150	35	2.1	1.1	134	100	13.4	**7314C**
	150	35	2.1	1.1	134	100	13.4	**7314CM**
	180	42	3	1.1	148	118	13.9	**7414BM**
	180	42	3	1.1	148	118	13.9	**7414BT**
	180	42	3	1.1	164	131	13.0	**7414AC**
	180	42	3	1.1	164	131	13.0	**7414ACJ**
	180	42	3	1.1	164	131	13.0	**7414ACM**

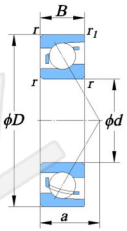
Limiting speeds(r/min) Grease	Oil	Function point (mm) *a*	Abutment and fillet dimensions(mm) d_{amin}	D_{amax}	r_{amax}	Mass(kg) (approx.)
7200	9600	33.1	74	111	1.5	1.16
7200	9600	33.0	74	111	1.5	1.00
8800	12000	23.9	74	111	1.5	1.02
8800	12000	23.9	74	111	1.5	1.16
4400	5900	59.5	77	128	2	1.95
4400	5900	59.5	77	128	2	2.53
4400	5900	59.5	77	128	2	2.53
4400	5900	59.4	77	128	2	2.29
6500	8600	40.4	77	128	2	2.24
6500	8600	40.5	77	128	2	2.53
4000	5300	65.8	77	148	2	3.70
6500	8700	36.0	77	103	1.1	0.635
7400	9800	30.9	77	103	1.1	0.626
7400	9800	30.9	77	103	1.1	0.725
7400	9800	30.9	77	103	1.1	0.622
9000	12000	22.0	77	103	1.1	0.625
9000	12000	22.0	77	103	1.1	0.724
9000	12000	22.0	77	103	1.1	0.620
4600	6200	52.8	79	116	1.5	1.27
6800	9100	34.7	79	116	1.5	1.10
6800	9100	34.7	79	116	1.5	1.24
6800	9100	34.8	79	116	1.5	1.11
8300	12000	25.0	79	116	1.5	1.10
8300	12000	25.0	79	116	1.5	1.24
8300	12000	25.0	79	116	1.5	1.09
5300	7100	49.3	82	138	2	2.66
4100	5500	63.7	82	138	2	2.85
4100	5500	63.7	82	138	2	3.16
4100	5500	63.6	82	138	2	2.71
6000	8000	43.2	82	138	2	2.69
6000	8000	43.2	82	138	2	3.08
7300	9800	32.1	82	138	2	2.69
7300	9800	32.1	82	138	2	3.08
3600	4800	73.5	84	166	2.5	5.61
3600	4800	73.5	84	166	2.5	5.23
5200	7000	50.2	84	166	2.5	4.76
5200	7000	50.2	84	166	2.5	4.86
5200	7000	50.2	84	166	2.5	5.22

ZWZ

d 75～80mm



Machined cage



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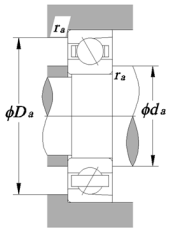
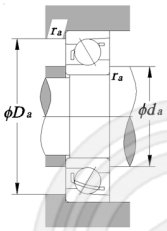
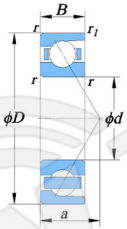




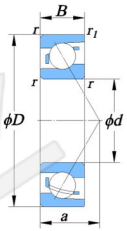
d	Principal dimensions(mm) D	B	r_{min}	r_{1min}	Basic load ratings(kN) C_r	C_{or}	Factor f_o	Designations
75	115	20	1.1	0.6	42.0	41.7	16.2	**7015AC**
	115	20	1.1	0.6	58.5	41.7	16.2	**7015ACTN1**
	115	20	1.1	0.6	46.5	43.5	15.9	**7015C**
	130	25	1.5	0.6	79.8	58.3	15.6	**7215BM**
	130	25	1.5	0.6	78.8	66.8	15.1	**7215AC**
	130	25	1.5	0.6	78.8	66.8	15.1	**7215ACJ**
	130	25	1.5	0.6	78.8	66.8	15.1	**7215ACM**
	130	25	1.5	0.6	78.8	66.8	15.1	**7215ACTN1**
	130	25	1.5	0.6	82.7	69.7	14.8	**7215C**
	130	25	1.5	0.6	79.8	58.1	15.5	**7215CTN1**
	160	37	2.1	1.1	124	97.1	14.5	**7315B**
	160	37	2.1	1.1	124	97.1	14.5	**7315BM**
	160	37	2.1	1.1	124	97.1	14.5	**7315BM/YB2**
	160	37	2.1	1.1	124	97.1	14.5	**7315BQ1**
	160	37	2.1	1.1	140	109	13.8	**7315AC**
	160	37	2.1	1.1	140	109	13.8	**7315ACJ**
	160	37	2.1	1.1	140	109	13.8	**7315ACM**
	160	37	2.1	1.1	140	109	13.8	**7315ACQ1**
	160	37	2.1	1.1	140	109	13.8	**7315ACTN1**
	160	37	2.1	1.1	146	113	13.4	**7315CJ**
	160	37	2.1	1.1	146	113	13.4	**7315CM**
	190	45	3	1.1	158	130	13.9	**7415BM**
	190	45	3	1.1	158	130	13.9	**7415BT**
80	110	16	1	0.6	32.6	33.9	16.5	**71916AC**
	125	22	1.1	0.6	64.5	47.5	16.2	**7016A**
	125	22	1.1	0.6	55.5	52.5	15.9	**7016AC**
	125	22	1.1	0.6	55.5	52.5	15.9	**7016ACJ**
	125	22	1.1	0.6	55.5	52.5	15.9	**7016ACM**
	125	22	1.1	0.6	55.5	52.5	15.9	**7016ACTN1**
	125	22	1.1	0.6	58.7	55.2	15.7	**7016C**
	125	22	1.1	0.6	31.4	34.8	16.3	**7016C/YA5**
	125	22	1.1	0.6	58.7	55.2	15.7	**7016CA**
	140	26	2	1	80.5	68.9	15.5	**7216BM**
	140	26	2	1	92.3	78.9	15.0	**7216AC**
	140	26	2	1	92.3	78.9	15.0	**7216ACM**
	140	26	2	1	96.9	83.0	14.8	**7216C**
	140	26	2	1	96.9	83.0	14.8	**7216CM**
	170	39	2.1	1.1	135	110	14.6	**7316BM**

Limiting speeds(r/min) Grease	Oil	Function point (mm) *a*	Abutment and fillet dimensions(mm) d_{amin}	D_{amax}	r_{amax}	Mass(kg) (approx.)
7000	9300	32.4	82	108	1.1	0.648
7000	9300	32.4	82	108	1.1	0.645
8600	12000	22.6	82	108	1.1	0.641
4400	5900	55.5	84	121	1.5	1.32
6500	8600	36.4	84	121	1.5	1.18
6500	8600	36.4	84	121	1.5	1.18
6500	8600	36.4	84	121	1.5	1.34
6500	8600	36.4	84	121	1.5	1.21
7900	11000	26.1	84	121	1.5	1.24
7900	11000	26.3	84	121	1.5	1.26
3800	5100	67.8	87	148	2	3.26
3800	5100	67.8	87	148	2	3.40
3800	5100	67.8	87	148	2	3.40
3800	5100	67.8	87	148	2	3.70
5600	7500	45.9	87	148	2	3.11
5600	7500	45.9	87	148	2	3.10
5600	7500	45.9	87	148	2	3.60
5600	7500	45.9	87	148	2	3.52
5600	7500	45.9	87	148	2	3.08
6800	9100	34.1	87	148	2	3.10
6800	9100	34.2	87	148	2	3.60
3400	4500	78.4	89	176	2.5	6.95
3400	4500	78.4	89	176	2.5	6.30
7000	9300	30.1	86	104	1	0.376
5700	7600	40.6	87	118	1.1	0.925
6500	8600	34.9	87	118	1.1	0.849
6500	8600	34.8	87	118	1.1	0.849
6500	8600	34.9	87	118	1.1	0.997
6500	8600	35.0	87	118	1.1	0.847
7900	11000	24.7	87	118	1.1	0.852
7900	11000	24.6	87	118	1.1	0.926
7900	11000	24.7	87	118	1.1	0.728
4100	5500	59.2	90	130	2	1.70
6000	8000	38.7	90	130	2	1.48
6000	8000	38.7	90	130	2	1.63
7300	9800	27.7	90	130	2	1.52
7300	9800	27.7	90	130	2	1.74
3600	4800	71.8	92	158	2	4.21

d 80～90mm



Machined cage



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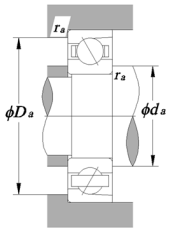
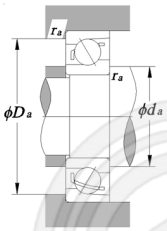
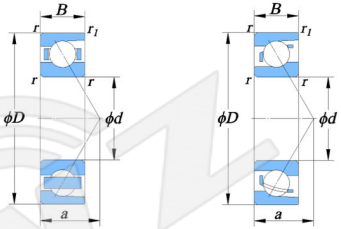




d	Principal dimensions(mm) D	B	r_{min}	r_{1min}	Basic load ratings(kN) C_r	C_{or}	Factor f_o	Designations
80	170	39	2.1	1.1	152	123	13.8	**7316AC**
	170	39	2.1	1.1	152	123	13.8	**7316ACF3**
	170	39	2.1	1.1	152	123	13.8	**7316ACJ**
	170	39	2.1	1.1	152	123	13.8	**7316ACM**
	200	48	3	1.1	179	153	13.8	**7416BM**
	200	48	3	1.1	179	153	13.8	**7416BT**
	200	48	3	1.1	197	170	12.9	**7416AC**
	200	48	3	1.1	197	170	12.9	**7416ACJ**
	200	48	3	1.1	197	170	12.9	**7416ACM**
85	120	18	1.1	0.6	42.6	44.0	16.4	**71917AC**
	120	18	1.1	0.6	37.7	39.8	16.5	**71917ACTA**
	130	22	1.1	0.6	56.9	55.4	16.0	**7017AC**
	130	22	1.1	0.6	56.9	55.4	16.0	**7017ACM**
	130	22	1.1	0.6	60.2	58.7	15.9	**7017C**
	150	28	2	1	86.3	75.3	15.6	**7217BM**
	150	28	2	1	99.1	86.2	15.1	**7217AC**
	150	28	2	1	99.1	86.2	15.1	**7217ACJ**
	150	28	2	1	99.1	86.2	15.1	**7217ACM**
	150	28	2	1	99.1	86.2	15.1	**7217ACTN1**
	150	28	2	1	104	90.1	14.8	**7217CJ**
	150	28	2	1	104	90.1	14.8	**7217CM**
	150	28	2	1	104	90.1	14.8	**7217CTN1**
	180	41	3	1.1	145	122	14.6	**7317BM**
	180	41	3	1.1	145	122	14.6	**7317BM/YB2**
	180	41	3	1.1	145	122	14.6	**7317BT**
	180	41	3	1.1	145	122	14.6	**7317BTN1**
	180	41	3	1.1	164	137	13.8	**7317AC**
	180	41	3	1.1	164	137	13.8	**7317ACM**
	180	41	3	1.1	164	137	13.8	**7317Q1**
90	125	18	1.1	0.6	38.3	41.1	16.4	**71918ACTA**
	140	24	1.5	0.6	58.3	57.1	16.4	**7018BM**
	140	24	1.5	0.6	58.3	57.1	16.4	**7018BT**
	140	24	1.5	0.6	67.9	65.5	15.9	**7018AC**
	140	24	1.5	0.6	67.9	65.5	15.9	**7018ACM**
	140	24	1.5	0.6	67.9	65.5	15.9	**7018ACMA**
	140	24	1.5	0.6	79.3	62.2	16.0	**7018ACTN1**
	140	24	1.5	0.6	90.8	72.9	15.8	**7018C**
	140	24	1.5	0.6	37.4	42.9	16.3	**7018C/YA5**

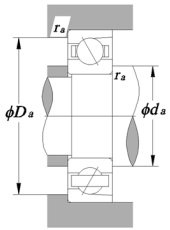
Limiting speeds(r/min) Grease	Oil	Function point (mm) a	Abutment and fillet dimensions(mm) d_{amin}	D_{amax}	r_{amax}	Mass(kg) (approx.)
5200	7000	48.7	92	158	2	3.59
5200	7000	48.7	92	158	2	4.15
5200	7000	48.7	92	158	2	3.88
5200	7000	48.7	92	158	2	4.16
3200	4200	82.9	94	186	2.5	8.05
3200	4200	82.9	94	186	2.5	7.30
4600	6100	56.7	94	186	2.5	7.18
4600	6100	56.7	94	186	2.5	7.22
4600	6100	56.7	94	186	2.5	8.60
6500	8600	32.9	92	113	1.1	0.523
6500	8600	32.9	92	113	1.1	0.547
6200	8200	36.0	92	123	1.1	0.950
6200	8200	36.0	92	123	1.1	1.11
7500	10000	25.3	92	123	1.1	0.901
3800	5100	63.4	95	140	2	2.26
5600	7500	41.5	95	140	2	1.91
5600	7500	41.4	95	140	2	1.97
5600	7500	41.4	95	140	2	2.11
5600	7400	41.4	95	140	2	1.96
6800	9100	29.7	95	140	2	1.96
6800	9100	29.7	95	140	2	2.11
6800	9100	29.7	95	140	2	1.93
3400	4500	76.1	99	166	2.5	4.89
3400	4500	76.1	99	166	2.5	4.89
3400	4500	76.1	99	166	2.5	4.34
3400	4500	76.1	99	166	2.5	4.26
4900	6500	51.4	99	166	2.5	4.35
4900	6500	51.4	99	166	2.5	4.89
4900	6500	51.0	99	166	2.5	4.93
6200	8200	34.1	97	118	1.1	0.573
3900	5200	60.3	99	131	1.5	1.43
3900	5200	60.3	99	131	1.5	1.20
5700	7600	38.8	99	131	1.5	1.18
5700	7600	38.8	99	131	1.5	1.39
5700	7600	38.9	99	131	1.5	1.37
5700	7600	38.7	99	131	1.5	1.17
6800	9000	28.0	99	131	1.5	1.17
7000	9300	27.2	99	131	1.5	1.25

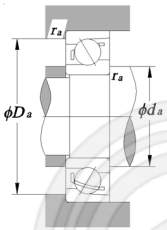
d 90～100mm



Machined cage

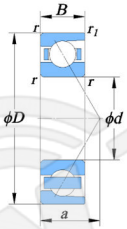
Pressed cage



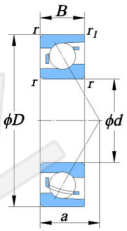


d	Principal dimensions(mm) D	B	r_{min}	r_{1min}	Basic load ratings(kN) C_r	C_{or}	Factor f_o	Designations	Limiting speeds(r/min) Grease	Oil	Function point (mm) a	Abutment and fillet dimensions(mm) d_{amin}	D_{amax}	r_{amax}	Mass(kg) (approx.)
90	140	24	1.5	0.6	74.0	72.4	15.7	**7018CTYN**	7000	9300	27.3	99	131	1.5	1.19
	160	30	2	1	102	88.0	15.5	**7218BM**	3600	4800	67.4	100	150	2	3.38
	160	30	2	1	117	100	14.9	**7218AC**	5200	7000	44.0	100	150	2	2.11
	160	30	2	1	117	100	14.9	**7218ACJ**	5200	7000	44.0	100	150	2	2.16
	160	30	2	1	117	100	14.9	**7218ACM**	5200	7000	44.0	100	150	2	2.39
	160	30	2	1	123	104	14.6	**7218C**	6400	8500	31.6	100	150	2	2.09
	160	30	2	1	123	104	14.6	**7218CM**	6400	8500	31.6	100	150	2	2.37
	190	43	3	1.1	156	135	14.6	**7318B**	3200	4200	80.0	104	176	2.5	4.94
	190	43	3	1.1	156	135	14.6	**7318BM**	3200	4200	80.0	104	176	2.5	5.13
	190	43	3	1.1	156	135	14.6	**7318BM/YB2**	3200	4200	80.0	104	176	2.5	5.13
	190	43	3	1.1	156	135	14.6	**7318BT**	3200	4200	80.0	104	176	2.5	4.75
	190	43	3	1.1	176	152	13.9	**7318AC**	4600	6100	54.1	104	176	2.5	5.35
	190	43	3	1.1	176	152	13.9	**7318ACM**	4600	6100	54.1	104	176	2.5	6.17
	190	43	3	1.1	183	158	13.5	**7318C**	5600	7500	40.2	104	176	2.5	4.96
	190	43	3	1.1	183	158	13.5	**7318CM**	5600	7500	40.2	104	176	2.5	5.70
	225	54	4	1.5	211	194	13.8	**7418BM**	2800	3700	93.0	108	207	3	11.4
	225	54	4	1.5	211	194	13.8	**7418BT**	2800	3700	93.0	108	207	3	10.3
	225	54	4	1.5	233	215	12.9	**7418AC**	4000	5400	63.8	108	207	3	10.0
	225	54	4	1.5	233	215	12.9	**7418ACM**	4000	5400	63.8	108	207	3	11.3
	160	30	2	1	108	88.0	15.5	**7218B**	3600	4800	67.6	100	150	2	2.39
95	145	24	1.5	0.6	69.5	69.3	16.0	**7019AC**	5500	7300	39.9	104	136	1.5	1.21
	145	24	1.5	0.6	69.5	69.3	16.0	**7019ACM**	5500	7300	39.9	104	136	1.5	1.44
	145	24	1.5	1.5	69.5	69.3	16.0	**7019ACN5**	5500	7300	39.9	104	136	1.5	1.41
	145	24	1.5	0.6	85.7	69.3	16.0	**7019ACTN1**	5500	7300	40.1	104	136	1.5	1.20
	145	24	1.5	0.6	73.5	73.4	15.9	**7019C**	6700	8900	28.0	104	136	1.5	1.21
	170	32	2.1	1.1	116	101	15.5	**7219B**	3400	4500	71.8	107	158	2	3.00
	170	32	2.1	1.1	116	101	15.5	**7219BM**	3400	4500	71.8	107	158	2	3.00
	170	32	2.1	1.1	136	114	14.8	**7219AC**	4900	6500	46.9	107	158	2	2.68
	170	32	2.1	1.1	132	114	14.8	**7219ACJ**	4900	6500	46.9	107	158	2	2.76
	170	32	2.1	1.1	132	114	14.8	**7219ACM**	4900	6500	46.9	107	158	2	2.95
	170	32	2.1	1.1	136	114	14.8	**7219ACQ5**	4900	6500	46.9	107	158	2	2.98
	170	32	2.1	1.1	139	120	14.6	**7219CJ**	6000	8000	33.8	107	158	2	2.76
	170	32	2.1	1.3	139	120	14.6	**7219CM**	6000	8000	33.8	107	158	2	2.95
	200	45	3	1.1	167	149	14.6	**7319BM**	3000	4000	84.5	109	186	2.5	6.29
	200	45	3	1.1	188	168	13.9	**7319ACM**	4400	5800	56.9	109	186	2.5	6.32
	200	45	3	1.1	196	174	13.5	**7319CM**	5300	7100	42.2	109	186	2.5	6.32
100	140	20	1.1	0.6	41.0	47.2	16.3	**71920AC**	5500	7300	38.0	107	133	1.1	0.849
	150	24	1.5	0.6	84.1	70.6	16.3	**7020A**	4600	6200	48.0	109	141	1.5	1.25

d 100～110mm



Machined cage



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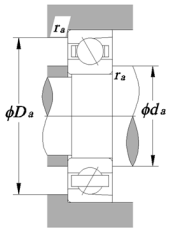
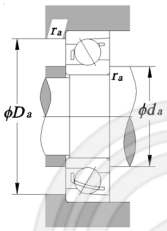
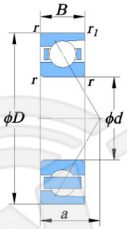




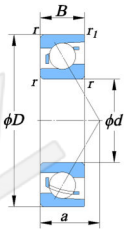
d	Principal dimensions(mm) *D*	*B*	r_{min}	r_{1min}	Basic load ratings(kN) C_r	C_{or}	Factor f_o	Designations
100	150	24	1.5	0.6	76.4	76.7	16.0	**7020AC**
	150	24	1.5	0.6	76.4	76.7	16.0	**7020ACM**
	150	24	1.5	1	92.2	76.7	16.0	**7020ACTA**
	150	24	1.5	1	69.7	73.0	16.1	**7020CTYN**
	180	34	2.1	1.1	130	114	15.4	**7220BM**
	180	34	2.1	1.1	149	130	14.8	**7220AC**
	180	34	2.1	1.1	149	130	14.8	**7220ACM**
	180	34	2.1	1.1	156	136	14.6	**7220CM**
	215	47	3	1.1	190	178	14.5	**7320B**
	215	47	3	1.1	190	178	14.5	**7320BM**
	215	47	3	1.1	190	178	14.5	**7320BT**
	215	47	3	1.1	214	199	13.7	**7320AC**
	215	47	3	1.1	214	199	13.7	**7320ACM**
	150	24	1.5	0.6	97.5	80.8	15.8	**7020CM**
105	145	20	1.1	0.6	48.4	55.1	16.4	**71921AC**
	145	20	1.1	0.6	54.9	60.3	16.5	**71921ACTA**
	160	26	2	1	91.3	92.3	15.9	**7021AC**
	160	26	2	1	80.6	80.6	16.0	**7021ACM**
	160	26	2	1	91.3	92.3	15.9	**7021ACTA**
	160	26	2	1	95.4	80.6	16.0	**7021ACTN1**
	160	26	2	1	85.3	84.8	15.8	**7021C**
	190	36	2.1	1.1	155	137	14.8	**7221ACM**
	225	49	3	1.1	202	193	14.5	**7321BM**
110	170	21	1.5	1.5	76.2	82.3	16.4	**7022AX2M**
	170	28	2	1	98.7	101	15.9	**7022AC**
	170	28	2	1	98.7	101	15.9	**7022ACJ**
	170	28	2	1	98.7	101	15.9	**7022ACM**
	170	28	2	1	109	96.7	16.0	**7022ACTN1**
	200	38	2.1	1.1	176	164	14.8	**7222AC**
	200	38	2.1	1.1	176	164	14.8	**7222ACJ**
	200	38	2.1	1.1	176	164	14.8	**7222ACM**
	200	38	2.1	1.1	184	172	14.5	**7222C**
	200	38	2.1	1.1	184	172	14.5	**7222CJ**
	200	38	2.1	1.1	184	172	14.5	**7222CM**
	240	50	3	1.1	213	211	14.6	**7322B**
	240	50	3	1.1	213	211	14.6	**7322BM**
	240	50	3	1.1	213	211	14.6	**7322BM/YA8**
	240	50	3	1.1	213	211	14.6	**7322BM/YB2**

Limiting speeds(r/min) Grease	Oil	Function point (mm) *a*	Abutment and fillet dimensions(mm) d_{amin}	D_{amax}	r_{amax}	Mass(kg) (approx.)
5200	7000	41.1	109	141	1.5	1.25
5200	7000	41.1	109	141	1.5	1.53
5200	7000	41.2	109	141	1.5	1.27
6400	8500	28.8	109	141	1.5	1.26
3200	4200	75.8	112	168	2	4.00
4600	6100	49.5	112	168	2	3.25
4600	6100	49.5	112	168	2	3.61
5600	7500	35.6	112	168	2	3.61
2800	3700	89.8	114	201	2.5	7.29
2800	3700	89.8	114	201	2.5	8.60
2800	3700	89.8	114	201	2.5	7.58
4000	5400	60.2	114	201	2.5	8.33
4000	5400	60.2	114	201	2.5	9.44
6400	8500	28.7	109	141	1.5	1.47
5200	7000	39.1	112	138	1.1	0.851
5200	7000	39.2	112	138	1.1	0.834
4900	6500	43.9	115	150	2	1.62
4900	6500	43.9	115	150	2	1.92
4900	6500	43.9	115	150	2	1.62
4900	6500	43.8	115	150	2	1.57
6000	8000	30.6	115	150	2	1.58
4400	5800	52.3	117	178	2	4.36
2600	3500	93.9	119	211	2.5	9.40
4100	5400	50.9	119	161	1.5	1.86
4600	6100	46.6	120	160	2	2.16
4600	6100	46.6	120	160	2	1.90
4600	6100	46.6	120	160	2	2.41
4600	6100	46.7	120	160	2	1.97
4100	5500	55.1	122	188	2	4.07
4100	5500	55.1	122	188	2	4.14
4100	5500	55.1	122	188	2	4.65
5000	6700	39.7	122	188	2	4.07
5000	6700	39.7	122	188	2	4.14
5000	6700	39.7	122	188	2	4.84
2400	3200	99.2	124	226	2.5	9.84
2400	3200	99.2	124	226	2.5	11.8
2400	3200	99.2	124	226	2.5	11.7
2400	3200	99.2	124	226	2.5	11.8

d 110～140mm



Machined cage



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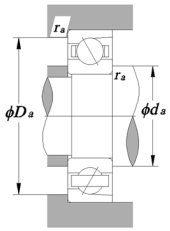
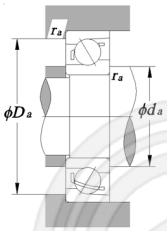
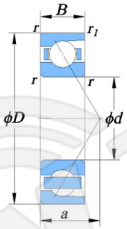




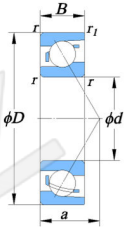
d	Principal dimensions(mm) D	B	r_{min}	r_{1min}	Basic load ratings(kN) C_r	C_{or}	Factor f_o	Designations
110	240	50	3	1.1	226	226	14.4	**7322BTN1**
	240	50	3	1.1	239	231	13.6	**7322ACM**
	240	50	3	1.1	248	241	13.3	**7322CM**
	240	50	3	1.1	239	231	13.6	**7322AC**
120	165	22	1.1	0.6	68.9	81.3	16.5	**71924C**
	180	28	2	1	106	99.6	16.4	**7024A**
	180	28	2	1	98.5	92.7	16.5	**7024BM**
	180	28	2	1	101	107	16.1	**7024AC**
	180	28	2	1	101	107	16.1	**7024ACM**
	180	28	2	1	119	111	16.0	**7024ACTA**
	180	28	2	1	110	103	16.2	**7024ACTN1**
	180	28	2	1	100	109	16.1	**7024C**
	215	40	2.1	1.1	189	183	14.8	**7224AC**
	215	40	2.1	1.1	189	183	14.8	**7224ACM**
	215	40	2.1	1.1	189	183	14.8	**7224ACQ5**
	215	40	2.1	1.1	198	192	14.6	**7224CM**
	260	55	3	1.1	250	262	14.4	**7324B**
	260	55	3	1.1	250	262	14.4	**7324B/YA8**
	260	55	3	1.1	265	270	13.7	**7324AC**
	260	55	3	1.1	265	270	13.7	**7324ACM**
130	120	33	2	1	121	131	16.2	**7026YABD**
	180	24	1.5	0.6	98.4	95.2	16.5	**71926ACM**
	180	24	1.5	0.6	86.2	102	16.5	**71926ACTA**
	200	33	2	1	121	131	16.2	**7026AQ1**
	200	33	2	1	108	118	16.4	**7026BM**
	200	33	2	1	133	130	16.0	**7026AC**
	200	33	2	1	129	137	15.9	**7026C**
	230	40	3	1	189	193	15.3	**7226YABD**
	230	40	3	1.1	171	175	15.7	**7226BM**
	230	40	3	1.1	197	199	15.1	**7226ACM**
	230	40	3	1.1	206	209	14.9	**7226C**
	230	40	3	1.1	206	209	14.9	**7226CM**
	280	58	4	1.5	250	269	14.8	**7326B**
	280	58	4	1.5	250	269	14.8	**7326BM**
	280	58	4	1.5	282	303	14.1	**7326ACM**
	200	33	2	1	124	123	16.3	**7026ACTN1**
	280	58	4	1.5	282	303	14.1	**7326AC**
140	190	24	1.5	0.6	85.3	101	16.4	**71928AC**

Limiting speeds(r/min) Grease	Oil	Function point (mm) a	Abutment and fillet dimensions(mm) d_{amin}	D_{amax}	r_{amax}	Mass(kg) (approx.)
2500	3300	98.5	124	226	2.5	10.1
3600	4800	65.9	124	226	2.5	10.1
4400	5800	48.5	124	226	2.5	9.81
3600	4800	65.9	124	226	2.5	9.05
5500	7400	30.0	127	158	1.1	1.20
3800	5000	57.3	130	170	2	2.14
2900	3900	76.8	130	170	2	2.58
4300	5700	48.9	130	170	2	2.31
4300	5700	48.9	130	170	2	2.62
4300	5700	49.0	130	170	2	2.14
4300	5700	49.0	130	170	2	2.15
5200	7000	34.1	130	170	2	2.14
3800	5000	59.1	132	203	2	5.56
3800	5000	59.1	132	203	2	6.31
3800	5000	59.1	132	203	2	6.55
4600	6100	42.4	132	203	2	6.21
2200	2900	107.2	134	246	2.5	14.6
2200	2900	107.2	134	246	2.5	14.6
3200	4300	72.0	134	246	2.5	14.0
3200	4300	72.0	134	246	2.5	14.2
3400	4500	64.2	140	110	2	3.81
4100	5500	48.1	139	171	1.5	1.89
4000	5300	49.2	139	171	1.5	1.57
3400	4500	64.2	140	190	2	3.81
2600	3500	85.8	140	190	2	3.85
3800	5100	54.9	140	190	2	3.38
4700	6200	38.5	140	190	2	3.33
3100	4100	72.1	144	216	2.5	7.07
2400	3100	95.5	144	216	2.5	7.56
3500	4600	48.4	144	216	2.5	6.98
4200	5600	44.2	144	216	2.5	6.25
4200	5600	44.0	144	216	2.5	7.00
2000	2700	115.3	148	262	3	17.5
2000	2700	115.3	148	262	3	17.9
2900	3900	77.0	148	262	3	18.1
3800	5100	55.1	140	190	2	3.48
2900	3900	76.9	148	262	3	18.1
3800	5100	50.4	149	181	1.5	1.64

d 140～170mm



Machined cage



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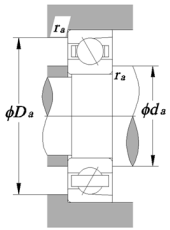
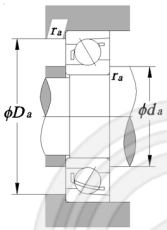
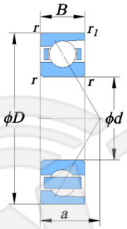


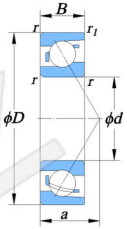


Principal dimensions(mm)					Basic load ratings(kN)		Factor	Designations	Limiting speeds(r/min)		Function point (mm)	Abutment and fillet dimensions(mm)			Mass(kg)
d	D	B	r_{min}	r_{1min}	C_r	C_{or}	f_o		Grease	Oil	a	d_{amin}	D_{amax}	r_{amax}	(approx.)
140	190	24	1.5	0.6	99.3	98.0	16.4	**71928ACMB**	3800	5100	50.5	149	181	1.5	1.86
	190	24	1.5	0.6	105	105	16.5	**71928CTA**	4700	6200	34.1	149	181	1.5	1.68
	210	33	2	1	125	138	16.2	**7028AC**	3600	4800	57.3	150	200	2	3.46
	210	33	2	1	125	138	16.2	**7028ACM**	3600	4800	57.3	150	200	2	4.14
	210	33	2	1	143	145	16.0	**7028CM**	4400	5800	39.9	150	200	2	4.14
	250	42	3	1.1	191	207	15.8	**7228BM**	2100	2800	103.1	154	236	2.5	8.59
	250	42	3	1.1	219	238	15.3	**7228ACM**	3100	4200	66.5	154	236	2.5	8.43
	250	42	3	1.1	231	248	15.0	**7228CM**	3800	5100	47.1	154	236	2.5	8.31
	300	62	4	1.5	275	309	14.8	**7328B**	1900	2500	123.5	158	282	3	21.2
	300	62	4	1.5	275	309	14.8	**7328B/YA8**	1900	2500	123.5	158	282	3	22.6
	300	62	4	1.5	275	309	14.8	**7328BA**	1900	2500	123.5	158	282	3	21.6
	300	62	4	1.5	275	309	14.8	**7328BM**	1900	2500	123.5	158	282	3	21.2
	300	62	4	1.5	311	348	14.1	**7328AC**	2700	3600	82.3	158	282	3	21.7
150	210	28	2	1	115	135	16.4	**71930AC**	3500	4600	55.9	160	200	2	2.54
	225	35	2.1	1.1	137	147	16.5	**7030BM**	2300	3000	96.1	162	213	2	4.81
	225	35	2.1	1.1	153	170	16.1	**7030AC**	3300	4400	61.2	162	213	2	4.23
	225	35	2.1	1.1	153	170	16.1	**7030ACM**	3300	4400	61.2	162	213	2	4.80
	270	45	3	1.1	195	222	16.0	**7230BM**	2000	2600	110.7	164	256	2.5	11.7
	320	65	4	1.5	318	380	14.8	**7330B**	1700	2300	131.3	168	302	3	26.2
	320	65	4	1.5	359	429	14.1	**7330AC**	2500	3300	87.7	168	302	3	25.7
160	215	25	2	1.1	83.6	103	16.1	**71932X1NCBM**	2300	3000	92.7	170	205	2	2.79
	220	28	2	1	117	141	16.5	**71932AC**	3200	4300	58.3	170	210	2	2.65
	229.5	33	2	1	114	133	16.3	**72932X3BM**	2200	2900	98.2	170	219.5	2	4.53
	240	38	2.1	1.1	142	158	16.5	**7032BM**	2100	2800	102.9	172	228	2	6.00
	240	38	2.1	1.1	162	183	16.2	**7032ACM**	3000	4000	65.6	172	228	2	5.99
	290	48	3	1.1	200	238	16.2	**7232B**	1800	2400	118.3	174	276	2.5	13.9
	290	48	3	1.1	200	238	16.2	**7232BM**	1800	2400	118.4	174	276	2.5	13.9
	340	68	4	1.5	316	385	15.0	**7332B**	1600	2100	139.2	178	322	3	30.8
	340	68	4	1.5	316	385	15.0	**7332B/YB2**	1600	2100	139.2	178	322	3	31.2
	340	68	4	1.5	359	435	14.3	**7332AC**	2300	3100	92.4	178	322	3	31.3
	400	88	5	2	446	584	14.2	**7432BM**	1400	1800	161.9	182	378	4	61.4
170	230	28	2	1	121	151	16.4	**71934AC**	3000	4000	60.6	180	220	2	2.82
	260	42	2.1	1.1	191	217	16.0	**7034A**	2500	3300	83.1	182	248	2	7.80
	260	42	2.1	1.1	194	230	16.2	**7034B**	1900	2500	112.0	182	248	2	8.30
	260	42	2.1	1.1	200	232	16.0	**7034AC**	2800	3700	71.0	182	248	2	7.02
	260	42	2.1	1.1	198	226	15.9	**7034ACQ1**	2800	3700	71.1	182	248	2	8.27
	310	52	4	1.5	266	326	15.6	**7234B**	1700	2200	126.8	188	292	3	17.8
	310	52	4	1.5	306	371	15.0	**7234AC**	2400	3200	82.0	188	292	3	17.1

d 170～240mm



Machined cage



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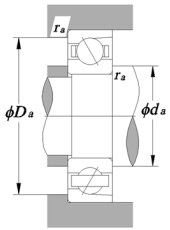
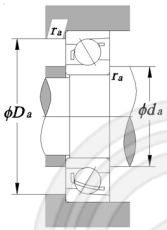


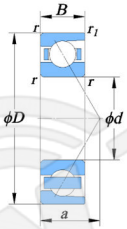


d	Principal dimensions(mm) D	B	r_{min}	r_{1min}	Basic load ratings(kN) C_r	C_{or}	Factor f_o	Designations
170	310	52	4	1.5	321	390	14.8	**7234C**
	360	72	4	1.5	344	435	15.0	**7334B**
	360	72	4	1.5	390	491	14.3	**7334AC**
180	250	33	2	1	160	196	16.4	**71936CM**
	280	46	2.1	1.1	228	275	15.9	**7036AC**
	280	46	2.1	2.1	228	275	15.9	**7036ACM**
	280	46	2.1	1.1	191	229	16.3	**7036C**
	320	52	4	1.5	243	302	16.0	**7236BM**
	320	52	4	1.5	317	399	15.2	**7236AC**
	320	52	4	1.5	333	417	14.9	**7236C**
	380	75	4	1.5	404	536	14.8	**7336B**
	380	75	4	1.5	456	605	14.1	**7336AC**
190	260	33	2	1	120	137	16.1	**71938C**
	260	33	2	1	120	137	16.1	**71938CTYN**
	290	46	2.1	1.1	214	264	16.2	**7038AC**
	340	55	4	1.5	334	433	15.3	**7238AC**
	400	78	5	2	403	544	15.0	**7338B**
	400	78	5	2	432	566	14.3	**7338AC**
200	250	24	1.5	0.6	78.0	115	15.8	**71840AC**
	280	38	2.1	1.1	132	156	16.1	**71940AC**
	280	38	2	1	164	218	16.4	**71940C**
	280	38	2.1	1.1	140	167	16.2	**71940CTYN**
	280	38	2.1	1	190	240	16.5	**71940A**
	310	51	2.1	1.1	227	289	16.3	**7040B**
	310	51	2.1	1.1	263	332	15.8	**7040AC**
	310	51	2.1	1.1	263	332	15.8	**7040ACN1**
	360	58	4	1.5	310	417	15.8	**7240B**
	420	80	5	2	479	670	14.5	**7340AC**
220	300	38	2.1	1.1	134	180	16.0	**71944BX2**
	300	38	2.1	1.1	171	239	16.3	**71944C**
	300	38	2.1	1.1	171	239	16.3	**71944CTA**
	400	65	4	1.5	423	604	15.2	**7244AC**
	460	88	5	2	485	725	15.2	**7344B**
230	329.5	40	2.1	1.1	222	303	16.5	**7646AMB**
240	320	38	2.1	1.1	184	250	16.2	**71948AC**
	320	38	2.1	1.1	201	268	16.3	**71948C**
	320	48	2.1	1.1	184	250	16.2	**72948AC**
	360	56	3	1.1	249	355	16.5	**7048B**

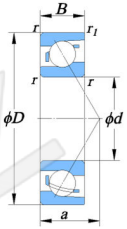
Limiting speeds(r/min) Grease	Oil	Function point (mm) a	Abutment and fillet dimensions(mm) d_{amin}	D_{amax}	r_{amax}	Mass(kg) (approx.)
3000	3900	58.1	188	292	3	17.1
1500	2000	147.0	188	342	3	37.7
2100	2800	98.1	188	342	3	35.8
3400	4500	45.2	190	240	2	4.88
2600	3400	76.6	192	268	2	10.6
2600	3400	76.6	192	268	2	10.6
3100	4200	53.7	192	268	2	9.50
1600	2100	130.8	198	302	3	19.1
2300	3100	67.0	198	302	3	17.9
2800	3700	59.4	198	302	3	17.9
1400	1800	154.9	198	362	3	36.8
2000	2600	102.9	198	362	3	42.5
3200	4300	46.6	200	250	2	4.79
3200	4300	46.6	200	250	2	4.79
2400	3200	78.9	202	278	2	10.6
2100	2800	89.3	208	322	3	22.4
1300	1700	163.0	212	378	4	50.5
1900	2500	108.2	212	378	4	48.4
2600	3500	64.3	209	241	1.5	2.48
2400	3200	75.0	212	268	2	6.75
3000	3900	51.0	210	270	2	7.33
3000	3900	51.1	212	268	2	6.70
2200	2900	88.4	212	268	2	6.34
1500	2000	132.3	212	298	2	14.2
2300	3000	85.0	212	298	2	14.9
2300	3000	85.0	212	298	2	14.8
1400	1800	146.5	218	342	3	25.8
1700	2300	112.3	222	398	4	56.3
1500	2000	128.2	232	288	2	8.08
2700	3600	53.7	232	288	2	8.19
2700	3600	53.7	232	288	2	7.02
1700	2300	105.0	238	382	3	35.8
1100	1400	187.1	242	438	4	74.5
1800	2300	100.8	242	317.5	2	11.4
2000	2600	84.2	252	308	2	8.70
2400	3200	56.5	252	308	2	7.30
2000	2600	89.2	252	308	2	10.2
1300	1700	154.2	254	346	2.5	20.4

ZWZ

d 240～560mm



Machined cage



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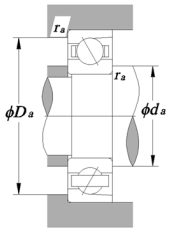
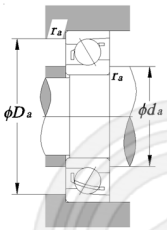
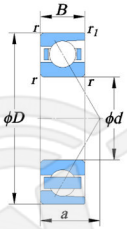


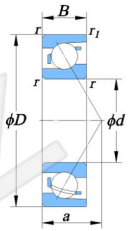


Principal dimensions(mm)					Basic load ratings(kN)		Factor	Designations	Limiting speeds(r/min)		Function point (mm)	Abutment and fillet dimensions(mm)			Mass(kg)
d	*D*	*B*	r_{min}	r_{1min}	C_r	C_{or}	f_o		Grease	Oil	*a*	d_{amin}	D_{amax}	r_{amax}	(approx.)
240	440	72	4	1.5	435	653	15.5	**7248AC**	1600	2100	115.2	258	422	3	51.1
260	360	46	2.1	1.1	255	375	16.4	**71952A**	1500	2000	112.6	272	348	2	13.7
	360	46	2.1	1.1	222	316	16.2	**71952B**	1200	1600	152.9	272	348	2	14.4
	360	46	2.1	1.1	260	381	16.5	**71952AC**	1700	2300	95.3	272	348	2	13.8
	360	46	2.1	1.1	275	406	16.5	**71952C**	2100	2800	64.4	272	348	2	13.7
	400	65	4	1.5	320	485	16.4	**7052B**	1100	1500	171.0	278	382	3	30.0
270	320	24	1.5	0.6	97.3	160	15.6	**7654A/YB2**	1700	2200	97.0	279	311	1.5	3.67
280	350	33	2	1.1	144	223	15.8	**71856AC**	1700	2300	89.9	290	340	2	7.35
	380	46	2.1	1.1	251	372	16.3	**71956A**	1400	1900	118.3	292	368	2	16.6
	380	46	2.1	1.1	229	337	16.1	**71956B**	1100	1500	161.5	292	368	2	15.4
	380	46	2.1	1.1	268	406	16.4	**71956AC**	1600	2100	99.9	292	368	2	15.7
	420	65	4	1.5	343	529	16.3	**7056AM**	1300	1800	133.7	298	402	3	32.1
	420	65	4	1.5	316	495	16.5	**7056BM**	990	1400	179.5	298	402	3	31.9
	350	33	2	1.1	111	145	15.5	**71856BTN1**	1200	1600	148.7	290	340	2	6.65
300	460	74	4	1.5	350	574	16.5	**7060B**	890	1200	196.6	318	442	3	45.2
	460	74	4	1.5	408	667	16.2	**7060AC**	1300	1800	125.7	318	442	3	46.5
320	400	38	2.1	1	193	311	15.8	**71864AC**	1400	1900	102.9	332	388	2	11.1
	480	74	4	1.5	415	705	16.4	**7064AC**	1300	1700	130.2	338	462	3	47.5
340	420	38	2.1	1.1	196	325	15.8	**71868AC**	1300	1800	107.5	352	408	2	11.4
	520	82	5	2	511	887	16.0	**7068AC**	1100	1500	141.3	362	498	4	61.0
360	440	38	2.1	1.1	202	344	15.7	**71872AC**	1300	1700	112.3	372	428	2	12.4
	480	56	3	1.1	361	630	16.3	**71972ACM**	1200	1600	125.9	374	466	2.5	28.3
	540	82	5	1.3	532	963	16.1	**7072CF3**	1300	1700	101.2	382	518	4	65.3
	540	82	5	2	430	778	16.4	**7072BM**	700	930	230.0	382	518	4	65.5
380	480	46	2.1	1.1	221	368	15.7	**71876B**	750	990	203.6	392	468	2	18.6
	520	65	4	1.5	355	630	16.1	**71976B**	700	930	221.5	398	502	3	42.1
	520	65	4	1.5	419	760	16.4	**71976AC**	1100	1400	137.5	398	502	3	41.5
400	500	31	2	2	157	285	15.5	**70880AMB**	910	1300	145.4	410	490	2	15.2
	540	65	4	1.5	424	782	16.3	**71980AC**	960	1300	142.1	418	522	3	44.3
440	540	46	2.1	1.1	290	526	15.8	**71888ACM**	900	1200	137.2	452	528	2	22.0
	600	74	4	1.5	508	1010	16.4	**71988ACM**	830	1100	158.3	458	582	3	62.1
460	580	56	3	1.1	334	635	15.8	**71892AC**	830	1100	149.2	474	566	2.5	34.8
480	600	56	3	1.1	353	677	15.8	**71896C**	960	1300	100.4	494	586	2.5	37.5
500	620	56	3	1.1	390	784	15.8	**718/500AMB**	660	880	189.7	514	606	2.5	37.4
530	650	56	3	1.1	353	717	15.7	**718/530AC**	700	930	165.5	544	636	2.5	40.1
560	680	56	3	1.1	376	796	15.6	**718/560A**	570	760	207.0	574	666	2.5	43.2
	680	56	3	1.1	418	893	15.7	**718/560C**	790	1100	111.0	574	666	2.5	43.3
	750	85	5	2.5	535	1180	16.0	**719/560B**	410	540	317.7	582	728	4	110

d 600～1500mm



Machined cage



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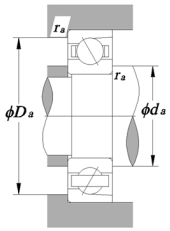
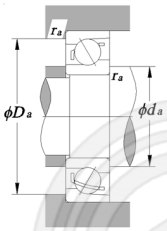
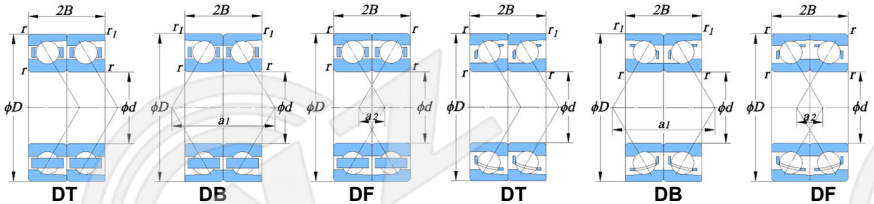


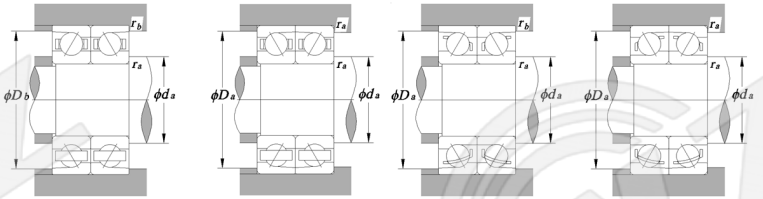


d	Principal dimensions(mm) D	B	r_{min}	r_{1min}	Basic load ratings(kN) C_r	C_{or}	Factor f_o	Designations
600	730	42	3	1.1	336	733	15.5	**708/600A**
	730	60	3	1.1	386	840	15.6	**718/600A**
	730	60	3	1.1	406	885	15.7	**718/600ACM**
	730	60	3	1.1	432	943	15.7	**718/600C**
630	850	100	6	2	638	1480	16.0	**719/630B**
670	820	69	4	1.5	484	1140	15.7	**718/670A**
	820	69	4	1.5	540	1270	15.8	**718/670C**
	980	136	7.5	4	1050	2750	16.5	**70/670ACM**
710	870	74	4	1.5	533	1290	15.7	**718/710A**
	870	74	4	1.5	533	1290	15.7	**718/710A/YB2**
	870	74	4	1.5	556	1350	15.7	**718/710AC**
	950	106	6	3	858	2220	16.2	**719/710ACM**
750	920	78	5	2	610	1520	15.8	**718/750A**
	920	78	5	2	636	1590	15.8	**718/750AC**
850	1000	60	4	1.5	455	1160	15.4	**718/850X3A**
	1000	60	4	1.5	474	1220	15.4	**718/850X3AC**
	1030	82	5	2	672	1800	15.7	**718/850AC**
900	1090	85	5	2	669	1820	15.6	**718/900ACF1**
	1090	85	5	2	669	1820	15.6	**718/900ACF3**
1000	1220	100	6	3	829	2460	15.6	**718/1000A**
	1220	100	6	3	955	2860	15.8	**718/1000ACMB**
1060	1500	195	9.5	5	1380	4450	16.0	**70/1060BM**
1180	1420	106	6	4	957	3050	15.6	**718/1180B**
	1420	106	6	4	1130	3660	15.8	**718/1180ACF1**
	1420	106	6	4	1130	3660	15.8	**718/1180ACF3**
1250	1750	218	9.5	5	1680	5930	16.0	**70/1250BM**
1500	1805	150	7.5	4	1320	4970	15.6	**718/1500X3A**

Limiting speeds(r/min) Grease	Oil	Function point (mm) a	Abutment and fillet dimensions(mm) d_{amin}	D_{amax}	r_{amax}	Mass(kg) (approx.)
520	690	212.9	614	716	2.5	40.1
520	690	222.1	614	716	2.5	53.6
580	780	185.0	614	716	2.5	54.6
710	950	119.1	614	716	2.5	55.9
340	450	360.2	658	822	5	159
430	570	249.7	688	802	3	74.7
590	790	134.3	688	802	3	74.5
410	540	260.7	706	944	6	351
390	520	265.1	728	852	3	99.9
390	520	265.0	728	852	3	99.9
440	580	221.2	728	852	3	96.4
400	530	246.7	738	922	5	213
350	470	280.3	772	898	4	115
400	530	233.6	772	898	4	115
290	380	297.1	868	982	3	86.4
320	430	245.5	868	982	3	85.3
310	410	260.2	872	1008	4	140
270	360	274.5	922	1068	4	163
270	360	274.5	922	1068	4	163
-	-	369.8	1028	1192	5	239
-	-	309.1	1028	1192	5	249
-	-	635.2	1104	1456	8	1100
-	-	599.1	1208	1392	5	343
-	-	356.2	1208	1392	5	329
-	-	356.2	1208	1392	5	329
-	-	739.2	1294	1706	8	1630
-	-	552.2	1536	1769	6	749

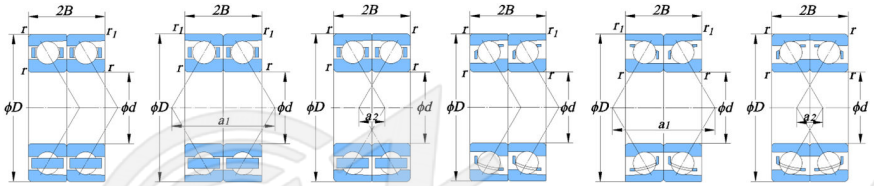
d 10～35mm



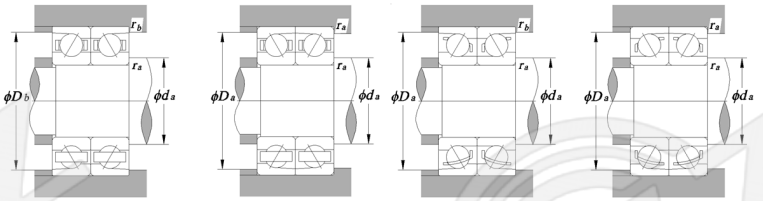


Principal dimensions(mm)					Basic load ratings (kN)		Factor	Limiting speeds(r/min)		Designations	Designations		Function point (mm)		Abutment and fillet dimensions (mm)					Mass(kg) (approx.)
d	*D*	*2B*	r_{min}	r_{1min}	C_r	C_{or}	f_o	Grease	Oil	*DB*	*DF*	*DT*	$DB(a_1)$	$DF(a_2)$	d_{amin}	D_{amax}	D_{bmax}	r_{amax}	r_{bmax}	
10	26	16	0.3	0.3	9.00	5.30	13.0	26000	35000	7000AC/DB	7000AC/DF	7000AC/DT	16.4	0.4	12.4	23.6	23.6	0.3	0.3	0.0395
12	28	16	0.3	0.3	9.10	5.60	13.7	24000	32000	7001AC/DB	7001AC/DF	7001AC/DT	17.0	1.0	14.4	25.6	25.6	0.3	0.3	0.122
17	40	24	0.6	0.6	11.9	8.30	14.4	20000	26000	7203AC/DB	7203AC/DF	7203AC/DT	23.8	0.2	22	35	35	0.6	0.6	0.147
20	42	24	0.6	0.6	17.3	12.6	14.4	17000	23000	7004AC/DB	7004AC/DF	7004AC/DT	26.4	2.4	25	37	37	0.6	0.6	0.139
	47	28	0.6	0.3	24.3	17.6	14.0	16000	21000	7204AC/DB	7204AC/DF	7204AC/DT	30.0	2.0	25	42	44.6	0.6	0.3	0.211
	52	30	1.1	0.6	28.1	19.5	14.0	9900	14000	7304BTN1/DB	7304BTN1/DF	7304BTN1/DT	45.3	15.4	27	45	47	1.1	0.6	0.297
25	47	24	0.6	0.3	18.1	14.2	14.9	15000	20000	7005AC/DB	7005AC/DF	7005AC/DT	28.7	4.8	30	42	44.6	0.6	0.3	0.152
	47	24	0.6	0.3	19.0	14.9	14.7	18000	24000	7005C/DB	7005C/DF	7005C/DT	21.5	2.6	30	42	44.6	0.6	0.3	0.152
	52	30	1	0.3	27.2	21.4	14.4	14000	19000	7205AC/DB	7205AC/DF	7205AC/DT	32.9	3.0	31	46	49.6	1	0.3	0.260
	52	30	1	0.3	25.8	19.3	14.2	17000	22000	7205C/DB	7205C/DF	7205C/DT	25.3	4.6	31	46	49.6	1	0.3	0.280
	52	30	1	0.3	25.4	19.0	14.2	17000	23000	7205CTA/DB	7205CTA/DF	7205CTA/DT	25.3	4.8	31	46	49.6	1	0.3	0.254
	62	34	1.1	0.6	39.6	28.8	14.2	8100	11000	7305BM/DB	7305BM/DF	7305BM/DT	54.2	20.2	32	55	57	1.1	0.6	0.554
	62	34	1.1	0.6	39.6	28.4	14.0	8300	11000	7305BTN1/DB	7305BTN1/DF	7305BTN1/DT	53.7	19.6	32	55	57	1.1	0.6	0.462
	62	34	1.1	0.6	43.9	31.2	13.0	13000	17000	7305ACM/DB	7305ACM/DF	7305ACM/DT	37.2	3.2	32	55	57	1.1	0.6	0.511
	62	34	1.1	0.6	45.4	32.8	12.8	15000	20000	7305C/DB	7305C/DF	7305C/DT	28.5	5.4	32	55	57	1.1	0.6	0.448
30	55	26	1	0.3	22.0	19.1	15.4	13000	17000	7006AC/DB	7006AC/DF	7006AC/DT	32.8	6.8	36	49	52.6	1	0.3	0.236
	55	26	1	0.3	22.0	19.1	15.4	13000	17000	7006ACTA/DB	7006ACTA/DF	7006ACTA/DT	32.7	6.8	36	49	52.6	1	0.3	0.237
	55	26	1	0.3	23.1	20.1	15.2	16000	21000	7006C/DB	7006C/DF	7006C/DT	24.3	1.8	36	49	52.6	1	0.3	0.236
	60	32	1	0.3	30.0	24.5	15.2	7800	11000	7206BJ/DB	7206BJ/DF	7206BJ/DT	54.5	22.4	36	54	57.6	1	0.3	0.405
	62	32	1	0.3	30.0	24.5	15.2	7800	11000	7206BM/DB	7206BM/DF	7206BM/DT	54.5	22.4	36	56	59.6	1	0.3	0.497
	62	32	1	0.3	33.4	27.5	15.2	7800	11000	7206BTN1/DB	7206BTN1/DF	7206BTN1/DT	54.7	22.8	36	56	59.6	1	0.3	0.399
	62	32	1	0.3	34.1	28.1	14.7	12000	16000	7206ACM/DB	7206ACM/DF	7206ACM/DT	37.3	5.4	36	56	59.6	1	0.3	0.480
	62	32	1	0.3	37.8	30.8	14.4	12000	16000	7206AC/DB	7206AC/DF	7206AC/DT	37.4	5.4	36	56	59.6	1	0.3	0.402
	62	32	1	0.3	34.1	28.1	14.7	12000	16000	7206ACJ/DB	7206ACJ/DF	7206ACJ/DT	37.3	5.4	36	56	59.6	1	0.3	0.405
	72	38	1.1	0.6	47.6	36.7	14.4	7100	9500	7306BM/DB	7306BM/DF	7306BM/DT	61.7	23.8	37	65	67	1.1	0.6	0.742
	72	38	1.1	0.6	50.4	39.6	14.0	11000	14000	7306ACM/DB	7306ACM/DF	7306ACM/DT	43.2	5.2	37	65	67	1.1	0.6	0.661
	72	38	1.1	0.6	52.5	40.7	13.5	13000	17000	7306C/DB	7306C/DF	7306C/DT	32.8	5.2	37	65	67	1.1	0.6	0.692
35	62	28	1	0.3	30.9	27.3	15.6	7500	9900	7007BTN1/DB	7007BTN1/DF	7007BTN1/DT	54.8	26.8	41	56	59.6	1	0.3	0.310
	62	28	1	0.3	31.1	27.8	15.2	14000	18000	7007C/DB	7007C/DF	7007C/DT	26.9	1.0	41	56	59.6	1	0.3	0.296
	72	34	1.1	0.6	41.7	34.5	15.2	6800	9000	7207BM/DB	7207BM/DF	7207BM/DT	61.8	27.8	42	65	67	1.1	0.6	0.656
	72	34	1.1	0.6	44.0	37.4	15.2	6800	9000	7207BTN1/DB	7207BTN1/DF	7207BTN1/DT	61.8	27.8	42	65	67	1.1	0.6	0.571
	72	34	1.1	0.6	47.3	38.7	14.4	9900	14000	7207AC/DB	7207AC/DF	7207AC/DT	42.0	8.0	42	65	67	1.1	0.6	0.575
	72	34	1.1	0.6	52.1	43.4	14.0	13000	17000	7207C/DB	7207C/DF	7207C/DT	31.2	2.8	42	65	67	1.1	0.6	0.608
	72	34	1.1	0.6	52.1	43.4	14.0	13000	17000	7207CM/DB	7207CM/DF	7207CM/DT	31.2	2.8	42	65	67	1.1	0.6	0.674
	72	34	1.1	0.6	47.9	41.5	14.4	13000	17000	7207CTN1/DB	7207CTN1/DF	7207CTN1/DT	31.3	2.6	42	65	67	1.1	0.6	0.584
	80	42	1.5	0.6	63.5	48.4	13.7	8200	11000	7307AQ1/DB	7307AQ1/DF	7307AQ1/DT	54.2	12.2	44	71	75	1.5	0.6	1.08
	80	42	1.5	0.6	63.5	48.4	13.7	8200	11000	7307YABD/DB	7307YABD/DF	7307YABD/DT	54.2	12.2	44	71	75	1.5	0.6	1.08
	80	42	1.5	0.6	62.3	49.5	14.4	6200	8300	7307B/DB	7307B/DF	7307B/DT	70.0	28.0	44	71	75	1.5	0.6	1.10

d 35～45mm



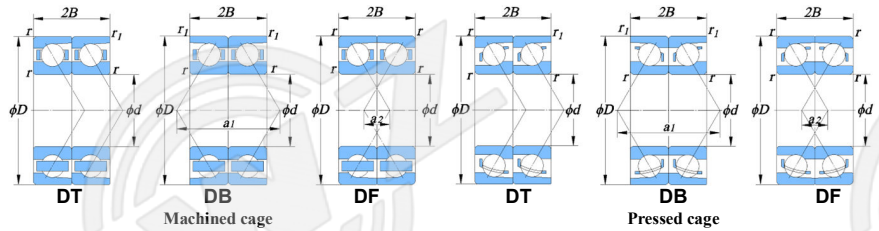
Machined cage　　Pressed cage

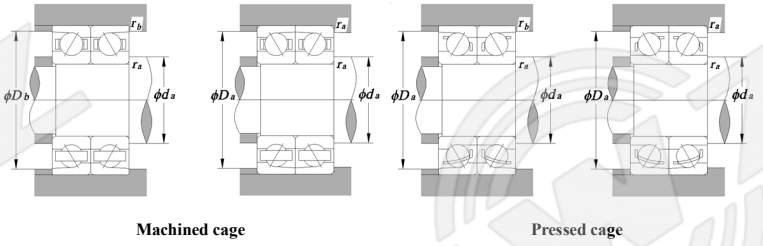


Machined cage　　Pressed cage

Principal dimensions(mm)					Basic load ratings (kN)		Factor	Limiting speeds(r/min)		Designations	Designations		Function point (mm)		Abutment and fillet dimensions (mm)					Mass (kg) (approx.)
d	D	2B	r_{min}	r_{1min}	C_r	C_{or}	f_o	Grease	Oil	DB	DF	DT	DB(a_1)	DF(a_2)	d_{amin}	D_{amax}	D_{bmax}	r_{amax}	r_{bmax}	
35	80	42	1.5	0.6	62.3	49.5	14.4	6200	8300	7307BM/DB	7307BM/DF	7307BM/DT	70.0	28.0	44	71	75	1.5	0.6	1.10
	80	42	1.5	0.6	62.3	49.5	14.4	6200	8300	7307BM/DBYA3	7307BM/DFYA3	7307BM/DTYA3	70.0	28.0	44	71	75	1.5	0.6	1.10
	80	42	1.5	0.6	62.4	48.9	14.2	6300	8400	7307BTN1/DB	7307BTN1/DF	7307BTN1/DT	69.4	27.4	44	71	75	1.5	0.6	0.929
	80	42	1.5	0.6	63.1	50.8	14.0	9100	13000	7307ACM/DB	7307ACM/DF	7307ACM/DT	48.2	6.2	44	71	75	1.5	0.6	1.07
	80	42	1.5	0.6	63.1	50.8	14.0	9100	13000	7307AC/DB	7307AC/DF	7307AC/DT	48.2	6.2	44	71	75	1.5	0.6	0.907
	100	50	1.5	0.6	114	85.5	12.3	7900	11000	7407AC/DB	7407AC/DF	7407AC/DT	56.6	6.6	44	91	95	1.5	0.6	1.95
	100	50	1.5	0.6	114	85.5	12.3	7900	11000	7407ACM/DB	7407ACM/DF	7407ACM/DT	56.6	6.6	44	91	95	1.5	0.6	2.28
	80	42	1.5	0.6	65.6	52.2	13.5	12000	15000	7307C/DB	7307C/DF	7307C/DT	36.5	5.4	44	71	75	1.5	0.6	0.908
40	68	30	1.1	1.1	31.7	30.3	15.6	9800	14000	7008AC/DB	7008AC/DF	7008AC/DT	40.4	10.4	47	61	61	1.1	1.1	0.376
	68	30	1	0.3	33.4	31.9	15.4	12000	16000	7008C/DB	7008C/DF	7008C/DT	29.4	0.6	46	62	65.6	1	0.3	0.375
	68	30	1	0.3	33.4	31.9	15.4	13000	17000	7008CTN1/DB	7008CTN1/DF	7008CTN1/DT	29.4	0.6	46	62	65.6	1	0.3	0.374
	80	36	1.1	0.6	56.4	48.1	14.4	8900	12000	7208ACM/DB	7208ACM/DF	7208ACM/DT	45.9	9.8	47	73	75	1.1	0.6	0.858
	80	36	1.1	0.6	59.2	51.8	14.4	8900	12000	7208AC/DB	7208AC/DF	7208AC/DT	46.0	10.0	47	73	75	1.1	0.6	0.752
	80	36	1.1	0.6	59.0	50.6	14.2	11000	15000	7208C/DB	7208C/DF	7208C/DT	34.0	2.0	47	73	75	1.1	0.6	0.728
	80	36	1.1	0.6	59.0	50.6	14.2	11000	15000	7208CM/DB	7208CM/DF	7208CM/DT	34.0	2.0	47	73	75	1.1	0.6	0.850
	80	36	1.1	0.6	59.0	50.6	14.2	11000	15000	7208CTN1/DB	7208CTN1/DF	7208CTN1/DT	34.0	2.0	47	73	75	1.1	0.6	0.624
	90	46	1.5	0.6	75.4	61.2	14.4	5600	7400	7308B/DB	7308B/DF	7308B/DT	77.4	31.4	49	81	85	1.5	0.6	1.31
	90	46	1.5	0.6	75.4	61.2	14.4	5600	7400	7308BM/DB	7308BM/DF	7308BM/DT	77.4	31.4	49	81	85	1.5	0.6	1.42
	90	46	1.5	1	65.8	55.9	14.9	5600	7400	7308BTYN/DB	7308BTYN/DF	7308BTYN/DT	77.4	31.4	49	81	84	1.5	1	1.31
	90	46	1.5	0.6	77.1	63.5	14.0	8100	11000	7308AC/DB	7308AC/DF	7308AC/DT	53.4	7.4	49	81	85	1.5	0.6	1.25
	90	46	1.5	0.6	77.1	63.5	14.0	8100	11000	7308ACM/DB	7308ACM/DF	7308ACM/DT	53.4	7.4	49	81	85	1.5	0.6	1.49
	90	46	1.5	0.6	80.2	65.2	13.5	10000	14000	7308C/DB	7308C/DF	7308C/DT	40.4	5.6	49	81	85	1.5	0.6	1.25
	90	46	1.5	0.6	80.2	65.2	13.5	10000	14000	7308CM/DB	7308CM/DF	7308CM/DT	40.4	5.6	49	81	85	1.5	0.6	1.49
	110	54	2	1	112	86.8	13.7	4900	6500	7408BM/DB	7408BM/DF	7408BM/DT	89.8	35.8	50	100	104	2	1	2.94
45	75	32	1	0.3	39.8	38.9	15.6	8900	12000	7009AC/DB	7009AC/DF	7009AC/DT	43.9	11.8	51	69	72.6	1	0.3	0.478
	85	38	1.1	0.6	55.7	48.8	15.2	5600	7400	7209BM/DB	7209BM/DF	7209BM/DT	73.3	35.4	52	78	80	1.1	0.6	1.97
	85	38	1.1	0.6	58.6	52.6	15.2	5600	7400	7209BTN1/DB	7209BTN1/DF	7209BTN1/DT	73.7	35.8	52	78	80	1.1	0.6	0.844
	85	38	1.1	0.6	63.3	55.9	14.7	8200	11000	7209AC/DB	7209AC/DF	7209AC/DT	49.2	11.2	52	78	80	1.1	0.6	0.808
	85	38	1.1	0.6	63.3	55.9	14.7	8200	11000	7209ACM/DB	7209ACM/DF	7209ACM/DT	49.2	11.2	52	78	80	1.1	0.6	0.980
	85	38	1.1	0.6	66.3	58.3	14.4	10000	14000	7209CM/DB	7209CM/DF	7209CM/DT	36.3	1.8	52	78	80	1.1	0.6	0.976
	85	38	1.1	0.6	66.3	58.3	14.4	10000	14000	7209C/DB	7209C/DF	7209C/DT	36.3	1.8	52	78	80	1.1	0.6	0.805
	100	50	1.5	0.6	96.9	79.8	14.2	5000	6700	7309BM/DB	7309BM/DF	7309BM/DT	86.0	36.0	54	91	95	1.5	0.6	2.03
	100	50	1.5	0.6	96.9	79.8	14.2	5000	6700	7309BT/DB	7309BT/DF	7309BT/DT	86.0	36.0	54	91	95	1.5	0.6	1.83
	100	50	1.5	0.6	89.4	74.0	14.4	5000	6700	7309BTN1/DB	7309BTN1/DF	7309BTN1/DT	86.1	36.0	54	91	95	1.5	0.6	1.70
	100	50	1.5	0.6	108	89.7	13.5	7400	9800	7309AC/DB	7309AC/DF	7309AC/DT	58.6	8.6	54	91	95	1.5	0.6	1.72
	100	50	1.5	0.6	108	89.7	13.5	7400	9800	7309ACM/DB	7309ACM/DF	7309ACM/DT	58.6	8.6	54	91	95	1.5	0.6	1.99
	100	50	1.5	0.6	104	87.5	13.5	8900	12000	7309C/DB	7309C/DF	7309C/DT	44.5	5.4	54	91	95	1.5	0.6	1.67
	120	58	2	1	129	106	14.0	4400	5900	7409BM/DB	7409BM/DF	7409BM/DT	98.4	40.4	55	110	114	2	1	3.64

d 45～55mm

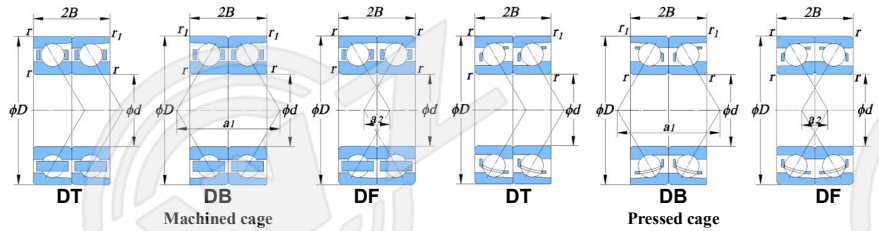


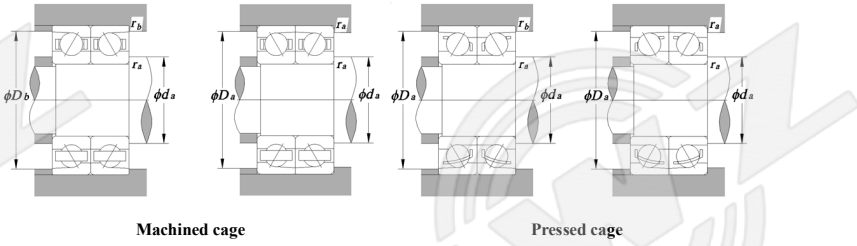


Principal dimensions(mm)					Basic load ratings (kN)		Factor	Limiting speeds(r/min)		Designations
d	*D*	*2B*	r_{min}	r_{1min}	C_r	C_{or}	f_o	Grease	Oil	*DB*
45	120	58	2	1	129	106	14.0	4400	5900	**7409BT/DB**
	75	32	1	0.3	41.2	40.8	15.4	11000	15000	**7009C/DB**
50	80	32	1	0.3	40.9	42.0	15.9	8200	11000	**7010AC/DB**
	80	32	1	0.3	40.9	42.0	15.9	8200	11000	**7010ACM/DB**
	80	32	1	1	43.2	43.9	15.6	10000	14000	**7010C/DB**
	80	32	1	0.3	43.2	43.9	15.6	10000	14000	**7010CM/DB**
	80	32	1	0.3	44.8	46.4	15.6	10000	14000	**7010CTN1/DB**
	90	40	1.1	0.6	60.7	57.8	15.6	5200	6900	**7210B/DB**
	90	40	1.1	0.6	58.0	54.0	15.6	5200	6900	**7210BM/DB**
	90	40	1.1	0.6	66.3	61.0	14.9	7600	11000	**7210AC/DB**
	90	40	1.1	0.6	66.3	61.0	14.9	7600	11000	**7210ACM/DB**
	110	54	2	1	106	90.2	14.2	5900	7800	**7310AQ1/DB**
	110	54	2	1	106	90.2	14.2	5900	7800	**7310YABD/DB**
	110	54	2	1	105	88.1	14.4	4500	6000	**7310B/DB**
	110	54	2	1	105	88.1	14.4	4500	6000	**7310BM/DB**
	110	54	2	1	105	88.1	14.4	4500	6000	**7310BM/DBYA3**
	110	54	2	1	111	96.1	14.4	4500	6000	**7310BTN1/DB**
	110	54	2	1	117	99.1	13.7	6700	8900	**7310AC/DB**
	110	54	2	1	117	99.1	13.7	6700	8900	**7310AC/DBYAD**
	110	54	2	1	117	99.1	13.7	6700	8900	**7310ACM/DB**
	110	54	2	1	122	102	13.2	8100	11000	**7310C/DB**
	110	54	2	0.6	122	102	13.2	8100	11000	**7310CM/DB**
	130	62	1.1	1.1	155	130	14.0	4000	5400	**7410BM/DB**
	130	62	2.1	1.1	171	143	13.0	5900	7900	**7410AC/DB**
	130	62	2.1	1.1	171	143	13.0	5900	7900	**7410ACM/DB**
	90	40	1.1	0.6	69.5	64.1	14.7	9300	13000	**7210C/DB**
55	90	36	1.1	0.6	50.6	52.2	15.9	7400	9800	**7011AC/DB**
	90	36	1.1	0.6	58.4	59.4	15.6	7400	9800	**7011ACTN1/DB**
	90	36	1.1	0.6	52.5	55.2	15.9	7400	9800	**7011ACQ5/DB**
	90	36	1.1	1.1	61.5	62.4	15.4	9000	12000	**7011C/DB**
	100	42	1.5	0.6	71.8	67.4	15.4	4700	6200	**7211BM/DB**
	100	42	1.5	0.6	75.2	72.3	15.4	4700	6200	**7211BTN1/DB**
	100	42	1.5	0.6	82.0	77.2	14.9	6900	9200	**7211AC/DB**
	100	42	1.5	0.6	82.0	77.2	14.9	6900	9200	**7211ACTYN/DB**
	100	42	1.5	0.6	82.0	77.2	14.9	6900	9200	**7211ACM/DB**
	100	42	1.5	0.6	86.0	81.2	14.7	8400	12000	**7211CM/DB**
	100	42	1.5	0.6	81.1	78.6	14.9	8400	12000	**7211C/DB**
	120	58	2	1	139	124	14.0	5400	7200	**7311AQ1/DB**

Designations		Function point (mm)		Abutment and fillet dimensions (mm)					Mass (kg)
DF	*DT*	$DB(a_1)$	$DF(a_2)$	d_{amin}	D_{amax}	D_{bmax}	r_{amax}	r_{bmax}	(approx.)
7409BT/DF	**7409BT/DT**	98.4	40.4	55	110	114	2	1	3.30
7009C/DF	**7009C/DT**	32.2	0.2	51	69	72.6	1	0.3	0.474
7010AC/DF	**7010AC/DT**	46.2	14.2	56	74	77.6	1	0.3	0.508
7010ACM/DF	**7010ACM/DT**	46.2	14.2	56	74	77.6	1	0.3	0.628
7010C/DF	**7010C/DT**	33.2	1.2	56	74	74	1	1	0.498
7010CM/DF	**7010CM/DT**	33.2	1.2	56	74	77.6	1	0.3	0.618
7010CTN1/DF	**7010CTN1/DT**	33.4	1.4	56	74	77.6	1	0.3	0.513
7210B/DF	**7210B/DT**	78.7	38.8	57	83	85	1.1	0.6	0.974
7210BM/DF	**7210BM/DT**	78.7	38.8	57	83	85	1.1	0.6	1.17
7210AC/DF	**7210AC/DT**	52.8	12.8	57	83	85	1.1	0.6	0.917
7210ACM/DF	**7210ACM/DT**	52.5	12.6	57	83	85	1.1	0.6	1.12
7310AQ1/DF	**7310AQ1/DT**	73.4	19.4	60	100	104	2	1	2.50
7310YABD/DF	**7310YABD/DT**	73.4	19.4	60	100	104	2	1	2.50
7310B/DF	**7310B/DT**	94.1	40.0	60	100	104	2	1	2.10
7310BM/DF	**7310BM/DT**	94.2	40.2	60	100	104	2	1	2.35
7310BM/DFYA3	7310BM/DTYA3	94.2	40.2	60	100	104	2	1	2.35
7310BTN1/DF	**7310BTN1/DT**	93.8	39.8	60	100	104	2	1	2.28
7310AC/DF	**7310AC/DT**	64.2	10.2	60	100	104	2	1	2.09
7310AC/DFYAD	7310AC/DTYAD	64.5	10.6	60	100	104	2	1	2.14
7310ACM/DF	**7310ACM/DT**	64.2	10.2	60	100	104	2	1	2.44
7310C/DF	**7310C/DT**	48.6	5.4	60	100	104	2	1	2.08
7310CM/DF	**7310CM/DT**	48.6	5.4	60	100	105	2	0.6	2.44
7410BM/DF	**7410BM/DT**	106.3	44.4	57	123	123	1.1	1.1	4.60
7410AC/DF	**7410AC/DT**	73.0	11	62	118	123	2	1.1	3.90
7410ACM/DF	**7410ACM/DT**	73.0	11	62	118	123	2	1.1	4.36
7210C/DF	**7210C/DT**	38.8	1.2	57	83	85	1.1	0.6	0.917
7011AC/DF	**7011AC/DT**	51.7	15.8	62	83	85	1.1	0.6	0.770
7011ACTN1/DF	7011ACTN1/DT	51.8	15.8	62	83	85	1.1	0.6	0.746
7011ACQ5/DF	7011ACQ5/DT	51.7	15.8	62	83	85	1.1	0.6	0.947
7011C/DF	**7011C/DT**	37.7	1.6	62	83	83	1.1	1.1	0.327
7211BM/DF	**7211BM/DT**	85.8	43.8	64	91	95	1.5	0.6	1.53
7211BTN1/DF	**7211BTN1/DT**	85.8	43.8	64	91	95	1.5	0.6	1.26
7211AC/DF	**7211AC/DT**	57.1	15.0	64	91	95	1.5	0.6	1.20
7211ACTYN/DF	7211ACTYN/DT	57.2	15.2	64	91	95	1.5	0.6	1.21
7211ACM/DF	**7211ACM/DT**	57.1	15.0	64	91	95	1.5	0.6	1.40
7211CM/DF	**7211CM/DT**	41.6	0.4	64	91	95	1.5	0.6	1.40
7211C/DF	**7211C/DT**	41.6	0.4	64	91	95	1.5	0.6	1.26
7311AQ1/DF	**7311AQ1/DT**	79.6	21.6	65	110	114	2	1	3.26

d 55～65mm

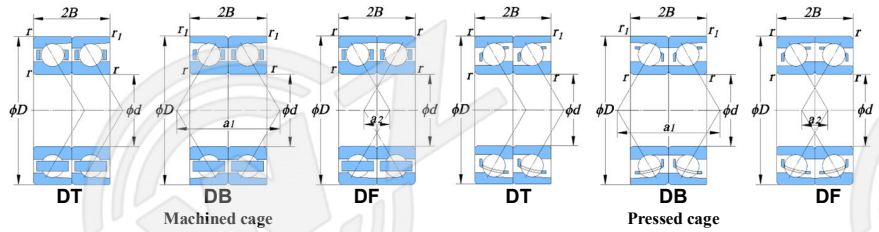


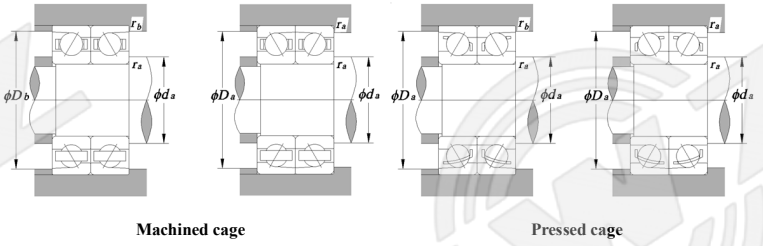


Principal dimensions(mm)					Basic load ratings (kN)		Factor	Limiting speeds(r/min)		Designations
d	*D*	*2B*	r_{min}	r_{1min}	C_r	C_{or}	f_o	Grease	Oil	*DB*
55	120	58	2	1	139	124	14.0	5400	7200	7311YABD/DB
	120	58	2	1	128	113	14.4	4200	5500	7311BM/DB
	120	58	2	1	128	113	14.4	4200	5500	7311BTN1/DB
	120	58	2	1	143	127	13.7	6100	8100	7311ACQ1/DB
	120	58	2	1	143	127	13.7	6100	8100	7311AC/DB
	120	58	2	1	143	127	13.7	6100	8100	7311ACM/DB
	120	58	2	1	149	133	13.5	7400	9900	7311C/DB
	120	58	2	1	149	133	13.5	7400	9900	7311CM/DB
	140	66	2.1	1.1	197	169	12.8	5500	7300	7411AC/DB
	140	66	2.1	1.1	197	169	12.8	5500	7300	7411ACM/DB
60	95	36	1.1	0.6	57.9	59.4	15.6	6900	9200	7012AC/DB
	95	36	1.1	0.6	54.0	58.3	15.9	6900	9200	7012ACTN1/DB
	95	36	1.1	0.6	57.0	62.1	15.9	8400	12000	7012C/DB
	95	36	1.1	0.6	57.0	62.1	15.9	8400	12000	7012CTN1/DB
	110	44	1.5	0.6	74.0	77.5	15.6	6300	8300	7212AC/DB
	110	44	1.5	0.6	90.2	86.0	14.9	6300	8300	7212ACM/DB
	110	44	1.5	0.6	94.7	90.4	14.7	7700	11000	7212CM/DB
	110	44	1.5	0.6	94.7	90.4	14.7	7700	11000	7212C/DB
	130	62	2.1	1.1	138	122	14.7	3800	5100	7312B/DB
	130	62	2.1	1.1	138	122	14.7	3800	5100	7312BM/DB
	130	62	2.1	1.1	138	122	14.7	3800	5100	7312BT/DB
	130	62	2.1	1.1	155	135	13.7	5600	7400	7312AC/DB
	130	62	2.1	1.1	155	135	13.7	5600	7400	7312ACM/DB
	130	62	2.1	1.1	161	142	13.5	6800	9100	7312CM/DB
	150	70	2.1	1.1	194	175	14.0	3500	4600	7412BM/DB
	150	70	2.1	1.1	194	175	14.0	3500	4600	7412BT/DB
	150	70	2.1	1.1	212	192	13.2	5100	6700	7412AC/DB
	150	70	2.1	1.1	212	192	13.2	5100	6700	7412ACM/DB
	110	44	1.5	0.6	78.8	76.1	15.6	4300	5700	7212BM/DB
65	100	36	1.1	0.6	61.7	67.6	15.9	6500	8600	7013ACJ/DB
	100	36	1.1	0.6	55.1	62.1	16.1	6500	8600	7013AC/DB
	100	36	1.1	0.6	60.3	68.7	15.9	7900	11000	7013C/DB
	100	36	1.1	0.6	58.4	65.4	15.9	7900	11000	7013CTN1/DB
	120	46	1.5	0.6	99.0	99.6	15.6	3900	5200	7213BM/DB
	120	46	1.5	0.6	113	113	14.9	5800	7700	7213AC/DB
	120	46	1.5	0.6	113	113	14.9	5800	7700	7213ACM/DB
	120	46	1.5	0.6	113	113	14.9	5800	7700	7213ACQ5/DBYA3
	120	46	1.5	0.6	108	105	14.9	5800	7700	7213ACTN1/DB

Designations		Function point (mm)		Abutment and fillet dimensions (mm)					Mass (kg)
DF	*DT*	$DB(a_1)$	$DF(a_2)$	d_{amin}	D_{amax}	D_{bmax}	r_{amax}	r_{bmax}	(approx.)
7311YABD/DF	7311YABD/DT	79.6	21.6	65	110	114	2	1	3.26
7311BM/DF	7311BM/DT	102.5	44.4	65	110	114	2	1	3.22
7311BTN1/DF	7311BTN1/DT	102.7	44.8	65	110	114	2	1	2.86
7311ACQ1/DF	7311ACQ1/DT	69.9	11.8	65	110	114	2	1	3.28
7311AC/DF	7311AC/DT	69.9	11.8	65	110	114	2	1	2.88
7311ACM/DF	7311ACM/DT	69.9	11.8	65	110	114	2	1	3.30
7311C/DF	7311C/DT	52.4	5.6	65	110	114	2	1	2.88
7311CM/DF	7311CM/DT	52.4	5.6	65	110	114	2	1	3.30
7411AC/DF	7411AC/DT	78.5	12.4	67	128	133	2	1.1	4.76
7411ACM/DF	7411ACM/DT	78.5	12.4	67	128	133	2	1.1	5.58
7012AC/DF	7012AC/DT	54.0	18.0	67	88	90	1.1	0.6	0.785
7012ACTN1/DF	7012ACTN1/DT	54.2	18.2	67	88	90	1.1	0.6	0.815
7012C/DF	7012C/DT	38.8	2.8	67	88	90	1.1	0.6	0.816
7012CTN1/DF	7012CTN1/DT	38.8	2.8	67	88	90	1.1	0.6	0.815
7212AC/DF	7212AC/DT	61.7	17.6	69	101	105	1.5	0.6	1.86
7212ACM/DF	7212ACM/DT	61.7	17.6	69	101	105	1.5	0.6	1.89
7212CM/DF	7212CM/DT	44.6	0.6	69	101	105	1.5	0.6	1.83
7212C/DF	7212C/DT	44.6	0.6	69	101	105	1.5	0.6	1.57
7312B/DF	7312B/DT	110.9	49.0	72	118	123	2	1.1	3.72
7312BM/DF	7312BM/DT	110.9	49.0	72	118	123	2	1.1	4.28
7312BT/DF	7312BT/DT	110.9	49.0	72	118	123	2	1.1	3.79
7312AC/DF	7312AC/DT	75.3	13.4	72	118	123	2	1.1	3.61
7312ACM/DF	7312ACM/DT	75.3	13.4	72	118	123	2	1.1	4.24
7312CM/DF	7312CM/DT	56.2	5.8	72	118	123	2	1.1	4.06
7412BM/DF	7412BM/DT	123.3	53.2	72	138	143	2	1.1	6.84
7412BT/DF	7412BT/DT	123.3	53.2	72	138	143	2	1.1	6.30
7412AC/DF	7412AC/DT	83.9	14.0	72	138	143	2	1.1	6.22
7412ACM/DF	7412ACM/DT	83.9	14.0	72	138	143	2	1.1	7.30
7212BM/DF	7212BM/DT	93.2	49.2	69	101	105	1.5	0.6	1.89
7013ACJ/DF	7013ACJ/DT	56.4	20.4	72	93	95	1.1	0.6	0.820
7013AC/DF	7013AC/DT	56.3	20.4	72	93	95	1.1	0.6	0.828
7013C/DF	7013C/DT	40.1	4.0	72	93	95	1.1	0.6	0.880
7013CTN1/DF	7013CTN1/DT	40.1	4.0	72	93	95	1.1	0.6	0.861
7213BM/DF	7213BM/DT	100.5	54.4	74	111	115	1.5	0.6	2.41
7213AC/DF	7213AC/DT	66.2	20.2	74	111	115	1.5	0.6	2.03
7213ACM/DF	7213ACM/DT	66.1	20.2	74	111	115	1.5	0.6	2.31
7213ACQ5/DFYA3	7213ACQ5/DTYA3	66.1	20.0	74	111	115	1.5	0.6	2.43
7213ACTN1/DF	7213ACTN1/DT	66.0	20.0	74	111	115	1.5	0.6	2.00

d 65～70mm

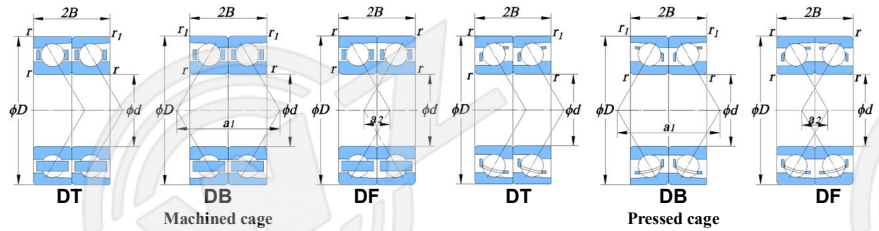


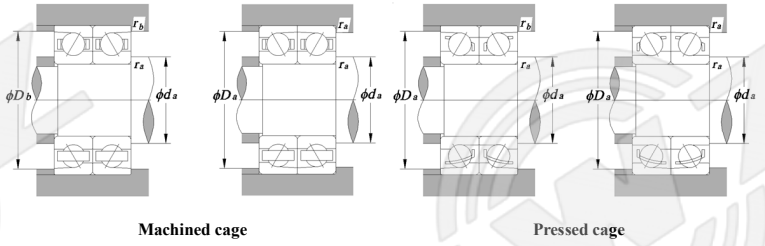


Principal dimensions(mm)					Basic load ratings (kN)		Factor	Limiting speeds(r/min)		Designations
d	*D*	*2B*	r_{min}	r_{1min}	C_r	C_{or}	f_o	Grease	Oil	*DB*
65	120	46	1.5	0.6	119	118	14.7	7000	9400	**7213C/DB**
	120	46	1.5	0.6	119	118	14.7	7000	9400	**7213CM/DB**
	140	66	2.1	1.1	165	153	14.7	3500	4700	**7313B/DB**
	140	66	2.1	1.1	165	153	14.7	3500	4700	**7313BM/DB**
	140	66	2.1	1.1	186	169	13.7	5200	6900	**7313ACJ/DB**
	140	66	2.1	1.1	186	169	13.7	5200	6900	**7313AC/DB**
	140	66	2.1	1.1	186	169	13.7	5200	6900	**7313ACM/DB**
	140	66	2.1	1.1	193	177	13.5	6300	8400	**7313CM/DB**
	160	74	2.1	1.1	209	195	14.0	3200	4300	**7413BM/DB**
	100	36	1.1	0.6	55.1	62.1	16.1	6500	8600	**7013ACM/DB**
70	110	40	1.1	0.6	62.4	73.7	16.4	5200	7000	**7014A/DB**
	110	40	1.1	0.6	72.1	81.7	15.9	5900	7900	**7014ACM/DB**
	110	40	1.1	0.6	72.1	81.7	15.9	5900	7900	**7014AC/DB**
	110	40	1.1	0.6	65.0	75.7	16.1	5900	7900	**7014ACTN1/DBYA4**
	110	40	1.1	0.6	76.2	87.1	15.9	7200	9600	**7014C/DB**
	110	40	1.1	0.6	76.2	87.1	15.9	7200	9600	**7014CM/DB**
	110	40	1.1	1.1	68.7	80.6	16.1	7200	9600	**7014CTN1/DB**
	125	48	1.5	0.6	108	109	15.6	3700	5000	**7214BM/DB**
	125	48	1.5	0.6	123	124	14.9	5500	7300	**7214AC/DB**
	125	48	1.5	0.6	123	124	14.9	5500	7300	**7214ACM/DB**
	125	48	1.5	0.6	123	124	14.9	5500	7300	**7214ACTA/DB**
	125	48	1.5	0.6	129	130	14.7	6700	8900	**7214C/DB**
	125	48	1.5	0.6	129	130	14.7	6700	8900	**7214CM/DB**
	125	48	1.5	0.6	129	130	14.7	6700	8900	**7214CTN1/DB**
	150	70	2.1	1.1	203	188	14.0	4300	5700	**7314A/DB**
	150	70	2.1	1.1	186	174	14.7	3300	4400	**7314B/DB**
	150	70	2.1	1.1	186	174	14.7	3300	4400	**7314BM/DB**
	150	70	2.1	1.1	186	174	14.7	3300	4400	**7314BTN1/DB**
	150	70	2.1	1.1	209	196	14.0	4800	6400	**7314ACM/DB**
	150	70	2.1	1.1	209	196	14.0	4800	6400	**7314ACM/DBYA8**
	150	70	2.1	1.1	217	202	13.5	5900	7800	**7314C/DB**
	150	70	2.1	1.1	217	202	13.5	5900	7800	**7314CM/DB**
	180	84	3	1.1	267	262	13.0	4200	5600	**7414ACJ/DB**
	180	84	3	1.1	267	262	13.0	4200	5600	**7414ACM/DB**
	110	40	1.1	0.6	65.0	75.7	16.1	5900	7900	**7014ACTN1/DB**
	150	70	2.1	1.1	209	196	14.0	4800	6400	**7314AC/DB**
	180	84	3	1.1	241	238	14.0	2900	3800	**7414BT/DB**
	180	84	3	1.1	267	262	13.0	4200	5600	**7414AC/DB**

Designations		Function point (mm)		Abutment and fillet dimensions (mm)					Mass (kg)
DF	*DT*	$DB(a_1)$	$DF(a_2)$	d_{amin}	D_{amax}	D_{bmax}	r_{amax}	r_{bmax}	(approx.)
7213C/DF	**7213C/DT**	47.7	1.8	74	111	115	1.5	0.6	2.03
7213CM/DF	**7213CM/DT**	47.7	1.8	74	111	115	1.5	0.6	2.32
7313B/DF	**7313B/DT**	118.9	53.0	77	128	133	2	1.1	3.90
7313BM/DF	**7313BM/DT**	118.9	53.0	77	128	133	2	1.1	5.07
7313ACJ/DF	**7313ACJ/DT**	80.9	14.8	77	128	133	2	1.1	4.48
7313AC/DF	**7313AC/DT**	80.9	15.0	77	128	133	2	1.1	4.47
7313ACM/DF	**7313ACM/DT**	80.9	15.0	77	128	133	2	1.1	5.05
7313CM/DF	**7313CM/DT**	33.6	32.4	77	128	133	2	1.1	5.04
7413BM/DF	**7413BM/DT**	131.6	57.6	77	148	153	2	1.1	7.40
7013ACM/DF	**7013ACM/DT**	56.3	20.4	72	93	95	1.1	0.6	1.01
7014A/DF	**7014A/DT**	71.9	32.0	77	103	105	1.1	0.6	1.27
7014ACM/DF	**7014ACM/DT**	61.8	21.8	77	103	105	1.1	0.6	1.45
7014AC/DF	**7014AC/DT**	61.8	21.8	77	103	105	1.1	0.6	1.25
7014ACTN1/DFYA4	7014ACTN1/DTYA4	62.2	22.2	77	103	105	1.1	0.6	1.24
7014C/DF	**7014C/DT**	44.0	4.0	77	103	105	1.1	0.6	1.25
7014CM/DF	**7014CM/DT**	44.0	4.0	77	103	105	1.1	0.6	1.45
7014CTN1/DF	**7014CTN1/DT**	44.1	4.0	77	103	103	1.1	1.1	1.24
7214BM/DF	**7214BM/DT**	105.6	57.6	79	116	120	1.5	0.6	2.54
7214AC/DF	**7214AC/DT**	69.4	21.4	79	116	120	1.5	0.6	2.20
7214ACM/DF	**7214ACM/DT**	69.4	21.4	79	116	120	1.5	0.6	2.47
7214ACTA/DF	**7214ACTA/DT**	69.5	21.6	79	116	120	1.5	0.6	2.22
7214C/DF	**7214C/DT**	50.0	2.0	79	116	120	1.5	0.6	2.20
7214CM/DF	**7214CM/DT**	50.0	2.0	79	116	120	1.5	0.6	2.48
7214CTN1/DF	**7214CTN1/DT**	50.0	2.0	79	116	120	1.5	0.6	2.18
7314A/DF	**7314A/DT**	98.6	28.6	82	138	143	2	1.1	5.32
7314B/DF	**7314B/DT**	127.5	57.4	82	138	143	2	1.1	5.70
7314BM/DF	**7314BM/DT**	127.5	57.4	82	138	143	2	1.1	6.32
7314BTN1/DF	**7314BTN1/DT**	127.2	57.2	82	138	143	2	1.1	5.41
7314ACM/DF	**7314ACM/DT**	86.4	16.4	82	138	143	2	1.1	6.16
7314ACM/DFYA8	7314ACM/DTYA8	86.4	16.4	82	138	143	2	1.1	6.25
7314C/DF	**7314C/DT**	64.3	5.8	82	138	143	2	1.1	5.38
7314CM/DF	**7314CM/DT**	64.3	5.8	82	138	143	2	1.1	6.16
7414ACJ/DF	**7414ACJ/DT**	100.3	16.4	84	166	173	2.5	1.1	9.72
7414ACM/DF	**7414ACM/DT**	100.3	16.4	84	166	173	2.5	1.1	10.4
7014ACTN1/DF	**7014ACTN1/DT**	62.0	22.0	77	103	105	1.1	0.6	1.24
7314AC/DF	**7314AC/DT**	86.4	16.4	82	138	143	2	1.1	5.37
7414BT/DF	**7414BT/DT**	147.1	63.0	84	166	173	2.5	1.1	10.5
7414AC/DF	**7414AC/DT**	100.3	16.4	84	166	173	2.5	1.1	9.52

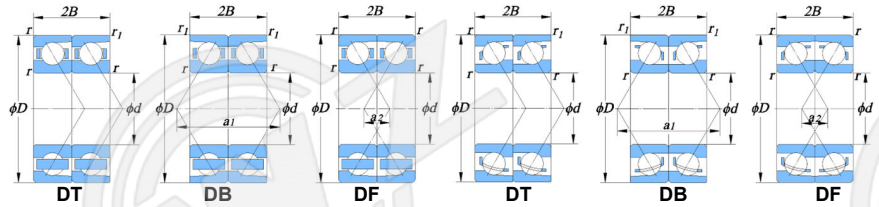
d 70～80mm

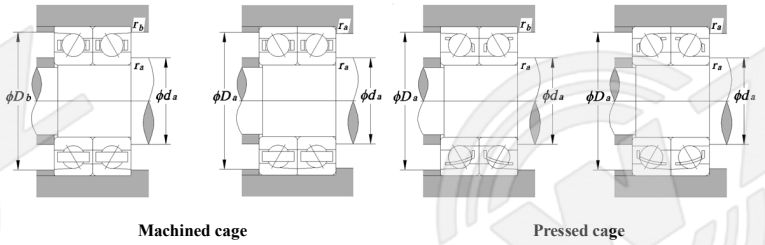




Principal dimensions(mm)					Basic load ratings (kN)		Factor	Limiting speeds(r/min)		Designations	Designations		Function point (mm)		Abutment and fillet dimensions(mm)					Mass (kg)
d	*D*	*2B*	r_{min}	r_{1min}	C_r	C_{or}	f_o	Grease	Oil	*DB*	*DF*	*DT*	$DB(a_1)$	$DF(a_2)$	d_{amin}	D_{amax}	D_{bmax}	r_{amax}	r_{bmax}	(approx.)
70	180	84	3	1.1	241	238	14.0	2900	3800	7414BM/DB	7414BM/DF	7414BM/DT	147.1	63.0	84	166	173	2.5	1.1	11.2
75	115	40	1.1	0.6	68.3	84.4	16.4	5600	7500	7015AC/DB	7015AC/DF	7015AC/DT	64.8	24.8	82	108	110	1.1	0.6	1.30
	115	40	1.1	0.6	68.3	84.4	16.4	5600	7500	7015ACTN1/DB	7015ACTN1/DF	7015ACTN1/DT	64.8	24.8	82	108	110	1.1	0.6	1.29
	130	50	1.5	0.6	112	117	15.6	3500	4700	7215BM/DB	7215BM/DF	7215BM/DT	111.0	61.0	84	121	125	1.5	0.6	2.63
	130	50	1.5	0.6	128	134	15.2	5200	6900	7215ACJ/DB	7215ACJ/DF	7215ACJ/DT	72.7	22.8	84	121	125	1.5	0.6	2.36
	130	50	1.5	0.6	123	126	15.2	5200	6900	7215ACM/DB	7215ACM/DF	7215ACM/DT	72.7	22.8	84	121	125	1.5	0.6	2.74
	130	50	1.5	0.6	117	124	15.4	5200	6900	7215ACTN1/DB	7215ACTN1/DF	7215ACTN1/DT	72.7	22.8	84	121	125	1.5	0.6	2.38
	130	50	1.5	0.6	134	140	14.9	6300	8400	7215C/DB	7215C/DF	7215C/DT	52.3	2.2	84	121	125	1.5	0.6	2.48
	130	50	1.5	0.6	103	117	15.6	6300	8400	7215CTN1/DB	7215CTN1/DF	7215CTN1/DT	52.5	2.6	84	121	125	1.5	0.6	2.51
	160	74	2.1	1.1	202	197	14.7	3100	4100	7315B/DB	7315B/DF	7315B/DT	135.5	61.6	87	148	153	2	1.1	6.51
	160	74	2.1	1.1	202	197	14.7	3100	4100	7315BM/DB	7315BM/DF	7315BM/DT	135.5	61.6	87	148	153	2	1.1	6.81
	160	74	2.1	1.1	202	197	14.7	3100	4100	7315BQ1/DB	7315BQ1/DF	7315BQ1/DT	135.5	61.6	87	148	153	2	1.1	7.40
	160	74	2.1	1.1	227	222	14.0	4500	6000	7315AC/DB	7315AC/DF	7315AC/DT	91.7	17.8	87	148	153	2	1.1	6.22
	160	74	2.1	1.1	227	222	14.0	4500	6000	7315ACJ/DB	7315ACJ/DF	7315ACJ/DT	91.7	17.8	87	148	153	2	1.1	6.20
	160	74	2.1	1.1	227	222	14.0	4500	6000	7315ACTN1/DB	7315ACTN1/DF	7315ACTN1/DT	91.7	17.8	87	148	153	2	1.1	6.16
	160	74	2.1	1.1	227	222	14.0	4500	6000	7315ACM/DB	7315ACM/DF	7315ACM/DT	91.8	17.8	87	148	153	2	1.1	7.19
	160	74	2.1	1.1	227	222	14.0	4500	6000	7315ACQ1/DB	7315ACQ1/DF	7315ACQ1/DT	91.7	17.8	87	148	153	2	1.1	7.04
	160	74	2.1	1.1	237	228	13.5	5500	7300	7315CJ/DB	7315CJ/DF	7315CJ/DT	68.3	5.8	87	148	153	2	1.1	6.20
	160	74	2.1	1.1	237	228	13.5	5500	7300	7315CM/DB	7315CM/DF	7315CM/DT	68.3	5.6	87	148	153	2	1.1	7.20
	190	90	3	1.1	257	262	14.0	2700	3600	7415BM/DB	7415BM/DF	7415BM/DT	156.9	66.8	89	176	183	2.5	1.1	13.9
	190	90	3	1.1	257	262	14.0	2700	3600	7415BT/DB	7415BT/DF	7415BT/DT	156.9	66.8	89	176	183	2.5	1.1	12.6
	115	40	1.1	0.6	70.2	84.5	16.1	6900	9100	7015C/DB	7015C/DF	7015C/DT	45.7	5.6	82	108	110	1.1	0.6	1.28
	130	50	1.5	0.6	128	134	15.2	5200	6900	7215AC/DB	7215AC/DF	7215AC/DT	73.1	23.0	84	121	125	1.5	0.6	2.42
80	110	32	1	0.6	53.0	67.8	16.5	5600	7500	71916AC/DB	71916AC/DF	71916AC/DT	60.2	28.2	86	104	105	1	0.6	0.752
	125	44	1.1	0.6	79.3	96.2	16.4	4600	6100	7016A/DB	7016A/DF	7016A/DT	81.2	37.2	87	118	120	1.1	0.6	1.85
	125	44	1.1	0.6	90.2	106	16.1	5200	6900	7016ACJ/DB	7016ACJ/DF	7016ACJ/DT	69.7	25.6	87	118	120	1.1	0.6	1.70
	125	44	1.1	0.6	92.8	112	16.1	5000	6700	7016AC/DB	7016AC/DF	7016AC/DT	71.5	27.6	87	118	120	1.1	0.6	1.85
	125	44	1.1	0.6	90.2	106	16.1	5200	6900	7016ACM/DB	7016ACM/DF	7016ACM/DT	69.7	25.8	87	118	120	1.1	0.6	2.00
	125	44	1.1	0.6	95.3	112	15.9	6300	8400	7016CA/DB	7016CA/DF	7016CA/DT	49.3	5.4	87	118	120	1.1	0.6	1.46
	125	44	1.1	0.6	95.3	112	15.9	6300	8400	7016CTN1/DBYA4	7016CTN1/DFYA4	7016CTN1/DTYA4	49.6	5.6	87	118	120	1.1	0.6	1.71
	140	52	2	1	150	160	15.2	4800	6400	7216AC/DB	7216AC/DF	7216AC/DT	77.7	25.6	90	130	134	2	1	2.97
	140	52	2	1	150	160	15.2	4800	6400	7216ACM/DB	7216ACM/DF	7216ACM/DT	77.4	25.4	90	130	134	2	1	3.46
	140	52	2	1	150	160	15.2	4800	6400	7216ACQ5/DBYA3	7216ACQ5/DFYA3	7216ACQ5/DTYA3	77.4	25.4	90	130	134	2	1	3.26
	140	52	2	1	157	167	14.9	5900	7800	7216C/DB	7216C/DF	7216C/DT	55.3	3.4	90	130	134	2	1	3.04
	140	52	2	1	157	167	14.9	5900	7800	7216CM/DB	7216CM/DF	7216CM/DT	55.3	3.4	90	130	134	2	1	3.48
	170	78	2.1	1.1	219	221	14.7	2900	3800	7316BM/DB	7316BM/DF	7316BM/DT	143.6	65.6	92	158	163	2	1.1	8.42
	170	78	2.1	1.1	246	249	14.0	4200	5600	7316ACF3/DB	7316ACF3/DF	7316ACF3/DT	97.3	19.4	92	158	163	2	1.1	8.30
	170	78	2.1	1.1	246	249	14.0	4200	5600	7316ACJ/DB	7316ACJ/DF	7316ACJ/DT	97.3	19.4	92	158	163	2	1.1	7.76

d 80～90mm

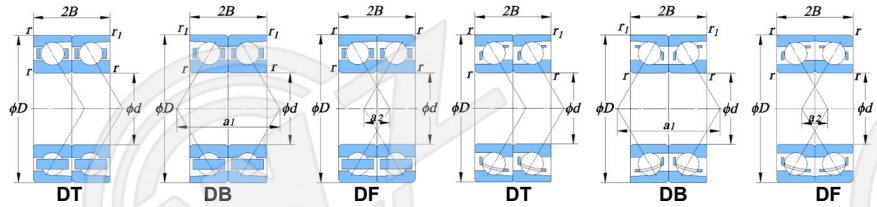




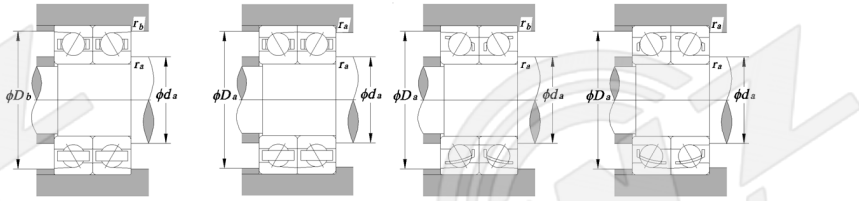
Principal dimensions(mm)					Basic load ratings (kN)		Factor	Limiting speeds(r/min)		Designations
d	*D*	*2B*	r_{min}	r_{1min}	C_r	C_{or}	f_o	Grease	Oil	*DB*
80	170	78	2.1	1.1	246	249	14.0	4200	5600	**7316AC/DB**
	170	78	2.1	1.1	246	249	14.0	4200	5600	**7316ACM/DB**
	200	96	3	1.1	290	311	14.0	2500	3400	**7416BM/DB**
	200	96	3	1.1	290	311	14.0	2500	3400	**7416BT/DB**
	200	96	3	1.1	320	342	13.0	3700	4900	**7416ACJ/DB**
	200	96	3	1.1	320	342	13.0	3700	4900	**7416ACM/DB**
	200	96	3	1.1	320	342	13.0	3700	4900	**7416AC/DB**
	125	44	1.1	0.6	90.2	106	16.1	5200	6900	**7016ACTN1/DB**
	125	44	1.1	0.6	95.3	112	15.9	6300	8400	**7016C/DB**
	140	52	2	1	131	139	15.6	3300	4400	**7216BM/DB**
85	120	36	1.1	0.6	69.1	88.6	16.5	5200	6900	**71917AC/DB**
	120	36	1.1	0.6	61.2	79.6	16.5	5200	6900	**71917ACTA/DB**
	130	44	1.1	0.6	92.5	112	16.1	4900	6600	**7017ACM/DB**
	130	44	1.1	0.6	84.5	105	16.4	4900	6600	**7017AC/DB**
	130	44	1.1	0.6	97.7	117	15.9	6000	8000	**7017C/DB**
	150	56	2	1	140	153	15.9	3100	4100	**7217BM/DB**
	150	56	2	1	161	174	15.2	4500	6000	**7217ACJ/DB**
	150	56	2	1	161	174	15.2	4500	6000	**7217ACTN1/DB**
	150	56	2	1	161	174	15.2	4500	6000	**7217AC/DB**
	150	56	2	1	161	174	15.2	4500	6000	**7217ACM/DB**
	150	56	2	1	169	181	14.9	5500	7300	**7217CJ/DB**
	150	56	2	1	169	181	14.9	5500	7300	**7217CM/DB**
	150	56	2	1	169	181	14.9	5500	7300	**7217CTN1/DB**
	180	82	3	1.1	236	246	14.7	2700	3600	**7317BT/DB**
	180	82	3	1.1	236	246	14.7	2700	3600	**7317BM/DB**
	180	82	3	1.1	236	246	14.7	2700	3600	**7317BTN1/DB**
	180	82	3	1.1	266	277	14.0	3900	5200	**7317AC/DB**
	180	82	3	1.1	266	277	14.0	3900	5200	**7317ACM/DB**
	180	82	3	1.1	266	277	14.0	3900	5200	**7317ACM/DBYA8**
90	125	36	1.1	0.6	62.2	81.8	16.3	4900	6600	**71918ACTA/DB**
	140	45	1.5	1	68.3	90.6	16.3	4100	5400	**7018X2ATYN/DB**
	140	48	1.5	0.6	94.7	114	16.4	3100	4200	**7018BM/DB**
	140	48	1.5	0.6	94.7	114	16.4	3100	4200	**7018BT/DB**
	140	48	1.5	0.6	110	133	16.1	4600	6100	**7018ACM/DB**
	140	48	1.5	0.6	110	133	16.1	4600	6100	**7018ACMA/DB**
	140	48	1.5	0.6	110	133	16.1	4600	6100	**7018AC/DB**
	140	48	1.5	0.6	102	125	16.1	4600	6100	**7018ACTN1/DB**
	140	48	1.5	0.6	102	125	16.1	4600	6100	**7018ACTYN/DB**

Designations		Function point (mm)		Abutment and fillet dimensions (mm)					Mass (kg)
DF	*DT*	*DB*(a_1)	*DF*(a_2)	d_{amin}	D_{amax}	D_{bmax}	r_{amax}	r_{bmax}	(approx.)
7316AC/DF	**7316AC/DT**	97.3	19.4	92	158	163	2	1.1	7.17
7316ACM/DF	**7316ACM/DT**	97.3	19.4	92	158	163	2	1.1	8.18
7416BM/DF	**7416BM/DT**	165.8	69.8	94	186	193	2.5	1.1	16.1
7416BT/DF	**7416BT/DT**	165.8	69.8	94	186	193	2.5	1.1	14.6
7416ACJ/DF	**7416ACJ/DT**	113.5	17.4	94	186	193	2.5	1.1	14.4
7416ACM/DF	**7416ACM/DT**	113.5	17.4	94	186	193	2.5	1.1	17.2
7416AC/DF	**7416AC/DT**	113.5	17.4	94	186	193	2.5	1.1	14.4
7016ACTN1/DF	7016ACTN1/DT	69.9	26.0	87	118	120	1.1	0.6	1.69
7016C/DF	**7016C/DT**	49.3	5.4	87	118	120	1.1	0.6	1.70
7216BM/DF	**7216BM/DT**	118.3	66.4	90	130	134	2	1	3.40
71917AC/DF	**71917AC/DT**	65.8	29.8	92	113	115	1.1	0.6	1.05
71917ACTA/DF	71917ACTA/DT	65.8	29.8	92	113	115	1.1	0.6	1.09
7017ACM/DF	**7017ACM/DT**	72.0	28.0	92	123	125	1.1	0.6	2.22
7017AC/DF	**7017AC/DT**	72.2	28.2	92	123	125	1.1	0.6	1.85
7017C/DF	**7017C/DT**	50.6	6.6	92	123	125	1.1	0.6	1.80
7217BM/DF	**7217BM/DT**	126.7	70.8	95	140	144	2	1	4.53
7217ACJ/DF	**7217ACJ/DT**	82.7	26.8	95	140	144	2	1	3.94
7217ACTN1/DF	7217ACTN1/DT	82.8	26.8	95	140	144	2	1	3.92
7217AC/DF	**7217AC/DT**	82.9	27.0	95	140	144	2	1	3.83
7217ACM/DF	7217ACM/DT	82.7	26.8	95	140	144	2	1	4.22
7217CJ/DF	7217CJ/DT	59.3	3.4	95	140	144	2	1	3.92
7217CM/DF	7217CM/DT	59.3	3.4	95	140	144	2	1	4.22
7217CTN1/DF	7217CTN1/DT	59.5	3.4	95	140	144	2	1	3.86
7317BT/DF	7317BT/DT	152.1	70.2	99	166	173	2.5	1.1	8.68
7317BM/DF	7317BM/DT	152.1	70.2	99	166	173	2.5	1.1	9.78
7317BTN1/DF	7317BTN1/DT	152.8	70.8	99	166	173	2.5	1.1	8.89
7317AC/DF	7317AC/DT	102.9	20.8	99	166	173	2.5	1.1	8.70
7317ACM/DF	7317ACM/DT	102.9	20.8	99	166	173	2.5	1.1	9.78
7317ACM/DFYA8	7317ACM/DTYA8	102.9	21.0	99	166	173	2.5	1.1	10.0
71918ACTA/DF	71918ACTA/DT	68.1	32.2	97	118	120	1.1	0.6	1.15
7018X2ATYN/DF	7018X2ATYN/DT	89.1	44.2	99	131	134	1.5	1	2.48
7018BM/DF	**7018BM/DT**	120.7	72.6	99	131	135	1.5	0.6	2.86
7018BT/DF	**7018BT/DT**	120.7	72.6	99	131	135	1.5	0.6	2.40
7018ACM/DF	**7018ACM/DT**	77.6	29.6	99	131	135	1.5	0.6	2.78
7018ACMA/DF	7018ACMA/DT	77.7	29.8	99	131	135	1.5	0.6	2.74
7018AC/DF	**7018AC/DT**	77.6	29.6	99	131	135	1.5	0.6	2.36
7018ACTN1/DF	7018ACTN1/DT	77.4	29.4	99	131	135	1.5	0.6	2.34
7018ACTYN/DF	7018ACTYN/DT	77.8	29.8	99	131	135	1.5	0.6	2.15

d 90～100mm



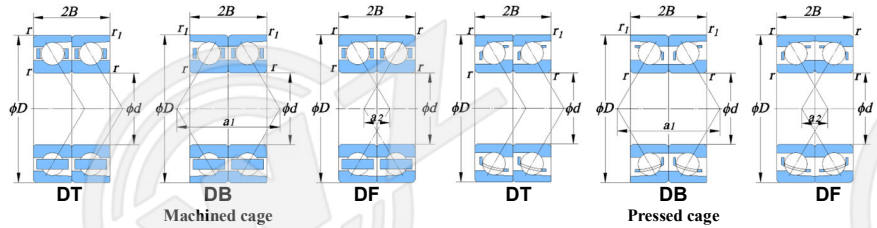
Machined cage　　Pressed cage

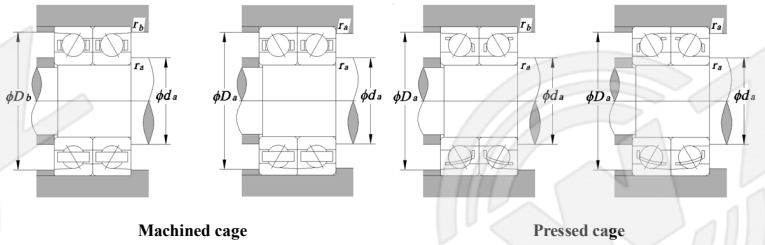


Machined cage　　Pressed cage

Principal dimensions(mm)					Basic load ratings(kN)		Factor	Limiting speeds(r/min)		Designations	Designations		Function point (mm)		Abutment and fillet dimensions(mm)					Mass (kg)
d	*D*	*2B*	r_{min}	r_{1min}	C_r	C_{or}	f_o	Grease	Oil	*DB*	*DF*	*DT*	$DB(a_1)$	$DF(a_2)$	d_{amin}	D_{amax}	D_{bmax}	r_{amax}	r_{bmax}	(approx.)
90	140	48	1.5	0.6	102	125	16.1	4600	6100	7018ACTYN/DBYA4	7018ACTYN/DFYA4	7018ACTYN/DTYA4	77.9	29.8	99	131	135	1.5	0.6	2.34
	140	48	1.5	0.6	120	147	15.9	5600	7500	7018CTYN/DB	7018CTYN/DF	7018CTYN/DT	54.6	6.6	99	131	135	1.5	0.6	2.38
	140	48	1.5	0.6	120	147	15.9	5400	7200	7018C/DB	7018C/DF	7018C/DT	55.9	8.0	99	131	135	1.5	0.6	2.34
	160	60	2	1	166	177	15.6	2900	3800	7218BM/DB	7218BM/DF	7218BM/DT	134.7	74.8	100	150	154	2	1	6.10
	160	60	2	1	190	200	14.9	4200	5600	7218AC/DB	7218AC/DF	7218AC/DT	88.1	28.0	100	150	154	2	1	4.22
	160	60	2	1	190	200	14.9	4200	5600	7218ACJ/DB	7218ACJ/DF	7218ACJ/DT	88.1	28.0.	100	150	154	2	1	4.32
	160	60	2	1	190	200	14.9	4200	5600	7218ACM/DB	7218ACM/DF	7218ACM/DT	88.4	28.4	100	150	154	2	1	4.94
	160	60	2	1	199	210	14.7	5100	6800	7218C/DB	7218C/DF	7218C/DT	63.3	3.2	100	150	154	2	1	4.18
	160	60	2	1	199	210	14.7	5100	6800	7218CM/DB	7218CM/DF	7218CM/DT	63.3	3.2	100	150	154	2	1	4.74
	190	86	3	1.1	254	272	14.7	2500	3400	7318B/DB	7318B/DF	7318B/DT	160.1	74.0	104	176	183	2.5	1.1	9.88
	190	86	3	1.1	254	272	14.7	2500	3400	7318BT/DB	7318BT/DF	7318BT/DT	160.1	74.0	104	176	183	2.5	1.1	9.50
	190	86	3	1.1	254	272	14.7	2500	3400	7318BM/DB	7318BM/DF	7318BM/DT	160.1	74.0	104	176	183	2.5	1.1	10.3
	190	86	3	1.1	286	307	14.0	3700	4900	7318AC/DB	7318AC/DF	7318AC/DT	108.2	22.2	104	176	183	2.5	1.1	10.7
	190	86	3	1.1	286	307	14.0	3700	4900	7318ACM/DB	7318ACM/DF	7318ACM/DT	108.2	22.2	104	176	183	2.5	1.1	12.2
	190	86	3	1.1	297	320	13.7	4500	6000	7318C/DB	7318C/DF	7318C/DT	80.4	5.6	104	176	183	2.5	1.1	9.92
	190	86	3	1.1	297	320	13.7	4500	6000	7318CM/DB	7318CM/DF	7318CM/DT	80.4	5.6	104	176	183	2.5	1.1	11.4
	225	108	4	1.5	342	394	14.0	2200	3000	7418BM/DB	7418BM/DF	7418BM/DT	186.0	78.0	108	207	216	3	1.5	22.8
	225	108	4	1.5	342	394	14.0	2200	3000	7418BT/DB	7418BT/DF	7418BT/DT	186.0	78.0	108	207	216	3	1.5	20.6
	225	108	4	1.5	378	433	13.0	3200	4300	7418AC/DB	7418AC/DF	7418AC/DT	127.6	19.6	108	207	216	3	1.5	20.0
	225	108	4	1.5	378	433	13.0	3200	4300	7418ACM/DB	7418ACM/DF	7418ACM/DT	127.6	19.6	108	207	216	3	1.5	22.6
	160	60	2	1	166	177	15.6	2900	3800	7218B/DB	7218B/DF	7218B/DT	135.2	75.2	100	150	154	2	1	4.78
95	145	48	1.5	0.6	113	139	16.1	4400	5800	7019AC/DB	7019AC/DF	7019AC/DT	79.8	31.8	104	136	140	1.5	0.6	2.42
	145	48	1.5	0.6	113	139	16.1	4400	5800	7019ACM/DB	7019ACM/DF	7019ACM/DT	79.8	31.8	104	136	140	1.5	0.6	2.88
	145	48	1.5	1.5	113	139	16.1	4400	5800	7019ACN5/DB	7019ACN5/DF	7019ACN5/DT	79.8	31.8	104	136	136	1.5	1.5	2.82
	145	48	1.5	0.6	113	139	16.1	4400	5800	7019ACTN1/DB	7019ACTN1/DF	7019ACTN1/DT	80.2	32.2	104	136	140	1.5	0.6	2.40
	145	48	1.5	0.6	119	147	15.9	5400	7100	7019C/DB	7019C/DF	7019C/DT	56.0	8.0	104	136	140	1.5	0.6	2.42
	170	64	2.1	1.1	188	203	15.6	2700	3600	7219B/DB	7219B/DF	7219B/DT	143.6	79.6	107	158	163	2	1.1	6.00
	170	64	2.1	1.1	188	203	15.6	2700	3600	7219BM/DB	7219BM/DF	7219BM/DT	143.7	79.6	107	158	163	2	1.1	6.01
	170	64	2.1	1.1	215	230	14.9	3900	5200	7219ACJ/DB	7219ACJ/DF	7219ACJ/DT	93.7	29.8	107	158	163	2	1.1	5.52
	170	64	2.1	1.1	215	230	14.9	3900	5200	7219AC/DB	7219AC/DF	7219AC/DT	93.7	29.8	107	158	163	2	1.1	5.36
	170	64	2.1	1.1	215	230	14.9	3900	5200	7219ACM/DB	7219ACM/DF	7219ACM/DT	93.7	29.8	107	158	163	2	1.1	5.91
	170	64	2.1	1.1	215	230	14.9	3900	5200	7219ACQ5/DB	7219ACQ5/DF	7219ACQ5/DT	93.7	29.8	107	158	163	2	1.1	5.95
	170	64	2.1	1.1	226	242	14.7	4800	6400	7219CJ/DB	7219CJ/DF	7219CJ/DT	67.5	3.6	107	158	163	2	1.1	5.52
	170	64	2.1	1.3	226	242	14.7	4800	6400	7219CM/DB	7219CM/DF	7219CM/DT	67.5	3.6	107	158	163	2	1.1	5.91
	200	90	3	1.1	272	300	14.7	2400	3200	7319BM/DB	7319BM/DF	7319BM/DT	169.0	79.0	109	186	193	2.5	1.1	12.6
	200	90	3	1.1	306	338	14.0	3500	4600	7319ACM/DB	7319ACM/DF	7319ACM/DT	113.8	23.8	109	186	193	2.5	1.1	13.0
	200	90	3	1.1	319	353	13.7	4300	5700	7319CM/DB	7319CM/DF	7319CM/DT	84.4	5.6	109	186	193	2.5	1.1	12.6
100	140	40	1.1	0.6	66.7	93.2	16.1	4400	5800	71920AC/DB	71920AC/DF	71920AC/DT	75.9	36.0	107	133	135	1.1	0.6	1.70

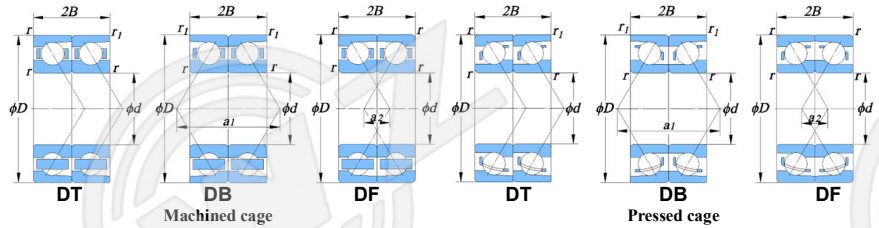
d 100～110mm

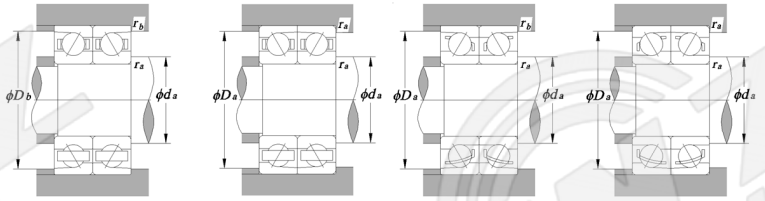




Principal dimensions(mm)					Basic load ratings (kN)		Factor	Limiting speeds(r/min)		Designations	Designations		Function point (mm)		Abutment and fillet dimensions(mm)					Mass (kg)
d	*D*	*2B*	r_{min}	r_{1min}	C_r	C_{or}	f_o	Grease	Oil	*DB*	*DF*	*DT*	$DB(a_1)$	$DF(a_2)$	d_{amin}	D_{amax}	D_{bmax}	r_{amax}	r_{bmax}	(approx.)
100	150	45	1.5	1	70.2	96.4	16.1	3700	4900	7020X2ATYN/DB	7020X2ATYN/DF	7020X2ATYN/DT	94.9	50.0	109	141	144	1.5	1	2.68
	150	45	1.5	1	62.5	84.2	15.9	2900	3800	7020X2BTYN/DB	7020X2BTYN/DF	7020X2BTYN/DT	127.8	82.8	109	141	144	1.5	1	2.68
	150	48	1.5	0.6	111	142	16.4	3700	4900	7020A/DB	7020A/DF	7020A/DT	96.1	48.0	109	141	145	1.5	0.6	2.49
	150	48	1.5	0.6	124	154	16.1	4200	5600	7020ACM/DB	7020ACM/DF	7020ACM/DT	82.2	34.2	109	141	145	1.5	0.6	3.06
	150	48	1.5	0.6	124	154	16.1	4200	5600	7020AC/DB	7020AC/DF	7020AC/DT	82.2	34.2	109	141	145	1.5	0.6	2.49
	150	48	1.5	1	124	154	16.1	4200	5600	7020ACTA/DB	7020ACTA/DF	7020ACTA/DT	82.3	34.4	109	141	144	1.5	1	2.54
	150	48	1.5	1	113	146	16.1	5100	6800	7020CTYN/DB	7020CTYN/DF	7020CTYN/DT	57.5	9.6	109	141	144	1.5	1	2.52
	180	68	2.1	1.1	212	231	15.6	2500	3400	7220BM/DB	7220BM/DF	7220BM/DT	151.7	83.6	112	168	173	2	1.1	8.00
	180	68	2.1	1.1	242	261	14.9	3700	4900	7220ACM/DB	7220ACM/DF	7220ACM/DT	99.1	31.0	112	168	173	2	1.1	7.22
	180	68	2.1	1.1	253	275	14.7	4500	6000	7220CM/DB	7220CM/DF	7220CM/DT	71.3	3.2	112	168	173	2	1.1	7.22
	215	94	3	1.1	309	360	14.7	2200	3000	7320B/DB	7320B/DF	7320B/DT	179.7	85.6	114	201	208	2.5	1.1	14.6
	215	94	3	1.1	309	360	14.7	2200	3000	7320BM/DB	7320BM/DF	7320BM/DT	179.7	85.6	114	201	208	2.5	1.1	17.2
	215	94	3	1.1	309	360	14.7	2200	3000	7320BT/DB	7320BT/DF	7320BT/DT	179.7	85.6	114	201	208	2.5	1.1	15.2
	215	94	3	1.1	347	397	13.7	3200	4300	7320ACM/DB	7320ACM/DF	7320ACM/DT	120.4	26.4	114	201	208	2.5	1.1	18.9
	150	48	1.5	0.6	131	163	15.9	5100	6800	7020CM/DB	7020CM/DF	7020CM/DT	57.3	9.4	109	141	145	1.5	0.6	2.94
	180	68	2.1	1.1	242	261	14.9	3700	4900	7220AC/DB	7220AC/DF	7220AC/DT	99.5	31.4	112	168	173	2	1.1	6.51
	215	94	3	1.1	347	397	13.7	3200	4300	7320AC/DB	7320AC/DF	7320AC/DT	120.4	26.4	114	201	208	2.5	1.1	16.7
105	145	40	1.1	0.6	89.2	121	16.5	4200	5600	71921ACTA/DB	71921ACTA/DF	71921ACTA/DT	78.3	38.4	112	138	140	1.1	0.6	1.67
	160	52	2	1	148	187	16.1	3900	5200	7021AC/DB	7021AC/DF	7021AC/DT	87.8	35.8	115	150	154	2	1	3.24
	160	52	2	1	131	162	16.1	3900	5200	7021ACM/DB	7021ACM/DF	7021ACM/DT	87.7	35.8	115	150	154	2	1	3.84
	160	52	2	1	148	187	16.1	3900	5200	7021ACTA/DB	7021ACTA/DF	7021ACTA/DT	87.8	35.8	115	150	154	2	1	3.24
	160	52	2	1	131	162	16.1	3900	5200	7021ACTN1/DB	7021ACTN1/DF	7021ACTN1/DT	87.7	35.6	115	150	154	2	1	3.13
	160	52	2	1	139	171	15.9	4800	6400	7021C/DB	7021C/DF	7021C/DT	61.2	9.2	115	150	154	2	1	3.16
	145	40	1.1	0.6	78.7	110	16.3	4200	5600	71921AC/DB	71921AC/DF	71921AC/DT	78.1	38.2	112	138	140	1.1	0.6	1.70
	190	72	2.1	1.1	251	275	14.9	3500	4600	7221ACM/DB	7221ACM/DF	7221ACM/DT	104.7	32.6	117	178	183	2	1.1	8.96
	225	98	3	1.1	328	392	14.7	2100	2800	7321BM/DB	7321BM/DF	7321BM/DT	188.8	90.8	119	211	218	2.5	1.1	18.8
110	170	54	2	1	137	173	16.4	3300	4400	7022X2ATN1/DB	7022X2ATN1/DF	7022X2ATN1/DT	108.3	54.2	120	160	164	2	1	3.82
	170	54	2	1	122	154	16.5	2500	3400	7022X2BTN1/DB	7022X2BTN1/DF	7022X2BTN1/DT	144.4	90.4	120	160	164	2	1	3.94
	170	56	2	1	160	204	16.1	3700	4900	7022AC/DB	7022AC/DF	7022AC/DT	93.2	37.2	120	160	164	2	1	4.32
	170	56	2	1	160	204	16.1	3700	4900	7022ACJ/DB	7022ACJ/DF	7022ACJ/DT	93.2	37.2	120	160	164	2	1	3.80
	170	56	2	1	160	204	16.1	3700	4900	7022ACM/DB	7022ACM/DF	7022ACM/DT	93.2	37.2	120	160	164	2	1	4.82
	170	56	2	1	155	195	16.1	3700	4900	7022ACTN1/DB	7022ACTN1/DF	7022ACTN1/DT	93.4	37.4	120	160	164	2	1	3.94
	170	56	2	1	169	215	15.9	4500	6000	7022CM/DBYA3	7022CM/DFYA3	7022CM/DTYA3	65.7	9.6	120	160	164	2	1	4.82
	200	76	2.1	1.1	250	289	15.4	2300	3000	7222BM/DB	7222BM/DF	7222BM/DT	168.2	92.2	122	188	193	2	1.1	7.92
	200	76	2.1	0.5	239	270	15.4	2300	3000	7222BM/DBYAD	7222BM/DFYAD	7222BM/DTYAD	166.7	90.6	122	188	197.6	2	0.3	10.4
	200	76	2.1	1.1	285	331	14.9	3300	4400	7222AC/DB	7222AC/DF	7222AC/DT	110.3	34.2	122	188	193	2	1.1	8.14
	200	76	2.1	1.1	285	331	14.9	3300	4400	7222ACJ/DB	7222ACJ/DF	7222ACJ/DT	110.3	34.2	122	188	193	2	1.1	8.28
	200	76	2.1	1.1	285	331	14.9	3300	4400	7222ACM/DB	7222ACM/DF	7222ACM/DT	110.3	34.2	122	188	193	2	1.1	9.47

d 110～130mm

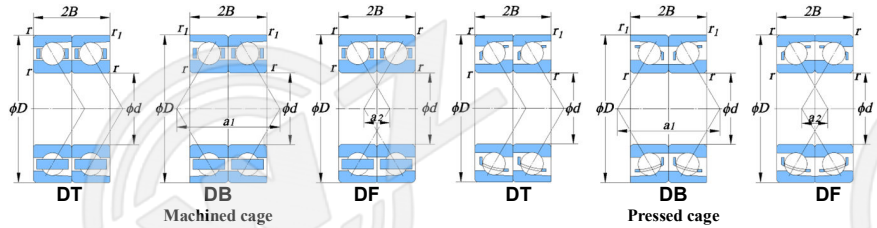


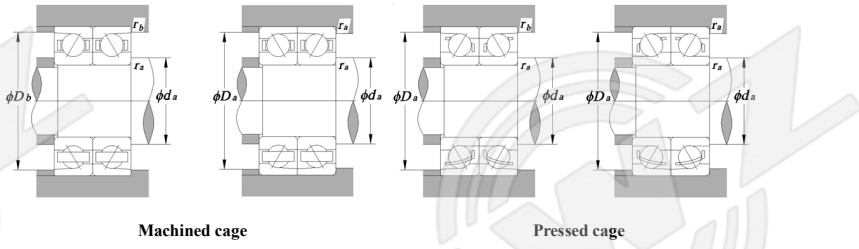


Principal dimensions(mm)					Basic load ratings (kN)		Factor	Limiting speeds (r/min)		Designations
d	*D*	f_o	r_{min}	r_{1min}	C_r	C_{or}	f_o	Grease	Oil	*DB*
110	200	76	2.1	0.5	285	331	14.9	3300	4400	7222ACM/DBYA3
	200	76	2.1	1.1	299	348	14.7	4000	5400	7222C/DB
	200	76	2.1	1.1	299	348	14.7	4000	5400	7222CJ/DB
	200	76	2.1	1.1	299	348	14.7	4000	5400	7222CM/DB
	240	100	3	1.1	347	426	14.7	1900	2600	7322B/DB
	240	100	3	1.1	347	426	14.7	1900	2600	7322BM/DB
	240	100	3	1.1	367	451	14.4	2000	2600	7322BTN1/DB
	240	100	3	1.1	388	465	13.7	2900	3800	7322ACM/DB
	240	100	3	1.1	403	489	13.5	3500	4700	7322CM/DB
	240	100	3	1.1	388	465	13.7	2900	3800	7322AC/DB
120	180	54	2.1	1	148	199	16.4	3000	4000	7024X2ATN1/DB
	180	54	2	1	148	199	16.4	3000	4000	7024X2ATYN/DB
	180	54	2	1	82.2	118	15.9	2400	3100	7024X2BTN1/DBYA3
	180	56	2	1	148	199	16.4	3000	4000	7024A/DB
	180	56	2	1	140	185	16.5	2400	3100	7024BM/DB
	180	56	2	1	163	214	16.1	3400	4600	7024ACM/DB
	180	56	2	1	163	214	16.1	3400	4600	7024AC/DB
	180	56	2	1	172	222	16.1	3400	4600	7024ACTA/DB
	180	56	2	1	154	208	16.4	3400	4600	7024ACTN1/DB
	180	56	2	1	163	218	16.1	4200	5600	7024C/DB
	215	80	2.1	1.1	307	369	14.9	3000	4000	7224AC/DB
	215	80	2.1	1.1	307	369	14.9	3000	4000	7224ACM/DB
	215	80	2.1	1.1	307	369	14.9	3000	4000	7224ACQ5/DB
	215	80	2.1	1.1	322	388	14.7	3700	4900	7224CM/DB
	260	110	3	1.1	407	534	14.7	1800	2400	7324B/DB
	260	110	3	1.1	431	540	13.7	2600	3500	7324ACM/DB
	260	110	3	1.1	431	540	13.7	2600	3500	7324AC/DB
	165	44	1.1	0.6	112	163	16.5	4400	5900	71924C/DB
130	180	48	1.5	0.6	130	188	16.3	3300	4400	71926ACM/DB
	200	63	2	1	126	178	16.3	2700	3600	7026X2ATYN/DB
	200	63	2	1	112	155	16.1	2100	2800	7026X2BTYN/DB
	200	66	2	1	197	266	16.4	2700	3600	7026AQ1/DB
	200	66	2	1	198	261	16.1	3100	4100	7026AC/DB
	200	66	2	1	210	275	15.9	3800	5000	7026C/DB
	230	80	3	1.1	278	355	15.9	1900	2500	7226BM/DB
	230	80	3	1.1	335	419	14.9	3400	4500	7226C/DB
	230	80	3	1.1	335	419	14.9	3400	4500	7226CM/DB
	280	116	4	1.5	406	541	14.9	1600	2100	7326B/DB

Designations		Function point (mm)		Abutment and fillet dimensions(mm)					Mass(kg) (approx.)
DF	*DT*	*DB*(a_1)	*DF*(a_2)	d_{amin}	D_{amax}	D_{bmax}	r_{amax}	r_{bmax}	
7222ACM/DFYA3	7222ACM/DTYA3	110.3	34.2	122	188	197.6	2	0.3	9.47
7222C/DF	7222C/DT	79.4	3.4	122	188	193	2	1.1	8.14
7222CJ/DF	7222CJ/DT	79.4	3.4	122	188	193	2	1.1	8.28
7222CM/DF	7222CM/DT	79.4	3.4	122	188	193	2	1.1	9.67
7322B/DF	7322B/DT	198.3	98.4	124	226	233	2.5	1.1	19.7
7322BM/DF	7322BM/DT	198.3	98.4	124	226	233	2.5	1.1	23.6
7322BTN1/DF	7322BTN1/DT	197.0	97.0	124	226	233	2.5	1.1	20.2
7322ACM/DF	7322ACM/DT	131.8	31.8	124	226	233	2.5	1.1	20.2
7322CM/DF	7322CM/DT	97.0	3.0	124	226	233	2.5	1.1	19.6
7322AC/DF	7322AC/DT	131.8	31.8	124	226	233	2.5	1.1	18.1
7024X2ATN1/DF	7024X2ATN1/DT	113.7	59.8	132	168	174	2	1	4.16
7024X2ATYN/DF	7024X2ATYN/DT	113.7	59.8	130	170	174	2	1	4.16
7024X2BTN1/DFYA3	7024X2BTN1/DTYA3	152.9	98.8	130	170	174	2	1	4.57
7024A/DF	7024A/DT	114.5	58.6	130	170	174	2	1	4.27
7024BM/DF	7024BM/DT	153.6	97.6	130	170	174	2	1	5.15
7024ACM/DF	7024ACM/DT	97.8	41.8	130	170	174	2	1	5.24
7024AC/DF	7024AC/DT	97.8	41.8	130	170	174	2	1	4.62
7024ACTA/DF	7024ACTA/DT	98.0	42.0	130	170	174	2	1	4.28
7024ACTN1/DF	7024ACTN1/DT	98.0	42.0	130	170	174	2	1	4.30
7024C/DF	7024C/DT	68.1	12.2	130	170	174	2	1	4.28
7224AC/DF	7224AC/DT	118.2	38.2	132	203	208	2	1.1	11.1
7224ACM/DF	7224ACM/DT	118.4	38.4	132	203	208	2	1.1	12.6
7224ACQ5/DF	7224ACQ5/DT	118.2	38.2	132	203	208	2	1.1	13.1
7224CM/DF	7224CM/DT	85.1	5.0	132	203	208	2	1.1	12.1
7324B/DF	7324B/DT	214.3	104.4	134	246	253	2.5	1.1	29.2
7324ACM/DF	7324ACM/DT	143.9	34.0	134	246	253	2.5	1.1	28.4
7324AC/DF	7324AC/DT	143.9	34.0	134	246	253	2.5	1.1	28.0
71924C/DF	71924C/DT	60.0	16.0	127	158	160	1.1	0.6	2.40
71926ACM/DF	71926ACM/DT	96.2	48.2	139	171	175	1.5	0.6	3.78
7026X2ATYN/DF	7026X2ATYN/DT	127.1	64.0	140	190	194	2	1	6.76
7026X2BTYN/DF	7026X2BTYN/DT	170.5	107.4	140	190	194	2	1	6.76
7026AQ1/DF	7026AQ1/DT	128.5	62.4	140	190	194	2	1	7.62
7026AC/DF	7026AC/DT	109.8	43.8	140	190	194	2	1	6.75
7026C/DF	7026C/DT	77.0	11.0	140	190	194	2	1	6.66
7226BM/DF	7226BM/DT	191.1	111	144	216	223	2.5	1.1	15.1
7226C/DF	7226C/DT	88.4	8.4	144	216	223	2.5	1.1	12.5
7226CM/DF	7226CM/DT	88.4	8.4	144	216	223	2.5	1.1	14.0
7326B/DF	7326B/DT	230.6	114.6	148	262	271	3	1.5	35.9

d 130～170mm





Principal dimensions(mm)					Basic load ratings(kN)		Factor	Limiting speeds(r/min)		Designations
d	*D*	*2B*	r_{min}	r_{1min}	C_r	C_{or}	f_0	Grease	Oil	*DB*
130	280	116	4	1.5	458	610	14.2	2400	3100	7326ACM/DB
	180	48	1.5	0.6	140	204	16.5	3200	4300	71926ACTA/DB
	200	66	2	1	176	237	16.5	2100	2800	7026BM/DB
	200	66	2	1	180	248	16.4	3100	4100	7026ACTN1/DB
	280	116	4	1.5	406	541	14.9	1600	2100	7326BM/DB
	280	116	4	1.5	458	610	14.2	2400	3100	7326AC/DB
140	190	48	1.5	0.6	131	195	16.3	3100	4100	71928ACMB/DB
	190	48	1.5	0.6	139	208	16.3	3800	5000	71928CTA/DB
	210	66	2	1	202	279	16.4	2900	3800	7028AC/DB
	210	66	2	1	202	279	16.4	2900	3800	7028ACM/DB
	210	66	2	1	214	291	16.1	3500	4700	7028CM/DB
	250	84	3	1.1	309	417	15.9	1700	2300	7228BM/DB
	250	84	3	1.1	356	478	15.4	2500	3300	7228ACM/DB
	250	84	3	1.1	374	503	15.2	3100	4100	7228CM/DB
	300	124	4	1.5	447	621	14.9	1500	2000	7328B/DB
	300	124	4	1.5	447	621	14.9	1500	2000	7328BA/DB
	300	124	4	1.5	447	621	14.9	1500	2000	7328BM/DB
	300	124	4	1.5	447	621	14.9	1500	2000	7328B/YA8/DB
	300	124	4	1.5	504	701	14.2	2200	2900	7328AC/DB
150	210	56	2	1	187	271	16.5	2800	3700	71930AC/DB
	225	67.5	2.1	1.1	213	295	16.5	1800	2400	7030X2BM/DB
	225	70	2.1	1.1	213	295	16.5	1800	2400	7030BM/DB
	225	70	2.1	1.1	248	340	16.1	2600	3500	7030AC/DB
	225	70	2.1	1.1	248	340	16.1	2600	3500	7030ACM/DB
	270	90	3	1.1	318	448	16.1	1600	2100	7230BM/DB
	320	130	4	1.5	516	766	14.9	1400	1800	7330B/DB
	320	130	4	1.5	583	864	14.2	2000	2600	7330AC/DB
160	220	56	2	1	190	282	16.5	2600	3500	71932AC/DB
	229.5	66	3	1.5	184	266	16.3	1700	2300	72932X3BM/DBYA6
	240	76	2.1	1.1	225	315	16.5	1700	2200	7032BM/DB
	240	76	2.1	1.1	262	371	16.4	2400	3200	7032ACM/DB
	240	76	2.1	1.1	262	371	16.4	2400	3200	7032ACM/DBYA1
	290	96	3	1.1	325	481	16.4	1500	1900	7232BM/DB
	290	96	3	1.1	325	481	16.4	1500	1900	7232B/DB
	340	136	4	1.5	514	781	15.2	1300	1700	7332B/DB
	340	136	4	1.5	582	876	14.4	1900	2500	7332AC/DB
	400	176	5	2	724	1170	14.2	1100	1500	7432BM/DB
170	229.5	56	2	1.1	147	223	15.9	1700	2200	71934X1B/DBYA3

Designations		Function point (mm)		Abutment and fillet dimensions(mm)					Mass (kg) (approx.)
DF	*DT*	*DB*(a_1)	*DF*(a_2)	d_{amin}	D_{amax}	D_{bmax}	r_{amax}	r_{bmax}	
7326ACM/DF	7326ACM/DT	153.8	37.8	148	262	271	3	1.5	36.1
71926ACTA/DF	71926ACTA/DT	98.4	50.4	139	171	175	1.5	0.6	3.14
7026BM/DF	7026BM/DT	171.6	105.6	140	190	194	2	1	7.70
7026ACTN1/DF	7026ACTN1/DT	110.1	44.2	140	190	194	2	1	6.95
7326BM/DF	7326BM/DT	230.6	114.6	148	262	271	3	1.5	35.0
7326AC/DF	7326AC/DT	153.8	37.8	148	262	271	3	1.5	36.1
71928ACMB/DF	71928ACMB/DT	101.1	53.0	149	181	185	1.5	0.6	3.71
71928CTA/DF	71928CTA/DT	68.3	20.2	149	181	185	1.5	0.6	3.36
7028AC/DF	7028AC/DT	114.6	48.6	150	200	204	2	1	6.92
7028ACM/DF	7028ACM/DT	114.8	48.8	150	200	204	2	1	8.27
7028CM/DF	7028CM/DT	79.8	13.8	150	200	204	2	1	8.27
7228BM/DF	7228BM/DT	206.2	122.2	154	236	243	2.5	1.1	17.2
7228ACM/DF	7228ACM/DT	132.9	49.0	154	236	243	2.5	1.1	16.9
7228CM/DF	7228CM/DT	94.1	10.2	154	236	243	2.5	1.1	16.6
7328B/DF	7328B/DT	247.0	123.0	158	282	291	3	1.5	42.3
7328BA/DF	7328BA/DT	247.0	123.0	158	282	291	3	1.5	42.3
7328BM/DF	7328BM/DT	247.0	123.0	158	282	291	3	1.5	42.3
7328B/YA8/DF	7328B/YA8/DT	247.0	123.0	158	282	291	3	1.5	45.2
7328AC/DF	7328AC/DT	164.7	40.6	158	282	291	3	1.5	43.4
71930AC/DF	71930AC/DT	111.9	55.8	160	200	204	2	1	5.08
7030X2BM/DF	7030X2BM/DT	191.5	123.9	162	213	218	2	1.1	9.57
7030BM/DF	7030BM/DT	192.3	122.2	162	213	218	2	1.1	9.61
7030AC/DF	7030AC/DT	122.3	52.4	162	213	218	2	1.1	8.46
7030ACM/DF	7030ACM/DT	122.3	52.4	162	213	218	2	1.1	9.60
7230BM/DF	7230BM/DT	221.4	131.4	164	256	263	2.5	1.1	23.4
7330B/DF	7330B/DT	262.6	132.6	168	302	311	3	1.5	52.3
7330AC/DF	7330AC/DT	175.4	45.4	168	302	311	3	1.5	51.4
71932AC/DF	71932AC/DT	116.5	60.6	170	210	214	2	1	5.30
72932X3BM/DFYA6	72932X3BM/DTYA6	196.6	130.6	174	215.5	220.5	2.5	1.5	9.06
7032BM/DF	7032BM/DT	205.8	129.8	172	228	233	2	1.1	12.0
7032ACM/DF	7032ACM/DT	130.8	54.8	172	228	233	2	1.1	11.6
7032ACM/DFYA1	7032ACM/DTYA1	131.2	55.2	172	228	233	2	1.1	12.0
7232BM/DF	7232BM/DT	236.8	140.8	174	276	283	2.5	1.1	27.8
7232B/DF	7232B/DT	236.6	140.6	174	276	283	2.5	1.1	27.8
7332B/DF	7332B/DT	278.3	142.4	178	322	331	3	1.5	62.3
7332AC/DF	7332AC/DT	184.8	48.8	178	322	331	3	1.5	62.6
7432BM/DF	7432BM/DT	323.7	147.8	182	378	390	4	2	123
71934X1B/DFYA3	71934X1B/DTYA3	195.8	139.8	180	219.5	222.5	2	1.1	7.04

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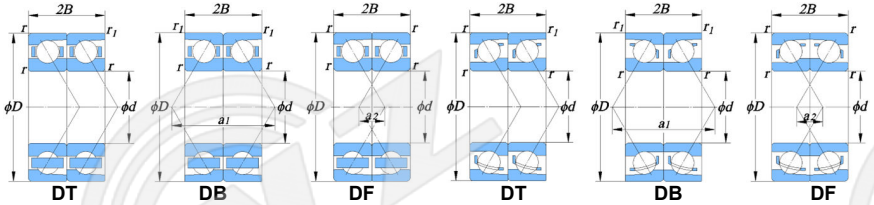
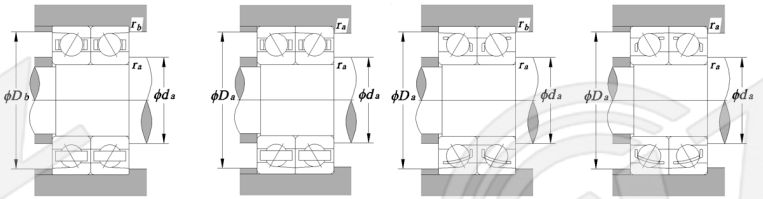
d 170～200mm



Machined cage

Pressed cage



Machined cage

Pressed cage

Principal dimensions(mm)					Basic load ratings(kN)		Factor	Limiting speeds (r/min)		Designations
d	*D*	*2B*	r_{min}	r_{1min}	C_r	C_{or}	f_0	Grease	Oil	*DB*
170	230	56	2	1	196	300	16.3	2400	3200	**71934AC/DB**
	260	84	2.1	1.1	310	437	16.1	2000	2600	**7034A/DB**
	260	84	2.1	1.1	315	465	16.4	1500	2000	**7034B/DB**
	260	84	2.1	1.1	322	458	16.1	2200	3000	**7034ACQ1/DB**
	260	84	2.1	2.1	324	468	16.1	2200	3000	**7034AC/DB**
	310	104	4	1.5	433	651	15.6	1300	1800	**7234B/DB**
	310	104	4	1.5	496	751	15.2	2000	2600	**7234AC/DB**
	310	104	4	1.5	521	785	14.9	2400	3200	**7234C/DB**
	360	144	4	1.5	559	882	15.2	1200	1600	**7334B/DB**
	360	144	4	1.5	634	989	14.4	1700	2300	**7334AC/DB**
	360	144	4	1.5	559	882	15.2	1200	1600	**7334BM/DBYA8**
180	249.5	66	2	1	195	294	16.1	1500	2000	**71936X1BM/DBYA3**
	280	92	2.1	2.1	370	558	16.1	2100	2700	**7036ACM/DB**
	280	92	2.1	1.1	370	558	16.1	2100	2700	**7036AC/DB**
	280	92	2.1	1.1	306	460	16.4	2500	3300	**7036C/DB**
	320	104	4	1.5	395	609	16.1	1300	1700	**7236BM/DB**
	320	104	4	1.5	541	850	15.2	2300	3000	**7236C/DB**
	380	150	4	1.5	741	1220	14.2	1600	2100	**7336AC/DB**
	250	66	2	1	260	391	16.4	2700	3600	**71936CM/DB**
	380	150	4	1.5	656	1080	14.9	1100	1500	**7336B/DB**
190	260	66	2	1	162	271	15.9	2600	3400	**71938C/DB**
	260	66	2	1	162	271	15.9	2600	3400	**71938CTYN/DB**
	260	78	2	1	153	254	15.9	2100	2800	**71938X2AC/DB**
	290	92	2.1	1.1	348	534	16.4	2000	2600	**7038AC/DB**
	340	110	4	1.5	542	872	15.4	1700	2300	**7238AC/DB**
	400	156	5	2	654	1100	15.2	990	1400	**7338B/DB**
	400	156	5	2	702	1140	14.4	1500	2000	**7338AC/DB**
200	280	76	2	1	309	479	16.5	1700	2300	**71940A/DB**
	280	76	2.1	1.1	189	307	15.9	2000	2600	**71940AC/DB**
	280	76	2.1	1.1	200	332	16.1	2400	3200	**71940C/DB**
	280	76	2.1	1.1	200	332	16.1	2400	3200	**71940CTYN/DB**
	280	96	2.1	1.1	189	307	15.9	2000	2600	**71940X2AC/DB**
	289.5	76	3.5	2	274	419	16.3	1300	1700	**71940X1B/DBYA6**
	310	102	2.1	1.1	369	582	16.4	1200	1600	**7040B/DB**
	310	102	2.1	1.1	428	668	15.9	1800	2400	**7040AC/DB**
	310	102	2.1	1.1	428	668	15.9	1800	2400	**7040ACN1/DB**
	360	116	4	1.5	503	839	15.9	1100	1500	**7240B/DB**
	360	116	4	1.5	559	935	15.6	1600	2100	**7240ACL3/DB**

Designations		Function point (mm)		Abutment and fillet dimensions(mm)					Mass(kg) (approx.)
DF	*DT*	$DB(a_1)$	$DF(a_2)$	d_{amin}	D_{amax}	D_{bmax}	r_{amax}	r_{bmax}	
71934AC/DF	**71934AC/DT**	121.2	65.2	180	220	224	2	1	5.64
7034A/DF	**7034A/DT**	166.1	82.2	182	248	253	2	1.1	15.6
7034B/DF	**7034B/DT**	224.1	140.0	182	248	253	2	1.1	16.6
7034ACQ1/DF	**7034ACQ1/DT**	142.3	58.2	182	248	253	2	1.1	16.5
7034AC/DF	**7034AC/DT**	142.4	58.4	182	248	248	2	2	16.3
7234B/DF	**7234B/DT**	253.6	149.6	188	292	301	3	1.5	35.6
7234AC/DF	**7234AC/DT**	164.0	60.0	188	292	301	3	1.5	34.1
7234C/DF	**7234C/DT**	116.2	12.2	188	292	301	3	1.5	34.2
7334B/DF	**7334B/DT**	294.1	150.0	188	342	351	3	1.5	75.4
7334AC/DF	**7334AC/DT**	196.2	52.2	188	342	351	3	1.5	71.6
7334BM/DFYA8	**7334BM/DTYA8**	294.1	150	188	342	351	3	1.5	75.4
71936X1BM/DFYA3	**71936X1BM/DTYA3**	213.2	147.2	190	239.5	243.5	2	1	9.79
7036ACM/DF	**7036ACM/DT**	153.3	61.2	192	268	268	2	2	21.2
7036AC/DF	**7036AC/DT**	153.3	61.2	192	268	273	2	1.1	21.2
7036C/DF	**7036C/DT**	107.5	15.4	192	268	273	2	1.1	19.0
7236BM/DF	**7236BM/DT**	261.6	157.6	198	302	311	3	1.5	38.2
7236C/DF	**7236C/DT**	118.9	14.8	198	302	311	3	1.5	35.8
7336AC/DF	**7336AC/DT**	205.8	55.8	198	362	371	3	1.5	85.0
71936CM/DF	**71936CM/DT**	90.3	24.4	190	240	244	2	1	9.73
7336B/DF	**7336B/DT**	309.7	159.8	198	362	371	3	1.5	73.7
71938C/DF	**71938C/DT**	93.2	27.2	200	250	254	2	1	9.58
71938CTYN/DF	**71938CTYN/DT**	93.2	27.2	200	250	254	2	1	9.58
71938X2AC/DF	**71938X2AC/DT**	138.0	60.0	200	250	254	2	1	10.6
7038AC/DF	**7038AC/DT**	157.9	65.8	202	278	283	2	1.1	21.1
7238AC/DF	**7238AC/DT**	178.5	68.6	208	322	331	3	1.5	43.6
7338B/DF	**7338B/DT**	326.1	170.0	212	378	390	4	2	101
7338AC/DF	**7338AC/DT**	216.3	60.4	212	378	390	4	2	96.8
71940A/DF	**71940A/DT**	176.3	100.2	210	270	274	2	1	14.7
71940AC/DF	**71940AC/DT**	150.0	74.0	212	268	273	2	1.1	13.5
71940C/DF	**71940C/DT**	102.3	26.2	212	268	273	2	1.1	13.4
71940CTYN/DF	**71940CTYN/DT**	102.3	26.2	212	268	273	2	1.1	13.4
71940X2AC/DF	**71940X2AC/DT**	150.0	54.0	212	268	273	2	1.1	16.1
71940X1B/DFYA6	**71940X1B/DTYA6**	242.8	166.8	216	273.5	279.5	3.5	2	16.9
7040B/DF	**7040B/DT**	264.6	162.6	212	298	303	2	1.1	28.3
7040AC/DF	**7040AC/DT**	169.9	68.0	212	298	303	2	1.1	29.8
7040ACN1/DF	**7040ACN1/DT**	169.9	68.0.	212	298	303	2	1.1	29.6
7240B/DF	**7240B/DT**	293.1	177.0	218	342	351	3	1.5	51.6
7240ACL3/DF	**7240ACL3/DT**	148.7	32.8	218	342	351	3	1.5	48.0

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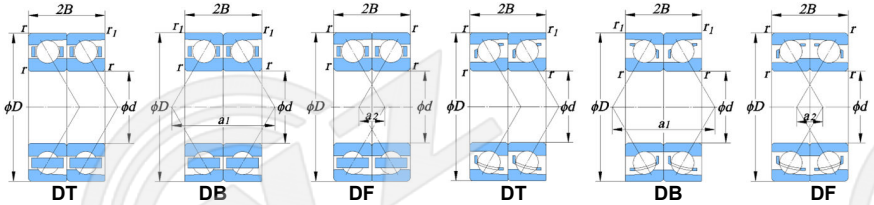
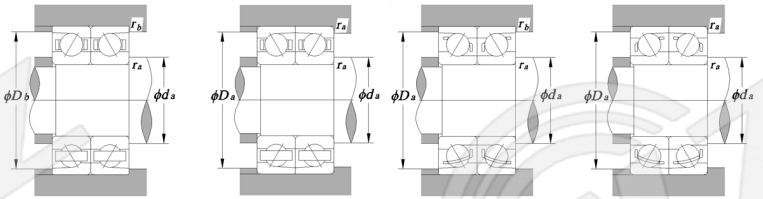
d 200～380mm



Machined cage　　Pressed cage

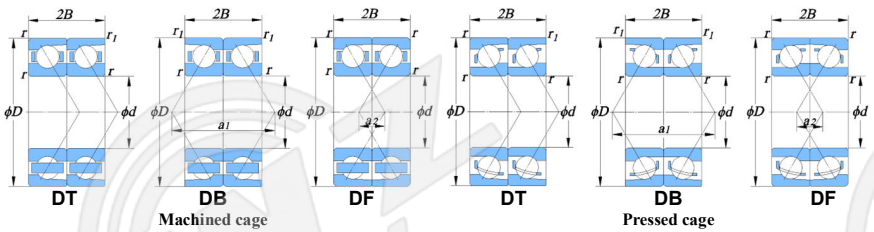


Machined cage　　Pressed cage

Principal dimensions(mm)					Basic load ratings(kN)		Factor	Limiting speeds (r/min)		Designations
d	*D*	*2B*	r_{min}	r_{1min}	C_r	C_{or}	f_o	Grease	Oil	*DB*
200	420	160	5	2	777	1360	14.7	1400	1900	**7340AC/DB**
	250	48	1.5	0.6	127	228	15.7	2100	2800	**71840AC/DB**
220	300	76	2.1	1.1	279	477	16.3	2200	2900	**71944CTA/DB**
	300	76	2.1	1.1	279	477	16.3	2200	2900	**71944C/DB**
	400	130	4	1.5	688	1220	15.4	1400	1900	**7244AC/DB**
	460	176	5	2	788	1450	15.2	820	1100	**7344B/DB**
230	329.5	80	2.1	1.1	361	599	16.3	1400	1900	**7646AMB/DB**
240	320	76	2.1	1.1	255	414	15.9	1100	1500	**71948B/DBYB2**
	320	76	2.1	1.1	299	496	16.1	1600	2100	**71948AC/DB**
	320	76	2.1	1.1	318	536	16.3	2000	2600	**71948C/DB**
	320	96	2.1	1.1	299	496	16.1	1600	2100	**72948AC/DB**
	360	112	3	1.1	405	701	16.3	970	1300	**7048B/DB**
	370	112	3	1.1	451	807	16.5	950	1300	**7048BX1/DB**
	440	144	4	1.5	706	1310	15.6	1300	1700	**7248AC/DB**
260	360	92	2.1	1.1	414	745	16.3	1200	1600	**71952A/DB**
	360	92	2.1	1.1	361	628	16.1	930	1300	**71952B/DB**
	360	92	2.1	1.1	422	753	16.3	1400	1900	**71952AC/DB**
	360	92	2.1	1.1	447	812	16.5	1700	2300	**71952C/DB**
	400	130	4	1.5	519	975	16.5	860	1200	**7052B/DB**
280	350	66	2	1.1	233	444	15.7	1400	1800	**71856AC/DB**
	380	92	2.1	1.1	408	736	16.1	1200	1500	**71956A/DB**
	380	92	2.1	1.1	372	673	16.1	860	1200	**71956B/DB**
	380	92	2.1	1.1	436	806	16.3	1300	1700	**71956AC/DB**
	420	130	4	1.5	557	1060	16.4	1100	1400	**7056AM/DB**
	420	130	4	1.5	513	991	16.5	790	1100	**7056BM/DB**
	350	66	2	1.1	152	290	15.5	910	1300	**71856BTN1/DB**
300	460	148	4	1.5	569	1150	16.5	710	950	**7060B/DB**
	460	148	4	1.5	662	1350	16.4	1100	1400	**7060AC/DB**
310	429.5	120	3	1.1	462	888	16.1	740	980	**71962X3B/DB**
320	480	148	4	1.5	675	1410	16.4	970	1300	**7064AC/DB**
	400	76	2.1	1	314	619	15.7	1200	1500	**71864AC/DB**
340	420	76	2.1	1.1	319	647	15.7	1100	1400	**71868AC/DB**
	520	164	5	2	829	1790	16.1	880	1200	**7068AC/DB**
360	440	76	2.1	1.1	327	689	15.7	970	1300	**71872AC/DB**
	480	112	3	1.1	587	1240	16.1	910	1300	**71972ACM/DB**
	540	164	5	1.3	864	1960	16.4	1000	1400	**7072CF3/DB**
	540	164	5	2	698	1550	16.3	560	750	**7072BM/DB**
380	480	92	2.1	1.1	359	726	15.5	600	800	**71876B/DB**

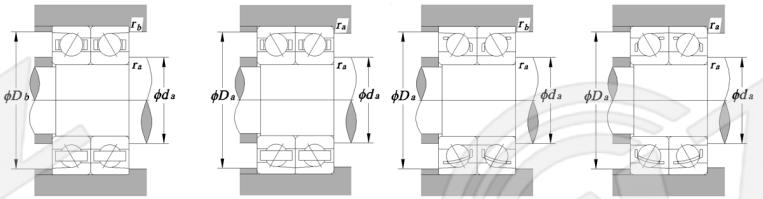
Designations		Function point (mm)		Abutment and fillet dimensions(mm)					Mass(kg) (approx.)
DF	*DT*	$DB(a_1)$	$DF(a_2)$	d_{amin}	D_{amax}	D_{bmax}	r_{amax}	r_{bmax}	
7340AC/DF	**7340AC/DT**	224.7	64.6	222	398	410	4	2	113
71840AC/DF	**71840AC/DT**	128.7	80.6	209	241	245	1.5	0.6	4.96
71944CTA/DF	**71944CTA/DT**	107.5	31.4	232	288	293	2	1.1	14.0
71944C/DF	**71944C/DT**	107.7	31.8	232	288	293	2	1.1	14.1
7244AC/DF	**7244AC/DT**	210.0	80.0	238	382	391	3	1.5	71.6
7344B/DF	**7344B/DT**	374.2	198.2	242	438	450	4	2	149
7646AMB/DF	**7646AMB/DT**	201.7	121.6	242	317.5	322.5	2	1.1	22.7
71948B/DFYB2	**71948B/DTYB2**	273.0	197.0	252	308	313	2	1.1	17.3
71948AC/DF	**71948AC/DT**	168.4	92.4	252	308	313	2	1.1	17.4
71948C/DF	**71948C/DT**	113	37.0	252	308	313	2	1.1	14.6
72948AC/DF	**72948AC/DT**	178.4	82.4	252	308	313	2	1.1	20.4
7048B/DF	**7048B/DT**	308.4	196.4	254	346	353	2.5	1.1	40.8
7048BX1/DF	**7048BX1/DT**	312.4	200.4	254	356	363	2.5	1.1	48.7
7248AC/DF	**7248AC/DT**	230.5	86.4	258	422	431	3	1.5	102
71952A/DF	**71952A/DT**	225.3	133.2	272	348	353	2	1.1	27.4
71952B/DF	**71952B/DT**	305.8	213.8	272	348	353	2	1.1	28.8
71952AC/DF	**71952AC/DT**	190.6	98.6	272	348	353	2	1.1	27.5
71952C/DF	**71952C/DT**	128.9	36.8	272	348	353	2	1.1	27.4
7052B/DF	**7052B/DT**	342.0	212.0	278	382	391	3	1.5	60.0
71856AC/DF	**71856AC/DT**	179.8	113.8	290	340	343	2	1.1	14.7
71956A/DF	**71956A/DT**	236.5	144.6	292	368	373	2	1.1	33.2
71956B/DF	**71956B/DT**	322.9	231.0	292	368	373	2	1.1	30.8
71956AC/DF	**71956AC/DT**	199.8	107.8	292	368	373	2	1.1	31.4
7056AM/DF	**7056AM/DT**	267.4	137.4	298	402	411	3	1.5	64.2
7056BM/DF	**7056BM/DT**	359.1	229.0	298	402	411	3	1.5	63.8
71856BTN1/DF	**71856BTN1/DT**	297.5	231.4	290	340	343	2	1.1	13.3
7060B/DF	**7060B/DT**	393.2	245.2	318	442	451	3	1.5	90.4
7060AC/DF	**7060AC/DT**	251.3	103.4	318	442	451	3	1.5	93.0
71962X3B/DF	**71962X3B/DT**	370.6	250.6	324	415.5	422.5	2.5	1.1	52.2
7064AC/DF	**7064AC/DT**	260.5	112.4	338	462	471	3	1.5	95.0
71864AC/DF	**71864AC/DT**	205.7	129.8	332	388	394	2	1	22.2
71868AC/DF	**71868AC/DT**	215.1	139.0	352	408	413	2	1.1	22.8
7068AC/DF	**7068AC/DT**	282.6	118.6	362	498	510	4	2	122
71872AC/DF	**71872AC/DT**	224.5	148.6	372	428	433	2	1.1	24.8
71972ACM/DF	**71972ACM/DT**	251.8	139.8	374	466	473	2.5	1.1	56.6
7072CF3/DF	**7072CF3/DT**	202.4	38.4	382	518	533	4	1.1	131
7072BM/DF	**7072BM/DT**	460.1	296.0	382	518	530	4	2	131
71876B/DF	**71876B/DT**	407.2	315.2	392	468	473	2	1.1	37.2

d 380～1400mm



Machined cage

Pressed cage



Machined cage

Pressed cage

Principal dimensions(mm)					Basic load ratings (kN)		Factor	Limiting speeds(r/min)		Designations	Designations		Function point (mm)		Abutment and fillet dimensions(mm)					Mass(kg) (approx.)
d	*D*	*2B*	r_{min}	r_{1min}	C_r	C_{or}	f_o	Grease	Oil	*DB*	*DF*	*DT*	$DB(a_1)$	$DF(a_2)$	d_{amin}	D_{amax}	D_{bmax}	r_{amax}	r_{bmax}	
380	520	130	4	1.5	576	1260	16.1	560	750	**71976B/DB**	**71976B/DF**	**71976B/DT**	443.0	313.0	398	502	511	3	1.5	84.2
	520	130	4	1.5	681	1510	16.3	820	1100	**71976AC/DB**	**71976AC/DF**	**71976AC/DT**	274.9	145.0	398	502	511	3	1.5	450
400	600	180	5	2	828	1960	16.3	480	630	**7080BM/DBYA1**	-	-	510.1	330.2	422	578	590	4	2	180
	500	62	2	2	255	564	15.3	730	970	**70880AMB/DB**	-	-	290.8	228.8	410	490	490	2	2	30.3
	600	180	5	2	828	1960	16.3	480	630	**7080BM/DB**	-	-	510.1	330.2	422	578	590	4	2	180
440	650	188	6	3	885	2180	16.3	430	570	-	**7088BM/DF**	-	551.1	363.0	468	622	636	5	2.5	221
460	580	112	3	1.1	543	1260	15.7	660	880	-	-	**71892AC/DT**	298.4	186.4	474	566	573	2.5	1.1	69.7
500	620	74	2.1	0.6	456	1100	15.5	530	710	**708/500AM/DB**	-	-	360.5	286.6	512	608	615	2	0.6	53.5
530	615	70	3	1.1	277	725	15.3	580	780	**718/530X3AC/DB**	-	-	301.3	231.4	544	601	608	2.5	1.1	37.1
	710	164	5	2	950	2520	16.1	460	610	**719/530A/DB**	-	-	439.5	275.6	552	688	700	4	2	189
	710	164	5	2	848	2200	15.9	360	470	-	-	**719/530B/DT**	602.1	438.0	552	688	700	4	2	191
	780	224	6	3	1390	3960	16.4	420	560	-	**70/530AMB/DF**	-	490.8	266.8	558	752	766	5	2.5	367
560	680	112	3	1.1	610	1580	15.5	460	610	-	-	**718/560A/DT**	414.0	302.0	574	666	673	2.5	1.1	86.4
	750	170	5	2	978	2680	16.1	420	560	**719/560A/DB**	-	-	463.4	293.4	582	728	740	4	2	218
	820	230	6	1.1	1370	3980	16.5	390	520	**70/560AN1MB/DB**	-	-	514.2	284.2	588	792	813	5	1.1	407
600	730	84	3	1.1	546	1450	15.3	410	550	**708/600AMB/DB**	-	-	425.8	341.8	614	716	723	2.5	1.1	80.2
	920	256	7.5	4	1480	4590	16.3	320	430	**70/630AF3/DB**	-	-	576.1	320.0	636	884	902	6	3	596
850	1030	164	5	2	1040	3390	15.5	220	290	**718/850AMB/DB**	-	-	625.2	461.2	872	1008	1020	4	2	284
	1220	330	7.5	4	2220	8160	16.3	-	-	-	-	**70/850A/DT**	762.2	432.2	886	1184	1202	6	3	1300
	1120	236	6	2	1750	6080	16.1	200	260	-	**719/850A/DF**	-	687.4	451.4	878	1092	1110	5	2	630
1000	1420	260	7.5	2	2340	9210	16.1	-	-	-	**70/1000X2AF3/DF**	-	827.5	567.4	1036	1384	1410	6	2	1400
1060	1280	200	6	3	1530	5780	15.5	-	-	-	-	**718/1060AC/DT**	646.1	446.0	1088	1252	1266	5	2.5	516
1120	1360	212	6	3	1750	6830	15.7	-	-	-	-	**718/1120AC/DT**	684.8	472.8	1148	1332	1346	5	2.5	657
1180	1420	212	6	4	1830	7270	15.7	-	-	**718/1180ACF1/DB**	-	-	712.4	500.4	1208	1392	1402	5	3	657
	1420	212	6	4	1830	7270	15.7	-	-	**718/1180ACF3/DB**	**718/1180ACF3/DF**	**718/1180ACF3/DT**	712.4	500.4	1208	1392	1402	5	3	657
	1420	212	6	4	1830	7270	15.7	-	-	**718/1180ACM/DB**	-	-	712.4	500.4	1208	1392	1402	5	3	669
1320	1600	244	6	1.2	1930	8160	15.5	-	-	-	**718/1320ACF3/DF**	-	803.0	559.0	1348	1572	1593	5	1.1	987
	1600	244	6	1.2	1930	8160	15.5	-	-	-	**718/1320ACF1/DF**	-	803.0	559.0	1348	1572	1593	5	1.1	987
1400	1800	270	7.5	4	2440	11300	15.7	-	-	-	**718/1400X3ACF3/DF**	-	881.2	611.2	1436	1764	1782	6	3	1820

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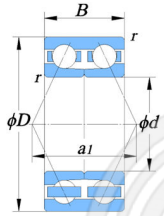
d 20～80mm



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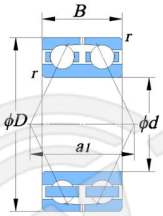

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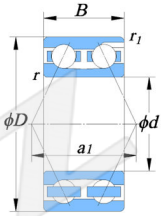

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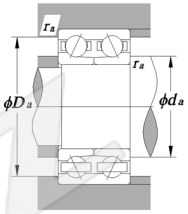
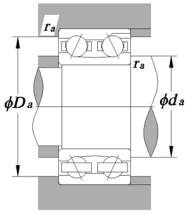
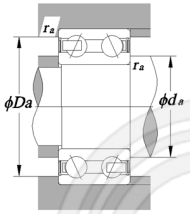
Filling slot

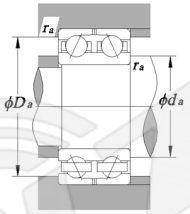
Outer ring lubrication hole

Seals









Principal dimensions(mm)					Basic load ratings(kN)		Limiting speeds(r/min)		Designations	Factor	Function point (mm)	Abutment and fillet dimensions(mm)				Mass (kg)
d	*D*	*B*	r_{min}	r_{1min}	C_r	C_{or}	Grease	Oil		f_o	a_1	d_{amin}	d_{amax}	D_{amax}	r_{amax}	(approx.)
20	47	20.6	1	1	17.0	11.5	9200	13000	**3204ATN1**	14.4	27.8	25	27.1	42	1	0.162
25	52	20.6	1	1	17.0	11.9	8200	12000	**3205ATN1**	14.9	31.5	31	—	46	1	0.185
	62	25.4	1.1	1.1	26.5	17.9	7400	9900	**3305ATN1**	14.2	36.0	32	—	55	1.1	0.359
30	62	23.8	1	1	24.4	17.6	7000	9400	**3206ATN1**	14.8	36.4	36	37.5	56	1	0.293
35	72	27	1.1	1.1	33.0	24.6	6000	8100	**3207ATN1**	14.8	42.2	42	—	65	1.1	0.457
	72	27	1.1	1.1	42.1	35.5	6000	8100	**3207M**	14.8	46.3	42	—	65	1.1	0.510
	80	34.9	1.5	1.5	49.5	35.3	5500	7400	**3307ATN1**	14.0	48.2	44	—	71	1.5	0.741
	80	34.9	1.5	1.5	61.2	48.2	5600	7500	**3307M**	13.9	52.3	44	—	71	1.5	0.870
40	68	21	1	1	25.1	21.2	6000	8000	**3008ACTN1**	15.5	34.7	46	—	62	1	0.243
	80	30.2	1.1	1.1	35.1	28.0	5400	7200	**3208ATN1**	15.2	46.4	47	51	73	1.1	0.643
	80	30.2	1.1	1.1	48.0	41.4	5400	7200	**3208M**	14.9	50.6	47	—	73	1.1	0.680
	90	36.5	1.5	1.5	60.5	44.1	4900	6600	**3308ATN1**	14.0	53.6	49	53.2	81	1.5	0.984
	90	36.5	1.5	1.5	68.0	55.2	5000	6700	**3308M**	14.2	57.8	49	—	81	1.5	1.10
45	85	30.2	1.1	1.1	51.9	39.8	5000	6700	**3209CTN1/YA5**	14.2	31.1	52	—	78	1.1	0.640
	85	30.2	1.1	1.1	50.1	45.5	5000	6700	**3209F1**	15.2	50.3	52	—	78	1.1	0.710
	85	30.2	1.1	1.1	50.1	45.5	5000	6700	**3209M**	15.2	53.5	52	—	78	1.1	0.719
	100	39.7	1.5	1.5	66.4	49.6	4500	6000	**3309ATN1**	14.2	58.8	54	—	91	1.5	1.35
	100	39.7	1.5	1.5	82.2	68.2	4500	6000	**3309M**	14.2	63.1	54	—	91	1.5	1.54
50	90	30.2	1.1	1.1	51.9	49.7	4600	6200	**3210M/YA8**	15.5	55.2	57	—	83	1.1	0.762
	110	44.4	2	2	78.9	60.0	4000	5400	**3310ATN1**	14.2	64.6	60	66.8	100	2	1.82
	110	44.4	2	2	98.0	82.5	4000	5400	**3310M**	14.2	69.7	60	—	100	2	2.04
55	100	33.3	1.5	1.5	54.0	47.3	4200	5600	**3211ATN1**	15.4	58.3	64	67.4	91	1.5	0.998
	120	49.2	2	2	99.0	76.9	3700	5000	**3311ATN1**	14.1	71.4	65	73.2	110	2	2.33
60	110	36.5	1.5	1.5	59.9	53.8	3800	5100	**3212ATN1**	15.5	63.8	69	74.4	101	1.5	1.33
	110	36.5	1.5	1.5	82.0	81.1	3800	5100	**3212M**	15.3	69.7	69	—	101	1.5	1.47
65	120	38.1	1.5	1.5	66.2	60.3	3500	4700	**3213ATN1**	15.5	71.8	74	—	111	1.5	1.70
	120	38.1	1.5	1.5	91.0	96.1	3500	4700	**3213YM**	15.4	64.7	74	—	111	1.5	1.84
	140	58.7	2.1	2.1	138	110	3100	4200	**3313ATN1**	14.0	85.1	77	87.2	128	2	3.66
	140	58.74	2.1	-	164	150	3200	4200	**3313DYM**	14.1	79.4	77	—	128	2	4.89
	140	58.7	2.1	2.1	159	146	3200	4200	**3313M**	14.2	90.3	77	—	128	2	4.34
70	150	63.5	2.1	2.1	181	169	2900	3900	**3314**	14.3	96.8	82	—	138	2	5.26
	150	63.5	2.1	2.1	181	169	2900	3900	**3314ATN1**	14.3	96.8	82	93.4	138	2	5.26
75	130	41.3	1.5	1.5	107	115	3200	4200	**3215**	15.5	75.7	84	—	121	1.5	2.09
	130	41.3	1.5	-	110	119	3200	4200	**3215DYM**	15.4	70.6	84	—	121	1.5	2.81
	130	41.3	1.5	1.5	83.0	77.4	3200	4200	**3215TN1**	15.4	64.4	84	88.8	121	1.5	1.99
	160	68.3	2.1	2.1	203	192	2700	3700	**3315**	14.3	103.8	87	—	148	2	6.27
	160	68.3	2.1	-	208	196	2700	3700	**3315DYM**	14.1	91.5	87	—	148	2	6.82
80	170	68.3	2.1	2.1	221	215	2600	3500	**3316M**	14.2	105.6	92	—	158	2	7.21

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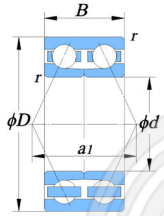
d 85～190mm



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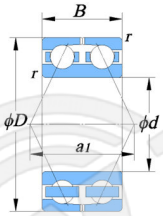

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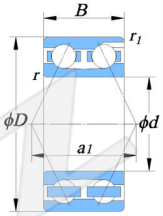

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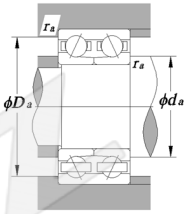
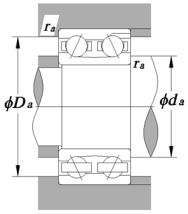
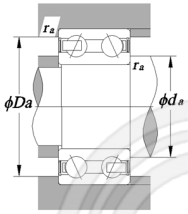
Filling slot

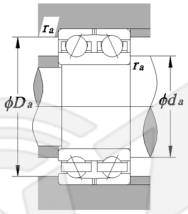
Outer ring lubrication hole

Seals





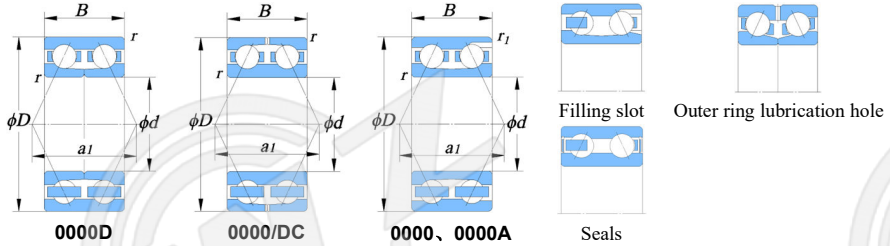


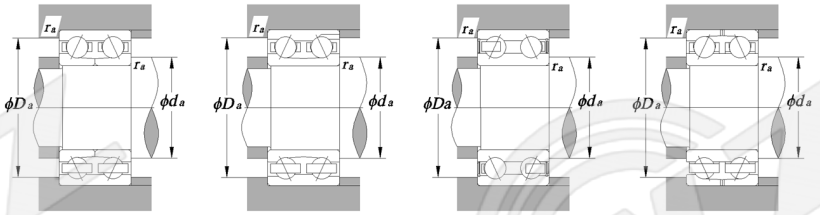


Principal dimensions(mm)					Basic load ratings(kN)		Limiting speeds (r/min)		Designations	Factor	Function point (mm)	Abutment and fillet dimensions(mm)				Mass (kg)
d	*D*	*B*	r_{min}	r_{1min}	C_r	C_{or}	Grease	Oil		f_o	a_1	d_{amin}	d_{amax}	D_{amax}	r_{amax}	(approx.)
85	140	48	2	1.1	116	128	2900	3800	**3217X3DATN1**	15.5	54.1	95	—	130	2	2.39
	140	48	2	1.1	127	140	2900	3800	**3217X3DATN1/YA5**	15.3	54.9	95	—	130	2	2.50
100	170	72	2	-	138	163	2300	3100	**4120X3DM**	16.3	168.0	110	126.4	160	2	7.39
	180	60.3	2.1	2.1	197	215	2300	3000	**3220YM**	15.4	129.5	112	—	168	2	6.46
110	200	53	2.1	-	119	160	2000	2700	**4222DM**	16.3	157.6	122	—	188	2	8.03
	240	92.1	3	3	358	428	1800	2300	**3322M**	14.2	151.0	124	—	226	2.5	19.9
120	180	60	2	-	119	155	2100	2800	**4024DM/YA1**	16.3	180.0	130	—	170	2	5.35
	190	66	2	2	183	231	2000	2700	**4024X3DM**	16.0	129.9	130	—	180	2	6.78
	215	58	2.1	-	141	193	1900	2500	**4224DM**	16.4	170.5	132	—	203	2	9.98
130	200	75	2	-	153	199	1900	2500	**4026X2DM**	16.5	202.5	140	—	190	2	8.29
140	209.5	66	2	-	161	217	1800	2300	**4028X3DM**	16.4	208.0	150	—	199.5	2	8.30
	210	69	2	-	161	217	1800	2300	**4028DM**	16.4	209.3	150	—	200	2	8.24
150	225	73	2	-	199	275	1600	2200	**4030X2DYM/YA6**	16.5	193.8	160	—	215	2	6.78
	230	70	2.1	-	184	252	1600	2100	**4030X3DM**	16.4	225.0	162	—	218	2	10.7
	230	70	2.1	-	184	252	1600	2100	**4030X3DM/YA3**	16.4	225.0	162	—	218	2	10.6
	230	70	2.1	-	184	252	1600	2100	**4030X3DM/YAD**	16.4	225.0	162	—	218	2	10.7
	230	70	2.1	-	198	275	1600	2100	**4030X3M/DCYA3**	16.5	193.2	162	—	218	2	11.0
160	215	50	2	1.1	126	189	1600	2200	**4932X3DM**	16.0	212.5	169	—	206	2	5.15
	239.5	58	2.1	-	170	244	1500	2000	**3032X3DF3/DC**	16.2	227.6	172	—	227.5	2	9.59
	239.5	76	2.1	-	225	315	1500	2000	**4032X3M/DCYA1**	16.5	204.7	172	—	227.5	2	12.4
	240	80	2.1	-	209	289	1500	2000	**4032DM**	16.4	240.0	172	—	228	2	11.6
	240	76	2.1	-	209	289	1500	2000	**4032X2DM**	16.4	237.9	172	—	228	2	12.4
	240	76	2.1	-	225	315	1500	2000	**4032X2M/DCYA1**	16.5	204.7	172	—	228	2	12.5
170	230	56	2	-	139	213	1500	2000	**4934X2DM**	15.9	229.9	180	—	220	2	6.86
	259.5	84	2.1	-	251	357	1400	1800	**4034X3DM**	16.5	257.0	182	—	247.5	2	15.3
	259.5	84	2.1	-	270	384	1400	1800	**4034X3M/DCYA1**	16.4	221.2	182	—	247.5	2	16.0
	260	90	2.1	-	251	357	1400	1800	**4034D**	16.5	260.0	182	—	248	2	16.1
	260	90	2.1	-	251	357	1400	1800	**4034DM**	16.5	260.0	182	—	248	2	16.1
	260	84	2.1	2.1	270	384	1400	1800	**4034X2BM/YA1**	16.4	221.2	182	—	248	2	16.1
	260	84	2.1	2.1	270	384	1400	1800	**4034X2BM/YAD**	16.4	221.2	182	—	248	2	15.2
180	259	66	2.1	-	223	325	1300	1800	**4936X3DM/YA8**	16.2	253.0	192	—	247	2	10.9
	259.5	66	2.1	-	217	312	1300	1800	**4936X3DF3**	16.2	253.0	192	—	247.5	2	9.92
	259.5	66	2.1	-	217	312	1300	1800	**4936X3DM**	16.2	253.0	192	—	247.5	2	11.1
	259.5	66	2.1	-	217	312	1300	1800	**4936X3DM/YA10**	16.2	253.0	192	—	247.5	2	11.1
	280	100	2.1	-	277	403	1300	1700	**4036DM**	16.5	280.0	192	—	268	2	22.4
	280	92	2.1	-	277	403	1300	1700	**4036DMX2**	16.5	277.0	192	—	268	2	20.9
	280	92	2.1	-	277	403	1300	1700	**4036X2DN1**	16.5	277.0	192	—	268	2	20.9
190	269.5	66	2.1	-	220	325	1300	1700	**4938X3DM**	16.2	262.7	202	—	257.5	2	11.5

ZWZ

d 190～530mm



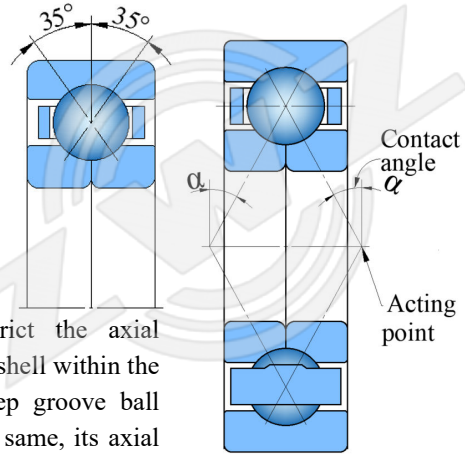


Principal dimensions(mm)					Basic load ratings(kN)		Limiting speeds (r/min)		Designations	Factor	Function point (mm)	Abutment and fillet dimensions(mm)				Mass(kg)
d	*D*	*B*	r_{min}	r_{1min}	C_r	C_{or}	Grease	Oil		f_o	a_1	d_{amin}	d_{amax}	D_{amax}	r_{amax}	(approx.)
190	290	100	2.1	1.1	309	470	1200	1600	**4038DM**	16.5	290.0	202	—	278	2	23.0
200	279.5	76	2.1	-	223	336	1200	1600	**4940X3DM**	16.1	277.7	212	—	267.5	2	17.4
	280	76	2.1	-	241	366	1200	1600	**4940DCM**	16.2	237.9	212	—	268	2	14.5
	289.5	76	2.1	-	254	384	1200	1600	**4940X3DCM**	16.2	281.2	212	—	277.5	2	16.9
	310	109	2.1	-	343	538	1100	1500	**4040DM**	16.4	309.5	212	—	298	2	28.0
	310	96	3	-	369	579	1100	1500	**4040X2DCM/YA3**	16.3	260.0	214	—	296	2.5	26.3
220	300	60	2.5	-	193	349	1100	1400	**4644M/YA2**	15.9	159.2	232	—	288	2	12.7
	309.5	76	2.1	-	249	382	1100	1400	**4944X3DM**	16.1	303.0	232	—	297.5	2	18.0
	340	118	3	-	387	644	950	1300	**4044/DCYA1**	16.4	292.3	234	—	326	2.5	37.5
	340	118	3	-	359	598	950	1300	**4044DM**	16.5	339.0	234	—	326	2.5	36.7
230	309.5	80	2.1	-	267	423	990	1400	**4946X1DM**	16.0	309.9	242	—	297.5	2	16.9
	329.5	80	1.1	2.1	343	570	950	1300	**4646DCM/YA3**	16.4	234.3	237	—	322.5	1.1	22.8
	329.5	80	2.1	-	298	483	950	1300	**4646X3DM**	16.1	319.8	242	—	317.5	2	22.5
240	359.5	118	3	-	375	647	860	1200	**4048X1DM**	16.3	359.0	254	—	345.5	2.5	44.9
	360	118	3	-	375	647	860	1200	**4048DM**	16.3	359.0	254	—	346	2.5	42.8
260	369.5	92	4	-	373	662	810	1100	**4952X3DM**	16.2	361.0	278	—	351.5	3	31.3
	400	140	4	-	454	835	760	1100	**4052DM**	16.5	400.0	278	—	382	3	60.7
	400	130	4	-	474	856	760	1100	**4052X2/DCYA1**	16.4	339.9	278	—	382	3	60.2
280	389	92	4	-	376	676	750	1000	**4056X3D**	16.2	326.7	298	—	371	3	32.9
	389.5	92	4	-	377	683	750	1000	**4956X3DM**	16.1	381.0	298	—	371.5	3	34.0
	420	140	4	-	498	947	700	950	**4056D**	16.5	363.7	298	—	402	3	66.3
	420	130	4	-	498	947	700	950	**4056X2/DCYA1**	16.5	356.4	298	—	402	3	65.6
	420	130	4	-	498	947	700	950	**4056X2D**	16.5	358.4	298	—	402	3	62.6
300	419.5	112	2.1	-	420	789	680	910	**4960X3DM**	16.1	416.0	312	—	407.5	2	43.0
	460	160	4	-	617	1250	630	850	**4060D**	16.4	398.9	318	—	442	3	96.4
	460	160	4	-	617	1250	630	850	**4060DX**	16.4	398.9	318	—	442	3	96.4
	460	160	4	-	617	1250	630	850	**4060DYM**	16.4	398.9	318	—	442	3	96.4
	460	148	4	-	512	1010	630	850	**4060X2/DCYA1**	16.4	451.1	318	—	442	3	88.8
	460	148	4	-	512	1010	630	850	**4060X2D**	16.4	451.1	318	—	442	3	88.3
320	440	112	2.1	-	459	893	630	850	**4964X2DM**	16.2	374.9	332	—	428	2	53.2
	459.5	140	4	-	491	976	610	820	**4064X3DM**	16.2	460.0	338	—	441.5	3	73.0
360	540	164	5	-	599	1300	500	670	**4072X2DM**	16.2	532.0	382	—	518	4	128
380	560	164	5	2	743	1690	470	630	**4076X2DM**	16.5	476.4	402	—	538	4	133
381	519.5	130	4	-	555	1210	500	670	**4976X3DM**	16.0	515.0	399	—	501.5	3	81.7
440	650	188	6	-	959	2450	370	500	**4088X2M/DCYA1**	16.5	551.4	468	—	622	5	219
460	620	148	4	-	714	1730	380	510	**4992X2DM/YB2**	16.1	526.8	478	—	602	3	127
530	778	224	3	6	1210	3380	290	390	**40/530X3/DCYA1**	16.5	656.9	544	—	764	2.5	365

Four-point Contact Ball Bearings

●Four-point contact ball bearings

■Product characteristics



The four-point contact ball bearing are separable radial single row angular contact ball bearing, which can withstand double-direction axial load or radial & axial combined load because of their special raceway design. The standard structure of four-point contact ball bearing is equal inner ring with 35° contact angle. This bearing can restrict the axial displacement of both sides of the shaft or shell within the axial clearance. Compared with the deep groove ball bearing, when the radial clearance is the same, its axial clearance is smaller, the axial load is larger, and the limiting speed is higher, but its axial carrying load is lower than that of the double row angular contact ball bearing.

Under the pure radial load, there is four-point contact between the ball and the ring. Under the pure axial load, there is two-point contact between the ball and the ring, which has the function of both single row and double row angular contact ball bearing. This bearing can only ensure normal operation when two-point contact is formed.

■Product structural types

Structure	QJ	QJF	QJB	QJ…N1/2	QJ…N	QJ…NR	QJ…N4
Size range	Inner diameter size range: 25mm～1250mm Outer diameter size range: 52mm～1750mm Width size range: 15mm～218mm						
Accuracy	**ZWZ** produces standard series four-point contact ball bearings, which are mainly produced at ordinary level, but also can offer products of accuracy class P6 and above.						
Clearance	**ZWZ** can offer bearings in various clearance groups, and in some models, ZWZ can offer larger or smaller clearance, or narrower clearance range. Refer to Table 1 for specific clearance.						

Alignment error	The four-point contact ball bearing have limited capacity of allowable angular error, so they are not applicable to operating conditions with large misalignment or shaft deflection
Cage type	The four-point contact ball bearing are generally made of brass solid cage and pressed cage.
Minimum load	In order for bearing to operate properly, the four-point-contact ball bearing, like all ball bearing and roller bearing, must withstand a certain minimum load, especially operating at high speed, high acceleration, or under the rapid change of load direction. The minimum load required for four-point-contact ball bearing can be estimated by the following formula: $F_m = k_m \frac{C_{or}}{1000}\left(\frac{nD_{pw}}{100000}\right)^2$ F_m= Minimum axial load, kN k_m= Minimum axial load coefficient C_{or}= Basic static load rating, kN n= Rotary speed, r/min D_{pw}=0.5(d+D) bearing average diameter, mm
Equivalent load	If a four-point-contact ball bearing is used as a fixed-end bearing and is subject to both radial load and axial load, the Dynamic equivalent load can be calculated by the following formula: When $F_a/F_r \le 0.95$, $P = F_r + 0.66F_a$ When $F_a/F_r > 0.95$, $P = 0.6F_r + 1.07F_a$ Under bearing normal operation, it shall meet $F_a \ge 1.27F_r$ Static equivalent load $P_0 = F_r + 0.58F_a$

In addition to normal four-point-contact ball bearing, four-point-contact ball bearing can provide two positioning notches on the outer ring end face, which are spaced 180° to facilitate positioning and prevent rotation of the outer ring.

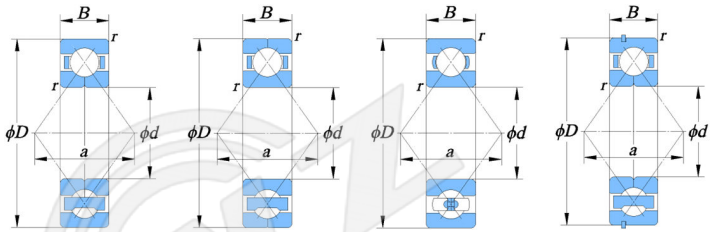
Table 1 Axial clearance of four-point contact ball bearings unit: mm

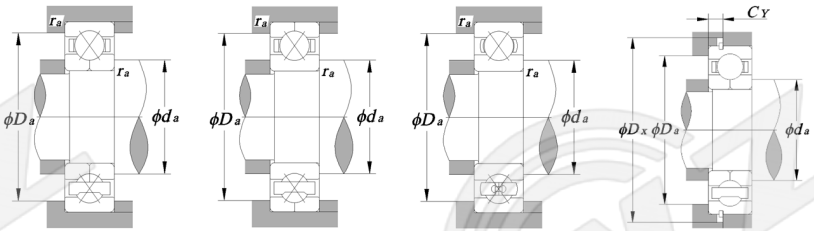
d		Group 2		Group 0		Group 3		Group 4	
Over	Incl.	min	max	min	max	min	max	min	max
-	18	15	55	45	85	75	115	105	145
18	40	26	66	56	106	96	146	136	186
40	60	36	86	76	126	116	166	156	206
80	100	56	116	96	156	136	196	176	236
100	140	66	136	116	176	156	216	196	256
180	220	96	176	156	216	196	256	236	296
220	260	115	195	175	235	215	295	275	335
300	350	155	235	215	295	275	355	335	415
350	400	175	265	245	325	305	385	365	465
400	500	205	305	285	385	355	455	435	525
500	600	255	355	335	445	425	545	525	615

■Supplementary code

Code name	Code description	Code name	Code description
QJ	Four-point-contact ball bearing, double half inner ring	J	Steel plate pressed cage , digit is added to distinction when material changes
QJF	Four-point-contact ball bearing, double half outer ring	N1	The bearing outer ring has a positioning notch
QJB	Four-point-contact ball bearing, integral ring	N2	The bearing outer ring has two or more symmetrical positioning notches
HA	The ring, rolling element and cage or only the ring and rolling element are made of vacuum smelted bearing steel	Q	Bronze solid cage, digit is added to indicate different materials Q1- Aluminum iron manganese bronze Q2- Ferrosilicon zinc bronze
RS2	Bearing with frame sealing ring (contact type) on one side, the materials of sealing ring is fluorinated rubber	2RS2	Bearing with RS2 seal on both sides

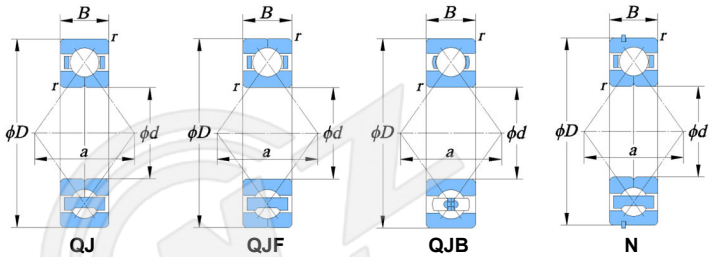
d 25～70mm

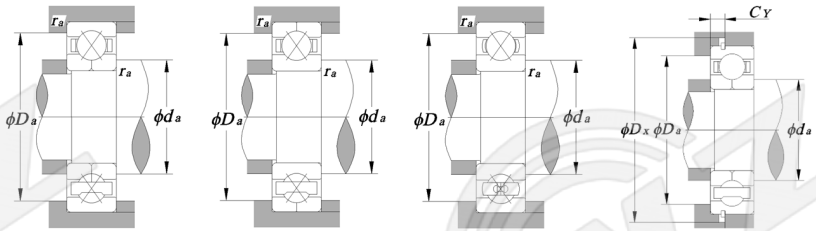




Principal dimensions(mm)				Basic load ratings(kN)		Limiting speeds (r/min)		Designations		Designations		Function point (mm)	Abutment and fillet dimensions (mm)			Mass (kg)
d	D	B	r_{min}	C_r	C_{or}	Grease	Oil	QJ	QJF	QJB	$N(N_1、N_2)$	a	d_{amin}	D_{amax}	r_{amax}	(approx.)
25	52	15	1	24.0	18.0	11000	14000	QJ205/YA7	-	-	-	27.0	31	46	1	0.167
	62	17	1.1	43.8	31.1	9100	13000	-	-	-	QJ305TN1	30.5	32	55	1.1	0.252
30	62	16	1	33.3	26.2	8600	12000	QJ206/YA7	-	-	-	32.2	36	56	1	0.257
	72	19	1.1	49.9	38.2	7800	11000	QJ306MA	-	-	-	35.7	37	65	1.1	0.463
	72	19	1.1	47.1	36.3	7800	11000	-	-	-	QJ306TN1	35.7	37	65	1.1	0.381
35	80	21	1.5	57.1	41.8	6900	9200	-	-	-	QJ307N2Q1	40.3	44	71	1.5	0.690
40	80	18	1.1	55.9	46.3	6700	8900	QJ208	-	-	-	42.0	47	73	1.1	0.445
	90	23	1.5	72.0	58.2	6100	8200	QJ308	-	-	-	45.5	49	81	1.5	0.793
	90	23	1.5	58.3	42.3	6100	8100	-	-	QJB308	-	45.9	49	81	1.5	0.652
45	85	19	1.1	58.7	51.2	6100	8200	QJ209	-	-	-	45.5	52	78	1.1	0.549
	85	19	1.1	58.7	51.2	6100	8200	QJ209/YA7	-	-	-	45.5	52	78	1.1	0.697
	85	23	1.1	63.3	55.1	6100	8200	QJ209X2AC	-	-	-	30.3	52	78	1.1	0.622
	90	23.8	1.1	69.1	58.6	5900	7900	-	-	-	QJ2209X3N/YB2	47.3	52	83	1.1	0.748
	100	25	1.5	86.2	71.1	5500	7300	QJ309M	-	-	-	50.8	54	91	1.5	1.06
	100	25	1.5	86.2	71.1	5500	7300	-	-	-	QJ309N2	50.8	54	91	1.5	1.06
	100	25	1.5	78.7	58.3	5400	7200	-	-	QJB309A/YA5	-	42.4	54	91	1.5	0.852
50	90	20	1.1	61.3	56.2	5700	7600	-	-	-	QJ210N	49.0	57	83	1.1	0.559
55	100	21	1.5	75.9	71.2	5200	6900	QJ211	-	-	-	54.3	64	91	1.5	0.755
	100	21	1.5	75.9	71.2	5200	6900	QJ211/YAD	-	-	-	54.3	64	91	1.5	0.761
	100	21	1.5	75.9	71.2	5200	6900	-	-	-	QJ211N	54.3	64	91	1.5	0.755
	120	29	2	64.0	50.0	4600	6100	-	-	-	QJ311N	61.3	65	110	2	1.67
60	100	20	1.5	51.3	45.3	5000	6600	-	-	QJB212X3TN1	-	56.0	69	91	1.5	0.519
	110	22	1.5	51.3	45.3	5000	6600	QJ212M	-	-	-	56.0	69	101	1.5	0.519
	110	22	1.5	51.3	45.3	5000	6600	-	-	-	QJ212NRM	56.0	69	101	1.5	0.519
	110	22	1.5	91.9	87.3	4700	6300	-	-	-	QJ212TN1	59.5	69	101	1.5	0.828
	130	31	2.1	145	126	4200	5600	QJ312/YA7	-	-	-	66.5	72	118	2	2.27
	130	31	2.1	145	126	4200	5600	-	-	-	QJ312N2	66.5	72	118	2	2.16
65	120	23	1.5	105	104	4300	5700	QJ213	-	-	-	64.8	74	111	1.5	1.24
	120	23	1.5	105	104	4300	5700	-	-	-	QJ213N/YB2	64.8	74	111	1.5	1.21
	120	23	1.5	91.0	89.0	4300	5700	-	-	-	QJ213NR	64.8	74	111	1.5	1.29
	130	28	1	117	111	4100	5400	QJ213X3AR/YAB	-	-	-	97.5	71	124	1	1.97
	140	33	2.1	164	145	3900	5200	QJ313/YAD	-	-	-	71.8	77	128	2	2.51
	140	33	2.1	154	132	3900	5200	QJ313M	-	-	-	71.8	77	128	2	2.34
	140	33	2.1	164	145	3900	5200	-	-	-	QJ313N/YAB	71.8	77	128	2	2.57
	140	33	2.1	154	132	3900	5200	-	-	-	QJ313N2	71.8	77	128	2	2.34
	140	33	2.1	154	132	3900	5200	-	-	-	QJ313N2Q1	71.8	77	128	2	2.32
	140	33	2.1	154	132	3900	5200	QJ313Q1	-	-	-	71.8	77	128	2	2.32
70	125	24	1.5	109	107	4100	5400	QJ214	-	-	-	68.3	79	116	1.5	1.32

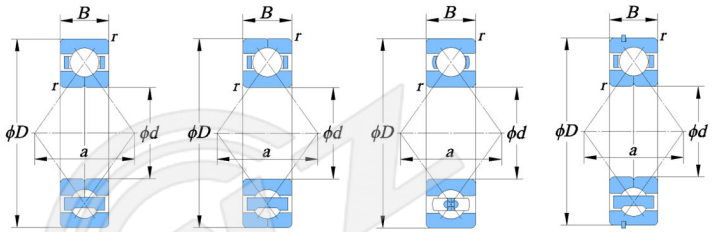
d 70～100mm

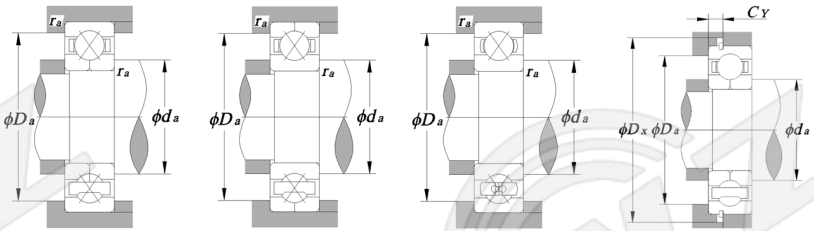




Principal dimensions (mm)				Basic load ratings (kN)		Limiting speeds (r/min)		Designations		Designations		Function point (mm)	Abutment and fillet dimensions (mm)			Mass(kg)
d	*D*	*B*	r_{min}	C_r	C_{or}	Grease	Oil	*QJ*	*QJF*	*QJB*	*N(N、N_1、N_2)*	a	d_{amin}	D_{amax}	r_{amax}	(approx.)
70	125	24	1.5	109	107	4100	5400	-	-	-	QJ214N2Q1	68.3	79	116	1.5	1.29
	150	35	2.1	184	166	3500	4700	QJ314M	-	-	-	78.4	82	138	2	3.28
	150	35	2.1	184	165	3600	4800	QJ314MB	-	-	-	77.0	82	138	2	3.10
	150	35	2.1	184	165	3600	4800	-	-	-	QJ314N/YAB	77.0	82	138	2	3.32
	150	35	2.1	184	165	3600	4800	-	-	-	QJ314N2/YAB	77.0	82	138	2	3.22
75	115	20	1.1	63.4	64.7	4200	5500	-	-	QJB1015CNRJ/YAD	-	25.7	82	108	1.1	0.674
	130	25	1.5	118	123	3900	5200	QJ215	-	-	-	71.8	84	121	1.5	1.38
	130	25	1.5	118	123	3900	5200	QJ215M	-	-	-	71.8	84	121	1.5	1.38
	130	25	1.5	118	123	3900	5200	-	-	-	QJ215N2	71.8	84	121	1.5	1.38
	140	31	1	148	147	3700	4900	QJ215X3R/YA6	-	-	-	75.3	81	134	1	2.29
	160	37	2.1	212	203	3400	4500	QJ315	-	-	-	82.3	87	148	2	4.14
	160	37	2.1	212	203	3400	4500	-	-	-	QJ315N2	82.3	87	148	2	3.83
	160	37	2.1	212	203	3400	4500	-	-	-	QJ315N2/YAD	82.3	87	148	2	4.14
80	125	22	1.1	79.8	91.8	3900	5200	-	-	-	QJ1016N2	71.8	87	118	1.1	1.07
	140	26	2	138	146	3600	4800	QJ216	-	-	-	77.0	90	130	2	2.02
	140	26	2	138	146	3600	4800	-	-	-	QJ216N2	77.0	90	130	2	2.02
	140	26	2	138	146	3600	4800	QJ216R	-	-	-	77.0	90	130	2	1.90
	170	39	2.1	230	230	3200	4200	QJ316	-	-	-	87.5	92	158	2	4.63
	170	39	2.1	230	230	3200	4200	-	-	-	QJ316N2	87.5	92	158	2	4.58
85	149	28	2	148	159	3400	4500	-	-	-	QJ217X1N2	82.3	95	139	2	2.20
	150	28	2	148	159	3400	4500	-	-	-	QJ217N/YB2	82.3	95	140	2	2.25
	160	33	2.1	160	140	3200	4200	-	-	QJB617NRJ	-	86.5	97	148	2	2.65
90	140	24	1.5	101	121	3500	4600	-	-	-	QJ1018N/YAB	80.5	99	131	1.5	1.39
	140	24	1.5	90.4	109	3500	4600	QJ1018/YAD	QJF1018/YAD	-	-	80.5	99	131	1.5	1.48
	160	30	2	163	174	3200	4200	QJ218	-	-	-	87.5	100	150	2	2.87
	160	30	2	163	174	3200	4200	-	-	-	QJ218N2	87.5	100	150	2	2.87
	190	43	3	251	260	2800	3700	QJ318	-	-	-	98.0	104	176	2.5	6.26
	190	43	3	251	260	2800	3700	-	-	-	QJ318N2	98.0	104	176	2.5	6.19
	190	43	3	251	260	2800	3700	-	-	-	QJ318N2Q1	98.0	104	176	2.5	6.22
95	170	32	2.1	174	188	3000	3900	QJ219	-	-	-	92.8	107	158	2	3.31
	170	32	2.1	174	188	3000	3900	-	-	-	QJ219N2	92.8	107	158	2	3.30
	200	45	3	285	312	2600	3500	-	-	-	QJ319N2	103.3	109	186	2.5	7.52
100	150	24	1.5	102	128	3200	4200	QJ1020	QJF1020	-	-	87.5	109	141	1.5	1.63
	180	34	2.1	197	215	2800	3700	QJ220	-	-	-	98.0	112	168	2	3.81
	180	34	2.1	197	215	2800	3700	-	-	-	QJ220N2	98.0	112	168	2	3.81
	180	34	2.1	197	215	2800	3700	-	-	-	QJ220N2Q1	98.0	112	168	2	3.74
	215	47	3	324	372	2400	3200	QJ320	-	-	-	110.3	114	201	2.5	8.80
	215	47	3	324	372	2400	3200	-	-	-	QJ320N2	110.3	114	201	2.5	8.87

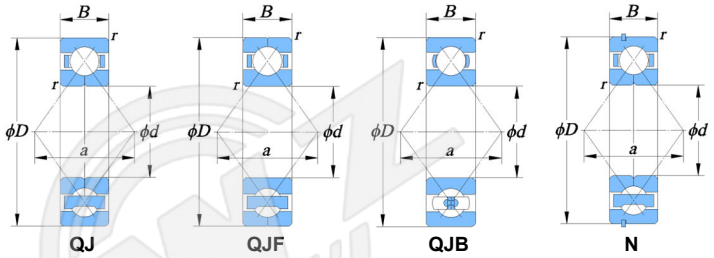
d 110～140mm

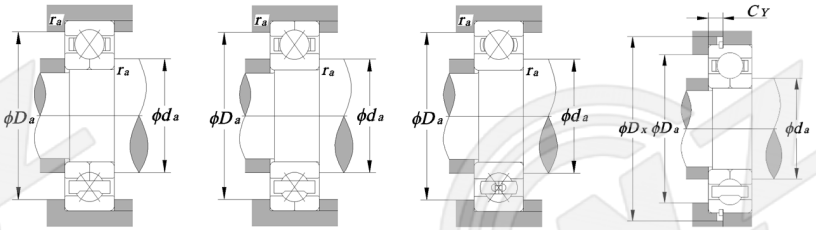




Principal dimensions(mm)				Basic load ratings(kN)		Limiting speeds (r/min)		Designations		Designations		Function point (mm)	Abutment and fillet dimensions(mm)			Mass(kg)
d	*D*	*B*	r_{min}	C_r	C_{or}	Grease	Oil	*QJ*	*QJF*	*QJB*	*N*(N、N_1、N_2)	a	d_{amin}	D_{amax}	r_{amax}	(approx.)
110	170	28	2	147	186	2800	3700	**QJ1022M**	-	-	-	98.1	120	160	2	2.68
	170	28	2	147	186	2800	3700	-	-	-	**QJ1022N**	98.1	120	160	2	2.64
	200	38	2.1	252	285	2500	3300	**QJ222**	-	-	-	108.5	122	188	2	5.49
	200	38	2.1	252	285	2500	3300	-	-	-	**QJ222N2**	108.5	122	188	2	5.49
	200	38	2.1	252	285	2500	3300	-	-	-	**QJ222N2Q1**	108.5	122	188	2	5.37
	200	38	2.1	252	285	2500	3300	**QJ222**	**QJF222**	-	-	108.5	122	188	2	5.67
	240	50	3	364	443	2200	2900	**QJ322**	-	-	-	122.5	124	226	2.5	12.0
	240	50	3	364	443	2200	2900	-	-	-	**QJ322N2**	122.5	124	226	2.5	12.0
	240	50	3	344	406	2200	2900	-	-	-	**QJ322N2Q1**	122.5	124	226	2.5	11.7
120	150	16	1	34.4	48.0	2900	3900	**QJ1824/YA7**	-	-	-	77.9	126	144	1	0.559
	180	28	2	149	197	2600	3400	**QJ1024**	**QJF1024**	-	-	105.0	130	170	2	2.62
	200	38	2	239	280	2400	3200	**QJ1124**	-	-	-	112.0	130	190	2	5.15
	215	40	2.1	271	317	2300	3000	**QJ224**	-	-	-	117.3	132	203	2	6.29
	215	40	2.1	271	317	2300	3000	-	-	-	**QJ224N2**	117.3	132	203	2	6.29
	215	40	2.1	271	317	2300	3000	-	-	-	**QJ224N2Q1**	117.3	132	203	2	6.45
	260	55	3	406	516	2000	2600	**QJ324**	-	-	-	133.0	134	246	2.5	15.1
	260	55	3	406	516	2000	2600	-	-	-	**QJ324N2**	133.0	134	246	2.5	15.1
	260	55	3	406	516	2000	2600	-	-	-	**QJ324N2/YA8**	133.0	134	246	2.5	14.8
	260	55	3	406	516	2000	2600	**QJ324Q1**	-	-	-	133.0	134	246	2.5	15.1
130	200	33	2	181	239	2300	3100	**QJ1026**	-	-	-	115.5	140	190	2	4.22
	230	40	3	294	370	2100	2800	-	-	-	**QJ226N2**	126.0	144	216	2.5	7.43
	230	40	3	294	370	2100	2800	-	-	-	**QJ226N2Q1**	126.0	144	216	2.5	7.48
	280	58	4	426	563	1800	2400	**QJ326**	-	-	-	143.5	148	262	3	20.1
	280	58	4	426	563	1800	2400	-	-	-	**QJ326N2**	143.5	148	262	3	20.1
	280	58	4	426	563	1800	2400	-	-	-	**QJ326N2MA**	143.5	148	262	3	20.1
	280	58	4	426	563	1800	2400	**QJ326**	**QJF326**	-	-	143.5	148	262	3	20.7
140	209.5	33	2	185	252	2200	2900	**QJ1028X1**	-	-	-	122.5	150	199.5	2	4.24
	210	33	2	185	252	2200	2900	**QJ1028**	**QJF1028**	-	-	122.5	150	200	2	3.35
	250	42	3	314	410	1900	2500	**QJ228**	-	-	-	136.5	154	236	2.5	9.38
	250	42	3	314	410	1900	2500	-	-	-	**QJ228N2**	136.5	154	236	2.5	9.36
	250	42	3	314	410	1900	2500	-	-	-	**QJ228N2MA**	136.5	154	236	2.5	9.64
	250	42	3	314	410	1900	2500	-	-	-	**QJ228N2Q1**	136.5	154	236	2.5	9.36
	250	42	3	327	435	1900	2500	**QJ228**	**QJF228**	-	-	136.5	154	236	2.5	10.4
	300	62	4	469	647	1600	2200	**QJ328**	-	-	-	154.0	158	282	3	23.1
	300	62	4	469	647	1600	2200	-	-	-	**QJ328N2**	154.0	158	282	3	22.5
	300	62	4	469	647	1600	2200	-	-	-	**QJ328N2/YA8**	154.0	158	282	3	23.1
	300	62	4	469	647	1600	2200	-	-	-	**QJ328N2/YAD**	154.0	158	282	3	22.5
	300	62	4	469	647	1600	2200	-	-	-	**QJ328N2Q1**	154.0	158	282	3	23.0

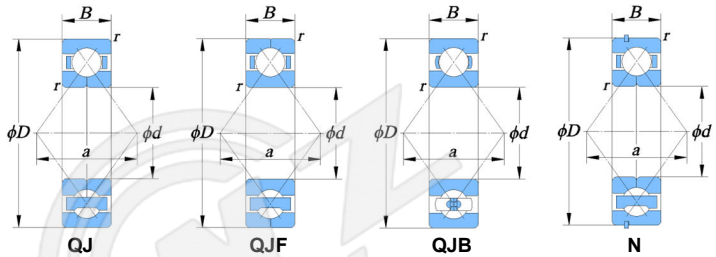
d 150～190mm

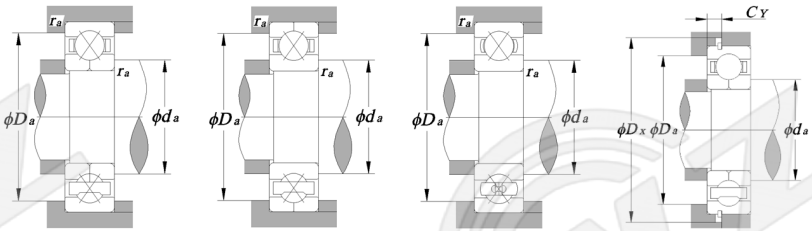




Principal dimensions(mm)				Basic load ratings(kN)		Limiting speeds (r/min)		Designations		Designations		Function point (mm)	Abutment and fillet dimensions (mm)			Mass (kg)
d	*D*	*B*	r_{min}	C_r	C_{or}	Grease	Oil	*QJ*	*QJF*	*QJB*	*N*(*N*、N_1、N_2)	a	d_{amin}	D_{amax}	r_{amax}	(approx.)
150	224.5	35	2.1	220	299	2000	2600	QJ1030X1	QJF1030X1	-	-	131.3	162	212.5	2	5.29
	225	35	2.1	220	299	2000	2600	QJ1030	-	-	-	131.3	162	213	2	5.26
	225	35	2.1	220	299	2000	2600	QJ1030	QJF1030	-	-	131.3	162	213	2	5.29
	225	35	2.1	176	214	2000	2600	QJ1030J	QJF1030J	-	-	131.3	162	213	2	4.37
	270	45	3	337	470	1700	2300	QJ230	-	-	-	147.0	164	256	2.5	12.0
	270	45	3	337	470	1700	2300	-	-	-	QJ230N2	147.0	164	256	2.5	12.0
	270	45	3	337	470	1700	2300	-	-	-	QJ230N2Q1	147.0	164	256	2.5	12.0
	320	65	4	542	797	1500	2000	QJ330M	-	-	-	164.5	168	302	3	27.4
	320	65	4	542	797	1500	2000	-	-	-	QJ330N2	164.5	168	302	3	27.2
	320	65	4	542	797	1500	2000	-	-	-	QJ330N2Q1	164.5	168	302	3	26.9
	320	65	4	542	797	1500	2000	QJ330	QJF330	-	-	164.5	168	302	3	29.4
160	239.5	38	2.1	240	335	1800	2400	QJ1032X1	QJF1032X1	-	-	140.0	172	227.5	2	6.64
	240	38	2.1	240	335	1800	2400	QJ1032	QJF1032	-	-	140.0	172	228	2	6.54
	290	48	3	372	533	1600	2100	QJ232	-	-	-	157.5	174	276	2.5	15.4
	290	48	3	372	533	1600	2100	-	-	-	QJ232N2	157.5	174	276	2.5	14.9
	290	48	3	372	533	1600	2100	-	-	-	QJ232N2Q1	157.5	174	276	2.5	14.8
	340	68	4	542	785	1400	1900	-	-	-	QJ332N2	175.1	178	322	3	32.7
	340	68	4	542	785	1400	1900	-	-	-	QJ332N2Q1	175.1	178	322	3	34.4
170	259.5	42	2.1	287	408	1700	2200	QJ1034X1	QJF1034X1	-	-	150.5	182	247.5	2	8.35
	260	42	2.1	287	408	1700	2200	QJ1034	-	-	-	150.5	182	248	2	8.23
	260	42	2.1	287	408	1700	2200	-	-	-	QJ1034N2Q1	150.5	182	248	2	8.06
	260	42	2.1	287	408	1700	2200	QJ1034	QJF1034	-	-	150.5	182	248	2	8.82
	310	52	4	458	688	1500	1900	QJ234	-	-	-	168.0	188	292	3	18.7
	310	52	4	458	688	1500	1900	-	-	-	QJ234N2Q1	168.0	188	292	3	18.2
	360	72	4	589	918	1300	1700	QJ334	-	-	-	185.6	188	342	3	40.7
	360	72	4	589	918	1300	1700	-	-	-	QJ334N2	185.6	188	342	3	40.7
	259.5	42	2.1	287	408	1700	2200	QJ1034X1	-	-	-	150.5	182	247.5	2	8.13
180	259.5	52	2	249	368	1600	2200	QJ3936X1	QJF3936X1	-	-	154.0	190	249.5	2	9.18
	280	46	2.1	320	480	1600	2100	QJ1036	-	-	-	161.0	192	268	2	10.6
	280	46	2.1	320	480	1600	2100	QJ1036	QJF1036	-	-	161.0	192	268	2	10.9
	320	52	4	474	735	1400	1900	QJ236	-	-	-	175.1	198	302	3	17.7
	320	52	4	474	735	1400	1900	-	-	-	QJ236N2	175.1	198	302	3	17.8
	320	52	4	474	735	1400	1900	QJ236	QJF236	-	-	175.1	198	302	3	18.0
	380	75	4	689	1120	1200	1600	QJ336	-	-	-	196.1	198	362	3	46.2
	380	75	4	689	1120	1200	1600	-	-	-	QJ336N2	196.1	198	362	3	46.2
	380	75	4	689	1120	1200	1600	-	-	-	QJ336N2Q1	196.1	198	362	3	46.2
190	240	24	1.5	84.0	126	1700	2200	-	-	QJB1838J	-	150.5	199	231	1.5	2.28
	269.5	55	3	253	381	1600	2100	QJ3938X3	QJF3938X3	-	-	161.0	204	255.5	2.5	9.88

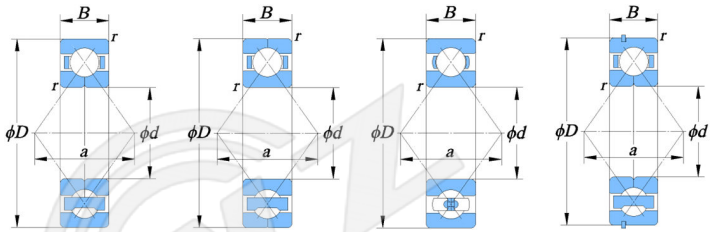
d 190～240mm



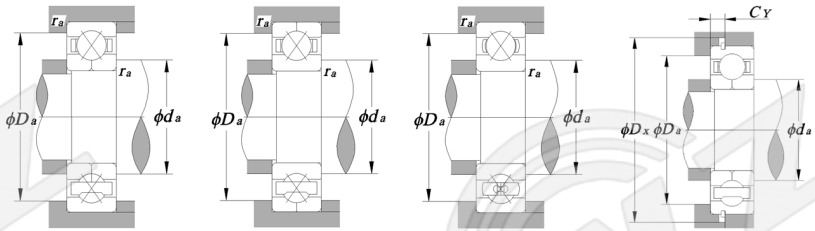


Principal dimensions(mm)				Basic load ratings (kN)		Limiting speeds (r/min)		Designations		Designations		Function point (mm)	Abutment and fillet dimensions (mm)			Mass(kg)
d	*D*	*B*	r_{min}	C_r	C_{or}	Grease	Oil	*QJ*	*QJF*	*QJB*	*N*(N、N_1、N_2)	a	d_{amin}	D_{amax}	r_{amax}	(approx.)
190	289.5	46	2.1	317	483	1500	1900	QJ1038X1	QJF1038X1	-	-	168.1	202	277.5	2	11.1
	290	46	2.1	317	483	1500	1900	-	-	-	QJ1038N2Q1	168.0	202	278	2	11.5
	290	46	2.1	317	483	1500	1900	QJ1038	QJF1038	-	-	168.1	202	278	2	11.1
	280	55	2.5	299	453	1500	2000	QJ238X1/YAD	-	-	-	164.5	202	268	2	11.6
	340	55	4	498	798	1300	1700	QJ238	-	-	-	185.6	208	322	3	24.0
	340	55	4	498	798	1300	1700	-	-	-	QJ238N2	185.6	208	322	3	24.0
	340	55	4	498	798	1300	1700	QJF238	QJF238	-	-	185.6	208	322	3	22.6
	400	78	5	688	1130	1100	1500	-	-	-	QJ338N2	206.6	212	378	4	52.4
200	250	24	1.5	87.1	136	1600	2100	-	-	QJB1840J	-	157.5	209	241	1.5	2.40
	280	51	2.1	257	394	1500	1900	QJ2940X2	QJF2940X2	-	-	168.0	212	268	2	10.0
	289.5	58	2.1	305	473	1400	1900	QJ3940X3	-	-	-	171.6	212	277.5	2	12.6
	300	58	2.5	324	508	1400	1900	QJ240X1/YA6	-	-	-	175.1	212	288	2	14.7
	309.5	51	2.1	389	619	1400	1800	QJ1040X1	QJF1040X1	-	-	178.6	212	297.5	2	14.9
	309.5	60	2.1	389	619	1400	1800	QJ1040X3	-	-	-	178.6	212	297.5	2	17.2
	310	51	2.1	389	619	1400	1800	QJ1040	-	-	-	178.6	212	298	2	14.7
	310	51	2.1	389	619	1400	1800	QJ1040Q1	-	-	-	178.6	212	298	2	14.4
	310	51	2.1	389	619	1400	1800	QJ1040	QJF1040	-	-	178.6	212	298	2	14.7
	360	58	4	513	856	1200	1600	QJ240	-	-	-	196.1	218	342	3	26.9
	360	58	4	513	856	1200	1600	-	-	-	QJ240N2	196.1	218	342	3	27.1
	360	58	4	513	856	1200	1600	-	-	-	QJ240N2/YAB	196.1	218	342	3	26.9
	360	58	4	513	856	1200	1600	QJ240	QJF240	-	-	196.1	218	342	3	27.3
	420	80	5	739	1260	1100	1400	-	-	-	QJ340N2	217.1	222	398	4	55.3
205	282	38	2.1	251	394	1400	1900	QJ641	-	-	-	170.5	217	270	2	7.48
210	309.5	55	2.1	340	541	1300	1800	QJ642WB1	-	-	-	182.1	222	297.5	2	13.2
220	299.5	60	2.1	265	421	1300	1800	QJ3944X1	QJF3944X1	-	-	182.1	232	287.5	2	12.6
	300	60	2.1	265	421	1300	1800	QJ3944	QJF3944	-	-	182.1	232	288	2	12.7
	339.5	56	3	398	651	1200	1600	QJ1044X1	QJF1044X1	-	-	196.1	234	325.5	2.5	19.4
	340	56	3	398	651	1200	1600	-	-	-	QJ1044N2Q1	196.1	234	326	2.5	17.8
	340	56	3	398	651	1200	1600	QJ1044Q1	-	-	-	196.1	234	326	2.5	18.6
	340	56	3	398	651	1200	1600	QJ1044	QJF1044	-	-	196.1	234	326	2.5	19.5
	400	65	4	608	1040	1100	1400	-	-	-	QJ244N2	217.1	238	382	3	39.2
	400	78	4	608	1040	1100	1400	-	-	-	QJ1244N2	217.1	238	382	3	44.8
	460	88	5	799	1450	900	1200	-	-	-	QJ344N2	238.1	242	438	4	78.2
	460	88	5	761	1340	900	1200	-	-	-	QJ344N2Q1	238.1	242	438	4	79.2
240	329.5	60	2.1	311	506	1200	1600	QJ3948X1	QJF3948X1	-	-	199.4	252	317.5	2	15.0
	359.5	56	3	430	758	1100	1500	QJ1048X1	QJF1048X1	-	-	210.1	254	345.5	2.5	21.2
	360	56	3	430	758	1100	1500	QJ1048	-	-	-	210.1	254	346	2.5	21.0
	360	56	3	430	758	1100	1500	-	-	-	QJ1048N2Q1	210.1	254	346	2.5	20.9

d 240～360mm

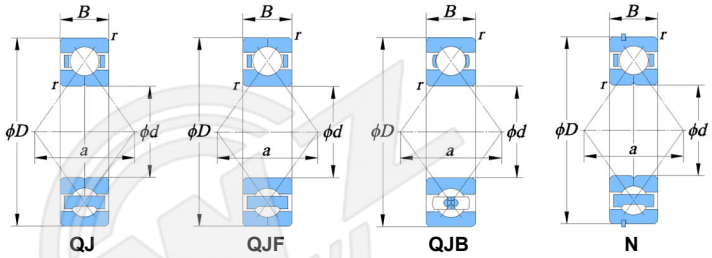


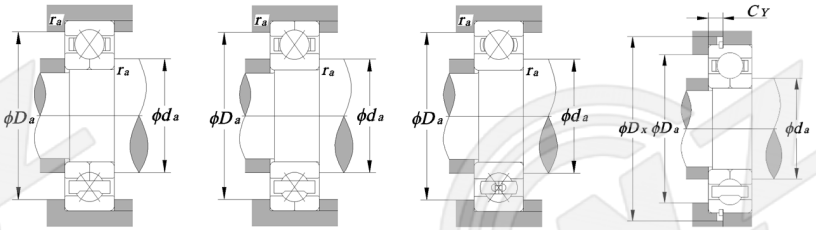
QJ　QJF　QJB　N



Principal dimensions(mm)				Basic load ratings(kN)		Limiting speeds (r/min)		Designations		Designations		Function point (mm)	Abutment and fillet dimensions (mm)			Mass(kg)
d	*D*	*B*	r_{min}	C_r	C_{or}	Grease	Oil	*QJ*	*QJF*	*QJB*	*N*(*N*、N_1、N_2)	a	d_{amin}	D_{amax}	r_{amax}	(approx.)
240	440	72	4	686	1260	900	1200	-	-	-	QJ248N2	238.1	258	422	3	53.0
	440	72	4	686	1260	900	1200	QJ248	QJF248	-	-	238.1	258	422	3	53.6
	440	85	4	686	1260	900	1200	QJ1248	-	-	-	238.1	258	422	3	61.0
	500	95	5	883	1680	810	1100	-	-	-	QJ348N2	259.1	262	478	4	100
260	340	28	2	228	408	1100	1500	QJ1852X1TP	-	-	-	210.1	270	330	2	6.89
	359.5	46	2.1	387	677	1100	1400	QJ1952X1	QJF1952X1	-	-	217.1	272	347.5	2	14.7
	360	46	2.1	387	677	1100	1400	QJ1952E	-	-	-	217.1	272	348	2	15.5
	360	46	2.1	387	677	1100	1400	QJ1952	QJF1952	-	-	217.1	272	348	2	15.0
	369.5	60	2.1	418	747	1000	1400	QJ2952X1	QJF2952X1	-	-	220.2	272	357.5	2	21.4
	399.5	65	4	503	910	940	1300	QJ1052X1/YA7	-	-	-	231.1	278	381.5	3	31.0
	399.5	65	4	503	910	940	1300	QJ1052X1	QJF1052X1	-	-	231.1	278	381.5	3	31.3
	400	65	4	503	910	940	1300	QJ1052M	-	-	-	231.1	278	382	3	31.5
	480	80	5	773	1470	810	1100	QJ252	-	-	-	259.1	282	458	4	72.8
	480	80	5	773	1470	810	1100	-	-	-	QJ252N2	259.1	282	458	4	72.8
	480	90	5	836	1620	810	1100	QJ1252	-	-	-	259.1	282	458	4	78.5
280	389.5	46	2.1	434	801	920	1300	QJ1956X1	QJF1956X1	-	-	234.6	292	377.5	2	18.8
	389.5	65	2.1	434	801	920	1300	QJ2956X3	QJF2956X3	-	-	234.6	292	377.5	2	24.1
	389.5	65	4	434	801	920	1300	QJ2956X3/YA6	QJF2956X3/YA6	-	-	234.6	298	371.5	3	24.1
	419.5	65	4	530	1000	870	1200	QJ1056X1	QJF1056X1	-	-	245.1	298	401.5	3	33.5
	420	65	4	530	1000	870	1200	QJ1056M	-	-	-	245.1	298	402	3	34.4
	420	65	4	530	1000	870	1200	QJ1056	QJF1056	-	-	245.1	298	402	3	33.5
300	420	65	4	482	931	840	1200	QJ2960X2/YA3	QJF2960X2/YA3	-	-	252.1	318	402	3	30.3
	459.5	74	4	604	1220	780	1100	QJ1060X1	-	-	-	266.1	318	441.5	3	48.3
	460	74	4	604	1220	780	1100	QJ1060	-	-	-	266.1	318	442	3	48.5
	460	74	4	604	1220	780	1100	QJ1060	QJF1060	-	-	266.1	318	442	3	48.2
320	440	65	3	488	961	780	1100	QJ2964X2	QJF2964X2	-	-	266.1	334	426	2.5	30.9
	459.5	60	2.1	542	1100	750	1000	QJ1964X3	QJF1964X3	-	-	273.1	332	447.5	2	35.7
	479.5	74	4	632	1330	730	970	QJ1064X1	QJF1064X1	-	-	280.1	338	461.5	3	52.2
	480	74	4	632	1330	730	970	QJ1064	-	-	-	280.1	338	462	3	51.2
340	499.5	80	5	661	1410	680	910	QJ1068X31	-	-	-	294.1	362	477.5	4	58.5
	500	80	5	661	1410	680	910	QJ1068X3	-	-	-	294.1	362	478	4	58.7
	519.5	82	5	730	1590	660	880	QJ1068X1	QJF1068X1	-	-	301.1	362	497.5	4	68.2
	520	82	5	730	1590	660	880	QJ1068	-	-	-	301.1	362	498	4	68.8
	520	82	5	730	1590	660	880	QJ1068	QJF1068	-	-	301.1	362	498	4	68.4
345	479.5	60	3	562	1170	700	930	QJ1969X3	QJF1969X3	-	-	288.5	359	465.5	2.5	35.9
360	480	56	3	522	1090	680	910	-	-	-	QJ1972N2MA	294.1	374	466	2.5	29.4
	540	82	5	743	1670	620	820	QJ1072	-	-	-	315.1	382	518	4	72.1
	540	82	5	743	1670	620	820	QJ1072	QJF1072	-	-	315.1	382	518	4	70.3

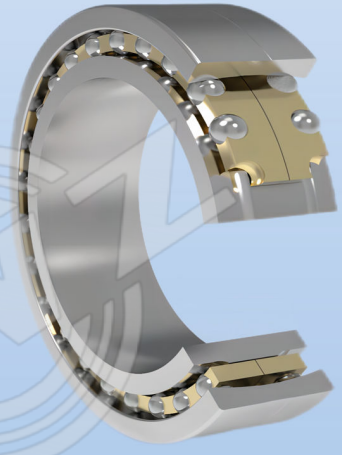
d 370～1250mm





Principal dimensions(mm)				Basic load ratings (kN)		Limiting speeds (r/min)		Designations		Designations		Function point (mm)	Abutment and fillet dimensions(mm)			Mass(kg)
d	*D*	*B*	r_{min}	C_r	C_{or}	Grease	Oil	*QJ*	*QJF*	*QJB*	*N*(N、N_1、N_2)	a	d_{amin}	D_{amax}	r_{amax}	(approx.)
370	540	82	5	741	1670	610	810	**QJ1074X3**	**QJF1074X3**	-	-	318.6	392	518	4	67.1
380	559.5	82	5	790	1810	580	770	**QJ1076X1**	**QJF1076X1**	-	-	329.1	402	537.5	4	76.1
	560	82	5	790	1810	580	770	**QJ1076**	-	-	-	329.1	402	538	4	75.9
	560	82	5	790	1810	580	770	**QJ1076/YB2**	-	-	-	329.1	402	538	4	75.9
	560	82	5	790	1810	580	770	-	-	-	**QJ1076N2**	329.1	402	538	4	75.9
	560	82	5	790	1810	580	770	**QJ1076**	**QJF1076**	-	-	329.1	402	538	4	76.5
400	600	90	5	880	2110	520	700	**QJ1080M**	-	-	-	350.1	422	578	4	97.5
	600	90	5	880	2110	520	700	-	-	-	**QJ1080N2**	350.1	422	578	4	98.6
415	615	90	5	900	2150	500	670	**QJ1083**	-	-	-	360.6	437	593	4	96.1
420	620	90	5	925	2260	500	660	**QJ1084**	-	-	-	364.1	442	598	4	99.8
	620	90	5	925	2260	500	660	**QJ1084**	**QJF1084**	-	-	364.1	442	598	4	101
440	650	94	6	943	2360	470	620	**QJ1088**	-	-	-	381.6	468	622	5	111
	650	94	6	943	2360	470	620	**QJ1088**	**QJF1088**	-	-	381.6	468	622	5	112
530	780	112	6	1280	3610	360	480	**QJ10/530**	**QJF10/530**	-	-	458.6	558	752	5	192
560	780	60	5	691	1840	350	460	**QJ9/560X1**	**QJF9/560X1**	-	-	469.1	582	758	4	100
710	870	74	4	891	2680	260	350	**QJ18/710**	-	-	-	553.2	728	852	3	98.7
1250	1750	218	9.5	3020	13600	-	-	**QJ10/1250F3**	-	-	-	1050.3	1294	1706	8	1740

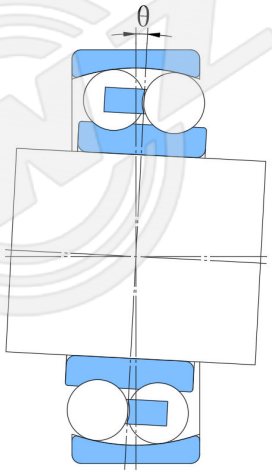
Self-aligning Ball Bearings

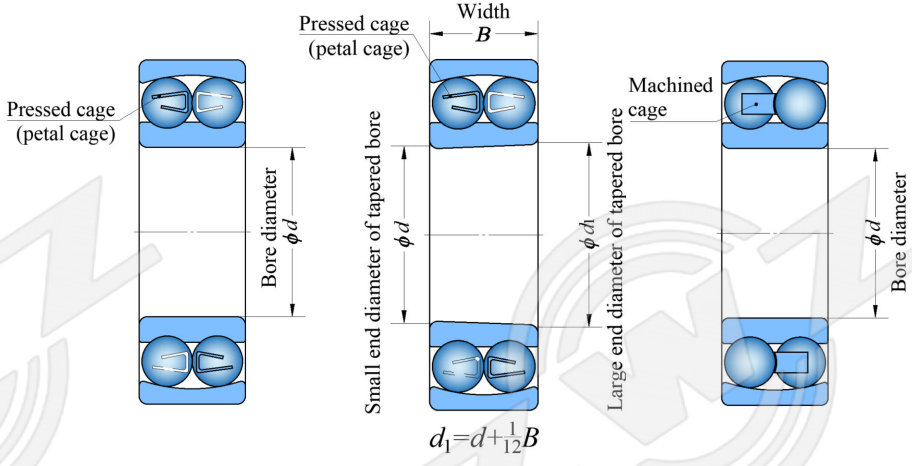


● Self-aligning ball bearings

■Product characteristics

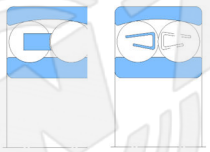
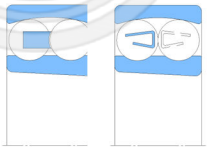
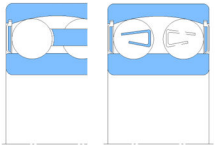
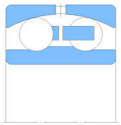
The aligning ball bearing has two rows of ball. The inner ring is two deep groove raceways, and the outer ring is a spherical raceway. The curvature center is consistent with the bearing center. This bearing has a self-aligning function, allowing the shaft to be eccentric relative to the bearing housing. When there is deflection between the shaft and the shell, it can automatically adjust such deflection, without increasing the bearing burden. It is especially applicable to precision instrument, low noise motor, automobile, motorcycle, woodworking machinery, textile machinery drive shaft, mining machinery, mechanical & electrical equipment, plastic machinery, office equipment, medical equipment, fitness and sports equipment, and it is one of the most widely used bearing in the machinery industry.





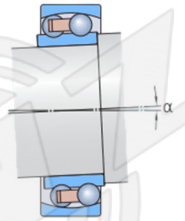
■Product structural types

Table 1 Product Structural Form

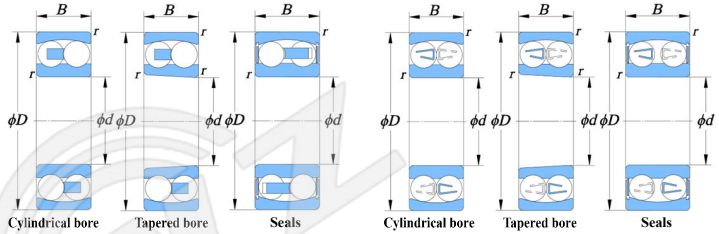
Cylindrical bore (open type)		It can withstand radial load, small axial load, but it can't withstand pure axial load. It can compensate the concentricity error caused by machining, installation and shaft deformation. It is applicable to application occasions of shaft deflection or bearing misalignment. It has the characteristics of high rotating speed, low friction and low noise. It has excellent light load performance and minimal maintenance requirements.
Tapered bore (open type)		It has the feature of cylindrical bore aligning ball bearing. The inner bore is a taper bore (normal taper 1:12), and it is installed on the taper shaft to fine-tune the bearing clearance.
Sealed type		Compared with open type aligning ball bearing, the allowable angular deviation of sealed aligning ball bearing is reduced.
Large self-aligning ball bearing		The outer ring has annular lubrication groove and equally-spaced lubricating oil hole, which can be used in occasions of low friction and high carrying capacity.

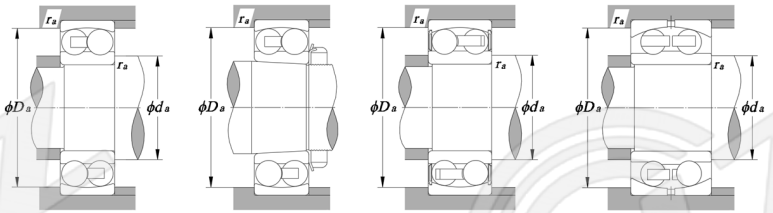
■Basic Information

Size range	Inner diameter size range: 25mm~1100mm Outer diameter size range: 52mm~1300mm Width size range: 15mm~300mm
Accuracy	**ZWZ** produces standard series self-aligning ball bearing, which are mainly produced at ordinary level, but also can offer products of accuracy class P6 and above. **For bearing of various precision levels, you can contact ZWZ technicians.**
Clearance	**ZWZ** standard self-aligning ball bearing have clearance groups of C2, standard (CN), C3, C4 and C5. The tapered bore aligning ball bearing take C3 clearance as the standard, and they are applicable to uninstalled and no-load bearing. **If non-standard clearance is required, please contact ZWZ technicians.**

Angle misalignment error	Allowable aligning angle **Bearing/Series** / **Misalignment error α (°)** 108, 126, 127, 129, 135, 130, 139 — 3 12, 22, 112 — 2.5 22-2RS, 23-2RS — 1.5 13, 23 — 3 
Cage type	Generally, it is made of pressed cage, brass solid cage and nylon cage. **For special demand, please contact ZWZ technicians.**
Equivalent load	Dynamic equivalent load When $F_a / F_r \le e$, $P = F_r + Y_1 F_a$ When $F_a / F_r > e$, $P = 0.65F_r + Y_2 F_a$ Static equivalent load $P_0 = F_r + Y_0 F_a$, Refer to the bearing size table for e, Y0, Y1 and Y2 in the format.

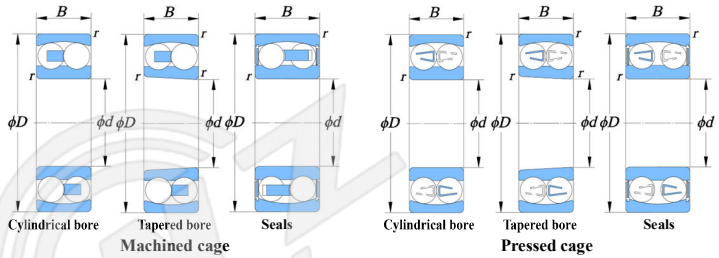
d 25～55mm

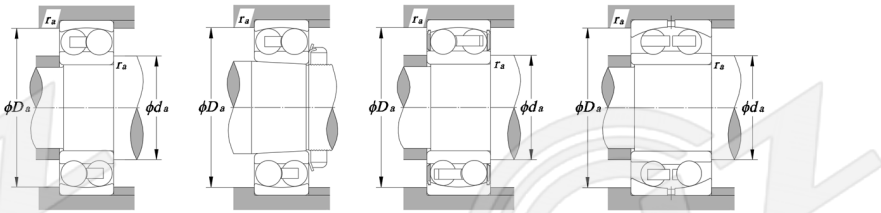




Principal dimensions (mm)				Basic load ratings (kN)		Limiting speeds (r/min)		Designations		Abutment and fillet dimensions (mm)			Axle load coefficient				Mass(kg)(approx.)	
d	*D*	*B*	r_{min}	C_r	C_{or}	Grease	Oil	Cylindrical bore	Tapered bore	d_{amin}	D_{amax}	r_{amax}	*e*	Y_1	Y_2	Y_0	Cylindrical bore	Tapered bore
25	52	15	1	12.1	3.30	11000	14000	**1205TN1**	-	31	46	1	0.27	2.30	3.60	2.40	0.137	-
	62	17	1.1	17.9	5.00	9600	13000	**1305TN1**	-	32	55	1.1	0.28	2.30	3.50	2.40	0.249	-
30	62	16	1	15.7	4.70	9200	12000	**1206**	**1206K**	36	56	1	0.25	2.50	3.87	2.62	0.228	0.223
	62	20	1	15.2	4.60	9100	12000	**2206**	**2206K**	36	56	1	0.39	1.63	2.53	1.71	0.260	0.254
	62	20	1	15.4	4.60	8900	12000	**2206TN1**	-	36	56	1	0.39	1.63	2.53	1.71	0.242	-
	72	27	1.1	31.4	8.70	8400	11000	**2306**	**2306K**	37	65	1.1	0.44	1.43	2.22	1.50	0.515	0.515
	72	27	1.1	31.4	8.70	8400	11000	**2306TN1**	-	37	65	1.1	0.44	1.43	2.22	1.50	0.494	-
35	72	17	1.1	15.8	5.10	8000	10000	**1207**	**1207K**	42	65	1.1	0.23	2.74	4.24	2.87	0.318	0.312
	72	17	1.1	15.1	4.80	8000	10000	**1207TN1**	**1207KTN1**	42	65	1.1	0.23	2.74	4.24	2.87	0.309	0.303
	72	23	1.1	21.7	6.70	8000	10000	**2207**	**2207K**	42	65	1.1	0.37	1.69	2.61	1.77	0.604	0.544
	72	23	1.1	21.7	6.70	8000	10000	**2207TN1**	-	42	65	1.1	0.37	1.69	2.61	1.77	0.587	-
	80	21	1.5	25.1	7.90	7100	9000	**1307**	**1307K**	44	71	1.5	0.25	2.56	3.97	2.69	0.507	0.480
	80	21	1.5	23.9	7.40	7100	9000	**1307TN1**	**1307KTN1**	44	71	1.5	0.25	2.56	3.97	2.69	0.486	0.475
	80	31	1.5	39.4	11.1	7500	9400	**2307**	**2307K**	44	71	1.5	0.46	1.36	2.11	1.43	0.675	0.662
	80	31	1.5	39.4	11.1	7500	9400	**2307TN1**	-	44	71	1.5	0.46	1.36	2.11	1.43	0.659	-
40	80	18	1.1	19.2	6.50	7000	8800	**1208**	**1208K**	47	73	1.1	0.22	2.87	4.45	3.01	0.410	0.402
	80	18	1.1	18.5	6.10	7000	8800	**1208TN1**	**1208KTN1**	47	73	1.1	0.22	2.87	4.45	3.01	0.402	0.391
	80	23	1.1	22.3	7.40	7000	8900	**2208**	**2208K**	47	73	1.1	0.33	1.90	2.94	1.99	0.520	0.519
	80	23	1.1	21.3	6.90	7000	8900	**2208TN1**	**2208KTN1**	47	73	1.1	0.33	1.90	2.94	1.99	0.476	0.475
	90	23	1.5	29.5	9.80	6400	8100	**1308**	**1308K**	49	81	1.5	0.24	2.62	4.05	2.74	0.714	0.714
	90	23	1.5	28.2	9.10	6400	8100	**1308TN1**	**1308KTN1**	49	81	1.5	0.24	2.62	4.05	2.74	0.688	0.688
	90	33	1.5	44.8	13.4	6600	8300	**2308**	**2308K**	49	81	1.5	0.43	1.45	2.25	1.52	0.959	0.944
	90	33	1.5	42.3	12.3	6600	8300	**2308TN1**	**2308KTN1**	49	81	1.5	0.43	1.45	2.25	1.52	0.901	0.886
45	85	19	1.1	21.9	7.40	6500	8300	**1209**	**1209K**	52	78	1.1	0.21	2.94	4.55	3.08	0.469	0.460
	85	19	1.1	21.9	7.40	6500	8300	**1209TN1**	**1209KTN1**	52	78	1.1	0.21	2.94	4.55	3.08	0.458	0.446
	85	23	1.1	23.3	8.20	6500	8200	**2209**	**2209K**	52	78	1.1	0.31	2.04	3.15	2.13	0.553	0.553
	85	23	1.1	21.5	7.30	6500	8200	**2209TN1**	**2209KTN1**	52	78	1.1	0.31	2.04	3.15	2.13	0.500	0.540
	100	25	1.5	38.0	12.9	5800	7300	**1309**	**1309K**	54	91	1.5	0.25	2.53	3.92	2.66	0.951	0.946
	100	25	1.5	36.3	12.0	5800	7300	**1309TN1**	**1309KTN1**	54	91	1.5	0.25	2.53	3.92	2.66	0.920	0.915
	100	36	1.5	54.1	16.5	5900	7400	**2309**	**2309K**	54	91	1.5	0.42	1.51	2.33	1.58	1.24	1.23
	100	36	1.5	54.1	16.5	5900	7400	**2309M**	-	54	91	1.5	0.42	1.51	2.33	1.58	1.36	-
50	90	20	1.1	22.7	8.10	6100	7700	**1210**	**1210K**	57	83	1.1	0.20	3.13	4.85	3.28	0.547	0.543
	90	20	1.1	22.7	8.10	6100	7700	**1210TN1**	**1210KTN1**	57	83	1.1	0.20	3.13	4.85	3.28	0.535	0.531
	90	23	1.1	22.4	8.00	6100	7600	**2210**	**2210K**	57	83	1.1	0.29	2.20	3.41	2.31	0.618	0.539
	90	23	1.1	21.5	7.60	6100	7600	**2210TN1**	**2210KTN1**	57	83	1.1	0.29	2.20	3.41	2.31	0.567	0.489
	110	27	1.5	43.3	14.2	5200	6600	**1310**	**1310K**	59	101	1.5	0.24	2.68	4.14	2.80	1.21	1.19
	110	40	2	64.2	19.9	5300	6700	**2310**	**2310K**	60	100	2	0.42	1.49	2.30	1.56	1.66	1.65
55	100	21	1.5	26.7	10.0	5400	6900	**1211**	**1211K**	64	91	1.5	0.20	3.23	4.99	3.38	0.708	0.702

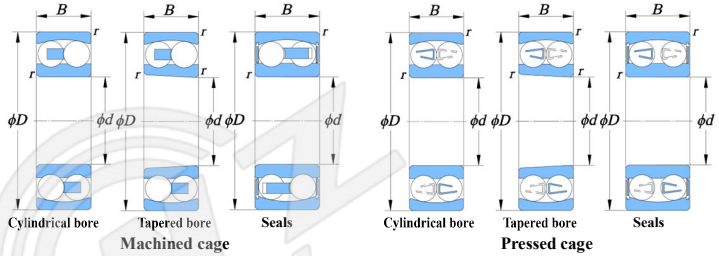
d 55～85mm

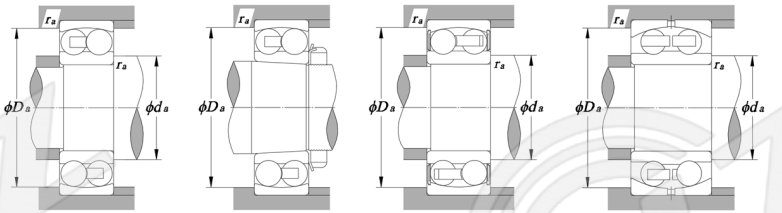




Principal dimensions(mm)				Basic load ratings (kN)		Limiting speeds (r/min)		Designations		Abutment and fillet dimensions (mm)				Axle load coefficient			Mass(kg)(approx.)	
d	*D*	*B*	r_{min}	C_r	C_{or}	Grease	Oil	Cylindrical bore	Tapered bore	d_{amin}	D_{amax}	r_{amax}	*e*	Y_1	Y_2	Y_0	Cylindrical bore	Tapered bore
55	100	21	1.5	25.8	9.50	5400	6900	**1211TN1**	**1211KTN1**	64	91	1.5	0.20	3.23	4.99	3.38	0.681	0.680
	100	25	1.5	25.6	9.40	5500	6900	**2211**	**2211K**	64	91	1.5	0.28	2.26	3.50	2.37	0.824	0.812
	120	29	1.5	51.4	18.1	4700	6000	**1311**	**1311K**	64	111	1.5	0.23	2.70	4.18	2.83	1.57	1.57
	120	29	2	49.0	16.9	4700	6000	**1311TN1**	**1311KTN1**	65	110	2	0.23	2.70	4.18	2.83	1.52	1.51
	120	43	2	75.1	23.8	4900	6200	**2311**	**2311K**	65	110	2	0.41	1.53	2.36	1.60	2.10	2.05
60	110	22	1.5	30.4	11.6	5000	6300	**1212**	**1212K**	69	101	1.5	0.19	3.39	5.25	3.56	0.892	0.877
	110	22	1.5	30.4	11.6	5000	6300	**1212TN1**	**1212KTN1**	69	101	1.5	0.19	3.39	5.25	3.56	0.870	0.855
	110	28	1.5	35.4	13.2	5000	6300	**2212**	**2212K**	69	101	1.5	0.28	2.27	3.51	2.38	1.16	1.14
	110	28	1.5	34.2	12.5	5000	6300	**2212TN1**	**2212KTN1**	69	101	1.5	0.28	2.27	3.51	2.38	1.09	1.07
	130	31	2.1	57.1	20.7	4300	5400	**1312**	**1312K**	72	118	2	0.23	2.80	4.33	2.93	1.98	1.98
	130	31	2.1	54.7	19.4	4300	5400	**1312TN1**	**1312KTN1**	72	118	2	0.23	2.80	4.33	2.93	1.92	1.90
	130	46	2.1	87.1	28.0	4500	5700	**2312**	**2312K**	72	118	2	0.40	1.56	2.41	1.63	2.61	2.60
	130	46	2.1	87.1	28.0	4500	5700	**2312M**	-	72	118	2	0.40	1.56	2.41	1.63	2.68	-
	150	35	2.1	74.2	27.6	3800	4800	**1412**	-	72	138	2	0.22	2.81	4.35	2.95	3.26	-
	150	35	2.1	71.1	25.9	3800	4800	**1412M**	-	72	138	2	0.22	2.81	4.35	2.95	3.31	-
65	120	23	1.5	31.0	12.4	4500	5700	**1213**	**1213K**	74	111	1.5	0.17	3.71	5.73	3.88	0.915	0.910
	120	23	1.5	30.0	11.8	4500	5700	**1213TN1**	**1213KTN1**	74	111	1.5	0.17	3.71	5.73	3.88	0.883	0.878
	120	31	1.5	43.4	16.3	4600	5700	**2213**	**2213K**	74	111	1.5	0.28	2.25	3.48	2.35	1.50	1.49
	140	33	2.1	61.9	22.9	4000	5100	**1313**	**1313K**	77	128	2	0.23	2.78	4.31	2.92	2.38	2.37
	140	48	2.1	96.0	32.4	4100	5200	**2313**	**2313K**	77	128	2	0.38	1.65	2.55	1.72	3.22	3.21
70	125	24	1.5	34.6	13.7	4400	5500	**1214**	**1214K**	79	116	1.5	0.18	3.51	5.44	3.68	1.29	1.25
	125	31	1.5	43.9	17.0	4300	5400	**2214**	**2214K**	79	116	1.5	0.27	2.36	3.66	2.48	1.63	1.63
	150	35	2.1	74.2	27.6	3800	4800	**1314**	**1314K**	82	138	2	0.22	2.81	4.35	2.95	2.98	2.90
	150	51	2.1	109	37.4	3800	4800	**2314**	-	82	138	2	0.38	1.68	2.60	1.76	3.92	-
75	130	25	1.5	38.9	15.6	4100	5100	**1215**	**1215K**	84	121	1.5	0.17	3.60	5.58	3.77	1.35	1.35
	130	31	1.5	44.4	18.0	4100	5200	**2215**	**2215K**	84	121	1.5	0.25	2.49	3.86	2.61	1.71	1.68
	160	37	2.1	79.3	29.9	3500	4400	**1315**	**1315K**	87	148	2	0.22	2.84	4.39	2.97	3.55	3.49
	160	55	2.1	123	42.7	3600	4500	**2315**	**2315K**	87	148	2	0.38	1.66	2.56	1.73	4.71	4.63
	160	55	2.1	123	42.7	3600	4500	**2315TN1**	-	87	148	2	0.38	1.66	2.56	1.73	4.71	-
80	140	26	2	39.7	16.9	3800	4700	**1216**	**1216K**	90	130	2	0.16	3.94	6.10	4.13	1.65	1.59
	140	26	2	38.5	16.2	3800	4700	**1216TN1**	**1216KTN1**	90	130	2	0.16	3.94	6.10	4.13	1.59	1.54
	140	33	2	49.0	20.1	3800	4800	**2216**	**2216K**	90	130	2	0.25	2.49	3.86	2.61	2.19	2.05
	170	39	2.1	88.4	33.0	3300	4100	**1316**	**1316K**	92	158	2	0.22	2.92	4.52	3.06	4.19	4.18
	170	58	2.1	128	45.5	3300	4200	**2316**	**2316K**	92	158	2	0.39	1.63	2.53	1.71	5.70	5.55
	170	58	2.1	128	45.5	3300	4200	**2316M**	-	92	158	2	0.39	1.63	2.53	1.71	5.93	-
	170	58	2.1	128	45.5	3300	4200	**2316TN1**	-	92	158	2	0.39	1.63	2.53	1.71	5.77	-
85	150	28	2	49.1	20.4	3500	4400	**1217**	**1217K**	95	140	2	0.17	3.69	5.70	3.86	2.10	2.07
	150	36	2	58.1	23.6	3600	4500	**2217**	**2217K**	95	140	2	0.25	2.48	3.84	2.60	2.53	2.48

d 85～140mm

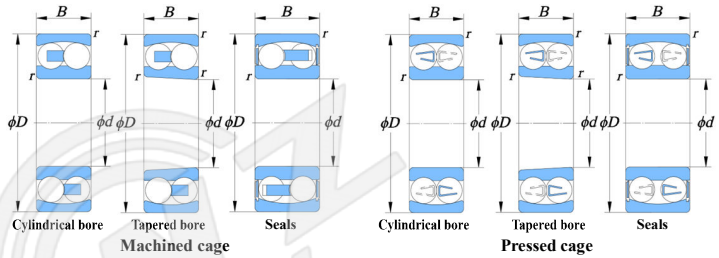


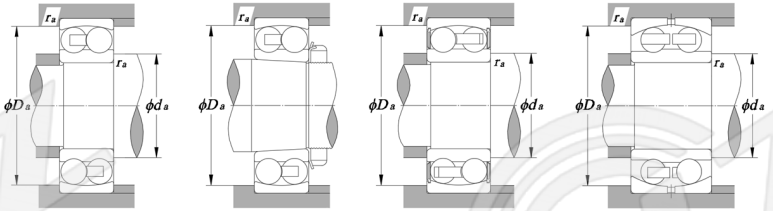


Principal dimensions(mm)				Basic load ratings (kN)		Limiting speeds (r/min)		Designations	
d	*D*	*B*	r_{min}	C_r	C_{or}	Grease	Oil	Cylindrical bore	Tapered bore
85	180	41	3	98.0	37.8	3100	3900	**1317**	**1317K**
	180	60	3	141	51.4	3200	4000	**2317**	**2317K**
	180	60	3	141	51.4	3200	4000	**2317M/C3**	**-**
90	160	30	2	56.9	23.4	3300	4200	**1218**	**1218K**
	160	40	2	70.4	28.5	3300	4200	**2218**	**2218K**
	190	43	3	116	44.8	2900	3700	**1318**	**1318K**
	190	43	3	116	44.8	2900	3700	**1318M**	**-**
	190	64	3	152	57.6	3000	3700	**2318**	**2318K**
	190	64	3	153	57.6	3000	3800	**2318M**	**2318KM**
95	170	32	2.1	63.7	26.9	3100	3900	**1219**	**1219K**
	170	43	2.1	83.2	34.1	3100	3900	**2219**	**2219K**
	200	45	3	132	51.5	2800	3500	**1319**	**1319K**
	200	67	3	165	64.2	2800	3500	**2319**	**2319K**
	200	67	3	165	64.2	2800	3500	**2319M/C3**	**-**
100	180	34	2.1	69.0	29.4	2900	3700	**1220**	**1220K**
	180	34	2.1	69.0	29.4	2900	3700	**1220M**	**1220KM**
	180	46	2.1	94.0	38.5	2900	3700	**2220**	**2220K**
	180	46	2.1	97.0	40.6	2900	3700	**2220M**	**2220KM**
	215	47	3	143	57.8	2600	3200	**1320**	**1320K**
	215	47	3	143	57.8	2600	3200	**1320J**	**1320KJ**
	215	73	3	192	78.5	2600	3200	**2320**	**2320K**
	215	73	3	192	78.5	2600	3200	**2320J**	**2320KJ**
	215	73	3	192	78.5	2600	3200	**2320TN1**	**-**
105	190	36	2.1	74.0	32.0	2800	3500	**1221**	**-**
	225	77	3	195	79.4	2500	3100	**2321**	**-**
110	200	38	2.1	87.9	38.5	2600	3300	**1222**	**1222K**
	200	38	2.1	87.9	38.5	2600	3300	**1222M**	**1222KM**
	200	53	2.1	124	52.2	2600	3300	**2222**	**2222K**
	200	53	2.1	124	52.2	2600	3300	**2222M**	**2222KM**
	240	50	3	163	71.4	2200	2800	**1322**	**1322K**
	240	50	3	163	71.4	2200	2800	**1322J**	**1322KJ**
	240	80	3	217	94.1	2300	2900	**2322**	**2322K**
	240	80	3	217	94.1	2300	2900	**2322J**	**2322KJ**
	240	80	3	217	94.1	2300	2900	**2322TN1**	**-**
120	215	42	2.1	119	52.5	2400	3000	**11224**	**-**
	215	42	2.1	115	49.9	2400	3000	**11224J**	**11224KJ**
130	230	46	3	125	56.2	2200	2800	**1226**	**-**
140	250	50	3	156	72.2	2000	2500	**11228**	**-**

Abutment and fillet dimensions (mm)			Axle load coefficient				Mass (kg) (approx.)	
d_{amin}	D_{amax}	r_{amax}	*e*	Y_1	Y_2	Y_0	Cylindrical bore	Tapered bore
99	166	2.5	0.22	2.90	4.49	3.04	4.95	4.90
99	166	2.5	0.38	1.67	2.59	1.75	6.73	6.56
99	166	2.5	-	-	-	-	-	-
100	150	2	0.17	3.76	5.81	3.94	2.44	2.36
100	150	2	0.27	2.36	3.65	2.47	3.22	3.08
104	176	2.5	0.22	2.81	4.35	2.94	5.70	5.82
104	176	2.5	0.22	2.81	4.35	2.94	5.99	-
104	176	2.5	0.38	1.64	2.54	1.72	7.82	7.79
104	176	2.5	0.38	1.67	2.58	1.74	8.27	8.23
107	158	2	0.17	3.68	5.69	3.85	3.06	3.02
107	158	2	0.26	2.38	3.69	2.50	5.38	5.30
109	186	2.5	0.23	2.77	4.29	2.90	6.98	6.96
109	186	2.5	0.38	1.68	2.59	1.76	9.20	8.16
109	186	2.5	-	-	-	-	-	-
112	168	2	0.17	3.64	5.63	3.81	3.69	3.68
112	168	2	0.17	3.64	5.63	3.81	3.68	3.67
112	168	2	0.27	2.34	3.62	2.45	4.61	4.60
112	168	2	0.27	2.34	3.62	2.45	4.95	4.94
114	201	2.5	0.24	2.67	4.13	2.80	8.64	-
114	201	2.5	0.24	2.67	4.13	2.80	8.28	8.26
114	201	2.5	0.37	1.69	2.62	1.77	12.4	12.3
114	201	2.5	0.37	1.69	2.62	1.77	11.7	11.7
114	201	2.5	0.37	1.69	2.62	1.77	11.4	-
117	178	2	0.18	3.55	5.50	3.72	4.71	-
119	211	2.5	0.39	1.64	2.53	1.71	14.4	-
122	188	2	0.17	3.64	5.64	3.82	5.18	5.14
122	188	2	0.17	3.64	5.64	3.82	5.53	5.12
122	188	2	0.28	2.25	3.49	2.36	6.66	6.65
122	188	2	0.28	2.25	3.49	2.36	7.16	7.00
124	226	2.5	0.22	2.83	4.39	2.97	11.9	11.8
124	226	2.5	0.22	2.83	4.39	2.97	11.3	11.2
124	226	2.5	0.38	1.67	2.59	1.75	17.6	17.3
124	226	2.5	0.38	1.67	2.59	1.75	16.1	15.8
124	226	2.5	0.38	1.67	2.59	1.75	15.9	-
132	203	2	0.20	3.21	4.97	3.36	7.04	6.84
132	203	2	0.20	3.21	4.97	3.36	5.96	5.90
144	216	2.5	0.20	3.19	4.93	3.34	8.64	-
154	236	2.5	0.20	3.12	4.83	3.27	11.3	11.0

d 150～1100mm



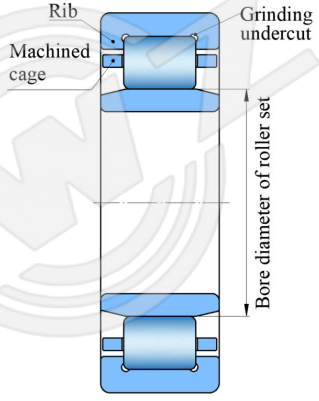


Principal dimensions (mm)				Basic load ratings (kN)		Limiting speeds (r/min)		Designations		Abutment and fillet dimensions (mm)			Axle load coefficient				Mass(kg)(approx.)	
d	*D*	*B*	r_{min}	C_r	C_{or}	Grease	Oil	Cylindrical bore	Tapered bore	d_{amin}	D_{amax}	r_{amax}	*e*	Y_1	Y_2	Y_0	Cylindrical bore	Tapered bore
150	235	36	3	104	52.9	2000	2600	**1730**	-	164	221	2.5	0.15	4.18	6.46	4.38	6.25	-
500	720	300	6	337	301	500	530	**150/500D1L**	-	528	692	5	0.32	1.98	3.06	2.07	342	-
680	900	300	6	356	372	300	350	**150/680D1L**	-	708	872	5	0.26	2.38	3.69	2.50	447	-
800	1000	300	6	292	319	300	270	**150/800D1L**	-	828	972	5	-	-	-	-	-	-
820	1000	150	6	262	290	300	270	**150/820D1L**	-	848	972	5	-	-	-	-	-	-
1100	1300	300	6	326	439	-	-	**150/1100D1L**	-	1128	1272	5	0.21	2.99	4.62	3.13	614	-

Cylindrical Roller Bearings

● Cylindrical roller bearings

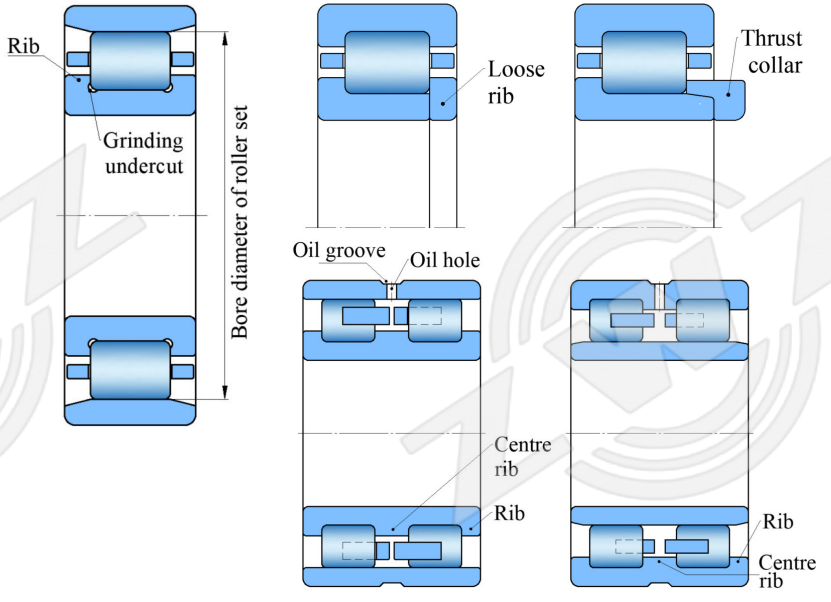
■Product characteristics

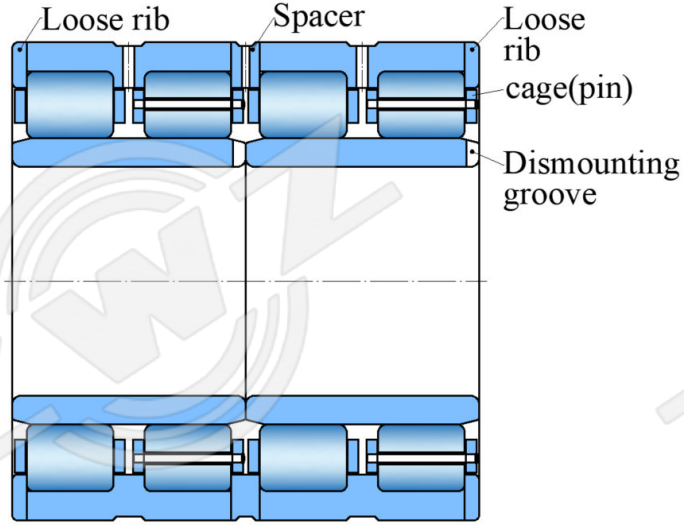


The roller and the raceway of cylindrical roller bearing is in linear contact, so it has a large capacity to withstand radial load, which is applicable to withstand both heavy load and impact load. There is low friction between the roller and the ring rib, which is applicable to high-speed rotation.

After the improved design of the raceway and the roller geometrical shape, the cylindrical roller bearing obtain a higher carrying capacity. The new structural design of the rib and the roller end face not only increases the axial carrying capacity of the bearing, but also improves the lubrication conditions of the contact area between the roller end face and the rib, improving the service performance of the bearing.

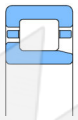
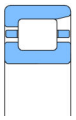
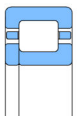
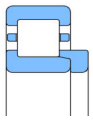
This bearing is mainly used in medium and large electric motors, generators, internal combustion engines, gas turbines, machine tool spindles, decelerating devices, loading/unloading & handling machinery, and various industrial machineries.





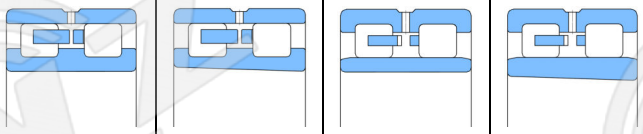
■Product structural types

➢Single-row cylindrical roller bearing

The main structural type of single row cylindrical roller bearing						
Structure	Type **NU**	Type **N**	Type **NJ**	Type **NF**	Type **NUP**	Type **NH**
Figure						
Inner diameter (mm)	17～1700	30～1900	17～1600	30～1600	20～1000	90～480
Outer diameter (mm)	40～2060	72～2300	40～1950	72.046 ～ 1950	47～1250	190～700
Width (mm)	12～315	16～780	12～190.5	18～210	14～224	43～100
Load capacity	Single-direction radial load	Single-direction radial load	Radial load and certain single-direction axial load	Radial load and certain single-direction axial load	Radial load and certain single-direction axial load	Radial load and certain single-direction axial load

Type	Structural form	Characteristics
N	❖The inner ring has double ribs, the outer ring has no rib, and the inner ring, roller and cage can be separated from the outer ring.	❖ The shaft is allowed to move axially relative to the shell within a certain range, so it can adapt to the change in the relative position of the shaft and the shell due to thermal expansion or installation error, which is applicable to be used as a free-end bearing. ❖ It can't restrict the axial displacement between the shaft and the shell, and it can only withstand radial load.
NU	❖The outer ring has double ribs, the inner ring has no rib, and the outer ring, roller and cage can be separated from the inner ring.	❖ The shaft of this bearing is allowed to move axially relative to the shell within a certain range, so it can adapt to the change in the relative position of the shaft and the shell due to thermal expansion or installation error, which is applicable to use as a free-end bearing. ❖ It can't restrict the axial displacement between the shaft and the shell, and it can only withstand radial load.
NJ	❖The bearing outer ring has double ribs, and the inner ring has single rib.	❖ It can make axial positioning in one direction, and withstand single-direction axial load to some extent.
NF	❖The bearing inner ring has double ribs, and the outer ring has single rib.	❖ It can make axial positioning in one direction, and withstand single-direction axial load to some extent.
NUP	❖The bearing outer ring has double ribs, and the inner ring has single rib and loose rib.	❖ The double-direction axial displacement between the shaft and the shell can be restricted within the axial clearance limit of the bearing; ❖ In addition to withstanding radial load, it can also withstand a few of double-direction axial load, so it is applicable to be used as a fixed-end bearing.
NH	❖The bearing outer ring has double ribs, and the inner ring has single rib and inclined thrust collar.	❖ The inner ring and the outer ring (with a full set of rollers and cages) can be installed respectively, and the double-direction axial displacement between the shaft and the shell can be restricted within the axial clearance limit of the bearing; ❖ In addition to withstanding radial load, it can also withstand a few of double-direction axial load, so it is applicable to be used as a fixed-end bearing.
NB	❖It is a cylindrical roller bearing without rib. The inner ring and outer ring both have no rib, and the outer ring has lubricating oil hole.	❖ The inner ring, the outer ring and the cage with a full set of rollers can be installed separately, but it can't restrict the axial displacement of the bearing or the shell, and it can't withstand the axial load.
NCL…V	❖The bearing outer ring has no rib but have double retaining snap rings. The inner ring has double ribs and has no cage, with full-loaded rollers; ❖ The bearing inner ring and the outer ring can't be separated, and it can't be installed separately.	❖ Compared with other cylindrical roller bearing of the same size, it can withstand larger radial load, but its extreme rotating speed is lower. ❖ The double-direction axial displacement of the shaft or the shell can be restricted within the axial clearance limit of the bearing.
NJ…V	❖The bearing inner ring has single rib, and the outer ring has double ribs and has no case, with full-loaded rollers; The outer ring and the roller set can be separated from the inner ring.	❖ It can withstand larger radial load, but its extreme rotating speed is lower; ❖ It can't restrict the axial displacement of the shaft or the shell, and it can't withstand axial load.
NCF…V	❖The inner ring has double ribs, and the outer ring has single rib and has no cage, with full-loaded rollers. The side of the outer ring without rib is equipped with elastic yoke to prevent rollers from slipping out and keep the bearing integrated.	❖ Compared with other cylindrical roller bearing of the same size, it can withstand larger radial load, but its extreme rotating speed is lower. ❖ The double-direction axial displacement of the shaft or the shell can be restricted within the axial clearance limit of the bearing.

➢Double row cylindrical roller bearing

The main structural type of double row cylindrical roller bearing				
Structure	Type **NN**	Type **NN…K**	Type **NNU**	Type **NNU…K**
Figure				
Inner diameter (mm)	50～1320	50～2280	100～1600	100～1400
Outer diameter (mm)	80～1720	80～2580	140～2300	140～2180
Width (mm)	23～400	23～400	40～800	40～775
Carrying	Single-direction radial load	Single-direction radial load	Single-direction radial load	Single-direction radial load

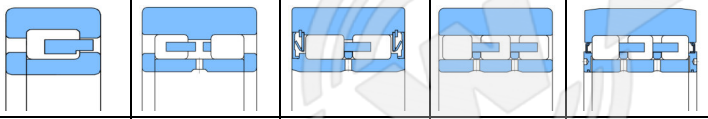
Type	Structural form	Characteristics
NN	❖ The bearing inner ring has rib, and the outer ring has no rib; ❖ The outer ring and the inner assembly can be installed separately.	❖ It can't restrict the axial displacement of the shaft or the shell, and it can't withstand axial load; ❖ Compared with the single row cylindrical roller bearing of the same radial size, it can withstand larger radial load. ❖ It has compact structure and small deformation under load, so it is especially applicable to be used as the support of machine tool spindle.
NN…K	❖ Its bearing structure is the same as that of type NN, but its inner bore is tapered.	❖ It is easy to fine-tune the radial clearance of the bearing, and it is convenient to install and disassemble; ❖ The machine tool spindle mostly adopts this type of bearing. It is installed on the tapered shaft, and the radial clearance is adjusted by the press-in amount of the inner ring.
NNU **NNU…K**	❖ The bearing outer ring has rib, and inner ring has no rib; ❖ The cylindrical bore type and the tapered bore type (with a suffix K) are available.	❖ It can't restrict the axial displacement of the shaft or the shell, and it can't withstand axial load; ❖ Compared with the single row cylindrical roller bearing of the same radial size, it can withstand larger radial load
NNCF	❖ The bearing inner ring has three ribs, and outer ring has one rib; ❖ The side of the outer ring without rib is equipped with a fixed collar to keep the bearing integrated.	❖ It can make axial positioning in one direction, and withstand radial load and axial load in one direction.
NNCL	❖ The bearing inner ring has three ribs, and the outer ring has no rib. Both sides are equipped with snap rings to make it a non-separable bearing.	❖ It can withstand radial force. The inner ring can make appropriate runout relative to the outer ring in two directions, but it can't be separated.
NNCS	❖ The bearing inner ring has three ribs, and the outer ring has no rib. One middle retaining snap ring is provided in the middle of the outer ring to form a non-separable bearing	❖ The shaft is allowed to have a certain axial displacement with the bearing housing, and it can be used as a free-end bearing.

➢Four-row cylindrical roller bearing

The four-row cylindrical roller bearing can withstand large radial load and impact load, and machining accuracy is high, so they are applicable to high-speed. After the inner ring is pressed into the roller diameter, the inner ring raceway surface and the roller surface can be ground at the same time, which is favor to improving the rolling accuracy, and the installation clearance of the bearing can be adjusted freely. They are mostly used in the working roll or supporting roll of the cold rolling mill, hot rolling mill, roughing mill and other machines, but they can also be used in other occasions.

The main structural type of four-row cylindrical roller bearing			
Structure	Type **FC**	Type **FCD**	Type **FCDP**
Figure			
Inner diameter (mm)	80～1040	100～950	190～1480
Outer diameter (mm)	125～1440	140～1300	260～1900
Width (mm)	70～1000	104～850	168～1360
Carrying	Single-direction radial load	Single-direction radial load	Single-direction radial load
Structural form	Double outer ring, single inner ring, inner ring without rib.	Double outer ring, double inner ring, inner ring without rib.	Double outer ring, the outer ring has only the central rib and with loose rib, double inner ring, the inner ring has no rib.

➢Sendzimir bearing

The main structural type of Sendzimir bearing					
Structure	Single row open type	Double row open type	Double row closed type	Three row open type	Three row closed type
Figure					
Inner diameter (mm)	40～	35～205	100～1600	100～1400	100～1400
Outer diameter (mm)	105～	110～520	140～2300	140～2180	140～2180
Width (mm)	48～	40～176	40～800	40～775	40～775

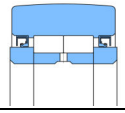
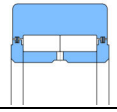
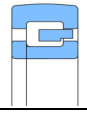
Sendzimir bearing are mostly used in the multi-roll cold mills. The outer diameter of the bearing is directly in contact with the intermediate roll, and the rolling component force is withstood while rotating. Due to the characteristics that the bearing outer ring is used as the rolling contact surface directly, the thickness of the outer ring is increased,

and the special structure is applied in the shape of the bearing outer ring bus, which eliminates the edge stress and effectively prolongs the grinding interval of outer ring surface. It has good wear resistance and the operability of re-grinding, and it still has good rotary accuracy after re-grinding. The special lubricating oil holes and oil circuits are added on the bearing inner ring and spacer, so that the lubricating oil can enter the bearing inside smoothly, and it has a sufficiently long rolling fatigue life.

➢Track roller rolling bearing

The track roller rolling bearing is a full-loaded cylindrical roller bearing with thick outer ring wall, inner ring with oil groove & oil hole, both sides with yoke and sealing structure, and without cage. The outer diameter cylindrical surface has cylindrical shape and circular arc shape, and its outer ring can also be added with single-side or both-side flange to fit with the raceway surface according to the user demand. It can roll directly on the raceway, and can withstand larger load and impact load. This bearing mostly adopts the sealing structure, and its inside is filled with grease for effective lubrication.

The main structural type of track roller rolling bearing

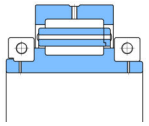
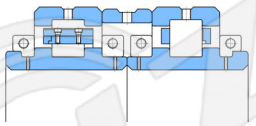
Structure	Type **NUTR**	Type **NNTR**	Type **NUPTR**
Figure			
Inner diameter (mm)	55～140	45～310	35～100
Outer diameter (mm)	130～250	90～500	110～260
Width (mm)	50～120	30～190	30～93
Structural form	The inner ring without rib, with yoke on both sides, clamped by spring ring.	The inner ring without rib, double row full-loaded roller bearing.	The inner ring with single rib, the other side with yoke, clamped by spring ring.

➢Split cylindrical roller bearing

The split cylindrical roller bearing is a cylindrical roller bearing whose inner ring, outer ring and cage are split along the radial direction at a certain angle and the outside of inner ring is tightened with clamping collar, and it is designed and produced on the basis of the integral bearing by special process. It has the characteristics of small working resistance, smooth operation and working temperature up to 180 degrees Celsius, and it is quite applicable to be used in occasions of low rotating speed, heavy load, large impact load and poor sealing performance. The split bearing can be conveniently installed and disassembled, saving time and lowering production costs.

The split bearing are applicable to all industrial fields, and they are mainly used in converter supports, various large conveying equipment, combined casting roll supports, lifts, conveyors, paper machinery and other occasions where the disassembly is difficult.

The main structural type of split cylindrical roller bearing

Structure	Type **N6···D**	Type **ND6···D**
Figure		
Inner diameter (mm)	200～756.2	500～775
Outer diameter (mm)	368.3～994	635～960
Width (mm)	120～292	310～450

■Basic Information

Accuracy	**ZWZ** standard thrust ball bearings are available in accuracy class of ordinary, P6, P5 and P4, which conform to the national standards. Tolerance values are shown in the table in the Preface.
Radial clearance	● **ZWZ** standard single row cylindrical roller bearings are in the radial clearance of basic group, and ZWZ can also offer the bearings in the clearance of Group C3 and Group C4. ● **ZWZ** standard double row cylindrical roller bearings are in the clearance of Group C1. The cylindrical bore bearing can also offer the clearance of Group C2 and Group C3, and the tapered bore bearings can offer clearance of Group C2. ● **ZWZ** standard four-row cylindrical roller bearings are in the clearance of Group C3, and ZWZ can also offer the bearings in the clearance of other groups. ● See table in Preface for standard clearance values. ● Bearing with radial clearance greater than or less than the standard value can also be produced according to user requirements.
Cage type	➢**Cage type:** ● The single row cylindrical roller bearing are mostly made of machined solid cages, pressed cage s, and engineering plastic cages and so on. ● The double row cylindrical roller bearing are mostly made of turned copper cages, and sometimes are made of engineering plastic cages. ● The four-row cylindrical roller bearing are mainly made of turned copper cages, and the large size shall be made of solid pin cages. ➢**Code mark:** ● When the pressed cage is used, the suffix code mark of the cage is J. If the structure of several pressed cage s is different, J, J1, J2... are used to express ● It adopts the brass solid cage, and the suffix code mark of the cage is M; ● When the bearing outer diameter D>400mm, the steel solid cage is used, and suffix code of the cage is not marked. But, in the case of internal guide and external guide, the suffix code and the guide method (A for external guide, B for internal guide) of the cage material shall be marked accordingly. ● The double row cylindrical roller bearing are made of brass solid cage, which is not marked.

Minimum radial load

During the bearing operation, due to the influence of the inertia force of cage & roller and the lubricant, the contact between the roller and the raceway surface will slide, which will cause sliding friction and abrasion on the contact surface. In bearing at high-speed operation, this sliding friction will result in early damage to the bearings, and this phenomenon is usually called light load slip. In order to prevent the light load slip, a certain radial load F_{rmin} must be applied to the bearings.

$$F_{r\min} = K_r\left(6+\frac{4n}{n_j}\right)\left(\frac{D_m}{100}\right)^2$$

Where: F_{rmin}: Minimum load required [N]
n: Bearing rotary speed [r/min]
n_j: Bearing extreme rotary speed when oil lubricated [r/min]
D_m: Bearing average diameter [mm]
K_r: Minimum radial load coefficient

Bearing type	bearing series	K_r
Cylindrical roller bearing	10 series	100
	2, 3, 4 series	150
	22 series	200
	23 series	250
Full-loaded roller Cylindrical roller bearing	18 series	100
	29, 48 series	200
	49 series	250
	22, 30 series	300
	23 series	350
	NNF50	400
	50 series	500

Radial equivalent load

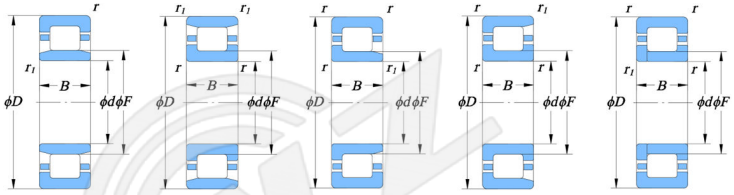
Radial dynamic equivalent load $P = F_r$ [kN]

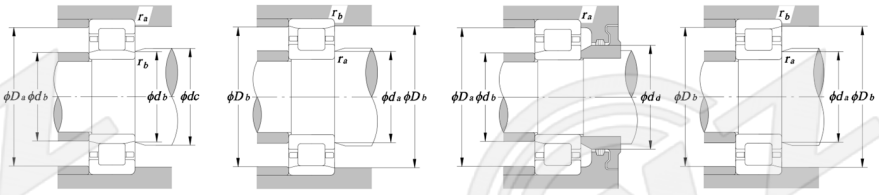
Radial static equivalent load $P_{0r} = F_r$ [kN]

■Supplementary code

Code name	Code description
/C9T	The raceway clearance of two rows in the double row cylindrical roller bearing is different.
DR	Double row split bearing are paired for use
E	Interior design change, reinforced structure. (The raceway size conforms to the current national standard (reinforced type), and the diameter and the length of roller are increased compared with the non-reinforced type.)
FC…ZW	Four row cylindrical roller bearing, single inner ring, double outer ring with double ribs, two rows of rollers lean together.
NB	Narrow inner ring bearing.
NB1	Narrow inner ring bearing, narrow on one side.
NC	Narrow outer ring bearing.
N1	The bearing outer ring has a positioning notch.
N2	The bearing outer ring has two or more symmetrical positioning notches.
Q	Bronze solid cage, digit is added to indicate different materials.
/QR	Four cylindrical roller bearing are combined, and the radial load is evenly distributed.
S	Martensite quenching.
VB	Vibrating screen bearing.
WB	Bearing with extended inner ring (both sides are wide).
WB1	Bearing with extended inner ring (single side is wide).
WC	Wide outer ring bearing.
X	Loose rib roller full-loaded cylinder roller bearing.

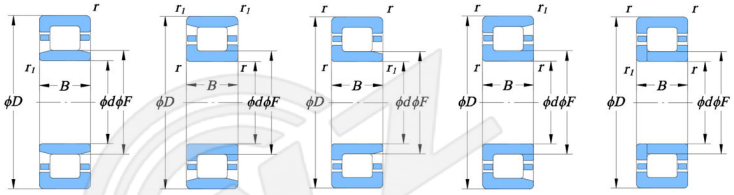
d 17～35mm

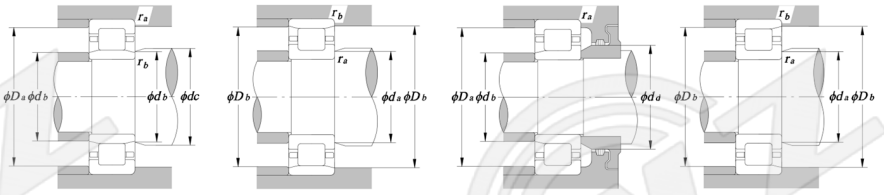




Principal dimensions(mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations		Designations			Abutment and fillet dimensions(mm)									Mass (kg)
d	*D*	*B*	r_{min}	r_{1min}	*F*	*E*	C_r	C_{or}	Grease	Oil	*NU*	*NJ*	*NUP*	*N*	*NF*	d_{amin}	d_{bmin}	d_{bmax}	d_{amax}	d_{amin}	D_{amax}	D_{bmax}	D_{bmin}	r_{amax}	r_{bmax}	(approx.)
17	40	12	0.3	0.6	22	35	16.0	11.3	-	-	NU203E	NJ203E	-	-	-	-	-	-	23	26	-	-	-	0.3	0.6	0.0640
20	47	14	1	0.6	26.5	41.5	28.8	23.2	13000	16000	NU204ETN1	-	NUP204ETN1	-	-	-	24	27	28	30	43	-	-	1	0.6	0.110
	47	18	1	0.6	26.5	41.5	34.2	28.9	13000	16000	NU2204ETYN	-	-	-	-	-	23	25	28	-	43	-	-	1	0.6	0.139
	52	15	1	0.6	27.5	45.5	34.7	26.9	12000	15000	-	-	NUP304ETN1	-	-	-	25	28	-	31	47	-	-	1	0.6	0.158
25	52	15	1	0.6	31.5	46.5	29.0	24.0	11000	13500	NU205EM	NJ205EM	-	-	-	-	29	31	33	35	48	-	-	1	0.6	0.162
	52	15	1	0.6	31.5	46.5	32.9	28.4	11000	13500	NU205ETN1	NJ205ETN1	-	-	-	-	29	31	33	35	48	-	-	1	0.6	0.132
	52	15	1	0.6	31.5	46.5	32.9	28.4	11000	13500	-	-	NUP205E	-	-	-	29	32	-	35	48	-	-	1	0.6	0.159
	52	18	1	0.6	31.5	46.5	38.9	35.3	11000	13500	-	NJ2205EM	-	-	-	-	29	31	-	35	48	-	-	1	0.6	0.188
	52	18	1	0.1	31.5	46.5	38.9	35.3	11000	13500	-	NJ2205ETN1	-	-	-	-	28	29	-	35	48	-	-	1	0.1	0.162
	52	18	1	0.6	31.5	46.5	38.9	35.3	11000	13500	NU2205ETN1	-	NUP2205ETN1	-	-	-	28	31	33	35	48	-	-	1	0.6	0.166
	62	17	1.1	1.1	34	54	45.8	37.4	9900	13000	NU305ETN1	NJ305ETN1	-	-	-	-	30	33	35	38	57	-	-	1.1	1.1	0.238
	62	17	1.1	1.1	34	54	42.6	34.0	9900	13000	NU305EM	NJ305EM	NUP305EM	-	-	-	30	33	35	38	57	-	-	1.1	1.1	0.266
	62	24	1.1	1.1	35	53	50.4	45.0	9500	12000	-	NJ2305M	-	-	-	-	30	33	-	39	57	-	-	1.1	1.1	0.453
30	55	13	1	0.6	36.5	48.5	20.6	18.4	12000	15000	NU1006M	-	-	-	-	-	33	35	38	-	51	-	-	1	0.6	0.138
	55	13	1	0.6	36.5	48.5	22.7	20.8	12000	15000	NU1006TN1	-	-	-	-	-	33	35	38	-	51	-	-	1	0.6	0.119
	62	16	1	0.6	37.5	55.5	43.0	37.4	9500	12000	NU206EM	NJ206EM	-	-	-	-	34	37	39	41	58	-	-	1	0.6	0.247
	62	16	1	0.6	37.5	55.5	43.0	37.4	9500	12000	NU206ETN1	NJ206ETN1	-	-	-	-	34	37	39	41	58	-	-	1	0.6	0.198
	62	16	1	0.6	37.5	55.5	43.0	37.4	9500	12000	-	NJ206E	NUP206E	-	-	-	34	37	-	41	58	-	-	1	0.6	0.234
	62	20	1	0.6	37.5	55.5	53.8	49.8	9500	12000	-	NJ2206E	-	-	-	-	34	37	-	41	58	-	-	1	0.6	0.295
	62	20	1	0.6	37.5	55.5	53.8	49.8	9500	12000	-	NJ2206EM	-	-	-	-	33	37	-	41	58	-	-	1	0.6	0.299
	62	20	1	0.6	37.5	55.5	53.8	49.8	9500	12000	NU2206ETN1	NJ2206ETN1	-	-	-	-	33	37	39	41	58	-	-	1	0.6	0.263
	70	18(19.6)	1.1	0.6	40	62	58.4	50.1	9000	11000	-	NJ306X3WB	-	-	-	-	33	39	-	45	65	-	-	1.1	0.6	0.342
	72	19	1.1	1.1	42	62	49.3	42.6	9000	11000	-	-	-	N306M	-	36	-	-	-	-	-	67.2	65.2	1.1	1.1	0.403
	72	19	1.1	1.1	40.5	62.5	58.5	50.2	9000	11000	-	NJ306E	-	-	-	-	35	41	-	44	67	-	-	1.1	1.1	0.407
	72	19	1.1	1.1	40.5	62.5	54.8	46.1	9000	11000	NU306EM	NJ306EM	-	-	-	-	35	38	42	44	67	-	-	1.1	1.1	0.413
	72	19	1.1	0.5	40.5	62.5	58.5	50.2	9000	11000	-	NJ306ENR	-	-	-	-	35	38	-	44	67	-	-	1.1	0.3	0.417
	72	19	1.1	1.1	40.5	62.5	58.5	50.2	9000	11000	-	NJ306ETN1	-	-	-	-	35	38	-	44	67	-	-	1.1	1.1	0.372
	72	27	1.1	1.1	40.5	62.5	76.9	71.2	9000	11000	NU2306EM	-	NUP2306EM	-	-	-	35	39	42	45	67	-	-	1.1	1.1	0.592
	72	27	1.1	1.1	42	62	67.5	64.0	9000	11000	-	-	NUP2306M	-	-	-	33	42	-	46	67	-	-	1.1	1.1	0.585
	72	27	(3)1.1	0.5	40.5	62.5	76.9	71.2	9000	11000	-	NJ2306EM	-	-	-	-	38	39	-	44	67	-	-	-	0.3	0.605
	72.046	23	1.1	1.1	40.5	62.5	66.1	58.6	9000	11000	-	-	-	-	NF306X3EM	36	-	-	-	-	-	67.2	61.7	1.1	1.1	0.502
	90	23	1.5	1.5	45	73	73.7	60.1	7500	9000	-	NJ406M	-	-	-	-	36	43	-	51	85	-	-	1.5	1.5	0.882
35	62	14	1	0.6	42	55	24.4	22.6	9000	11000	NU1007M	-	-	-	-	-	38	41	43	-	58	-	-	1	0.6	0.173
	62	14	1	0.6	42	55	26.7	25.4	9000	11000	NU1007TN1	-	-	-	-	-	38	41	43	-	58	-	-	1	0.6	0.156
	72	17	1.1	0.6	44	64	52.3	46.6	8500	10000	NU207EM	NJ207EM	-	N207EM	-	41	38	43	45	49	67	69.2	66.4	1.1	0.6	0.333
	72	17	1.1	0.6	44	64	55.3	50.2	8500	10000	-	NJ207E	-	-	-	-	40	43	-	49	67	-	-	1.1	0.6	0.333

d 35～40mm



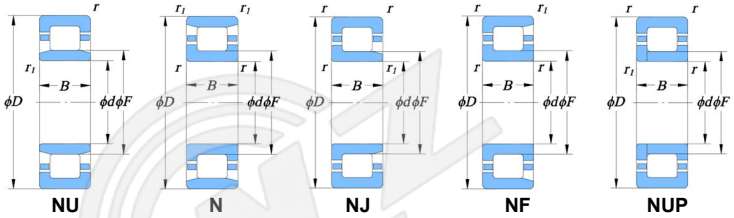


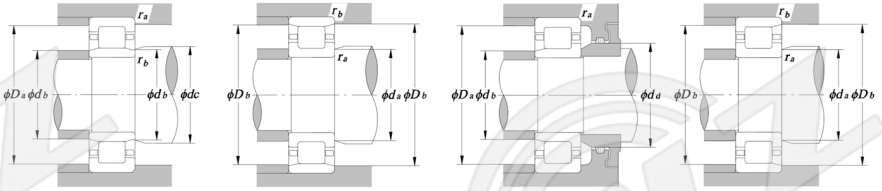
Principal dimensions(mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations	
d	*D*	*B*	r_{min}	r_{1min}	*F*	*E*	C_r	C_{or}	Grease	Oil	*NU*	*NJ*
35	72	17	1.1	0.6	44	64	55.3	50.2	8500	10000	-	NJ207ETN1
	72	21	1.1	0.6	44	64	64.1	60.6	8500	10000	NU2207X2ETN1	-
	72	23	1.1	0.6	44	64	67.8	65.3	8500	10000	NU2207EM	NJ2207EM
	72	23	1.1	0.6	44	64	67.8	65.3	8500	10000	-	NJ2207ETN1
	72	23	1.1	0.6	44	64	67.8	65.3	8500	10000	-	-
	80	21	1.5	1.1	46.8	67.8	61.7	56.6	8000	9500	-	-
	80	21	1.5	1.1	46.2	70.2	73.3	65.4	8000	9500	NU307E	NJ307E
	80	21	1.5	1.1	46.2	70.2	73.3	65.4	8000	9500	NU307ENRM	NJ307ENRM
	80	21	1.5	1.1	46.2	70.2	73.3	65.4	8000	9500	NU307M	NJ307M
	80	21	1.5	1.1	46.2	70.2	77.8	70.8	8000	9500	NU307EMA	-
	80	21	1.5	1.1	46.2	70.2	73.3	65.4	8000	9500	NU307EQ1	-
	80	21	1.5	1.1	46.2	70.2	73.3	65.4	8000	9500	-	-
	80	21	1.5	1.5	46.2	70.2	77.8	70.8	8000	9500	-	-
	80	31	1.5	1.1	46.2	68.2	102	100	7000	8500	-	NJ2307E
	80	31	1.5	1.1	46.2	70.2	102	101	7000	8500	NU2307EM	NJ2307EM
	80	31	1.5	1.1	46.2	68.2	82.4	79.7	7000	8500	-	NJ2307M
	100	25	1.5	1.5	53	83	91.0	78.1	6700	8000	-	NJ407M
38	83	25	1.1	1.1	48.5	72.5	76.9	69.8	7500	9000	-	-
40	68	15	1	0.6	47	61	26.8	24.9	9500	12000	NU1008M	-
	68	15	1	0.6	47	61	29.5	28.3	9500	12000	NU1008TN1	-
	80	18	1.1	1.1	49.5	71.5	61.3	55.4	7500	9000	NU208EM	NJ208EM
	80	18	1.1	1.1	49.5	71.5	61.3	55.4	7500	9000	NU208E	NJ208E
	80	18	1.1	1.1	49.5	71.5	61.3	55.4	7500	9000	NU208ETN1	NJ208ETN1
	80	18	1.1	1.1	49.5	71.5	61.3	55.4	7500	9000	-	-
	80	23	1.1	1.1	49.5	71.5	79.5	77.6	7500	9000	NU2208EM	NJ2208EM
	80	23	1.1	1.1	49.5	71.5	79.5	77.6	7500	9000	NU2208ETN1	-
	90	23	1.5	1.5	52	80	90.4	80.4	6700	8000	-	NJ308ETN1
	90	23	1.5	1.5	52	80	90.4	80.4	6700	8000	-	-
	90	23	1.5	1.5	52	80	90.4	80.4	6700	8000	-	NJ308E
	90	23	1.5	1.5	52	80	90.4	80.4	6700	8000	-	NJ308EJC
	90	23	1.5	1.5	52	80	90.4	80.4	6700	8000	NU308EM	NJ308EM
	90	23	1.5	1.5	52	80	90.4	80.4	6700	8000	-	-
	90	33	1.5	1.5	52	80	115	110	6300	7500	-	NJ2308E
	90	33	1.5	1.5	52	80	115	110	6300	7500	-	NJ2308ETN1
	90	33	1.5	1.5	52	80	124	121	6300	7500	NU2308E	-
	90	33	1.5	1.5	52	80	108	100	6300	7500	NU2308EM	-

Designations			Abutment and fillet dimensions(mm)										Mass (kg)
NUP	*N*	*NF*	d_{amin}	d_{bmin}	d_{bmax}	d_{cmin}	d_{dmin}	D_{amax}	D_{bmax}	D_{bmin}	r_{amax}	r_{bmax}	(approx.)
-	-	-	-	38	43	-	49	67	-	-	1.1	0.6	0.303
-	-	-	-	38	43	45	-	67	-	-	1.1	0.6	0.358
-	-	-	-	38	43	45	49	67	-	-	1.1	0.6	0.450
-	-	-	-	38	43	-	49	67	-	-	1.1	0.6	0.404
NUP2207E	-	-	-	40	44	-	49	67	-	-	1.1	0.6	0.444
-	NCL307E	-	41	-	-	-	-	-	74.6	69.4	1.5	1.1	0.523
NUP307E	-	-	-	41	45	47	51	75	-	-	1.5	1.1	0.547
-	-	-	-	41	45	47	51	75	-	-	1.5	1.1	0.614
-	N307M	NF307M	42	40	45	47	51	75	75.2	73.6	1.5	1.1	0.604
-	-	-	-	40	45	47	-	75	-	-	1.5	1.1	0.547
-	-	-	-	40	45	47	-	75	-	-	1.5	1.1	0.591
NUP307ETN1	-	NF307ETN1	42	41	46	-	51	75	74.6	70.1	1.5	1.1	0.522
NUP307ENR	-	-	-	41	46	-	51	75	-	-	1.5	1.5	0.584
-	-	-	-	41	45	-	51	75	-	-	1.5	1.1	0.794
-	-	-	-	40	45	47	51	75	-	-	1.5	1.1	0.816
-	-	-	-	40	44	-	51	75	-	-	1.5	1.1	0.833
-	-	-	-	41	52	-	58	95	-	-	1.5	1.5	1.10
NUP6/38X2NM	-	-	-	42	49	-	53	78	-	-	1.1	1.1	0.705
-	-	-	-	43	46	48	-	64	-	-	1	0.6	0.231
-	-	-	-	43	46	48	-	64	-	-	1	0.6	0.183
NUP208EM	N208EM	-	46	45	49	51	54	75	75.2	72.7	1.1	1.1	0.451
NUP208E	-	-	-	45	49	51	54	75	-	-	1.1	1.1	0.436
NUP208ETN1	-	NF208ETN1	46	45	50	51	55	75	75.2	70.9	1.1	1.1	0.394
NUP208NEM	-	-	-	45	50	-	55	75	-	-	1.1	1.1	0.460
-	-	-	-	45	48	51	55	75	-	-	1.1	1.1	0.563
-	-	-	-	45	48	51	-	75	-	-	1.1	1.1	0.487
-	N308ETN1	NF308ETN1	47	46	50	-	58	85	84.6	78.8	1.5	1.5	0.664
-	NCL308E	-	47	-	-	-	-	-	84.6	81.6	1.5	1.5	0.692
NUP308E	-	NF308E	47	46	50	-	58	85	84.6	81.4	1.5	1.5	0.754
-	-	-	-	46	50	-	58	85	-	-	1.5	1.5	0.718
NUP308EM	-	NF308EM	47	46	50	53	58	85	84.6	78.8	1.5	1.5	0.812
NUP308ETN1	-	-	-	46	50	-	58	85	-	-	1.5	1.5	0.672
-	-	-	-	46	50	-	58	85	-	-	1.5	1.5	1.10
-	-	-	-	46	50	-	58	85	-	-	1.5	1.5	0.983
-	-	-	-	46	50	53	-	85	-	-	1.5	1.5	1.06
-	-	-	-	46	50	53	-	85	-	-	1.5	1.5	1.01

ZWZ

d 40～45mm

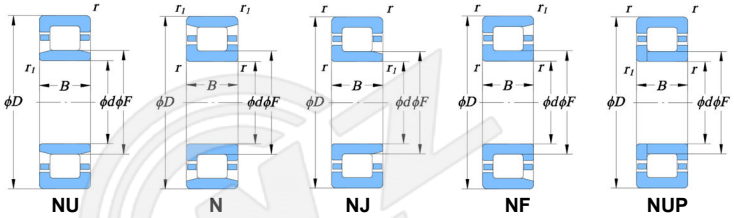


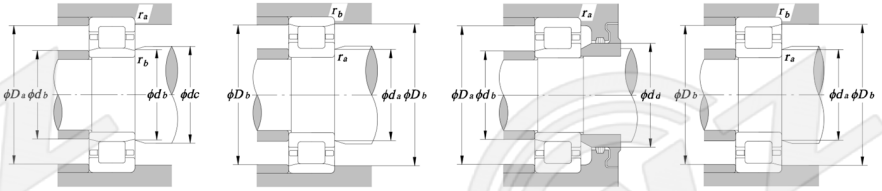


Principal dimensions(mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations	
d	*D*	*B*	r_{smin}	r_{1smin}	*F*	*E*	C_r	C_{or}	Grease	Oil	*NU*	*NJ*
40	90	33	1.5	1.5	52	80	115	110	6300	7500	-	-
	90	23(19)	1.5	1.5	52	80	90.4	80.4	6700	8000	-	NJ308EB1JC
	94	30	5	1.5	52	80	115	110	6500	8000	-	NJ2308X3E
	94	30	5	1.5	52	80	90.4	80.4	6500	8000	-	NJ2308X3M
45	75	16	1	0.6	52.5	68.5	48.4	50.6	7200	8900	NU1009ETN1	-
	75	16	1	0.6	52.5	67.5	35.1	34.8	7200	8900	NU1009TN1	-
	75	16	1	0.6	52.5	68.5	33.6	32.9	7200	8900	NU1009M	-
	80.036	16	1	1	57.5	72.5	44.0	47.9	6700	8000	-	NJ609M
	85	19	1.1	1.1	54.5	76.5	69.4	66.4	6700	8000	NU209EM	NJ209EM
	85	19	1.1	1.1	54.5	76.5	69.4	66.4	6700	8000	NU209ETN1	-
	85	19	1.1	1.1	54.5	76.5	69.4	66.4	6700	8000	-	NJ209E
	85	19	1.1	1.1	55	75	50.7	46.9	6700	8000	-	NJ209M
	85	19	1.1	1.1	55	75	53.4	50.3	6700	8000	-	NJ209TN1
	85	23	1.1	1.1	54.5	76.5	79.4	78.9	5600	6700	-	NJ2209E
	85	23	1.1	1.1	54.5	76.5	83.7	84.6	5600	6700	NU2209EM	NJ2209EM
	85	23	1.1	1.1	54.5	76.5	83.7	84.6	5600	6700	NU2209ETN1	-
	85	23	1.1	1.1	54.5	76.5	83.7	84.6	5600	6700	-	-
	85	30.16	1.7	1.1	55.52	75.52	102	116	6300	7500	NU3209X2M	-
	100	25	1	0.5	56.4	88.4	116	104	6300	7500	-	-
	100	25	1.5	1.5	58.5	88.5	103	93.3	6300	7500	NU309EM	NJ309EM
	100	25	1.5	1.5	58.5	88.5	109	101	6300	7500	NU309ETN1	-
	100	25	1.5	1.5	58.5	86.5	85.6	76.3	6300	7500	-	-
	100	25	1.5	1.5	58.5	86.5	85.6	76.3	6300	7500	NU309M	-
	100	25	1.5	1.5	58.5	88.5	103	93.3	6300	7500	-	-
	100	25	1.5	1.5	58.5	88.5	103	93.3	6300	7500	-	-
	100	25	1.5	1.5	58.5	88.5	109	101	6300	7500	NU309E	NJ309E
	100	25	1.5	1.5	58.5	88.5	109	101	6300	7500	-	NJ309ETN1
	100	25	1.5	1.5	56.4	88.4	116	104	6300	7500	NU309NRB1J	-
	100	25	1.5	1.5	58.5	88.5	109	101	6300	7500	-	-
	100	31	4.5	1.5	56	88	124	113	6300	7500	-	-
	100	36	1.5	1.5	58.5	88.5	153	156	5600	6700	NU2309E	NJ2309E
	100	36	1.5	1.5	58.5	88.5	153	156	5600	6700	NU2309EM	NJ2309EM
	100	40	1	1	58.5	88.5	174	183	6000	7400	-	NJ2309X2E
	100	40	1	1	58.5	88.5	177	187	6000	7400	-	-
	100	27.5(25)	1.5	1.5	58.5	88.5	109	101	6300	7500	-	-
	120	29	2	2	64.5	100.5	128	113	5600	6700	NU409M	NJ409M

Designations			Abutment and fillet dimensions(mm)										Mass (kg)
NUP	*N*	*NF*	d_{amin}	d_{bmin}	d_{bmax}	d_{cmin}	d_{dmin}	D_{amax}	D_{bmax}	D_{bmin}	r_{amax}	r_{bmax}	(approx.)
NUP2308EM	-	-	-	46	52	-	58	85	-	-	1.5	1.5	1.09
-	-	-	-	46	52	-	58	85	-	-	1.5	1.5	0.681
-	-	-	-	52	53	-	58	89	-	-	4	1.5	1.12
-	-	-	-	52	53	-	58	89	-	-	4	1.5	1.08
-	-	-	-	49	52	54	-	71	-	-	1	0.6	0.258
-	-	-	-	49	51	54	-	71	-	-	1	0.6	0.246
-	-	-	-	49	51	54	-	71	-	-	1	0.6	0.279
-	-	-	-	49	57	-	63	76	-	-	1	1	0.363
NUP209EM	N209EM	NF209EM	51	50	53	56	60	80	80.2	75.4	1.1	1.1	0.502
-	-	NF209ETN1	51	50	53	56	-	80	80.2	75.4	1.1	1.1	0.438
NUP209E	-	-	-	50	53	-	60	80	-	-	1.1	1.1	0.495
-	-	-	-	50	53	-	61	80	-	-	1.1	1.1	0.487
-	-	-	-	50	53	-	61	80	-	-	1.1	1.1	0.439
NUP2209E	-	-	-	50	53	-	60	80	-	-	1.1	1.1	0.645
-	-	-	-	50	53	56	60	80	-	-	1.1	1.1	0.642
-	-	-	-	50	53	56	-	80	-	-	1.1	1.1	0.571
NUP2209EN	-	-	-	50	55	-	60	80	-	-	1.1	1.1	0.596
-	-	-	-	51	54	57	-	80	-	-	1.5	1.1	0.831
NUP309ENB	-	-	-	49	56	-	65	96	-	-	1	0.3	1.03
-	N309EM	-	52	51	57	60	64	95	94.6	86.8	1.5	1.5	0.980
NUP309ETN1	N309ETN1	-	52	51	57	60	65	95	94.6	92.3	1.5	1.5	0.876
-	N309J	-	55	-	-	-	-	-	94.6	91.6	1.5	1.5	0.820
-	N309M	-	55	51	57	60	-	95	94.6	91.6	1.5	1.5	0.956
-	NCL309E	-	52	-	-	-	-	-	94.6	90.1	1.5	1.5	0.903
-	NCL309EN	-	52	-	-	-	-	-	94.6	90.1	1.5	1.5	0.872
NUP309E	-	-	-	51	57	60	65	95	-	-	1.5	1.5	1.00
-	-	NF309ETN1	52	51	57	-	64	95	94.6	92.5	1.5	1.5	0.884
-	-	-	-	51	57	57	-	95	-	-	1.5	1.5	0.919
NUP309ENJC	-	-	-	51	59	-	65	95	-	-	1.5	1.5	0.939
-	-	NF2309X2J	60	-	-	-	-	-	94.6	91.2	3.5	1.5	1.12
-	-	-	-	51	57	60	64	95	-	-	1.5	1.5	1.44
NUP2309EM	-	-	-	51	57	60	65	95	-	-	1.5	1.5	1.47
-	-	-	-	49	57	-	65	96	-	-	1	1	1.68
NUP2309X2ENB	-	-	-	49	59	-	65	96	-	-	1	1	1.71
NUP309EWB1NR	-	-	-	51	59	-	65	95	-	-	1.5	1.5	0.942
-	N409M	-	53	52	63	66	70	113	113.2	104.3	2	2	1.77

d 45～55mm





Principal dimensions(mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations	
d	*D*	*B*	r_{min}	r_{1min}	*F*	*E*	C_r	C_{or}	Grease	Oil	*NU*	*NJ*
45	120	29	2	2	63.5	100.5	147	131	5600	6700	-	-
50	80	16	1	0.6	57.5	72.5	45.7	50.3	8500	10000	NU1010M	NJ1010M
	80	16	1	0.6	57.5	72.5	45.7	50.3	8500	10000	-	NJ1010TN1
	80	16	1	1	57.5	72.5	44.0	47.9	8500	10000	-	-
	90	20	1.1	1.1	59.5	81.5	72.6	71.9	6300	7500	HNU210J5A	-
	90	20	1.1	1.1	59.5	81.5	72.6	71.9	6300	7500	NU210EM	NJ210EM
	90	20	1.1	1.1	60.4	80.4	58.3	57.8	6300	7500	NU210M	-
	90	20	1.1	1.1	59.5	81.5	72.6	71.9	6300	7500	NU210ETN1	NJ210ETN1
	90	20	1.1	1.1	60.4	80.4	58.3	57.8	6300	7500	NU210Q1	-
	90	20	1.1	1.1	59.5	81.5	72.6	71.9	6300	7500	-	-
	90	23	1.1	1.1	59.5	81.5	87.6	91.5	6300	7500	NU2210EM	NJ2210EM
	90	23	1.1	1.1	59.5	81.5	87.6	91.5	6300	7500	NU2210ETN1	NJ2210ETN1
	90	23	1.1	1.1	59.5	81.5	87.6	91.5	6300	7500	NU2210E	-
	90	30.16	1.7	1.1	60.45	80.45	106	125	6300	7500	NU3210X2M	-
	100	27(32)	2	2	65	97	124	116	5000	6000	NU310EWBTN1	-
	110	27	2	2	65	97	124	116	5000	6000	-	-
	110	27	2	2	65	97	124	116	5000	6000	-	-
	110	27	2	2	65	97	116	107	5000	6000	NU310EM	NJ310EM
	110	27	2	2	65	95	97.8	88.8	5000	6000	NU310M	NJ310M
	110	27	2	2	65	97	124	116	5000	6000	-	NJ310E
	110	27	2	2	65	97	124	116	5000	6000	NU310ETN1	NJ310ETN1
	110	27	2	2	65	95	104	96.2	5000	6000	NU310TN1	NJ310TN1
	110	27	2	2	65	97	124	116	5000	6000	-	-
	110	40	2	2	65	97	181	190	5000	6000	-	NJ2310E
	110	40	2	2	65	97	181	190	5000	6000	NU2310EM	NJ2310EM
	110	40	2	2	65	97	181	190	5000	6000	NU2310ETN1	NJ2310ETN1
	130	31	2.1	2.1	70	110	156	140	5000	6000	NU410	NJ410
	130	31	2.1	2.1	70	110	156	140	5000	6000	NU410M	NJ410M
	130	31	2.1	2.1	70	110	156	140	5000	6000	NU410TN1	NJ410TN1
55	90	18	1.1	1	64.5	80.5	43.9	47.3	7000	8500	NU1011M	-
	90	18	1.1	1	64.5	80.5	43.9	47.3	7000	8500	NU1011TN1	-
	90	18	1.1	1.1	63.5	81.5	50.9	52.7	7000	8500	-	-
	100	21	1.5	1.1	66	90	94.9	98.7	6000	7000	NU211ETN1	NJ211ETN1
	100	21	1.5	1.5	66	90	94.9	98.7	6000	7000	NU211EM	NJ211EM
	100	21	1.5	1.5	66	90	94.9	98.7	6000	7000	NU211E	NJ211E
	100	21	1.5	1.5	66.5	88.5	75.5	77.7	6000	7000	-	-

Designations			Abutment and fillet dimensions(mm)										Mass (kg)
NUP	*N*	*NF*	d_{amin}	d_{bmin}	d_{bmax}	d_{cmin}	d_{dmin}	D_{amax}	D_{bmax}	D_{bmin}	r_{amax}	r_{bmax}	(approx.)
NUP409ENB	-	-	-	52	64	-	70	113	-	-	2	2	1.86
-	-	-	-	54	57	59	64	76	-	-	1	0.6	0.307
-	-	-	-	54	57	-	64	76	-	-	1	0.6	0.279
-	N1010KM	-	55	-	-	-	-	-	76.2	73.5	1	1	0.309
-	-	-	-	55	58	61	-	84	-	-	1.1	1.1	0.534
NUP210EM	N210EM	NF210EM	56	55	58	61	66	85	85.2	83.8	1.1	1.1	0.596
-	N210M	NF210M	56	55	59	61	-	85	85.2	82	1.1	1.1	0.563
-	-	-	-	55	58	61	66	85	-	-	1.1	1.1	0.496
-	-	-	-	55	59	61	-	85	-	-	1.1	1.1	0.557
NUP210E	-	-	-	55	60	-	66	85	-	-	1.1	1.1	0.606
-	-	-	-	55	58	61	66	85	-	-	1.1	1.1	0.643
-	-	-	-	55	58	61	66	85	-	-	1.1	1.1	0.571
NUP2210E	-	-	-	55	58	61	66	85	-	-	1.1	1.1	0.626
-	-	-	-	56	59	61	-	85	-	-	1.5	1.1	0.902
-	-	-	-	57	63	66	-	93	-	-	2	2	1.19
NUP310ENR	-	-	-	53	65	-	72	103	-	-	2	2	1.20
NUP310ENTN1	-	-	-	53	65	-	71	103	-	-	2	2	1.20
NUP310EM	N310EM	-	58	57	63	66	71	103	103.2	101	2	2	1.33
NUP310M	N310M	NF310M	58	57	63	66	71	103	103.2	97.4	2	2	1.34
NUP310E	-	-	-	57	63	-	71	103	-	-	2	2	1.36
NUP310ETN1	-	-	-	57	63	66	71	103	-	-	2	2	1.17
-	-	-	-	57	63	66	71	103	-	-	2	2	1.12
NUP310ENJC	-	-	-	57	65	-	71	103	-	-	2	2	1.24
NUP2310E	-	-	-	57	63	-	71	103	-	-	2	2	1.97
-	-	-	-	57	63	66	71	103	-	-	2	2	1.91
-	-	-	-	57	63	66	71	103	-	-	2	2	1.73
-	N410	-	58	-	-	-	-	-	113.2	109.7	2	2	2.12
-	N410M	-	60	59	68	71	76	121	121.2	115.4	2	2	2.21
-	-	-	60	59	68	71	76	121	121.2	115.4	2	2	2.01
-	N1011M	-	61	59	68	71	76	121	85.4	84.1	1.1	1	0.466
-	-	-	61	60	63	66	-	85	85.4	84.1	1.1	1	0.403
NUP1011EM	-	-	-	60	63	66	-	85	-	-	1.1	1.1	0.485
NUP211ETN1	N211ETN1	-	62	60	64	-	71	85	94.6	91	1.5	1.1	0.670
NUP211EM	N211EM	-	62	61	66	67	71	95	94.6	91.2	1.5	1.5	0.756
NUP211E	-	NF211E	62	61	65	67	71	95	94.6	91.2	1.5	1.5	0.752
-	-	NF211M	62	61	65	67	71	95	94.6	92.3	1.5	1.5	0.806

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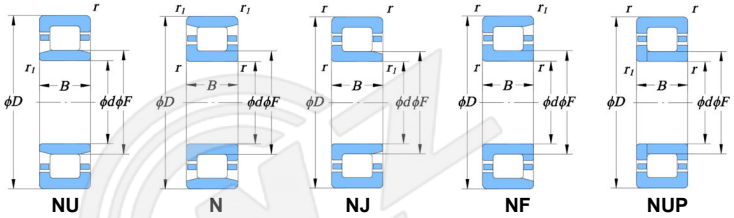
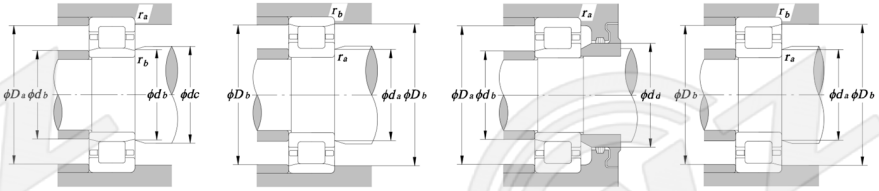
d 55～60mm

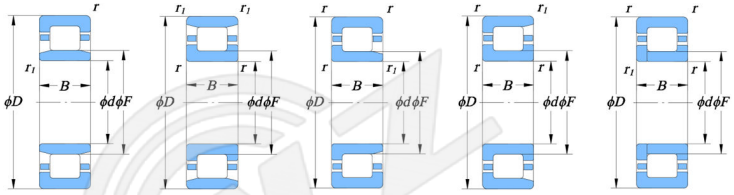


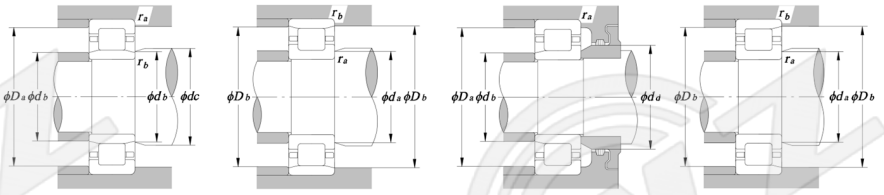


Principal dimensions(mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations		Designations			Abutment and fillet dimensions(mm)									Mass (kg)
d	*D*	*B*	r_{min}	r_{1min}	*F*	*E*	C_r	C_{or}	Grease	Oil	*NU*	*NJ*	*NUP*	*N*	*NF*	d_{amin}	d_{bmin}	d_{bmax}	d_{cmin}	d_{dmin}	D_{amax}	D_{bmax}	D_{bmin}	r_{amax}	r_{bmax}	(approx.)
55	100	25	1.5	1.1	66	90	112	122	6000	7000	NU2211EM	NJ2211EM	-	-	-	62	-	-	-	-	-	94.6	92.3	1.5	1.1	0.765
	100	25	1.5	1.1	66	90	112	122	6000	7000	-	NJ2211ETN1	-	-	-	-	61	65	67	71	95	-	-	1.5	1.1	0.666
	100	25	1.5	1.1	66	90	112	122	6000	7000	-	-	NUP2211EM	-	-	-	61	65	-	71	95	-	-	1.5	1.1	0.790
	100	33.3	1.5	1.1	66.9	88.9	125	148	4800	7000	-	-	-	N3211M	-	62	61	66	-	71	95	95.2	90.9	1.5	1.1	1.20
	100	33.34	1.5	1.1	66.9	88.9	125	148	4800	5600	NU5211XP	-	-	-	-	62	-	-	-	-	-	95.2	90.9	1.5	1.1	1.21
	100	33.34	2.2	1.5	66.9	88.9	125	148	4800	5600	NU3211X2M	-	-	-	-	-	60	65	68	-	95	-	-	2	1.5	1.21
	120	29	2	0.6	70.5	104.5	123	113	4800	5600	-	NJ311TN1	-	-	-	-	62	69	-	77	113	-	-	2	0.6	1.45
	120	29	2	2	70.5	106.5	152	144	4800	5600	NU311E	NJ311E	NUP311E	N311E	-	63	62	69	72	77	113	113.2	110.5	2	2	1.67
	120	29	2	2	70.5	106.5	143	133	4800	5600	NU311EM	-	-	N311EM	-	63	62	69	72	-	113	113.2	110.5	2	2	1.62
	120	29	2	2	70.5	106.5	152	144	4800	5600	NU311ETN1	-	NUP311ETN1	N311ETN1	-	63	62	69	72	77	113	113.2	110.5	2	2	1.47
	120	29	2	2	70.5	104.5	123	113	4800	5600	-	-	-	N311J	-	63	-	-	-	-	-	113.2	109.7	2	2	1.45
	120	29	2	2	70.5	104.5	123	113	4800	5600	NU311M	NJ311M	NUP311M	N311M	NF311M	63	62	69	72	77	113	113.2	109.7	2	2	1.75
	120	29	2	2	70.5	104.5	123	113	4800	5600	NU311TN1	-	-	-	-	-	62	69	72	-	113	-	-	2	2	1.44
	120	29	2	2	70.5	106.5	152	144	4800	5600	-	-	NUP311EN	-	-	-	58	71	-	77	113	-	-	2	2	1.68
	120	29	2	2	70.5	106.5	152	144	4800	5600	-	-	NUP311ENJC	-	-	-	58	71	-	77	113	-	-	2	2	1.54
	120	29	2	2	68.75	104.75	152	144	4800	5600	-	-	NUP311NJC	-	-	-	62	69	-	76	113	-	-	2	2	1.65
	120	43	2	2	70.5	106.5	222	235	4800	5600	NU2311E	NJ2311E	-	N2311E	-	63	62	69	72	76	113	114.6	109	2	2	2.59
	120	43	2	2	70.5	106.5	222	235	4800	5600	NU2311ETN1	-	-	-	-	-	62	69	72	-	113	-	-	2	2	2.41
	120	43	2	2	70.5	104.5	164	163	4800	5600	NU2311M	-	-	-	-	-	62	69	72	-	113	-	-	2	2	2.43
	140	33	2.1	2.1	77.2	117.2	168	156	4800	5600	NU411M	NJ411M	-	N411M	-	65	64	75	78	84	131	131.2	122.6	2	2	2.88
60	95	18	1.1	1	69.5	85.5	54.6	63.9	6700	8000	NU1012M	-	NUP1012M	N1012M	-	66	65	68	71	77	90	90.4	88.7	1.1	1	0.512
	95	18	1.1	1	69.5	85.5	54.6	63.9	6700	8000	-	-	-	N1012TN1	-	66	-	-	-	-	-	90.4	88.7	1.1	1	0.387
	110	22	1.5	1.5	72	100	95.9	92.4	5300	6300	NU212EM	NJ212EM	-	N212EM	-	67	66	71	73	80	105	104.6	101.4	1.5	1.5	0.920
	110	22	1.5	1.5	73.5	97.5	82.7	84.9	5300	6300	NU212M	NJ212M	-	N212M	NF212M	67	66	72	75	81	105	104.6	101.7	1.5	1.5	0.944
	110	22	1.5	1.5	72	100	106	106	5300	6300	-	NJ212E	NUP212E	-	-	-	66	71	-	80	105	-	-	1.5	1.5	0.960
	110	22	1.5	1.5	72	100	106	106	5300	6300	NU212ETN1	NJ212ETN1	-	-	-	-	66	71	73	80	105	-	-	1.5	1.5	0.831
	110	22	1.5	1.5	73.5	97.5	82.7	84.9	5300	6300	-	-	NUP212NM	-	-	-	66	74	-	81	105	-	-	1.5	1.5	0.978
	110	28	1	0.5	72	100	143	155	5300	6300	-	-	NUP2212ENJ	-	-	-	65	72	-	79	105	-	-	1	0.3	1.12
	110	28	1.5	1.5	72	100	136	145	5300	6300	NU2212EM	NJ2212EM	-	-	-	-	66	71	73	80	105	-	-	1.5	1.5	1.22
	110	28	1.5	1.5	72	100	136	145	5300	6300	-	NJ2212ETN1	-	-	-	-	66	71	-	80	105	-	-	1.5	1.5	1.07
	110	28	1.5	1.5	72	100	136	145	5300	6300	-	-	NUP2212EM	-	-	-	66	72	-	79	105	-	-	1.5	1.5	1.24
	110	28	1.5	1.5	72	100	143	155	5300	6300	-	-	NUP2212EN	-	-	-	65	72	-	79	105	-	-	1.5	1.5	1.24
	110	28	1.5	1.5	73.5	97.5	116	131	5300	6300	-	-	NUP2212M	-	-	-	66	74	-	81	105	-	-	1.5	1.5	1.27
	110	36.51	1.5	1.5	72.39	98.39	158	185	4800	5600	NU3212X2M	-	-	-	-	-	67	71	73	-	105	-	-	1.5	1.5	1.75
	110	36.51	1.5	1.5	72.39	98.39	158	185	4800	5600	NU5212XP	-	-	-	-	-	66	71	73	-	105	-	-	1.5	1.5	1.75
	110	28(60)	1.5	1.5	73.5	97.5	116	131	5300	6300	NU2212WBM	-	-	-	-	-	66	71	75	-	105	-	-	1.5	1.5	1.57

ZWZ

d 60～65mm

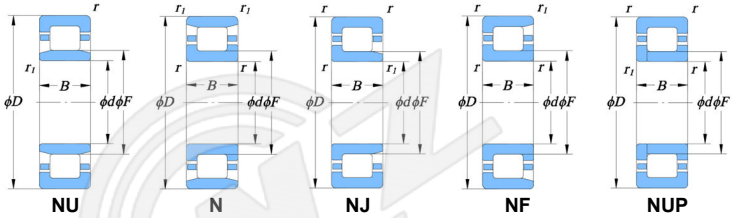


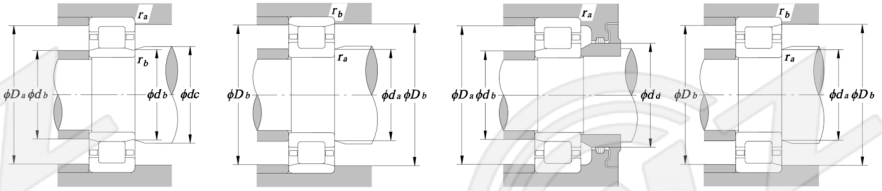


Principal dimensions(mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations	
d	*D*	*B*	r_{min}	r_{1min}	*F*	*E*	C_r	C_{or}	Grease	Oil	NU	NJ
60	116	28	1.5	1.5	72	100	143	155	4900	6100	-	-
	130	31	2.1	2.1	77	115	169	162	4300	5000	NU312EM	NJ312EM
	130	31	2.1	2.1	77	115	169	162	4300	5000	NU312ETN1	-
	130	31	2.1	2	77	113	146	139	4300	5000	NU312M	NJ312M
	130	31	2.1	2.1	77	113	146	139	4300	5000	-	NJ312TN1
	130	31	2.1	2.1	77	115	169	162	4300	5000	NU312E	NJ312E
	130	31	2.1	2.1	77	113	146	139	4300	5000	NU312Q1	-
	130	46	2.1	2.1	77	115	248	267	4300	5000	NU2312E	NJ2312E
	130	46	2.1	2.1	77	113	198	205	4300	5000	NU2312M	NJ2312M
	130	46	2.1	2.1	77	115	248	267	4300	5000	NU2312EM	NJ2312EM
	130	46	2.1	2.1	77	115	248	267	4300	5000	NU2312ETN1	NJ2312ETN1
	140	51	2.5	2.5	78	122	285	294	4300	5000	-	-
	150	35	2.1	2.1	83	127	199	187	4300	5000	NU412M	NJ412M
	150	35	2.1	2.1	83	127	199	187	4300	5000	-	NJ412
	150	35	2.1	2.1	83	127	199	187	4300	5000	-	NJ412J
	150	35	2.1	2.1	83	127	199	187	4300	5000	NU412TN1	-
65	100	18	1.1	1	74.5	90.5	55.8	67.3	5300	6500	NU1013M	-
	120	23	1.5	1.5	78.5	108.5	121	122	4800	5600	NU213E	NJ213E
	120	23	1.5	1.5	78.5	108.5	121	122	4800	5600	-	-
	120	23	1.5	1.5	79.6	105.6	91.0	92.8	4800	5600	NU213M	NJ213M
	120	23	1.5	1.5	78.5	108.5	121	122	4800	5600	-	-
	120	23	1.5	1.5	78.5	108.5	121	122	4800	5600	NU213ETN1	-
	120	31	1.5	1.5	78.5	108.5	166	184	4800	5600	-	NJ2213E
	120	31	1.5	1.5	78.5	108.5	166	184	4800	5600	NU2213EM	NJ2213EM
	120	31	1.5	1.5	79.6	105.6	137	157	4800	5600	NU2213M	NJ2213M
	120	31	1.5	1.5	78.5	108.5	166	184	4800	5600	NU2213ETN1	-
	120	31	1.5	1.5	79.6	105.6	137	157	4800	5600	NU2213NM	-
	120	38.1	1.5	1.5	80.42	108.42	176	208	4000	4800	NU5213XP	-
	120	38.1	3	1.5	80.42	108.42	176	208	4000	4800	NU3213M	-
	140	33	2.1	2.1	82.5	124.5	191	182	4000	4800	NU313EM	NJ313EM
	140	33	2.1	2.1	82.5	124.5	203	197	4000	4800	NU313ETN1	-
	140	33	2.1	2.1	83.5	121.5	162	156	4000	4800	NU313M	NJ313M
	140	33	2.1	2.1	82.5	124.5	203	197	4000	4800	NU313E	NJ313E
	140	33	2.1	2.1	83.5	121.5	162	156	4000	4800	NU313Q1	-
	140	48	2.1	2.1	82.5	124.5	259	269	4000	4800	NU2313EM	NJ2313EM
	140	48	2.1	2.1	82.5	124.5	275	291	4000	4800	-	-

Designations			Abutment and fillet dimensions(mm)										Mass (kg)
NUP	N	NF	d_{amin}	d_{bmin}	d_{bmax}	d_{cmin}	d_{dmin}	D_{amax}	D_{bmax}	D_{bmin}	r_{amax}	r_{bmax}	(approx.)
NUP2212X1E	-	-	-	66	72	-	79	111	-	-	1.5	1.5	1.41
NUP312EM	N312EM	NF312EM	70	69	75	78	85	121	121.2	119.2	2	2	2.12
NUP312ETN1	N312ETN1	-	70	69	75	78	84	121	121.2	119.2	2	2	1.79
-	N312M	-	68	69	75	78	85	121	121.2	119	2	2	2.07
-	N312TN1	-	68	69	75	-	85	121	121.2	119	2	2	1.81
NUP312E	-	-	-	69	75	78	85	121	-	-	2	2	2.00
-	-	-	-	69	75	78	-	121	-	-	2	2	2.03
-	N2312E	-	70	69	75	78	85	121	121.2	119	2	2	2.96
-	N2312M	-	70	69	73	78	85	121	121.2	119	2	2	3.27
NUP2312EM	-	-	-	69	75	78	85	121	-	-	2	2	3.12
-	-	-	-	69	75	78	85	121	-	-	2	2	2.73
-	N612M	-	71	-	-	-	-	-	130.2	128.2	2	2	3.96
NUP412M	N412M	-	70	69	81	84	91	141	141.2	133	2	2	3.35
NUP412	-	-	-	69	81	-	91	141	-	-	2	2	3.34
NUP412J	-	-	-	69	81	-	91	141	-	-	2	2	3.22
-	-	-	-	69	81	84	-	141	-	-	2	2	2.91
-	-	-	-	70	73	76	-	95	-	-	1.1	1	0.528
NUP213E	N213E	NF213E	72	71	77	80	87	115	114.6	113.1	1.5	1.5	1.12
-	N213EJ	-	72	-	-	-	-	-	114.6	111.7	1.5	1.5	1.06
NUP213M	N213M	-	72	71	78	81	84	115	111.2	109	1.5	1.5	1.18
NUP213EM	-	NF213EM	72	71	79	-	86	115	114.6	112.3	1.5	1.5	1.21
NUP213ETN1	-	-	-	71	77	80	86	115	-	-	1.5	1.5	1.04
-	-	-	-	71	77	-	83	115	-	-	1.5	1.5	1.58
-	-	-	-	71	77	80	83	115	-	-	1.5	1.5	1.66
NUP2213M	-	-	-	71	78	81	87	115	-	-	1.5	1.5	1.66
-	-	-	-	71	77	80	-	115	-	-	1.5	1.5	1.43
NUP2213NM	-	-	-	71	78	81	87	115	-	-	1.5	1.5	1.65
-	-	-	-	71	78	81	-	115	-	-	1.5	1.5	1.96
-	-	-	-	73	78	81	-	115	-	-	2.5	1.5	1.96
NUP313EM	N313EM	NF313EM	75	74	81	84	90	131	131.2	128.7	2	2	2.55
-	N313ETN1	-	75	74	81	84	-	131	131.2	128.7	2	2	2.17
-	N313M	-	75	74	81	85	91	131	131.2	127.7	2	2	2.55
-	-	-	-	74	81	84	91	131	-	-	2	2	2.48
-	-	-	-	74	81	85	-	131	-	-	2	2	2.46
NUP2313EM	N2313EM	-	75	74	80	84	91	131	131.2	127.3	2	2	3.69
-	N2313ETN1	-	75	-	-	-	-	-	131.2	127.3	2	2	3.22

d 65～70mm



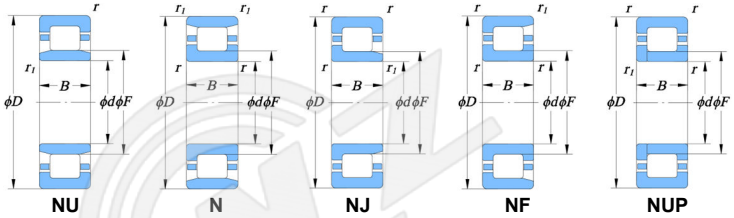


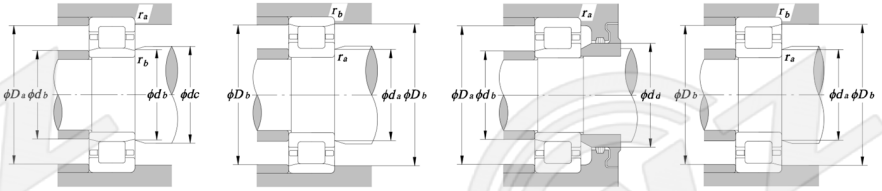
Principal dimensions (mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations	
d	*D*	*B*	r_{min}	r_{1min}	*F*	*E*	C_r	C_{or}	Grease	Oil	*NU*	*NJ*
65	140	48	2.1	2.1	82.5	124.5	275	291	4000	4800	NU2313ETN1	NJ2313ETN1
	140	48	2.1	2.1	83.5	121.5	223	236	4000	4800	NU2313M	NJ2313M
	160	37	2.1	2.1	89.5	135.5	217	207	4000	4800	NU413	NJ413
	160	37	2.1	2.1	89.5	135.5	217	207	4000	4800	NU413M	NJ413M
	160	37	2.1	2.1	89.5	135.5	231	224	4000	4800	-	NJ413W1
70	110	20	1.1	1.1	80	100	64.1	70.4	4600	5500	NU1014M	-
	125	24	1.5	1.5	83.5	113.5	133	141	4500	5300	HNU214A	-
	125	24	1.5	1.5	83.5	113.5	133	141	4500	5300	HNU214B	-
	125	24	1.5	1.5	84.5	110.5	90.5	93.6	4500	5300	HNU214J5A	-
	125	24	1.5	1.5	84.5	110.5	90.5	93.6	4500	5300	HNU214J5B	-
	125	24	2	1.5	83.5	113.5	133	141	4500	5300	-	NJ214EM
	125	24	1.5	1.5	83.5	113.5	127	133	4500	5300	NU214ETN1	NJ214ETN1
	125	24	1.5	1.5	84.5	110.5	94.8	99.4	4500	5300	NU214M	-
	125	24	1.5	1.5	83.5	113.5	133	141	4500	5300	NU214E	NJ214E
	125	24	1.5	1.5	84.5	110.5	99.0	105	4500	5300	NU214Q1	-
	125	24	4.3	1.5	83.5	113.5	127	133	4500	5300	-	-
	125	24	4.3	1.5	83.5	113.5	127	133	4500	5300	-	-
	125	31	1.5	1.5	84.5	110.5	136	158	4500	5300	NU2214M	NJ2214M
	125	31	1.5	1.5	83.5	113.5	166	186	4500	5300	-	NJ2214EM
	125	36	1.5	1.5	82.5	114.5	217	253	4500	5300	-	-
	125	39.69	1.5	1.5	84.76	110.76	176	221	4500	5300	NU5214XP	-
	125	39.69	3	1.5	84.76	110.76	176	221	4500	5300	NU3214X2M	-
	125	39.69	3	1.5	84.76	110.76	176	221	4500	5300	NU5214	-
	125	31(41)	1.5	1.5	84.5	110.5	136	158	4500	5300	NU2214WBM	-
	150	35	2.1	2.1	90	130	178	174	3600	4300	-	-
	150	35	2.1	2.1	90	130	178	174	3600	4300	-	-
	150	35	2.1	2.1	89	133	228	226	3600	4300	HNU314A	-
	150	35	2.1	2.1	89	133	228	226	3600	4300	-	NJ314E
	150	35	2.1	2.1	89	133	228	226	3600	4300	NU314EM	NJ314EM
	150	35	2.1	2.1	90	130	189	188	3600	4300	-	-
	150	35	2.1	2.1	90	130	189	188	3600	4300	NU314M	NJ314M
	150	35	2.1	2.1	89	133	228	226	3600	4300	-	NJ314EM
	150	35	2.1	2.1	90	130	189	188	3600	4300	NU314Q1	NJ314Q1
	150	35	2.1	2.1	89	133	228	226	3600	4300	NU314ETN1	-
	150	35	2.1	2.1	86.5	126.5	177	171	3600	4300	NU314MA	-
	150	35	2.1	2.1	90	130	189	188	3600	4300	NU314NM	-

Designations			Abutment and fillet dimensions(mm)										Mass (kg)
NUP	*N*	*NF*	d_{amin}	d_{bmin}	d_{bmax}	d_{cmin}	d_{dmin}	D_{amax}	D_{bmax}	D_{bmin}	r_{amax}	r_{bmax}	(approx.)
-	-	NF2313ETN1	75	74	80	84	91	131	131.2	127.3	2	2	3.27
-	-	-	-	74	80	85	92	131	-	-	2	2	3.64
-	N413	-	75	74	87	91	97	151	151.2	141.7	2	2	3.98
NUP413M	N413M	-	75	74	87	91	97	151	151.2	141.7	2	2	4.12
-	-	-	76	86	-	-	97	149	-	-	2	2	4.00
-	-	-	-	75	79	81	-	105	-	-	1.1	1.1	0.690
-	-	-	-	76	82	85	-	120	-	-	1.5	1.5	1.28
-	-	-	-	76	82	85	-	120	-	-	1.5	1.5	1.29
-	-	-	-	76	83	86	-	119	-	-	1.5	1.5	1.29
-	-	-	-	76	83	86	-	119	-	-	1.5	1.5	1.32
NUP214EM	N214EM	-	77	76	82	-	93	118	119.6	117.1	2	1.5	1.33
NUP214ETN1	N214ETN1	-	77	76	82	85	93	120	119.6	117.1	1.5	1.5	1.20
NUP214M	N214M	-	77	76	83	86	94	120	119.6	115.7	1.5	1.5	1.31
NUP214E	-	-	-	76	82	85	93	120	-	-	1.5	1.5	1.35
-	-	-	-	76	83	86	-	120	-	-	1.5	1.5	1.23
-	-	NF214EJ	77	-	-	-	-	-	119.6	118.1	3	1.5	1.21
-	-	NF214ETN1	77	-	-	-	-	-	119.6	118.1	3	1.5	1.17
NUP2214M	N2214M	-	77	76	83	86	94	120	119.6	114.7	1.5	1.5	1.76
-	-	-	-	76	82	-	91	120	-	-	1.5	1.5	1.73
NUP2214X2EM	-	-	-	76	83	-	92	120	-	-	1.5	1.5	2.06
-	-	-	-	76	82	86	-	120	-	-	1.5	1.5	2.17
-	-	-	-	78	82	86	-	120	-	-	2.5	1.5	2.17
-	-	-	-	78	82	86	-	120	-	-	2.5	1.5	2.17
-	-	-	-	76	83	86	-	120	-	-	1.5	1.5	1.88
-	HN314A	-	80	-	-	-	-	-	141.2	-	2	2	3.00
-	HN314B	-	80	-	-	-	-	-	141.2	137.2	2	2	3.00
-	-	-	-	79	87	90	-	141	-	-	2	2	3.08
-	N314E	-	80	79	87	-	97	141	141.2	137.2	2	2	3.03
NUP314EM	N314EM	-	80	79	87	90	97	141	141.2	137.2	2	2	3.28
-	N314J	-	80	-	-	-	-	-	136.2	132.6	2	2	2.78
-	N314M	NF314M	80	79	87	91	98	141	136.2	132.6	2	2	3.07
-	-	-	-	79	87	-	97	141	-	-	2	2	3.13
-	-	-	-	79	87	91	98	141	-	-	2	2	3.07
-	-	-	-	79	87	90	-	141	-	-	2	2	2.70
-	-	-	-	79	87	88	-	141	-	-	2	2	3.29
-	-	-	-	79	87	91	-	141	-	-	2	2	2.96

ZWZ

d 70～75mm





Principal dimensions(mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations	
d	*D*	*B*	r_{min}	r_{1min}	*F*	*E*	C_r	C_{or}	Grease	Oil	*NU*	*NJ*
70	150	35	2.1	1	90	130	189	188	3600	4300	NU314NRM	-
	150	35	2.1	2	90	130	189	188	3600	4300	NU314NTN1	-
	150	51	2.1	2.1	89	133	304	327	3600	4300	NU2314E	NJ2314E
	150	51	2.1	2.1	89	133	304	327	3600	4300	NU2314EM	NJ2314EM
	150	51	2.1	2.1	90	130	264	288	3600	4300	NU2314M	NJ2314M
	150	51	2.1	2.1	89	133	304	327	3600	4300	NU2314ETN1	-
	150	51(56)	2.1	2.1	86	134	342	361	3600	4300	-	NJ2314E/WB
	150	51(56)	4	2.1	89	133	304	327	3600	4300	-	NJ2314X2EM
	180	42	3	3	100	152	274	266	3600	4300	NU414	NJ414
	180	42	3	3	100	152	274	266	3600	4300	NU414M	NJ414M
75	112	20	2	0.5	85	105	66.0	74.4	4600	5700	-	-
	115	20	1.1	1	85	105	66.0	74.4	5600	6700	NU1015M	-
	130	25	1.5	1.5	88.5	118.5	140	152	4500	5300	-	-
	130	25	1.5	1.5	88.5	118.5	140	152	4500	5300	-	-
	130	25	1.5	1.5	88.5	118.5	146	161	4500	5300	HNU215A	-
	130	25	1.5	1.5	88.5	118.5	146	161	4500	5300	HNU215B	-
	130	25	1.5	1.5	88.5	118.5	146	161	4500	5300	NU215E	NJ215E
	130	25	1.5	1.5	88.5	118.5	139	150	4500	5300	NU215EM	NJ215EM
	130	25	1.5	1.5	88.5	116.5	110	116	4500	5300	NU215M	NJ215M
	130	25	1.5	1.5	88.5	118.5	146	161	4500	5300	-	-
	130	25	1.5	1.5	88.5	118.5	146	161	4500	5300	NU215EL3	-
	130	25	1.5	1.5	88.5	118.5	146	161	4500	5300	NU215EQ1	-
	130	25	1.5	1.5	88.5	118.5	146	161	4500	5300	NU215ETN1	-
	130	25	1.5	1.5	88.5	118.5	146	161	4500	5300	-	-
	130	31	1.5	1.5	88.5	116.5	154	180	4500	5300	-	NJ2215EMA
	130	31	1.5	1.5	88.5	116.5	148	170	4500	5300	NU2215M	-
	130	31	1.5	1.5	88.5	118.5	181	211	4500	5300	-	NJ2215E
	130	31	1.5	1.5	88.5	118.5	181	211	4500	5300	NU2215EM	NJ2215EM
	130	31	1.5	1.5	88.5	118.5	181	211	4500	4500	NU2215ETN1	-
	130	31	1.5	1.5	88.5	116.5	148	170	4500	5300	-	-
	130	41.28	1.5	1.5	89	117	203	257	4000	4000	NU5215XP	-
	130	41.28	3	1.5	89	117	203	257	4000	4000	NU3215X2M	-
	160	37	2.1	2.1	95	143	268	267	3400	4000	NU315E	NJ315E
	160	37	2.1	2.1	95	143	252	247	3400	4000	NU315EM	-
	160	37	2.1	2.1	95.5	139.5	212	209	3400	4000	NU315M	NJ315M
	160	37	2.1	2.1	95	143	268	267	3400	4000	-	NJ315EM

Designations			Abutment and fillet dimensions(mm)										Mass (kg)
NUP	*N*	*NF*	d_{amin}	d_{bmin}	d_{bmax}	d_{cmin}	d_{dmin}	D_{amax}	D_{bmax}	D_{bmin}	r_{amax}	r_{bmax}	(approx.)
-	-	-	-	79	87	91	-	139	-	-	2	1	3.05
-	-	-	-	79	87	91	-	139	-	-	2	2	2.66
-	N2314E	-	80	79	86	90	96	141	141.2	138.4	2	2	4.27
NUP2314EM	-	-	-	79	86	90	96	141	-	-	2	2	4.58
-	-	-	-	79	86	91	98	141	-	-	2	2	4.57
-	-	-	-	79	86	90	-	141	-	-	2	2	3.89
-	-	-	-	79	84	-	93	141	-	-	2	2	4.51
-	-	-	-	84	86	-	97	136	-	-	3	2	4.63
-	N414	-	82	81	97	101	108	169	169.2	158.4	2.5	2.5	6.46
NUP414M	N414M	-	82	81	97	101	108	169	169.2	158.4	2.5	2.5	5.95
-	N1015X1M	NF1015X1M	84	-	-	-	-	-	108.8	106.8	2	0.3	0.654
-	-	-	-	80	83	86	-	110	-	-	1.1	1	0.739
-	HN215A	-	82	-	-	-	-	-	124.6	122.45	1.5	1.5	1.40
-	HN215B	-	82	-	-	-	-	-	124.6	122.45	1.5	1.5	1.39
-	-	-	-	81	87	90	-	125	-	-	1.5	1.5	1.41
-	-	-	-	81	87	90	-	125	-	-	1.5	1.5	1.41
NUP215E	N215E	-	82	81	88	90	95	125	124.6	122.7	1.5	1.5	1.37
-	N215EM	-	82	81	87	90	95	125	124.6	122.3	1.5	1.5	1.44
-	N215M	-	82	81	87	90	95	125	124.6	120.7	1.5	1.5	1.43
NUP215NM	-	-	-	81	89	-	99	125	-	-	1.5	1.5	1.48
NUP215EL3	-	-	-	81	88	90	94	125	-	-	1.5	1.5	1.33
NUP215EQ1	-	-	-	81	87	90	94	125	-	-	1.5	1.5	1.47
-	-	-	-	81	88	90	-	125	-	-	1.5	1.5	1.24
NUP215ENM	-	-	-	81	89	-	94	125	-	-	1.5	1.5	1.49
-	-	-	-	81	87	-	94	125	-	-	1.5	1.5	1.84
NUP2215M	N2215M	-	82	81	87	90	94	125	124.6	120.7	1.5	1.5	1.90
-	-	NFP2215E	82	81	87	-	99	125	124.6	117.1	1.5	1.5	1.79
-	-	NFP2215EM	82	81	87	90	95	125	124.6	117.1	1.5	1.5	1.85
-	-	-	-	81	87	90	-	125	-	-	1.5	1.5	1.54
NUP2215TN1	-	-	-	81	89	-	94	125	-	-	1.5	1.5	1.83
-	-	-	-	81	87	90	-	125	-	-	1.5	1.5	2.27
-	-	-	-	83	87	90	-	125	-	-	2.5	1.5	2.27
-	N315E	-	85	84	93	96	101	151	151.2	147.8	2	2	3.59
NUP315EM	N315EM	-	85	84	93	96	101	151	151.2	147.8	2	2	3.69
-	N315M	-	85	84	93	97	102	151	151.2	145.9	2	2	3.59
-	-	-	-	84	93	-	101	151	-	-	2	2	3.93

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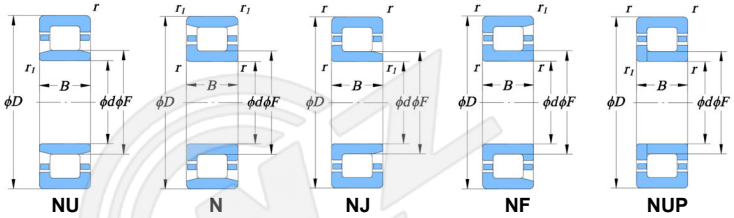
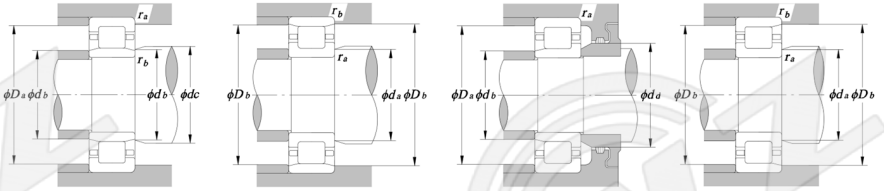
d 75～80mm





Principal dimensions(mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations	
d	*D*	*B*	r_{min}	r_{1min}	*F*	*E*	C_r	C_{or}	Grease	Oil	*NU*	*NJ*
75	160	37	2.1	2.1	95	143	268	267	3400	4000	NU315ETN1	-
	160	37	2.1	2.1	95.5	139.5	212	209	3400	4000	NU315Q1	-
	160	46	2.1	2.1	95	143	284	287	3400	4000	-	NJ315X2EM
	160	55	2.1	2.1	95	143	365	399	3400	4000	-	NJ2315EM
	160	55	2.1	2.1	95.5	139.5	304	331	3400	4000	NU2315M	NJ2315M
	160	55(60)	4	2.1	95	143	365	399	3700	4500	-	NJ2315X2EM
	190	45	3	3	104.5	160.5	312	303	3400	4000	NU415M	NJ415M
	190	45	3	3	104.5	164.5	354	345	3400	4000	-	NJ415EM
80	125	22	1.1	1	91.5	113.5	79.5	90.7	5300	6300	NU1016M	NJ1016M
	140	26	2	0.3	95.3	127.3	156	171	4000	4800	-	-
	140	26	2	2	95	125	151	171	4000	4800	NU216MA	-
	140	26	2	2	95.3	127.3	156	171	4000	4800	NU216E	NJ216E
	140	26	2	2	95	125	131	142	4000	4800	NU216M	NJ216M
	140	26	2	2	95.3	127.3	156	171	4000	4800	NU216EM	NJ216EM
	140	26	2	2	95.3	127.3	156	171	4000	4800	NU216EQ1	-
	140	26	2	2	95.3	127.3	156	171	4000	4800	NU216ETN1	-
	140	26	2	2	95	125	151	171	4000	4800	NU216Q1	-
	140	26	2	0.3	95.3	127.3	156	171	4000	4800	-	-
	140	33	2	2	95.3	127.3	208	247	4000	4800	NU2216E	NJ2216E
	140	33	2	2	95.3	127.3	208	247	4000	4800	NU2216EM	NJ2216EM
	140	33	2	2	95.3	125.3	180	214	4000	4800	NU2216M	NJ2216M
	140	33	2	2	95.3	127.3	208	247	4000	4800	NU2216ETN1	-
	140	33	2	2	95.3	125.3	180	214	4000	4800	NU2216MWB	-
	140	44.45	2	2	95.28	125.28	231	296	4000	4800	NU5216	-
	140	44.45	3	2	95.28	125.28	231	296	4000	4800	NU3216X2M	-
	150	45	2	2	97	133	273	327	3800	4500	-	NJ3216X3M
	150	45	2	2	97	133	273	327	3800	4500	-	NJP3216X3M
	170	39	2.1	2.1	101	151	289	291	3200	3800	NU316E	NJ316E
	170	39	2.1	2.1	101	151	272	269	3200	3800	NU316EM	NJ316EM
	170	39	2.1	2.1	103	147	224	228	3200	3800	NU316M	NJ316M
	170	39	2.1	2.1	101	151	272	269	3200	3800	NU316EF1	-
	170	39	2.1	2.1	101	151	289	291	3200	3800	NU316ETN1	-
	170	39	2.1	2.1	103	147	224	228	3200	3800	NU316Q1	-
	170	58	2.1	2.1	101	151	398	440	3200	3800	NU2316E	NJ2316E
	170	58	2.1	2.1	103	147	322	362	3200	3800	NU2316M	NJ2316M
	170	58	2.1	2.1	101	151	398	440	3200	3800	NU2316EM	NJ2316EM

Designations			Abutment and fillet dimensions(mm)										Mass (kg) (approx.)
NUP	*N*	*NF*	d_{amin}	d_{bmin}	d_{bmax}	d_{cmin}	d_{dmin}	D_{amax}	D_{bmax}	D_{bmin}	r_{amax}	r_{bmax}	
-	-	-	-	84	93	96	-	151	-	-	2	2	3.25
-	-	-	-	84	93	97	-	151	-	-	2	2	3.68
-	-	-	-	84	92	-	101	151	-	-	2	2	4.62
-	-	-	-	84	92	-	101	151	-	-	2	2	5.46
-	-	-	-	84	92	97	102	151	-	-	2	2	5.91
-	-	-	-	89	92	-	101	141	-	-	3	2	5.69
-	N415M	-	87	86	102	106	111	179	179.2	167.1	2.5	2.5	6.97
-	-	-	-	86	102	-	111	179	-	-	2.5	2.5	7.16
-	N1016M	-	86	85	90	93	100	120	120.4	117.3	1.1	1	1.06
NUP216ENRJ	-	-	-	87	95	-	104	133	-	-	2	0.3	1.66
-	-	-	-	87	94	96	-	132	-	-	2	2	1.75
NUP216E	N216E	-	88	87	94	96	103	133	133.2	131.1	2	2	1.71
NUP216M	N216M	NF216M	88	87	93	96	103	133	133.2	129.2	2	2	1.71
-	-	-	-	87	94	96	103	133	-	-	2	2	1.69
-	-	-	-	87	94	96	-	133	-	-	2	2	1.72
-	-	-	-	87	94	96	-	133	-	-	2	2	1.48
-	-	-	-	87	94	96	-	133	-	-	2	2	1.74
NUP216ENRM	-	-	-	90	95	-	104	133	-	-	2	0.3	1.81
NUP2216E	N2216E	-	88	87	94	96	103	133	131	128.7	2	2	2.21
NUP2216EM	N2216EM	-	88	87	94	96	103	133	131	128.7	2	2	2.24
-	-	-	-	87	94	96	103	133	-	-	2	2	2.26
-	-	-	-	87	93	96	-	133	-	-	2	2	2.11
-	-	-	-	87	94	96	-	133	-	-	2	2	2.36
-	-	-	-	87	93	96	-	133	-	-	2	2	3.03
-	-	-	-	88	93	96	-	133	-	-	2.5	2	3.03
-	-	-	-	86	95	-	104	143	-	-	2	2	3.69
-	-	-	-	85	95	-	104	143	-	-	2	2	3.69
-	N316E	-	90	89	99	102	110	161	161.2	156	2	2	4.20
-	N316EM	-	90	89	100	102	110	161	161.2	156	2	2	4.26
NUP316M	N316M	NF316M	90	89	100	104	112	161	161.2	153.2	2	2	4.49
-	-	-	-	89	100	102	-	161	-	-	2	2	4.20
-	-	-	-	89	100	102	-	161	-	-	2	2	3.89
-	-	-	-	89	100	104	-	161	-	-	2	2	4.45
-	N2316E	-	90	89	98	102	110	161	161.2	157.2	2	2	6.44
-	N2316M	-	90	89	99	104	110	161	161.2	155.2	2	2	6.26
-	-	-	-	89	98	102	110	161	-	-	2	2	6.56

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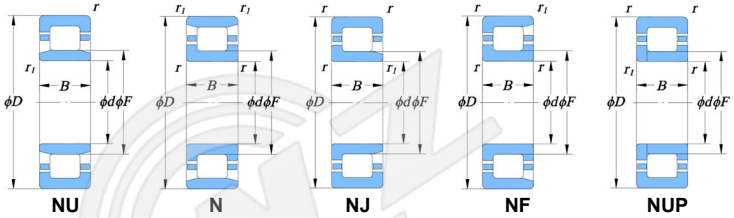
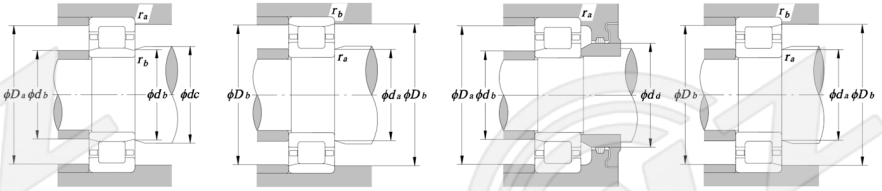
d 80～90mm





Principal dimensions(mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations	
d	*D*	*B*	r_{min}	r_{1min}	*F*	*E*	C_r	C_{or}	Grease	Oil	*NU*	*NJ*
80	170	58	2.1	2.1	103	147	322	362	3200	3800	-	NJ2316TN1
	170	68.26	1.5	1.5	101	151	446	509	3400	4200	-	-
	170	58(60)	2.1	2.1	100	136	297	367	3200	3800	-	-
	200	48	3	3	110	170	355	349	3200	3800	NU416M	NJ416M
83	140	33	3	3	95.3	125.3	187	225	3900	4800	-	NJ22/83M
	140	33	3	3	95.3	125.3	187	225	3900	4800	-	NJP22/83M
85	130	22	1.1	1	96.5	118.5	79.0	91.2	5000	6000	NU1017M	-
	130	22	1.1	1.1	96.5	118.5	90.0	109	5000	6000	-	NJ1017TN1
	150	28	2	2	100.5	136.5	185	201	3800	4500	NU217E	NJ217E
	150	28	2	2	101.8	133.8	148	162	3800	4500	NU217M	NJ217M
	150	28	2	2	100.5	136.5	185	201	3800	4500	NU217EM	NJ217EM
	150	28	2	2	100.5	136.5	185	201	3800	4500	NU217ETN1	-
	150	28	2	2	100.5	136.5	185	201	3800	4500	-	-
	150	36	2	1	100.5	136.5	241	281	3800	4500	NU2217EM	NJ2217EM
	150	36	2	2	100.5	136.5	241	281	3800	4500	NU2217ETN1	-
	150	36	2	2	101.8	133.8	205	248	3800	4500	NU2217M	-
	150	42	1	1	98.5	138.5	280	318	3700	4500	-	-
	150	49.2	2	2	102	136	268	334	3800	4500	NU3217M	-
	150	49.21	2	2	102	136	268	334	3800	4500	NU5217XP	-
	150	49.21	3.5	2	102	136	268	334	3800	4500	NU3217X2M	-
	180	41	3	3	108	160	328	341	3000	3600	-	-
	180	41	3	3	108	160	328	341	3000	3600	-	-
	180	41	3	3	108	160	328	341	3000	3600	-	-
	180	41	3	3	108	160	328	341	3000	3600	NU317E	NJ317E
	180	41	3	3	108	160	328	341	3000	3600	NU317EM	NJ317EM
	180	41	3	3	108	160	328	341	3000	3600	NU317EQ1	NJ317EQ1
	180	41	3	3	108	160	328	341	3000	3600	NU317ETN1	-
	180	60	3	3	108	160	439	496	3000	3600	NU2317E	NJ2317E
	180	60	3	3	108	160	415	460	3000	3600	-	NJ2317EM
	180	60	3	3	108	160	415	460	3000	3600	-	-
	180	60	3	3	108	156	370	416	3000	3600	NU2317M	NJ2317M
	210	52	4	4	115.5	179.5	401	397	3000	3600	NU417M	NJ417M
90	130	22	1.1	1.1	99	121	113	146	3900	4800	NU2918X1M	-
	140	24	1.5	1.1	103	127	97.0	114	3600	4300	NU1018M	NJ1018M
	160	30	2	2	107	145	205	225	3600	4300	NU218E	NJ218E
	160	30	2	2	107	145	205	225	3600	4300	NU218EM	NJ218EM

Designations			Abutment and fillet dimensions(mm)										Mass (kg)
NUP	*N*	*NF*	d_{amin}	d_{bmin}	d_{bmax}	d_{cmin}	d_{dmin}	D_{amax}	D_{bmax}	D_{bmin}	r_{amax}	r_{bmax}	(approx.)
-	-	-	-	89	99	-	110	161	-	-	2	2	5.86
NUP2316X2EM	-	-	-	86	101	-	110	165	-	-	1.5	1.5	8.17
NUP2316M	-	-	-	89	100	-	109	161	-	-	2	2	7.23
-	N416M	-	92	91	107	111	121	189	189.2	176.2	2.5	2.5	8.17
-	-	-	-	92	94	-	105	131	-	-	2.5	2.5	2.13
-	-	-	-	92	94	-	105	131	-	-	2.5	2.5	2.13
-	-	-	-	90	95	98	-	125	-	-	1.1	1	1.04
-	-	-	-	90	95	-	106	125	-	-	1.1	1.1	0.972
NUP217E	N217E	-	94	93	99	102	110	142	142.2	139.6	2	2	2.13
-	N217M	-	94	93	100	103	112	142	142.2	138.2	2	2	2.10
NUP217EM	-	-	-	93	99	102	110	142	-	-	2	2	2.24
-	-	-	-	93	99	102	-	142	-	-	2	2	1.90
NUP217ERM	-	-	-	93	101	-	110	142	-	-	2	2	2.24
NUP2217EM	-	-	-	93	99	102	110	142	-	-	2	1	2.83
-	-	-	-	93	99	102	-	142	-	-	2	2	2.42
-	-	-	-	93	100	103	-	142	-	-	2	2	2.80
NUP2217X2EM	-	-	-	90	99	-	108	175	-	-	1	1	3.34
-	-	-	-	93	99	103	-	142	-	-	2	2	3.88
-	-	-	-	93	99	103	-	142	-	-	2	2	3.88
-	-	-	-	95	99	103	-	142	-	-	3	2	3.88
-	N317E	-	97	-	-	-	-	-	169.2	165.8	2.5	2.5	5.14
-	N317EM	-	97	-	-	-	-	-	169.2	165.8	2.5	2.5	5.20
-	N317EQ1	-	97	-	-	-	-	-	169.2	165.8	2.5	2.5	5.20
-	-	-	-	96	106	109	118	169	-	-	2.5	2.5	5.17
NUP317EM	-	-	-	96	106	109	118	169	-	-	2.5	2.5	5.23
-	-	-	-	96	106	109	118	169	-	-	2.5	2.5	5.23
-	-	-	-	96	106	109	-	169	-	-	2.5	2.5	4.57
-	N2317E	-	97	96	105	109	118	169	169.2	165.8	2.5	2.5	7.45
-	N2317EM	-	97	96	105	-	118	169	169.2	165.4	2.5	2.5	7.44
-	-	NF2317EM	97	-	-	-	-	-	169.2	166.61	2.5	2.5	7.58
-	-	-	-	96	104	109	118	169	-	-	2.5	2.5	7.58
NUP417M	N417M	-	100	99	112	117	125	196	196.2	187.9	3	3	9.78
-	-	-	-	95	98	100	-	125	-	-	1.1	1.1	0.984
NUP1018M	-	-	-	96	101	104	107	135	-	-	1.5	1.1	1.37
-	N218E	NF218E	99	98	105	108	114	152	152.2	149	2	2	2.51
NUP218EM	N218EM	-	99	98	105	108	114	152	152.2	149	2	2	2.68

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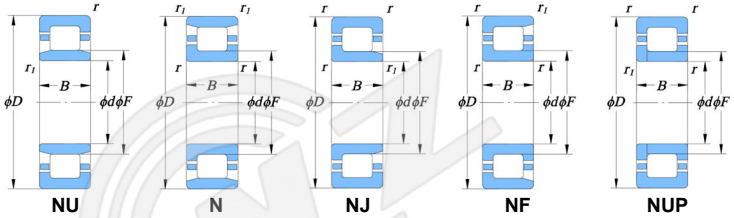
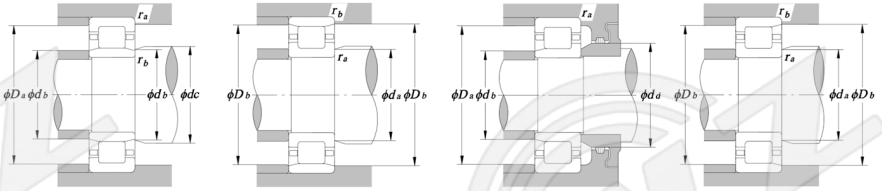
d 90～120mm





Principal dimensions(mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations	
d	*D*	*B*	r_{min}	r_{1min}	*F*	*E*	C_r	C_{or}	Grease	Oil	*NU*	*NJ*
90	160	30	2	2	107	143	167	178	3600	4300	-	-
	160	30	2	2	107	143	177	191	3600	4300	NU218M	NJ218M
	160	30	2	2	107	145	205	225	3600	4300	NU218ETN1	-
	160	40	2	2	107	143	240	284	3600	4300	-	-
	160	40	2	2	107	145	259	302	2800	3400	NU2218EM	-
	160	40	2	2	107	145	271	321	2800	3400	NU2218ETN1	-
	160	52.4	2	2	107.218	143.218	299	375	3200	3800	NU5218XP	-
	160	52.4	3.5	2	107.218	143.218	299	375	3600	4300	NU3218M	-
	160	52.4	3.5	2	107.218	143.218	299	375	3200	3800	NU5218	-
	190	43	3	3	113.5	169.5	352	360	2800	3400	NU318E	-
	190	43	3	3	113.5	169.5	352	360	2800	3400	NU318EM	NJ318EM
	190	43	3	3	115	165	287	296	2800	3400	NU318M	NJ318M
	190	43	3	3	113.5	169.5	333	335	2800	3400	-	NH318EQ1
	190	43	3	3	113.5	169.5	372	387	2800	3400	NU318ETN1	-
	190	43	3	3	115	165	367	390	2800	3400	NU318Q1	-
	190	64	3	3	113.5	169.5	482	540	2800	3400	NU2318EM	NJ2318EM
	190	64	3	3	115	165	421	486	2800	3400	NU2318M	NJ2318M
	190	64	3	3	113.5	169.5	482	540	2800	3400	NU2318E	-
	225	54	4	4	123.5	191.5	451	451	2800	3400	NU418M	NJ418M
110	170	28	1.1	2	125	155	148	179	3800	4500	-	-
	240	50	3	3	143	207	453	483	2000	2600	NU322Q1	-
	280	65	4	4	153	237	660	679	2000	2500	NU422EM	-
120	164	27	1.1	1.1	132	152	114	172	3400	4000	-	-
	165	27	1.1	1.1	132	152	114	172	2900	3600	-	-
	180	28	1.1	2	135	165	151	189	3400	4000	NU1024M	NJ1024M
	180	28	1.1	2	135	165	151	189	3400	4000	NU1024MA	-
	215	40	2.1	2.1	143.5	195.5	378	435	2400	3000	NU224E	NJ224E
	215	40	2.1	2.1	143.5	195.5	378	435	2400	3000	NU224EM	NJ224EM
	215	40	2.1	2.1	143.5	191.5	317	365	2400	3000	NU224M	NJ224M
	215	40	2.1	2.1	143.5	195.5	378	435	2400	3000	NU224EMA	-
	215	58	2.1	2.1	143.5	195.5	505	632	2400	3000	NU2224E	NJ2224E
	215	58	2.1	2.1	143.5	195.5	505	632	2400	3000	NU2224ETN1	NJ2224ETN1
	215	58	2.1	2.1	143.5	191.5	424	529	2400	3000	NU2224M	NJ2224M
	215	58	2.1	2.1	143.5	191.5	424	529	2400	3000	-	-
	215	58	2.1	2.1	143.5	195.5	483	595	2400	3000	-	NJ2224EM
	215	76	2.1	2.1	145.14	193.14	609	848	2400	3000	NU3224M	-

Designations			Abutment and fillet dimensions(mm)										Mass (kg)
NUP	*N*	*NF*	d_{amin}	d_{bmin}	d_{bmax}	d_{cmin}	d_{dmin}	D_{amax}	D_{bmax}	D_{bmin}	r_{amax}	r_{bmax}	(approx.)
-	N218J	-	99	-	-	-	-	-	152.2	147.4	2	2	2.42
NUP218M	N218M	NF218M	99	98	105	108	114	152	152.2	147.4	2	2	2.76
-	-	-	-	98	105	108	-	152	-	-	2	2	2.26
-	N2218M	-	99	-	-	-	-	-	152.2	148.6	2	2	3.62
NUP2218EM	-	-	-	98	105	108	114	152	-	-	2	2	3.61
-	-	-	-	98	105	108	-	152	-	-	2	2	3.12
-	-	-	-	98	104	108	-	152	-	-	2	2	4.50
-	-	-	-	100	104	108	-	152	-	-	3	2	4.50
-	-	-	-	100	104	108	-	152	-	-	3	2	4.50
-	N318E	-	102	101	112	115	-	179	179.2	175.3	2.5	2.5	5.88
NUP318EM	N318EM	-	102	101	112	115	124	179	179.2	175.3	2.5	2.5	6.02
NUP318M	N318M	-	102	101	112	115	124	179	179.2	171.8	2.5	2.5	6.21
-	-	-	-	101	114	-	121	179	-	-	2.5	2.5	6.64
-	-	-	-	101	112	115	-	179	-	-	2.5	2.5	5.36
-	-	-	-	101	112	116	-	179	-	-	2.5	2.5	5.88
-	-	-	-	101	110	115	123	179	-	-	2.5	2.5	8.79
NUP2318M	-	-	-	101	110	116	124	179	-	-	2.5	2.5	9.27
-	-	-	-	101	110	115	-	179	-	-	2.5	2.5	8.69
-	N418M	-	105	104	120	125	136	211	211.2	198.7	3	3	11.6
NUP1022TN1	-	-	-	118	-	-	131	162	-	-	1.1	2	2.17
-	-	-	-	126	140	145	-	224	-	-	2.5	2.5	11.6
-	-	-	-	124	149	155	-	266	-	-	3	3	22.1
-	-	NF2924X1M	125	-	-	-	-	-	159	155.8	1.1	1.1	1.74
-	-	NF2924M	125	-	-	-	-	-	160	155.8	1.1	1.1	1.80
-	N1024M	-	128	128	133	137	141	172	175	167.6	1.1	-	2.55
-	-	-	-	125	133	137	-	172	-	-	1.1	2	2.96
NUP224E	N224E	-	129	129	142	146	153	206	206	200.7	2	2	6.67
-	N224EM	-	129	129	142	146	153	206	206	200.7	2	2	6.60
-	N224M	-	129	129	141	146	152	206	206	197.7	2	2	6.26
-	-	-	-	129	142	146	-	206	-	-	2	2	6.92
-	N2224E	-	129	129	141	146	153	206	206	202.1	2	2	9.15
-	N2224ETN1	-	129	129	141	146	153	206	206	202.1	2	2	8.48
-	N2224M	-	129	129	140	-	156	206	206	198.7	2	2	9.40
-	N2224NM	-	129	-	-	-	-	-	206	198.7	2	2	8.86
-	-	NF2224EM	129	129	141	-	153	206	206	201.7	2	2	9.72
-	-	-	-	129	141	147	-	206	-	-	2	2	12.4

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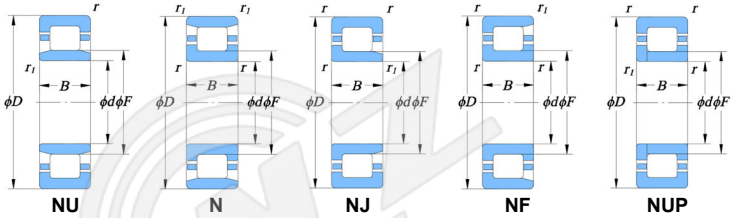
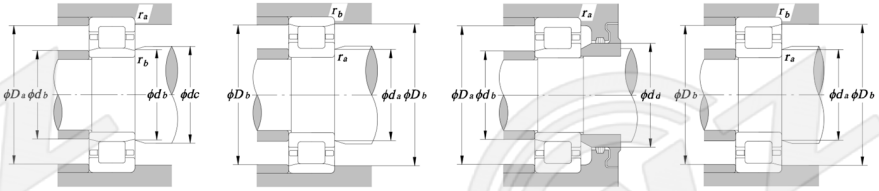
d 120～130mm





Principal dimensions(mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations		Designations			Abutment and fillet dimensions(mm)										Mass (kg)
d	*D*	*B*	r_{min}	r_{1min}	*F*	*E*	C_r	C_{or}	Grease	Oil	*NU*	*NJ*	*NUP*	*N*	*NF*	d_{amin}	d_{bmin}	d_{bmax}	d_{cmin}	d_{dmin}	D_{amax}	D_{bmax}	D_{bmin}	r_{amax}	r_{bmax}	(approx.)
120	215	76.2	5.3	2	145.14	193.14	609	848	2200	2800	NU3224X2M	-	-	-	-	-	134	141	147	-	201	-	-	4	2	12.6
	240	80	3.7	3	150	210	620	759	2400	3200	-	NJ624M	-	-	-	-	134	145	-	162	229	-	-	3	2.5	17.7
	260	55	3	3	154	230	622	668	1900	2400	NU324E	NJ324E	-	N324E	-	131	131	152	156	168	249	249	236.3	2.5	2.5	15.4
	260	55	3	3	154	230	622	668	1900	2400	NU324EM	NJ324EM	-	N324EM	-	131	131	152	156	168	249	249	235.8	2.5	2.5	16.0
	260	55	3	3	154	226	562	604	1900	2400	-	-	-	N324J	-	131	-	-	-	-	-	249	233.4	2.5	2.5	13.9
	260	55	3	3	154	226	562	604	1900	2400	NU324M	NJ324M	NUP324M	N324M	NF324M	131	131	151	156	168	249	249	233.4	2.5	2.5	15.2
	260	55	3	3	154	230	589	621	1900	2400	-	NJ324EQ1A	-	-	-	-	131	149	-	169	249	-	-	2.5	2.5	15.4
	260	55	3	3	154	230	622	668	1900	2400	NU324ETN1	-	-	-	-	-	131	152	156	-	249	-	-	2.5	2.5	14.6
	260	55	3	3	154	230	562	605	1900	2400	NU324L3	-	-	-	-	-	131	151	156	-	249	-	-	2.5	2.5	14.3
	260	55	3	3	154	226	562	604	1900	2400	NU324Q1	-	-	-	-	-	131	151	156	-	249	-	-	2.5	2.5	15.2
	260	86	3	3	154	230	929	1120	1900	2400	-	NJ2324EMA	-	-	-	-	131	151	-	168	249	-	-	2.5	2.5	23.2
	260	86	3	3	154	230	879	1040	1900	2400	-	NJ2324EQ1A	-	-	-	-	131	152	-	168	249	-	-	2.5	2.5	24.1
	260	86	3	3	154	230	929	1120	1900	2400	NU2324EMA	-	-	-	-	-	131	150	156	-	249	-	-	2.5	2.5	22.8
	260	86	3	3	154	226	786	928	1900	2400	NU2324M	NJ2324M	-	N2324M	-	131	131	150	156	167	249	249	234.2	2.5	2.5	24.3
	260	86	3	3	154	230	929	1120	1900	2400	-	NJ2324EM	NUP2324EM	-	-	-	131	150	-	167	249	-	-	2.5	2.5	24.0
	260	86	3	3	154	230	879	1040	1900	2400	NU2324EM	-	-	-	-	-	131	150	156	-	249	-	-	2.5	2.5	23.1
	260	104.775	3	3	154	230	1000	1230	1900	2400	-	-	-	N3324X2M	-	131	-	-	-	-	-	249	239.6	2.5	2.5	28.0
	260	106	3	3	154	230	1040	1280	1900	2400	-	-	-	-	NF3324Q1	131	-	-	-	-	-	249	239.6	2.5	2.5	29.7
	310	72	5	5	170	260	801	855	1900	2400	NU424M	NJ424M	-	N424M	-	137	137	166	172	186	293	293	268.9	4	4	29.4
	310	72	5	5	170	260	801	855	1900	2400	-	NJ424MA	-	-	-	-	137	166	-	186	293	-	-	4	4	30.1
	310	72	5	5	167	263	849	886	1900	2400	NU424EM	-	-	-	-	-	137	163	169	-	293	-	-	4	4	30.0
	310	72	5	5	170	260	801	855	1900	2400	NU424Q1	-	-	-	-	-	137	166	172	-	293	-	-	4	4	28.8
127	228.6	34.925	1.1	2	155.8	199.8	308	381	1900	2400	-	-	-	N6/127M	-	135	-	-	-	-	-	222.6	204.6	1.1	-	5.60
129	250	80	3.7	3	158	222	673	820	1800	2200	-	NJ3226X1K2	-	-	-	-	143	153	-	171	239	-	-	3	2.5	18.4
129.5	250	80	5	4	158	222	673	820	1800	2200	-	NJ3226X1K1	-	-	-	-	144	153	-	171	239	-	-	4	3	18.4
130	180	24	2	1	142	168	129	173	2700	3300	-	-	-	-	NF1926	138	-	-	-	-	-	172	169	2	1	1.70
	200	33	1.1	2	148	182	211	276	3200	3800	-	NJ1026EM	-	-	-	-	138	145	-	156	192	-	-	1.1	2	4.67
	200	33	2	1.1	148	182	199	254	3200	3800	NU1026M	NJ1026M	-	N1026M	-	138	136	145	150	156	192	194	187.4	2	1.1	4.66
	200	42	1.1	2	147	185	298	394	3000	3700	NU2026EMA	-	-	-	-	-	136	145	149	-	192	-	-	1.1	2	4.95
	220	62	2.1	2	150	202	527	675	2200	2800	-	NJ2226X3TN1	-	-	-	-	139	146	-	160	212	-	-	2	2	8.69
	230	40	3	3	156	204	315	369	2200	2800	-	-	-	N226	-	141	-	-	-	-	-	219	210.2	2.5	2.5	6.52
	230	40	3	3	153.5	209.5	404	461	2200	2800	NU226E	NJ226E	NUP226E	N226E	-	141	146	152	156	164	213	219	215.5	2.5	2.5	7.30
	230	40	3	3	153.5	209.5	404	461	2200	2800	NU226EM	NJ226EM	NUP226EM	N226EM	NF226EM	141	146	152	156	164	213	219	215.5	2.5	2.5	7.60
	230	40	3	3	156	204	328	390	2200	2800	NU226M	NJ226M	-	N226M	-	141	141	153	158	164	219	219	210.2	2.5	2.5	7.30
	230	64	3	3	153.5	209.5	587	744	2200	2800	NU2226EMA	-	-	-	-	-	141	150	156	-	219	-	-	2.5	2.5	11.2
	230	64	3	3	156	204	457	598	2200	2800	NU2226M	NJ2226M	NUP2226M	N2226M	NF2226M	141	141	151	158	165	219	219	213.4	2.5	2.5	11.6

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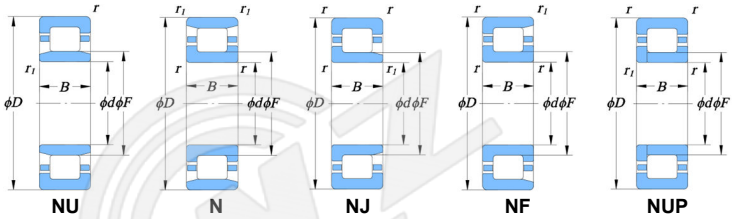
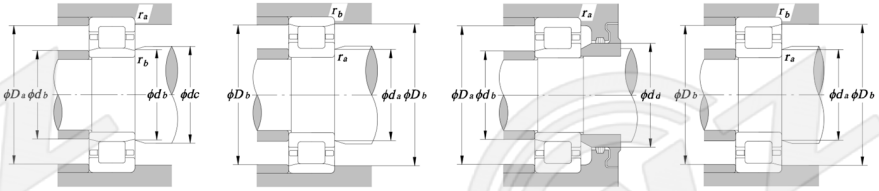
d 130～140mm





Principal dimensions (mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations	
d	*D*	*B*	r_{min}	r_{1min}	*F*	*E*	C_r	C_{or}	Grease	Oil	*NU*	*NJ*
130	230	64	3	3	156	204	457	598	2200	2800	-	-
	230	64	3	3	156	204	457	598	2200	2800	-	-
	230	64	3	3	156	204	457	598	2200	2800	-	NJ2226Q1
	230	64	3	3	153.5	209.5	561	700	2200	2800	NU2226EM	-
	230	64(89)	3	3	156	204	457	598	2200	2800	NU2226MWB	-
	230	79.38	5.3	3	155	207	650	889	1800	2200	NU3226X2M	-
	240	80(87)	3	3	156	203	651	809	1800	2200	-	NJ3226X1SCTN
	250	80	3.7	3	158	222	673	820	1800	2200	-	NJ3226X1
	250	80	3.7	3	158	222	673	820	1800	2200	-	NJ3226X1TN1
	250	80(97.5)	3.7	3	158	222	673	820	1800	2200	NU3226X1WB	-
	280	58	4	4	167	248	678	736	1800	2200	NU326EMA	-
	280	58	4	4	167	248	686	748	1800	2200	NU326EM	NJ326EM
	280	58	4	4	167	243	623	679	1800	2200	NU326M	NJ326M
	280	58	4	4	167	243	623	679	1800	2200	NU326Q1	-
	280	93	4	4	167	247	982	1180	1800	2200	NU2326MA	-
	280	93	4	4	167	243	930	1140	1800	2200	NU2326M	NJ2326M
	280	93	4	4	167	247	1020	1240	1800	2200	-	NJ2326EM
	280	93	4	4	167	243	930	1140	1800	2200	-	NJ2326M
	280	93	4	4	167	247	965	1160	1800	2200	NU2326EM	-
	340	78	5	5	185	289	974	1030	1800	2200	NU426M	NJ426M
140	190	30	1.5	1.1	152	178	179	269	3000	3600	-	NJ2928M
	210	33	1.1	2	157	193	237	313	3000	3600	-	NJ1028EM
	210	33	1.1	2	158	192	203	267	3000	3600	NU1028M	NJ1028M
	210	53	1.1	2	158	192	385	608	2600	3400	NU3028M	-
	220	36	2.3	2.7	160	200	255	320	660	1300	NU1128X3M	-
	250	42	3	3	169	225	419	495	2400	3000	NU228E	-
	250	42	3	3	169	221	382	460	2400	3000	NU228M	NJ228M
	250	42	3	3	169	221	336	387	2400	3000	-	-
	250	42	3	3	169	221	382	460	2400	3000	-	NJ228Q1
	250	42	3	3	169	225	437	522	2400	3000	NU228EM	NJ228EM
	250	42	3	3	169	225	419	495	2000	2600	NU228EMA	-
	250	68	3	3	169	225	609	800	2000	2600	-	-
	250	68	3	3	169	225	609	799	2000	2600	NU2228EMA	-
	250	68	3	3	169	225	609	799	2000	2600	-	-
	250	68	3	3	169	225	609	799	2000	2600	-	-
	250	68	3	3	169	225	609	799	2000	2600	NU2228EM	NJ2228EM

Designations			Abutment and fillet dimensions(mm)										Mass (kg)
NUP	*N*	*NF*	d_{amin}	d_{bmin}	d_{bmax}	d_{cmin}	d_{dmin}	D_{amax}	D_{bmax}	D_{bmin}	r_{amax}	r_{bmax}	(approx.)
-	N2226M	-	141	-	-	-	-	-	219	212.4	2.5	2.5	11.6
-	N2226NM	-	141	-	-	-	-	-	219	212.4	2.5	2.5	11.2
-	-	-	-	141	151	-	165	219	-	-	2.5	2.5	11.9
-	-	-	-	141	151	156	-	219	-	-	2.5	2.5	11.5
-	-	-	-	141	151	158	-	219	-	-	2.5	2.5	12.5
-	-	-	-	144	151	157	-	219	-	-	4	2.5	14.6
-	-	-	-	139	151	-	168	231	-	-	2.5	2.5	15.0
-	-	-	-	144	153	-	171	239	-	-	3	2.5	16.6
-	-	-	-	144	153	-	171	239	-	-	3	2.5	16.8
-	-	-	-	144	-	160	-	239	-	-	3	2.5	17.2
-	-	-	-	144	164	169	-	266	-	-	3	3	18.7
-	N326EM	-	144	144	164	169	182	266	266	253.8	3	3	18.5
-	N326M	-	144	144	164	169	181	266	266	250.2	3	3	18.0
-	-	-	-	144	164	169	-	266	-	-	3	3	17.9
-	-	-	-	144	162	169	-	266	-	-	3	3	28.7
NUP2326M	N2326M	-	144	144	162	169	180	266	266	252.4	3	3	29.0
-	-	-	-	144	163	-	181	266	-	-	3	3	29.5
-	-	-	-	144	162	-	180	266	-	-	3	3	30.0
-	-	-	-	144	162	169	-	266	-	-	3	3	29.3
-	-	-	-	147	181	187	203	323	-	-	4	4	40.0
-	-	NF2928M	147	147	150	-	157	183	183	179.7	1.5	1.1	2.60
-	-	-	-	148	155	-	164	202	-	-	1.1	2	4.17
-	-	-	-	148	155	160	164	202	-	-	1.1	2	4.01
-	-	-	-	145	156	160	-	202	-	-	1.1	2	7.64
-	-	-	-	149	157	162	-	211	-	-	2	2	5.03
-	N228E	-	151	151	167	171	-	239	239	230.3	2.5	2.5	9.03
NUP228M	N228M	-	151	151	166	171	179	239	239	227	2.5	2.5	9.30
-	N228Q1	-	151	-	-	-	-	-	239	227	2.5	2.5	8.66
-	-	-	-	151	166	-	179	239	-	-	2.5	2.5	9.24
NUP228EM	N228EM	-	151	151	167	171	178	239	239	230.3	2.5	2.5	9.20
-	-	-	-	151	167	171	-	239	-	-	2.5	2.5	9.11
-	N2228EMB	-	151	-	-	-	-	-	239	232.4	2.5	2.5	14.8
-	-	-	-	151	165	171	-	239	-	-	2.5	2.5	14.2
-	N2228E	-	151	-	-	-	-	-	239	232.4	2.5	2.5	14.2
-	N2228E	-	151	-	-	-	-	-	239	232.4	2.5	2.5	14.2
-	-	-	-	151	165	171	179	239	-	-	2.5	2.5	14.4

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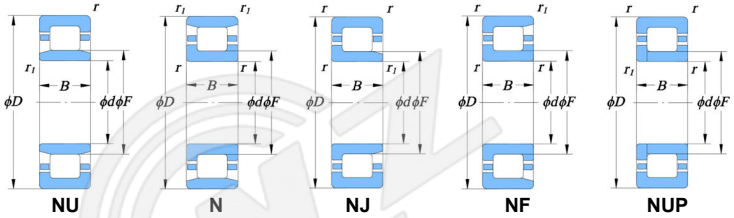
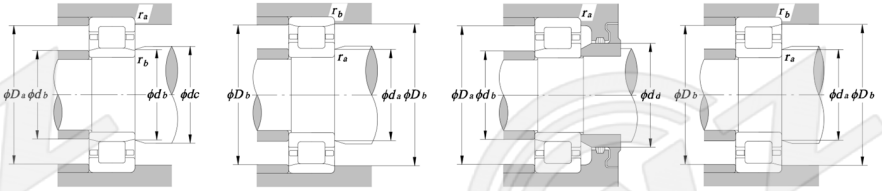
d 140～150mm





Principal dimensions (mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations	
d	*D*	*B*	r_{min}	r_{1min}	*F*	*E*	C_r	C_{or}	Grease	Oil	*NU*	*NJ*
140	250	68	3	3	169	221	543	723	2000	2600	NU2228M	NJ2228M
	250	68	3	3	169	225	563	758	2000	2600	-	NJ2228Q1
	250	80	3	3	169	225	730	1010	2000	2600	-	NJ3228X2M
	250	82.55	5.3	3	168.46	224.46	741	1030	2000	2600	NU3228X2M	-
	250	82.55	5.1	3	168.46	224.46	741	1030	2000	2600	NU5228XP	-
	250	68(100)	3	3	169	221	543	723	2000	2600	NU2228MWB	-
	300	62	4	4	182	262	684	782	1900	2400	NU328MA	-
	300	62	4	4	180	264	704	760	1900	2400	NU328EM	-
	300	62	4	4	180	260	687	758	1900	2400	NU328M	NJ328M
	300	62	4	4	180	264	744	818	1900	2400	NU328EQ1	-
	300	62	4	4	180	260	687	758	1800	2200	NU328Q1	-
	300	102	4	4	180	260	1020	1260	1800	2200	NU2328M	NJ2328M
	300	102	4	4	180	264	1130	1410	1800	2200	NU2328EM	NJ2328EM
	360	82	5	5	196	306	1050	1120	1800	2200	-	NJ428M
	360	82	4.7	4.7	196	306	1050	1120	1800	2200	-	NJ428MA
150	210	28	4(0.8)	3	165	195	188	267	2700	3300	-	NJ1930B1M
	225	35	1.5	2.1	169	207	292	403	2600	3200	-	NJ1030EM
	225	35	1.5	2.1	169.5	205.5	218	285	2600	3200	NU1030M	NJ1030M
	225	56	2.1	2.1	169.5	205.5	385	595	2400	3000	NU3030M	-
	270	45	3	3	182	242	478	571	2000	2600	NU230E	NJ230E
	270	45	3	3	182	242	478	571	2000	2600	NU230EM	-
	270	45	3	3	182	238	434	528	2000	2600	NU230M	NJ230M
	270	45	3	3	182	242	478	571	2000	2600	NU230EMA	-
	270	45	3	3	182	242	498	603	2000	2600	NU230EQ	-
	270	54	3	3	182	242	623	710	1900	2300	NU1230Q1A	-
	270	73	3	3	182	242	674	886	1900	2400	NU2230EMA	-
	270	73	3	3	182	242	704	938	1900	2400	-	NJ2230E
	270	73	3	3	182	242	674	886	1900	2400	NU2230EM	-
	270	88.9	7.5	2.6	181.53	246.05	1080	1550	1800	2200	NU3230X2M	-
	270	88.9	6.4	2.6	181.53	246.05	1080	1550	1800	2200	NU5230XP	-
	320	65	4	4	193	283	849	944	1700	2000	NU330EM	NJ330EM
	320	65	4	4	193	277	744	829	1700	2000	NU330M	NJ330M
	320	65	4	4	193	283	849	944	1700	2000	-	NJ330EQ1
	320	65	4	4	193	283	852	948	1700	2000	NU330EQ1	-
	320	108	4	4	193	277	1130	1420	1700	2000	NU2330M	NJ2330M
	320	108	4	4	193	283	1290	1620	1700	2000	NU2330EM	NJ2330EM

Designations				Abutment and fillet dimensions(mm)										Mass (kg)
NUP	*N*	*NF*	d_{amin}	d_{bmin}	d_{bmax}	d_{cmin}	d_{dmin}	D_{amax}	D_{bmax}	D_{bmin}	r_{amax}	r_{bmax}	(approx.)
-	-	-	-	151	164	171	179	239	-	-	2.5	2.5	14.6
-	-	-	-	151	165	-	178	239	-	-	2.5	2.5	15.1
-	-	-	-	152	165	-	179	239	-	-	2.5	2.5	17.8
-	-	-	-	154	164	170	-	239	-	-	4	2.5	18.3
-	-	-	-	154	164	170	-	239	-	-	4	2.5	18.3
-	-	-	-	151	164	171	-	239	-	-	2.5	2.5	16.2
-	-	-	-	154	178	184	-	286	-	-	3	3	22.2
-	N328EM	-	154	154	177	182	-	286	286	271.4	3	3	21.9
NUP328M	N328M	NF328M	154	154	176	182	194	286	286	268.8	3	3	22.0
-	-	-	-	154	177	182	-	286	-	-	3	3	21.6
-	-	-	-	154	176	182	-	286	-	-	3	3	21.7
-	N2328M	NF2328M	154	154	173	182	194	286	286	270.6	3	3	34.8
-	-	-	-	154	175	182	195	286	-	-	3	3	36.8
-	-	-	-	161	192	-	215	343	-	-	4	4	46.3
-	-	-	-	156	194	-	217	344	-	-	3.5	3.5	48.6
-	-	-	-	163	-	-	172	199	-	-	-	2.5	2.94
-	-	-	-	159	167	-	176	216	-	-	1.5	2	5.11
-	-	-	-	159	167	172	176	216	-	-	1.5	2	5.00
-	-	-	-	159	166	172	-	216	-	-	2	2	7.99
NUP230E	N230E	-	161	161	180	184	193	259	259	247.8	2.5	2.5	11.5
-	N230EM	-	161	161	180	184	-	259	259	247.8	2.5	2.5	11.5
NUP230M	N230M	NF230M	161	161	179	184	192	259	259	244.2	2.5	2.5	11.9
-	-	-	-	161	180	184	-	259	-	-	2.5	2.5	11.6
NUP230EQ	-	-	-	161	180	184	193	259	-	-	2.5	2.5	11.7
-	-	-	-	161	172	184	-	259	-	-	2.5	2.5	14.0
-	-	-	-	161	178	184	-	259	-	-	2.5	2.5	18.4
-	-	-	-	161	178	-	193	259	-	-	2.5	2.5	18.1
-	-	-	-	161	178	184	-	259	-	-	2.5	2.5	19.0
-	-	-	-	168	179	184	-	262	-	-	6	2	23.6
-	-	-	-	166	179	184	-	262	-	-	5	2	23.6
-	N330EM	-	164	164	191	195	209	306	306	290	3	3	25.9
NUP330M	N330M	-	164	164	189	195	208	306	306	286	3	3	26.8
-	-	-	-	164	190	-	207	309	-	-	3	3	27.3
-	-	-	-	164	190	195	-	306	-	-	3	3	26.7
NUP2330M	N2330M	NF2330M	164	164	186	195	208	306	306	287.8	3	3	43.6
-	-	-	-	164	188	195	208	306	-	-	3	3	43.2

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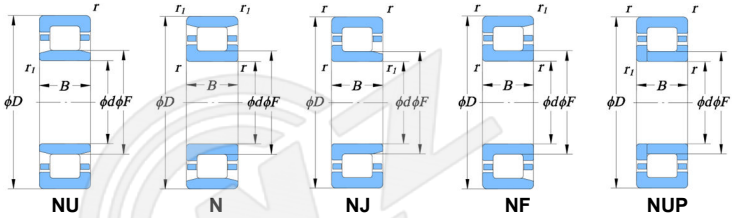
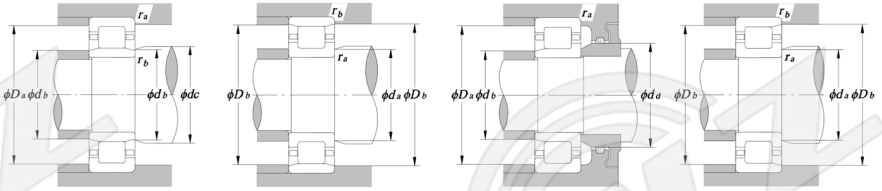
d 150～160mm





Principal dimensions (mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations	
d	*D*	*B*	r_{min}	r_{1min}	*F*	*E*	C_r	C_{or}	Grease	Oil	*NU*	*NJ*
150	320	108	4	4	193	283	1220	1500	1700	2000	NU2330EMA	-
	320	108	4	4	193	277	1130	1420	1700	2000	NU2330MN	-
	320	108	4	4	193	277	1130	1420	1700	2000	NU2330MWB	-
	320	128	4	4	193	283	1420	1820	1400	1800	-	NJ330X2EM
	320	65(108)	4	4	193	283	865	967	1700	2000	NU330EWBM	-
	380	85	5	5	207	323	1200	1290	1400	1700	-	NJ430M
158	290	80(110)	3	3	193	261	865	1150	1800	2200	NU2232WBK3	NJ2232WBK3
158.5	290	80(110)	3	3	193	261	865	1150	1800	2200	NU2232WBK2	NJ2232WBK2
	290	80(85)	3	3	193	261	865	1150	1700	2100	NUHJ2232WBYK2	NJ2232WBYK2
	290	80(97.5)	3	3	193	261	865	1150	1700	2100	NUHJ2232WBY1K2	-
159	290	80(110)	3	3	193	261	865	1150	1800	2200	NU2232WBK1	NJ2232WBK1
	290	80(85)	3	3	193	261	865	1150	1800	2200	NUHJ2232WBYK1	NJ2232WBYK1
	290	80(97.5)	3	3	193	261	865	1150	1700	2100	NUHJ2232WBY1K1	-
159.5	290	80(110)	3	3	193	261	865	1150	1700	2100	NU2232WBK	NJ2232WBK
	290	80(85)	3	3	193	261	865	1150	1700	2100	NUHJ2232WBYK	NJ2232WBYK
	290	80(97.5)	3	3	193	261	865	1150	1700	2100	NUHJ2232WBY1K	-
160	220	28	2	2	175	205	207	307	2100	2600	-	-
	220	36	2	2	173	205	270	411	2100	2600	-	NJ2932M
	230	22	1.5	1.5	181	209	153	220	2900	3500	-	-
	240	25	1.5	1.5	184	216	196	278	2800	3400	-	-
	240	38	2.1	2.1	180	220	276	368	2400	3000	NU1032M	NJ1032M
	240	38	1.5	2.1	179	223	348	463	2400	3000	NU1032EM	NJ1032EM
	240	38	2.1	2.1	180	220	268	354	2400	3000	NU1032Q1	-
	290	48	3	3	195	259	541	653	1800	2200	NU232E	NJ232E
	290	48	3	3	193	257	518	616	1800	2200	NU232M	NJ232M
	290	48	3	3	195	259	518	617	1800	2200	NU232EM	NJ232EM
	290	48	3	3	195	259	518	617	1800	2200	NU232EMA	-
	290	48	3	3	195	259	518	617	1800	2200	NU232F1	-
	290	80	3	3	193	261	853	1130	1800	2200	-	NJ2232MA
	290	80	3	3	193	261	903	1210	1800	2200	NU2232EMA	-
	290	80	3	3	193	261	865	1150	1800	2200	-	-
	290	80	3	3	193	261	865	1150	1800	2200	NU2232EM	NJ2232EM
	290	80	3	3	195	255	747	1030	1800	2200	-	NJ2232M
	290	80	3	3	193	257	726	947	1800	2200	NU2232F1	-
	290	104	3	3	196	254	1060	1670	1700	2100	NU3232M	-
	290	80(110)	3	3	193	261	865	1150	1800	2200	NU2232WB	NJ2232WB

Designations			Abutment and fillet dimensions(mm)										Mass (kg)
NUP	*N*	*NF*	d_{amin}	d_{bmin}	d_{hmax}	d_{cmin}	d_{dmin}	D_{amax}	D_{bmax}	D_{bmin}	r_{amax}	r_{bmax}	(approx.)
-	-	-	-	164	-	195	-	306	-	-	3	3	44.9
-	-	-	-	164	186	195	-	306	-	-	3	3	43.0
-	-	-	-	164	186	195	-	306	-	-	3	3	41.6
-	-	-	-	164	186	-	209	306	-	-	3	3	49.9
-	-	-	-	164	186	195	-	306	-	-	3	3	29.5
-	-	-	-	167	203	-	230	363	-	-	4	4	54.8
-	-	-	-	169	193	195	206	279	-	-	2.5	2.5	26.5
-	-	-	-	170	193	195	206	279	-	-	2.5	2.5	26.4
-	-	-	-	170	193	195	206	279	-	-	2.5	2.5	24.5
-	-	-	-	170	193	195	-	279	-	-	2.5	2.5	26.9
-	-	-	-	170	193	195	206	279	-	-	2.5	2.5	25.0
-	-	-	-	170	193	195	206	279	-	-	2.5	2.5	24.4
-	-	-	-	170	193	195	-	279	-	-	2.5	2.5	26.6
-	-	-	-	171	193	195	206	279	-	-	2.5	2.5	26.0
-	-	-	-	171	193	195	206	279	-	-	2.5	2.5	24.3
-	-	-	-	171	193	195	-	279	-	-	2.5	2.5	26.6
-	-	NF1932EM	168	-	-	-	-	-	212	206.8	2	2	3.44
-	-	NF2932M	168	168	171	-	180	212	212	207	2	2	4.29
-	N032X3M	-	167	-	-	-	-	-	223	212.8	1.5	1.5	3.37
-	N032M	-	167	-	-	-	-	-	233	220	1.5	1.5	4.47
-	N1032M	-	169	169	177	182	188	231	231	225.8	2	2	5.96
-	-	-	-	169	177	181	188	231	-	-	1.5	2	6.22
-	-	-	-	169	177	182	-	231	-	-	2	2	5.86
NUP232E	N232E	-	171	171	193	197	207	279	279	264.8	2.5	2.5	14.0
NUP232M	N232M	-	171	171	190	195	204	279	279	263	2.5	2.5	14.3
-	-	-	-	171	193	197	207	279	-	-	2.5	2.5	14.5
-	-	-	-	171	193	197	-	279	-	-	2.5	2.5	14.3
-	-	-	-	171	193	197	-	279	-	-	2.5	2.5	13.9
-	-	-	-	171	189	-	205	279	-	-	2.5	2.5	24.2
-	-	-	-	171	190	195	-	279	-	-	2.5	2.5	23.0
-	N2232ENM	-	171	-	-	-	-	-	279	268.2	2.5	2.5	23.5
-	-	-	-	171	189	195	205	279	-	-	2.5	2.5	23.9
-	-	-	-	171	190	-	206	279	-	-	2.5	2.5	23.9
-	-	-	-	171	193	195	-	279	-	-	2.5	2.5	23.3
-	-	-	-	171	191	198	-	279	-	-	2.5	2.5	32.4
-	-	-	-	171	193	195	204	279	-	-	2.5	2.5	26.0

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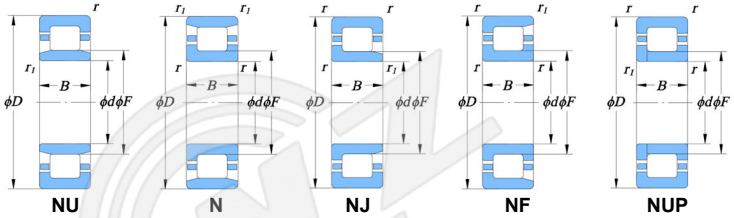
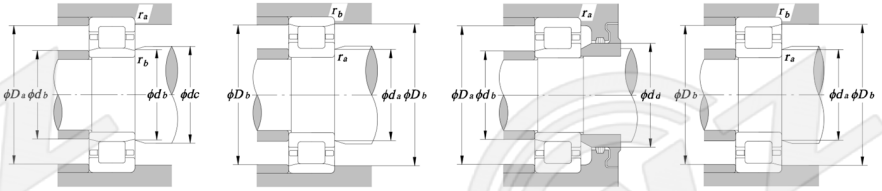
d 160～180mm

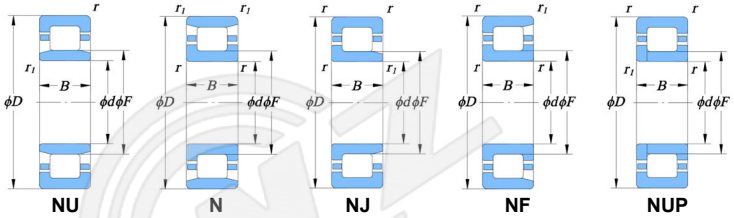


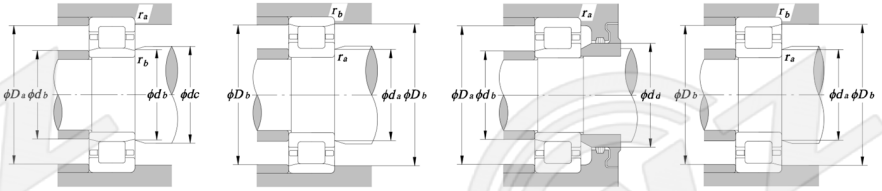


Principal dimensions (mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations	
d	*D*	*B*	r_{min}	r_{1min}	*F*	*E*	C_r	C_{or}	Grease	Oil	*NU*	*NJ*
160	290	80(110)	3	3	193	261	867	1150	1800	2200	-	NJ2232WB1Q1
	290	80(85)	3	3	193	261	867	1150	1800	2200	-	NJ2232WB11Q1
	290	80(85)	3	3	193	261	865	1150	1800	2200	NUHJ2232WBY	NJ2232WBY
	290	80(97.5)	3	3	193	261	867	1150	1800	2200	NU2232WBQ1	-
	290	80(97.5)	3	3	193	261	865	1150	1800	2200	NUHJ2232WBY1	-
	320	108	4	4	198	282	1130	1430	1500	1800	NU632M	-
	340	68	4	4	204	300	960	1080	1500	1800	NU332EMA	-
	340	68	4	4	208	292	783	900	1500	1800	NU332M	NJ332M
	340	68	4	4	204	300	960	1080	1500	1800	NU332EM	-
	340	68	4	4	204	300	960	1080	1500	1800	NU332EQ1	-
	340	114	4	4	208	292	1190	1550	1350	1700	NU2332M	NJ2332M
	340	114	4	4	204	300	1460	1840	1350	1700	NU2332EM	NJ2332EM
	340	114	4	4	204	300	1460	1840	1350	1700	NU2332E	-
	340	114	4	4	204	300	1380	1710	1350	1700	NU2332EMA	-
170	230	28	1.1	2	184	216	201	288	2400	2900	-	-
	260	42	2.1	2.1	193	237	310	408	2200	2800	NU1034M	NJ1034M
	260	42	2.1	2.1	192	240	396	527	2200	2800	-	NJ1034EM
	265	42	2.1	2.1	193	237	344	467	580	1100	-	-
	310	52	4	4	207	279	673	816	1800	2200	NU234EM	-
	310	52	4	4	208	272	582	732	1800	2200	NU234M	NJ234M
	310	52	4	4	208	272	582	732	1800	2200	NU234Q1	-
	310	86	4	4	205	281	1070	1430	1800	2300	NU2234EMA	-
	310	86	4	4	208	272	923	1320	1800	2300	NU2234MA	-
	310	86	4	4	205	281	1070	1430	1800	2300	NU2234EM	NJ2234EM
	310	86	4	4	205	281	1070	1430	1800	2300	-	NJ2234EQ1
	310	86	4	4	208	272	923	1320	1800	2200	NU2234M	-
	310	52(86)	4	4	207	279	673	816	1800	2200	NU234EWBM	-
	360	72	4	4	220	310	893	1040	1400	1700	NU334M	NJ334M
	360	72	4	4	218	318	1040	1180	1400	1700	NU334EM	-
	360	120	4	4	216	306	1360	1770	1400	1700	NU2334EMA	-
	360	120	4	4	220	310	1430	1890	1400	1700	NU2334M	NJ2334M
	360	120	4	4	216	316	1550	1980	1400	1700	-	NJ2334EM
	360	120	4	4	216	316	1470	1830	1400	1700	-	NJ2334EMA
	360	120	4	4	220	310	1360	1780	1400	1700	NU2334MA	-
180	250	33	2	1.1	197	233	245	349	2200	2800	-	-
	280	31	2	2	210	260	341	434	2000	2400	-	-

Designations			Abutment and fillet dimensions(mm)										Mass (kg)
NUP	*N*	*NF*	d_{amin}	d_{bmin}	d_{bmax}	d_{cmin}	d_{dmin}	D_{amax}	D_{bmax}	D_{bmin}	r_{amax}	r_{bmax}	(approx.)
-	-	-	-	171	193	-	206	279	-	-	2.5	2.5	26.0
-	-	-	-	171	193	-	206	279	-	-	2.5	2.5	24.2
-	-	-	-	171	193	195	206	279	-	-	2.5	2.5	24.2
-	-	-	-	171	193	195	-	279	-	-	2.5	2.5	24.8
-	-	-	-	171	193	195	-	279	-	-	2.5	2.5	26.6
-	-	-	-	174	191	200	-	306	-	-	3	3	40.9
-	-	-	-	174	201	206	-	326	-	-	3	3	31.4
-	N332M	-	174	174	204	210	223	326	326	300.4	3	3	30.8
-	-	-	-	174	201	206	-	326	-	-	3	3	30.8
-	-	-	-	174	201	206	-	326	-	-	3	3	31.3
NUP2332M	N2332M	-	174	174	201	210	223	326	326	303.8	3	3	54.3
-	-	-	-	174	200	206	222	326	-	-	3	3	53.0
-	-	-	-	174	200	206	-	326	-	-	3	3	50.7
-	-	-	-	174	200	206	-	326	-	-	3	3	53.9
-	N1934M	-	178	-	-	-	-	-	224	220.6	1.1	-	3.64
-	N1034M	-	179	179	189	195	201	251	251	244	2	2	8.24
-	-	-	-	179	189	-	201	251	-	-	2	2	8.28
-	N1034X1M	-	179	-	-	-	-	-	256	243.6	2	2	7.97
NUP234EM	N234EM	-	184	184	205	209	220	296	296	285.4	3	3	18.1
-	N234M	-	184	184	205	210	221	296	296	279.4	3	3	18.4
-	-	-	-	184	205	210	-	296	-	-	3	3	18.1
-	-	-	-	184	201	207	-	296	-	-	3	3	29.0
-	-	-	-	184	204	210	-	296	-	-	3	3	32.0
-	-	-	-	184	201	207	219	296	-	-	3	3	29.5
-	-	-	-	184	201	-	219	296	-	-	3	3	29.5
-	-	-	-	184	204	210	-	296	-	-	3	3	30.5
-	-	-	-	184	203	209	-	296	-	-	3	3	21.1
-	N334M	NF334M	184	184	215	222	238	346	346	318.6	3	3	38.0
-	-	-	-	184	215	220	-	346	-	-	3	3	36.1
-	-	-	-	184	210	218	-	346	-	-	3	3	62.2
-	N2334M	-	184	184	212	222	237	346	346	323.2	3	3	63.2
-	-	-	-	184	210	-	235	346	-	-	3	3	62.1
-	-	-	-	184	201	-	235	346	-	-	3	3	61.8
-	-	-	-	184	212	222	-	346	-	-	3	3	61.5
-	-	NF1936M	188	-	-	-	-	-	242	233	2	1.1	4.96
-	N036EM	-	188	-	-	-	-	-	272	266.21	2	2	7.15

d 180～190mm





Principal dimensions (mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations	
d	*D*	*B*	r_{min}	r_{1min}	*F*	*E*	C_r	C_{or}	Grease	Oil	*NU*	*NJ*
180	280	31	2	2	210	250	294	419	2000	2400	-	-
	280	31	2	2	210	250	294	419	2000	2400	-	-
	280	46	2.1	2.1	205	255	399	528	2000	2600	NU1036M	NJ1036M
	280	46	2.1	2.1	205	255	439	598	2000	2600	-	NJ1036EM
	280	50	2.1	2.1	205	255	464	640	2000	2600	-	-
	320	52	4	4	217	289	671	822	2000	2600	NU236EM	-
	320	52	4	4	218	282	580	737	1700	2000	NU236M	NJ236M
	320	52	4	4	218	282	580	737	1700	2000	NU236L3	-
	320	86	4	4	215	291	1120	1520	1700	2000	NU2236EM	NJ2236EM
	320	86	4	4	219	287	1030	1480	1700	2000	NU2236MA	-
	320	86	4	4	215	291	1120	1520	1700	2000	-	NJ2236EQ1
	320	112	4	4	218	282	1240	1960	1700	2000	NU3236M	-
	320	130	4	4	218	282	1390	2260	1500	1800	NU4236X2M	-
	320	108(127)	5	5	218	282	1130	1730	1500	1800	NU2236X2MAWB1	-
	320	86(106)	4	4	215	291	1120	1520	1500	1800	NU2236EMAWB	-
	380	75	4	4	230	330	1040	1190	1500	1800	NU336M	NJ336M
	380	75	4	4	231	335	1100	1260	1500	1800	NU336EM	NJ336EM
	380	75	4	4	231	335	1100	1260	1500	1800	NU336EMA	-
	380	126	4	4	227	335	1740	2200	1300	1500	NU2336EM	NJ2336EM
	380	126	4	4	232	328	1530	2020	1300	1600	NU2336M	NJ2336M
190	260	42	2	2	208	242	368	625	2200	2800	-	NJ2938
	260	42	2	1.1	208	242	368	625	2200	2800	NU2938Q1	-
	290	46	2.1	2.1	215	265	450	626	2000	2600	-	NJ1038EM
	290	46	2.1	2.1	215	265	436	601	2000	2600	NU1038M	NJ1038M
	290	46	2.1	2.1	215	265	436	601	2000	2600	-	NJ1038Q1
	290	46	2.1	2.1	215	265	436	601	2000	2600	NU1038MA	-
	340	55	4	4	230	306	743	920	1600	1900	NU238EM	NJ238EM
	340	55	4	4	230	306	774	971	1600	1900	-	NJ238E
	340	55	4	4	231	299	651	835	1600	1900	NU238M	NJ238M
	340	92	4	4	228	308	1210	1670	1600	1900	NU2238EM	NJ2238EM
	340	92	4	4	228	308	1210	1670	1600	1900	NU2238M	-
	340	120	4	4	231	299	1430	2300	1600	1900	NU3238M	-
	400	78	5	5	245	345	1090	1290	1200	1500	NU338M	NJ338M
	400	132	5	5	240	348	1900	2500	1200	1500	-	NJ2338EM
	400	132	5	5	245	345	1770	2400	1200	1500	-	NJ2338MA
	400	132	5	5	240	348	1800	2340	1200	1500	NU2338EMA	-

Designations			Abutment and fillet dimensions(mm)									Mass (kg)
NUP	*N*	*NF*	d_{amin}	d_{bmin}	d_{bmax}	d_{cmin}	d_{dmin}	D_{amax}	D_{bmax}	D_{bmin}	r_{amax}	r_{bmax}	(approx.)
-	N036L	-	188	-	-	-	-	-	272	256.4	2	2	7.08
-	N036M	-	188	-	-	-	-	-	272	256.4	2	2	8.59
-	N1036M	-	189	189	201	207	215	271	271	261.2	2	2	10.3
-	-	-	-	189	202	-	215	271	-	-	2	2	10.9
-	-	NF1036X2M	189	-	-	-	-	-	271	261.2	2	2	11.9
-	N236EM	-	194	194	215	219	-	306	306	294.6	3	3	18.7
NUP236M	N236M	-	194	194	215	220	230	306	306	289.36	3	3	19.7
-	-	-	-	194	215	220	-	306	-	-	3	3	18.6
NUP2236EM	-	-	-	194	212	217	229	306	-	-	3	3	31.0
-	-	-	-	194	215	221	-	306	-	-	3	3	62.2
-	-	-	-	194	211	-	229	306	-	-	3	3	31.7
-	-	-	-	194	214	220	-	306	-	-	3	3	41.6
-	-	-	-	194	211	220	-	306	-	-	3	3	48.0
-	-	-	-	197	213	220	-	303	-	-	4	4	41.9
-	-	-	-	194	211	217	-	306	-	-	3	3	32.2
-	N336M	-	194	194	226	232	248	366	366	339.2	3	3	42.0
-	-	-	-	194	228	233	249	366	-	-	3	3	42.7
-	-	-	-	194	228	233	-	366	-	-	3	3	43.3
-	-	-	-	194	221	229	246	366	-	-	3	3	72.4
-	N2336M	-	194	194	223	234	251	366	366	340.8	3	3	72.8
-	-	-	-	197	205	-	215	253	-	-	2	2	7.24
-	-	-	-	195	206	210	-	253	-	-	2	1.1	6.98
-	-	-	-	199	212	-	225	281	-	-	2	2	11.2
-	-	-	-	199	212	217	225	281	-	-	2	2	11.1
-	-	-	-	199	212	-	225	281	-	-	2	2	11.2
-	-	-	-	199	212	217	-	281	-	-	2	2	11.2
-	N238EM	-	204	204	227	232	243	326	326	312.6	3	3	22.9
-	-	-	-	204	227	-	243	326	-	-	3	3	22.7
NUP238M	-	-	-	204	228	233	243	326	-	-	3	3	22.0
-	-	-	-	204	223	230	239	326	-	-	3	3	39.1
-	-	-	-	204	223	230	-	326	-	-	3	3	38.6
-	-	-	-	204	227	233	-	326	-	-	3	3	51.2
-	N338M	-	207	207	240	247	263	383	383	354	4	4	49.4
-	-	-	-	207	234	-	261	383	-	-	4	4	84.5
-	-	-	-	207	237	-	265	383	-	-	4	4	86.7
-	-	-	-	207	235	242	-	383	-	-	4	4	82.8

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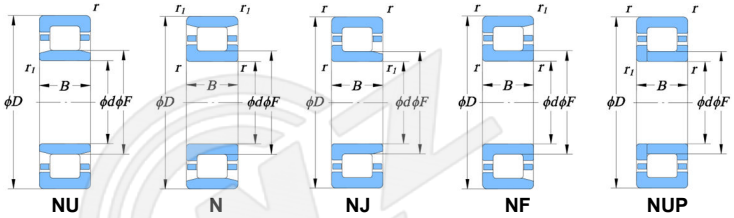
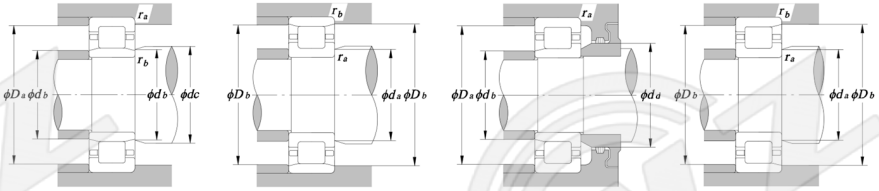
d 190～220mm





Principal dimensions (mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations	
d	*D*	*B*	r_{min}	r_{1min}	*F*	*E*	C_r	C_{or}	Grease	Oil	*NU*	*NJ*
190	400	132	5	5	245	345	1680	2250	1200	1500	NU2338M	-
190.5	266.7	103.188	2	1.1	208	248	788	1480	1500	1800	NU6/190.5	-
200	280	48	2.1	2.1	218	262	444	674	2000	2600	-	NJ2940M
	310	34	2	2	233	277	350	505	2200	2800	-	-
	310	51	2.1	2.1	227	285	586	807	1900	2400	-	NJ1040EM
	310	51	2.1	2.1	227	283	490	656	1900	2400	NU1040M	NJ1040M
	320	48	2.1	2.1	227	283	490	656	1900	2400	-	-
	320	88.9	3	3	232.689	288.689	834	1310	1700	2000	NU3040X3M	-
	360	58	4	4	243	323	819	1020	1500	1800	NU240EM	-
	360	58	4	4	244	316	719	928	1500	1800	NU240M	NJ240M
	360	58	4	4	243	323	819	1020	1500	1800	-	NJ240EM
	360	58	4	4	243	323	819	1020	1500	1800	NU240EMA	-
	360	98	4	4	241	325	1360	1900	1500	1800	-	NJ2240EQ1A
	360	98	4	4	241	325	1360	1900	1500	1800	NU2240EM	-
	360	98	4	4	244	316	1060	1530	1500	1800	-	NJ2240M
	360	120.65	4	4	244	316	1400	2180	1900	2400	NU5240XP	-
	360	85(115)	4	4	244	316	1060	1530	1900	2400	NU1240X2WBM	-
	360	98(140)	4	4	241	325	1300	1790	1300	1600	NU2240EMWB	-
	420	80	5	5	260	360	1140	1390	1300	1600	NU340F3	-
	420	80	5	5	260	360	1140	1390	1300	1600	NU340M	-
	420	138	5	5	256	364	1900	2530	1200	1500	NU2340M	NJ2340M
	420	138	5	5	253	377	2280	2940	1200	1500	NU2340EM	NJ2340EM
	420	138	5	5	260	360	1760	2420	1200	1500	NU2340MA	-
	420	165	5	5	260	360	2320	3450	1200	1500	NU3340M	-
	420	165	5	5	260	360	2320	3450	1200	1500	-	-
	420	138(180)	5	5	253	377	2280	2940	1100	1400	NU2340EMWB	-
203.23	310	82	3	3	229.006	285.006	903	1440	1000	1200	NU30/203X4M	-
	310	82	3	3	229.006	285.006	903	1440	1000	1200	NU30/203X4Q1	-
220	300	48	2.1	2.1	240	280	434	720	1900	2400	NU2944M	NJ2944M
	300	48	2.1	2.1	240	280	434	720	1900	2400	NU2944Q1	-
	340	56	3	3	250	310	557	759	1800	2200	NU1044MA	-
	340	56	3	3	250	310	557	759	1800	2200	NU1044M	NJ1044M
	340	56	3	3	250	310	557	759	1800	2200	NU1044NM	-
	340	90	3	3	252	308	1060	1830	1800	2200	NU3044M	-
	340	90	3	3	251.409	308.595	1050	1770	1800	2200	NU3044Q1	-
	350	98.4	3	3	253	317	1230	2010	1800	2200	NU3044X3M	-

Designations			Abutment and fillet dimensions(mm)										Mass (kg)
NUP	*N*	*NF*	d_{amin}	d_{bmin}	d_{bmax}	d_{cmin}	d_{dmin}	D_{amax}	D_{bmax}	D_{bmin}	r_{amax}	r_{bmax}	(approx.)
-	-	-	-	207	237	247	-	383	-	-	4	4	82.9
-	-	-	-	196	204	210	-	259	-	-	2	1.1	18.0
-	-	-	-	210	215	-	226	270	-	-	2	2	9.43
-	N040M	-	209	-	-	-	-	-	301	282.6	2	2	10.1
-	-	-	-	210	224	-	238	300	-	-	2	2	14.8
-	-	-	-	210	223	230	238	300	-	-	2	2	14.5
-	N640M	-	210	-	-	-	-	-	310	290.8	2	2	14.7
-	-	-	-	213	228	236	-	307	-	-	2.5	2.5	28.7
NUP240EM	-	-	-	215	240	246	257	345	-	-	3	3	27.0
-	N240M	-	215	215	240	247	257	345	345	324.6	3	3	26.8
-	-	-	-	215	240	-	257	345	-	-	3	3	26.5
-	-	-	-	215	240	246	-	345	-	-	3	3	27.5
-	-	-	-	215	-	-	258	345	-	-	3	3	45.6
-	N2240EM	-	215	215	236	244	-	345	345	334.8	3	3	43.5
NUP2240M	-	-	-	215	237	-	257	345	-	-	3	3	45.9
-	-	-	-	215	239	247	-	345	-	-	3	3	57.6
-	-	-	-	215	239	247	-	345	-	-	3	3	42.9
-	-	-	-	215	235	244	-	345	-	-	3	3	50.1
-	-	-	-	218	255	263	-	402	-	-	4	4	57.3
-	-	-	-	218	255	263	-	402	-	-	4	4	56.7
-	N2340M	-	218	218	247	259	276	402	402	369.4	4	4	96.5
-	-	-	-	218	249	256	273	402	-	-	4	4	96.3
-	-	-	-	218	250	263	-	402	-	-	4	4	95.6
-	-	-	-	218	253	263	-	402	-	-	4	4	115
NUP3340	-	-	-	218	-	-	278	402	-	-	4	4	121
-	-	-	-	218	246	256	-	402	-	-	4	4	102
-	-	-	-	216	225	232	-	298	-	-	2.5	2.5	24.4
-	-	-	-	216	225	232	-	298	-	-	2.5	2.5	23.9
-	-	-	-	230	237	243	248	290	-	-	2	2	10.7
-	-	-	-	230	237	243	-	290	-	-	2	2	10.5
-	-	-	-	232	244	253	-	328	-	-	2.5	2.5	18.4
-	-	NFP1044M	232	232	244	253	261	328	328	305.4	2.5	2.5	20.2
-	-	-	-	232	244	253	-	328	-	-	2.5	2.5	19.0
-	-	-	-	232	249	255	-	328	-	-	2.5	2.5	32.4
-	-	-	-	233	246	254	-	328	-	-	2.5	2.5	32.0
-	-	-	-	232	248	256	-	338	-	-	2.5	2.5	38.1

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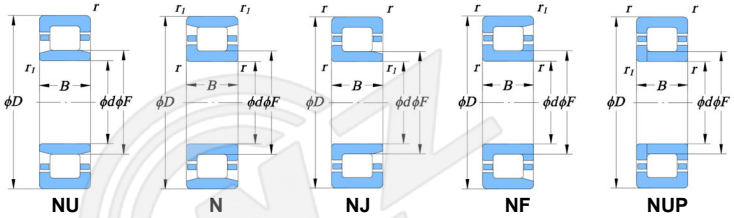
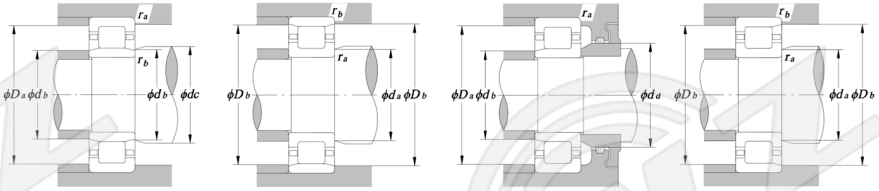
d 220～260mm





Principal dimensions (mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations	
d	*D*	*B*	r_{min}	r_{1min}	*F*	*E*	C_r	C_{or}	Grease	Oil	*NU*	*NJ*
220	370	120	4	4	258	334	1550	2440	1200	1500	NU3144M	-
	400	65	4	4	268	358	1010	1280	1500	1800	NU244EM	-
	400	65	4	4	270	350	879	1150	1500	1800	NU244M	NJ244M
	400	108	4	4	270	350	1300	1900	1300	1600	NU2244M	NJ2244M
	400	108	4	4	265	361	1640	2280	1300	1600	NU2244EM	NJ2244EM
	400	108	4	4	270	350	1440	2180	1300	1600	NU2244M	-
	400	108	4	4	265	361	1640	2280	1300	1600	NU2244EMA	-
	400	144	4	4	269	359	2110	3290	1500	1800	-	-
	400	144	4	4	265	355	2100	3260	1500	1800	-	-
	460	88	5	5	284	396	1330	1610	1000	1300	NU344M	-
	460	88	5	5	282	398	1430	1710	1000	1300	-	NJ344EM
	460	145	5	5	279	407	2450	3240	1000	1300	NU2344EM	-
	460	145	5	5	284	396	1970	2660	1000	1300	NU2344M	NJ2344M
	460	145	5	5	266.7	418.7	2660	3250	1000	1300	-	NJD2344
	460	145	5	5	275	403	2450	3230	1000	1300	NU2344EMA	-
240	320	38	2.5	1.8	260	300	321	502	1900	2400	NU1948M	NJ1948M
	360	56	3	3	270	330	551	765	1700	2000	NU1048M	NJ1048M
	360	56	3	3	270	330	551	765	1700	2000	NU1048MA	-
	360	56	3	3	270	330	569	798	1700	2000	NU1048Q1	-
	390	107.95	3	3	272.26	361.16	1500	2140	1500	1800	NUFP2148X3M	-
	390	108	4	4	278	354	1300	1990	1500	1800	NU2148X3M	-
	440	72	4	4	293	393	1240	1590	1300	1600	-	-
	440	72	4	4	295	385	1090	1440	1300	1600	NU248M	NJ248M
	440	72	4	4	293	393	1240	1590	1700	1600	NU248EMA	-
	440	120	4	4	295	385	1600	2350	1200	1500	NU2248MA	NJ2248MA
	440	146	4	4	290	390	2420	3730	1100	1400	NU5248	-
	500	95	5	5	306	442	1840	2190	900	1100	NU348EM	NJ348EM
	500	155	5	5	303	437	2960	4090	950	1200	NU2348E	-
	500	155	5	5	310	430	2330	3220	950	1200	NU2348M	-
	500	155	5	5	310	430	2330	3220	950	1200	NU2348MA	-
250	380	50	6	2.3	283	347	685	987	1800	2300	-	-
260	360	46	2.1	2.1	286	334	467	737	1600	1850	-	-
	360	75	3	3	285	335	927	1730	1600	1850	-	-
	400	65	4	4	296	364	855	1270	1500	1800	NU1052MA	-
	400	65	4	4	296	364	726	1030	1500	1800	NU1052M	NJ1052M
	400	82	4	4	294	366	1160	1800	1300	1700	NU2052EM	-

Designations			Abutment and fillet dimensions(mm)									Mass (kg)
NUP	*N*	*NF*	d_{amin}	d_{bmin}	d_{bmax}	d_{cmin}	d_{dmin}	D_{amax}	D_{bmax}	D_{bmin}	r_{amax}	r_{bmax}	(approx.)
-	-	-	-	235	251	261	-	355	-	-	3	3	55.2
-	-	-	-	235	265	271	-	385	-	-	3	3	36.8
NUP244M	N244M	-	235	235	266	273	284	385	385	359.2	3	3	36.6
-	N2244M	-	235	235	262	273	285	385	385	364	3	3	62.4
-	-	-	-	235	260	268	283	385	-	-	3	3	62.0
-	-	-	-	235	263	273	-	385	-	-	3	3	62.6
-	-	-	-	235	260	268	-	385	-	-	3	3	62.3
-	N3244EM	-	235	-	-	-	-	-	385	370.8	3	3	92.4
-	NB3244F1	-	235	-	-	-	-	-	385	367.2	3	3	77.3
-	-	NF344M	238	238	277	287	-	442	442	406.6	4	4	74.4
-	-	-	-	238	277	-	301	442	-	-	4	4	75.6
-	N2344EM	-	238	238	268	278	-	442	442	418.2	4	4	114
-	-	-	-	238	274	287	304	442	-	-	4	4	122
-	-	-	-	238	267	-	297	442	-	-	4	4	109
-	-	-	-	238	268	278	-	442	-	-	4	4	116
-	-	-	-	249	257	263	267	309	-	-	2	1.5	8.62
-	-	-	-	252	265	273	281	348	-	-	2.5	2.5	20.8
-	-	-	-	252	268	273	-	348	-	-	2.5	2.5	19.6
-	-	-	-	252	268	273	-	348	-	-	2.5	2.5	21.2
-	-	-	-	252	263	275	-	378	-	-	2.5	2.5	50.5
-	-	-	-	255	271	281	-	375	-	-	3	3	51.2
-	N248EM	-	255	-	-	-	-	-	425	401.4	3	3	50.5
NUP248M	N248M	-	255	255	291	298	311	425	425	394.4	3	3	48.8
-	-	-	-	255	290	296	-	425	-	-	3	3	51.3
-	-	-	-	255	287	298	311	425	-	-	3	3	85.6
-	-	-	-	255	287	293	-	425	-	-	3	3	104
NUP348EM	-	-	-	258	301	309	330	482	-	-	4	4	96.3
-	-	-	-	258	295	306	-	482	-	-	4	4	154
-	-	-	-	258	300	313	-	482	-	-	4	4	154
-	-	-	-	258	300	313	-	482	-	-	4	4	155
-	N650EM	-	266	-	-	-	-	-	370	355.77	5	2	21.4
-	-	NF1952M	270	-	-	-	-	-	350	341.6	2	2	14.9
NUP3952M	-	-	-	273	-	-	294	347	-	-	2.5	2.5	24.9
-	-	-	-	275	292	299	-	385	-	-	3	3	31.4
NUP1052M	-	-	-	275	290	299	308	385	-	-	3	3	34.6
-	-	-	-	275	290	297	-	385	-	-	3	3	40.1

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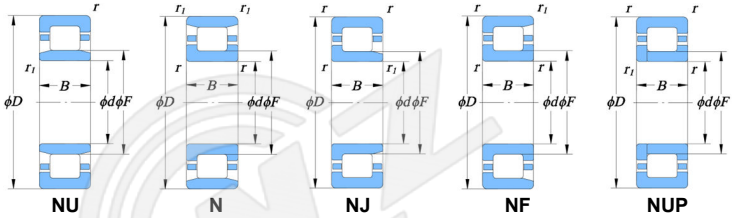
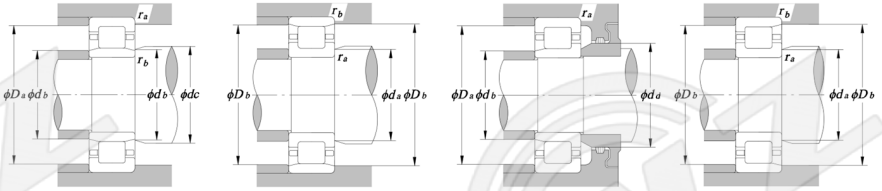
d 260～290mm





Principal dimensions (mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations	
d	*D*	*B*	r_{min}	r_{1min}	*F*	*E*	C_r	C_{or}	Grease	Oil	*NU*	*NJ*
260	400	82	4	4	294	366	1160	1800	1300	1700	NU2052ENM	-
	400	104	4	4	296	366	1460	2480	1150	1450	NU3052M	-
	400	105	4	4	296	366	1460	2480	1050	1300	NU3052X2M	-
	440	144	4	4	306	396	2200	3590	950	1250	NU3152	-
	440	144	4	4	306	396	2200	3590	950	1250	NU3152M	-
	480	80	5	5	317	425	1420	1830	1050	1350	-	NJ252EM
	480	80	5	5	320	420	1280	1700	1050	1350	NU252MA	NJ252MA
	480	80	5	5	317	425	1420	1830	1100	1400	NU252EMA	-
	480	80	5	5	320	420	1280	1700	1100	1400	NU252M	-
	480	130	5	5	320	420	1900	2810	950	1250	NU2252MA	NJ2252MA
	480	130	5	5	320	420	1900	2810	1000	1300	NU2252	-
	480	150	5	5	317	425	2670	4140	900	1100	NU2252X2	-
	480	150	5	5	320	420	2250	3490	950	1250	NU2252X2M	-
	540	102	6	6	336	464	1800	2270	850	1050	NU352M	-
	540	165	6	6	316	486	3370	4250	850	1050	-	NJD2352M
	540	165	6	6	336	472	2860	3960	850	1050	NU2352M	-
280	340	30	2	2	297	327	325	653	1800	2200	-	-
	350	42	2	2	299	333	389	753	1800	2200	-	NJ2856M
	360	30	2	2	301	341	348	583	1700	1900	-	NJ1856X3M
	380	46	2.1	2.1	306	354	495	812	1700	1900	NU1956M	NJ1956M
	380	55	2.1	2.1	304	356	684	1160	1700	1900	-	-
	420	65	4	4	316	384	741	1080	1400	1700	NU1056MA	-
	420	65	4	4	316	384	741	1080	1400	1700	NU1056M	NJ1056M
	420	82	4	4	314	386	1190	1900	1050	1300	NU2056EMA	-
	420	82	4	4	314	-	1190	1900	1050	1300	NU2056M	-
	440	135	3	3	318	406	2070	3400	1100	1400	-	-
	460	123.825	5	5	320.675	418.675	1950	2960	900	1150	NU2156X2EQ1A	-
	460	123.825	5	5	320.675	416.675	2060	3200	900	1150	NU2156X2M	-
	500	80	5	5	340	440	1280	1710	1150	1450	NU256M	NJ256M
	500	130	5	5	333	449	2320	3330	1100	1400	NU2256EM	NJ2256EM
	500	130	5	5	333	449	2320	3330	1100	1400	NU2256E	-
	500	130	5	5	333	449	2320	3330	1100	1400	NU2256EF3	-
	500	165.1	5	5	333	447	3040	4800	950	1300	NU3256X2	-
	580	108	6	6	362	498	2020	2580	850	1000	NU356M	-
	580	175	6	6	362	498	3210	4680	850	1000	NU2356M	-
290	420	65	4	4	321	389	784	1170	1300	1600	-	-

Designations			Abutment and fillet dimensions(mm)										Mass (kg)
NUP	*N*	*NF*	d_{amin}	d_{bmin}	d_{bmax}	d_{cmin}	d_{dmin}	D_{amax}	D_{bmax}	D_{bmin}	r_{amax}	r_{bmax}	(approx.)
-	-	-	-	275	290	297	-	385	-	-	3	3	40.1
-	-	-	-	275	292	299	-	385	-	-	3	3	50.9
-	-	-	-	275	292	299	-	385	-	-	3	3	51.2
-	-	-	-	275	299	309	-	425	-	-	3	3	94.1
-	-	-	-	275	299	309	-	425	-	-	3	3	94.1
-	-	-	-	278	313	-	338	462	-	-	4	4	68.8
-	-	-	-	278	315	323	338	462	-	-	4	4	68.4
-	-	-	-	278	313	320	-	462	-	-	4	4	68.4
NUP252M	-	-	-	278	315	323	338	462	-	-	4	4	68.3
-	-	-	-	278	312	323	338	462	-	-	4	4	109
-	-	-	-	278	312	323	-	462	-	-	4	4	106
-	-	-	-	278	307	320	-	464	-	-	4	4	123
-	-	-	-	278	310	323	-	462	-	-	4	4	128
-	-	-	-	282	330	339	-	518	-	-	5	5	120
-	-	-	-	282	308	-	347	518	-	-	5	5	165
-	-	-	-	282	327	339	-	518	-	-	5	5	191
-	N1856X3M	-	288	-	-	-	-	-	332	327	2	2	5.76
-	-	-	-	290	297	-	305	340	-	-	2	2	9.15
-	-	-	-	290	299	-	309	350	-	-	2	2	8.11
-	-	NF1956M	290	290	303	309	314	370	370	361.2	2	2	15.9
-	N2956X2M	-	290	-	-	-	-	-	370	363.4	2	2	18.4
-	-	-	-	295	310	319	-	405	-	-	3	3	30.9
-	N1056M	-	295	295	310	319	328	405	405	394.2	3	3	31.5
-	-	-	-	295	310	317	-	405	-	-	3	3	42.0
-	-	-	-	295	310	317	-	405	-	-	3	3	39.5
-	NB4056X3M	-	292	-	-	-	-	-	428	418.58	2.5	2.5	75.4
-	-	-	-	298	-	324	-	442	-	-	4	4	85.8
-	-	-	-	298	315	324	-	442	-	-	4	4	85.8
-	N256M	-	298	298	335	343	356	482	482	452.9	4	4	71.1
-	N2256EM	-	298	298	326	336	354	482	482	461.3	4	4	118
-	-	-	-	298	326	336	-	482	-	-	4	4	116
-	-	-	-	298	326	336	-	482	-	-	4	4	116
-	-	-	-	297	327	336	-	483	-	-	4	4	142
-	-	-	-	302	355	365	-	558	-	-	5	5	147
-	-	-	-	302	353	365	-	558	-	-	5	5	237
-	-	NFP10/290K	305	-	-	-	-	-	405	382.4	3	3	33.2

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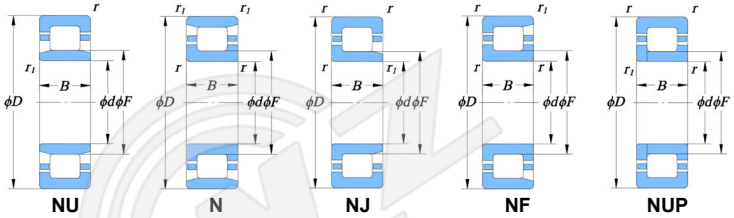
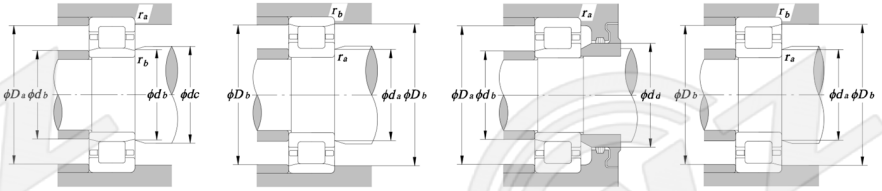
d 300～320mm





Principal dimensions (mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations	
d	*D*	*B*	r_{min}	r_{1min}	*F*	*E*	C_r	C_{or}	Grease	Oil	*NU*	*NJ*
300	380	48	2.1	2.1	322	360	511	1010	1370	1650	-	NJ2860M
	380	60	2.1	2.1	322	360	587	1210	1200	1500	-	-
	420	72	3	3	326.5	390.5	990	1650	900	1100	NU2960M	-
	420	72	3	3	326.5	390.5	1020	1710	900	1100	NU2960MA	-
	420	90	3	3	328.5	392.5	1260	2250	1350	1600	-	-
	460	57	4	4	344	416	840	1250	1400	1700	-	NJ1060X2M
	460	74	4	4	340	420	983	1420	1200	1500	NU1060MA	-
	460	74	4	4	340	420	1040	1540	1200	1500	-	NJ1060EM
	460	74	4	4	340	420	983	1420	1200	1500	NU1060M	NJ1060M
	460	95	4	4	341	-	1500	2420	980	1250	NU2060M	-
	460	95	4	4	341	423	1500	2420	980	1250	NU2060MA	-
	460	118	4	4	340	420	1670	2810	1200	1500	NU3060F1	-
	460	118	4	4	340	420	1670	2810	1200	1500	NU3060M	-
	500	160	5	5	350	450	2700	4530	800	1000	NU3160M	-
	540	85	5	5	364	476	1570	2110	1000	1300	NU260M	NJ260M
	540	85	5	5	364	476	1570	2110	1000	1300	NU260F1	-
	540	140	5	5	364	476	2320	3490	1000	1200	-	NJ2260MA
	540	140	5	5	364	476	2320	3490	1000	1200	NU2260M	-
	620	109	7.5	7.5	385	535	2440	3140	900	1100	NU360M	-
	620	185	7.5	7.5	378	554	4350	5980	650	800	NU2360M	-
320	400	48	2.1	2.1	341	383	551	1060	1250	1550	NU2864M	-
	440	56	3	3	350	414	824	1340	1100	1400	NU1964EMA	-
	440	56	3	3	350	410	664	1060	1100	1400	NU1964M	-
	440	90	3	3	350	410	1170	2190	1100	1400	-	-
	480	74	4	4	360	440	1200	1880	1100	1400	NU1064MPA	-
	480	74	4	4	360	440	1010	1490	1100	1400	NU1064M	NJ1064M
	480	74	4	4	360	440	1010	1490	1100	1400	-	NJ1064MA
	480	74	4	4	360	440	1010	1490	1100	1400	NU1064KM	-
	480	74	4	4	360	440	1010	1490	1100	1400	NU1064Q1A	-
	480	95	4	4	360	444	1620	2660	1100	1400	-	NJ2064EQ1A
	480	121	4	4	358	446	1970	3310	1100	1400	NU3064EQ1A	-
	480	121	4	4	360	440	1710	2950	1100	1400	NU3064M	-
	500	121	4	4	366	458	1880	3050	900	1200	-	NJ3064X1EM
	540	176	5	5	374	486	3040	4970	870	1050	NU3164M	-
	580	92	5	5	390	510	1790	2430	960	1200	NU264M	NJ264M
	580	150	5	5	380	520	2970	4200	900	1100	NU2264EM	NJ2264EM

Designations			Abutment and fillet dimensions(mm)									Mass (kg)
NUP	*N*	*NF*	d_{amin}	d_{bmin}	d_{bmax}	d_{cmin}	d_{dmin}	D_{amax}	D_{bmax}	D_{bmin}	r_{amax}	r_{bmax}	(approx.)
-	-	-	-	311	319	-	329	369	-	-	2	2	13.7
-	N3860M	-	311	-	-	-	-	-	369	363	2	2	16.6
-	-	-	-	313	323	330	-	407	-	-	2.5	2.5	32.2
-	-	-	-	313	323	330	-	407	-	-	2.5	2.5	32.2
NUP3960M	-	-	-	313	-	-	340	407	-	-	2.5	2.5	40.7
-	-	-	-	315	341	-	357	445	-	-	3	3	36.5
-	-	-	-	315	334	343	-	445	-	-	3	3	43.3
-	-	-	-	315	334	-	354	445	-	-	3	3	44.8
-	-	-	-	315	334	343	354	445	-	-	3	3	44.6
-	-	-	-	317	336	344	-	443	-	-	3	3	60.0
-	-	-	-	315	337	344	-	445	-	-	3	3	60.0
-	-	-	-	315	333	343	-	445	-	-	3	3	71.8
-	-	-	-	315	333	343	-	445	-	-	3	3	72.5
-	-	-	-	313	342	353	-	487	-	-	4	4	135
-	-	-	-	318	359	367	382	522	-	-	4	4	89.3
-	-	-	-	318	359	367	-	522	-	-	4	4	86.2
-	-	-	-	318	355	-	384	522	-	-	4	4	149
-	-	-	-	318	355	367	-	522	-	-	4	4	146
-	-	-	-	327	380	388	-	593	-	-	6	6	166
-	-	-	-	327	370	381	-	593	-	-	6	6	273
-	-	-	-	330	337	344	-	390	-	-	2	2	14.3
-	-	-	-	333	346	353	-	427	-	-	2.5	2.5	24.7
-	-	-	-	333	345	353	-	427	-	-	2.5	2.5	24.7
NUP3964M	-	-	-	333	-	-	361	427	-	-	2.5	2.5	45.8
-	-	-	-	335	354	363	-	465	-	-	3	3	48.5
NUP1064M	-	-	-	335	354	363	374	465	-	-	3	3	48.4
-	-	-	-	335	354	-	374	465	-	-	3	3	48.2
-	-	-	-	335	354	363	-	465	-	-	3	3	46.3
-	-	-	-	335	354	363	-	465	-	-	3	3	46.4
-	-	-	-	335	355	-	375	465	-	-	3	3	65.0
-	-	-	-	335	351	361	-	465	-	-	3	3	80.6
-	-	-	-	335	353	363	-	465	-	-	3	3	78.1
-	-	-	-	335	359	-	381	485	-	-	3	3	92.6
-	-	-	-	338	366	377	-	522	-	-	4	4	172
NUP264M	-	-	-	338	385	393	411	562	-	-	4	4	114
-	-	-	-	338	372	383	403	562	-	-	4	4	183

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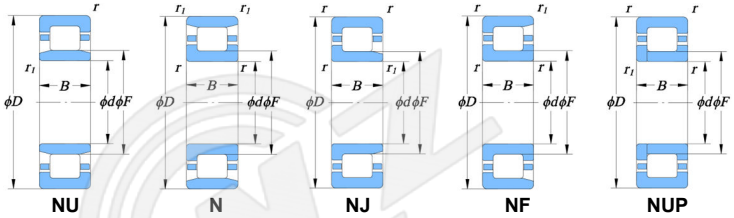
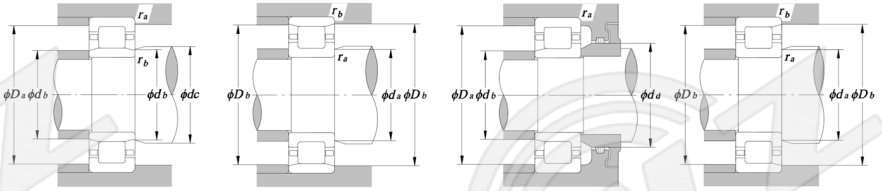
d 320～360mm





Principal dimensions (mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations	
d	*D*	*B*	r_{min}	r_{1min}	*F*	*E*	C_r	C_{or}	Grease	Oil	*NU*	*NJ*
320	580	150	5	5	390	510	2720	4170	900	1100	NU2264	-
	580	150	5	5	390	510	2720	4170	900	1100	NU2264F3	-
	580	150	5	5	390	510	2720	4170	900	1100	NU2264M	-
	580	150	5	5	377	525	3040	4180	900	1100	NUD2264M	-
	580	190.5	5	5	390	510	3360	5480	700	850	NU2264X2M	NJ2264X2M
	670	200	7.5	7.5	410	594	5050	7190	1100	1400	NU2364	-
	670	200	7.5	7.5	410	594	4570	6290	1100	1400	NU2364F1	-
330	580	151	6	6	395	515	2930	4620	900	1100	NU666/HC	-
340	420	48	2.1	2.1	361	399	544	1140	1150	1450	-	NJ2868M
	440	56	3	3	365	417	721	1320	1050	1350	NU1968X1M	NJ1968X1M
	460	56	3	3	370	-	721	1400	1050	1350	NU1968M	-
	460	72	3	3	373	429	1020	1980	800	1000	NU2968M	NJ2968M
	520	82	5	5	385	475	1250	1860	1000	1300	NU1068Q1	-
	520	82	5	5	385	475	1210	1790	1000	1300	-	NJ1068M
	520	82	5	5	385	475	1250	1860	1000	1300	NU1068M	-
	520	133	5	5	385	475	2230	3910	750	900	NU3068MA	-
	580	190	5	5	400	520	3880	6670	760	910	NU3168	-
	580	190	5	5	399	527	3570	5720	760	910	NU3168E	-
	580	190	5	5	399	527	3570	5720	760	910	NU3168EF3	-
	580	190(200)	5	5	400	520	3880	6670	760	910	NU3168WB	-
	600	170	6	6	405	535	3460	5490	740	880	NU2268X3	-
	620	92	6	6	416	544	2020	2780	600	750	-	NJ268M
	620	165	6	6	412	548	3240	4900	810	950	NU2268	-
	620	165	6	6	408	552	3720	5620	810	950	NU2268EMA	-
	620	165	6	6	412	548	3240	4900	810	950	NU2268F3	-
	620	165	6	6	412	548	3380	5170	810	950	NU2268MA	-
	620	224	6	6	410	550	5000	8420	810	950	NU3268	-
	710	212	7.5	7.5	436	620	5020	7220	550	650	NU2368EM	-
360	480	56	3	3	390	450	769	1320	750	900	NU1972MA	-
	480	72	3	3	388	452	1190	2210	1100	1300	-	-
	480	72	3	3	388	452	1190	2210	1100	1300	NU2972E	NJ2972E
	480	90	3	3	388	452	1360	2620	1100	1300	-	-
	520	82	5	5	402	478	1350	2330	700	850	-	-
	540	82	5	5	405	495	1240	1870	980	1280	NU1072M	NJ1072M
	540	82	5	5	405	495	1240	1870	980	1280	NU1072F1	-
	540	82	5	5	405	495	1240	1870	980	1280	NU1072MA	-

Designations				Abutment and fillet dimensions(mm)										Mass (kg) (approx.)
NUP	*N*	*NF*	d_{amin}	d_{bmin}	d_{bmax}	d_{cmin}	d_{dmin}	D_{amax}	D_{bmax}	D_{bmin}	r_{amax}	r_{bmax}	
-	-	-	-	338	382	393	-	562	-	-	4	4	181
-	-	-	-	338	382	393	-	562	-	-	4	4	181
-	-	-	-	338	382	393	-	562	-	-	4	4	183
-	-	-	-	338	369	380	-	562	-	-	4	4	151
-	-	-	-	338	380	393	412	562	-	-	4	4	235
-	-	-	-	347	398	413	-	643	-	-	6	6	349
-	-	-	-	347	398	413	-	643	-	-	6	6	349
-	-	-	-	352	387	398	-	558	-	-	5	5	177
-	-	-	-	351	359	-	369	409	-	-	2	2	15.3
-	-	-	-	353	362	368	374	427	-	-	2.5	2.5	22.5
-	-	-	-	353	365	373	-	447	-	-	2.5	2.5	28.3
NUP2968M	-	-	-	353	370	376	383	447	-	-	2.5	2.5	36.6
-	-	-	-	358	376	388	-	502	-	-	4	4	62.3
-	-	-	-	358	378	-	403	502	-	-	4	4	64.7
-	-	-	-	358	378	388	-	502	-	-	4	4	62.5
-	-	-	-	358	376	388	-	502	-	-	4	4	107
-	-	-	-	358	397	403	-	562	-	-	4	4	211
-	-	-	-	358	389	402	-	562	-	-	4	4	211
-	-	-	-	358	389	402	-	562	-	-	4	4	211
-	-	-	-	358	392	403	-	562	-	-	4	4	213
-	-	-	-	362	391	408	-	578	-	-	5	5	205
-	-	-	-	362	412	-	440	598	-	-	5	5	131
-	-	-	-	362	400	415	-	598	-	-	5	5	229
-	-	-	-	362	402	411	-	598	-	-	5	5	234
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-	-	-	-	367	421	439	-	683	-	-	6	6	431
-	-	-	-	373	386	393	-	467	-	-	2.5	2.5	28.2
-	-	NF2972EM	372	-	-	-	-	-	468	459	2.5	2.5	37.6
-	-	-	-	372	385	391	399	468	-	-	2.5	2.5	37.8
NUP3972M	-	-	-	372	-	-	399	468	-	-	2.5	2.5	51.3
NUP1072X1M	-	-	-	378	-	-	416	502	-	-	4	4	62.4
-	N1072M	NF1072M	378	378	401	408	421	522	522	506.4	4	4	66.6
-	-	-	-	378	401	408	-	522	-	-	4	4	65.2
-	-	-	-	378	401	408	-	522	-	-	4	4	66.2

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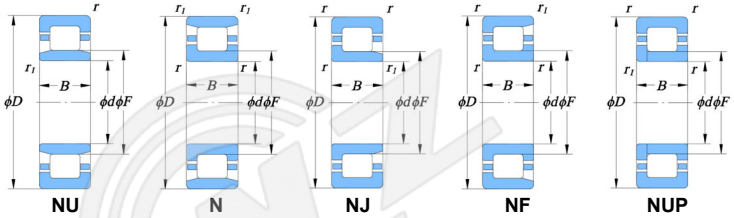
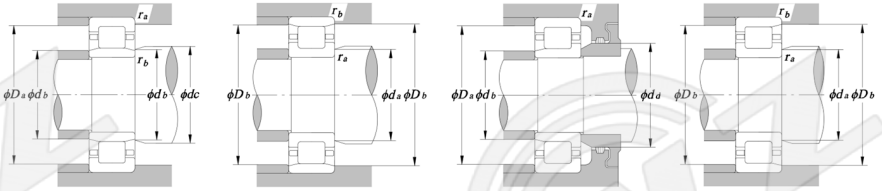
d 360～400mm

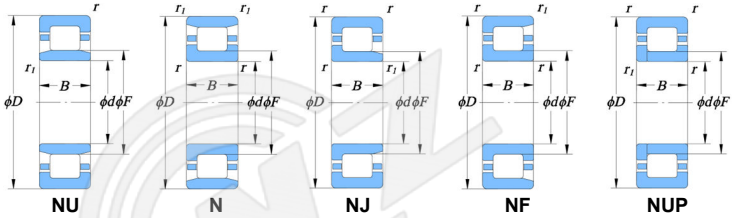


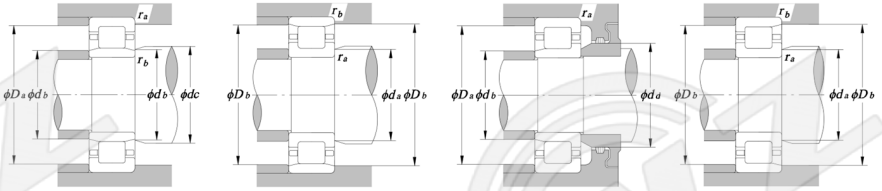


Principal dimensions (mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations	
d	*D*	*B*	r_{min}	r_{1min}	*F*	*E*	C_r	C_{or}	Grease	Oil	*NU*	*NJ*
360	540	82	5	5	405	495	1240	1870	980	1280	NU1072N1MA	-
	540	106	5	5	405	495	1750	2900	870	1050	NU2072MA	-
	540	134	5	5	405	495	2290	4100	800	1000	NU3072M	-
	600	192	5	5	420	548	3820	6310	900	1000	NU3172F3	-
	600	192	5	5	420	548	3820	6310	900	1000	NU3172M	-
	650	170	6	6	437	573	3360	5210	800	950	NU2272M	-
	650	232	6	6	435	579	4780	7880	800	950	NU3272M	-
	750	224	7.5	7.5	455	655	5850	8440	700	850	NU2372	-
	750	224	7.5	7.5	455	655	5850	8440	700	850	NU2372F3	-
	750	224	7.5	7.5	455	655	5560	7880	700	850	-	-
370	490	90	3	3	398	462	1400	2750	710	900	-	-
379.5	480	60	2.1	2.1	406	454	677	1330	900	1180	-	-
	480.5	60	2.1	2.1	406	454	677	1330	900	1180	-	-
380	480	46	2.1	2.1	407	459	601	1080	950	1250	NU1876M	NJ1876M
	480	60	1.1	1.1	406	454	667	1300	900	1180	-	-
	520	82	4	4	418	482	1300	2540	920	1200	-	-
	540	82	5	5	422	502	1560	2750	650	800	NU2976X3	-
	560	82	5	5	425	515	1270	1960	650	800	NU1076M	NJ1076M
	560	106	5	5	425	519	2120	3670	800	950	NU2076EM	-
	560	135	5	5	425	515	2340	4280	800	950	NU3076F1	-
	560	135	5	5	425	515	2340	4280	800	950	NU3076M	-
	680	175	6	6	462	598	3480	5530	730	860	NU2276MA	-
	680	177	6	6	460	600	3710	5890	550	650	NU2276X2MA	-
	680	240	6	6	458	608	5460	9290	730	860	NU3276	-
	780	270	6	6	485	679	7710	12500	500	600	NU2376X2	-
400	500	75	2.1	2.1	425	475	915	1940	980	1250	-	NJ3880M
	500	75	2.1	2.1	425	475	915	1940	980	1250	NU3880Q1	-
	540	65	4	4	434	510	1060	1750	900	1150	NU1980M	NJ1980M
	540	65	4	4	434	510	1060	1750	900	1150	NU1980	-
	540	65	4	4	434	510	1060	1750	900	1150	NU1980Q1A	-
	540	82	4	4	435	507	1470	2780	900	1150	-	NJ2980
	540	82	4	4	438	506	1340	2580	900	1150	NU2980M	-
	600	90	5	5	450	550	1520	2330	900	1100	-	NJ1080
	600	90	5	5	450	550	1520	2330	900	1100	NU1080M	NJ1080M
	600	90	5	5	450	550	1520	2330	900	1100	NU1080MA	-
	600	118	5	5	448	552	2570	4480	750	900	NU2080E	-

Designations			Abutment and fillet dimensions(mm)										Mass (kg) (approx.)
NUP	*N*	*NF*	d_{amin}	d_{bmin}	d_{bmax}	d_{cmin}	d_{dmin}	D_{amax}	D_{bmax}	D_{bmin}	r_{amax}	r_{bmax}	
-	-	-	-	378	401	408	-	522	-	-	4	4	66.2
-	-	-	-	378	399	408	-	522	-	-	4	4	88.0
-	-	-	-	378	398	408	-	522	-	-	4	4	112
-	-	-	-	378	410	423	-	582	-	-	4	4	227
-	-	-	-	378	410	423	-	582	-	-	4	4	221
-	-	-	-	382	427	440	-	628	-	-	5	5	261
-	-	-	-	382	422	438	-	628	-	-	5	5	352
-	-	-	-	387	445	458	-	723	-	-	6	6	480
-	-	-	-	387	445	458	-	723	-	-	6	6	480
NUP2372M	-	-	-	387	-	-	483	723	-	-	6	6	513
-	-	NFP3974X3Q1	382	-	-	-	-	-	478	456	2.5	2.5	51.2
NUP2876K	N2876K	-	391	391	-	-	414	469	469	462.2	2	2	26.6
NUP2876KY	N2876KY	-	391	391	-	-	414	470	469.5	462.2	2	2	26.7
NUP1876M	-	-	-	391	404	410	416	469	-	-	2	2	21.7
NUP2876	N2876	-	386	386	-	-	414	474	474	462.2	1.1	1.1	26.5
-	N2976M	-	395	-	-	-	-	-	505	489.9	3	3	62.8
-	-	-	-	398	419	425	-	522	-	-	4	4	63.6
-	-	-	-	398	419	428	443	542	-	-	4	4	71.9
NUP2076EM	-	-	-	398	418	428	442	542	-	-	4	4	94.6
-	-	-	-	398	418	428	-	542	-	-	4	4	117
-	-	-	-	398	418	428	-	542	-	-	4	4	118
-	-	-	-	402	452	465	-	658	-	-	5	5	289
-	-	-	-	400	448	463	-	660	-	-	5	5	293
-	-	-	-	402	442	461	-	658	-	-	5	5	383
-	-	-	-	402	472	488	-	758	-	-	5	5	651
-	-	-	-	411	419	-	434	489	-	-	2	2	34.5
-	-	-	-	411	419	428	-	489	-	-	2	2	33.4
NUP1980M	-	-	-	415	430	437	447	525	-	-	3	3	42.8
-	-	-	-	415	429	437	-	525	-	-	3	3	41.7
-	-	-	-	415	429	437	-	525	-	-	3	3	41.7
-	-	-	-	415	431	-	449	525	-	-	3	3	56.2
-	-	NF2980M	414	-	-	441	-	-	526	515	3	3	52.6
-	-	-	-	418	443	-	468	582	-	-	4	4	90.6
NUP1080M	-	-	-	418	443	453	468	582	-	-	4	4	92.5
-	-	-	-	418	442	453	-	582	-	-	4	4	93.0
-	-	-	-	418	441	451	-	582	-	-	4	4	123

d 400～440mm



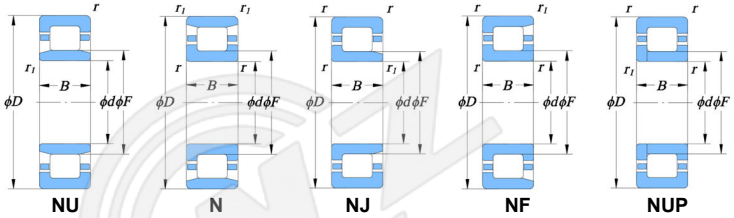


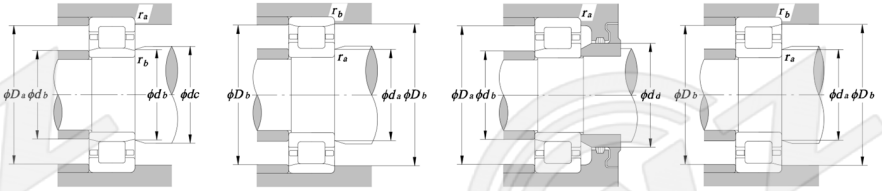
Principal dimensions (mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations	
d	*D*	*B*	r_{min}	r_{1min}	*F*	*E*	C_r	C_{or}	Grease	Oil	*NU*	*NJ*
400	600	148	5	5	450	550	2560	4550	900	1100	NU3080M	-
	650	145	6	6	460	588	3120	4990	700	850	NU2180M	-
	650	200	6	6	460	588	4050	6970	700	850	NU3180M	-
	690	230	3	6	469	621	5450	9250	500	620	NU680	-
406	502	76	2	2	425	481	1250	2660	1000	1200	-	-
406.362	501.688	76.2	1	0.6	425	481	1250	2680	1000	1200	-	-
	501.688	76.2	3	3	429.33	481.33	1130	2480	1000	1200	-	-
	501.688	76.2	4	3	430	480	1160	2650	1000	1200	-	-
406.4	546.1	69.85	5	5	442	512	1290	2410	600	750	NU6/406X4M	-
420	520	46	2.1	2.1	447	499	636	1200	900	1100	NU1884M	-
	520	46	2.1	2.1	447	499	636	1200	900	1100	NU1884	-
	520	75	2.1	2.1	447	497	906	1940	930	1150	NU3884M	NJ3884M
	560	65	4	4	452	528	1140	1950	930	1150	-	-
	560	65	4	4	452	528	1140	1950	930	1150	-	NJ1984MA
	560	82	4	4	458	526	1390	2730	930	1150	-	NJ2984
	560	82	4	4	458	526	1390	2730	930	1150	NU2984M	NJ2984M
	560	106	4	4	458	526	1740	3660	930	1150	-	-
	560	106	4	4	458	526	1740	3660	930	1150	-	-
	620	90	5	5	470	570	1560	2430	550	660	NU1084M	NJ1084M
	670	150	5	5	484	608	3610	6270	700	900	-	NJ3084X1
	670	150	5	5	484	608	3610	6270	700	900	-	NJ3084X3
	700	224	6	6	485	635	5440	9360	650	780	NU3184E1M	-
	700	224	6	6	485	635	5240	8920	650	780	NU3184EM	-
	760	280	7.5	7.5	507	673	7560	13600	560	700	NU3284X2	-
440	540	46	2.1	2.1	464	516	654	1260	580	710	-	-
	540	46	2.1	2.1	464	512	719	1510	580	710	-	-
	540	46	2.1	2.1	464	516	654	1260	580	710	-	NJ1888MA
	540	75	2.1	2.1	464	516	1040	2290	580	710	NU3888N1MPA	-
	600	74	4	4	482	562	1160	1960	870	1050	NU1988M	NJ1988M
	600	74	4	4	482	562	1210	2080	870	1050	NU1988EM	-
	600	74	4	4	482	562	1160	1960	870	1050	NU1988MA	-
	600	95	4	4	481.5	561.5	1760	3360	550	660	NU2988EM	NJ2988EM
	600	118	4	-	481.5	-	1940	4250	850	1000	-	-
	650	94	6	6	495	595	1690	2740	850	1000	NU1088Q1	-
	650	94	6	6	493	597	1720	2740	850	1000	NU1088M	NJ1088M
	650	122	6	6	487	603	2690	4490	670	820	NU2088EM	-

Designations			Abutment and fillet dimensions(mm)										Mass (kg) (approx.)
NUP	*N*	*NF*	d_{amin}	d_{bmin}	d_{bmax}	d_{cmin}	d_{dmin}	D_{amax}	D_{bmax}	D_{bmin}	r_{amax}	r_{bmax}	
-	-	-	-	418	437	453	-	582	-	-	4	4	153
-	-	-	-	422	451	463	-	628	-	-	5	5	197
-	-	-	-	422	448	463	-	628	-	-	5	5	274
-	-	-	-	412	453	472	-	668	-	-	2.5	5	364
-	-	NF6/406	415	-	-	-	-	-	493	483.4	2	2	31.2
-	N6/406X4	-	412	-	-	-	-	-	497.09	488.6	1	0.6	29.8
-	N6/406X4M	-	418	-	-	-	-	-	491.69	483	2.5	2.5	34.1
-	N6/406X4Q1	-	422	-	-	-	-	-	491.69	483.2	3	2.5	34.5
-	-	-	-	425	438	445	-	528	-	-	4	4	48.8
-	-	NF1884M	431	431	444	450	-	509	509	500	2	2	22.9
NUP1884	-	-	-	431	444	450	457	509	-	-	2	2	22.2
NUP3884M	-	-	-	430	441	450	456	510	-	-	2	2	35.2
-	-	NF1984F3	435	-	-	-	-	-	545	536.2	3	3	45.2
-	-	-	-	435	447	-	465	545	-	-	3	3	46.0
-	-	-	-	435	452	-	470	545	-	-	3	3	59.5
-	-	-	-	435	452	461	470	545	-	-	3	3	58.8
NUP3984M	-	-	-	435	-	-	472	545	-	-	3	3	77.9
NUP3984M	-	-	-	435	-	-	472	545	-	-	3	3	77.9
-	-	-	-	438	463	473	488	602	-	-	4	4	99.5
-	-	-	-	438	481	-	506	652	-	-	4	4	220
-	-	-	-	438	481	-	506	652	-	-	4	4	220
-	-	-	-	442	474	488	-	678	-	-	5	5	368
-	-	-	-	442	474	488	-	678	-	-	5	5	366
-	-	-	-	447	496	510	-	733	-	-	6	6	577
-	-	NF1888M	451	-	-	-	-	-	529	524	2	2	22.9
-	-	NF1888MA	451	-	-	-	-	-	529	516.8	2	2	24.6
-	-	-	-	451	461	-	474	529	-	-	2	2	23.6
-	-	-	-	450	460	467	-	530	-	-	2	2	37.4
-	-	-	-	455	474	485	496	585	-	-	3	3	60.8
-	-	-	-	455	474	485	-	585	-	-	3	3	59.7
-	-	-	-	455	474	485	-	585	-	-	3	3	59.8
-	-	-	-	455	477	485	496	585	-	-	3	3	82.3
NUP3988EM	-	-	-	-	-	-	496	-	-	-	3	-	106
-	-	-	-	462	488	498	-	628	-	-	5	5	107
-	-	-	-	462	486	496	514	628	-	-	5	5	104
-	-	-	-	462	480	490	-	628	-	-	5	5	144

ZWZ

d 440～480mm





Principal dimensions (mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations	
d	*D*	*B*	r_{min}	r_{1min}	*F*	*E*	C_r	C_{or}	Grease	Oil	*NU*	*NJ*
440	720	122	6	6	508	648	2860	4320	800	950	-	-
	720	226	6	6	508	668	5680	9590	600	750	NU3188	-
	720	226	6	6	508	668	5680	9590	600	750	NU3188F3	-
	720	226	6	6	508	668	5680	9590	600	750	NU3188M	-
	790	255	7.5	7.5	530	700	6240	10500	650	800	NU3288X2	-
445	815	210	7.5	7.5	539	729	5190	7730	750	1100	NU689M	-
452	680	100	6	6	516	624	1770	2800	600	750	NU10/452M	-
460	580	56	3	3	489	553	882	1630	800	950	-	NJ1892M
	580	56	3	3	490	548	798	1570	800	950	-	-
	580	72	3	3	490	552	1200	2480	860	1050	-	NJ2892
	580	72	3	3	490	552	1180	2420	860	1050	-	NJ2892M
	580	72	3	3	489	-	1180	2420	860	1050	-	NJ2892EM
	620	74	4	4	502	582	1370	2460	509	628	-	-
	620	95	4	4	502	582	1710	3270	800	950	NU2992	NJ2992
	620	118	4	4	502	582	2100	4260	800	950	-	-
	680	100	6	6	516	624	1770	2800	800	950	NU1092M	-
	680	128	6	6	513	-	2600	4590	650	800	NU2092EM	-
	680	128	6	6	513	-	2600	4590	650	800	NU2092EMA	-
	680	128	6	6	516	624	2600	4590	650	800	NU2092MA	-
	680	163	6	6	516	624	3780	7470	650	790	NU3092	-
	680	163	6	6	516	624	3170	5930	650	790	NU3092M	-
	760	240	7.5	7.5	531	691	5880	10200	400	480	NU3192	-
	760	240	7.5	7.5	531	691	5880	10200	400	480	NU3192F3	-
	760	240	7.5	7.5	531	691	5880	10200	400	480	NU3192MA	-
	820	200	7.5	7.5	550	730	5760	9290	580	670	NU2292X3	-
	830	165	7.5	7.5	554	744	4660	6810	600	720	NU1292	-
	830	212	7.5	7.5	554	744	6260	9990	580	670	NU2292	-
	830	212	7.5	7.5	554	744	5180	7760	580	670	NU2292M	-
	830	212	7.5	7.5	554	744	5180	7760	580	670	NU2292MA	-
470	600	69	2.1	2.1	499	575	1530	2960	520	650	-	-
	600	85	2.1	2.1	499	575	1900	3890	520	650	NU2894X2	-
	870	210	6	6	570	770	6810	10900	400	500	NU694	-
480	600	56	3	3	511	571	819	1570	840	950	NU1896M	NJ1896M
	600	56	3	3	511	571	819	1570	840	950	NU1896	-
	600	72	3	3	509.5	573.5	1220	2500	840	950	-	NJ2896EM
	650	78	5	5	525	605	1260	2230	780	920	NU1996	-

Designations			Abutment and fillet dimensions(mm)										Mass (kg)
NUP	*N*	*NF*	d_{amin}	d_{bmin}	d_{bmax}	d_{cmin}	d_{dmin}	D_{amax}	D_{bmax}	D_{bmin}	r_{amax}	r_{bmax}	(approx.)
-	N1188	-	462	-	-	-	-	-	698	661.2	5	5	207
-	-	-	-	462	500	511	-	698	-	-	5	5	374
-	-	-	-	462	500	511	-	698	-	-	5	5	374
-	-	-	-	462	500	511	-	698	-	-	5	5	378
-	-	-	-	467	516	533	-	763	-	-	6	6	583
-	-	-	-	472	528	542	-	788	-	-	6	6	501
-	-	-	-	474	508	519	-	658	-	-	5	5	116
-	N1892M	NF1892M	473	473	485	-	502	567	567	560.6	2.5	2.5	36.7
-	N1892Q1B	-	473	-	-	-	-	-	567	551.6	2.5	2.5	35.7
-	-	-	-	473	486	-	503	567	-	-	2.5	2.5	46.1
-	-	NF2892M	473	473	486	-	500	567	567	560.4	2.5	2.5	46.5
-	-	-	-	-	-	-	499	-	-	-	2.5	2.5	48.7
NUP1992MA	-	-	-	475	-	-	517	605	-	-	3	-	67.8
NUP2992	-	-	-	475	498	505	517	605	-	-	3	3	99.7
NUP3992M	-	-	-	475	-	-	517	605	-	-	3	3	108
-	-	-	-	482	508	519	-	658	-	-	5	5	111
-	-	-	-	483	509	516	-	657	-	-	5	5	166
-	-	-	-	483	509	516	-	657	-	-	5	5	164
-	-	-	-	482	509	519	-	658	-	-	5	5	164
-	-	-	-	482	509	519	-	658	-	-	5	5	216
-	-	-	-	482	507	519	-	658	-	-	5	5	211
-	-	-	-	487	520	534	-	733	-	-	6	6	467
-	-	-	-	487	520	534	-	733	-	-	6	6	467
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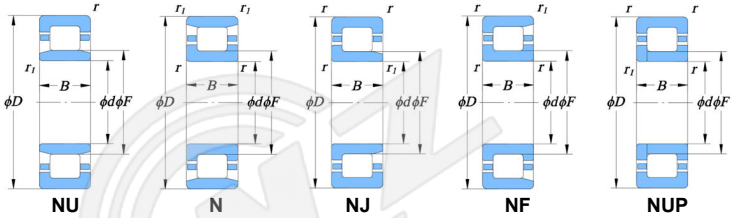
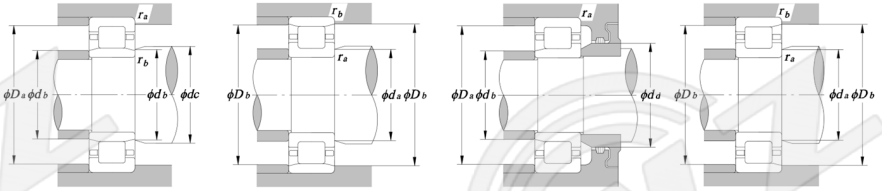
-	-	-	-	487	542	557	-	803	-	-	6	6	405
-	-	-	-	487	539	557	-	803	-	-	6	6	515
-	-	-	-	487	541	557	-	803	-	-	6	6	515
-	-	-	-	487	541	557	-	803	-	-	6	6	518
-	-	NFP1894X2	480	-	-	-	-	-	590	567.1	2	2	48.9
-	-	-	-	480	496	502	-	590	-	-	2	2	58.4
-	-	-	-	492	557	573	-	848	-	-	5	5	580
-	-	NF1896M	493	493	506	514	521	587	587	580.2	2.5	2.5	36.9
-	-	-	-	493	506	514	-	587	-	-	2.5	2.5	36.3
-	-	-	-	493	505	-	519	587	-	-	2.5	2.5	49.0
-	-	-	-	498	520	528	-	632	-	-	4	4	74.3

ZWZ

d 480～530mm



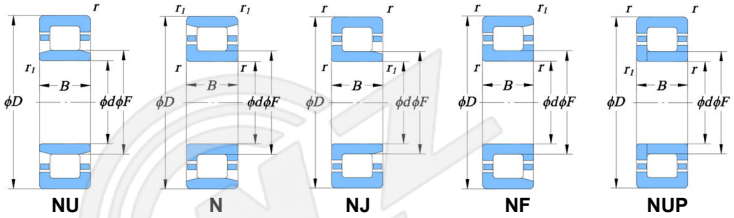


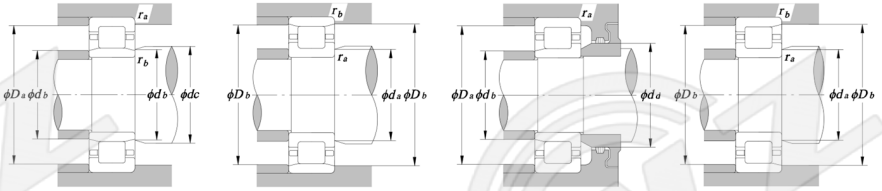
Principal dimensions (mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations	
d	*D*	*B*	r_{min}	r_{1min}	*F*	*E*	C_r	C_{or}	Grease	Oil	*NU*	*NJ*
480	650	78	5	5	525	605	1260	2230	780	920	NU1996MA	-
	700	100	6	6	536	644	1940	3190	720	860	NU1096MPA	-
	700	100	6	6	536	-	1980	3260	720	860	NU1096M	-
	700	100	6	6	536	644	1980	3260	720	860	NU1096MA	-
	700	128	6	6	536	644	2760	5010	600	720	NU2096MA	-
	790	248	7.5	7.5	547	-	6260	10900	500	600	NU3196EM	-
	790	248	7.5	7.5	556	720	6260	10900	500	600	NU3196M	-
	820	210	7.5	7.5	570	730	6390	11600	390	480	NU3196X3	-
	820	250	7.5	7.5	570	730	7320	13800	390	480	NU3196X31	-
	855	270	7.5	7.5	578	758	7820	13900	450	550	NU696	-
488.95	660.4	149.225	5	5	532	616	2530	5320	600	750	NU6/488X4	-
500	620	56	3	3	-	592	827	1610	780	940	-	-
	620	56	3	3	530	590	827	1610	780	940	NU18/500M	-
	620	72	3	3	532	592	1220	2640	780	940	NU28/500EM	-
	670	78	5	5	544	628	1370	2430	720	880	NU19/500	-
	670	78	5	5	544	628	1370	2430	720	880	NU19/500MA	-
	670	78	5	5	544	628	1370	2430	720	880	NU19/500Q1A	-
	670	100	5	5	543	627	1980	3910	750	900	-	NJ29/500
	670	100	5	5	543	627	2060	4140	750	900	NU29/500	-
	670	100	5	5	543	627	1980	3910	750	900	NU29/500F3	-
	670	128	5	5	-	633	2640	5680	670	840	-	-
	670	128	5	5	543	627	2640	5680	670	840	-	-
	720	100	6	6	556	664	1930	3200	720	880	NU10/500Q1	-
	720	100	6	6	556	664	1850	3030	720	880	-	NJ10/500
	720	128	6	6	553	-	3040	5330	620	720	NU20/500EM	-
	720	128	6	6	553	673	3040	5330	450	450	NU20/500M	-
	720	167	6	6	556	664	3440	6730	620	720	NU30/500	-
	830	264	7.5	7.5	581	751	6840	12100	480	580	NU31/500	-
	900	210	7.5	7.5	600	800	7040	11500	540	600	NU12/500X3	-
	920	185	7.5	7.5	605	815	6190	9450	540	650	NU12/500	-
	920	185	7.5	7.5	605	-	6190	9450	540	650	NU12/500M	-
508	622.3	95.25	4	4	538	594	1470	3540	740	850	-	-
520	680	82	5	5	558	644	1960	3860	450	550	NU6/520X2	-
	680	102	5	5	558	644	2500	5270	450	550	NU6/520	-
530	650	56	3	3	560	620	1030	2170	450	550	NU18/530EM	-
	650	72	3	3	562	622	1240	2770	900	1100	-	NJ28/530

Designations			Abutment and fillet dimensions(mm)										Mass (kg)
NUP	*N*	*NF*	d_{amin}	d_{bmin}	d_{bmax}	d_{cmin}	d_{dmin}	D_{amax}	D_{bmax}	D_{bmin}	r_{amax}	r_{bmax}	(approx.)
-	-	-	-	498	520	528	-	632	-	-	4	4	74.6
-	-	-	-	502	521	539	-	678	-	-	5	5	126
-	-	-	-	503	531	539	-	677	-	-	5	5	128
-	-	-	-	502	530	539	-	678	-	-	5	5	129
-	-	-	-	502	529	539	-	678	-	-	5	5	176
-	-	-	-	512	536	550	-	758	-	-	6	6	495
-	-	-	-	507	544	559	-	763	-	-	6	6	508
-	-	-	-	507	559	573	-	793	-	-	6	6	484
-	-	-	-	507	556	573	-	793	-	-	6	6	572
-	-	-	-	507	559	581	-	828	-	-	6	6	686
-	-	-	-	507	524	535	-	642	-	-	4	4	153
-	-	NF18/500EM	513	-	-	-	-	-	607	598	2.5	2.5	38.5
-	-	-	-	513	526	533	-	607	-	-	2.5	2.5	37.2
-	-	-	-	513	528	535	-	607	-	-	2.5	2.5	49.2
-	-	-	-	518	538	547	-	652	-	-	4	4	79.6
-	-	-	-	518	538	547	-	652	-	-	4	4	79.0
-	-	-	-	518	538	547	-	652	-	-	4	4	79.7
-	N29/500	-	518	518	538	-	558	652	652	639.4	4	4	104
-	-	-	-	518	538	546	-	652	-	-	4	4	101
NUP29/500F3	-	-	-	518	538	546	558	652	-	-	4	4	104
-	N39/500EM	-	518	-	-	-	-	-	652	638	4	4	128
NUP39/500M	-	-	-	518	-	-	558	652	-	-	4	4	137
-	-	-	-	522	546	559	-	698	-	-	5	5	131
-	-	-	-	522	548	-	576	698	-	-	5	5	136
-	-	-	-	523	549	556	-	697	-	-	5	5	175
-	-	-	-	520	547	556	-	700	-	-	5	5	176
-	-	-	-	522	547	559	-	698	-	-	5	5	232
-	-	-	-	527	564	584	-	803	-	-	6	6	602
-	-	-	-	527	588	603	-	873	-	-	6	6	606
-	-	-	-	527	592	608	-	893	-	-	6	6	572
-	-	-	-	532	593	608	-	888	-	-	6	6	585
NUP6/508Q1	-	-	-	523	-	-	548	607	-	-	3	3	65.6
-	-	NFP6/520X2	538	538	554	561	-	662	662	636.4	4	4	81.4
-	-	-	-	538	554	561	-	662	-	-	4	4	101
-	-	-	-	543	557	563	-	638	-	-	2.5	2.5	42.8
-	-	NF28/530	543	543	558	-	574	637	637	630.4	2.5	2.5	54.2

ZWZ

d 530～560mm





Principal dimensions (mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations	
d	*D*	*B*	r_{min}	r_{1min}	*F*	*E*	C_r	C_{or}	Grease	Oil	*NU*	*NJ*
530	650	72	3	3	562	622	1240	2770	900	1100	-	-
	650	72	3	3	562	622	1260	2820	900	1100	NU28/530EM	-
	710	82	5	5	580	664	1720	3340	680	830	-	NJ19/530M
	710	106	5	5	580	664	2120	4390	400	500	NU29/530MA	-
	710	106	5	5	580	664	2120	4390	400	500	-	NJ29/530M
	710	106	5	5	580	664	2140	4430	400	500	NU29/530	-
	710	106	5	5	580	664	2120	4390	400	500	NU29/530F3	-
	710	106	5	5	580	664	2120	4390	400	500	NU29/530M	-
	710	106	5	5	580	664	2120	4390	400	500	-	-
	780	112	5	5	593	721	3060	5270	650	780	NU10/530N1MA	-
	780	145	6	6	591	719	3660	6610	550	650	NU20/530M	-
	870	272	7.5	7.5	612	792	7580	13500	460	550	NU31/530	-
	870	272	7.5	7.5	612	-	8420	15600	460	550	NU31/530EM	-
	905	270	6	6	628	808	8290	15400	350	460	NU6/530	-
540	680	56	3	3	591	651	888	1830	450	550	NU18/560X4KMA	-
	750	130	5	5	592	698	3340	6740	400	500	-	-
550	720	100	3	3	591	681	2610	5510	400	500	NU6/550X2	-
	720	125	3	3	591	681	3260	7320	400	500	NU6/550	-
558.8	685.8	100	5	5	590.5	654.5	1800	4330	670	820	-	-
560	680	56	3	3	591	-	888	1830	670	820	-	NJ18/560M
	680	56	3	3	591	651	888	1830	670	820	-	NJ18/560MA
	680	72	3	3	591	651	1310	3000	670	820	-	-
	750	72	5	5	610	700	1600	2940	670	820	-	-
	750	72	5	5	610	700	1630	3010	670	820	NU19/560X2Q1	-
	750	85	5	5	610	700	1970	3850	650	780	-	-
	750	85	5	5	608	708	1750	3060	650	780	-	NJ19/560
	750	85	5	5	608	708	1750	3060	650	780	-	NJ19/560MA
	750	85	5	5	608	-	1970	3850	650	780	NU19/560EM	-
	750	85	5	5	610	700	1970	3850	650	780	NU19/560Q1	-
	750	112	5	5	607	703	2720	5580	650	780	NU29/560	-
	750	112	5	5	607	703	2660	5430	650	780	-	-
	750	112	5	5	607	703	2610	5270	650	780	-	NJ29/560
	750	112	5	5	607	703	2610	5270	650	780	-	NJ29/560F3
	820	115	6	6	625	-	2750	4620	620	720	NU10/560M	-
	820	115	6	6	625	755	2750	4620	620	720	NU10/560MA	-
	820	150	6	6	626	-	3650	7600	500	600	NU20/560EM	-

Designations			Abutment and fillet dimensions(mm)										Mass(kg) (approx.)
NUP	*N*	*NF*	d_{amin}	d_{bmin}	d_{bmax}	d_{cmin}	d_{dmin}	D_{amax}	D_{bmax}	D_{bmin}	r_{amax}	r_{bmax}	
NUP28/530M	-	NF28/530M	543	543	-	-	574	637	637	630.4	2.5	2.5	54.5
-	-	-	-	543	558	565	-	637	-	-	2.5	2.5	51.8
-	-	-	-	548	575	-	596	692	-	-	4	4	97.5
-	-	-	-	548	574	583	-	688	-	-	4	4	115
-	-	-	-	548	574	-	596	688	-	-	4	4	124
-	-	-	-	548	574	583	-	692	-	-	4	4	125
NUP29/530F3	-	-	-	548	574	583	596	688	-	-	4	4	125
-	-	-	-	548	574	583	-	688	-	-	4	4	138
NUP29/530	-	-	-	548	-	-	596	688	-	-	4	4	125
-	-	-	-	548	588	596	-	762	-	-	4	4	188
-	-	-	-	550	582	594	-	760	-	-	5	5	248
-	-	-	-	557	595	615	-	843	-	-	6	6	670
-	-	-	-	562	605	615	-	838	-	-	6	6	663
-	-	-	-	552	611	631	-	883	-	-	5	5	744
-	-	-	-	553	586	594	-	667	-	-	2.5	2.5	49.6
-	-	NFP6/540	558	-	-	-	-	-	732	685.4	4	4	181
-	-	NFP6/550X2	563	563	587	594	-	707	707	672.6	2.5	2.5	112
-	-	-	-	563	587	594	-	707	-	-	2.5	2.5	137
NUP6/558.8Q1	-	-	-	575	-	-	602	670	-	-	4	4	83.0
-	-	-	-	-	-	-	602	-	-	-	2.5	2.5	42.5
-	-	-	-	-	-	-	602	-	-	-	2.5	2.5	44.2
-	-	NF28/560	573	-	-	-	-	-	667	658.8	2.5	2.5	53.0
NUP19/560X2	N19/560X2	-	578	578	-	-	628	732	732	712.4	4	4	92.4
-	-	NFP19/560X2Q1	578	578	606	613	628	733	732	689.4	4	4	97.2
-	N19/560	-	578	-	-	-	-	-	732	712.4	4	4	108
-	-	-	-	578	602	-	628	732	-	-	4	4	111
-	-	-	-	578	602	-	628	732	-	-	4	4	111
-	-	-	-	578	600	611	-	732	-	-	4	4	108
-	-	-	-	578	606	613	-	732	-	-	4	4	111
-	-	-	-	578	601	610	-	732	-	-	4	4	146
-	N29/560	-	578	-	-	-	-	-	732	715.4	4	4	138
-	-	-	-	578	602	-	624	732	-	-	4	4	148
-	-	-	-	578	602	-	624	732	-	-	4	4	148
-	-	-	-	583	617	628	-	797	-	-	5	5	215
-	-	-	-	582	615	628	-	798	-	-	5	5	209
-	-	-	-	583	616	629	-	797	-	-	5	5	289

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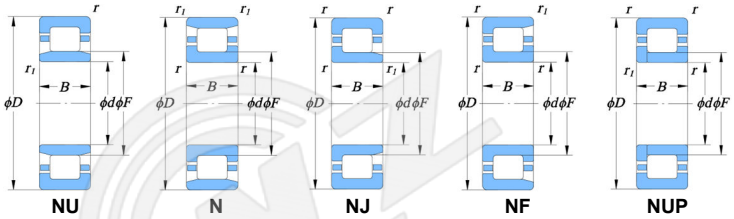
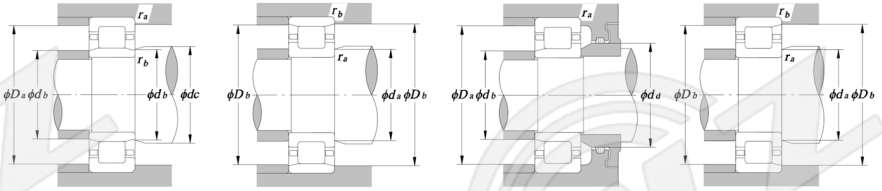
d 560～630mm





Principal dimensions (mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations	
d	*D*	*B*	r_{min}	r_{1min}	*F*	*E*	C_r	C_{or}	Grease	Oil	*NU*	*NJ*
560	820.28	115	6	6	625	755	2750	4620	620	720	NU10/560X1MA	-
	850	170	6	6	636	780	4550	8250	470	580	-	-
	960	270	9.5	9.5	670	860	9110	17000	480	550	NU6/560	-
	1030	206	9.5	9.5	668	-	6850	11000	460	550	NU12/560MA	-
600	730	60	3	3	637	697	962	2080	650	780	-	NJ18/600EQ1A
	730	60	3	3	632	-	962	2080	650	780	NU18/600EM	-
	730	78	3	3	635	695	1390	3340	650	780	-	NJ28/600M
	730	78	3	3	632	696	1450	3350	620	730	NU28/600EM	-
	730	90	3	3	635	695	1540	3810	400	500	-	NJ28/600X2M
	800	90	5	5	-	757	2040	3620	620	750	NU19/600EM	-
	800	90	5	5	649	757	2040	3620	620	750	-	NJ19/600M
	800	90	5	5	649	757	2040	3620	620	750	NU19/600	-
	800	90	5	5	649	757	2040	3620	620	750	NU19/600Q1	-
	800	118	5	5	649	-	2900	6550	620	750	NU29/600E	-
	800	150	5	5	649	757	3390	6950	600	700	-	-
	830	150	5	5	655	775	3680	7200	600	700	NU6/600	-
	870	118	6	6	667	803	3130	5400	590	680	NU10/600Q1	-
	870	118	6	6	667	807	2990	4970	590	680	NU10/600	-
	870	118	6	6	667	807	2990	4970	590	680	NU10/600M	-
	870	155	6	6	667	803	4940	9730	500	600	NU20/600E	-
	870	155	5	5	659	811	4370	7630	500	600	NU20/600EM	-
	870	200	6	6	661	-	5700	10900	500	600	NU30/600E	-
	870	200	6	6	661	811	5700	10900	500	600	NU30/600F3	-
	1090	155	9.5	9.5	740	960	5540	8340	500	600	NU2/600M	-
	1090	155	9.5	9.5	740	960	5540	8340	500	600	NU2/600MA	-
620	780	102	4	4	660	740	2120	4710	600	750	-	-
	780	102	4	4	660	740	2120	4710	600	750	-	-
630	780	69	4	4	667	743	1390	2860	350	450	-	NJ18/630EM
	780	88	4	4	668	744	1920	4340	630	750	NU28/630M	NJ28/630M
	780	88	4	4	668	744	1920	4340	630	750	-	-
	780	112	4	4	-	-	2640	6310	550	650	-	-
	780	112	4	4	665	745	2640	6310	550	650	-	-
	850	100	6	6	685	795	2680	5170	600	700	-	-
	850	100	6	6	688	796	2110	3860	600	700	-	NJ19/630
	850	100	6	6	683	-	2110	3860	600	700	NU19/630EM	-
	850	100	6	6	688	-	2110	3860	600	700	NU19/630M	-
	850	100	6	6	688	796	2160	3970	600	700	-	-

Designations			Abutment and fillet dimensions(mm)										Mass (kg) (approx.)
NUP	*N*	*NF*	d_{amin}	d_{bmin}	d_{bmax}	d_{cmin}	d_{dmin}	D_{amax}	D_{bmax}	D_{bmin}	r_{amax}	r_{bmax}	
-	-	-	-	582	615	628	-	798	-	-	5	5	209
-	N6/560M	-	582	-	-	-	-	-	828	795	5	5	360
-	-	-	-	587	657	673	-	933	-	-	8	8	846
-	-	-	-	600	657	671	-	990	-	-	8	8	809
-	-	-	-	613	632	-	649	717	-	-	2.5	2.5	53.9
-	-	-	-	613	625	635	-	717	-	-	2.5	2.5	49.3
-	-	-	-	613	631	-	647	717	-	-	2.5	2.5	70.2
-	-	-	-	613	628	635	-	717	-	-	2.5	2.5	69.2
-	-	NFP28/600X2M	613	613	629	-	647	717	717	690.4	2.5	2.5	81.9
-	-	NF19/600EM	618	-	-	652	-	-	782	773	4	4	129
-	-	-	-	618	643	-	666	782	-	-	4	4	130
NUP19/600	-	-	-	618	643	652	666	782	-	-	4	4	131
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-	-	-	-	618	643	652	-	782	-	-	4	4	163
NUP39/600	-	-	-	618	-	-	666	782	-	-	4	4	218
-	-	-	-	618	647	658	-	812	-	-	4	4	237
-	-	-	-	622	657	670	-	848	-	-	5	5	234
-	-	-	-	622	659	670	-	848	-	-	5	5	234
-	-	-	-	622	659	670	-	848	-	-	5	5	236
-	-	-	-	620	659	670	-	850	-	-	5	5	319
-	-	-	-	618	651	662	-	852	-	-	4	4	318
-	-	-	-	623	655	664	-	847	-	-	5	5	412
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-	-	-	-	632	730	743	-	1058	-	-	8	8	676
-	-	-	-	632	730	743	-	1058	-	-	8	8	686
-	N620/780	-	635	-	-	-	-	-	765	733.4	3	3	124
-	-	NFP6/620Q1	635	-	-	-	-	-	765	733.4	3	3	124
-	-	-	-	645	661	-	682	765	-	-	3	3	75.2
-	N28/630M	-	645	645	662	671	683	765	765	755.3	3	3	95.6
-	N28/630Q1B	-	645	-	-	-	-	-	765	755.3	3	3	95.7
-	N38/630M	NF38/630M	645	-	-	-	-	-	765	744	3	3	119
NUP38/630MA	-	-	-	645	-	-	682	765	-	-	3	3	128
-	N19/630Q1	-	652	-	-	-	-	-	828	807	5	5	169
-	-	-	-	652	682	-	709	828	-	-	5	5	167
-	-	-	-	653	676	686	-	827	-	-	5	5	160
-	-	-	-	653	681	691	-	827	-	-	5	5	158
NUP19/630	-	-	-	652	-	-	710	828	-	-	5	5	180

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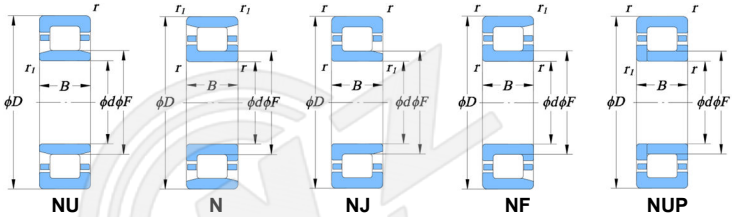
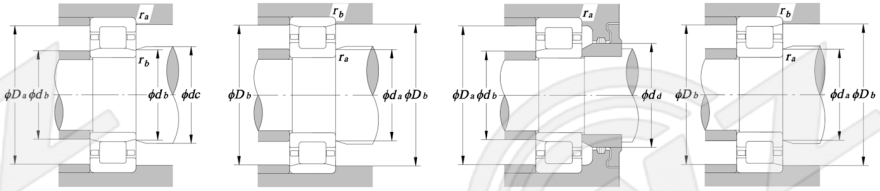
d 630～700mm





Principal dimensions (mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations	
d	*D*	*B*	r_{min}	r_{1min}	*F*	*E*	C_r	C_{or}	Grease	Oil	*NU*	*NJ*
630	850	128	6	6	688	796	3290	6820	580	680	-	-
	850	128	6	6	683	-	3290	6820	580	680	NU29/630EM	NJ29/630EM
	850	128	6	6	688	796	3220	6630	580	680	NU29/630	-
	870	78	5	5	691	813	2310	4000	300	400	-	-
	870	100	5	5	691	813	3040	5680	300	400	-	-
	920	128	5	5	702	842	3740	6740	450	530	NU10/630	-
	920	128	7.5	7.5	702	-	3740	6740	450	530	NU10/630EM	-
	920	170	7.5	7.5	699	-	5100	9160	480	560	NU20/630EM	-
	920	170	7.5	7.5	699	859	5100	9160	480	560	NU20/630MA	-
	920	212	7.5	7.5	699	-	6450	14500	450	530	NU30/630	-
	940	150	6	6	707	863	4800	8650	300	350	-	-
	960	180	5	5	710	880	5660	10100	300	350	-	-
	1100	315	7.5	7.5	742	990	12200	21500	250	300	NU31/630X1	-
	1150	240	7.5	7.5	767	1023	9710	15800	250	300	NU6/630X3	-
640	960	140	7.5	7.5	710	890	4570	7380	400	480	-	NJFP6/640K
650	960	180	6	6	727	887	5580	10400	300	350	-	-
660.4	863.6	107.95	5.1	5.1	704	824	3040	5760	560	670	-	-
666.75	838.2	114.3	6	3	710	796	2520	5750	560	680	-	-
670	820	69	4	4	706	786	1520	3170	550	650	-	NJ18/670
	820	69	4	4	706	786	1520	3170	550	650	-	NJ18/670M
	820	69	3	3	706	786	1700	3650	550	650	-	-
	820	112	4	4	706	786	2670	6520	560	670	-	-
	820	112	4	4	706	786	2810	6960	560	670	-	NJ38/670Q1
	900	103	6	6	731	851	2660	4920	530	630	NU19/670	-
	900	103	6	6	731	851	2550	4650	530	630	NU19/670KM	-
	900	103	6	6	731	851	2550	4650	530	630	NU19/670M	-
	980	136	7.5	7.5	747	-	3700	6800	430	500	NU10/670	-
	980	180	7.5	7.5	745	905	5560	10400	430	500	-	-
	980	180	7.5	7.5	746	-	5560	10400	430	500	NU20/670E	-
	980	230	7.5	7.5	-	914	6930	15000	430	500	-	-
	980	230	7.5	7.5	744	-	6500	14500	430	500	NU30/670M	-
700	920	120	5	5	755	865	3060	6330	300	350	-	-
	930	160	6	6	760	870	3870	8530	500	600	NU6/700	-
	930	160	6	6	760	870	3870	8530	500	600	NU6/700F3	-
	930	160	6	6	760	870	3870	8530	500	600	NU6/700M	-
	1020	150	6	6	778	942	4970	8990	250	300	-	-
	1050	190	6	6	790	960	6290	11900	250	300	-	-

Designations			Abutment and fillet dimensions(mm)										Mass (kg)
NUP	*N*	*NF*	d_{amin}	d_{bmin}	d_{bmax}	d_{cmin}	d_{dmin}	D_{amax}	D_{bmax}	D_{bmin}	r_{amax}	r_{bmax}	(approx.)
-	-	NFP29/630Q1	652	-	-	-	-	-	828	781.4	5	5	226
-	-	-	-	-	-	686	705	-	-	-	5	5	218
-	-	-	-	652	681	691	-	828	-	-	5	5	210
-	N6/630	-	648	-	-	-	-	-	852	823.8	4	4	144
-	N6/630X2	-	648	-	-	-	-	-	852	823.8	4	4	186
-	-	-	-	648	696	705	-	902	-	-	4	4	311
NUP10/630EM	-	-	-	658	691	705	706	892	-	-	6	6	284
-	-	-	-	658	690	702	-	892	-	-	6	6	395
-	-	-	-	657	687	702	-	893	-	-	6	6	399
-	-	-	-	658	690	702	-	892	-	-	6	6	485
-	-	NFP6/630Q1	652	-	-	-	-	-	918	839.4	5	5	393
-	N6/630X3Q1	-	648	-	-	-	-	-	942	895.8	4	4	476
-	-	-	-	657	742	745	-	1073	-	-	6	6	1290
-	-	-	-	653	751	770	-	1127	-	-	6	6	1150
-	-	-	-	663	-	-	742	938	-	-	6	6	345
-	-	NFP6/650Q1	672	-	-	-	-	-	938	862.4	5	5	482
NUP6/660.4Q1	-	-	-	678	-	-	726	846	-	-	4	4	179
-	-	NFP6/666X4Q1	689	-	-	-	-	-	825.2	788.4	5	2.5	160
-	-	NF18/670	685	-	-	-	-	-	805	795.6	3	3	84.8
-	-	-	-	685	701	-	720	805	-	-	3	3	84.8
NUP18/670Q1	-	-	-	683	-	-	721	807	-	-	2.5	2.5	81.1
NUP38/670Q1	-	NFP38/670Q1	685	685	-	-	720	805	805	780.4	3	3	133
-	-	-	-	685	702	-	720	805	-	-	3	3	133
NUP19/670	-	-	-	692	724	734	758	878	-	-	5	5	191
-	-	-	-	692	724	734	-	878	-	-	5	5	183
-	-	-	-	692	724	734	-	878	-	-	5	5	186
-	-	-	-	698	736	750	-	952	-	-	6	6	344
-	-	NFP20/670Q1	697	-	-	-	-	-	953	884.4	6	6	491
-	-	-	-	698	736	749	-	952	-	-	6	6	477
-	N30/670	-	678	-	-	-	-	-	952	919	6	6	594
-	-	-	-	698	736	747	-	952	-	-	6	6	596
NUP6/700X3Q1	-	-	-	718	-	-	775	902	-	-	4	4	223
NUP6/700	-	-	-	722	750	763	780	908	-	-	5	5	311
-	-	-	-	722	-	763	780	908	-	-	5	5	311
-	-	-	-	722	750	763	-	908	-	-	5	5	309
-	-	NFP6/700X3Q1	722	-	-	-	-	-	998	915.4	5	5	445
-	-	NFP6/700Q1	722	-	-	-	-	-	1028	935.4	5	5	615

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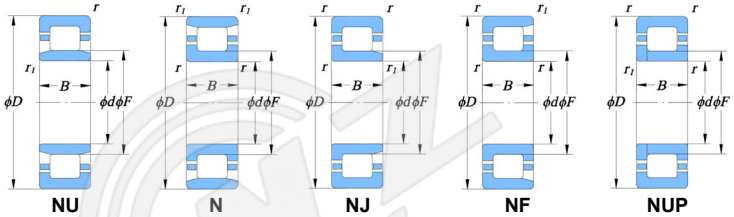
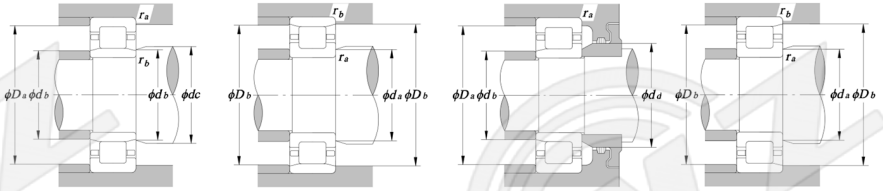
d 710～800mm





Principal dimensions (mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations	
d	*D*	*B*	r_{min}	r_{1min}	*F*	*E*	C_r	C_{or}	Grease	Oil	*NU*	*NJ*
710	870	74	4	4	750	830	1550	3310	480	560	-	NJ18/710EQ1A
	870	74	4	4	750	830	1510	3180	480	560	-	-
	870	74	4	4	750	830	1510	3180	480	560	NU18/710M	-
	870	95	4	4	751	831	2170	5080	480	560	-	NJ28/710EMA
	870	95	4	4	751	831	2000	4570	480	560	-	-
	870	95	4	4	751	831	2000	4570	480	560	-	NJ28/710M
	900	106	4	4	765	845	2140	5030	480	560	-	-
	900	106	4	4	765	845	2140	5030	480	560	-	-
	950	106	6	6	770	890	2850	5490	480	560	NU19/710	-
	950	106	6	6	788	884	2610	5730	480	560	-	-
	950	106	6	6	770	890	2640	4940	480	560	-	-
	950	106	6	6	770	890	2930	5660	480	560	NU19/710Q1	-
	950	140	6	6	766	-	3650	8250	480	560	NU29/710EM	-
	950	140	6	6	776	-	3290	7000	480	560	NU29/710M	-
	950	140	6	6	776	886	3290	7000	480	560	NU29/710MA	-
	1030	140	7.5	7.5	778	-	4550	8400	420	490	NU10/710EM	-
	1030	185	7.5	7.5	787	-	5800	12000	420	490	NU20/710EM	-
	1030	210	7.5	7.5	784	956	6830	13100	250	300	-	-
	1150	185	9.5	9.5	835	1025	6340	11300	400	450	NU11/710X2	-
	1250	780	7.5	7.5	852	1108	8300	13300	200	250	-	-
711.2	863.6	107.95	6.35	6.35	743	833	2820	6530	500	600	-	-
723.8	908.05	120.65	5	5	765	865	3260	7370	480	550	-	-
750	920	78	5	5	794	880	1650	3450	480	590	-	-
	920	78	5	5	794	880	1650	3450	480	590	NU18/750M	NJ18/750M
	920	100	5	5	794	880	2280	5260	480	590	-	-
	920	100	5	5	794	880	2280	5260	480	590	-	-
	920	100	5	5	794	880	2280	5260	480	590	NU28/750MA	-
	920	120	5	5	794	880	2880	7060	480	590	-	-
	950	120	6	6	798	902	3390	7660	480	590	-	-
	1000	100	6	6	815	943	3170	6110	460	550	NU19/750X2	-
	1000	112	6	6	-	-	3030	5750	470	550	-	-
	1000	112	6	6	815	943	2920	5480	470	550	-	-
	1090	150	7.5	7.5	835	1005	4830	8650	350	420	NU10/750EM	-
	1090	195	7.5	7.5	832	-	6700	14500	350	420	NU20/750EM	-
	1320	185	6	6	895	1175	8980	14100	320	400	NU2/750X3	-
800	980	82	5	5	846	936	1840	3950	430	510	NU18/800	-
	980	82	5	5	846	-	1870	4200	430	510	-	NJ18/800EM

Designations			Abutment and fillet dimensions(mm)										Mass(kg) (approx.)
NUP	*N*	*NF*	d_{amin}	d_{bmin}	d_{bmax}	d_{cmin}	d_{dmin}	D_{amax}	D_{bmax}	D_{bmin}	r_{amax}	r_{bmax}	
-	-	-	-	725	744	-	766	855	-	-	3	3	94.0
-	N18/710	-	725	-	-	-	-	-	855	843.7	3	3	102
-	-	-	-	725	743	753	-	855	-	-	3	3	102
-	-	-	-	725	746	-	766	855	-	-	3	3	125
-	-	NF28/710	725	-	-	-	-	-	855	841.2	3	3	126
-	-	-	-	725	747	-	767	855	-	-	3	3	125
-	N28/710X3	-	725	-	-	-	-	-	885	858.6	3	3	168
-	N28/710X3F3	-	725	-	-	-	-	-	885	858.6	3	3	168
NUP19/710	N19/710	-	732	732	762	773	797	928	928	906.9	5	5	213
-	N19/710F3	NF19/710F3	732	-	-	-	-	-	928	897.44	5	5	228
-	N19/710M	-	732	-	-	-	-	-	928	906.9	5	5	211
-	-	-	-	732	762	773	-	928	-	-	5	5	217
-	-	-	-	733	760	769	-	927	-	-	5	5	294
-	-	-	-	733	760	779	-	927	-	-	5	5	291
-	-	-	-	732	765	779	-	922	-	-	5	5	291
-	-	-	-	738	769	781	-	1002	-	-	6	6	420
-	-	-	-	738	780	790	-	1002	-	-	6	6	535
-	-	NFP30/710X2Q1	737	-	-	-	-	-	1003	932.4	6	6	628
-	-	-	-	742	824	838	-	1118	-	-	8	8	874
-	N6/710	-	737	-	-	-	-	-	1223	1127.7	6	6	986
NUP6/711.2M	-	-	-	735	-	-	761	840	-	-	5	5	136
-	-	NFP6/723.8Q1	742	-	-	-	-	-	890.05	853.4	4	4	197
-	-	NF18/750F3	768	-	-	-	-	-	902	890.6	4	4	101
-	-	NF18/750M	768	768	788	797	809	902	902	890.6	4	4	109
-	N28/750	-	768	-	-	-	-	-	902	892.6	4	4	145
-	N28/750F3	-	768	-	-	-	-	-	902	892.6	4	4	145
-	-	-	-	768	786	797	-	902	-	-	4	4	149
-	N38/750X2M	-	768	-	-	-	-	-	902	893.2	4	4	176
NUP6/750Q1	-	-	-	772	-	-	817	928	-	-	5	5	217
-	-	-	-	772	807	818	-	978	-	-	5	5	220
-	-	NF19/750EM	773	-	-	-	-	-	977	953	5	5	264
NUP19/750	-	-	-	772	-	-	837	978	-	-	5	5	252
-	-	-	-	777	826	838	-	1063	-	-	6	6	478
-	-	-	-	778	823	835	-	1062	-	-	6	6	634
-	-	-	-	772	886	898	-	1298	-	-	5	5	1220
-	-	NF18/800	818	818	840	849	-	962	962	946.4	4	4	132
-	-	-	-	-	-	-	862	-	-	-	4	4	144

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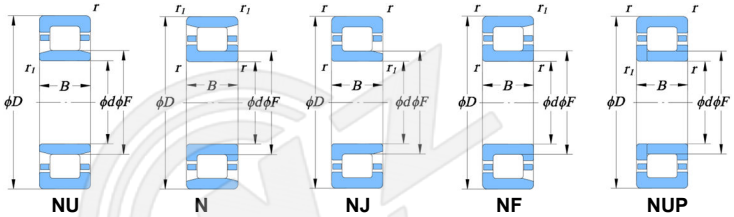
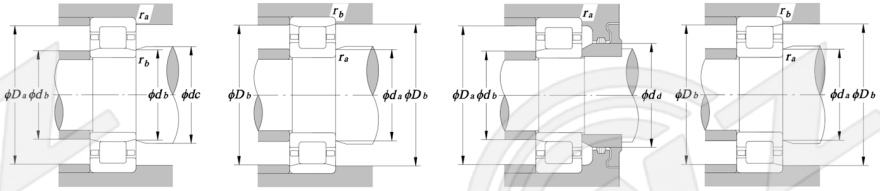
d 800～1060mm

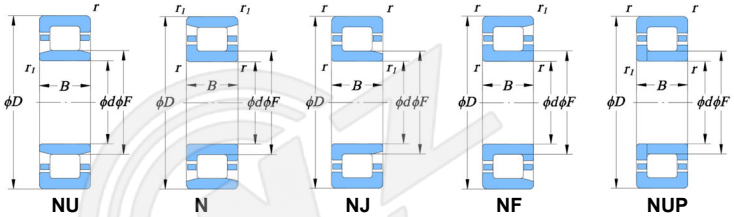


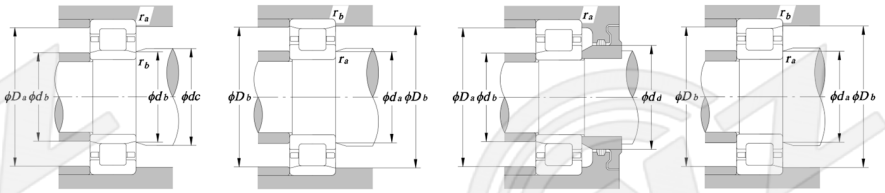


Principal dimensions (mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations	
d	*D*	*B*	r_{min}	r_{1min}	*F*	*E*	C_r	C_{or}	Grease	Oil	*NU*	*NJ*
800	980	82	5	5	846	936	1840	3950	430	510	-	NJ18/800M
	1060	115	6	6	870	1000	3170	6150	400	450	NU19/800	-
	1060	115	6	6	870	1000	3170	6150	400	450	-	-
	1060	125	6	6	867	997	4300	9100	200	250	-	-
	1150	155	7.5	7.5	883	-	5400	10500	320	380	NU10/800EM	-
	1150	200	7.5	7.5	882	-	7590	14500	320	380	NU20/800EM	-
	1150	200	7.5	7.5	885	1065	7210	14200	320	380	NU20/800MA	-
810	1000	130	5	5	859	955	3420	8370	420	500	-	-
812.8	1016	139.7	6	6	865	965	3420	8140	420	500	-	-
820	990	72	5	5	871	943	1230	2760	450	530	-	-
850	1030	82	5	5	902	982	1900	4570	200	250	-	NJ18/850M
	1030	87	5	5	895	985	2450	5800	200	250	-	-
	1030	106	5	5	-	982	2500	6490	410	480	-	-
	1030	106	5	5	902	982	2500	6490	410	480	NU28/850M	NJ28/850M
	1030	106	5	5	902	982	2500	6490	410	480	NU28/850MA	-
	1030	106	5	5	902	-	2500	6490	410	480	NU28/850MB	-
	1120	118	6	6	919	-	2930	6600	390	460	-	NJ19/850
	1120	118	6	6	919	-	3380	6900	390	460	NU19/850EM	-
	1120	118	6	6	919	1055	3380	6600	390	460	NU19/850M	-
	1220	212	7.5	7.5	935	1135	8050	15500	390	460	NU20/850EM	-
900	1090	85	5	5	949	-	1900	4850	370	440	NU18/900M	-
	1090	112	5	5	949	1045	2850	6840	370	440	NU28/900	NJ28/900
	1090	112	5	5	949	-	2850	6840	370	440	NU28/900M	-
	1090	140	5	5	945	1045	3570	8840	350	420	NU38/900	-
	1180	122	6	6	966.5	-	4050	8700	350	420	NU19/900EM	-
	1180	165	6	6	969	1119	5810	12600	350	420	NU29/900EQ1A	-
	1180	165	6	6	969	-	5810	12600	350	420	NU29/900EM	-
	1200	150	6	6	976	1124	5000	10500	350	420	NU6/900	-
950	1250	175	7.5	7.5	1024	1184	6120	13000	340	400	NU29/950	-
	1250	175	7.5	7.5	1024	1184	6120	13000	340	400	NU29/950F3	-
	1250	175	7.5	7.5	1024	1184	6120	13000	340	400	NU29/950M	-
1000	1220	100	6	6	1053	1165	2750	6080	350	420	NU18/1000M	NJ18/1000M
	1220	128	6	6	1053	-	3600	9500	350	420	-	NJ28/1000EM
	1320	185	7.5	7.5	1082	-	6700	17000	290	350	NU29/1000E	-
1030	1310	175	7.5	7.5	1095	1245	6110	14000	300	360	NU6/1030M	-
1060	1280	128	6	6	-	1225	3550	10500	310	370	-	-
	1400	150	7.5	7.5	1148	1318	5880	12300	290	350	NU19/1060	-

Designations			Abutment and fillet dimensions(mm)										Mass(kg) (approx.)
NUP	*N*	*NF*	d_{amin}	d_{bmin}	d_{bmax}	d_{cmin}	d_{dmin}	D_{amax}	D_{bmax}	D_{bmin}	r_{amax}	r_{bmax}	
-	-	-	-	818	840	-	862	962	-	-	4	4	134
-	-	-	-	822	863	873	-	1038	-	-	5	5	279
NUP19/800M	-	-	-	822	-	-	892	1038	-	-	5	5	292
NUP19/800X2Q1	-	-	-	822	-	-	888	1038	-	-	5	5	342
-	-	-	-	828	869	886	-	1122	-	-	6	6	565
-	-	-	-	828	868	885	-	1122	-	-	6	6	710
-	-	-	-	827	872	888	-	1123	-	-	6	6	723
NUP6/810	-	-	-	828	-	-	876	982	-	-	4	4	238
NUP6/812X4	-	-	-	835	-	-	883	994	-	-	5	5	277
-	N6/820	-	838	-	-	-	-	-	972	950.4	4	4	128
-	-	-	-	868	895	-	918	1012	-	-	4	4	150
-	N18/850X2EM	-	868	-	-	-	-	-	1012	996.81	4	4	152
-	N28/850MB	-	868	-	-	-	-	-	1012	993.6	4	4	187
-	-	-	-	868	894	905	918	1012	-	-	4	4	191
NUP28/850MA	-	-	-	868	894	905	918	1012	-	-	4	4	194
-	-	-	-	868	891	905	-	1012	-	-	4	4	192
-	-	-	-	873	909	-	935	1097	-	-	5	5	326
-	-	-	-	873	909	922	-	1097	-	-	5	5	325
-	-	-	-	872	911	922	-	-	-	-	5	5	320
-	-	-	-	877	921	938	-	1193	-	-	6	6	835
-	-	-	-	918	942	952	-	1072	-	-	4	4	172
-	-	NF28/900	918	918	944	952	968	1072	1072	1054	4	4	223
-	-	-	-	918	944	952	-	1072	-	-	4	4	234
-	-	-	-	918	937	948	-	1072	-	-	4	4	268
-	-	-	-	923	957	970	-	1157	-	-	5	5	378
-	-	-	-	922	959	972	-	1158	-	-	5	5	480
-	-	-	-	923	958	972	-	1157	-	-	5	5	565
-	N6/900	-	922	922	968	979	-	1178	1178	1142.9	5	5	486
NUP29/950	-	-	-	977	1016	1027	1054	1223	-	-	6	6	606
-	-	-	-	977	1016	1027	-	1223	-	-	6	6	596
-	-	-	-	977	1016	1027	-	1223	-	-	6	6	601
NUP18/1000M	-	-	-	1022	1043	1056	1075	1198	-	-	5	5	258
-	-	-	-	-	-	-	1075	-	-	-	5	5	345
-	-	-	-	1028	1072	1085	-	1292	-	-	6	6	705
-	-	-	-	1057	1087	1098	-	1283	-	-	6	6	579
-	N28/1060M	-	1083	-	-	-	-	-	1257	1230	5	5	355
-	-	-	-	1087	1141	1151	-	1373	-	-	6	6	649

d 1060～1900mm





Principal dimensions (mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations	
d	*D*	*B*	r_{min}	r_{1min}	*F*	*E*	C_r	C_{or}	Grease	Oil	*NU*	*NJ*
1060	1400	150	7.5	7.5	1148	1318	5880	12300	290	350	NU19/1060M	-
	1400	195	7.5	7.5	1146	-	7200	17000	290	350	NU29/1060EM	-
	1400	250	7.5	7.5	1146	-	9000	23500	250	310	NU39/1060EM	-
	1500	325	9.5	9.5	-	1390	12500	32500	230	290	-	-
1120	1360	106	6	6	1182	-	3370	8030	270	330	-	NJ18/1120EM
	1360	106	6	6	1185	1301	3370	8030	270	330	-	NJ18/1120F3
	1360	106	6	6	1185	1301	3370	8030	270	330	-	NJ18/1120M
	1360	112	6	6	1185	1301	3550	8560	150	200	-	NJ18/1120X2M
1180	1420	106	6	6	1242	-	3350	7900	250	320	-	NJ18/1180EM
	1420	106	6	6	1242	1362	3350	7900	250	320	-	NJ18/1180M
	1430	160	6	6	1243	1369	5910	15800	150	200	NU6/1180EQ1A	-
	1540	206	7.5	7.5	1270	1450	8130	18500	180	220	NU29/1180M	-
	1540	272	7.5	7.5	-	1466	11000	28500	190	250	-	-
1200	1520	185	7.5	7.5	1289	1439	6690	16500	110	140	-	-
	1520	185	7.5	7.5	1318	1452	6390	17000	110	140	NU38/1250X1F3	-
	1520	185	7.5	7.5	1289	1439	6690	16500	110	140	NU6/1200	-
	1520	185	7.5	7.5	1289	1439	6690	16500	110	140	NU6/1200F3	-
1250	1500	112	6	6	1316	1436	3760	9300	300	380	NU18/1250	-
	1500	112	6	6	1316	1436	3760	9300	300	380	NU18/1250F3	-
	1750	290	9.5	9.5	-	1635	12500	29500	165	190	-	-
1320	1600	122	6	6	1385	1535	4820	11100	190	250	-	-
	1600	122	6	6	1395	-	4820	11100	190	250	NU18/1320M	-
	1640	185	15	7.5	1404	1564	7170	17700	190	250	NU6/1320	-
	1720	175	7.5	7.5	1425	1625	8760	19700	190	240	NU19/1320	-
	1720	175	7.5	7.5	1475	1625	6330	16200	190	240	NU19/1320D	-
	1720	230	7.5	7.5	1420	-	10900	29000	180	230	NU29/1320E	-
	1720	300	7.5	7.5	-	1640	12600	32500	175	210	-	-
1400	1700	175	7.5	7.5	1477	1637	7090	17800	175	210	-	-
	1700	175	7.5	7.5	-	1637	7090	17800	175	210	-	-
	1700	175	7.5	7.5	1477	1637	6840	17000	175	210	NU28/1400F3	-
1420	1800	175	7.5	7.5	1520	1710	9220	22300	100	150	NU6/1420F3	-
1500	1820	140	7.5	7.5	1585	1735	6620	17600	100	150	NU18/1500	-
	1820	140	7.5	7.5	1585	1735	5920	15200	100	150	-	-
1600	1950	155	7.5	7.5	1687	1857	6980	17500	150	185	-	NJ18/1600
	1950	200	7.5	7.5	1690	1866	8980	23600	150	185	NU28/1600F3	-
1700	2060	160	7.5	7.5	1784	-	6950	18500	125	155	NU18/1700EM	-
1900	2300	175	9.5	9.5	-	2204	8150	23700	90	115	-	-

Designations			Abutment and fillet dimensions(mm)										Mass (kg)
NUP	*N*	*NF*	d_{amin}	d_{bmin}	d_{bmax}	d_{cmin}	d_{dmin}	D_{amax}	D_{bmax}	D_{bmin}	r_{amax}	r_{bmax}	(approx.)
-	-	-	-	1087	1141	1151	-	1373	-	-	6	6	653
-	-	-	-	1028	1133	1149	-	1372	-	-	6	6	875
-	-	-	-	1028	1140	1149	-	1372	-	-	6	6	1060
-	N30/1060	-	1094	-	-	-	-	-	1466	1402	8	8	1880
-	-	-	-	-	-	-	1204	-	-	-	5	5	330
-	-	-	-	1142	1176	-	1206	1338	-	-	5	5	327
-	-	-	-	1142	1176	-	1206	1338	-	-	5	5	329
-	-	-	-	1142	1178	-	1206	1338	-	-	5	5	353
-	-	-	-	-	-	-	1263	-	-	-	5	5	354
-	-	-	-	1202	1236	-	1262	1398	-	-	5	5	340
-	-	-	-	1202	1233	1246	-	1408	-	-	5	5	535
-	-	-	-	1207	1255	1273	-	1513	-	-	6	6	1040
-	N39/1180M	-	1208	-	-	-	-	-	1512	1474	6	6	1350
-	N6/1200	-	1227	-	-	-	-	-	1493	1458.2	6	6	838
-	-	-	-	1227	1305	1321	-	1493	-	-	6	6	708
-	-	-	-	1227	1279	1292	-	1493	-	-	6	6	832
-	-	-	-	1227	1279	1292	-	1493	-	-	6	6	825
-	-	-	-	1280	1306	1319	-	1470	-	-	5	5	386
-	-	-	-	1280	1306	1319	-	1470	-	-	5	5	386
-	N20/1250M	-	1284	-	-	-	-	-	1716	1650	8	8	2310
-	N18/1320F3	-	1342	-	-	-	-	-	1578	1552.6	5	5	486
-	-	-	-	1343	1382	1398	-	1577	-	-	5	5	525
-	-	-	-	1362	1394	1407	-	1611	-	-	12	6	893
-	-	-	-	1347	1417	1428	-	1693	-	-	6	6	1110
-	-	-	-	1347	1453	1478	-	1693	-	-	6	6	1080
-	-	-	-	1348	1405	1423	-	1692	-	-	6	6	1510
-	N39/1320M	-	1348	-	-	-	-	-	1692	1655	6	6	1890
-	N28/1400	-	1427	-	-	-	-	-	1673	1653.4	6	6	826
-	N28/1400EM	-	1428	-	-	-	-	-	1672	1647	6	6	858
-	N28/1400F3	NF28/1400F3	1427	1427	1470	1480	-	1673	1673	1653.4	6	6	842
-	-	-	-	1447	1512	1523	-	1773	-	-	6	6	1120
-	N18/1500	NF18/1500	1527	1527	1574	1588	-	1793	1793	1753.1	6	6	770
-	N18/1500F3	-	1527	-	-	-	-	-	1793	1753.1	6	6	755
-	N18/1600	NF18/1600	1627	1627	1677	-	1717	1923	1923	1874.6	6	6	1020
-	-	-	-	1627	1674	1693	-	1923	-	-	6	6	1270
-	-	-	-	1728	1771	1787	-	2032	-	-	6	6	1160
-	N18/1900	-	1934	-	-	-	-	-	2266	2219	8	8	1480

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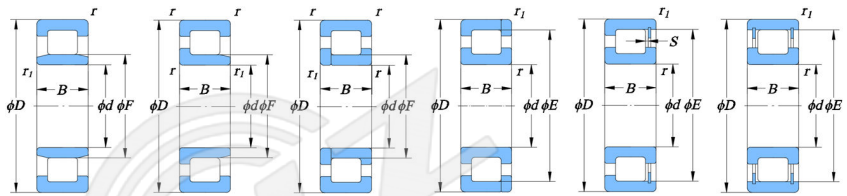
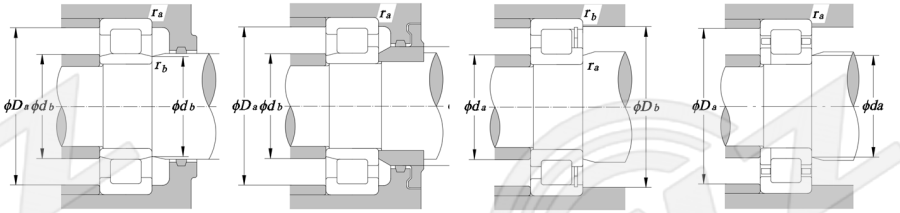
d 20～40mm



NU…V NJ…V NUP…V NFP…V NCF…V NCL…V



Principal dimensions(mm)								Basic load ratings (kN)		Limiting speeds (r/min)		Designations	
d	*D*	*B*	r_{min}	r_{1min}	*F*	*E*	*S*	C_r	C_{or}	Grease	Oil	*NU*	*NJ*
20	52	15	1.1	0.6	28.7	46.7	-	38.6	35.3	5300	6500	-	-
25	52	18	0.5	0.3	31	45	-	43.3	47.8	5000	6100	-	-
	52	18	1.3	1	31	46	-	41.4	43.4	5000	6100	NU2205V	-
	52	18	1	1	30.52	46.52	1	45.4	46.9	5000	6100	-	-
	62	20	1.9	1.1	34	53.408	-	55.7	55.8	4400	5400	-	NJ305X2V
	62	24	1.3	1.1	34	53.408	-	66.2	69.8	4400	5400	-	NJ2305V
	62	24	1.1	1.1	34.35	52.35	-	59.2	63.1	4400	5400	-	-
30	62	16	1	1	37.26	45.26	-	47.0	46.6	4200	5200	-	-
	62	19	1	1	38.2	54.2	-	52.8	59.7	4200	5200	-	-
	62	20	1	1	38.2	54.2	1	55.7	63.9	4200	5200	-	-
	62	20	1	1	37.26	55.26	-	58.6	63.3	4200	5200	-	-
	72	19	1	0.7×45°	38.5	60.5	0.8	55.3	52.7	3800	4700	-	-
	72	19	2	2	40.4	61.6	-	56.2	55.4	3800	4700	NU306EV	-
	72	19	1.1	0.5	41.5	61.5	-	59.8	62.4	3800	4700	-	-
	72	19	1.1	1.1	41.5	61.5	-	59.0	61.3	3800	4700	-	-
	72	21	1.1	1.1	38.5	60.5	-	63.7	63.2	3800	4700	NU306X2V	-
	72	30.162	1.5	1	40.681	60.409	-	90.1	106	3800	4700	-	-
	80	21	2.5	1.1	43.8	68.8	-	82.4	83.9	3500	4300	NU306X3V	-
35	72	23	1.1	1.1	44.5	64.5	1	79.7	91.6	3600	4500	-	-
	80	21	1.1	0.5	46.2	70.4	-	79.4	82.3	3400	4200	-	NJ307NV
	80	21	1.5	1.1	46.2	70.4	-	76.6	78.5	3400	4200	-	NJ307EV
	80	21	3	1.5	46.2	70.4	-	76.6	78.5	3400	4200	-	NJ307EV
	80	21	1.5	0.8×45°	46.9	67.9	0.15	72.9	80.2	3400	4200	-	-
	80	23	1.5	1.1	45.8	69.8	-	75.9	77.8	3400	4200	-	NJ607V
	82	23	1.1	0.3	44.5	64.5	-	73.0	81.8	3300	4100	-	-
	90	23	2	0.6	49.7	75.7	-	89.9	93.9	3100	3800	-	NJ2207X1V
	90	23	1.5	0.5	48.5	75.5	0.8	83.6	83.3	3100	3800	-	-
	90	23	2.5	1	49	77	-	86.8	85.9	3100	3800	-	-
	90	23	1.5	1.5	47.88	77.88	-	93.1	90.2	3100	3800	-	-
	90	29	1.5	0.5	48	78	-	118	123	3100	3800	-	NJ607NV
40	80	18	1.1	1.1	49.6	71.6	-	66.4	70.0	3200	4000	-	-
	80	23	1.1	1.1	48.94	70.94	1	89.2	102	3200	4000	-	-
	80	31	1.5	1.1	49	71	-	110	134	3200	4000	-	NJ3208X2V
	90	23	0.8	0.5	53.44	81.44	-	97.3	101	3000	3700	-	-
	90	23	1.5	1.5	53.44	81.44	-	97.3	101	3000	3700	-	NJ308V
	90	25	3.5	1	51	80	0.8	106	110	3000	3700	-	-
	90	33	2	2	53.44	79.34	-	134	160	2900	3600	-	NJ2308V

Designations			Abutment and fillet dimensions(mm)										Mass(kg)
NUP	*NCL*	*NCF*	d_{amin}	d_{bmin}	d_{bmax}	d_{cmin}	d_{dmin}	D_{amax}	D_{bmax}	D_{bmin}	r_{amax}	r_{bmax}	(approx.)
NUP304EV	-	-	-	25	29	-	32.1	47	-	-	1.1	0.6	0.167
NUP2205NV	-	-	-	28	31	-	34	48	-	-	0.3	0.3	0.193
-	-	-	-	29	31	32	-	48	-	-	1.1	1	0.176
-	-	NCF2205V	30	-		-	-	-	48.2	46.52	1	1	0.185
-	-	-	-	33	35	-	38	57	-	-	1.5	1.1	0.321
-	-	-	-	34	36	-	38	57	-	-	1.1	1.1	0.378
NUP2305V	-	-	-	30	34	-	39	57	-	-	1.1	1.1	0.401
NUP206V	-	-	-	34	37	-	50	58	-	-	1	1	0.263
-	NCL2206X2V	-	39	-		-	-	-	58.2	56.6	1	1	0.272
-	-	NCF2206V	35	-		-	-	-	58.2	54.2	1	1	0.292
NUP2206V	-	-	-	34	37	-	51.4	58	-	-	1	1	0.325
-	-	NCF306V	37	-		-	-	-	68.2	60.5	1		0.395
-	-	-	-	36	38	41	-	66	-	-	2	2	0.399
-	NCL306NRV	-	34	-		-	-	-	67.2	62.3	1.1	0.3	0.419
-	NCL306NV	-	34	-		-	-	-	67.2	62.3	1.1	1.1	0.404
-	-	-	-	35	37	40	-	67	-	-	1.1	1.1	0.431
-	NCL3306X2V	-	37	-		-	-	-	68.2	64	1.5	1	0.647
-	-	-	-	38	41	45	-	75	-	-	2	1.1	0.565
-	-	NCF2207V	41	-		-	-	-	67.2	65.1	1.1	1.1	0.439
NUP307NV	-	-	-	41	45	-	52.2	75	-	-	1.1	0.3	0.533
-	-	-	-	41	45	-	51	75	-	-	1.5	1.1	0.540
-	-	-	-	44	45	-	51	75	-	-	2.5	1.5	0.540
-	-	NCF307V	43	-		-	-	-	74.6	71.5	1.5		0.551
-	-	-	-	46	47	-	51	75	-	-	1.5	1.1	0.568
-	-	NFP2207X1V	41	-		-	-	-	77	64.5	1.1	0.3	0.681
NUP2207X1V	-	-	-	48	49	-	55.5	83	-	-	2	0.6	0.795
-	-	NCF407X3V	40	-		-	-	-	84.6	79.3	1.5	0.3	0.763
NUP407X3V	-	-	-	48	49	-	55	82	-	-	2	1	0.750
NUP307X3EV	-	-	-	41	48	-	54.6	85	-	-	1.5	1.5	0.790
-	-	-	-	41	47	-	56.5	85	-	-	1.5	0.3	0.998
NUP208V	-	-	-	45	47	-	65.2	75	-	-	1.1	1.1	0.480
-	-	NCF2208V	46	-		-	-	-	75.2	71.54	1.1	1.1	0.539
-	-	-	-	48	50	-	54.5	75	-	-	1.5	1.1	0.724
NUP308NV	-	-	-	43	53	-	59.2	85	-	-	0.6	0.3	0.499
NUP308V	-	-	-	51	53	-	59.2	85	-	-	1.5	1.5	0.719
-	-	NCF308X2V	50	-		-	-	-	86.2	80.8	3	1	0.754
-	-	-	-	49	52	-	59.2	83	-	-	2	2	1.02

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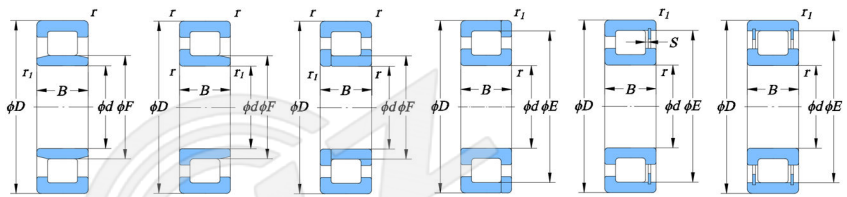
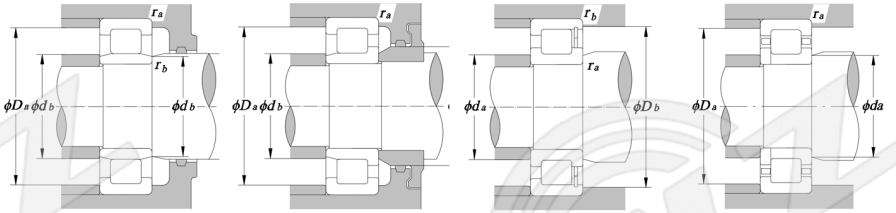
d 40～65mm



NU…V NJ…V NUP…V NFP…V NCF…V NCL…V

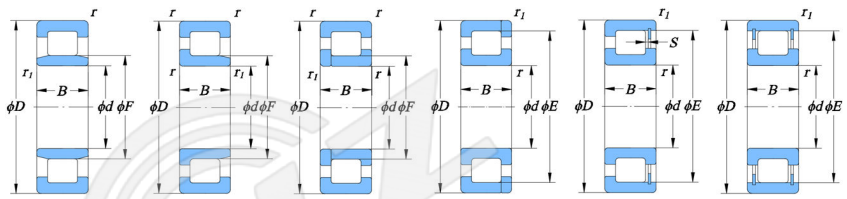


Principal dimensions(mm)								Basic load ratings (kN)		Limiting speeds (r/min)		Designations	
d	*D*	*B*	r_{min}	r_{1min}	*F*	*E*	*S*	C_r	C_{or}	Grease	Oil	*NU*	*NJ*
40	90	33	1.5	1.5	53.44	79.34	-	134	160	2900	3600	-	-
	94	30	5	1.5	51.04	83	-	130	135	2800	3500	-	NJ2308X3V
	94	30	1.5	1.5	51.1	83.1	-	127	131	2800	3500	-	NJ608V
	100	25	1.5	0.8×45°	58	86	0.8	109	119	2700	3300	-	-
45	85	19	1.1	1.1	56	78	-	75.2	84.5	2900	3600	-	-
	85	23	1.1	1.1	52.43	74.43	1	93.0	110	2900	3600	-	-
	85	23	1.1	1.1	53.46	77.46	-	98.9	113	2900	3600	-	-
	100	25	1.5	1.5	57.85	85.87	-	106	114	3600	4400	-	NJ309V
	100	25	1.5	1.5	57.3	87.3	-	111	116	3600	4400	-	-
	100	25	0.5	0.3	57.3	87.3	-	111	116	3600	4400	-	-
	100	25	1.5	1.5	57.38	87.38	-	111	116	3600	4400	-	-
	100	31	4	0.5	56	88	-	135	144	3600	4400	-	NJ2309X2NV
	100	31	1.5	0.5	56	88	-	135	144	3600	4400	-	NJ2309X2NRV
	100	31	4	1.5	58.5	86.5	1.5	130	150	3600	4400	-	-
	100	31	4	1.5	59.2	90.2	-	149	169	3600	4400	-	NJ2309X2V
	100	33	1.5	1.5	56	88	-	135	144	3600	4400	-	NJ2309X2RV
	100	36	1.5	1.5	57.38	87.38	-	155	179	2700	3300	-	-
48	120	35	3.5	2	71.3	99.3	-	164	209	2300	2800	-	NJ6/48V
50	80	28	1.1	0.6	58.5	70	-	90.0	165	3000	3700	NU4010X2V	-
	90	20	1.1	1.1	59.8	81.8	-	80.2	93.2	2800	3400	-	-
55	100	25	1.5	1.1	64.81	88.81	1	117	146	2500	3100	-	-
	110	27	0.5	0.3	66.72	96.72	-	131	148	2400	3000	-	-
	110	27	2	2	66.72	96.72	-	128	145	2400	3000	-	NJ310V
	110	27	2	0.5	66.72	96.72	-	128	145	2400	3000	-	-
	110	40	2	2	60.69	98.69	-	201	222	2400	3000	-	NJ2310V
	110	40	2	2	64	97	-	187	220	2400	3000	-	-
	100	21	1.5	1.5	64.84	88.84	-	99.8	119	2500	3100	-	-
	120	29	2	0.5	68.75	104.75	-	157	170	2200	2700	-	-
	120	29	2	0.5	68.75	104.75	-	157	170	2200	2700	-	-
	120	43	2	2	68.85	104.85	-	216	256	2200	2700	-	-
56	160	63(60)	2	2	77.15	121.15	-	290	342	1800	2200	-	-
60	110	22	1.5	1.5	71.2	99.2	-	114	131	2300	2800	-	-
	110	28	1.5	1.5	71.1	99.1	-	148	184	2300	2800	-	NJ2212EV
	130	46	2.1	2.1	73.64	115.64	-	276	326	2000	2500	-	NJ2312V
65	100	26	1.1	0.6	73.09	93.09	2	114	165	2900	3500	-	-
	120	23	1.5	1.5	80.06	108.06	-	129	159	2600	3100	-	-
	140	33	2.1	0.5	82.7	122.7	-	205	234	2300	2800	-	-

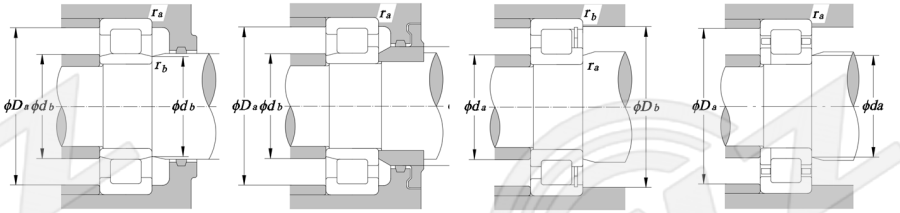
Designations			Abutment and fillet dimensions(mm)										Mass(kg)
NUP	*NCL*	*NCF*	d_{amin}	d_{bmin}	d_{bmax}	d_{cmin}	d_{dmin}	D_{amax}	D_{bmax}	D_{bmin}	r_{amax}	r_{bmax}	(approx.)
NUP2308V	-	-	-	46	53	-	59.2	85	-	-	1.5	1.5	1.09
-	-	-	-	46	49	-	36	89	-	-	4	1.5	1.01
-	-	-	-	46	49	-	58	89	-	-	1.5	1.5	1.02
-	-	NCF308X3V	48	-		-	-	-	94.6	86.8	1.5		1.05
NUP209EV	-	-	-	50	56	-	60.6	80	-	-	1.1	1.1	0.486
-	-	NCF2209V	51	-		-	-	-	80.2	75.03	1.1	1.1	0.588
NUP2209V	-	-	-	50	53	-	72.6	80	-	-	1.1	1.1	0.652
-	-	-	-	51	56	-	64	95	-	-	1.5	1.5	0.904
NUP309EV	-	-	-	51	57	-	64	95	-	-	1.5	1.5	0.996
NUP309ENRV	-	-	-	48	57	-	64	95	-	-	0.3	0.3	1.02
NUP309V	-	-	-	51	57	-	81.4	95	-	-	1.5	1.5	1.11
-	-	-	-	52.2	58	-	66	93	-	-	3	0.3	1.17
-	-	-	-	51	54	-	63	93	-	-	1.5	0.3	1.21
-	-	NCF2309X2V	57	-		-	-	-	94.6	90.9	3	1.5	1.24
-	-	-	-	51	58	-	66	95	-	-	3	1.5	1.19
-	-	-	-	52.2	54	-	63	95	-	-	1.5	1.5	1.26
NUP2309V	-	-	-	51	57	-	81.4	95	-	-	1.5	1.5	1.60
-	-	-	-	59	69	-	77.8	114	-	-	3	2	2.18
-	-	-	-	54	57	60	-	73	-	-	1.1	0.6	0.575
NUP210V	-	-	-	55	60	-	77	85	-	-	1.1	1.1	0.624
-	-	NCF2211V	62	-		-	-	-	93.8	89.41	1.5	1.1	0.854
NUP310NV	-	-	-	53	67	-	73.2	103	-	-	0.3	0.3	1.28
-	-	-	-	57	65	-	73.2	103	-	-	2	2	1.25
NUP310NRV	-	-	-	57	67	-	73.2	103	-	-	2	0.3	1.32
-	-	-	-	57	60	-	69	103	-	-	2	2	1.83
NUP2310V	-	-	-	57	64	-	90.4	104	-	-	2	2	2.09
NUP211V	-	-	-	64	66	-	85	91	-	-	1.5	1.5	0.820
NUP311NV	-	-	-	62	69	-	75.5	113	-	-	2	0.3	1.63
NUP311NRV	-	-	-	62	69	-	75.5	113	-	-	2	0.3	1.69
NUP2311V	-	-	-	62	69	-	98.1	113	-	-	2	2	2.71
NUP6/56V	-	-	-	63	77	-	88.2	153	-	-	2	2	7.29
NUP212V	-	-	-	66	71	-	93.6	104	-	-	1.5	1.5	1.04
-	-	-	-	67	70	-	77	105	-	-	1.5	1.5	1.17
-	-	-	-	64	72	-	82	121	-	-	2	2	3.01
-	-	NCF3013V	71	-		-	-	-	95.2	93.09	1.1	0.6	0.730
NUP213V	-	-	-	71	78	-	102.1	115	-	-	1.5	1.5	1.31
NUP313NRV	-	-	-	74	83	-	91.3	131	-	-	2	0.3	2.58

ZWZ

d 65～190mm



NU…V NJ…V NUP…V NFP…V NCF…V NCL…V

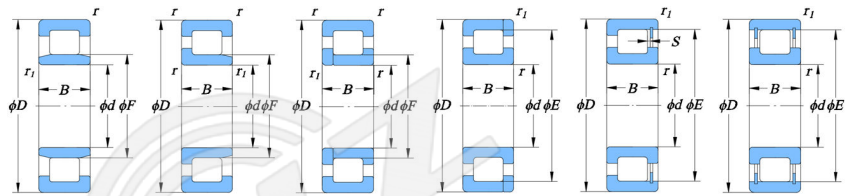


Principal dimensions(mm)								Basic load ratings (kN)		Limiting speeds (r/min)		Designations	
d	*D*	*B*	r_{min}	r_{1min}	*F*	*E*	*S*	C_r	C_{or}	Grease	Oil	*NU*	*NJ*
65	140	48	2.1	2.1	80.58	126.58	-	305	357	1900	2300	-	NJ2313V
70	125	31	1.5	1.5	80.98	110.98	-	165	209	2000	2400	NU2214V	-
	150	35	2.1	2.1	90.97	134.97	-	248	287	1700	2100	-	-
	150	51	2.1	2.1	84.17	132.17	-	334	396	1700	2100	-	NJ2314V
75	115	30	1.1	1.1	84	108	3	142	201	2500	3100	-	-
	130	31	1.5	1.5	89.2	117.2	-	173	238	2300	2800	-	-
	160	55	2.1	2.1	91.24	143.24	-	356	416	1600	2000	-	NJ2315V
80	170	60(58)	2.1	2.1	100	152	-	425	531	1500	1800	-	-
85	120	22	1.1	1	94.7	110.7	1	98.1	171	2500	3100	-	-
	130	34	1.1	1.1	95.5	119.5	3	176	276	2400	2900	-	-
	150	36	2	2	97.75	133.75	1.5	232	302	2200	2700	-	-
	180	41	3	3	108	160	-	336	398	1900	2300	-	-
	180	60	3	3	107.5	159.5	-	477	625	1400	1800	-	NJ2317V
90	160	40	2	2	108	142	2.5	272	395	1500	1900	-	-
95	200	67	3	3	114.68	174.68	-	563	722	1300	1600	-	NJ2319V
100	150	37	1.5	1.5	112	138	4	200	323	2000	2500	-	-
	180	46	2.1	2.1	119.3	163.3	2.5	362	497	1800	2200	-	-
	215	73	3	3	122.81	194.81	-	670	840	1200	1400	-	NJ2320V
110	180	56	2	2	126.5	162.5	4	374	600	1300	1600	-	-
	240	80	3	3	134.27	218.27	-	825	1010	1000	1300	-	NJ2322V
114.3	152.4	51.05	2.5	1.5	127.05	139.75	-	243	714	1400	1700	-	-
120	215	40	2.1	2.1	143.5	193.5	-	357	472	1100	1300	-	NJ224V
	215	58	2.1	2.1	140.8	192.8	4	526	753	1300	1600	-	-
	260	86	3	3	147.38	231.38	-	927	1190	930	1200	-	NJ2324V
130	180	30	1.5	1.1	145	169	2	204	380	930	1100	-	-
	230	64	3	3	151.75	207.75	5	612	890	780	960	-	-
140	210	53	2	1	154	198	4	441	686	1400	1700	-	-
	250	68	3	3	169	225	-	644	977	1200	1500	-	NJ2228EV
	300	102	4	4	168.5	264.5	-	1210	1590	860	1100	-	NJ2328V
150	210	36	2	1.1	163.5	195.5	1	297	521	1300	1600	-	-
	225	56	2.1	1.1	166	206	7	418	697	1400	1700	-	-
160	220	36	2	2	173.4	205.4	-	281	496	1200	1500	-	-
170	230	36	2	1.1	184.4	218.4	2.5	298	522	1200	1400	-	-
180	250	42	2	1.1	194	232	1	404	725	1100	1300	-	-
	280	74	2.1	2.1	207.2	259.2	5	775	1380	980	1200	-	-
	380	126	4	4	228	338	-	1860	2710	630	780	-	-
190	260	42	2	1.1	206	244	1	417	770	1100	1300	-	-

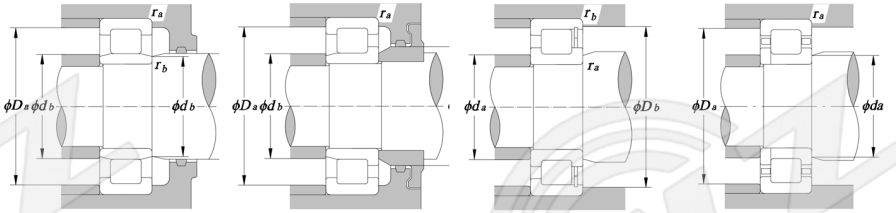
Designations			Abutment and fillet dimensions(mm)									Mass (kg)
NUP	*NCL*	*NCF*	d_{ami} min	d_{bmi} min	d_{bma} max	d_{cmi} min	d_{dmin}	D_{ama} max	D_{bmax}	D_{bmin}	r_{ama} max	r_{bma} max	(approx.)
-	-	-	-	74	79	-	89.8	131	-	-	2	2	3.54
-	-	-	-	76	79	82	-	120	-	-	1.5	1.5	1.54
NUP314NV	-	-	-	79	91	-	99.5	140	-	-	2	2	2.96
-	-	-	-	79	83	-	93.8	141	-	-	2	2	4.36
-	-	NCF3015V	81	-		-	-	-	110.2	108	1.1	1.1	1.05
NUP2215V	-	-	-	81	89	-	108	125	-	-	1.5	1.5	1.91
-	-	-	-	84	88	-	102	151	-	-	2	2	5.16
NUP2316WB1V	-	-	-	89	100	-	112	161	-	-	2	2	6.51
-	-	NCF2917V	91	-		-	-	-	115.2	111.3	1.1	1	0.718
-	-	NCF3017V	91	-		-	-	-	125.2	120.1	1.1	1.1	1.60
-	-	NCF2217V	94	-		-	-	-	142.2	134.35	2	2	2.67
NUP317EV	-	-	-	96	108	-	117	169	-	-	2.5	2.5	5.06
-	-	-	-	96	106	-	118	169	-	-	2.5	2.5	7.50
-	-	NCF2218V	99	-		-	-	-	152.2	142.6	2	2	3.53
-	-	-	-	106	112	-	126.8	189	-	-	2.5	2.5	10.3
-	-	NCF3020V	106	-		-	-	-	144.4	138.6	1.5	1.5	2.27
-	-	NCF2220V	109	-		-	-	-	171	163.9	2	2	5.04
-	-	-	-	111	120	-	137	204	-	-	2.5	2.5	12.7
-	-	NCF3122V	118	-		-	-	-	172	162.5	2	2	5.50
-	-	-	-	121	134	-	151.1	229	-	-	2.5	2.5	17.4
-	NCL6/114,3V	-	121	-	-	-	-	-	146.8	139.75	2	1.5	2.81
-	-	-	-	129	141	-	153.5	206	-	-	2	2	6.13
-	-	NCF2224V	129	-		-	-	-	206	194.2	2	2	8.97
-	-	-	-	131	143	-	162.5	249	-	-	2.5	2.5	21.9
-	-	NCF2926V	137	-		-	-	-	173	170	1.5	1.1	2.37
-	-	NCF2226V	141	-		-	-	-	219	209.15	2.5	2.5	11.2
-	-	NCF3028V	148	-		-	-	-	202	198.6	2	1	6.00
-	-	-	-	151	165	-	181.2	239	-	-	2.5	2.5	14.1
-	-	-	-	154	166	-	188	286	-	-	3	3	34.8
-	-	NCF2930V	158	-		-	-	-	202	196.9	2	1.1	3.89
-	-	NCF3030V	159	-		-	-	-	219	207.4	2	1.1	7.50
-	-	NCF2932V	168	-		-	-	-	212	206.8	2	2	3.98
-	-	NCF2934V	178	-		-	-	-	225.6	219.8	2	1.1	3.91
-	-	NCF2936V	188	-		-	-	-	242	233.6	2	1.1	4.35
-	-	NCF3036V	194	-		-	-	-	271	260.6	2	2	16.9
NUP2336V	-	-	-	194	228	-	250	366	-	-	3	3	70.6
-	-	NCF2938V	198	-		-	-	-	252	245.6	2	1.1	4.52

ZWZ

d 190～380mm



NU…V NJ…V NUP…V NFP…V NCF…V NCL…V

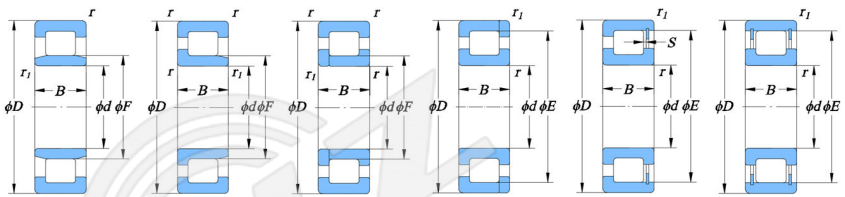


Principal dimensions(mm)								Basic load ratings (kN)		Limiting speeds (r/min)		Designations	
d	*D*	*B*	r_{min}	r_{1min}	*F*	*E*	*S*	C_r	C_{or}	Grease	Oil	*NU*	*NJ*
190	290	75	2.1	2.1	215	269	9	768	1340	1000	1200	-	-
	340	92	4	4	227.5	311.5	7	1210	1840	750	920	-	-
200	250	24	1.5	1.5	211	237	2	186	361	1100	1300	-	-
	270	24	1.5	1.1	219	251	2	205	356	1000	1300	-	-
	280	48	2.1	1.5	217	261	3	532	968	1000	1200	-	-
	310	82	2.1	2.1	225.6	284.6	7	918	1610	930	1100	-	-
	420	138	5	5	238.65	374.65	-	2290	3160	610	750	-	-
220	300	48	2.1	1.5	238.2	282.2	2.5	559	1060	910	1100	-	-
	340	90	3	3	244.8	308.8	8.3	1090	1950	890	1100	-	-
	460	145	5	5	266.7	418.7	-	2580	3530	540	660	-	NJ2344V
240	320	28	2.1	1.5	259.3	303.3	1.8	311	514	700	860	-	-
	320	48	2.1	1.5	259.3	303.3	3	585	1160	890	1100	-	-
	360	92	3	3	263.6	335.6	7	1230	2160	810	990	-	-
260	320	28	2	1.1	275.2	307.2	1.8	281	576	780	970	-	-
	360	60	2.1	2.1	281.1	333.1	3.5	733	1410	720	880	-	-
	400	104	4	4	286	376	11	1510	2480	710	880	-	-
	540	165	6	6	316	496	-	3560	5010	390	480	-	NJ2352V
280	350	33	2	2	297.6	331.6	3	318	665	760	930	-	-
	380	60	2.1	2.1	306.3	358.3	3.5	809	1650	710	880	-	-
	420	106	4	4	310.5	388.5	12	1520	2820	660	810	-	-
300	380	38	2.1	2.1	319	359	3	412	843	680	840	-	-
	400	38	2.1	2.1	331	371	3	420	876	660	810	-	-
	400	38	2.1	2.1	331	371	3	420	876	660	810	-	-
	420	72	3	3	326.5	390.5	5	1060	2060	630	780	-	-
	460	118	4	4	339	421	10	1850	3590	590	730	-	-
320	400	38	2.1	1.5	341	383	3	452	940	630	780	-	-
	440	72	3	3	346	410	5	1100	2190	590	730	-	-
	480	121	4	4	356	442	12	1950	3770	550	680	-	-
	500	74	4	4	366	462	5.4	1430	2370	530	650	-	-
340	420	38	2.1	2.1	363	401	3	428	961	590	730	-	-
	460	72	3	3	367	431	5	1130	2320	550	680	-	-
	520	133	5	5	382	482	12	2300	4310	530	660	-	-
360	440	38	2.1	1.5	382	424	2	479	1050	550	680	-	-
	480	72	3	3	388	452	5	1240	2670	510	630	-	-
	520	82	5	5	397	483	6	1410	2570	480	590	-	-
380	480	46	2.1	1.5	406	458	3.5	663	1400	530	660	-	-
	480	56	2.1	1.5	406	458	3.5	835	1880	530	660	-	-

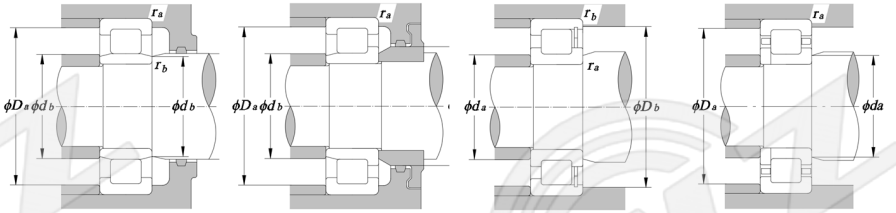
Designations			Abutment and fillet dimensions(mm)										Mass (kg) (approx.)
NUP	*NCL*	*NCF*	d_{amin}	d_{bmin}	d_{bmax}	d_{cmin}	d_{dmin}	D_{amax}	D_{bmax}	D_{bmin}	r_{amax}	r_{bmax}	
-	-	NCF3038V	204	-		-	-	-	281	270.4	2	2	17.3
-	-	NCF2238V	204	-		-	-	-	326	312.9	3	3	34.9
-	-	NCF1840V	212	-		-	-	-	242	238.4	1.5	1.5	2.65
-	-	NCF1840X1V	208	-		-	-	-	262	252.4	1.5	1.1	3.96
-	-	NCF2940V	210	-		-	-	-	270	262.6	2	1.5	9.14
-	-	NCF3040V	210	-		-	-	-	300	286	2	2	22.6
NUP2340V	-	-	-	218	239	-	266	402	-	-	4	4	93.1
-	-	NCF2944V	230	-		-	-	-	290	284	2	1.5	9.62
-	-	NCF3044V	232	-		-	-	-	328	311.2	2.5	2.5	30.0
-	-	-	-	238	290	-	295	442	-	-	4	4	111
-	-	NCF2948X2V	250	-		-	-	-	310	304.3	2	1.5	6.05
-	-	NCF2948V	250	-		-	-	-	310	303.3	2	1.5	10.6
-	-	NCF3048V	252	-		-	-	-	348	339.6	2.5	2.5	32.7
-	-	NCF1852V	269	-		-	-	-	311	208.6	2	1.1	4.60
-	-	NCF2952V	270	-		-	-	-	350	324.4	2	2	17.0
-	-	NCF3052V	275	-		-	-	-	385	378.8	3	3	44.1
-	-	-	-	282	310	-	352	518	-	-	5	5	175
-	-	NCF1856V	289	-		-	-	-	341	333	2	2	7.17
-	-	NCF2956V	290	-		-	-	-	370	360.5	2	2	19.9
-	-	NCF3056V	295	-		-	-	-	405	390.7	3	3	50.3
-	-	NCF1860V	310	-		-	-	-	370	360.4	2	2	9.95
-	-	NCF1860VX1	310	-		-	-	-	390	372.4	2	2	13.5
-	-	NCF1860X1V	310	-		-	-	-	390	372.4	2	2	13.5
-	-	NCF2960V	313	-		-	-	-	407	392.7	2.5	2.5	31.0
-	-	NCF3060V	315	-		-	-	-	445	423.2	3	3	71.1
-	-	NCF1864V	330	-		-	-	-	390	384	2	1.5	10.7
-	-	NCF2964V	333	-		-	-	-	427	411.4	2.5	2.5	30.0
-	-	NCF3064V	335	-		-	-	-	465	444.2	3	3	75.9
-	-	NCF1064X1V	335	-		-	-	-	485	462.6	3	3	52.4
-	-	NCF1868V	350	-		-	-	-	410	402.4	2	2	11.3
-	-	NCF2968V	353	-		-	-	-	447	433.2	2.5	2.5	34.4
-	-	NCF3068V	358	-		-	-	-	502	484.2	4	4	98.6
-	-	NCF1872V	370	-		-	-	-	430	424	2	1.5	11.7
-	-	NCF2972V	373	-		-	-	-	467	454.2	2.5	2.5	36.4
-	-	NCF1072X1V	378	-		-	-	-	502	485.2	4	4	55.1
-	-	NCF1876V	390	-		-	-	-	470	450.2	2	1.5	17.0
-	-	NCF1876VY	390	-		-	-	-	470	459.6	2	1.5	21.7

ZWZ

d 380～600mm



NU…V NJ…V NUP…V NFP…V NCF…V NCL…V



Principal dimensions(mm)								Basic load ratings (kN)		Limiting speeds (r/min)		Designations	
d	*D*	*B*	r_{min}	r_{1min}	*F*	*E*	*S*	C_r	C_{or}	Grease	Oil	*NU*	*NJ*
380	520	82	4	4	412.5	484.5	6	1570	3390	500	610	-	-
400	500	46	2.1	1.5	423	475	6	664	1420	500	610	-	-
	530	46	2.1	1.5	430.6	506.6	4	803	1540	510	620	-	-
	540	82	4	4	437	509	5	1620	3580	470	570	-	-
420	520	46	2.1	1.5	447	499	3.5	697	1540	470	570	-	-
	520	56	2.1	1.5	447	499	3.5	877	2070	470	570	-	-
	560	82	4	4	456.5	526.5	5	1560	3520	440	540	-	-
440	540	46	2.1	1.5	463.2	515.2	3.5	754	1730	440	540	-	-
	540	60	2.1	1.5	464	516	3.5	1000	2490	440	540	-	-
	540	60	2.1	1.5	464	516	3.5	984	2430	440	540	-	-
	540	60	2.1	1.5	464	516	3.5	984	2430	440	540	-	-
	570	46	2.1	1.5	472.5	538.5	3.5	845	1690	420	510	-	-
	600	60	2.1	1.5	483	563	3	1290	2570	400	500	-	-
	600	95	4	4	483	563	6	1910	4240	400	500	-	-
460	580	56	3	3	489	553	5	964	2080	400	500	-	-
	580	72	3	3	489	553	5	1320	3100	400	500	-	-
	620	95	4	4	504	576	7	1820	4350	380	470	-	-
480	600	56	3	3	509.5	573.5	5	985	2160	380	470	-	-
	600	72	3	3	509.5	573.5	5	1350	3230	380	470	-	-
	600	76	3	3	509.5	573.5	5	1410	3440	380	470	-	-
	650	100	5	5	519	607	7	2170	4780	380	470	-	-
500	620	56	3	3	529.5	593.5	4.8	1010	2250	390	480	-	-
	620	72	3	3	529.5	593.5	2.4	1370	3360	390	480	-	-
	670	100	5	5	541.3	630.9	7	2140	4700	360	450	-	-
530	650	56	3	3	560.5	624.5	4.8	1030	2380	360	440	-	-
	650	72	3	3	560.5	624.5	5	1410	3550	360	440	-	-
	710	72	5	5	572	672	4.5	1800	3550	340	410	-	-
	710	106	5	5	572	672	7	2610	5730	340	410	-	-
560	680	56	3	3	592.5	652.5	5	1010	2450	340	410	-	-
	680	72	3	3	592.5	652.5	4.1	1420	3820	340	410	-	-
	695	65	3	3	595.2	663.2	5	1350	3280	330	410	-	-
	750	72	5	5	601	709	4.5	1930	3730	310	380	-	-
	750	89	5	5	601	709	7	2090	4140	310	380	-	-
	750	112	5	5	601	709	7	2650	5630	310	380	-	-
	820	195	6	6	621	771	16	5360	11200	300	370	-	-
562	610	40(88)	2	2	576	596	-	549	2470	390	480	-	NJ6/562WBV
600	730	60	3	3	632	696	7.1	1100	2680	320	390	-	-

Designations			Abutment and fillet dimensions(mm)										Mass(kg)
NUP	*NCL*	*NCF*	d_{amin}	d_{bmin}	d_{bmax}	d_{cmin}	d_{dmin}	D_{amax}	D_{bmax}	D_{bmin}	r_{amax}	r_{bmax}	(approx.)
-	-	**NCF2976V**	395	-		-	-	-	505	486.7	3	3	52.6
-	-	**NCF1880V**	411	-		-	-	-	489	476.6	2	1.5	19.7
-	-	**NCF1880X1V**	410	-		-	-	-	520	498.2	2	1.5	27.3
-	-	**NCF2980V**	415	-		-	-	-	525	511.2	3	3	54.9
-	-	**NCF1884V**	431	-		-	-	-	509	500.4	2	1.5	20.5
-	-	**NCF1884VY**	430	-		-	-	-	510	500.6	2	1.5	25.7
-	-	**NCF2984V**	435	-		-	-	-	545	528.7	3	3	57.2
-	-	**NCF1888V**	450	-		-	-	-	530	516.8	2	1.5	22.1
-	-	**NCF2888V**	450	-		-	-	-	530	518.2	2	1.5	28.9
-	-	**NCF2888N1V**	450	-		-	-	-	530	518.2	2	1.5	28.9
-	-	**NCF2888X1N1V**	450	-		-	-	-	530	518.2	2	1.5	29.5
-	-	**NCF1888X1V**	450	-		-	-	-	560	540.1	2	1.5	29.8
-	-	**NCF2988X2V**	451	-		-	-	-	589	564.4	2	1.5	50.8
-	-	**NCF2988V**	455	-		-	-	-	585	565.2	3	3	79.6
-	-	**NCF1892V**	473	-		-	-	-	567	555.2	2.5	2.5	34.4
-	-	**NCF2892V**	473	-		-	-	-	567	555.2	2.5	2.5	44.0
-	-	**NCF2992V**	475	-		-	-	-	605	577.4	3	3	78.3
-	-	**NCF1896V**	493	-		-	-	-	587	575.7	2.5	2.5	32.8
-	-	**NCF2896V**	493	-		-	-	-	587	575.7	2.5	2.5	45.4
-	-	**NCF1896VY**	493	-		-	-	-	587	575.7	2.5	2.5	45.2
-	-	**NCF2996V**	498	-		-	-	-	632	608.4	4	4	89.1
-	-	**NCF18/500V**	513	-		-	-	-	607	595.1	2.5	2.5	35.5
-	-	**NCF28/500V**	513	-		-	-	-	607	595.1	2.5	2.5	47.6
-	-	**NCF29/500V**	518	-		-	-	-	652	606.1	4	4	97.8
-	-	**NCF18/530V**	543	-		-	-	-	637	626.1	2.5	2.5	34.4
-	-	**NCF28/530V**	543	-		-	-	-	637	626.1	2.5	2.5	49.9
-	-	**NCF29/530X2V**	548	-		-	-	-	692	673.6	4	4	78.2
-	-	**NCF29/530V**	548	-		-	-	-	692	674.4	4	4	110
-	-	**NCF18/560V**	573	-		-	-	-	667	654.5	2.5	2.5	40.3
-	-	**NCF28/560V**	573	-		-	-	-	667	654.5	2.5	2.5	53.3
-	-	**NCF18/560X3V**	573	-		-	-	-	682	665.2	2.5	2.5	54.7
-	-	**NCF29/560X2V**	578	-		-	-	-	732	711.2	4	4	86.7
-	-	**NCF19/560X2V**	578	-		-	-	-	732	711.2	4	4	104
-	-	**NCF29/560V**	578	-		-	-	-	732	711.2	4	4	133
-	-	**NCF30/560V**	582	-		-	-	-	798	773.2	5	5	336
-	-	-	-	570	576	-	582	602	-	-	2	2	17.9
-	-	**NCF18/600V**	613	-		-	-	-	717	698.8	2.5	2.5	49.8

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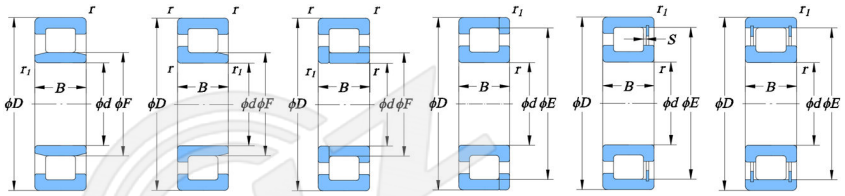
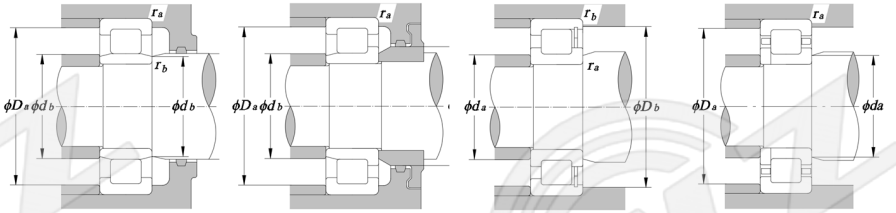
d 600～1000mm



NU…V NJ…V NUP…V NFP…V NCF…V NCL…V

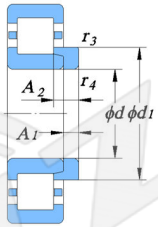


Principal dimensions(mm)								Basic load ratings (kN)		Limiting speeds (r/min)		Designations		Mass(kg)
d	*D*	*B*	r_{min}	r_{1min}	*F*	*E*	*S*	C_r	C_{or}	Grease	Oil	*NU*	*NJ*	(approx.)
600	730	78	3	3	632	696	6	1550	4180	320	390	-	-	67.0
	800	90	5	5	641	753	7	2270	4600	290	360	-	-	122
	800	118	5	5	641	753	7	2990	6540	290	360	-	-	163
625	780	69	4	4	666	742	-	1390	3270	290	360	-	-	73.3
630	780	69	4	4	666	742	8	1390	3270	290	360	-	-	70.8
	780	88	4	4	669	739	8	1900	5160	290	360	-	-	94.1
	850	128	6	6	679	801	8	3370	7300	270	330	-	-	202
670	820	69	4	4	711	783	8	1370	3390	270	330	-	-	72.6
	820	88	4	4	711	783	8	1890	5150	270	330	-	-	102
	900	136	6	6	725.5	845.5	10	3890	9100	260	320	-	-	244
710	870	74	4	4	751	831	7	1660	4100	250	310	-	-	91.0
	870	95	4	4	751	831	8	2200	5910	250	310	-	-	119
	870	95	4	4	751	831	-	2200	5910	250	310	-	-	119
	950	140	6	6	765	895	10	4220	9700	220	270	-	-	274
750	910	90	5	5	792	871	6	2250	6230	220	270	-	-	120
	920	78	5	5	796	878	8	1680	4170	240	300	-	-	107
	920	100	5	5	796	878	8	2300	6260	240	300	-	-	140
	1000	145	6	6	814	942	11	4400	10600	220	270	-	-	316
800	980	82	5	5	845.5	935.5	7	2010	5010	220	280	-	-	126
	980	106	5	5	845.5	935.5	7	2900	8040	220	280	-	-	170
	1060	106	6	6	864.5	1000.5	7	3520	7750	200	250	-	-	253
	1060	150	6	6	864.5	1000.5	11	4770	11500	200	250	-	-	359
850	1030	82	5	5	893	985	9	2110	5370	200	250	-	-	133
	1030	106	5	5	893	985	10	2810	7760	200	250	-	-	175
	1120	155	6	6	915	1055	13	5220	12800	180	220	-	-	411
900	1090	85	5	5	947	1043	9	2320	6010	170	220	-	-	155
	1090	112	5	5	947	1043	10	3150	8880	170	220	-	-	210
	1090	112	5	5	947	1043	10	3150	8880	170	220	-	-	210
	1180	165	6	6	968	1120	13	6060	14900	170	200	-	-	469
950	1150	90	5	5	995	1101	8	2610	6590	160	200	-	-	180
	1150	118	5	5	995	1101	12	3500	9610	160	200	-	-	238
	1250	175	7.5	7.5	1019	1179	14	6580	16300	160	190	-	-	570
995	1250	190	6	6	1054	1342	11	7270	20600	150	190	-	-	543
1000	1220	100	6	6	1057.6	1166.4	12	2900	7580	160	190	-	-	241
	1220	128	6	6	1057.6	1166.4	12	4060	11700	160	190	-	-	311
	1320	185	7.5	7.5	1081	1251	14	7210	17900	150	180	-	-	675

Designations			Abutment and fillet dimensions(mm)										
NUP	*NCL*	*NCF*	d_{amin}	d_{bmin}	d_{bmax}	d_{cmin}	d_{dmin}	D_{amax}	D_{bmax}	D_{bmin}	r_{amax}	r_{bmax}
-	-	**NCF28/600V**	613	-		-	-	-	717	685.6	2.5	2.5
-	-	**NCF19/600V**	618	-		-	-	-	782	755.2	4	4
-	-	**NCF29/600V**	618	-		-	-	-	782	755.2	4	4
-	-	**NCF18/625V**	640	-		-	-	-	765	743.6	3	3
-	-	**NCF18/630V**	645	-		-	-	-	765	744.2	3	3
-	-	**NCF28/630V**	645	-		-	-	-	765	741.8	3	3
-	-	**NCF29/630V**	652	-		-	-	-	828	803.2	5	5
-	-	**NCF18/670V**	685	-		-	-	-	805	785.2	3	3
-	-	**NCF28/670V**	685	-		-	-	-	805	785.2	3	3
-	-	**NCF29/670V**	692	-		-	-	-	878	847.7	5	5
-	-	**NCF18/710V**	725	-		-	-	-	855	833.8	3	3
-	-	**NCF28/710N2V**	725	-		-	-	-	855	833.8	3	3
-	-	**NCF28/710V**	725	-		-	-	-	855	833.8	3	3
-	-	**NCF29/710V**	732	-		-	-	-	928	897.8	5	5
-	-	**NCF28/750X3N1V**	768	-		-	-	-	892	872.4	4	4
-	-	**NCF18/750V**	768	-		-	-	-	902	880.8	4	4
-	-	**NCF28/750V**	768	-		-	-	-	902	880.8	4	4
-	-	**NCF29/750V**	772	-		-	-	-	978	944.8	5	5
-	-	**NCF18/800V**	818	-		-	-	-	962	938.3	4	4
-	-	**NCF28/800V**	818	-		-	-	-	962	938.3	4	4
-	-	**NCF29/800X2V**	822	-		-	-	-	1038	1002.7	5	5
-	-	**NCF29/800V**	822	-		-	-	-	1038	1002.7	5	5
-	-	**NCF18/850V**	868	-		-	-	-	1012	987.8	4	4
-	-	**NCF28/850V**	868	-		-	-	-	1012	987.8	4	4
-	-	**NCF29/850V**	872	-		-	-	-	1098	1059	5	5
-	-	**NCF18/900V**	918	-		-	-	-	1072	1044.6	4	4
-	-	**NCF28/900V**	918	-		-	-	-	1072	1045.8	4	4
-	-	**NCF28/900N1V**	918	-		-	-	-	1072	1045.8	4	4
-	-	**NCF29/900V**	928	-		-	-	-	1152	1122.8	5	5
-	-	**NCF18/950V**	968	-		-	-	-	1132	1103.8	4	4
-	-	**NCF28/950V**	968	-		-	-	-	1132	1103.8	4	4
-	-	**NCF29/950V**	977	-		-	-	-	1223	1183	6	6
-	-	**NCF28/995N1V**	1027	-		-	-	-	1228	1200.2	5	5
-	-	**NCF18/1000V**	1022	-		-	-	-	1198	1169.4	5	5
-	-	**NCF28/1000V**	1022	-		-	-	-	1198	1169.4	5	5
-	-	**NCF29/1000V**	1027	-		-	-	-	1293	1255	6	6

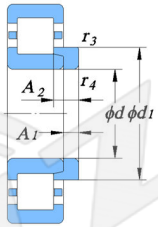
ZWZ

d 50～110mm



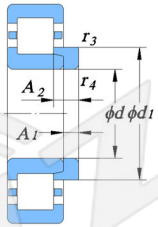
Principal dimensions(mm)					Thrust collar designations	Mass(Kg)	Designations	
d	d_1	A_1	A_2	r_3、r_4			NJ	NU
50	71.2	8	13.74	2	**HJ310**	0.158	NJ310EM	-
	71.2	8	13.74	2	**HJ310**	0.158	NJ310M	NU310M
	71.2	8	13.74	2	**HJ310**	0.158	NJ310TN1	NU310TN1
	71.2	8	12.74	2	**HJ310E**	0.152	NJ310E	-
	71.2	8	12.74	2	**HJ310E**	0.152	-	NU310EM
	71.2	8	12.74	2	**HJ310E**	0.152	-	NU310EWBTN1
60	84.2	9	18.78	2	**HJ2312**	0.255	NJ2312M	-
75	104	11	21.28	2.1	**HJ2315**	0.512	NJ2315M	NU2315M
80	120.5	13	21.78	3	**HJ416**	0.37	NJ416M	NU416M
	120.5	13	21.78	3	**HJ416**	0.37	NJ416M/YA8	-
85	116.4	12	23.73	3	**HJ2317**	0.617	NJ2317M	NU2317M
	126.3	14	23.73	4	**HJ417**	0.4	NJ417M	NU417M
95	130.9	13	26.23	3	**HJ2319**	0.864	NJ2319M	NU2319M
	130.9	13	26.23	3	**HJ2319**	0.864	NJ2319M/W124YA8	-
	130.9	13	26.23	3	**HJ2319**	0.864	NJ2319M/W20	-
	130.9	13	26.23	3	**HJ2319**	0.864	NJ2319M/YA8	-
	130.9	13	26.23	3	**HJ2319**	0.864	-	NU2319Q1
	145	15	25.23	4	**HJ419**	1.35	NJ419M	NU419M
100	139	13	27.23	3	**HJ2320**	0.98	NJ2320M	NU2320M
	139	13	27.23	3	**HJ2320**	0.98	NJ2320M/YA8	-
	139	23.28	23.5	3	**HJ2320E**	0.946	NJ2320E	NU2320E
	139	23.28	23.5	3	**HJ2320E**	0.946	NJ2320EQ1	-
	139	23.28	23.5	3	**HJ2320E**	0.946	-	NU2320EM
	139	23.28	23.5	3	**HJ2320E**	0.946	-	NU2320ETN1
	139	13	22.5	3	**HJ320**	0.867	-	NU320M-DT
	139	13	22.5	3	**HJ320**	0.867	-	NU320Q1
	139.1	13	20.5	3	**HJ320E**	0.888	NJ320E	NU320E
	139.1	13	20.5	3	**HJ320E**	0.888	NJ320EQ1/HA	-
	139.1	13	20.5	3	**HJ320E**	0.888	NJ320EM	-
	139.1	13	20.5	3	**HJ320E**	0.888	-	NU320EM/W124
	139.1	13	20.5	3	**HJ320E**	0.888	-	NU320EQ1
	139.1	13	20.5	3	**HJ320EM**	0.888	NJ320EM	-
	138.6	13	22.213	3	**HJ320EQ1/YB2**	0.904	NH320EQ1/HAYB2	-
110	155	14	26.22	3	**HJ2322E**	1.31	NJ2322EM	NU2322EM
	155	14	26.22	3	**HJ2322E**	1.31	NJ2322EM/YA8	-
	155.3	14	22	3	**HJ322E**	1.25	NJ322EM	NU322EM
	155.3	14	22	3	**HJ322E**	1.25	-	NU322E
	155.3	14	22	3	**HJ322E**	1.25	-	NU322EM/W124
	155.3	14	22	3	**HJ322E**	1.25	-	NU322EQ1
	155.3	14	22	3	**HJ322E**	1.25	-	NU322ETN1
	155.3	14	22	3	**HJ322E**	1.25	-	NU322M-DT

d 120～160mm



d	Principal dimensions(mm) d_1	A_1	A_2	r_3, r_4	Thrust collar designations	Mass(Kg)	Designations NJ	NU
120	151.5	11	18.73	2.1	**HJ224**	0.706	NJ224M	NU224M
	166.6	14	27.72	3	**HJ2324**	1.52	NJ2324M	NU2324M
	166.6	14	27.72	3	**HJ2324**	1.52	NJ2324M/W124YA8-1	-
	166.6	14	27.72	3	**HJ2324**	1.52	NJ2324M/YA8	-
	166.6	14	27.72	3	**HJ2324**	1.52	NJ2324M/YA8-1	-
130	180	14	29.17	4	**HJ2326**	1.8	NJ2326J	-
	180	14	29.17	4	**HJ2326**	1.8	NJ2326M	NU2326M
	180	14	29.17	4	**HJ2326**	1.8	NJ2326M/W124YA8-1	-
	180	14	29.17	4	**HJ2326**	1.8	NJ2326M/YA8	-
	180	14	29.17	4	**HJ2326**	1.8	NJ2326M/YA8-2	-
	181	14	27.69	4	**HJ2326E**	1.79	-	NU2326EM
	171	12.5	48.5	3.7	**NUHJ3226X1WB**	1.86	-	NUHJ3226X1WB
140	178.1	11	24.68	3	**HJ2228**	1.13	NJ2228M	NU2228M
	178.1	11	24.68	3	**HJ2228**	1.13	NJ2228M/YA8	-
	194	15	33.17	3	**HJ2328**	2.34	NJ2328M	NU2328M
	194	15	33.17	3	**HJ2328**	2.34	NJ2328M/W20	-
	194	15	33.17	3	**HJ2328**	2.34	NJ2328M/YA8	-
	194	15	25.69	4	**HJ328**	1.2	NJ328Q1	NU328Q1
	194	15	25.69	4	**HJ328**	1.2	-	NU328M
150	208	15	33.67	3.7	**HJ2330**	2.8	NJ2330M	NU2330M
	208	15	33.67	3.7	**HJ2330**	2.8	NJ2330M/W124YA8	-
	208	15	33.67	3.7	**HJ2330**	2.8	NJ2330M/YA8	-
	208	15	33.67	3.7	**HJ2330**	2.8	NJ2330M/YA8-1	-
	208	15	33.67	3.7	**HJ2330**	2.8	-	NU2330MN
	209	15	31.19	4	**HJ2330E**	2.64	-	NU2330EMA
158	206	12.5	48.5	3	**NUHJ2232WB.12**	2.39	-	NUHJ2232WBK3
158.5	206	12.5	48.5	3	**NUHJ2232WB.12**	2.39	-	NUHJ2232WBK2
	206	12.5	52	3	**NUHJ2232WBY.12**	2.35	-	NUHJ2232WBYK2
	206	12.5	28.5	3	**NUHJ2232WBY1.12**	1.7	-	NUHJ2232WBY1K2
159	206	12.5	48.5	3	**NUHJ2232WB.12**	2.39	-	NUHJ2232WBK1
	206	12.5	52	3	**NUHJ2232WBY.12**	2.35	-	NUHJ2232WBYK1
	206	12.5	28.5	3	**NUHJ2232WBY1.12**	1.7	-	NUHJ2232WBY1K1
159.5	206	12.5	48.5	3	**NUHJ2232WB.12**	2.39	-	NUHJ2232WBK
	206	12.5	52	3	**NUHJ2232WBY.12**	2.35	-	NUHJ2232WBYK
	206	12.5	28.5	3	**NUHJ2232WBY1.12**	1.7	-	NUHJ2232WBY1K
160	204	12	19.68	3	**HJ232**	1.4	NJ232M	-
	204	12	19.68	3	**HJ232**	1.4	-	NU232M/YA4
	222.7	15	36.67	4	**HJ2332**	3.21	NJ2332M	NU2332M

d 160～900mm



Principal dimensions(mm)					Thrust collar designations	Mass(Kg)	Designations	
d	d_1	A_1	A_2	r_3、r_4			NJ	NU
160	206	12.5	48.5	3	**HJR**	2.32	-	NU2232WBQ1/YB2
	206	12.5	52	3	**HJR1**	2.35	-	NU2232WBQ1/YB2
	206	12.5	28.5	3	**HJR2**	1.7	-	NU2232WBQ1/YB2
	206	12.5	48.5	3	**NUHJ2232WB.12**	2.39	-	NUHJ2232WB
	206	12.5	52	3	**NUHJ2232WBY.12**	2.35	-	NUHJ2232WBY
	206	12.5	28.5	3	**NUHJ2232WBY1.12**	1.7	-	NUHJ2232WBY1
180	229	12	23.67	4	**HJ2236E**	1.94	NJ2236EM	NU2236EM
	249.3	17	29.16	4	**HJ336**	3.1	NJ336M	NU336M
190	242.5	13	23.13	4	**HJ238**	2.04	NJ238M	NU238M
	265	18	31.65	5	**HJ338**	4.3	NJ338M	NU338M
200	238	13	24.13	2.1	**HJ1040**	1.7	NJ1040M	NU1040M
	256.5	14	33.67	4	**HJ2240**	3.48	NJ2240M	-
	276	18	41.6	5	**HJ2340**	6.13	NJ2340M	-
	276	18	41.6	5	**HJ2340**	6.13	NJ2340M/YA4	-
	276	18	41.6	5	**HJ2340**	6.13	-	NU2340MA
	260	14	23	4	**HJ240E**	2.72	-	NU240EMA
	279.3	18	32.63	5	**HJ340**	5.2	-	NU340M
220	286	15	27.13	4	**HJ244**	3.78	NJ244M	NU244M
	306	20	35.62	5	**HJ344**	6.7	-	NU344M
360	423	21	39.03	5	**HJ1072**	7.7	-	NU1072M
	423	21	39.03	5	**HJ1072**	7.7	-	NU1072MA
380	443	21	39.03	5	**HJ1076**	8.48	-	NU1076M
420	506	12	18.4	5	**HJ3084**	6.52	NJ3084X1/HCE	-
	506	12	18.4	5	**HJ3084X3**	6.52	NJ3084X3/HCE	-
440	512	24	44.47	6	**HJ1088**	12.8	NJ1088M	NU1088M
452	537.6	25	47.47	6	**HJ10/452**	15.1	-	NU10/452M/YB2
460	537.6	25	48	6	**HJ1092**	14	-	NU1092
	537.6	25	48	6	**HJ1092**	14	-	NU1092M1YB2
530	591.9	25	42	5	**HJ19/530**	13	-	NU19-530Q1A
	596	24	41.42	5	**HJ29/530**	13.2	-	NU29/530/YA1
	596	24	41.42	5	**HJ29/530**	13.2	-	NU29/530F3
560	624	24	39.42	5	**HJ29/560/YB2**	13.2	-	NU29/560
600	778	30	54.67	9.5	**HJ2/600**	54.4	-	NU2/600M/YB2
	778	30	54.67	9.5	**HJ2/600**	54.4	-	NU2/600MA/HC
670	720	15	25	4	**HJ38/670**	7.8	NJ38/670Q1	-
710	872	35	62	9.5	**HJ11/710**	67.7	-	NU11/710X2
750	965	40	70	6	**HJ750**	115	-	NU2/750X3
800	896	35	57	22	**HJ19/800/YA7**	39.1	-	NU19/800
	896	25	47	2	**HJ19/800/YA71**	33.6	-	NU19/800
900	971	24	43.3	5	**HJ28/900**	24.6	-	NU28/900

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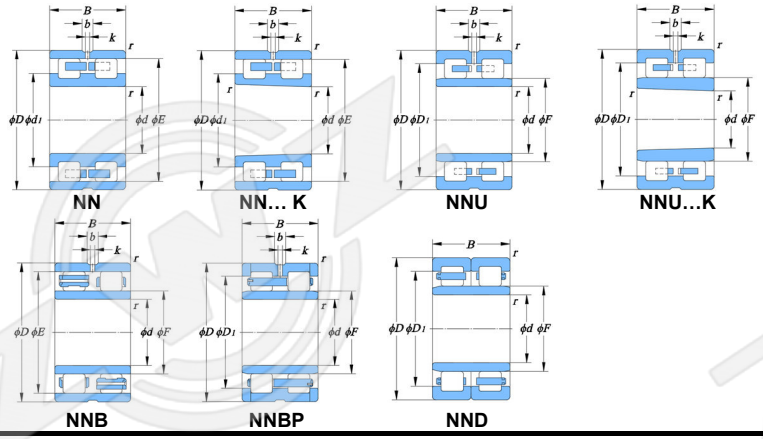
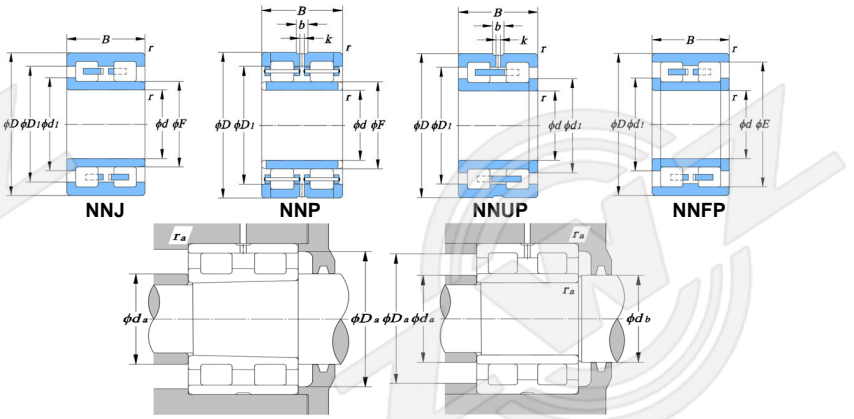
d 50～100mm





Principal dimensions(mm)						Basic load ratings (kN)		Limiting speeds (r/min)		Designations
d	*D*	*B*	r_{min}	*E*	*F*	C_r	C_{or}	Grease	Oil	Cylindrical bore
50	80	23	1	72.5	-	55.8	77.5	7700	9400	**NN3010**
55	90	26	1.1	81	-	73.3	104	6900	8500	**NN3011**
60	95	26	1.1	86.1	-	74.8	109	6400	7900	**NN3012**
70	110	30	1.1	100	-	94.6	143	5500	6800	**NN3014**
	110	30	1.1	100	-	94.6	143	5500	6800	-
	110	30	1.1	100	-	97.4	148	5500	6800	-
75	115	30	1.1	105	-	96.6	149	5200	6400	**NN3015**
	115	30	1.1	105	-	96.6	149	5200	6400	-
	115	30	1.1	105	-	96.6	149	5200	6400	-
80	125	34	1.1	113	-	119	186	4800	6000	**NN3016**
	125	34	1.1	113	-	119	186	4800	6000	-
	125	34	1.1	113	-	119	186	4800	6000	-
	125	34	1.1	113	-	112	172	4800	6000	-
	125	34	1.1	113	-	119	186	4800	6000	-
	125	34	1.1	113	-	112	172	4800	6000	-
	125	34	1.1	113	-	119	186	4800	6000	-
85	130	34	1.1	113	-	125	201	4600	5700	**NN3017**
	130	34	1.1	118	-	125	201	4600	5700	-
90	140	37	1.5	127	-	147	237	4300	5300	**NN3018**
	140	37	1.5	127	-	147	237	4300	5300	**NN3018/YA8**
	140	37	1.5	127	-	143	228	4300	5300	-
	140	37	1.5	127	-	143	228	4300	5300	-
	140	37	1.5	127	-	143	228	4300	5300	-
	140	37	1.5	127	-	143	228	4300	5300	-
95	145	37	1.5	132	-	150	246	4100	5100	**NN3019**
	145	37	1.5	132	-	150	246	4100	5100	-
100	140	40	1.1	-	113	133	265	4100	5100	**NNU4920**
	150	37	1.5	137	-	157	265	3900	4800	**NN3020**
	150	37	1.5	137	-	157	265	3900	4800	-
	150	37	1.5	137	-	157	265	3900	4800	-
	150	37	1.5	137	-	157	265	3900	4800	-
	150	37	1.5	137	-	149	247	3900	4800	-
	150	37	1.5	137	-	149	247	3900	4800	-
	150	37	1.5	137	-	149	247	3900	4800	-

Designations	Other dimensions(mm)				Abutment and fillet dimensions(mm)						Mass(kg)(approx.)	
Tapered bore	d_1	D_1	*b*	*k*	d_{amin}	d_{amax}	d_{bmin}	D_{amin}	D_{amax}	r_{amax}	Cylindrical bore	Tapered bore
NN3010K	61.3	-	-	-	56	-	-	73	75	1	0.431	0.428
NN3011K	68.2	-	4.5	3	62	-	-	82	84	1.1	0.660	0.641
NN3012K	73.3	-	4.5	3	67	-	-	87	89	1.1	0.712	0.691
NN3014K	85.6	-	-	-	77	-	-	101	103	1.1	1.09	1.06
NN3014KTN1	85.6	-	-	-	77	-	-	101	103	1.1	-	1.04
NN3014KTBK	85.6	-	-	-	77	-	-	101	103	1.1	-	1.01
NN3015K	90.6	-	-	-	82	-	-	106	108	1.1	1.16	1.13
NN3015KTN1	90.6	-	-	-	82	-	-	106	108	1.1	-	1.07
NN3015KTBK	90.6	-	-	-	82	-	-	106	108	1.1	-	1.04
NN3016K	97	-	-	-	87	-	-	115	118	1.1	1.55	1.50
NN3016K/YA8	97	-	-	-	87	-	-	115	118	1.1	-	1.50
NN3016K/YB2	97	-	-	-	87	-	-	115	118	1.1	-	1.50
NN3016KTN1	97	-	-	-	87	-	-	115	118	1.1	-	1.49
NN3016KTBK	97	-	-	-	87	-	-	116	118	1.1	-	1.43
NN3016KTBS	97	-	6	4	87	-	-	116	118	1.1	-	1.40
NN3016KTYN	97	-	6	4	87	-	-	115	118	1.1	-	1.48
NN3017K	102	-	-	-	92	-	-	121	123	1.1	1.71	1.66
NN3017K/YA8	102	-	-	-	92	-	-	121	123	1.1	-	1.63
NN3018K	109.4	-	6.5	4	99	-	-	128	131	1.5	1.95	1.92
NN3018K/YA8	109.4	-	-	-	99	-	-	128	131	1.5	1.98	1.95
NN3018KTN1	109.4	-	-	-	99	-	-	128	131	1.5	-	1.82
NN3018KTBK	109.4	-	-	-	99	-	-	129	131	1.5	-	1.82
NN3018KTBS	108	-	-	-	99	-	-	129	131	1.5	-	1.82
NN3018KTYN	109.4	-	6.5	4	99	-	-	128	131	1.5	-	1.84
NN3019K	114.4	-	6.5	2.5	104	-	-	133	136	1.5	2.32	2.24
NN3019KTN1	114.4	-	-	-	104	-	-	134	136	1.5	-	2.17
NNU4920K	-	126	5.5	3	107	111	115	-	133	1.1	2.03	1.95
NN3020K	119.4	-	-	-	109	-	-	139	141	1.5	2.28	2.23
NN3020K/YA8	119.4	-	-	-	109	-	-	139	141	1.5	-	2.20
NN3020K/YB2	119.4	-	6	4	109	-	-	138	141	1.5	-	2.23
NN3020KTN1	119.4	-	10	4	109	-	-	138	141	1.5	-	2.08
NN3020KTN1/YA8	119.4	-	6	4	109	-	-	138	141	1.5	-	2.05
NN3020KTBK	119.4	-	-	-	109	-	-	139	141	1.5	-	2.04
NN3020KTBS	119.4	-	-	-	109	-	-	139	141	1.5	-	2.04

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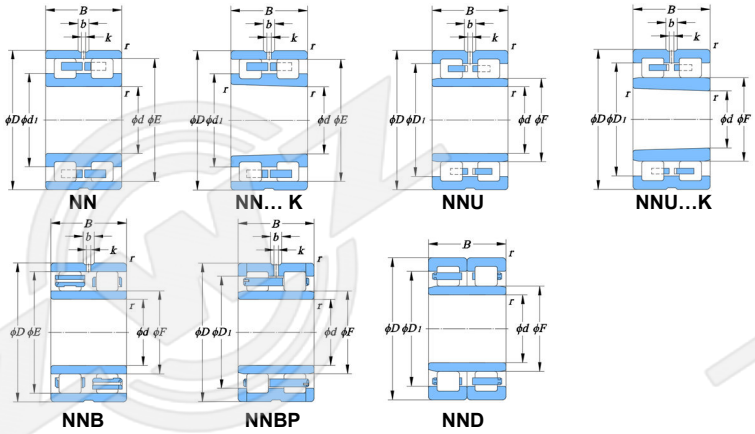
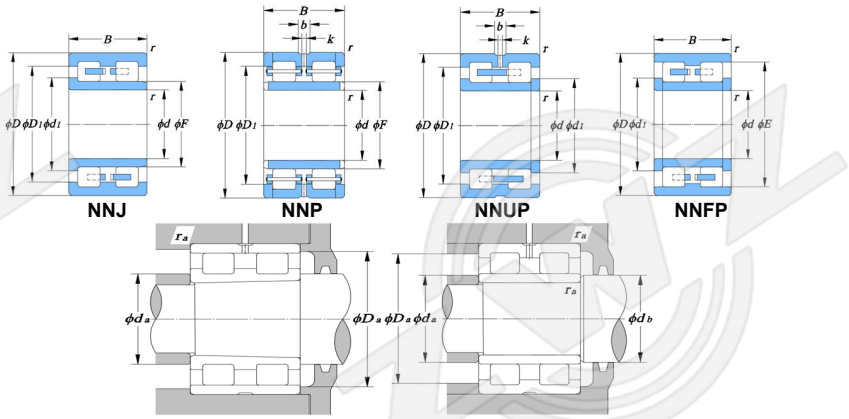
d 100～130mm





Principal dimensions(mm)						Basic load ratings (kN)		Limiting speeds (r/min)		Designations
d	*D*	*B*	r_{min}	*E*	*F*	C_r	C_{or}	Grease	Oil	Cylindrical bore
100	150	37	1.5	137	-	149	247	3900	4800	-
	150	37	1.5	137	-	157	265	3900	4800	-
	150	50	1.5	-	115	209	384	3900	4800	**NNU4020/YA8**
105	145	40	1.1	-	118	134	273	3900	4800	**NNU4921**
	160	41	2	146	-	195	317	3700	4500	**NN3021**
110	150	40	1.1	-	123	136	281	3800	4600	**NNU4922**
	150	40	1.1	-	123	133	274	3800	4600	-
	170	45	2	155	-	226	369	3500	4300	**NN3022**
	170	45	2	155	-	226	369	3500	4300	**NN3022/YA8**
	170	45	2	155	-	226	369	3500	4300	-
	170	45	2	155	-	226	369	3500	4300	-
	170	45	2	155	-	226	369	3500	4300	-
	170	45	2	155	-	226	369	3500	4300	-
	170	45	2	155	-	226	369	3500	4300	-
	170	45	2	155	-	226	369	3500	4300	-
	225	150/140	3.5	-	138	919	1400	2800	3500	**NNU622Q1/YA7**
117.61	288.925	134	2.1	-	208	1200	2290	2200	2700	**NNU6/177X4M**
120	165	45	1.1	152.5	-	164	338	3400	4200	-
	180	46	2	165	-	251	410	3200	3900	**NN3024**
	180	46	2	165	-	251	410	3200	3900	-
	180	46	2	165	-	251	410	3200	3900	-
	180	46	2	165	-	251	410	3200	3900	-
	180	46	2	165	-	251	410	3200	3900	-
	180	46	2	165	-	251	410	3200	3900	-
	180	46	2	165	-	236	400	3200	3900	-
	180	46	2	165	-	236	400	3200	3900	-
	180	46	2	165	-	236	400	3200	3900	-
	215	146	2.1	-	143.5	952	1610	2800	3500	**NNJ5224X2**
130	180	50	1.5	-	144	237	453	3100	3800	**NNU4926**
	180	50	1.5	-	146	250	520	3100	3800	**NNU4926/YAD**
	200	52	2	182	-	290	490	2900	3500	**NN3026**
	200	52	2	182	-	290	490	2900	3500	-
	280	90	3.7	195	-	539	935	2200	2700	**NN626M/YA7**
	300	172.644	3	-	159.5	1360	2420	2100	2600	**NNFP3326X3**

Designations	Other dimensions(mm)				Abutment and fillet dimensions(mm)						Mass(kg)(approx.)	
Tapered bore	d_1	D_1	*b*	*k*	d_{amin}	d_{amax}	d_{bmin}	D_{amin}	D_{amax}	r_{amax}	Cylindrical bore	Tapered bore
NN3020KTYN/YA8	119.4	-	6	4	109	-	-	138	141	1.5	-	2.08
NN3020KLM/YB2	119.4	-	6	4	109	-	-	138	141	1.5	-	2.08
-	-	133	-	-	109	112	117	-	141	1.5	3.11	-
NNU4921K	-	130.8	-	-	112	116	121	-	138	1.1	2.01	1.92
NN3021K	125.2	-	-	-	115	-	-	148	150	2	2.94	2.93
NNU4922K	-	135.8	5.5	3	117	121	126	-	143	1.1	2.12	2.03
NNU4922K/YA8	-	135.2	8	3	117	119.8	125	-	143	1.1	-	2.11
NN3022K	132.6	-	-	-	120	-	-	157	160	2	3.74	3.73
-	132.6	-	-	-	120	-	-	157	160	2	3.74	-
NN3022K/YB2	132.6	-	-	-	120	-	-	157	160	2	-	3.71
NN3022KL	132.6	-	12	4	120	-	-	157	160	2	-	3.54
NN3022KTN1	132.6	-	-	-	120	-	-	157	160	2	-	3.54
NN3022KTBS	132.6	-	12	4	120	-	-	155	160	2	-	3.52
NN3022KTBK	132.6	-	-	-	120	-	-	155	160	2	-	3.52
NN3022KLM/YB2	132.6	-	-	-	120	-	-	157	160	2	-	3.54
-	-	186	-	-	126	133	140	-	209	3	28.0	-
-	-	252.8	11.1	6	130	203	208	-	276.925	2	35.1	-
NN4924K/YB2	138.1	-	-	-	127	-	-	155	158	1.1	-	2.90
NN3024K	142.6	-	-	-	130	-	-	167	170	2	4.03	3.90
NN3024K/YB2	142.6	-	-	-	130	-	-	167	170	2	-	3.90
NN3024KL	142.6	-	7.5	4	130	-	-	167	170	2	-	3.47
NN3024KLM/YB2	142.6	-	-	-	130	-	-	167	170	2	-	3.64
NN3024K/YA6	142.6	-	7.5	4	130	-	-	166	170	2	-	3.65
NN3024KTN1	142.6	-	7.5	4	130	-	-	167	170	2	-	3.64
NN3024KTN1/YA5	143	-	7.5	4	130	-	-	167	170	2	-	3.89
NN3024KTBK	142.6	-	-	-	130	-	-	167	170	2	-	3.86
NN3024KTBS	142.6	-	7.5	4	130	-	-	167	170	2	-	3.86
-	153	187.5	-	-	132	-	-	190	203	2	21.7	-
NNU4926K	-	163	5.5	3	139	141	146	-	171	1.5	3.79	3.63
-	-	163.5	5.5	3	139	142	148	-	171	1.5	3.95	-
NN3026K	156.4	-	-	-	140	-	-	188	190	2	5.87	5.69
NN3026KTN1	156.4	-	-	-	140	-	-	188	190	2	-	5.22
-	162	187	-	-	146	-	-	191	264	3	32.5	-
-	175	-	-	9	144	-	-	227	286	2.5	74.7	-

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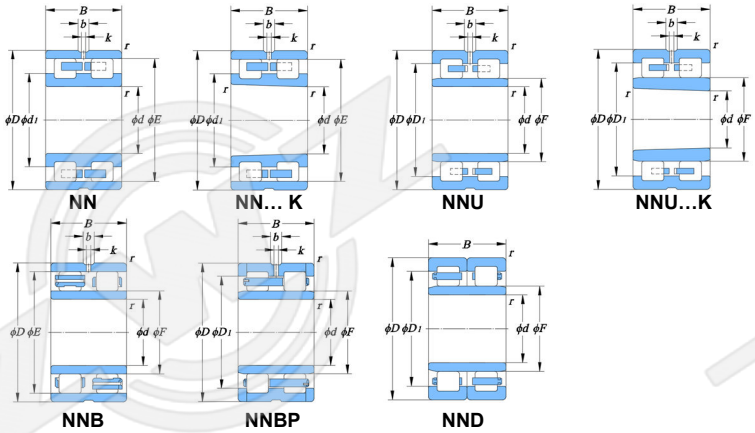
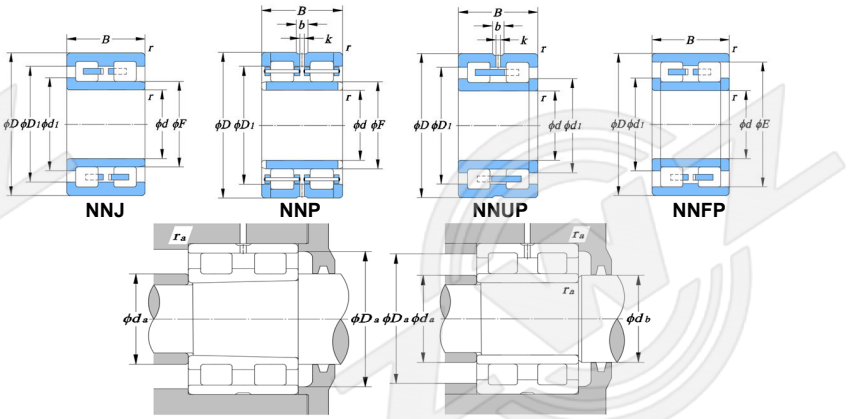
d 139.7～170mm





Principal dimensions(mm)						Basic load ratings (kN)		Limiting speeds (r/min)		Designations
d	*D*	*B*	r_{min}	*E*	*F*	C_r	C_{or}	Grease	Oil	Cylindrical bore
139.7	203.2	146.558	2	-	155.5	822	1890	2800	3400	**NNU6/139.7Q1/YA2**
140	190	50	1.5	176	-	208	447	2900	3500	**-**
	190	50	1.5	-	156	208	447	2900	3500	**NNU4928**
	190	50	1.5	-	156	208	447	2900	3500	**NNJ4928**
	210	53	2	192	-	301	523	2700	3300	**NN3028**
	210	53	2	192	-	301	523	2700	3300	**-**
	210	53	2	-	160	301	523	2700	3300	**NNU3028**
	210	95	2	-	160	550	1130	2700	3300	**NNU5028**
150	210	60	2	192.5	-	335	750	2600	3200	**NN4930**
	210	60	2	-	168.5	335	750	2600	3200	**NNU4930**
	225	56	2.1	206	-	341	602	2500	3000	**NN3030**
	225	56	2.1	206	-	341	602	2500	3000	**NN3030/YA8**
	250	100	2.5	-	176	727	1260	2300	2800	**NNBP4130**
	250	160	2.1	-	173	1250	2290	2300	2800	**NNU6130X2**
	260	180	2.1	230	-	1190	2330	2200	2700	**NN6130X1**
157.175	250	195	3	-	180	952	1750	2200	2700	**NNJD6/157X4**
158.75	231.775	161.925	2.1	-	176.5	1020	2390	2400	2900	**NNU6/158X4Q1**
160	220	45	2	203	-	238	489	2400	3000	**NN3932**
	220	60	2	-	178.5	345	792	2400	3000	**NNU4932**
	240	60	2.1	219	-	356	622	2300	2800	**NN3032**
	240	60	2.1	219	-	356	622	2300	2800	**-**
	240	60	2.1	219	-	356	622	2300	2800	**-**
	240	60	2.1	219	-	356	622	2300	2800	**-**
	265	120	3	-	190	1040	1940	2100	2600	**NNU4132X3/YA7**
	265	120	3	-	188	1040	1940	2100	2600	**NNU4132X3/YAB**
	270	170	3	-	182	1100	1880	2100	2600	**NNJ5132X2**
	270	175	2.1	-	190	1190	2390	2100	2600	**NN6132X2**
	270	176/150	3	-	182	1100	1880	2100	2600	**NNUP5132X2**
	280	180	3	-	190	1260	2170	2000	2500	**NNJ5232X3**
	280	180/159	3	-	190	1260	2170	2000	2500	**NNUP5232X3**
170	215	45	1.1	-	182.5	227	531	2400	2900	**NNU4834**
	230	60	2	-	188.5	355	834	2300	2800	**NNU4934**
	230	60	2	-	187	366	775	2300	2800	**NNU4934/YAD1**
	230	80	2.1	-	185.5	509	1080	2300	2800	**NNU5934Q1/YAD**

Designations	Other dimensions(mm)				Abutment and fillet dimensions(mm)						Mass(kg)(approx.)	
Tapered bore	d_1	D_1	*b*	*k*	d_{amin}	d_{amax}	d_{bmin}	D_{amin}	D_{amax}	r_{amax}	Cylindrical bore	Tapered bore
-	-	182	8	4	150	152	156	-	193.2	2	16.4	-
NN4928K/YB2	160	-	-	-	149	-	-	178	181	1.5	-	4.11
NNU4928K	-	172	5.5	3	149	153	158	-	181	1.5	4.13	3.95
-	160	172	-	-	149	-	-	173	181	1.5	4.19	-
NN3028K	166.4	-	-	-	150	-	-	189	200	2	6.25	6.05
NN3028KTN1	166.4	-	-	-	150	-	-	189	200	2	-	5.76
NNU3028K	-	185.6	9.6	5	150	155	162	-	200	2	6.18	5.98
NNU5028K	-	185.5	-	-	150	155	161	-	200	2	11.8	11.1
NN4930K	173.3	-	5.5	3	160	-	-	195	200	2	6.71	6.43
NNU4930K	-	187.7	5.5	3	160	166	173	-	200	2	6.66	6.38
NN3030K	178.8	-	-	-	162	-	-	206	213	2	7.75	7.70
-	178.8	-	-	-	162	-	-	206	213	2	7.75	-
-	-	215	9.5	4	162	-	-	219	238	2	20.7	-
-	-	218	12	6	162	167	175	-	238	2	31.2	-
-	190	-	-	-	162	-	-	238	248	2	40.6	-
-	191	222.4	13	8	171.175	-	-	227	236	2.5	28.3	-
-	-	205.5	8.3	4	171	174	180	-	219.775	2	23.9	-
NN3932K	183.5	-	-	-	170	-	-	205	210	2	5.23	5.06
NNU4932K	-	197.7	6.5	3	170	176	183	-	210	2	7.03	6.73
NN3032K	190.2	-	-	-	172	-	-	225	228	2	8.69	8.39
NN3032K/YAB	190.2	-	8.5	4.5	172	-	-	225	228	2	-	8.38
NN3032K/YB2	190.2	-	-	-	172	-	-	225	228	2	-	8.39
NN3032KTN1	190.2	-	-	-	172	-	-	225	228	2	-	7.86
-	-	231.6	6.5	3.2	174	181	190	-	251	2.5	29.0	-
-	-	229.6	12	5	174	181	189	-	251	2.5	28.3	-
-	182	233	-	-	174	-	-	237	256	2.5	35.1	-
-	200	-	-	-	172	-	-	248	258	2	41.6	-
-	193	233	15	8	174	189	199	-	256	2.5	34.4	-
-	202.8	244	15	8	174	-	-	248	266	2.5	40.9	-
-	202.8	244	15	10	174	199	209	-	266	2.5	41.2	-
NNU4834K	-	198.5	9.5	4	177	180	188	-	208	1.1	3.91	3.73
NNU4934K	-	207.7	-	-	180	186	193	-	220	2	7.46	7.14
-	-	209.4	6.5	3	180	184	192	-	220	2	7.23	-
-	-	210	8.3	5	179	182	188	-	218	2	9.38	-

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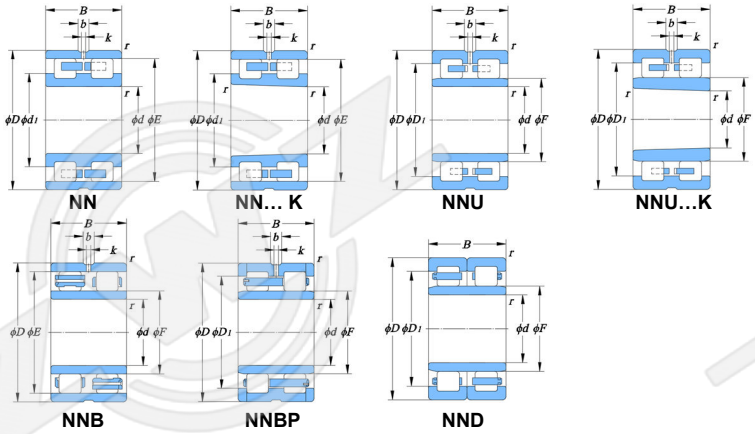
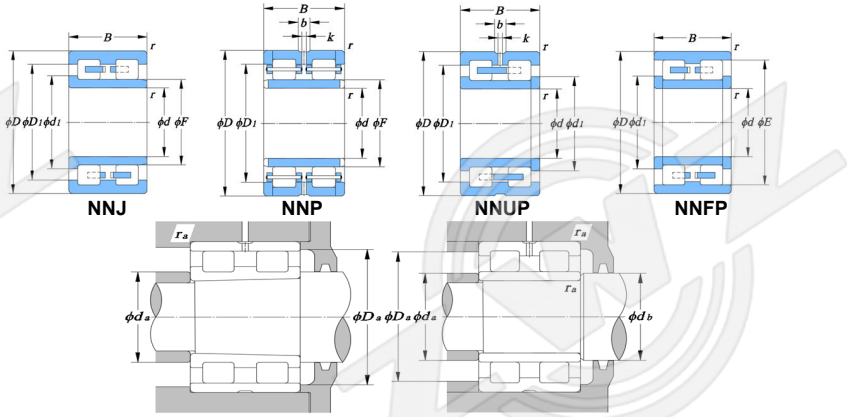
d 170～200mm





Principal dimensions(mm)						Basic load ratings (kN)		Limiting speeds (r/min)		Designations
d	*D*	*B*	r_{min}	*E*	*F*	C_r	C_{or}	Grease	Oil	Cylindrical bore
170	230	90/60	2	-	188.5	355	834	2300	2800	**NNU4934WB**
	230	97.5	2	-	188.5	526	1380	2300	2800	**NNU4934/YAD**
	260	67	2.1	236	-	451	802	2100	2600	**NN3034**
	260	67	2.1	236	-	451	802	2100	2600	**NN3034/YA8**
177.8	257.175	196.85	2	-	197.5	1270	3050	2100	2500	**NNU6/177X4Q1**
180	250	69	2	235	-	350	654	2100	2600	**NN4936**
	250	69	2	234	-	451	950	2100	2600	**-**
	250	69	2	-	201	350	654	2100	2600	**NNU4936**
	250	69	2	-	202	451	950	2100	2600	**NNU4936/YAB**
	260	88	2	-	198	551	976	2000	2500	**NND5936X3/YB4**
	280	74	2.1	255	-	578	1020	1900	2400	**NN3036**
	280	74	2.1	-	209	578	1020	1900	2400	**NNU3036**
	280	219	3.5	-	205	1630	3640	1900	2400	**NNU6036X2**
	300	118	3	-	211	1050	1850	1800	2200	**NNU4136**
	310	135	2.3	273	217	1080	2020	1800	2200	**NNB636M**
	320	204	4	-	215	1660	2880	1700	2100	**NNJ5236X2**
	320	224	4	-	215	1660	2880	1700	2100	**NNJ5236X2B**
	320	224/204	4	-	215	1660	2880	1700	2100	**NNJ5236X2WB**
190	260	69	2	242	-	413	898	2000	2400	**NN4938**
	260	69	2	-	212	413	898	2000	2400	**NNU4938**
	260	69	2	-	212	481	1040	2000	2400	**NNU4938/YA1**
	260	69	2	-	212	413	898	2000	2400	**NNU4938/YA4**
	290	75	2.1	265	-	591	1070	1800	2200	**NN3038**
	290	100	2.1	-	215	822	1530	1800	2200	**NNU4038**
	290	100	2.1	-	215	822	1530	1800	2200	**NNU4038/YA8**
	290	180	2.1	-	219	1360	3140	1800	2200	**NNU6038**
	320	75	3	283	-	625	1140	1700	2100	**NN2138X2**
200	280	80	2.1	259	-	502	1080	1800	2200	**NN4940**
	280	80	2.1	259	-	502	1080	1800	2200	**NN4940/YB2**
	280	80	2.1	-	225	502	1080	1800	2200	**NNU4940**
	310	82	2.1	282	-	698	1230	1700	2100	**NN3040**
	310	82	2.1	-	230	698	1230	1700	2100	**NNU3040**
	310	109	2.1	-	227	984	1820	1700	2100	**NNU4040**
	310	115	2.1	-	229	1010	1940	1700	2100	**NNU4040X2**

Designations	Other dimensions(mm)				Abutment and fillet dimensions(mm)						Mass(kg)(approx.)	
Tapered bore	d_1	D_1	*b*	*k*	d_{amin}	d_{amax}	d_{bmin}	D_{amin}	D_{amax}	r_{amax}	Cylindrical bore	Tapered bore
-	-	207.7	6.5	3	180	184	192	-	220	2	8.67	-
-	-	207.7	15	4	180	183	191	-	220	2	12.1	-
NN3034K	204	-	9.6	5	182	-	-	242	248	2	13.3	12.9
-	204	-	-	-	182	-	-	242	248	2	13.3	-
-	-	230.5	15.88	9.5	188	191	198	-	247.175	2	33.9	-
NN4936K	208	-	9.5	5	190	-	-	237	240	2	9.97	9.53
NN4936K/YAB	208.5	-	-	-	190	-	-	237	240	2	-	10.4
NNU4936K	-	228	-	-	190	195	204	-	240	2	10.3	9.80
-	-	228	9.5	5	190	199	206	-	240	2	10.4	-
-	-	234.8	-	-	190	-	-	238	250	2	14.8	-
NN3036K	218.2	-	-	-	192	-	-	261	268	2	17.4	16.9
NNU3036K	-	245.8	-	-	192	203	213	-	268	2	17.0	16.5
-	-	247.5	15	8	196	198	204	-	264	3	51.4	-
NNU4136K	-	260.5	11.1	6	194	203	212	-	286	2.5	33.5	32.2
-	-	-	-	9	192	-	-	278	298	2	48.0	-
-	223.5	279	26	-	198	-	-	285	302	3	63.8	-
-	229	279	26	8	198	-	-	284	302	3	66.3	-
-	223.5	279	26	-	198	-	-	285	302	3	66.4	-
NN4938K	218	-	9.5	5	200	-	-	245	250	2	10.9	10.4
NNU4938K	-	236	9.5	5	200	207	215	-	250	2	10.8	10.4
-	-	237.6	9	5	200	208	216	-	250	2	11.0	-
-	-	236	9.5	5	200	207	215	-	250	2	11.0	-
NN3038K	228.2	-	-	-	202	-	-	271	278	2	18.0	17.9
NNU4038K	-	255.5	13	5	202	211	218	-	278	2	23.7	22.7
-	-	255.5	13	6	202	209	217	-	278	2	23.5	-
NNU6038K	-	257	-	-	202	209	218	-	278	2	43.6	40.4
-	244	-	12	5	204	-	-	290	306	2.5	25.8	-
NN4940K	231.8	-	12.2	6	212	-	-	263	268	2	16.0	14.7
NN4940K/YB2	231.8	-	-	-	212	-	-	263	268	2	16.2	14.6
NNU4940K	-	253	12.2	6	212	221	229	-	268	2	15.3	14.8
NN3040K	242	-	-	-	212	-	-	288	298	2	22.1	21.2
NNU3040K	-	272	12.2	5	212	224	234	-	298	2	23.0	22.3
NNU4040K	-	272	11.1	6	212	221	230	-	298	2	29.9	28.7
-	-	272	19	5	212	222	232	-	298	2	32.0	-

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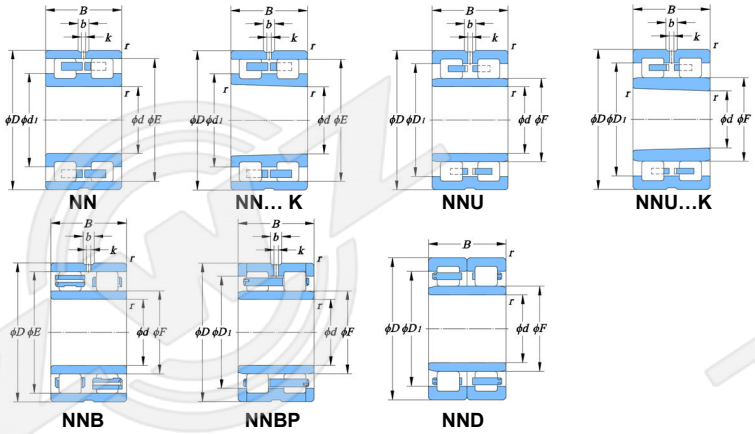
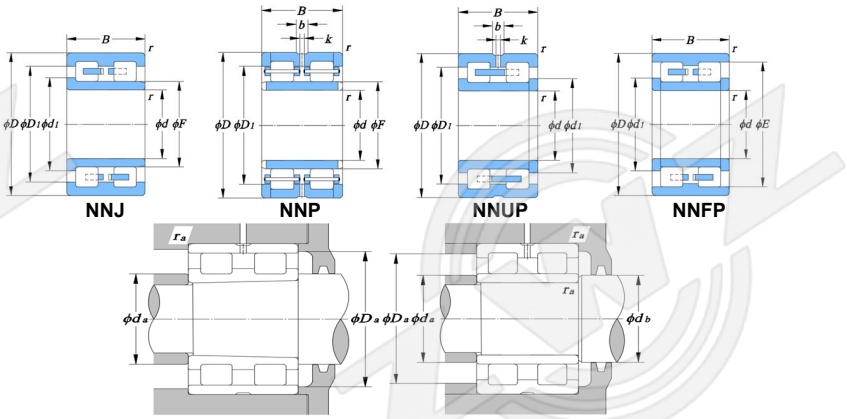
d 200～260mm



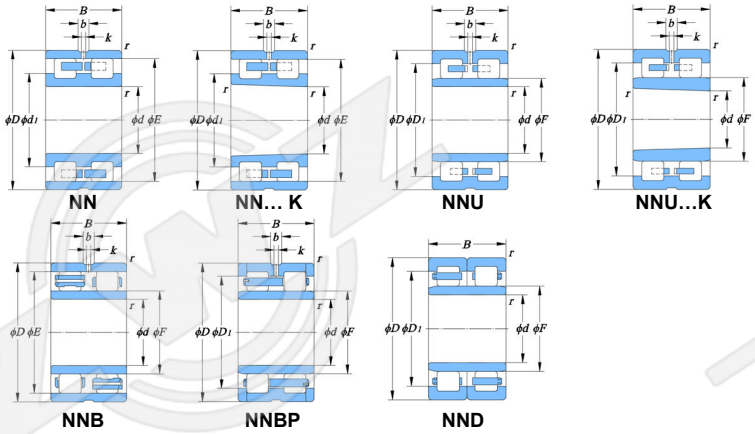


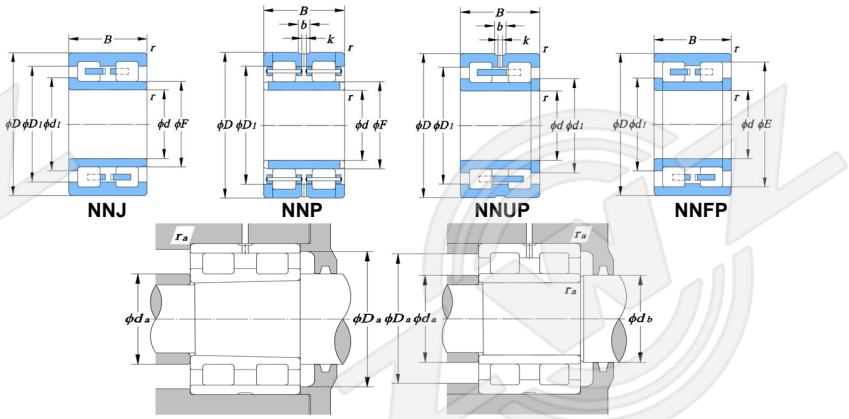
Principal dimensions(mm)						Basic load ratings (kN)		Limiting speeds (r/min)		Designations
d	*D*	*B*	r_{min}	*E*	*F*	C_r	C_{or}	Grease	Oil	Cylindrical bore
200	340	140	3	-	235	1370	2380	1600	1900	**NNU4140**
206.375	285.75	222.25	4	-	226	1440	3740	1800	2200	**NNU6/206X4M**
	285.75	222.25	5	-	226	1440	3740	1800	2200	**NNU6/206X4Q1**
	285.75	222.25	5	-	230	1440	4020	1800	2200	**NNU6/206X4Q1/YA5**
209.55	282.575	236.525	4	-	228	1430	3990	1800	2200	**NNU6/209X4M**
220	300	80	2.1	279	-	523	1170	1700	2000	**NN4944**
	300	80	2.1	-	245	523	1170	1700	2000	**NNU4944**
	300	95/80	2.1	-	245	523	1170	1700	2000	**NNU4944WB**
	310	110	2.1	288.3	-	790	1710	1600	2000	**NN3044X3**
	340	90	3	310	-	825	1500	1500	1800	**NN3044**
	340	90	3	310	-	825	1500	1500	1800	**NN3044/YB5**
	340	90	3	-	254	825	1500	1500	1800	**NNU3044**
	370	120	4	-	263	1080	1870	1400	1700	**NNU3144**
	370	150	4	-	258	1610	2890	1400	1700	**NNU4144**
230	340	206	3	-	261.5	1790	4450	1500	1800	**NNU646Q1**
240	320	80	2.1	301	-	605	1390	1500	1800	**NN4948**
	320	80	2.1	-	265	605	1390	1500	1800	**NNU4948**
	360	92	3	330	-	840	1570	1400	1700	**NN3048**
	360	92	3	330	-	840	1570	1400	1700	**-**
	360	92	3	-	274	840	1570	1400	1700	**NNU3048**
	400	128	4	-	282	1500	2700	1300	1500	**NNU3148M/YAB**
	400	160	4	-	282	1870	3600	1300	1500	**NNU4148M/YAD**
260	320	80	2	-	279	543	1640	1400	1800	**NNU5852**
	360	80	2.1	-	292	677	1540	1300	1600	**NNU4952X2**
	360	80	2.1	-	292	677	1540	1300	1600	**NNU4952X21**
	360	80	2.1	-	292	677	1540	1300	1600	**NNU4952X21/YA4**
	360	100	2.1	332	-	843	2040	1300	1600	**NN4952**
	360	100	2.1	-	292	843	2040	1300	1600	**NNU4952**
	360	100	2.1	-	292	843	2040	1300	1600	**NNU4952/YA4**
	360	102	2.1	-	292	903	2230	1300	1600	**NNU4952X22**
	360	115	2.1	-	292	961	2420	1300	1600	**NNU4952X2/YAB**
	360	115	2.1	-	292	961	2420	1300	1600	**NNU4952X2/YAB1**
	360	115	2.1	-	288	1030	2450	1300	1600	**NNU4952X2ZW/YA4**
	378	115	2.1	-	294	1250	2830	1300	1600	**NNU4952X3ZW**

Designations	Other dimensions(mm)				Abutment and fillet dimensions(mm)						Mass(kg)(approx.)	
Tapered bore	d_1	D_1	*b*	*k*	d_{amin}	d_{amax}	d_{bmin}	D_{amin}	D_{amax}	r_{amax}	Cylindrical bore	Tapered bore
NNU4140K	-	294	11.1	6	214	226	236	-	326	2.5	51.5	49.5
-	-	259	12.7	8	224	226	227	-	267.75	3	43.9	-
-	-	259	15.88	9.5	228	230	233	-	263.75	4	43.9	-
-	-	259	-	-	228	230	233	-	263.75	4	44.9	-
-	-	259	12.7	8	228	230	231	-	264.575	3	43.5	-
NN4944K	251	-	12.2	6	232	-	-	283	288	2	16.7	16.0
NNU4944K	-	273	12.2	6	232	240	249	-	288	2	17.3	16.6
-	-	273	12.2	6	232	240	249	-	288	2	17.7	-
-	254.7	-	12	6	232	-	-	294	298	2	25.7	-
NN3044K	265.2	-	-	-	234	-	-	316	326	2.5	31.0	30.1
NN3044K/YB5	265.2	-	15	6	234	-	-	316	326	2.5	31.6	30.7
NNU3044K	-	298.8	15	6	234	248	258	-	326	2.5	30.2	29.4
NNU3144K	-	319	-	-	238	254	264	-	352	3	52.4	50.8
NNU4144K	-	321	13.9	6	238	251	260	-	352	3	64.3	61.7
-	-	301.5	-	-	244	252	262	-	326	2.5	66.5	-
NN4948K	271.4	-	12.2	6	252	-	-	306	308	2	18.0	17.2
NNU4948K	-	295	12.2	6	252	260	270	-	308	2	17.8	17.7
NN3048K	285.2	-	-	-	254	-	-	336	346	2.5	33.7	32.7
NN3048K/YB2	285.2	-	-	-	254	-	-	336	346	2.5	-	32.6
NNU3048K	-	318.8	15	6	254	267	277	-	346	2.5	33.2	32.2
-	-	342	-	-	258	274	285	-	382	3	66.7	-
-	-	342	-	-	258	273	283	-	382	3	83.8	-
NNU5852K	-	298.4	-	-	270	275	285	-	310	2	14.4	13.5
-	-	325	9.5	5	272	287	297	-	348	2	28.2	-
-	-	325	9.5	5	272	287	297	-	348	2	28.2	-
-	-	325	9.5	5	272	287	297	-	348	2	28.2	-
NN4952K	299	-	15	6	272	-	-	338	348	2	31.7	30.4
NNU4952K	-	325	15	6	272	286	296	-	348	2	31.7	30.4
-	-	325	15	6	272	286	296	-	348	2	31.7	-
-	-	324	-	-	272	286	296	-	348	2	33.0	-
-	-	324	15	6	272	286	296	-	348	2	36.8	-
-	-	324	15	6	272	286	296	-	348	2	36.8	-
-	-	323.2	15	6	272	281	292	-	348	2	37.4	-
-	-	336	15	6	272	285	296	-	366	2	45.8	-

ZWZ

d 260～320mm



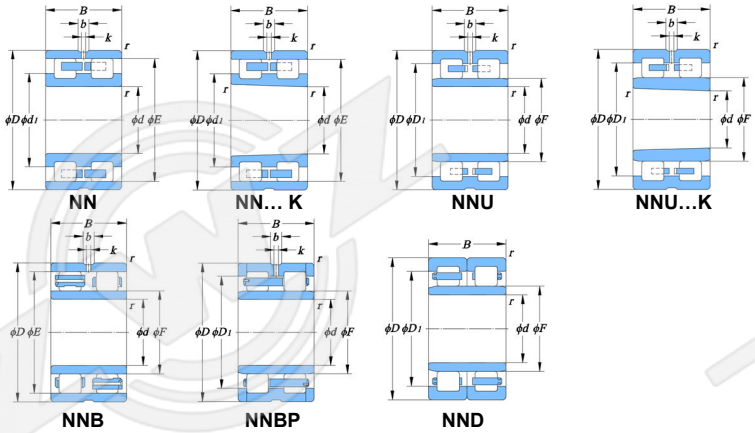


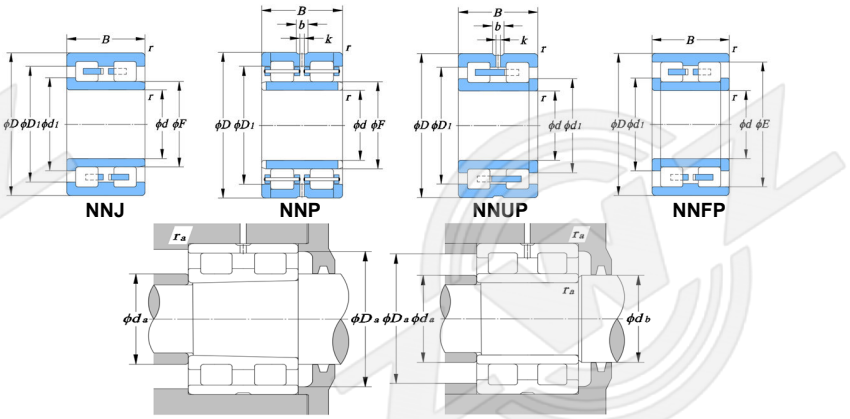
Principal dimensions(mm)						Basic load ratings (kN)		Limiting speeds (r/min)		Designations
d	*D*	*B*	r_{min}	*E*	*F*	C_r	C_{or}	Grease	Oil	Cylindrical bore
260	400	104	4	364	-	1090	2060	1200	1500	**NN3052**
	400	104	4	364	-	1090	2060	1200	1500	**-**
	400	104	4	-	300	1090	2060	1200	1500	**NNU3052**
	400	110/104	4	364	-	1090	2060	1200	1500	**-**
	400	140	4	-	295	1600	3090	1200	1500	**NNU4052**
	440	180	4	-	306	2470	4510	1100	1400	**NNU4152**
	400	190	3	-	290	2050	4410	1200	1500	**NNP5052NC/YAD**
280	380	100	2.1	355	-	954	2210	1200	1500	**NN4956**
	380	100	2.1	-	309	954	2210	1200	1500	**NNU4956**
	380	100	2.1	-	309	954	2210	1200	1500	**NNU4956/YA8**
	420	106	4	384	-	1110	2150	1100	1400	**NN3056**
	420	106	4	-	320	1110	2150	1100	1400	**NNU3056**
	460	180	5	-	326	2550	4790	1100	1300	**NNU4156**
	470	200	5	-	327	2730	5230	990	1300	**NNU4156X31**
	480	210	5	-	330	2780	5220	970	1200	**NNU4156X3**
285	415	102	3	-	317	1290	2610	1100	1400	**NNP657/YAD**
290	420	128	3	-	323	1470	3090	1100	1400	**NNU658**
300	420	118	3	387	-	1160	2850	1100	1300	**NN4960**
	420	118	3	-	339	1160	2850	1100	1300	**NNU4960**
	430	150	4	-	332	1790	4020	1100	1300	**NNU5960X3/YA8**
	430	150	4	-	334	1630	3720	1100	1300	**NNU5960X3/YAB**
	430	150	4	-	332	1790	4020	1100	1300	**NNU5960X3/YB4**
	430	150	4	-	338	1740	4070	1100	1300	**NNU5960X3ZW/YA4**
	445	150	4	-	339	2000	4300	1000	1300	**NNU4060X3**
	460	118	4	418	-	1350	2600	970	1200	**NN3060**
	460	118	4	418	-	1350	2600	970	1200	**NN3060/YA8**
	460	118	4	-	346	1350	2600	970	1200	**NNU3060**
	460	160	4	-	340	2020	4050	970	1200	**NNU4060**
	460	180	4	-	339	2610	5450	970	1200	**NNU4060X2**
	500	160	5	-	358	1980	3880	910	1200	**NNU3160**
	500	200	5	-	351	2720	5160	910	1200	**NNU4160**
	500	200	5	-	351	2720	5160	910	1200	**NNU4160/YA1**
320	440	118	3	407	-	1200	3010	970	1200	**NN4964**
	440	118	3	-	359	1200	3010	970	1200	**NNU4964**

Designations	Other dimensions(mm)				Abutment and fillet dimensions(mm)						Mass(kg)(approx.)	
Tapered bore	d_1	D_1	*b*	*k*	d_{amin}	d_{amax}	d_{bmin}	D_{amin}	D_{amax}	r_{amax}	Cylindrical bore	Tapered bore
NN3052K	312.8	-	-	-	278	-	-	372	382	3	50.8	49.3
NN3052K/YB5	312.8	-	15	6	278	-	-	372	382	3	-	49.2
NNU3052K	-	351.2	15	6	278	293	304	-	382	3	49.7	48.2
NN3052WCK/YA8	312.8	-	18	10	278	-	-	372	382	3	-	49.6
NNU4052K	-	354	13.9	6	278	289	299	-	382	3	63.3	60.7
NNU4152K	-	387	-	-	278	298	309	-	422	3	111	107
-	-	348	22.3	8	274	-	-	351	386	2.5	82.8	-
NN4956K	317	-	15	6	292	-	-	361	368	2	32.9	27.8
NNU4956K	-	347	-	-	292	304	314	-	368	2	33.5	32.8
NNU4956K/YA8	-	347	15	6	292	303	313	-	368	2	29.0	27.5
NN3056K	332.8	-	-	-	298	-	-	392	402	3	52.3	49.7
NNU3056K	-	371.2	15	6	298	312	324	-	402	3	53.2	51.6
NNU4156K	-	407	-	-	302	318	329	-	438	4	118	113
-	-	404	15	8	302	316	328	-	448	4	143	-
-	-	410	-	-	302	318	330	-	458	4	160	-
-	-	368	-	-	299	-	-	372	401	2.5	47.9	-
NNU658K	-	375	17.7	6	304	316	326	-	406	2.5	58.0	55.5
NN4960K	347	-	17.7	9	314	-	-	394	406	2.5	54.2	52.0
NNU4960K	-	379	17.7	9	314	332	343	-	406	2.5	51.6	49.3
-	-	383	16	6	318	325	336	-	412	3	71.6	-
-	-	383	16	6	318	328	339	-	412	3	72.1	-
-	-	384	12	6	318	325	336	-	412	3	71.8	-
-	-	387	15	6	318	331	343	-	412	3	75.4	-
-	-	397	22.3	10	318	328	341	-	427	3	84.7	-
NN3060K	360.4	-	-	-	318	-	-	425	442	3	78.1	75.9
NN3060K/YA8	360.4	-	-	-	318	-	-	425	442	3	77.9	76.2
NNU3060K	-	403.6	17.7	9	318	339	352	-	442	3	78.0	75.8
NNU4060K	-	406	16.7	9	318	332	343	-	442	3	95.7	91.7
-	-	407	-	-	318	328	340	-	442	3	113	-
NNU3160K	-	427	-	-	322	350	362	-	478	4	132	128
NNU4160K	-	433	-	-	322	343	354	-	478	4	159	153
-	-	433	12	6	322	343	354	-	478	4	158	-
NN4964K	367	-	17.7	9	334	-	-	414	426	2.5	54.3	52.0
NNU4964K	-	399	17.7	9	334	352	363	-	426	2.5	54.9	52.6

ZWZ

d 320～400mm



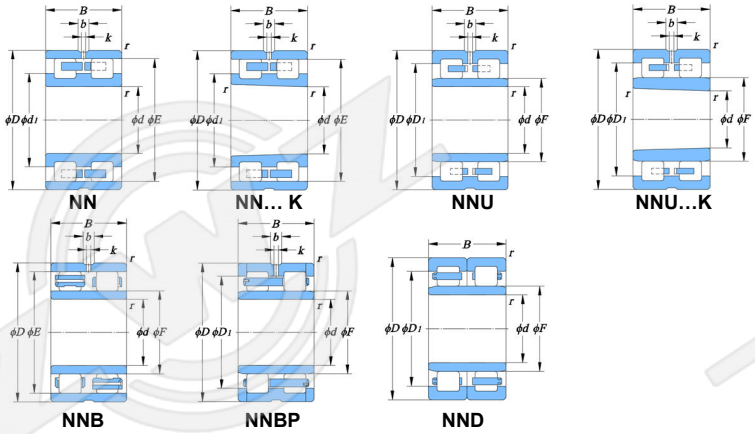


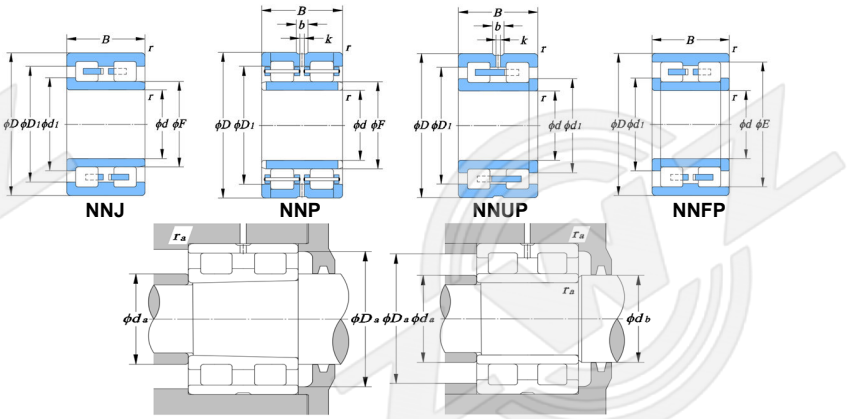
Principal dimensions(mm)						Basic load ratings (kN)		Limiting speeds (r/min)		Designations
d	*D*	*B*	r_{min}	*E*	*F*	C_r	C_{or}	Grease	Oil	Cylindrical bore
320	460	120	4	-	362	1500	2900	940	1200	**NU3064X3ZW/YA3**
	480	121	4	438	-	1490	2910	910	1200	**NN3064**
	480	121	4	-	362	1490	2910	910	1200	**NNU3064**
	480	145	3.7	-	364	1800	3840	910	1200	**NNU4064X2**
	480	160	4	-	360	2130	4410	910	1200	**NNU4064M**
	480	220/210	3	-	360	2530	5510	910	1200	**NNP5064X2NC**
	540	176	5	-	384	2510	4920	820	1100	**NNU3164**
340	460	118	3	427	-	1230	3170	910	1200	**NN4968**
	460	118	3	-	379	1230	3170	910	1200	**NNU4968**
	520	133	5	473	-	1790	3510	820	1100	**NN3068**
	520	180	5	-	385	2400	4850	820	1100	**NNU4068**
	580	243	5	-	402	3880	7510	740	920	**NNU4168**
350	520	150	5	-	395	2170	4510	810	990	**NNU670**
360	480	118	3	447	-	1260	3330	850	1100	**NN4972**
	480	118	3	-	399	1260	3330	850	1100	**NNU4972**
	540	134	5	493	-	1830	3660	770	950	**NN3072**
	540	266	5	-	402	4140	9250	770	950	**NNU5072X2/YB2**
	600	243	5	-	422	4020	7960	700	860	**NNU4172**
380	520	106	4	-	426	1300	3160	770	950	**NNU3976ZW**
	520	140	4	-	426	1660	4360	770	950	**NNU4976**
	540	180	5	-	420	2310	5130	740	920	**NNU4076X1**
	560	135	5	515	-	1860	3810	720	890	**NN3076**
	560	135	5	-	431	1860	3810	720	890	**NNU3076**
	560	180	5	-	425	2510	5310	720	890	**NNU4076**
	620	243	5	-	442	4000	7990	650	800	**NNU4176**
	670	240	4	-	460	4230	8260	610	750	**NNU3276X1/YAD**
	680	240	6	-	460	4790	9290	610	750	**NNU3276/YA3**
400	500	100	1.5	-	432	967	2780	770	950	**NNUP4880**
	540	140	4	502	-	1710	4590	720	890	**NN4980**
	540	140	4	-	446	1710	4590	720	890	**NNU4980**
	600	148	5	549	-	2240	4470	650	800	**NN3080**
	600	170	5	-	450	2790	5770	650	800	**NNU3080X2**
	600	200	5	-	449	3240	6770	650	800	**NNU4080/YB2**
	650	250	6	-	463	4530	9150	610	750	**NNU4180**

Designations	Other dimensions(mm)				Abutment and fillet dimensions(mm)						Mass(kg)(approx.)	
Tapered bore	d_1	D_1	*b*	*k*	d_{amin}	d_{amax}	d_{bmin}	D_{amin}	D_{amax}	r_{amax}	Cylindrical bore	Tapered bore
-	-	411	-	-	338	355.4	359	415.2	442	3	71.4	-
NN3064K	377	-	17.7	8	338	-	-	446	462	3	76.3	75.3
NNU3064K	-	423	16.7	9	338	355	366	-	462	3	77.0	76.9
-	-	424	18	8	336	356	368	-	464	3	93.3	-
-	-	426	16.7	9	338	353	365	-	462	3	102	-
-	-	426	12	6	334	-	-	431	466	2.5	139	-
NNU3164K	-	463	16.7	8	342	374	386	-	518	4	169	164
NN4968K	387.4	-	17.7	9	354	-	-	434	446	2.5	58.0	55.6
NNU4968K	-	418.6	12	6	354	372	383	-	446	2.5	58.3	55.9
NN3068K	406	-	16.7	9	362	-	-	483	498	4	102	99.5
NNU4068K	-	460	12	6	362	374	386	-	498	4	136	130
NNU4168K	-	500	-	-	362	393	405	-	558	4	267	257
NNU670K	-	463	15	6	372	386	400	-	498	4	111	107
NN4972K	408	-	-	-	374	-	-	452	466	2.5	61.0	58.4
NNU4972K	-	438	16.7	9	374	392	404	-	466	2.5	61.1	58.5
NN3072K	426	-	17.7	12	382	-	-	503	518	4	108	105
-	-	485.5	25	15	382	388	402	-	518	4	212	-
NNU4172K	-	522	-	-	382	411	424	-	578	4	279	268
-	-	471	15	8	398	419	432	-	502	3	72.5	-
NNU4976K	-	471	16.7	9	398	418	430	-	502	3	90.8	86.7
-	-	485	16.7	6	402	411	424	-	518	4	129	-
NN3076K	448	-	-	-	402	-	-	525	538	4	114	110
NNU3076K	-	498	-	-	402	420	435	-	538	4	114	110
NNU4076K	-	500	16.7	6	402	416	429	-	538	4	150	144
NNU4176K	-	538	-	-	402	431	444	-	598	4	288	276
-	-	567	-	-	398	444	460	-	652	3	376	-
-	-	579	-	-	408	449	462	-	652	5	400	-
-	439	463	16.7	9	409	435	450	-	491	1.5	47.1	-
NN4980K	457	-	16.7	8	418	-	-	510	522	3	94.4	90.4
NNU4980K	-	491	16.7	8	418	438	451	-	522	3	95.3	90.6
NN3080K	472	-	-	-	422	-	-	559	578	4	145	141
-	-	532	22	10	422	440	454	-	578	4	172	-
-	-	536	-	-	422	436	452	-	578	4	196	-
NNU4180K	-	568	-	-	428	450	465	-	622	5	328	315

ZWZ

d 400～460mm





Principal dimensions(mm)						Basic load ratings (kN)		Limiting speeds (r/min)		Designations
d	*D*	*B*	r_{min}	*E*	*F*	C_r	C_{or}	Grease	Oil	Cylindrical bore
400	650	250	6	-	463	4530	9150	610	750	NNU4180/HFYA3
420	560	140	4	526	-	1750	4570	670	830	NN4984
	560	140	4	-	466	1750	4570	670	830	NNU4984
	560	140	4	-	466	1750	4570	670	830	-
	580	130	4	-	468	1790	4480	650	800	NU684ZWF1/YA3
	600	220	5	-	470	3160	8000	640	780	NNU4084X3
	620	150	5	569	-	2360	4830	620	760	NN3084
	620	150	5	-	469	2590	5140	620	760	NNU3084
	620	200	5	-	469	3310	7070	620	760	NNU4084
	620	200	5	-	469	3310	7070	620	760	NNU4084/YA3
	620	200	3	-	469	3310	7070	620	760	NNU4084/YA6
	620	200	5	-	469	3310	7070	620	760	NNP4084F3
	620	200	5	-	469	3220	6800	620	760	NNP4084F3/YA8
	620	216/200	5	-	472	3460	7970	620	760	NNU4084WB
	700	280	6	-	491	5340	10600	560	690	NNU4184
	700	280	6	-	489	5830	11900	560	690	NNU4184/YA8
	730	230	6	-	500	4740	8970	540	670	NNU3184X3
	760	280	7.5	-	507	5700	10600	520	640	NNU3284
	760	280	7.5	-	507	5700	10600	520	640	NNU3284/HF
440	600	160	4	-	490	2020	5600	620	760	NNU4988
	640	230	6	-	482	4650	10000	590	730	NNU4088X3
	640	230	6	-	482	4650	10000	590	730	NNP4088X3
	640	250/230	3	-	492	3790	8560	590	730	NNP4088X3WB/YAD
	650	157	6	597	-	2540	5260	580	720	NN3088
	650	157	6	-	497	2540	5260	580	720	NNU3088
	650	212	6	-	487	3910	8010	580	720	NNU4088
	720	226	6	648	-	3850	7320	540	660	NN3188
	720	280	6	-	511	5510	11200	540	660	NNU4188
	720	280	6	-	511	5510	11200	540	660	-
457.2	660.4	228.6/203.2	6	-	512.5	3540	8340	560	690	NNU6/457.2WB
	660.4	228.6/203.2	6	-	512.5	3540	8340	560	690	NNU6/457.2WB/YA6
460	580	118	3	-	497			620	760	NNU4892
	620	160	4	-	510	2040	5730	590	730	NNU4992
	650	235	6	-	509	4200	10400	570	700	NNU4092X3

Designations	Other dimensions(mm)				Abutment and fillet dimensions(mm)						Mass(kg)(approx.)	
Tapered bore	d_1	D_1	*b*	*k*	d_{amin}	d_{amax}	d_{bmin}	D_{amin}	D_{amax}	r_{amax}	Cylindrical bore	Tapered bore
-	-	568	-	-	428	450	465	-	622	5	328	-
NN4984K	477	-	-	-	438	-	-	531	542	3	97.2	93.0
NNU4984K	-	515	17.7	9	438	458	472	-	542	3	94.3	93.3
NNU4984K/YA8	-	515	17.7	9	438	458.4	472	-	542	3	-	93.3
-	-	522	-	-	438	462.3	466	526.2	562	3	110	-
-	-	536	12	6	442	460	473	-	578	4	205	-
NN3084K	492	-	16.7	9	442	-	-	575	598	4	140	135
NNU3084K	-	556	-	-	442	460	474	-	598	4	152	147
NNU4084K	-	556	16.7	9	442	458	472	-	598	4	204	195
-	-	556	16.7	9	442	458	472	-	598	4	204	-
-	-	556	22.3	10	434	458	472	-	606	2.5	204	-
-	-	556	16.7	9	442	-	-	561	598	4	212	-
-	-	556	16.7	9	442	-	-	561	598	4	212	-
-	-	550	20	10	442	464	479	-	598	4	218	-
NNU4184K	-	609	16.7	9	448	478	494	-	672	5	436	419
-	-	606	-	-	448	476	492	-	672	5	445	-
-	-	622	-	-	448	487	502	-	702	5	423	-
NNU3284K	-	645	-	-	456	491	507	-	724	6	559	542
-	-	645	-	-	456	491	507	-	724	6	559	-
NNU4988K	-	538	17.7	9	458	483	496	-	582	3	139	134
-	-	584	16.7	7.5	468	476	490	-	612	5	259	-
-	-	584	16.7	7.5	468	-	-	587	612	5	258	-
-	-	572	22.3	12	454	-	-	575	626	2.5	256	-
NN3088K	517	-	22.3	12	468	-	-	606	622	5	178	172
NNU3088K	-	577	22.3	12	468	486	501	-	622	5	178	172
NNU4088K	-	585	22.3	12	468	476	490	-	622	5	235	214
NN3188K	536.8	-	22.3	12	468	-	-	657	692	5	358	346
NNU4188K	-	630	-	-	468	498	514	-	692	5	451	433
NNU4188K30M	-	630	22.3	12	468	497.6	514	-	692	5	-	452
-	-	588.5	27.5	12.5	485	503	518	-	632.4	5	244	-
-	-	588.5	27.5	12.5	485	503	518	-	632.4	5	242	-
NNU4892K	-	537	16.7	9	474	497	509	-	566	2.5	78.3	75.0
NNU4992K	-	558	17.7	9	478	501	514	-	602	3	145	138
-	-	588	18	8	488	499	513	-	622	5	251	-

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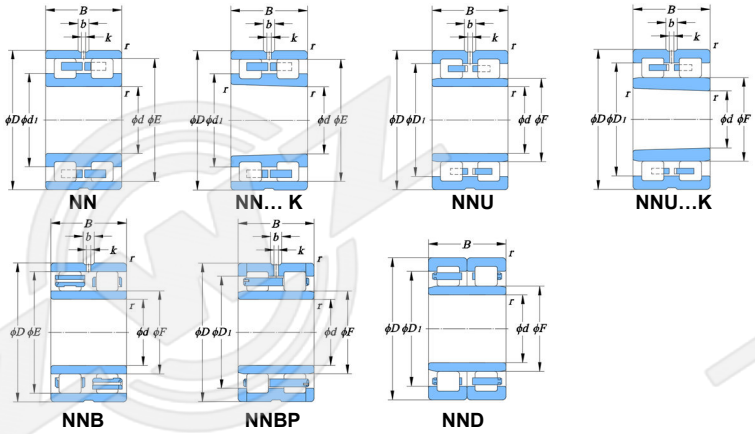
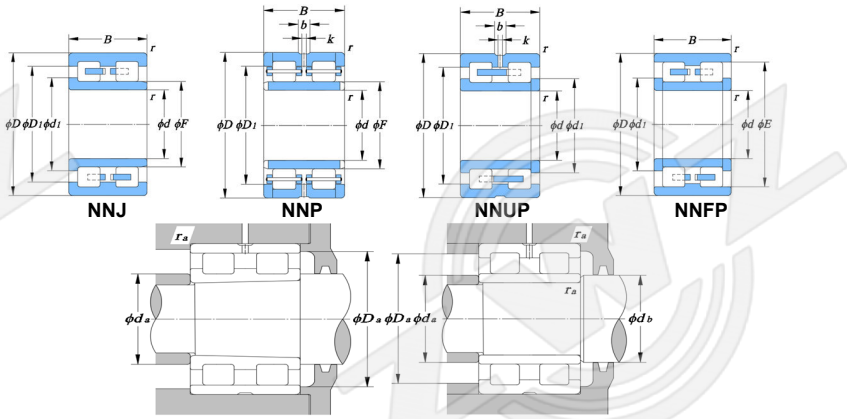
d 460～505mm

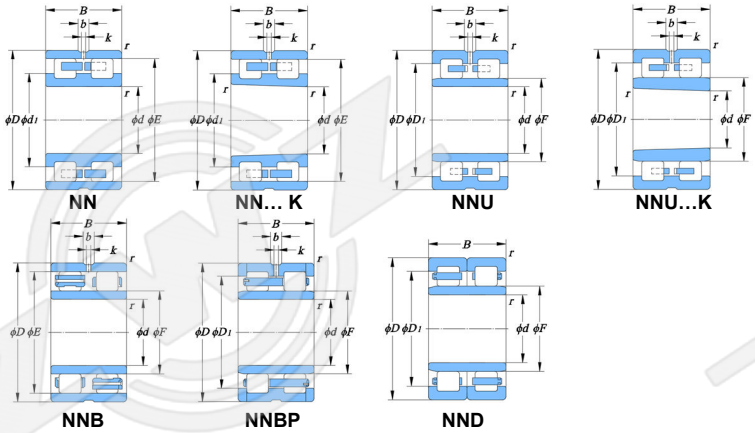


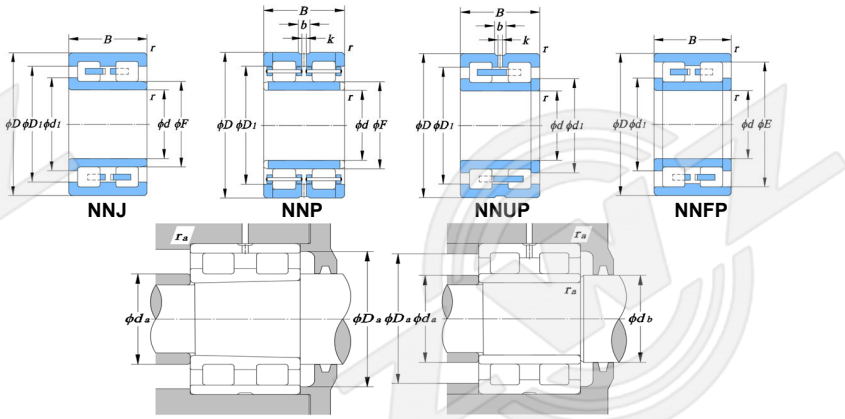


Principal dimensions(mm)						Basic load ratings (kN)		Limiting speeds (r/min)		Designations
d	*D*	*B*	r_{min}	*E*	*F*	C_r	C_{or}	Grease	Oil	Cylindrical bore
460	680	163	6	624	-	2720	5850	550	670	**NN3092**
	680	163	6	624	-	2680	5730	550	670	**NN3092/YB5**
	680	163	6	-	524	2720	5850	550	670	**NNU3092**
	680	218	6	-	513	3830	8550	550	670	**NNU4092**
	680	218	6	-	513	3830	8550	550	670	**NNU4092/YAD**
	760	300	7.5	-	537	6090	12200	500	610	**NNU4192**
	760	300	7.5	-	537	6090	12200	500	610	**NNU4192/YA3**
	800	250	5	-	545	5410	9960	480	580	**NNU692**
	800	250	5	-	545	5410	9960	480	580	**NNU692/HF**
470	810	300	6	-	557	6660	13100	460	570	**NNU694**
480	650	170	5	609	-	2720	6590	560	680	**NN4996**
	650	170	5	-	534	2320	6260	560	680	**NNU4996**
	700	165	6	644	-			520	640	**NN3096**
	700	165	6	-	534	2960	6030	520	640	**NNU3096M**
	700	218	6	-	533	3890	8480	520	640	**NNU4096**
	700	218	6	-	533	3890	8480	520	640	**NNU4096/YB5**
	700	260	6	-	533	5070	12000	520	640	**NNU4096X2**
	720	200	3	-	540	3860	8150	510	630	**NNU3096X3/YA6**
	770	320	5	-	553	7260	16100	480	590	**NNU4196X3/YA6**
	790	308	7.5	-	557	6690	13700	470	580	**NNU4196**
	790	308	7.5	-	557	6690	13700	470	580	**NNU4196/YA3**
	790	308	7.5	-	557	6690	13700	470	580	**NNU4196/YB2**
	890	320	7.5	-	585	8240	15600	420	510	**NND696X3**
500	670	170	5	-	554	2300	6520	530	650	**NNU49/500**
	670	170	5	-	554			530	650	**NNU49/500F1**
	720	167	6	664	-	2530	5610	500	610	**NN30/500**
	720	218	6	-	554	3980	8840	500	610	**NNU40/500**
	720	218	6	-	554	3980	8840	500	610	**NNU40/500/YB5**
	720	270	6	-	559	5410	13700	500	610	**NNU50/500X2**
	720	270	6	-	559	4780	11600	500	610	**NNU50/500X2/YA8**
	730	305	6	-	556	6010	14600	490	610	**NNP6/500/YB5**
	830	325	7.5	-	583	7140	14500	440	540	**NNU41/500**
	830	325	7.5	-	583	7140	14500	440	540	**NNU41/500/YB2**
505	820	290	6	-	582.5	6540	13500	440	540	**NND6/505/YA3**

Designations	Other dimensions(mm)				Abutment and fillet dimensions(mm)						Mass(kg)(approx.)	
Tapered bore	d_1	D_1	*b*	*k*	d_{amin}	d_{amax}	d_{bmin}	D_{amin}	D_{amax}	r_{amax}	Cylindrical bore	Tapered bore
NN3092K	544	-	20.5	12	488	-	-	636	652	5	199	198
-	544	-	-	-	488	-	-	636	652	5	200	-
NNU3092K	-	604	20.5	12	488	512	529	-	652	5	208	202
NNU4092K	-	602	22.3	12	488	501	515	-	652	5	281	235
-	-	602	-	-	488	501	515	-	652	5	285	-
NNU4192K30	-	667	-	-	496	523	538	-	724	6	543	533
-	-	667	22.3	10	496	523	538	-	724	6	543	-
NNU692K	-	684	-	-	482	530	546	-	778	4	533	518
-	-	684	-	-	482	530	546	-	778	4	533	-
NNU694K	-	693	-	-	498	540	557	-	782	5	656	634
NN4996K	542	-	-	-	502	-	-	621	628	4	162	155
NNU4996K	-	592	-	-	502	522	537	-	628	4	150	148
NN3096K	564	-	22.3	12	508	-	-	646	672	5	198	192
-	-	626	15	8	508	523	539	-	672	5	210	-
NNU4096K	-	626	22.3	12	508	523	538	-	672	5	275	263
-	-	626	22.3	12	508	523	538	-	672	5	275	-
-	-	626	22.3	12	508	521	536	-	672	5	347	-
-	-	639	22.3	10	494	529	543	-	706	2.5	285	-
-	-	673	32	14	502	538	553	-	748	4	595	-
NNU4196K	-	691	27.5	12	516	542	557	-	754	6	613	585
-	-	691	27.5	12	516	542	557	-	754	6	613	-
-	-	691	27.5	12	516	542	557	-	754	6	613	-
-	-	751	-	-	516	-	-	759	854	6	915	-
NNU49/500K	-	607	22.3	12	522	546	561	-	648	4	174	167
-	-	612	22.3	12	522	545	560	-	648	4	178	-
NN30/500K	585	-	22.3	12	528	-	-	679	692	5	228	221
NNU40/500K	-	647	22.3	12	528	542	558	-	692	5	300	288
-	-	647	-	-	528	542	558	-	692	5	288	-
-	-	648	32.3	20	528	547	563	-	692	5	383	-
-	-	648	32.3	20	528	547	563	-	692	5	361	-
-	-	658	22.3	12	528	-	-	663	702	5	435	-
NNU41/500K	-	725	22.3	12	536	567	584	-	794	6	696	669
-	-	725	23.7	12	536	567	584	-	794	6	698	-
-	-	713	-	-	533	-	-	718	792	5	614	-

d 530～580mm





Principal dimensions(mm)						Basic load ratings (kN)		Limiting speeds (r/min)		Designations
d	*D*	*B*	r_{min}	*E*	*F*	C_r	C_{or}	Grease	Oil	Cylindrical bore
530	710	136	5	660	-	2140	5590	490	600	**NN39/530**
	710	180	5	660	-	2670	7470	490	600	**NN49/530**
	710	180	5	-	588	2670	7470	490	600	**NNU49/530**
	710	180	5	-	587.5	2690	7230	490	600	**NNP49/530**
	760	260	5	-	587	5580	13500	460	560	**NNP40/530X3**
	780	185	6	715	-	3110	6790	450	550	**NN30/530**
	780	225	5	-	601	4310	9680	450	550	**NNU6/530**
	780	250	6	-	591	5020	11100	450	550	**NNU40/530**
	780	250	6	-	591	5020	11100	450	550	**NNU40/530/YA8**
	780	475/285	6	-	590	7080	17300	450	550	**NNU40/530X2WB**
	870	335	7.5	-	612	7860	16000	400	500	**NNU41/530**
	870	335	7.5	-	612	7860	16000	400	500	**-**
	920	330	7	-	625	8180	15900	380	470	**NNU6/530X3**
	920	330	6	-	625	8570	16900	380	470	**NNU6/530X3/YA5**
550	810	350	6	-	605	8080	19000	420	520	**NNU6/550**
560	750	140	5	703	-	2630	6030	450	550	**NN39/560**
	750	190	5	693	-	2940	8260	450	550	**NN49/560**
	750	190	5	703	-	3140	8700	450	550	**NN49/560/YB5**
	750	190	5	-	623	3140	8700	450	550	**NNU49/560**
	780	180	5	725	-	3320	7990	430	530	**NN6/560**
	820	195	6	755	-	3790	8380	410	510	**NN30/560**
	820	195	6	755	-	3790	8380	410	510	**NN30/560M**
	820	195	6	755	-	3790	8380	410	510	**-**
	820	258	6	756	-	5550	12900	410	510	**NN40/560**
	820	258	6	756	-	5550	12900	410	510	**NN40/560/YA6**
	820	258	6	-	626	5550	12900	410	510	**NNU40/560**
	820	258	3	-	626	5550	12900	410	510	**NNU40/560/YA6**
	820	258	6	-	626	5550	12900	410	510	**NNU40/560/YB5**
	920	355	7.5	-	653	8270	17400	370	450	**NNU41/560**
	920	355	7.5	-	653	8940	19100	370	450	**NND41/560**
	970	370	7.5	-	665	10300	21800	350	430	**NND41/560X3**
575	950	270	7.5	-	672.5	7300	15000	350	430	**NNU6/575**
580	1000	350	9.5	-	678	9850	19200	330	400	**NNU6/580**
	1000	350	9.5	-	678	8770	16400	330	400	**NNU6/580/YAB**

Designations	Other dimensions(mm)				Abutment and fillet dimensions(mm)						Mass(kg)(approx.)	
Tapered bore	d_1	D_1	*b*	*k*	d_{amin}	d_{amax}	d_{bmin}	D_{amin}	D_{amax}	r_{amax}	Cylindrical bore	Tapered bore
NN39/530K	600.6	-	22.3	12	552	-	-	669	688	4	156	151
NN49/530K	600.6	-	-	-	552	-	-	672	688	4	204	195
NNU49/530K	-	649	17.7	6	552	576	591	-	688	4	203	194
-	-	648.5	25	12	552	-	-	653	688	4	212	-
-	-	684	22.3	12	552	-	-	689	738	4	395	-
NN30/530K	626	-	22.3	12	558	-	-	730	752	5	311	302
NNU6/530K	-	701	22.3	12	552	592	608	-	758	4	366	352
NNU40/530K	-	701	22.3	12	558	581	598	-	752	5	399	384
-	-	701	22.3	12	558	581	598	-	752	5	401	-
-	-	698	-	-	558	579	597	-	752	5	562	-
NNU41/530K	-	760	23.8	12	566	596	613	-	834	6	783	770
NNU41/530K30	-	760	23.8	12	566	595.9	613	-	834	6	-	770
-	-	790	-	-	562	607	625	-	888	5.5	932	-
-	-	790	-	-	558	609	624	-	892	5	946	-
NNU6/550K	-	725	32	15	578	589	606	-	782	5	610	575
NN39/560K	624	-	-	-	582	-	-	712	728	4	173	167
NN49/560K	632	-	23.5	12	582	-	-	705	728	4	243	233
-	637	-	22.3	12	582	-	-	714	728	4	240	-
NNU49/560K	-	689	22.3	12	582	612	627	-	728	4	245	234
NN6/560K	643	-	22.3	12	582	-	-	736	758	4	266	257
NN30/560K	658.4	-	22.3	12	588	-	-	770	792	5	348	337
-	658.4	-	22.3	12	588	-	-	770	792	5	348	-
NN30/560KF3	658.4	-	-	-	588	-	-	770	792	5	-	337
NN40/560K	650	-	22.3	12	588	-	-	768	792	5	465	446
-	650	-	22.3	10	588	-	-	770	792	5	465	-
NNU40/560K	-	732	22.3	12	588	614	629	-	792	5	468	449
-	-	732	22.3	12	574	614	629	-	806	2.5	468	-
-	-	732	22.3	12	588	614	629	-	792	5	468	-
NNU41/560K	-	804	-	-	596	636	653	-	884	6	944	907
-	-	802	-	-	596	-	-	810	884	6	970	-
-	-	827	-	-	596	-	-	835	934	6	1220	-
NNU6/575K	-	822.5	-	-	611	657	674	-	914	6	802	780
NNU6/580K	-	857	50	20	624	657	674	-	956	8	1170	1130
-	-	857	-	-	624	659	676	-	956	8	1140	-

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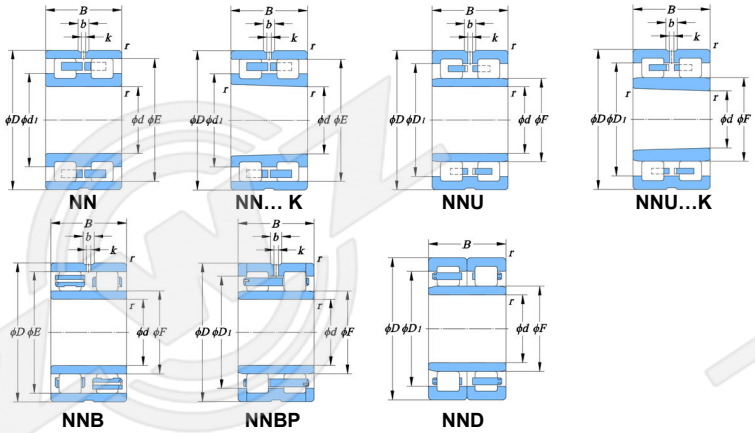
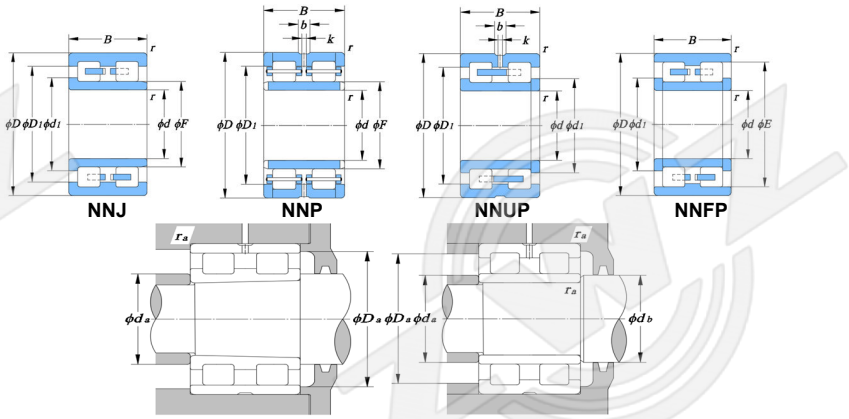
d 600～710mm





Principal dimensions(mm)						Basic load ratings (kN)		Limiting speeds (r/min)		Designations
d	*D*	*B*	r_{min}	*E*	*F*	C_r	C_{or}	Grease	Oil	Cylindrical bore
600	800	200	5	750	-	3460	10100	400	500	**NN49/600**
	800	200	5	-	666	3660	10200	400	500	**NNU49/600**
	800	200	5	-	666	3660	10200	400	500	**NNU49/600/YB5**
	860	300	6	802	-	6780	16400	380	460	**-**
	870	200	6	805	-	4430	9860	370	460	**NN30/600**
	870	200	6	805	-	4430	9860	370	460	**NN30/600F1/YA8**
	870	200	6	805	-	4430	9860	370	460	**NN30/600F3/YA8**
	870	272	6	-	667	5870	13600	370	460	**NNU40/600**
	980	375	7.5	-	699	9660	20600	330	400	**NNU41/600**
	980	375	7.5	-	699	10700	23600	330	400	**NNU41/600F1**
	980	375	7.5	-	699	9660	20600	330	400	**NNU41/600/YA3**
	980	375	7.5	-	699	10700	23600	330	400	**NNU41/600/YA8**
620	1080	380	6	-	736	10400	20800	290	350	**NNU6/620**
630	780	150	4	738	-	2270	6930	400	490	**NN48/630**
	780	150	4	-	668	2640	7370	400	490	**NNU48/630**
	850	218	6	784	-	3750	11400	370	450	**NN49/630**
	850	218	6	-	704	3750	11400	370	450	**NNU49/630**
	920	212	7.5	845	-	4870	10700	340	420	**NN30/630**
	920	212	7.5	845	-	4870	10700	340	420	**-**
	920	212	7.5	850	-	4870	10700	340	420	**NN30/630F1/YA8**
	920	212	7.5	845	-	4870	10700	340	420	**NN30/630/YB5**
	920	212	7.5	-	705	4870	10700	340	420	**NNU30/630**
	920	290	7.5	-	705	6510	15600	340	420	**NNU40/630M**
	1030	400	7.5	-	734	10500	22800	300	370	**NNU41/630**
670	900	230	6	838	-	4560	12700	330	410	**NN49/670**
	900	230	6	-	738	4560	12700	330	410	**NNU49/670**
	980	230	7.5	900	-	5060	11500	300	370	**NN30/670**
	980	230	7.5	-	760	5060	11500	300	370	**NNU30/670**
	980	308	7.5	906	-	8240	19400	300	370	**-**
	1090	336	7.5	-	774	9400	18900	270	330	**NNU31/670**
	1090	412	7.5	-	774	11600	25300	270	330	**NNU41/670**
	1160	410	10	-	791	12100	24400	250	300	**NNU6/670**
690	980	365	7.5	-	759	9950	26100	300	370	**NNU6/690/YB2**
710	870	180	4	823	-	2740	9200	330	400	**NN48/710X2**

Designations	Other dimensions(mm)				Abutment and fillet dimensions(mm)						Mass(kg)(approx.)	
Tapered bore	d_1	D_1	*b*	*k*	d_{amin}	d_{amax}	d_{bmin}	D_{amin}	D_{amax}	r_{amax}	Cylindrical bore	Tapered bore
NN49/600K	684	-	22.3	12	622	-	-	761	778	4	291	279
NNU49/600K	-	737	22.3	12	622	656	672	-	778	4	282	270
-	-	737	22.3	12	622	656	672	-	778	4	282	-
NN40/600X3K/YB5	690	-	22.3	12	628	-	-	816	832	5	-	535
NN30/600K	701	-	22.3	12	628	-	-	819	842	5	406	385
NN30/600KF1/YA8	701	-	-	-	628	-	-	819	842	5	403	384
-	701	-	-	-	628	-	-	819	842	5	403	-
NNU40/600K	-	779	22.3	12	628	657	675	-	842	5	536	513
NNU41/600K	-	864	22.3	12	636	688	706	-	944	6	1120	1080
-	-	864	22.3	12	636	688	706	-	944	6	1110	-
-	-	864	22.3	12	636	688	706	-	944	6	1120	-
-	-	864	22.3	12	636	688	706	-	944	6	1150	-
NNU6/620K	-	920	-	-	648	715	736	-	1052	5	1490	1450
NN48/630K	686.8	-	20.5	8	648	-	-	751	762	3	168	161
NNU48/630K	-	730	-	-	648	661	677	-	762	3	158	151
NN49/630K	718	-	22.3	12	658	-	-	795	822	5	386	371
NNU49/630K	-	771	22.3	12	658	692	711	-	822	5	387	372
NN30/630K	723	-	15	12	666	-	-	860	884	6	454	439
NN30/630K/YB5	723	-	15	12	666	-	-	860	884	6	-	439
NN30/630KF1/YA8	738	-	15	8	666	-	-	866	884	6	460	438
-	730	-	15	12	666	-	-	860	884	6	462	-
NNU30/630K	-	820	-	-	666	693	711	-	884	6	466	451
-	-	820	22.3	12	666	690	707	-	884	6	656	-
NNU41/630K	-	894	22.3	12	666	714	733	-	994	6	1330	1270
NN49/670K	755.5	-	18	10	698	-	-	850	872	5	443	425
NNU49/670K	-	822	-	-	698	726	743	-	872	5	424	406
NN30/670K	788	-	22.3	12	706	-	-	916	944	6	611	593
NNU30/670K	-	872	22.3	12	706	745	763	-	944	6	594	576
NN40/670K/YB5	773	-	22.3	12	706	-	-	921	944	6	-	773
NNU31/670K	-	957	22.3	12	706	753	772	-	1054	6	1210	1170
NNU41/670K	-	948	23.5	12	706	754	773	-	1054	6	1530	1470
NNU6/670K	-	991	-	-	716	770	791	-	1114	8	1830	1770
-	-	881	30	15	726	745	762	-	944	6	912	-
NN48/710X2K	771.8	-	-	-	728	-	-	833	852	3	236	223

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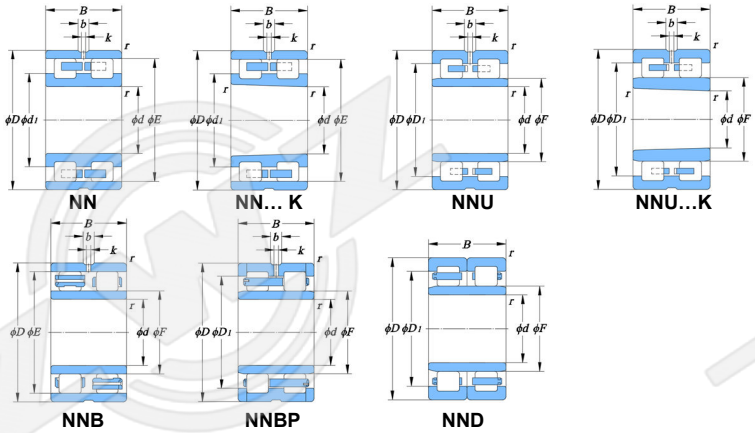
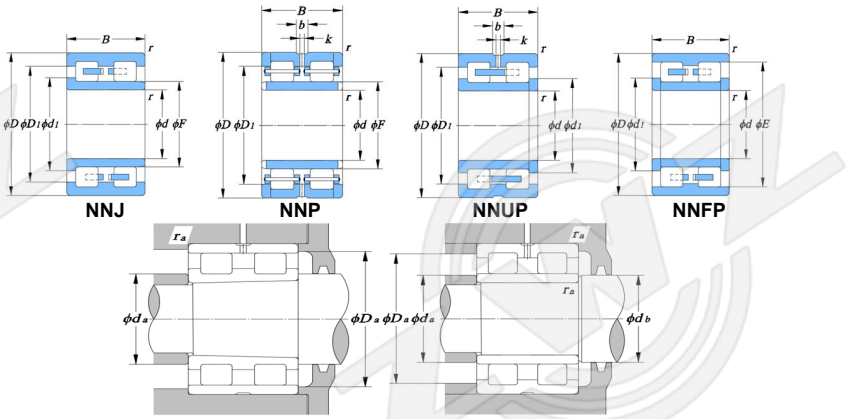
d 710～1000mm

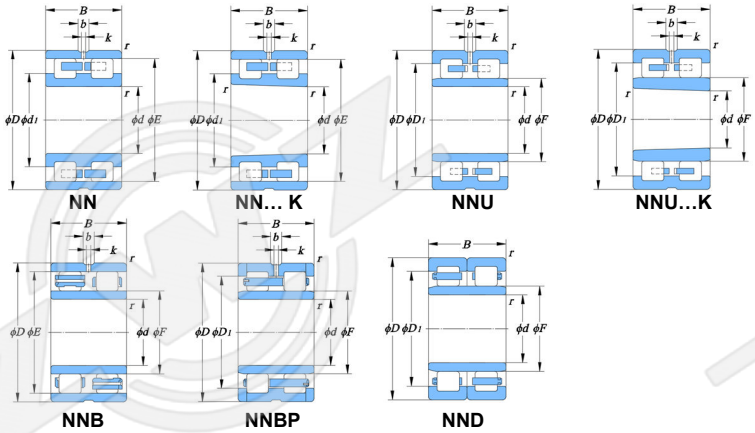


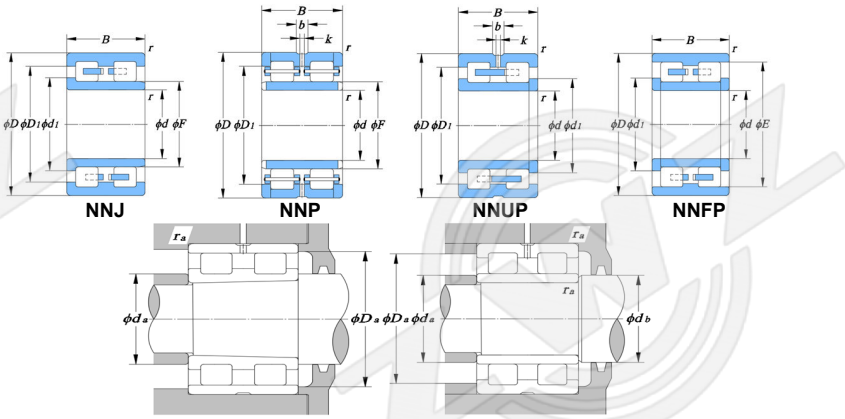


Principal dimensions(mm)						Basic load ratings (kN)		Limiting speeds (r/min)		Designations
d	*D*	*B*	r_{min}	*E*	*F*	C_r	C_{or}	Grease	Oil	Cylindrical bore
710	950	243	6	-	782	5070	14400	300	370	**NNU49/710**
	950	243	6	-	782	5070	14400	300	370	**NNU49/710/YB5**
	950	243	6	-	782	5330	16300	300	370	**NNP49/710/YA7**
	1030	236	7.5	951	-			270	340	**NN30/710**
	1030	315	7.5	-	784	8450	19500	270	340	**NNU40/710**
	1150	438	9.5	-	820			240	290	**NNU41/710**
730	1000	340	6	938	-	8720	23600	280	340	**NN6/730**
750	920	170	5	879	-			300	370	-
	1000	250	6	-	830	4940	15500	270	330	**NNU49/750**
	1000	250	6	-	830	4920	15500	270	330	**NNU49/750/YB5**
	1090	250	7.5	1013	-			240	300	**NN30/750**
	1090	250	7.5	1007	-	6820	15200	240	300	**NN30/750/YB5**
	1090	335	7.5	-	830			240	300	**NNU40/750**
	1220	475	9.5	-	871			210	260	**NNU41/750**
800	1060	258	6	-	884	5510	16200	240	290	**NNU49/800**
	1150	258	7.5	1065	-			220	260	**NN30/800**
	1150	345	7.5	-	885			220	260	**NNU40/800**
	1280	475	9.5	-	921	16000	36000	200	240	**NNU41/800**
850	1120	272	6	-	939			210	260	**NNU49/850**
	1220	272	7.5	1130	-			200	240	**NN30/850**
	1220	365	7.5	-	940			200	240	**NNU40/850**
	1360	500	12	-	976	18300	41300	180	230	**NNU41/850**
	1360	500	12	-	976	18300	41300	180	230	**NNU41/850M/YA3**
900	1180	280	6	-	986	6370	18800	200	240	**NNU49/900**
	1280	280	7.5	-	1185			190	230	**NN30/900**
	1280	375	7.5	-	990			190	230	**NNU40/900**
	1420	515	12	-	1032			180	220	**NNU41/900**
950	1250	300	7.5	-	1046			180	230	**NNU49/950**
	1360	300	7.5	1255	-			180	220	**NN30/950**
	1360	412	7.5	-	1050			180	220	**NNU40/950**
	1500	545	12	-	1092			170	200	**NNU41/950**
1000	1320	315	7.5	1238	-			180	220	**NN49/1000**
	1320	315	7.5	-	1103			180	220	**NNU49/1000**
	1420	308	7.5	1316	-			170	210	**NN30/1000**

Designations	Other dimensions(mm)				Abutment and fillet dimensions(mm)						Mass(kg)(approx.)	
Tapered bore	d_1	D_1	*b*	*k*	d_{amin}	d_{amax}	d_{bmin}	D_{amin}	D_{amax}	r_{amax}	Cylindrical bore	Tapered bore
NNU49/710K	-	868	22.3	12	738	774	792	-	922	5	490	469
-	-	868	22.3	12	738	774	792	-	922	5	492	-
-	-	852	35	18	738	-	-	857	922	5	512	-
NN30/710K	831	-	22.3	12	746	-	-	968	994	6	595	575
NNU40/710K	-	925	22.3	12	746	766	786	-	994	6	868	832
NNU41/710K	-	1024	22.3	12	754	774	790	-	1106	8	1800	1730
NN6/730K	826	-	22	10	758	-	-	947	972	5	804	760
NN48/750K30	811	-	22.3	12	772	-	-	860	898	4	-	235
NNU49/750K	-	906	22.3	12	778	817	835	-	972	5	570	545
-	-	906	22.3	12	778	817	835	-	972	5	570	-
NN30/750K	877	-	22.3	12	786	-	-	1022	1054	6	700	676
-	868	-	22.3	12	786	-	-	1022	1054	6	767	-
NNU40/750K	-	991	22.3	12	786	808	821	-	1054	6	924	880
NNU41/750K	-	1083	22.3	12	794	814	830	-	1176	8	2240	2150
NNU49/800K	-	972	22.3	12	828	869	889	-	1032	5	666	639
NN30/800K	929	-	22.3	12	836	-	-	1038	1114	6	785	750
NNU40/800K	-	1046	22.3	12	836	867	890	-	1114	6	1150	1100
NNU41/800K	-	1125	22.3	12	844	901	922	-	1236	8	2310	2220
NNU49/850K	-	1029	22.3	12	878	917	935	-	1092	5	715	683
NN30/850K	986	-	22.3	12	886	-	-	1038	1184	6	935	930
NNU40/850K	-	1110	22.3	12	886	925	946	-	1184	6	1350	1290
NNU41/850K	-	1213	22.3	12	904	955	976	-	1306	10	2890	2780
-	-	1196	23.5	12.5	904	955	976	-	1306	10	2810	-
NNU49/900K	-	1082	22.3	10	928	974	995	-	1152	5	843	808
NN30/900K	-	1185	22.3	12	936	-	-	1185	1244	6	1050	1010
NNU40/900K	-	990	22.3	12	936	982	998	-	1244	6	1510	1440
NNU41/900K	-	1032	22.3	12	954	996	1016	-	1366	10	3280	3160
NNU49/950K	-	1149	22.3	12	986	1028	1047	-	1214	6	958	914
NN30/950K	1103	-	22.3	12	986	-	-	1268	1324	6	1420	1370
NNU40/950K	-	1237	22.3	12	986	1028	1047	-	1324	6	1890	1810
NNU41/950K	-	1338	22.3	12	1004	1046	1065	-	1446	10	3850	3700
NN49/1000K	1124	-	22.3	12	1036	-	-	1208	1284	6	1210	1160
NNU49/1000K	-	1212	22.3	12	1036	1082	1097	-	1284	6	1250	1200
NN30/1000K	1156	-	22.3	12	1036	-	-	1308	1384	6	1390	1340

d 1000～2280mm





Principal dimensions(mm)						Basic load ratings (kN)		Limiting speeds (r/min)		Designations
d	*D*	*B*	r_{min}	*E*	*F*	C_r	C_{or}	Grease	Oil	Cylindrical bore
1000	1420	412	7.5	-	1101			170	210	**NNU40/1000**
	1580	580	12	-	1154			160	190	**-**
1060	1400	335	7.5	-	1160			170	200	**NNU49/1060**
	1500	325	9.5	1391	-	11900	30000	160	200	**NN30/1060**
	1660	600	15	-	1214			150	180	**NNU41/1060**
1120	1460	335	7.5	-	1220			160	190	**NNU49/1120**
	1750	630	15	-	1279			140	170	**NNU41/1120**
1180	1540	355	7.5	-	1285			150	180	**NNU49/1180**
	1850	670	15	-	1350			140	170	**NNU41/1180**
1250	1950	710	15	-	1426			130	160	**NNU41/1250**
1300	1580	340	7.5	-	1372	10900	39000	140	170	**NNU6/1300**
	1580	340	7.5	-	1373	10900	39000	140	170	**NNUP6/1300**
1320	1720	400	7.5	1620	-			140	170	**NN49/1320**
	1720	400	7.5	-	1442			140	170	**NNU49/1320**
	2060	750	15	-	1507			120	150	**NNU41/1320**
1400	2180	775	19	-	1598			120	140	**NNU41/1400**
1500	1805	300	7.5	1725	-	9250	33800	120	150	**-**
	2300	800	19	-	1709			110	130	**NNU41/1500**
2280	2580	200	6	2490	-	7740	34600	90	110	**NN6/2280**

Designations	Other dimensions(mm)				Abutment and fillet dimensions(mm)						Mass(kg)(approx.)	
Tapered bore	d_1	D_1	*b*	*k*	d_{amin}	d_{amax}	d_{bmin}	D_{amin}	D_{amax}	r_{amax}	Cylindrical bore	Tapered bore
NNU40/1000K	-	1296	22.3	12	1036	1082	1097	-	1384	6	1990	1900
NNU41/1000K30	-	1408	22.3	12	1054	1100	1115	-	1526	10	-	4250
NNU49/1060K	-	1288	22.3	12	1096	1136	1157	-	1364	6	1420	1360
NN30/1060K	1223	-	22.3	12	1104	-	-	1409	1456	8	1710	1650
NNU41/1060K	-	1485	22.3	12	1124	1166	1180	-	1596	12	5270	5080
NNU49/1120K	-	1348	22.3	12	1156	1198	1218	-	1424	6	1500	1440
NNU41/1120K30	-	1567	22.3	12	1184	1224	1246	-	1686	12	5800	5570
NNU49/1180K30	-	1421	22.3	12	1216	1259	1278	-	1504	6	1740	1660
NNU41/1180K	-	1655	22.3	12	1244	1285	1306	-	1786	12	7470	7200
NNU41/1250K30	-	1748	22.3	12	1314	1330	1352	-	1886	12	8330	8000
NNU6/1300K	-	1482	29.5	20	1336	1352	1379	-	1544	6	1370	1290
-	1398	1482	29.5	20	1336	1391	1418	-	1544	6	1400	-
NN49/1320K	1468	-	22.3	12	1356	-	-	1608	1684	6	3150	3040
NNU49/1320K	-	1592	22.3	12	1356	1375	1398	-	1684	6	3210	3100
NNU41/1320K	-	1846	22.3	12	1384	1422	1439	-	1996	12	9840	9450
NNU41/1400K30	-	1954	22.3	12	1464	1498	1513	-	2116	12	11100	10700
NN48/1500X3K	1618	-	22.3	12	1536	-	-	1741	1769	6	-	1470
NNU41/1500K	-	2065	22.3	12	1564	1587	1626	-	2236	12	12300	11800
NN6/2280K	2400	-	-	-	2308	-	-	2503	2552	5	1550	1500

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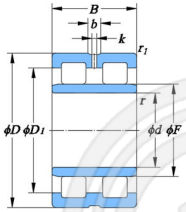
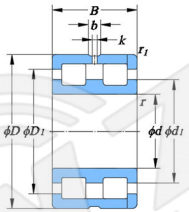
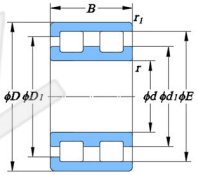
d 25.4～150mm



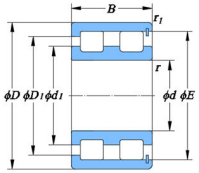
NNU…V



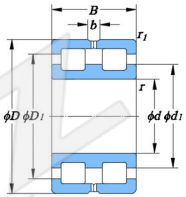
NNC…V



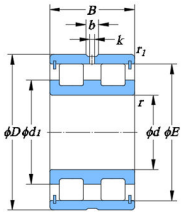
NNF…V



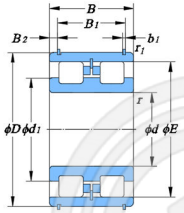
NNCF…V



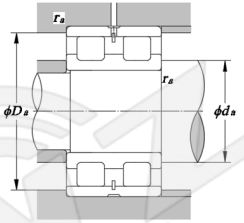
NNCD…V



NNCL…V

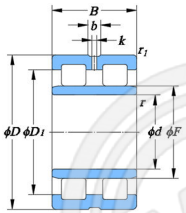


NNCS...2NRV



Principal dimensions(mm)					Basic load ratings (kN)			Limiting speeds (r/min)		Designations	Other dimensions(mm)				Abutment and fillet dimensions (mm)			Mass (kg)
d	*D*	*B*	r_{min}	r_{1min}	*E*	C_r	C_{or}	Grease	Oil		d_1	D_1	*b*	*k*	d_{amin}	D_{amax}	r_{amax}	(approx.)
25.4	50.3	32	0.2	0.6	42.51	65.5	78.8	8300	10300	NNCS6/25-2NRV	34.5	-	-	-	27	45.3	0.2	0.314
40	68	38	1	1	60.8	89	118	5840	7240	NNCF5008V	50.3	57.3	7	3	46	62	1	0.550
	68	38	1	1	60.8	89	118	5840	7240	NNCF5008V/YB4	50.3	57.3	7	3	46	62	1	0.553
	68	38	1	1	61.75	110	141	5840	7240	NNCF5008V/YAD	50.5	57.2	5.5	2.5	46	62	1	0.546
	68	38	0.8×30°	0.6	60.8	89	118	5840	7240	NNF5008V	50.3	-	6	2	45.6	63	0.6	0.555
	68	38	0.8×30°	0.6	61.75	110	141	5840	7240	NNF5008V/YAD	47.8	-	4.5	2	45.6	63	0.6	0.559
	68	38/37	0.8×30°	0.6	60.8	89	118	5840	7240	NNF5008CV	50.4	-	4.5	3	45.6	63	0.6	0.552
50	80	40	1	1	72	133	210	4900	6000	NNCF5010V	61	69	4	2	56	74	1	0.784
55	90	46	1.1	1.1	81.3	166	243	4400	5400	NNCF5011V	67.2	77.7	4.5	3.5	62	83	1.1	1.06
60	95	46	1.1	1.1	86.74	191	276	4100	5100	NNCF5012V	71.7	81.9	4.5	3	67	88	1.1	1.20
65	100	46	1.1	1.1	93.3	180	262	3900	4800	NNCF5013V	77.6	89.3	4.5	3	72	93	1.1	1.23
70	100	30	1	1	91.8	104	178	3800	4700	NNC4914V	82.8	87.8	-	-	76	94	1	0.789
	110	54	1.1	1.1	100	232	372	3600	4400	NNCF5014V	84	96	5	3.5	77	103	1.1	1.91
75	115	54	1.1	1.1	108	263	393	3400	4200	NNCF5015V	89.1	103.8	5	3.5	82	108	1.1	1.92
80	125	60	1.1	1.1	115.6	301	479	3000	3800	NNCF5016V	96.4	110.8	5	3.5	87	118	1.1	2.65
85	130	60	1.1	1.1	121.4	327	484	3000	3700	NNCF5017V	99.5	115.2	-	-	92	123	1.1	2.73
	130	60	1.1	1.1	121.4	327	484	3000	3700	NNCF5017V/W33	99.5	115.2	4.2143	2	92	123	1.1	2.71
89	125	58	1.1	1.1	115.22	199	349	2900	3600	NUCL6/89V/YA3DF	-	111.6	-	-	96	118	1.1	1.87
90	125	35	1.1	1.1	115.5	156	279	2900	3600	NNCD4918V	103.5	111.5	-	-	97	118	1.1	1.28
	125	58	1.1	1.1	115.22	199	349	2900	3600	NUCL3918X2V/YA3DF	-	111.6	-	-	97	118	1.1	1.81
	140	67	1.5	1.5	130	381	573	2700	3350	NNCF5018V	106.5	124	6	2	99	131	1.5	3.68
100	150	67	1.5	1.5	138	350	584	2500	3100	NNCF5020V	118	132	8	3	109	141	1.5	4.05
110	170	80	2	2	154.5	461	779	2200	2700	NNCF5022V	130	148.5	12	5	120	160	2	6.49
	260	111/110	1	1	184	1020	1540	1580	1950	NNFPL2422X3V/HA	150	184	-	-	116	254	1	34.0
120	165	45	1.1	1.1	154.3	270	465	2140	2650	NNCD4924V	135.5	149	-	-	127	158	1.1	2.80
	165	45	1.1	1.1	154.3	270	465	2140	2650	NNCL4924V/W33	135.5	-	6	3.5	127	158	1.1	2.72
	180	60	2	2	185	397	692	2000	2500	NNCF4024V	141.2	156.4	-	-	130	170	2	5.44
	180	80	2	2	167.8	556	892	2000	2500	NNCF5024V	138.5	161.5	6	3.5	130	170	2	6.91
130	180	50	1.5	1.5	169	320	600	1400	1800	NNCD4926V	151	163	-	-	139	171	1.5	3.86
	200	69	2	2	185	518	844	1800	2240	NNCF4026V	156.2	177.8	7	4	140	190	2	7.67
	200	95	2	2	185	704	1250	1800	2240	NNCF5026V	156.2	177.8	7	4	140	190	2	10.8
140	210	95	2	2	195.5	746	1320	1700	2100	NNCF5028V	164.5	188.9	7	4	150	200	2	11.3
	210	95	2	2	195.7	851	1450	1700	2100	NNCF5028V/YH	162.1	187.3	-	-	150	200	2	11.3
150	210	60	2	2	195	494	889	1200	1500	NNCD4930V	170	188	-	-	160	200	2	6.45
	210	60	2	2	195	415	709	1200	1500	NNCD4930V/YA4	170	188	-	-	160	200	2	6.14
	210	60	2	2	193	445	854	1200	1500	NNCD4930V/YAD	171.5	186.5	-	-	160	200	2	6.57

d 150～240mm



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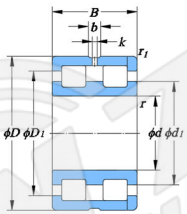
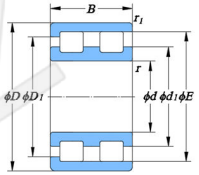


NNC…V



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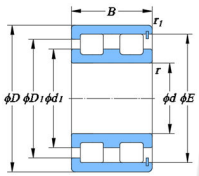

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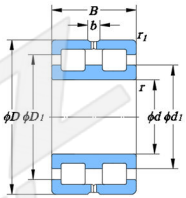

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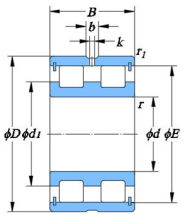

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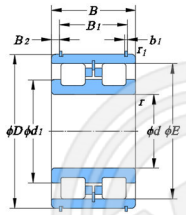
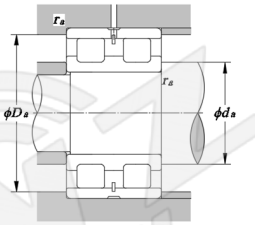


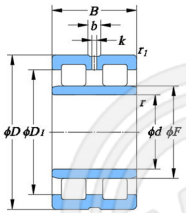
NNCS...2NRV



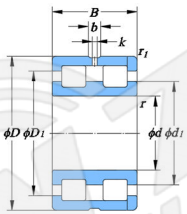
Principal dimensions(mm)						Basic load ratings (kN)		Limiting speeds (r/min)	
d	*D*	*B*	r_{min}	r_{1min}	*E*	C_r	C_{or}	Grease	Oil
150	210	60	2	2	193	445	854	1200	1500
	225	75	2	2	206	623	1030	1200	1400
	225	100	2	2	206	789	1390	1200	1400
	225	100	2.1	2.1	209	891	1580	1200	1400
	250	160	2.1	2.1	226	1530	2790	1100	1300
160	220	60	2	2	204.1	448	932	1200	1400
	240	109	2.1	2.1	222.6	886	1610	1100	1300
	240	109	2.1	2.1	223.7	1030	1760	1100	1300
170	260	122	2.1	2.1	239	1190	2170	1000	1200
	260	122	2.1	2.1	239	1190	2170	1000	1200
	260	122	2.1	2.1	231.9	1280	2270	1000	1200
180	250	69	2	2	231	612	1250	1300	1600
	250	69	2	2	231	570	1140	1300	1600
	250	69	2	2	231	612	1250	1300	1600
	280	136	2.1	2.1	254.6	1330	2580	1200	1500
	280	136	2.1	2.1	254.6	1330	2580	1200	1500
190	290	136	2.1	2.1	269.9	1380	2770	1200	1400
	290	136	2.1	2.1	269.9	1380	2770	1200	1400
200	250	50	1.5	1.5	235.6	354	825	1300	1500
	280	80	2.1	2.1	254.9	741	1510	1200	1400
	280	80	2.1	2.1	259.5	692	1390	1200	1400
	310	150	3	3	284.6	1640	3000	1100	1300
	310	150	3	3	284.6	1640	3000	1100	1300
	310	160	2.1	2.1	287.8	1910	3450	1100	1300
220	270	50	1.5	1.5	256.9	372	906	1100	1400
	300	80	2.1	2.1	276.8	769	1630	950	1180
	340	90	3	3	308	1140	1910	880	1100
	340	118	3	3	313.4	1500	2590	880	1100
	340	160	3	3	309.2	1920	3570	880	1100
	340	160	3	3	309.2	1920	3570	880	1100
	340	160	3	3	309.2	1920	3570	880	1100
	340.6	160	3	3	309.2	1920	3570	880	1100
	455	180	3	3	400.2	3050	4400	730	910
240	300	60	2	2	282	557	1320	910	1100
	300	60	2	2	282	510	1180	910	1100
	320	80	2.1	2.1	299.8	805	1790	930	1150

Designations	Other dimensions(mm)				Abutment and fillet dimensions (mm)			Mass(kg) (approx.)
	d_1	D_1	*b*	*k*	d_{amin}	D_{amax}	r_{amax}	
NNCL4930V	171.5	-	8	5	160	200	2	6.45
NNCF4030V	174.5	197.5	-	-	160	215	2	10.2
NNCF5030V	174.5	197.5	7	4	160	215	2	13.6
NNCF5030V/YH	175.4	200.6	7	4	162	213	2	13.7
NNU6130X2V/W33	-	216	12	6	162	238	2	31.6
NNF4932V	184.1	-	10	5	170	210	2	7.13
NNCF5032V	189.5	213.5	7	4	172	228	2	16.7
NNCF5032V/YH	185.3	214.1	7	4	172	228	2	16.5
NNCF5034V	199	231	9.5	5	182	248	2	21.4
NNCF5034V/YB	199	231	9.5	5	182	248	2	21.4
NNCF5034V/YH	200.7	231.9	9.5	5	182	248	2	22.9
NNCD4936V	206	224	-	-	190	240	2	10.7
NNCF4936V	206	224	8.66	4	190	240	2	10.4
NNCL4936V	206	-	7	4	190	240	2	10.4
NNCF5036V	216.2	245	9.5	5	192	268	2	31.4
NNCF5036V/YB	216.2	245	9.5	5	192	268	2	31.4
NNCF5038V	231.5	260.3	9.5	4	202	278	2	32.4
NNCF5038V/YA1	231.5	260.3	9.5	4	202	278	2	32.4
NNCD4840V	219	230.2	7	4	209	241	1.5	5.73
NNC4940V/W33	230.5	252.3	8	4	212	268	2	15.5
NNCL4940V/W33	230	-	12.2	6	212	268	2	15.0
NNCF5040V	238	272	8	4	214	296	2.5	40.7
NNCF5040V/YAB	238	272	8	4	214	296	2.5	40.9
NNU5040X2V	-	274	12	6	212	298	2	43.1
NNC4844V	239.5	252.3	8	4	229	261	1.5	5.83
NNCF4944V	248	269	9.3	4	232	288	2	16.8
NNF3044V	260	296	-	-	234	326	2.5	29.7
NNU4044V/W33	-	300.4	15	8	234	326	2.5	37.8
NNCF5044V	258	297	8	6	234	326	2.5	53.1
NNCF5044V/YAD	258	296.2	8	6	234	326	2.5	53.1
NNCF5044V-YX	258	296.2	8	6	234	326	2.5	53.1
NNCF5044X1V/W26YB4	258	297	-	-	234	326.6	2.5	53.1
NNCF5044X3V/M	299	377.4	12	6	234	441	2.5	138
NNCL4848V/W33	260	-	8	4	250	290	2	9.71
NNF4848V/W33A	260	-	8	5	250	290	2	9.86
NNC4948V	273	292	8	4	252	308	2	18.3

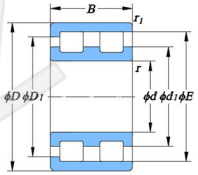
d 240～460mm



NNU…V



NNC…V



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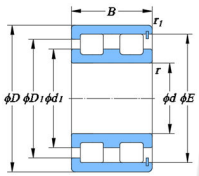

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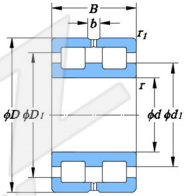

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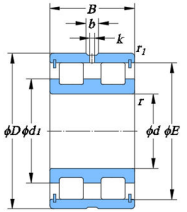

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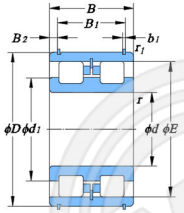
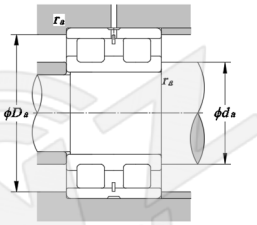


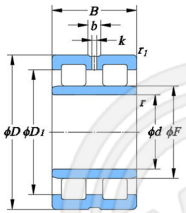
NNCS...2NRV

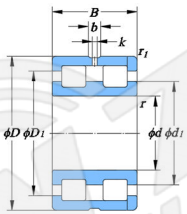


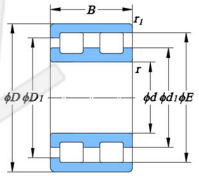
Principal dimensions(mm)						Basic load ratings (kN)		Limiting speeds (r/min)	
d	*D*	*B*	r_{min}	r_{1min}	*E*	C_r	C_{or}	Grease	Oil
240	360	160	3	3	335.3	2210	4030	870	1100
	360	160	3	3	335.3	2210	4030	870	1100
	360	160	3	3	335.3	2210	4030	870	1100
	360.6	160	3	3	335.3	2190	3990	870	1100
260	400	190	4	4	373	2930	5290	790	1000
	400	210/190	4	4	367.6	2710	5310	790	1000
280	420	190	4	4	391.5	3010	5670	690	850
	420	190	4	4	391.5	3010	5670	690	850
	420	190	4	4	391.5	3010	5670	690	850
300	380	80	2.1	2.1	358.5	889	2090	710	880
	380	80	2.1	2.1	358.5	889	2090	720	890
	420	118	3	3	391	1590	3590	680	840
	420	118	3	3	390.2	1530	3150	660	820
	460	270/218	4	4	429	3700	7130	630	780
	460	230/180	4	4	429	3120	5740	630	780
	460	230/180	4	4	429	3120	5740	630	780
	520	148	5	5	462.3	2790	4940	580	720
320	480	218	4	4	442	3490	7050	590	740
	480	218	4	4	442	3490	7050	590	740
	540	176	5	5	483.6	3290	5860	550	690
340	420	80	2.1	2.1	397	915	2350	620	780
	420	80	2.1	2.1	397	915	2350	620	780
	520	133	5	5	476.4	2460	4470	550	690
	520	133	5	5	476.4	2460	4470	550	690
	520	243	5	5	486	4450	8420	550	690
360	540	250/200	3	3	498.5	4530	9200	530	660
380	520	140	4	4	484.5	2410	5180	530	660
	520	140	4	4	484.5	2410	5180	530	660
	520	140	4	4	484.5	2410	5180	530	660
	540	260	4	4	508	3740	7980	470	580
400	600	272	5	5	550	5220	11400	430	530
420	520	100	2.1	2.1	466	1520	3980	455	560
440	600	160	4	4	563.5	2770	6080	410	510
	600	160	4	4	563.5	2770	6080	410	510
	600	160	4	4	563.5	2770	6080	410	510
460	580	118	3	3	544	1850	5260	390	485

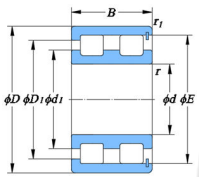
Designations	Other dimensions(mm)				Abutment and fillet dimensions (mm)			Mass(kg) (approx.)
	d_1	D_1	*b*	*k*	d_{amin}	D_{amax}	r_{amax}	
NNCF5048V	277	322	9.4	5	254	346	2.5	55.1
NNCF5048V/YAB	277	322	9.4	5	254	346	2.5	54.7
NNCF5048V/YH	277	322	9.4	5	254	346	2.5	55.1
NNCF5048X1V/W26YB4	277	322	-	-	254	346.6	2.5	55.1
NNCF5052V	304	357	9.4	5	278	382	3	83.9
NNU5052WBV/HCW33	-	352.6	12	6	278	382	3	87.9
NNCF5056V	323	375	9.4	5	298	402	3	89.4
NNCF5056V/YA1	323	375	9.4	5	298	402	3	89.2
NNCF5056V/YA2	323	375	9.4	5	298	402	3	89.2
NNCD4860V	327.5	351.5	-	-	312	368	2	21.4
NNCL4860V	327.5	-	12	5	312	368	2	21.0
NNC4960V	351	379	17.7	9	314	406	2.5	52.7
NNCF4960V	343	381	-	-	314	406	2.5	49.5
NNU4060X21WBV/W33	-	413	20	10	318	442	3	135
NNU4060X2WBV/HCW33	-	413	16.7	9	318	442	3	111
NNU4060X2WBV/HCYB2W33	-	413	16.7	9	318	442	3	111
NNF2260X3V/YB2	385	444	-	-	322	498	4	136
NNCF5064V	374	424	9.4	5	338	462	3	136
NNCF5064V/HCIYH	374	424	9.4	5	338	462	3	138
NNU3164V	-	465.3	16.7	8	342	518	4	164
NNCD4868V	368.5	389.5	-	-	352	408	2	24.5
NNCL4868V	368.5	-	12	5	352	408	2	24.1
NNF3068V	404	459	-	-	362	498	4	101
NNF3068V/YB2	404	459	-	-	362	498	4	101
NNCF5068V	399	465	12	6	362	498	4	178
NNU4072X2WBV/HCW33	-	478.5	17	9	374	526	2.5	175
NNCD4976V	430.3	466.7	-	-	398	502	3	89.2
NNCL4976V	430.3	-	-	-	398	502	3	86.8
NNCL4976V/YAD	430.3	-	12	6	398	502	3	87.4
NNCL5076X3V/HC	436	-	-	-	398	522	3	154
NNCL5080V/HC	466.2	-	10	5	422	578	4	266
NNCL4884V/W33X	456	-	10	8	432	508	2	48.2
NNCL4988V/W33	503	-	10	5	458	582	3	128
NNCL4988V/HCEW33	503	-	10	5	458	582	3	128
NNCL4988V/HG2YB4W33D	503	-	18	12	458	582	3	128
NNCS4892V/W33	506	-	20.5	12	474	566	2.5	75.5

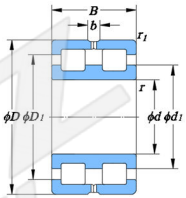
d 480～630mm


NNU…V


NNC…V


NNF…V


NNCF…V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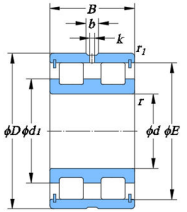
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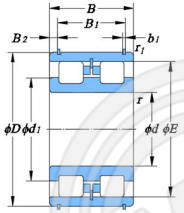
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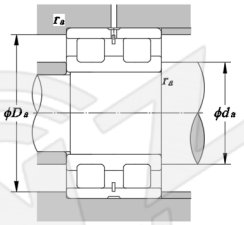
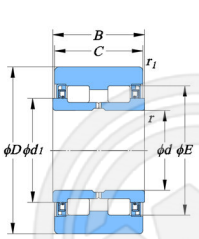


Principal dimensions(mm)						Basic load ratings(kN)		Limiting speeds (r/min)	
d	*D*	*B*	r_{min}	r_{1min}	*E*	C_r	C_{or}	Grease	Oil
480	600	118	3	3	567	1900	5500	370	460
	650	170	5	5	605	3430	7900	370	460
	720	280	6	2	641	5740	13700	350	430
500	620	118	3	3	587	2030	5590	380	460
530	780	185	6	6	710.45	4700	9620	320	390
560	820	258	6	6	762	7170	15100	260	320
	820	258	6	6	762	7170	15100	260	320
	820	400	6	6	771	8890	19000	260	320
	820	400	6	6	771	8890	19000	260	320
600	800	200	5	5	745.7	4640	12200	260	320
	870	272	6	6	806	7530	16800	250	300
630	850	218	6	6	795	5550	13400	230	290

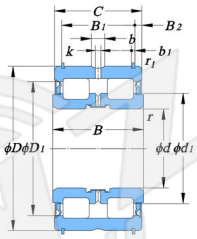
Designations	Other dimensions(mm)				Abutment and fillet dimensions (mm)			Mass (kg) (approx.)
	d_1	D_1	*b*	*k*	d_{amin}	D_{amax}	r_{amax}	
NNCS4896V/W33	529	-	20.5	12	494	586	2.5	78.6
NNCF4996V	538	588	-	-	502	628	4	163
NNCF5096X3NV/HCYA6	561	621	-	-	508	710	2	415
NNCS48/500V/W33X	544	-	15	8	514	606	2.5	79.6
NNU30/530V	-	690.1	22.3	8	558	752	5	300
NNCL40/560V/W33	652	-	22.3	12	588	792	5	451
NNCL40/560V/HCW33YB2	652	-	22.3	12	588	792	5	451
NNCL50/560X2V/HC	651	-	-	-	588	792	5	578
NNCL50/560X2V/HCE	651	-	-	-	588	792	5	578
NNCL49/600V/W33	675	-	22.3	12	622	778	4	283
NNCL40/600V/HC	694	-	16.7	9	628	842	5	509
NNCL49/630V/W33	710	-	22.3	12	658	822	5	351

ZWZ

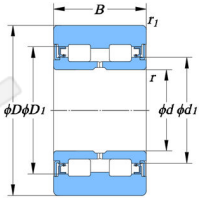
d 30～110mm



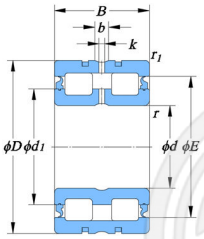
NN...2RS



NNF...2RS



NNUP...2RS



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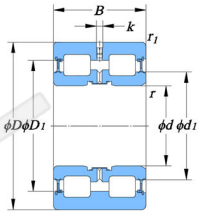
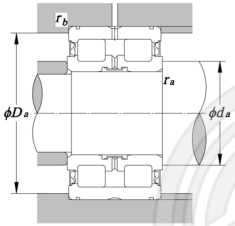
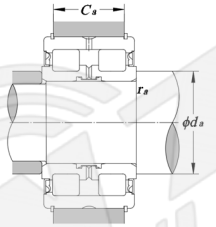


NNJ...2RS

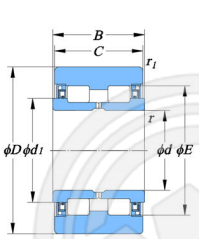




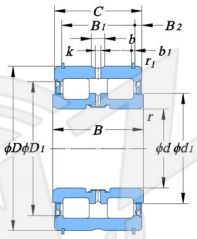
d	D	B	C	r_{min}	r_{1min}	E	F	C_r	C_{or}	Grease	Oil	Designations
30	70	60	58	1.1	1.1	-	40.1	127	225	1800	2200	NNUP6206X1V-2RS
	70	60	58	1.1	1.1	-	40.1	127	225	1800	2200	NNUP6206X1V-2RS/HCO
40	68	38	37	0.8×30°	0.6	60.8	-	80.9	118	1600	2000	NNF5008-2LSV
	68	38	37	0.8×30°	0.6	60.8	-	80.9	118	1600	2000	NNF5008-2LSV/W33
	68	38	37	0.8×30°	0.6	60.8	-	80.9	118	1600	2000	NNF5008-2LS1V
	68	38	37	0.8×30°	0.6	60.8	-	80.9	118	1600	2000	NNF5008-2LS1V/W33
	68	38	37	0.8×30°	0.6	60.8	-	80.9	118	1600	2000	NNF5008-2LSNRV
	95/80	40	39	1.5×30°	1	60.8	-	94.3	144	1500	1800	NNF4208R-2LSV
	95/80	40	39	1.5×30°	1	60.8	-	94.3	144	1500	1800	NNF4208R-2LS1V
	95/80	40	39	1.5×30°	1	60.8	-	94.3	144	1500	1800	NNF4208R-2LS1V/YB2
45	75	40	39	0.8×30°	0.6	67.5	-	97	147	1500	1800	NNF5009-2LSNRV
50	80	40	39	0.8×30°	0.6	72.3	-	102	161	1400	1700	NNF5010-2LSNRV-1
55	90	46	45	1.0×30°	0.6	79.6	-	120	196	1200	1500	NNF5011-2LSNRV
	130/110	46	45	1.5×30°	1.5	84	-	151	228	1100	1300	NNF4211X1R-2LS1V
60	95	46	45	1.0×30°	0.6	84.7	-	125	212	1200	1400	NNF5012-2LSNRV
	95	46	45	1.0×30°	0.6	84.7	-	125	212	1200	1400	NNF5012-2LS1NRV
65	100	46	45	1.0×30°	0.6	90	-	130	228	1100	1300	NNF5013-2LSNRV
70	110	54	53	1.0×30°	0.6	100	-	181	307	960	1200	NNF5014-2LSNV
	110	54	53	1.0×30°	0.6	100.2	-	191	329	960	1200	NNF5014-2LSNRV
	110	54	53	1.0×30°	0.6	100.2	-	191	329	960	1200	NNF5014-2LSNRV1
	110	54	53	1.0×30°	0.6	100	-	181	307	960	1200	NNF5014-2LS1NV
	110	54	53	1.0×30°	0.6	100	-	181	307	960	1200	NNF5014-2LS1NRV/DIN
75	115	54	53	1.0×30°	0.6	106.2	-	200	355	910	1200	NNF5015-2LS1V
	115	54	53	1.0×30°	0.6	106	-	197	323	910	1200	NNF5015-2LSNRV
80	125	60	59	1.5×30°	0.6	115.6	-	251	428	840	1100	NNF5016-2LSNRV
85	130	60	59	1.5×30°	0.6	119.5	-	257	446	800	980	NNF5017-2LSNRV
90	140	67	66	1.5×30°	0.6	127.2	-	292	539	740	920	NNF5018-2LSNV
	140	67	66	1.5×30°	0.6	127.2	-	292	539	740	920	NNF5018-2LSNRV
	140	67	66	1.5×30°	0.6	127.2	-	292	539	740	920	NNF5018-2LSNRV-XG
	140	67	66	1.5×30°	0.6	127.2	-	292	539	740	920	NNF5018-2LS1NV
95	145	67	66	1.5×30°	0.6	133.8	-	312	562	710	870	NNF5019-2LSNRV
100	150	67	66	1.0×30°	1	138	-	318	584	680	840	NNF5020-2RSV
	150	67	66	1.5×30°	0.6	138	-	318	584	680	840	NNF5020-2LSNRV
	150	67	66	1.5×30°	0.6	138	-	318	584	680	840	NNF5020-2LSNRV-1
110	170	80	79	1.0×30°	1.5	154	-	412	782	600	740	NNF5022-2LSV
	170	80	79	1.0×30°	1.5	154	-	412	782	600	740	NNF5022-2LS1V

d	d_1	D_1	b	k	d_{amin}	d_{amax}	D_{amax}	D_{amin}	r_{amax}	r_{bmax}	B_1	B_2	b_1	C_a	Mass(kg) (approx.)
30	43	53.8	-	-	37	41.6	63	53.8	1.1	1.1	-	-	-	-	1.31
	43	53.8	-	-	37	41.6	63	53.8	1.1	1.1	-	-	-	-	1.31
40	50.3	-	-	-	45.6	49.7	63	60.8	0.6	0.6	-	-	-	-	0.583
	50.3	-	4.5	3	45.6	49.7	63	60.8	0.6	0.6	-	-	-	-	0.583
	50.3	-	-	-	45.6	49.7	63	60.8	0.6	0.6	-	-	-	-	0.583
	50.3	-	4.5	3	45.6	49.7	63	60.8	0.6	0.6	-	-	-	-	0.583
	50.4	-	4.5	3	45.6	49.8	63	60.8	0.6	0.6	32.2	2.4	2.7	28	0.552
	50.3	-	-	-	49	50.3	74	60.8	1.5	1	-	-	-	-	1.16
	50.3	-	-	-	49	50.3	74	60.8	1.5	1	-	-	-	-	1.16
	50.3	-	-	-	49	50.3	74	60.8	1.5	1	-	-	-	-	1.16
45	57	-	4.5	3	50.6	56.4	70	67.5	0.6	0.6	34.2	2.4	2.7	30	0.726
50	61.1	-	4.5	3	55.6	60.5	75	72.3	0.6	0.6	34.2	2.4	2.7	30	0.780
55	67.8	-	4.5	3	62	67.2	85	79.6	1	0.6	40.2	2.4	3.2	35	1.19
	69	-	-	-	64	68	101	84	1.5	1.5	-	-	-	-	2.54
60	73	-	4.5	3	66	72.4	90	84.7	1	0.6	40.2	2.4	3.2	35	1.27
	73	-	-	-	66	72	90	84.7	1	0.6	39	2.8	3	34	1.31
65	77.2	-	-	-	71	76.2	95	90	1	0.6	40.2	2.4	3.2	35	1.35
70	85	-	-	-	76	82.2	105	100	1	0.6	48.2	2.4	4.2	-	1.85
	84.2	-	7.2	3.5	76	83.2	105	100.2	1	0.6	48.2	2.4	4.2	42	1.90
	84.2	-	7.2	3.5	76	83.2	105	100.2	1	0.6	48.2	2.4	4.2	43	1.88
	85	-	-	-	76	82.2	105	100	1	0.6	48.2	2.4	4.2	-	1.85
	84.2	-	-	-	76	81.4	105	100	1	0.6	48.2	2.5	4.2	40	1.99
75	91.2	-	-	-	81	89.8	110	106.2	1	0.6	-	-	-	-	2.06
	89.6	-	5	3.5	81	88.6	110	106	1	0.6	48.2	2.4	4.2	43	1.97
80	97.5	-	7.2	3	89	96.5	120	115.6	1.5	0.6	54.2	2.4	4.2	49	2.81
85	102.5	-	7.2	3	94	101.5	125	119.5	1.5	0.6	54.2	2.4	4.2	49	2.87
90	108.6	-	-	-	99	106.2	135	127.2	1.5	0.6	59	3.5	2.7	-	3.99
	108.6	-	7.2	3.5	99	107.6	135	127.2	1.5	0.6	59.2	3.4	4.2	54	3.76
	108.6	-	7.2	3.5	99	107.6	135	127.2	1.5	0.6	59	3.5	4.2	54	3.82
	108.6	-	-	-	99	106.2	135	127.2	1.5	0.6	59	3.5	2.7	-	3.99
95	113.8	-	6.6	3	104	112.8	140	133.8	1.5	0.6	59.2	3.4	4.2	54	3.95
100	116.5	-	-	-	106	115.4	144	138	1	1	-	-	-	-	3.99
	118	-	6.6	3	109	117	145	138	1.5	0.6	59.2	3.4	4.2	51	4.12
	118	-	6.6	3	109	117	145	138	1.5	0.6	59.2	3.4	4.2	54	4.07
110	131	-	-	-	116	128.2	161	154	1	1.5	-	-	-	-	6.93
	131	-	-	-	116	128.2	161	154	1	1.5	-	-	-	-	6.93

d 110～160mm



NN...2RS



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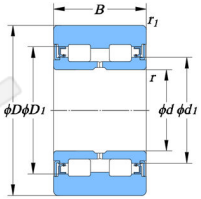

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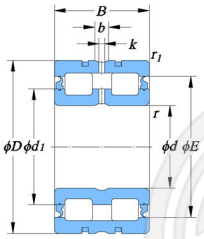

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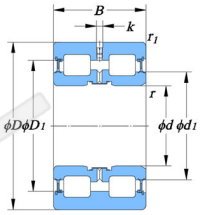

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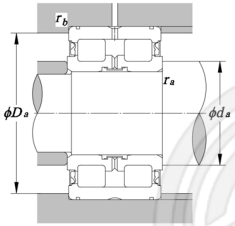
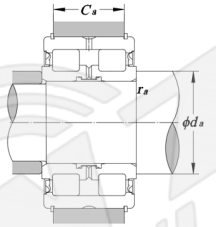


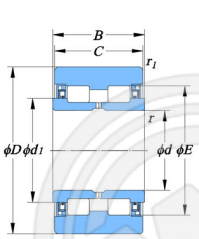


Principal dimensions(mm)								Basic load ratings (kN)		Limiting speeds (r/min)		Designations
d	*D*	*B*	*C*	r_{min}	r_{1min}	*E*	*F*	C_r	C_{or}	Grease	Oil	
110	170	80	79	1.0×30°	0.6	154	-	412	782	600	740	NNF5022-2LS1NRV
	170	80	79	1.8×30°	0.6	154.6	-	418	779	600	740	NNF5022-2LSNRV
	170	80	79	1.8×30°	0.6	154.6	-	418	779	600	740	NNF5022-2LSNRV-DIN
	195	80	79	1.8×30°	0.6	176	-	511	824	540	670	NNF5022X1-2ZV
115	165	60	55	2	2	151.542	-	284	531	600	740	NNCD623V-2RS
120	179.7	80	79	1.8×30°	0.6	164.7	-	435	840	560	680	NNF5024-2RSNRV
	179.7	80	79	1.8×30°	0.6	164.7	-	435	840	560	680	NNF5024-2RSNRV-DIN
	180	80	79	1.8×30°	0.6	164.5	-	435	840	550	680	NNF5024-2LSV
	180	80	79	1.8×30°	0.6	164	-	428	841	550	680	NNF5024-2LSNV
	180	80	79	1.8×30°	0.6	164.5	-	435	840	550	680	NNF5024-2LSNRV
	180	80	79	1.8×30°	0.6	164.5	-	435	840	550	680	NNF5024-2LSNRV/YA1
	180	80	79	1.8×30°	0.6	164	-	428	841	550	680	NNF5024-2LS1NV
	215	80	79	1.8×30°	0.6	189	-	483	784	490	600	NNF5024X1-2LSV
130	200	95	94	1.8×30°	0.6	185.2	-	540	1010	500	610	NNF5026-2LSNRV
	200	95	94	1.8×30°	1	185.2	-	540	1010	500	610	NNF5026-LS1NRV
	200	95	94	1.8×30°	1	185.2	-	540	1010	500	610	NNF5026-2LS1NV
	200	95	94	1.8×30°	1	185.2	-	540	1010	500	610	NNF5026-2LS1NRV
	200	95	94	1.8×30°	1	185.2	-	540	1010	500	610	NNF5026-2RSNRV
	200	95	94	1.8×30°	0.6	182	-	518	990	500	610	NNF5026-2RSNRV-DIN
	200	95	94	1.8×30°	0.6	182	-	518	990	500	610	NNF5026-2RSNRV-1
	200	95	94	3×30°	1	185.2	-	540	1010	500	610	NNF5026-2ZNRV
	200	95	94	3×30°	1	185.2	-	540	1010	500	610	NNF5026-2ZNRV-ZT
	280	120	114	3	2	211	-	680	1110	380	470	NN626V-2RS
140	190	50	50	1.5	1.5	176.5	-	271	595	500	610	NNCD4928V-2RS
	200	80	79	1.8×30°	0.6	183.2	-	468	960	480	590	NNF4028X2-2LSNRV
	200	80	79	1.8×30°	0.6	183.2	-	468	960	480	590	NNF4028X2-2LSNRV/YA1
	210	95	94	1.8×30°	0.6	190.8	-	606	1230	460	570	NNF5028-2LSNRV
	210	95	94	3×30°	1	191.3	-	539	1060	460	570	NNF5028-2ZNRV-ZT
150	210	80	79	1.8×30°	0.6	193.3	-	470	1040	450	550	NNF5930-2LSNRV
	210	80	79	1.8×30°	0.6	193.3	-	470	1040	450	550	NNF5930-2LSNRV/YB2
	225	100	99	2×30°	0.6	207.5	-	706	1430	430	530	NNF5030-2LSNRV
160	220	80	79	1.8×30°	0.6	205	-	519	1090	420	520	NNF4032X2-2LSNRV-DIN
	240	109	108	1.3×30°	0.6	222.6	-	806	1610	390	480	NNF5032-2LSNRV
	240	109	108	1.3×30°	0.6	222.6	-	806	1610	390	480	NNF5032-2LSNRV-1
	240	109	108	2×30°	0.6	222.6	-	806	1610	390	480	NNF5032-2LSNRV-2
	240	109	108	1.3×30°	1.1	222.6	-	806	1610	390	480	NNF5032-2LSNRV/YB2

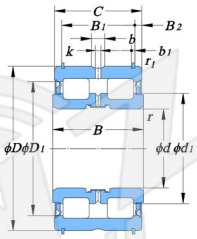
Other dimensions(mm)				Abutment and fillet dimensions(mm)						Snap ring dimensions (mm)				Mass(kg) (approx.)
d_1	D_1	*b*	*k*	d_{amin}	d_{amax}	D_{amax}	D_{amin}	r_{amax}	r_{bmax}	B_1	B_2	b_1	C_a	
131	-	-	-	116	128.2	165	154	1	0.6	70	4.5	4.2	62	7.29
131	-	7.2	3.5	119.2	130	165	154.6	1.5	0.6	70.2	4.4	4.2	65	6.59
131	-	7.2	3.5	119.2	128.2	165	154.6	1.5	0.6	70.2	4.4	4.2	62	6.69
144.5	-	7.2	3.5	119.2	141.7	190	176	1.5	0.6	-	-	-	-	10.5
130.9	144.7	-	-	125	129.3	155	146.1	2	2	-	-	-	-	4.05
140	-	-	-	129.2	138.8	174.7	164.7	1.5	0.6	71.2	3.9	3.1	63	7.35
140	-	-	-	129.2	138.8	174.7	164.7	1.5	0.6	71.2	3.9	4.1	63	7.46
142.8	-	-	-	129.2	141.8	175	164.5	1.5	0.6	-	-	-	-	6.82
141	-	-	-	129.2	138.2	175	164	1.5	0.6	71	4.0	3.2	-	7.41
141	-	7.2	3.5	129.2	140	175	164.5	1.5	0.6	71.2	3.9	4.2	65	7.09
141	-	7.2	3.5	129.2	140	175	164.5	1.5	0.6	71.2	3.9	4.2	63	7.08
141	-	-	-	129.2	138.2	175	164	1.5	0.6	71	4.0	3.2	-	7.41
156	-	7.2	3.5	129.2	155	210	189	1.5	0.6	-	-	-	-	12.5
158	-	7.2	4	139.2	157	195	185.2	1.5	0.6	83	5.5	3.2	77	10.6
158	-	-	-	139.2	157	194	185.2	1.5	1	83	5.5	3.2	77	10.8
158	-	-	-	139.2	157	194	185.2	1.5	1	83	5.5	3.2	-	10.9
158	-	-	-	139.2	155.2	194	185.2	1.5	1	83	5.5	3.2	77	11.1
156	-	-	-	139.2	154.8	194	185.2	1.5	1	83	5.5	3.2	77	10.8
153.5	-	-	-	139.2	152.3	195	182	1.5	0.6	83.2	5.4	4.1	75	11.2
153.5	-	-	-	139.2	152.3	195	182	1.5	0.6	85.2	4.4	4.1	77	11.2
158	-	-	-	144	155.2	194	185.2	2.5	1	83.2	5.4	3.2	77	10.8
158	-	-	-	144	155.2	194	185.2	2.5	1	83.2	5.4	5.2	77	10.8
170	-	-	-	144	164.6	270	210	2.5	2	-	-	-	-	38.8
159.5	171.5	-	-	149	158.1	181	172.5	1.5	1.5	-	-	-	-	4.03
159.6	-	7.2	3.5	149.2	158.6	195	183.2	1.5	0.6	71.2	3.9	4.2	65	8.17
159.6	-	7.2	3.5	149.2	158.6	195	183.2	1.5	0.6	69.2	4.9	3.2	63	8.17
166	-	7.2	3.5	149.2	165	205	190.8	1.5	0.6	83.2	5.4	5.2	77	11.6
166	-	-	-	154	163.2	204	191.3	2.5	1	83.2	5.4	5.2	77	11.9
171.3	-	7.2	3.5	159.2	170.3	205	193.3	1.5	0.6	71.2	3.9	5.2	65	8.6
171.3	-	7.2	3.5	159.2	170.3	205	193.3	1.5	0.6	67.2	3.9	5.2	61	8.6
177.5	-	9.3	4.5	160	176.5	220	207.5	2	0.6	87.2	5.9	5.2	81	13.7
184.4	-	7.2	3.5	169.2	183.4	215	205	1.5	0.6	71.2	3.9	5.2	61	9.32
191	-	-	-	167	188.2	235	222.6	1.1	0.6	96	6.0	6.0	86	17.9
191	-	7	4	167	188.2	235	222.6	1.1	0.6	96	6.0	6.0	86	17.9
191	-	7	4	170	190	235	222.6	2	0.6	95.2	6.4	5.2	89	17.5
191	-	-	-	167	188.2	233	222.6	1.1	1.1	95	6.5	4.0	89	18.4

ZWZ

d 160～240mm



NN...2RS



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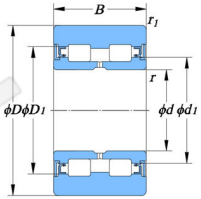

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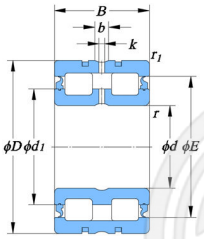

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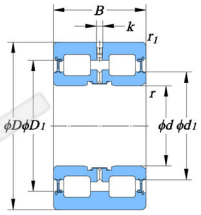

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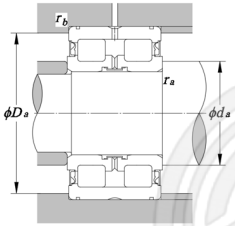
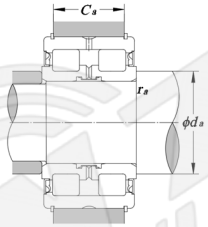
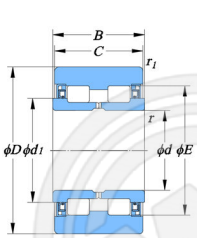




Principal dimensions(mm)								Basic load ratings (kN)		Limiting speeds (r/min)		Designations
d	*D*	*B*	*C*	r_{min}	r_{1min}	*E*	*F*	C_r	C_{or}	Grease	Oil	
160	240	109	108	1.3×30°	0.6	222.6	-	806	1610	390	480	NNF5032-2LS1NRV
	240	109	108	1.3×30°	1.1	222.6	-	806	1610	390	480	NNF5032-2LS1NRV/YB2
	240	109	108	1.3×30°	0.6	222.6	-	806	1610	390	480	NNF5032-2LS1NRV/DIN
	240	109	108	1.3×30°	0.6	222.9	-	806	1610	390	480	NNF5032-2RSNRV-DIN
	240	109	108	1.3×30°	1.1	222.6	-	806	1610	390	480	NNF5032-2ZNRV/YB2
	290	108	108	1.5	1.1	-	191	977	1910	340	420	NNJ3232X2V-2RS
	290	108	108	2	1.1	-	191	977	1910	340	420	NNUP3232X2V-2RS
	290	150	149	2×30°	0.6	249.5	-	1340	2420	340	420	NNF5032X3-2LSNRV
	290	108	108	3	2	-	183.4	860	1560	340	420	NNUP632V-2RS/HCO
161	290	108	108	1.5	1.1	-	191	977	1910	340	420	NNJ32/161X2V-2RS
	290	108	108	2	1.1	-	191	977	1910	340	420	NNUP32/161X2V-2RS
	290	108	108	3	2	-	183.4	860	1560	340	420	NNUP6/161V-2RS/HCO
170	230	80	79	1.8×30°	0.6	216.2	-	521	1170	390	480	NNF5934-2LSNRV
	260	122	122	2×30°	0.6	239	-	1010	2000	360	440	NNF5034-2RSV
	260	122	121	2×30°	0.6	239	-	1010	2000	360	440	NNF5034-2RSNV
	260	122	121	2×30°	0.6	239	-	1010	2000	360	440	NNF5034-2LSNRV
	260	122	121	2×30°	0.6	239	-	1010	2000	360	440	NNF5034-2LSNRV-1
180	280	136	135	1.3×30°	2.1	254	-	1100	2270	330	410	NNF5036-2LSV
	280	136	135	1.3×30°	2.1	254	-	1100	2270	330	410	NNF5036-2LS1V
	280	136	135	1.3×30°	0.6	254	-	1100	2270	330	410	NNF5036-2LS1NRV
	280	136	135	1.3×30°	0.6	254	-	1100	2270	330	410	NNF5036-2LS1NRV/DIN
	280	136	135	2×30°	0.6	254	-	1100	2270	330	410	NNF5036-2LSNRV
	280	136	135	2×30°	0.6	254	-	1100	2270	330	410	NNF5036-2ZNRV
	280	136	135	2×30°	0.6	259.3	-	1140	2280	330	410	NNF5036-2RSNRV
	280	136	135	2×30°	0.6	259.3	-	1140	2280	330	410	NNF5036-2RSNRV-DIN
190	290	136	135	2×30°	0.6	262.5	-	1120	2350	310	390	NNF5038-2LSNRV
	290	136	135	2×30°	0.6	267.5	-	1110	2360	310	390	NNF5038-2RSNRV-DIN
	290	136	135	1.3×30°	0.6	262.5	-	1120	2350	310	390	NNF5038-2ZNRV
	290	136	135	2×30°	0.6	262.5	-	1120	2350	310	390	NNF5038-2ZNRV/YB2
200	270	80	79	1.8×30°	0.6	251	-	587	1380	320	400	NNF4940X1-2LSNRV
	310	150	149	2×30°	0.6	284	-	1400	3060	290	360	NNF5040-2LSNRV
	310	150	149	2×30°	0.6	284.3	-	1400	3060	290	360	NNF5040-2RSNRV-DIN
	310	150	149	2×30°	0.6	284	-	1400	3060	290	360	NNF5040-2ZNRV
220	340	160	159	2×30°	1	307.5	-	1620	3500	260	320	NNF5044-2LSNRV
240	360	160	159	2×30°	1	328	-	1690	3680	230	290	NNF5048-2LSNRV
	360	160	159	2×30°	1	328	-	1690	3680	230	290	NNF5048-2LSNRV-DIN

Other dimensions (mm)				Abutment and fillet dimensions (mm)						Snap ring dimensions (mm)				Mass (kg)
d_1	D_1	*b*	*k*	d_{amin}	d_{amax}	D_{amax}	D_{amin}	r_{amax}	r_{bmax}	B_1	B_2	b_1	C_a	(approx.)
191	-	-	-	167	188.2	235	222.6	1.1	0.6	96	6.0	6.0	86	18.8
191	-	-	-	167	188.2	233	222.6	1.1	1.1	95	6.5	4.0	89	18.4
191	-	-	-	167	188.2	235	222.6	1.1	0.6	95.2	6.4	5.2	85.2	18.8
191.5	-	-	-	167	189.2	235	222.9	1.1	0.6	95.2	6.4	5.2	85	18.0
191	-	-	-	167	188.2	233	222.6	1.1	1.1	95	6.5	3.2	89	17.7
200	228	-	7	169	199	283	229.6	1.5	1.1	-	-	-	-	34.1
200	228	-	7	170	199	283	229.6	2	1.1	-	-	-	-	34.1
203	-	15	6	170	201	285	249.5	2	0.6	130.2	9.4	6.3	118	45.0
189.8	227.4	-	-	174	187.8	280	222	2.5	2	-	-	-	-	34.2
200	228	-	7	170	199	283	229.6	1.5	1.1	-	-	-	-	34.1
200	228	-	7	171	199	283	228	2	1.1	-	-	-	-	33.9
189.8	227.4	-	-	175	187.8	280	228	2.5	2	-	-	-	-	33.9
192.2	-	7.2	3.5	179.2	191.2	225	216.2	1.5	0.6	71.2	3.9	5.2	65	9.42
201	-	-	-	180	198.7	255	239	2	0.6	-	-	-	-	23.5
201	-	12.2	6	180	198.7	255	239	2	0.6	107.2	6.9	5.2	103	23.5
203	-	12	6	180	202	255	239	2	0.6	107.2	6.9	5.2	99	23.5
203	-	-	-	180	202	255	239	2	0.6	107.2	6.9	5.2	99	24.5
218	-	-	-	187	217	268	254	1.1	2	-	-	-	-	32.5
218	-	-	-	187	217	268	254	1.1	2	-	-	-	-	32.5
218	-	-	-	187	215.2	275	254	1.1	0.6	118.2	8.4	5.2	110	33.3
218	-	-	-	187	215.2	275	254	1.1	0.6	118.2	8.4	5.2	108.2	33.5
218	-	11.3	6	190	217	275	254	2	0.6	118.2	8.4	5.2	110	32.7
218	-	-	-	190	215.2	275	254	2	0.6	118.2	8.4	4.2	110	33.0
218	-	-	-	190	215.7	275	259.3	2	0.6	118.2	8.4	5.1	110	31.0
218	-	-	-	190	215.7	275	259.3	2	0.6	118.2	8.4	5.1	108	31.3
226.5	-	11.3	6	200	225.5	285	262.5	2	0.6	118.2	8.4	5.2	110	32.9
226.5	-	-	-	200	224.2	285	267.5	2	0.6	118.2	8.4	5.2	108	32.5
226.5	-	-	-	197	223.7	285	262.5	1.1	0.6	118	8.5	4.2	110	33.7
226.5	-	11.3	6	200	223.7	285	262.5	2	0.6	120	7.5	5.8	110	34.0
225	-	7.2	3.5	209.2	224	265	251	1.5	0.6	73.2	2.9	5.2	65	13.6
243.5	-	9	6	210	241.5	305	284	2	0.6	128.2	10.4	6.3	116	43.7
242.5	-	-	-	210	240.2	305	284.3	2	0.6	128.2	10.4	6.3	116	43.2
243.5	-	8	6	210	240.7	305	284	2	0.6	128.2	10.4	6.3	116	44.2
262.5	-	-	-	230	260.5	334	307.5	2	1	138.2	10.4	6.3	126	54.8
280	-	-	-	250	277.2	354	328	2	1	142.2	8.4	6.3	130	57.7
280	-	-	-	250	279	354	328	2	1	138.2	10.4	6.3	126	57.7

d 240～360mm



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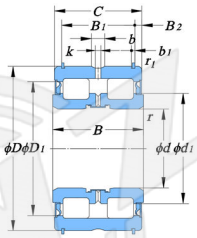

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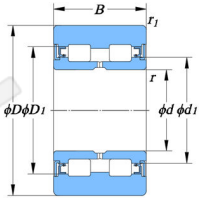

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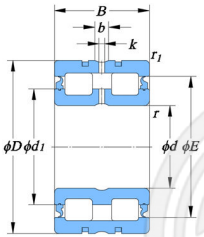

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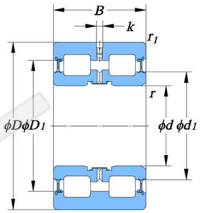

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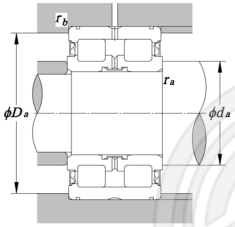
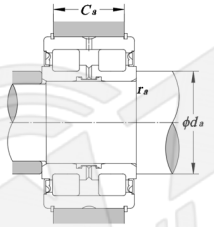


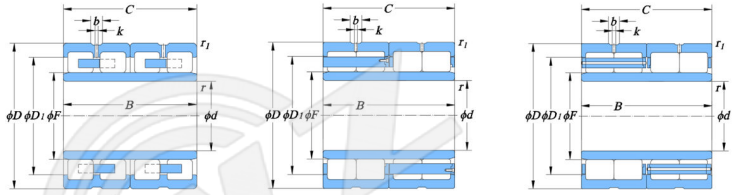


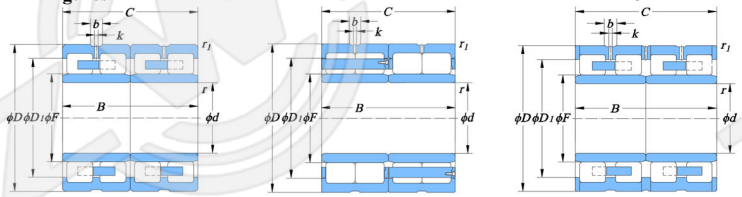
Principal dimensions(mm)								Basic load ratings (kN)		Limiting speeds (r/min)		Designations
d	*D*	*B*	*C*	r_{min}	r_{1min}	*E*	*F*	C_r	C_{or}	Grease	Oil	
240	360	160	159	2×30°	1	328	-	1690	3680	230	290	**NNF5048-2LS1NRV**
	360	160	159	2×30°	1	328	-	1690	3680	230	290	**NNF5048-2LS1NRV/DIN**
	360	160	159	2×30°	1	328	-	1690	3680	230	290	**NNF5048-2RSNRV-DIN**
	360	160	159	2×30°	1	328	-	1690	3680	230	290	**NNF5048-2RSNRV-DIN1**
	360	160	159	2×30°	1	328	-	1690	3680	230	290	**NNF5048-2ZNRV**
260	399.7	190	189	5×30°	1.1	370	-	2200	4720	210	260	**NNF5052-2RSNRV-DIN**
	400	190	189	5×30°	1.1	370	-	2200	4720	210	260	**NNF5052-2RSNRV**
	400	190	189	3×30°	1.1	361	-	2130	4660	210	260	**NNF5052-2LSNRV**
	400	190	189	3×30°	1.1	361	-	2130	4660	210	260	**NNF5052-2LS1NRV**
	400	190	189	3×30°	1.1	361	-	2130	4660	210	260	**NNF5052-2ZNRV**
280	420	190	189	2×30°	1.5	382.5	-	2250	4900	190	240	**NNF5056-2LSNRV**
	420	190	189	2×30°	1.5	382.5	-	2250	4900	190	240	**NNF5056-2LS1NRV**
	420	190	189	2×30°	1.5	382.5	-	2250	4900	190	240	**NNF5056-2ZNRV/YB2**
	420	215	214	3×30°	1.1	326	-	2720	6270	190	240	**NNF5056X2-2LSNRV**
300	460	218	216	3×30°	1.1	423.3	-	3010	6870	170	210	**NNF5060-2RSNRV-DIN**
	460	205	200	3×30°	1.5	415	-	2430	5370	170	210	**NNF5060X2-2LSNRV**
320	480	218	216	3×30°	1.1	436.5	-	3180	7420	160	200	**NNF5064-2LSNRV**
360	540	243	241	3.5×30°	1.5	492.8	-	3760	8410	140	170	**NNF5072-2RSNRV-DIN**

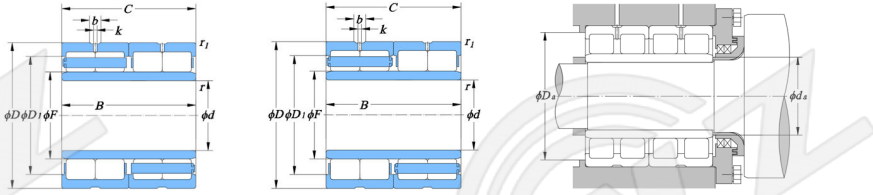
Other dimensions (mm)				Abutment and fillet dimensions (mm)						Snap ring dimensions (mm)				Mass (kg)
d_1	D_1	*b*	*k*	d_{amin}	d_{amax}	D_{amax}	D_{amin}	r_{amax}	r_{bmax}	B_1	B_2	b_1	C_a	(approx.)
279.5	-	-	-	250	276.7	354	328	2	1	142.6	8.2	6.3	130	60.7
279.5	-	-	-	250	276.7	354	328	2	1	138.2	10.4	6.3	126	60.7
275.5	-	-	-	250	273.2	354	328	2	1	138.2	10.4	6.2	126	59.0
280	-	-	-	250	277.2	354	328	2	1	138.2	10.4	6.2	126	58.2
280	-	-	-	250	277.2	354	328	2	1	138.2	10.4	6.3	126	59
308.5	-	-	-	282	307	392.7	370	4	1.1	161.2	13.9	6.2	149	86.1
308.5	-	-	-	282	307	393	370	4	1.1	168.2	10.4	7.2	154	87.5
309	-	-	-	274	306.2	393	361	2.5	1.1	168	10.5	8.1	154	92.4
309	-	-	-	274	306.2	393	361	2.5	1.1	168	10.5	8.1	154	92.4
309	-	-	-	274	306.2	393	361	2.5	1.1	168	10.5	8.1	154	90.6
326	-	-	-	290	323.2	411	382.5	2	1.5	168.2	10.4	8.1	154	95.8
326	-	-	-	290	323.2	411	382.5	2	1.5	168.2	10.4	8.1	154	95.8
326	-	-	-	290	323.2	411	382.5	2	1.5	163	13	8.1	149	94.2
326	-	17	8	294	323.2	413	382.5	2.5	1.1	188.2	12.9	7.3	174	108
352.9	-	-	-	314	351.3	453	430.6	2.5	1.1	185.3	15.35	7.3	171	134
355.4	-	-	-	314	354.3	451	415	2.5	1.5	172	14	7.5	158	129
372.2	-	-	-	334	369.4	473	436.5	2.5	1.1	190.2	12.9	7.3	176.2	143
414.9	-	-	-	376	412.5	531	500.1	3	1.5	210.2	15.4	8.2	194	199

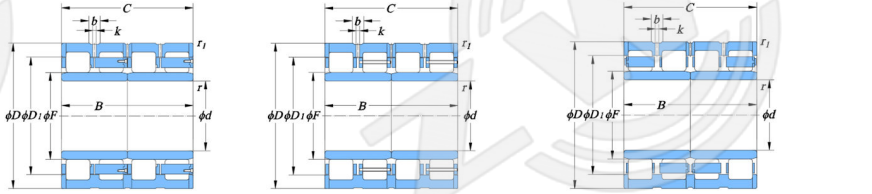
d 80～140mm

Figures[1)]









Principal dimensions(mm)							Basic load ratings(kN)	
d	*D*	*B*	*C*	*F*	r_{min}	r_{1min}	C_r	C_{or}
80	125	120	120	92	1.1	1.1	375	756
90	140	70	70	105	1.5	1.1	248	464
	140	70	70	105	1.5	1.1	248	464
	140	70	70	105	1.5	1.1	248	464
100	140	104	104	111	1.5	1.1	343	822
	140	104	104	111	1.5	1.1	343	822
	140	104	104	111	1.5	1.1	343	822
	140	104	104	111	1.5	1.1	343	822
	140	70	70	111	1.5	1.1	205	425
	140	70	70	111	1.5	1.1	205	425
	140	70	70	111	1.5	1.1	205	425
	140	104	104	111	1.5	1.1	343	822
	140	70	70	111	1.5	1.1	208	431
	150	106	106	113	1.5	1.1	403	834
	150	106	106	113	1.5	1.1	403	834
110	150	120	120	122	1.1	1.1	257	628
	170	120	120	127	2	2	490	999
	170	120	120	127	2	2	490	999
	170	120	120	127	2	2	490	999
120	165	90	90	132	1.5	1.5	381	813
	165	90	90	132	1.5	1.5	329	672
	180	105	105	135	2	2	420	796
	180	105	105	135	2	2	477	939
	180	105	105	135	2	2	430	820
130	200	104	104	419	2	2	413	1040
	200	125	125	149	2	2	583	1200
	200	125	125	149	2	2	583	1200
	200	125	125	149	2	2	583	1200
	200	125	125	149	2	2	583	1200
140	210	125	125	158	2	2	615	1200

Designations	Other dimensions(mm)			Abutment and fillet dimensions(mm)				Mass(kg) (approx.)
	D_1	b	k	d_{amin}	D_{amax}	r_{amax}[2)]	r_{bmax}[2)]	
FC1625120/P5	109	8	4	88	117	1.1	1.1	5.58
FC182870	123	6.5	4	98	132	1.5	1.1	3.78
FC182870A	122.6	6.5	4	98	132	1.5	1.1	3.78
FC182870S	123	6.5	4	98	132	1.5	1.1	3.78
FC2028104	125.4	8	4	108	132	1.5	1.1	4.99
FC2028104A	125.4	8	4	108	132	1.5	1.1	4.99
FC2028104F3/YA4	125.4	8	4	108	132	1.5	1.1	4.96
FC2028104S	125.4	8	4	108	132	1.5	1.1	4.99
FC202870/YA3	125.4	-	-	108	132	1.5	1.1	3.10
FC202870A/YA3	125.4	-	-	108	132	1.5	1.1	3.62
FC202870S/YA3	125.4	-	-	108	132	1.5	1.1	3.10
FCD2028104	125.4	8	4	108	132	1.5	1.1	4.99
NNQD6920X2/YA3	125.9	-	-	108	132	1.5	1.1	3.08
FC2030106	132	8	4	108	142	1.5	1.1	6.67
FCD2030106/C9YB2	132	8	4	108	142	1.5	1.1	6.63
FC2230120ZW/P64	134.8	8	4	115	144	1.1	1.1	6.80
FC2234120	149	6.5	4	119	161	2	2	10.1
FC2234120A	149	6.5	4	119	161	2	2	10.1
FC2234120S	149	6.5	4	119	161	2	2	10.1
FC243390/YA34	151.2	-	-	127	158	1.5	1.5	5.59
FC243390/YAD	151.2	5	3	127	158	1.5	1.5	5.41
FC2436105	160	6.5	4	129	171	2	2	9.13
FC2436105A	159	6.5	4	129	171	2	2	9.13
FC2436105S	160	6.5	4	129	171	2	2	9.13
FC2640104/YA34	174.6	8	4	139	191	2	2	12.1
FC2640125	174	6.5	4	139	191	2	2	14.6
FC2640125/HC	174	6.5	4	139	191	2	2	14.7
FC2640125A	174	6.5	4	139	191	2	2	14.6
FC2640125S	174	6.5	4	139	191	2	2	14.6
FC2842125	188	9.5	5	149	201	2	2	14.7

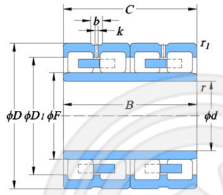
[**Note**] 1)p…Cage type

1P	2P	3P	4P	5P

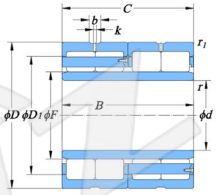
2)r_a: shaft fillet size corresponding to the inner ring chamfer size r; r_b: shell fillet size corresponding to the outer ring size r_1

d 140～160mm

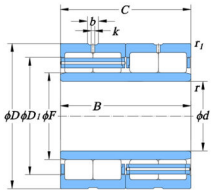
Figures[1] FC-1P



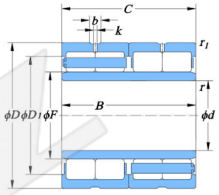
FC-2P



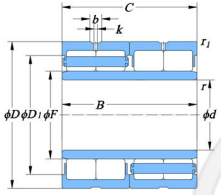
FC-3P

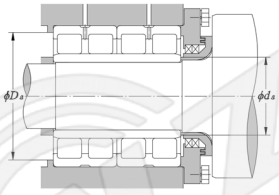


FC-4P

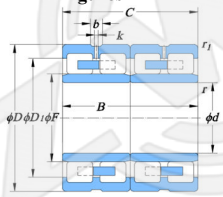


FC-5P

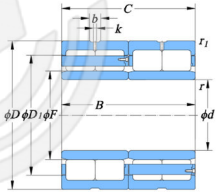




FCD-1P



FCD1-P



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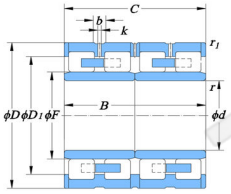

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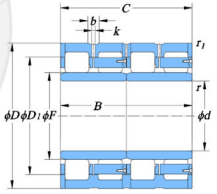

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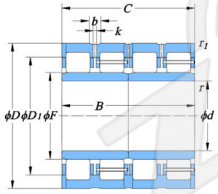

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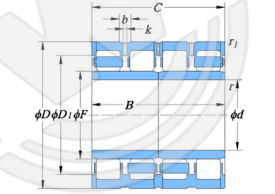


Principal dimensions(mm)							Basic load ratings(kN)	
d	*D*	*B*	*C*	*F*	r_{min}	r_{1min}	C_r	C_{or}
140	210	125	125	158	2	2	668	1340
	210	125	125	158	2	2	668	1340
	210	125	125	158	2	2	615	1200
	210	155	155	158	2	2	767	1660
	210	155	155	166	2	2	688	1600
	210	155	155	166	2	2	688	1600
145	210	155	155	166	1.1	1.1	752	1610
	210	155	155	166	2	2	688	1600
	210	155	155	166	2	2	735	1740
	210	155	155	166	2	2	688	1600
	225	156	156	169	2	2	814	1760
	225	156	156	169	2	2	814	1760
150	210	120	120	168.4	4	2	545	1320
	210	120	120	166	2	2	572	1320
	220	150	150	170	2	2	793	1850
	225	120	120	169	2	2	700	1400
	225	120	120	169	2	2	700	1400
	225	120	120	169	2	2	700	1400
	225	120	120	169	2	2	700	1400
	225	120	120	169	2	2	786	1560
	225	150	150	169	2	2	870	1850
	225	120	120	169	2	2	700	1400
	230	156	156	174	2	2	835	1840
	230	156	156	174	2	2	887	1990
	230	156	156	174	2	2	887	1990
	230	156	156	174	2	2	887	1990
160	230	130	130	180	1.5	1.5	684	1380
	230	130	130	180	1.5	1.5	773	1620
	230	130	130	180	1.5	1.5	630	1470
	230	130	130	180	1.5	1.5	630	1470

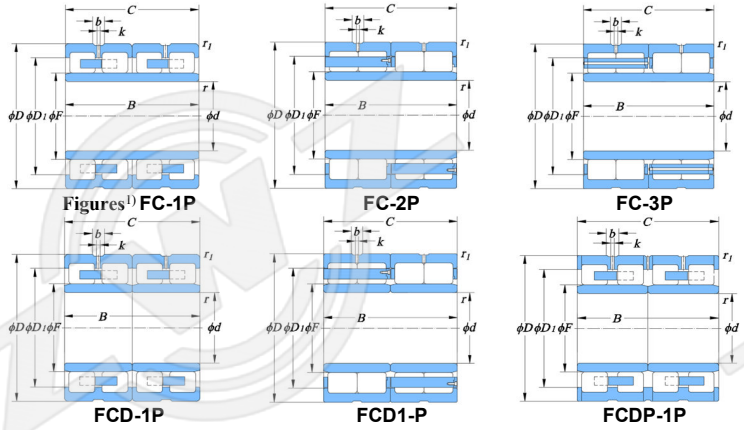
Designations	Other dimensions(mm)			Abutment and fillet dimensions(mm)				Mass(kg) (approx.)
	D_1	b	k	d_{amin}	D_{amax}	r_{amax}[2]	r_{bmax}[2]	
FC2842125A	186.8	9.5	5	149	201	2	2	14.7
FC2842125AF3	186.8	9.5	5	149	201	2	2	14.6
FC2842125S	188	9.5	5	149	201	2	2	14.7
FC2842155/P64	192	9.5	5	149	201	2	2	19.0
FC2842155K/C9YA3	190.9	-	-	149	201	2	2	18.1
FC2842155SK/C9YA3	190.9	-	-	149	201	2	2	18.1
FC2942155	190.9	-	-	151	204	1.1	1.1	18.3
FC2942155/YA3	190.9	-	-	154	201	2	2	18.3
FC2942155A/YA3	190	-	-	154	201	2	2	18.0
FC2942155S/YA3	190.9	-	-	154	201	2	2	18.3
FC2945156	197.8	9.5	5	154	216	2	2	23.6
FC2945156/YA3	197.8	9.5	5	154	216	2	2	23.6
FC3042120/P5YAD	189.2	-	4	161	199	3	2	13.2
FC3042120/YA3	188.5	R8	4	159	201	2	2	12.9
FC3044150/YAD	195.6	9.5	5	159	211	2	2	19.7
FC3045120	200	9	4	159	216	2	2	16.7
FC3045120A	199.4	9	4	159	216	2	2	16.7
FC3045120A/YA3	199.4	9	4	159	216	2	2	16.7
FC3045120S	200	9	4	159	216	2	2	16.7
FC3045120ZW/C9	202.4	9	4	159	216	2	2	17.9
FC3045150/HCYA34	199.4	9.5	4	159	216	2	2	20.9
FCD3045120	199.4	9	4	159	216	2	2	16.6
FC3046156	204	9.5	5	159	221	2	2	23.6
FC3046156/YA4	202.8	9.5	5	159	221	2	2	23.6
FC3046156A	202.8	9.5	5	159	221	2	2	23.6
FC3046156A/C4YA3	202.8	9.5	5	159	221	2	2	23.6
FC3246130	210	-	-	168	222	1.5	1.5	16.9
FC3246130/HCYA3	210	-	-	168	222	1.5	1.5	17.3
FC3246130/YA5	204	9	4	168	222	1.5	1.5	18.1
FC3246130/YAD	204	9	4	168	222	1.5	1.5	18.1

[**Note**] 1)p…Cage type

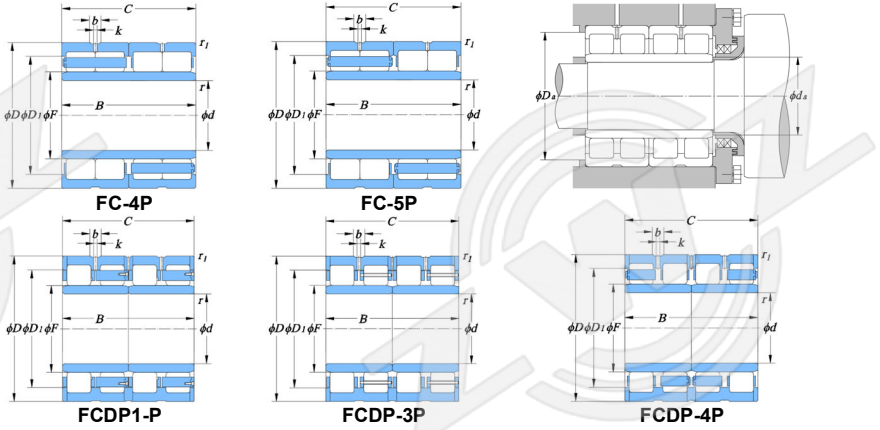
1P	2P	3P	4P	5P

r_a: shaft fillet size corresponding to the inner ring chamfer size r; r_b: shell fillet size corresponding to the outer ring size r_1

d 160～165.1mm



Figures[1]



Principal dimensions(mm)							Basic load ratings(kN)	
d	*D*	*B*	*C*	*F*	r_{min}	r_{1min}	C_r	C_{or}
160	230	130	130	180	1.5	1.5	773	1620
	230	130	130	180	1.5	1.5	684	1380
	230	168	168	179	2	2	906	2230
	230	168	168	179	2.1	2.1	906	2230
	230	168	168	180	2.1	2.1	905	2230
	230	168	168	180	2.1	2.1	905	2230
	230	168	168	179	2.1	2.1	906	2230
	230	168	168	179	2.1	2.1	906	2230
	230	168	168	180	2.1	2.1	905	2230
	230	168	168	180	2.1	2.1	905	2230
	230	168	168	182	1.1	2	875	2250
	230	168	168	180	2.1	2.1	905	2230
	240	124	124	183	2.1	2.1	758	1530
	240	124	124	183	2.1	2.1	758	1530
	240	124	124	183	2.1	2.1	758	1530
	240	124	124	183	2.1	2.1	758	1530
	240	124	124	183	2.1	2.1	758	1530
	240	124	124	183	2.1	2.1	758	1530
	240	124	124	183	2.1	2.1	758	1530
	240	124	124	183	2.1	2.1	758	1530
	240	124	124	183	2.1	2.1	758	1530
	240	168	168	183	2.1	2.1	1060	2360
	240	168	168	183	2.1	2.1	1060	2360
	240	168	168	183	2.1	2.1	1060	2360
	240	168	168	183	2.1	2.1	1060	2360
	240	168	168	183	2.1	2.1	1060	2360
	240	168	168	183	2.1	2.1	731	1640
	240	168	168	183	2.1	2.1	1120	2520
165.1	225.425	168.275	168.275	181	2	2	876	2250
	225.425	168.275	168.275	181	1.5	1.5	835	2110

Designations	Other dimensions(mm)			Abutment and fillet dimensions(mm)				Mass(kg)
	D_1	b	k	d_{amin}	D_{amax}	r_{amax}[2]	r_{bmax}[2]	(approx.)
FC3246130A/YA3	210	-	-	168	222	1.5	1.5	17.3
FC3246130S	210	-	-	168	222	1.5	1.5	16.9
FC3246168	204	9.5	4	169	221	2	2	22.3
FC3246168/C9YA34	204	8.5	4	170	220	2	2	22.0
FC3246168/W33AYA3	205.6	9.5	4	170	220	2	2	22.3
FC3246168/YA3	205.6	-	-	170	220	2	2	22.1
FC3246168/YA34	204	-	-	170	220	2	2	23.4
FC3246168/YAD1	204	8.5	4	170	220	2	2	22.0
FC3246168A/YA3	205.6	-	-	170	220	2	2	22.3
FC3246168A/YA31	205.6	-	-	170	220	2	2	22.3
FC3246168F3/C9YAD	207	-	-	167	221	1.1	2	23.5
FC3246168S/YA3	205.6	-	-	170	220	2	2	22.1
FC3248124	216	9	4	170	230	2	2	20.3
FC3248124/C9	215	9	4	170	230	2	2	20.3
FC3248124/YA31	216	9	4	170	230	2	2	20.2
FC3248124A	215	9	4	170	230	2	2	20.3
FC3248124A/YA3	215	9	4	170	230	2	2	20.3
FC3248124A/YA31	215	9	4	170	230	2	2	20.2
FC3248124AF3	215	9	4	170	230	2	2	20.1
FC3248124S	216	9	4	170	230	2	2	20.3
FC3248124S/YA31	216	9	4	170	230	2	2	20.2
FC3248168	216	10	5	170	230	2	2	26.4
FC3248168/YA3	215	10	5	170	230	2	2	26.4
FC3248168/YA4	215	10	5	170	230	2	2	26.4
FC3248168A	215	10	5	170	230	2	2	26.4
FC3248168S	216	10	5	170	230	2	2	26.4
FC3248168ZW/YAD	210	9.5	5	170	230	2	2	28.8
NNQD6032X2/C4	215	-	-	170	230	2	2	28.1
FC3345168X4F3/C4YA34	205	9.5	5	173	216	2	2	19.5
FCD3345168X4/YA3	205	-	-	173	217	1.5	1.5	19.7

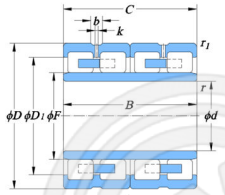
[**Note**] 1)p…Cage type

1P	2P	3P	4P	5P

2) r_a: shaft fillet size corresponding to the inner ring chamfer size r; r_b: shell fillet size corresponding to the outer ring size r_1

d 170～180mm

Figures[1)] FC-1P



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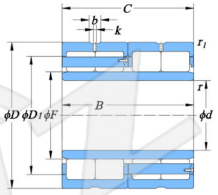

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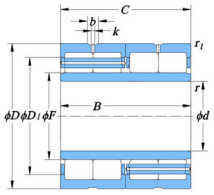

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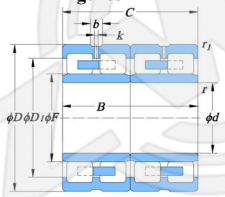

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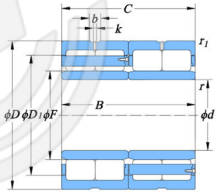

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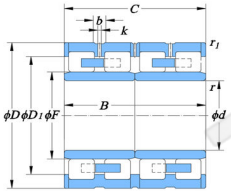
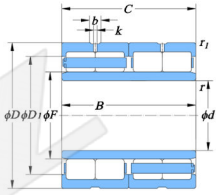


FC-4P



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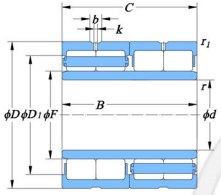

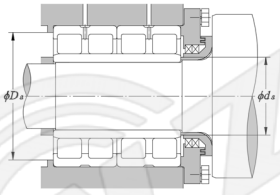

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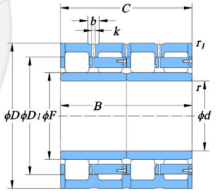

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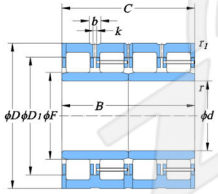

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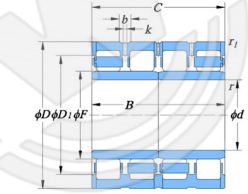


Principal dimensions(mm)							Basic load ratings(kN)	
d	*D*	*B*	*C*	*F*	r_{min}	r_{1min}	C_r	C_{or}
170	230	152	152	186	2	2	777	1930
	230	160	160	185.5	2	2	946	2390
	230	160	160	185.5	2	2	946	2390
	230	180	180	186	2	2	1010	2720
	230	180	180	186	2	2	1010	2720
	230	160	160	185.5	2	2	946	2390
	230	160	160	185.5	2	2	946	2390
	230	160	160	185.5	2	2	946	2390
	240	130	130	190	2.1	2.1	731	1730
	240	130	130	190	2.1	2.1	731	1730
	240	170	170	189	2.1	2.1	921	2320
	240	170	170	189	2.1	2.1	921	2320
	240	170	170	189	2.1	2.1	921	2320
	250	170	170	192	2.1	2.1	1110	2550
	250	170	170	192	2.1	2.1	1110	2550
	250	170	170	192	2.1	2.1	1110	2550
	250	170	170	192	2.1	2.1	1110	2550
	250	170	170	192	2.1	2.1	1110	2550
	250	170	170	192	2.1	2.1	1110	2550
	260	120	120	195	2.1	2.1	841	1790
	260	120	120	195	2.1	2.1	794	1660
	260	120	120	195	2.1	2.1	794	1660
	260	150	150	195	2.1	2.1	961	2120
	260	150	150	195	2.1	2.1	961	2120
	260	150	150	195	2.1	2.1	961	2120
	260	150	150	195	2.1	2.1	1020	2290
	260	225	225	196	2.1	2.1	1400	3330
180	250	156	156	200	2.1	2.1	797	1960
	250	156	156	200	2.1	2.1	797	1960
	250	156	156	198	2	2	945	2240

Designations	Other dimensions(mm)			Abutment and fillet dimensions(mm)				Mass(kg) (approx.)
	D_1	b	k	d_{amin}	D_{amax}	r_{amax}[2)]	r_{bmax}[2)]	
FC3446152/P5	210	7.5	3	179	221	2	2	17.9
FC3446160/YA34	211.1	7.5	3	179	221	2	2	20.1
FC3446160/YA34/W281	211.1	7.5	3	179	221	2	2	20.1
FC3446180/YA4	210	8	3	179	221	2	2	21.7
FC3446180/YAD	210	8	3	179	221	2	2	21.7
FCD3446160A	211.1	7.5	3	179	221	2	2	20.0
FCD3446160AF3	211.1	7.5	3	179	221	2	2	18.6
FCD3446160S	211.5	7.5	3	179	221	2	2	20.0
FC3448130	216	9.5	3	180	230	2	2	18.7
FC3448130/YAD	216	9.5	3	180	230	2	2	18.7
FC3448170/YA14	215	-	-	180	230	2	2	24.7
FC3448170/YA3	215	R9	6	180	230	2	2	24.7
FC3448170/YAD	215	R9	6	180	230	2	2	24.7
FC3450170	225	12	6	180	240	2	2	28.5
FC3450170/YA3	224	12	6	180	240	2	2	28.8
FC3450170A	224	12	6	180	240	2	2	28.8
FC3450170AF3	224	12	6	180	240	2	2	28.5
FC3450170Q1/HG2YA4	225	9.5	5	180	240	2	2	28.9
FC3450170S	225	12	6	180	240	2	2	28.5
FC3452120	228	9.5	5	180	250	2	2	24.6
FC3452120A	227	9.5	5	180	250	2	2	24.6
FC3452120S	228	9.5	5	180	250	2	2	24.6
FC3452150	227	9.5	5	180	250	2	2	29.7
FC3452150/HC	227	9.5	5	180	250	2	2	29.7
FC3452150F3/YA3	227	9.5	5	180	250	2	2	29.5
FC3452150ZW/YAD	227	9.5	5	180	250	2	2	30.9
FC3452225/P6YA3	230	-	-	180	250	2	2	44.2
FC3650156	226	9.5	6.5	190	248	2	2	22.7
FC3650156/C4YA4	226	9.5	6.5	190	248	2	2	22.7
FC3650156/YA3	226.8	-	-	189	241	2	2	23.7

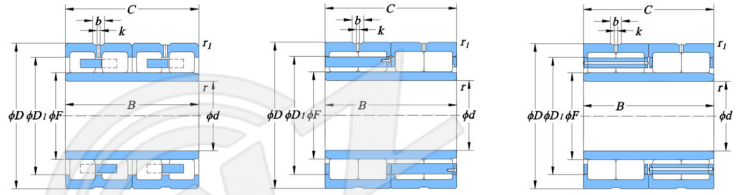
[**Note**] 1)p…Cage type

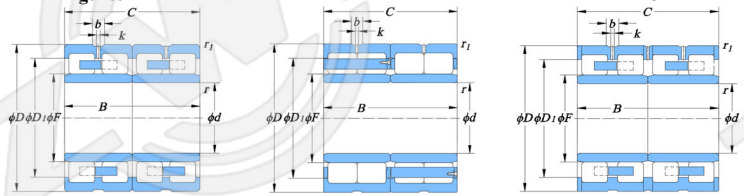
1P	2P	3P	4P	5P

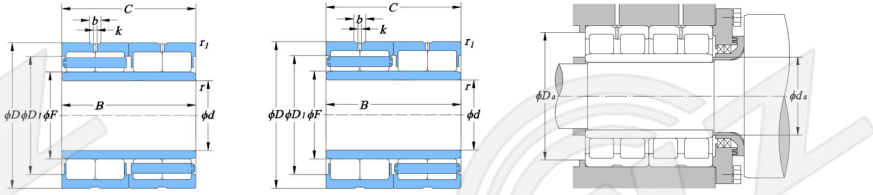
2) r_a: shaft fillet size corresponding to the inner ring chamfer size r; r_b: shell fillet size corresponding to the outer ring size r_1

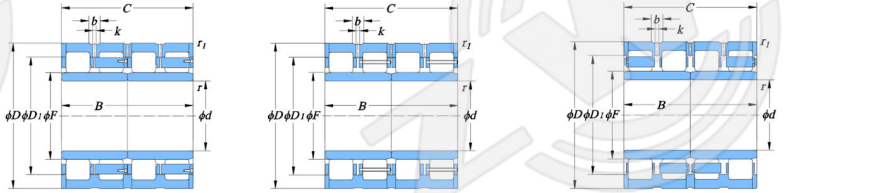
d 180～190mm

Figures[1)]









Principal dimensions(mm)							Basic load ratings (kN)		Designations	Other dimensions(mm)			Abutment and fillet dimensions(mm)				Mass(kg) (approx.)
d	*D*	*B*	*C*	*F*	r_{min}	r_{1min}	C_r	C_{or}		D_1	b	k	d_{amin}	D_{amax}	r_{amax}[2)]	r_{bmax}[2)]	
180	250	156	156	200	2	2	902	2200	FC3650156/YA34	226.8	-	-	189	241	2	2	23.9
	250	133	133	234	2	2	739	1720	NNQ6936X2V/YA7	200	12	6	189	241	2	2	18.2
	260	124	124	202	2.1	2.1	812	1730	FC3652124	234.8	9.5	5	190	250	2	2	21.7
	260	124	124	202	2.1	2.1	812	1730	FC3652124A	234	9.5	5	190	250	2	2	21.7
	260	124	124	202	2.1	2.1	812	1730	FC3652124S	234.8	9.5	5	190	250	2	2	21.7
	260	168	168	202	2.1	2.1	1060	2540	FC3652168/P64YAD5	232.4	12	5	190	250	2	2	30.0
	260	168	168	202	2.1	2.1	1060	2540	FC3652168/YA34	232.4	12	5	190	250	2	2	30.0
	260	168	168	202	2.1	2.1	839	2100	FC3652168/YAD3	227.6	12	5	190	250	2	2	30.9
	260	168	168	202	2.1	2.1	1060	2540	FC3652168A/YA3	232.4	12	5	190	250	2	2	30.0
	260	168	168	202	2.1	2.1	1060	2540	FC3652168F3/YA34	232.4	12	5	190	250	2	2	29.6
	260	168	168	202	2.1	2.1	999	2320	FC3652168ZW/P6YAD	233	12	6	190	250	2	2	31.0
	260	168	168	202	2.1	2.1	1120	2700	FC3652168ZW/YA4	232.4	-	-	190	250	2	2	30.6
	260	180	180	202	2.1	2.1	1260	3030	FC3652180	234.8	12	6	190	250	2	2	31.5
	260	180	180	202	2.1	2.1	1260	3030	FC3652180F3	234.8	12	6	190	250	2	2	31.3
	260	180	180	202	2.1	2.1	1260	3030	FC3652180S	234.8	12	6	190	250	2	2	31.5
	280	180	180	207	2.1	2.1	1320	2880	FC3656180	246	9.5	5	190	270	2	2	42.3
	280	180	180	207	2.1	2.1	1320	2880	FC3656180F3	246	9.5	5	190	270	2	2	42.0
190	260	168	168	212	2.1	2.1	989	2640	FC3852168/C9YAD1	237.6	-	-	200	250	2	2	26.2
	260	168	168	212	2.1	2.1	989	2640	FC3852168/HCYA34	237.6	8	4	200	250	2	2	23.1
	260	168	168	208	2.1	2.1	1020	2610	FC3852168/HG2YAB	235	9.5	5	200	250	2	2	26.8
	260	168	168	212	2.1	2.1	989	2640	FC3852168/YA3	237.6	-	-	200	250	2	2	23.1
	260	168	168	212	2.1	2.1	989	2640	FC3852168/YA34	237.6	8	4	200	250	2	2	26.2
	260	168	168	208	2.1	2.1	1020	2610	FC3852168/YA41	235	9.5	5	200	250	2	2	26.8
	260	168	168	208	2.1	2.1	1020	2610	FC3852168/YAB	235	9.5	5	200	250	2	2	26.8
	260	168	168	208	2.1	2.1	1020	2610	FC3852168/YAB1	235	9.5	5	200	250	2	2	26.8
	260	168	168	212	2.1	2.1	873	2610	FC3852168/YAD	232.8	9.5	5	200	250	2	2	27.8
	260	168	168	212	2.1	2.1	989	2640	FC3852168/YAD1	237.6	-	-	200	250	2	2	26.2
	260	168	168	212	2.1	2.1	989	2640	FC3852168/YAD2	237.6	8	4	200	250	2	2	26.2
	260	168	168	212	2.1	2.1	989	2640	FC3852168A	237.6	9.5	5	200	250	2	2	26.2
	260	168	168	212	2.1	2.1	989	2640	FC3852168A/YDJS	237.6	9.5	5	200	250	2	2	26.2

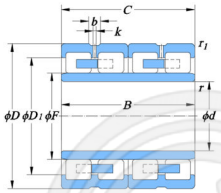
[**Note**] 1)p…Cage type

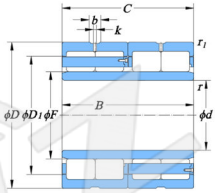
1P	2P	3P	4P	5P

2) r_a: shaft fillet size corresponding to the inner ring chamfer size r; r_b: shell fillet size corresponding to the outer ring size r_1

d 190～200mm

Figures[1)]


FC-1P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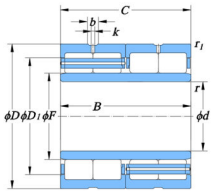
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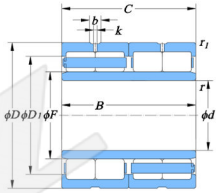
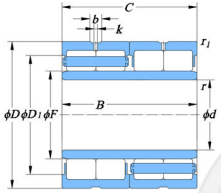
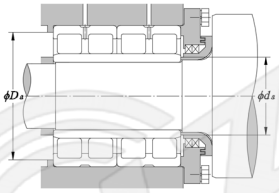
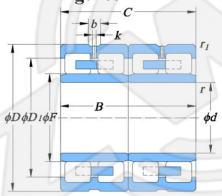
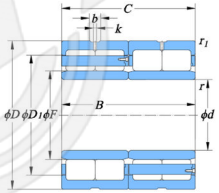
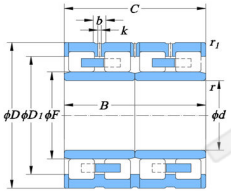

FC-4P

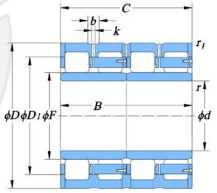

FC-5P




FCD-1P


FCD1-P


FCDP-1P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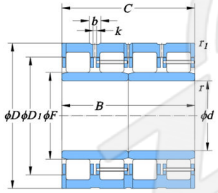
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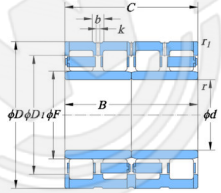

FCDP-4P

Principal dimensions(mm)							Basic load ratings(kN)	
d	*D*	*B*	*C*	*F*	r_{min}	r_{1min}	C_r	C_{or}
190	260	168	168	212	2.1	2.1	989	2640
	260	168	168	212	2.1	2.1	808	2030
	270	168	168	212	2.1	2.1	1000	2290
	270	168	168	212	2.1	2.1	1000	2290
	270	168	168	212	2.1	2.1	1130	2670
	270	168	168	212	2.1	2.1	1130	2670
	270	168	168	212	2.1	2.1	1130	2670
	270	168	168	212	2.1	2.1	1130	2670
	270	168	168	212	2.1	2.1	1000	2290
	270	168	168	212	2.1	2.1	1000	2290
	270	168	168	212	2.1	2.1	1000	2290
	270	170	170	212	2.1	2.1	1000	2290
	270	170	170	212	2.1	2.1	1130	2670
	270	170	170	212	2.1	2.1	1000	2290
	270	200	200	212	2.1	2.1	1300	3220
	270	200	200	212	2.1	2.1	1340	3340
	270	200	200	212	2.1	2.1	1240	3010
	270	200	200	212	2.1	2.1	1330	3320
	270	200	200	212	2.1	2.1	1240	3010
	270	200	200	212	2.1	2.1	1300	3220
	270	168	168	212	2.1	2.1	1130	2670
	270	200	200	212	2.1	2.1	1350	3380
	305	150	150	226	3	3	1130	2420
199.86	280	170	170	222	2.1	2.1	1180	2860
200	270	170	170	222	2.1	2.1	1000	2720
	270	170	170	222	2.1	2.1	1000	2720
	270	170	170	222	2.1	2.1	917	2670
	270	170	170	222	2.1	2.1	829	2340
	270	170	170	222	2.1	2.1	1000	2720
	270	170	170	222	2.1	2.1	1000	2720

[**Note**] 1)p…**Cage type**

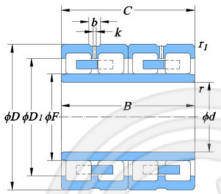
1P	2P	3P	4P	5P

Designations	Other dimensions (mm)			Abutment and fillet dimensions (mm)				Mass(kg) (approx.)
	D_1	b	k	d_{amin}	D_{amax}	r_{amax} [2)]	r_{bmax} [2)]	
FC3852168S	238.6	9.5	5	200	250	2	2	22.6
FCDP3852168F3/YA34/W283	237.6	8	4	200	250	2	2	27.0
FC3854168	245.2	9.5	5	200	260	2	2	30.2
FC3854168/YA3	245.2	9.5	5	200	260	2	2	29.9
FC3854168A	244	9.5	5	200	260	2	2	31.9
FC3854168A/YA3	244	9.5	5	200	260	2	2	31.0
FC3854168AF3/YA3	244	9.5	5	200	260	2	2	30.4
FC3854168AQ1/HG2C9YA4	244	9.5	5	200	260	2	2	30.8
FC3854168Q1/HG2C9YA4	245.2	9.5	5	200	260	2	2	30.8
FC3854168S	245.2	9.5	5	200	260	2	2	30.2
FC3854168S/YA3	245.2	9.5	5	200	260	2	2	29.9
FC3854170/YA3	245.2	9.5	5	200	260	2	2	30.2
FC3854170A/YA3	244	9.5	5	200	260	2	2	31.8
FC3854170S/YA3	245.2	9.5	5	200	260	2	2	30.2
FC3854200	245.2	15	7	200	260	2	2	35.0
FC3854200/YA34	244	15	7	200	260	2	2	37.6
FC3854200/YA5	244	15	5	200	260	2	2	33.4
FC3854200A	244	15	7	200	260	2	2	35.0
FC3854200F3/YA5	244	15	5	200	260	2	2	35.4
FC3854200SQ1	245.2	15	7	200	260	2	2	35.0
FCD3854168/C9YA4	244	-	-	200	260	2	2	31.9
FCD3854200F3/HC	244	15	7	200	260	2	2	37.4
FCFP3861151ZWWC/P69YAB	265.2	-	-	202	293	2.5	2.5	45.1
FC4056170X4/YA3	254	-	-	210	270	2	2	33.3
FC4054170/C4YA34	247.6	9.5	5	210	260	2	2	28.5
FC4054170/YA3	247.6	9.5	5	210	260	2	2	28.5
FC4054170/YAD	244	9.5	5	210	260	2	2	29.2
FC4054170/YAD2	244	9.5	4	210	260	2	2	28.9
FC4054170A/C4YA3	247.6	9.5	5	210	260	2	2	28.5
FC4054170AF3/C4YA3	247.6	9.5	5	210	260	2	2	28.3

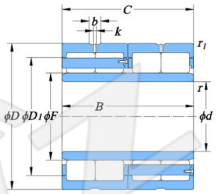
2) r_a: shaft fillet size corresponding to the inner ring chamfer size r; r_b: shell fillet size corresponding to the outer ring size r_1

d 200mm

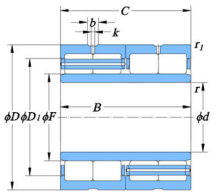
Figures[1] FC-1P



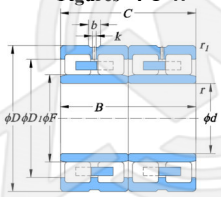
FC-2P



FC-3P



FCD-1P



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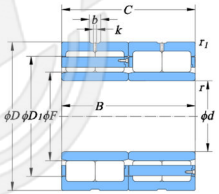

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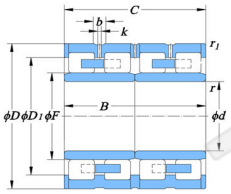
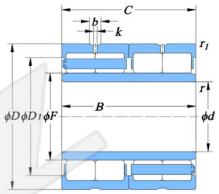
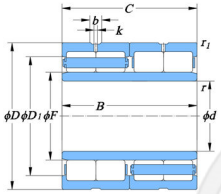
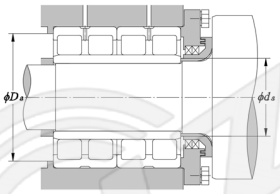


FC-4P



FC-5P





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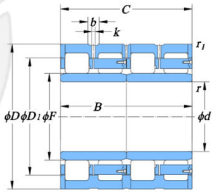

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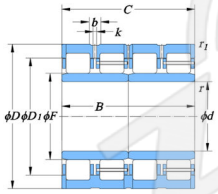

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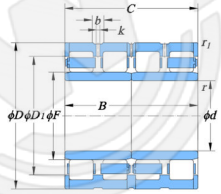


Principal dimensions(mm)							Basic load ratings(kN)	
d	*D*	*B*	*C*	*F*	r_{min}	r_{1min}	C_r	C_{or}
200	270	170	170	222	2.1	2.1	1000	2720
	270	170	170	222	2.1	2.1	855	2430
	270	170	170	222	2.1	2.1	890	2570
	270	270	170	222	2.1	2.1	890	2570
	280	170	170	222	2.1	2.1	1180	2860
	280	170	170	222	2.1	2.1	1180	2860
	280	170	170	222	2.1	2.1	1180	2860
	280	170	170	222	2.1	2.1	1180	2860
	280	170	170	222	2.1	2.1	1180	2860
	280	188	188	222	2.1	2.1	1180	2860
	280	188	188	222	2.1	2.1	1240	3060
	280	188	188	222	2.1	2.1	1240	3060
	280	188	188	222	2.1	2.1	1180	2860
	280	200	200	222	2.1	2.1	1360	3440
	280	200	200	222	2.1	2.1	1360	3440
	280	200	200	222	2.1	2.1	1360	3440
	280	200	200	222	2.1	2.1	1360	3440
	280	200	200	222	5	2.1	1380	3780
	280	200	200	222	2.1	2.1	1380	3780
	290	192	192	226	2.1	2.1	1410	3420
	290	192	192	226	2.1	2.1	1410	3420
	290	192	192	226	2.1	2.1	1410	3420
	290	192	192	226	2.1	2.1	1410	3420
	290	192	192	226	2.1	2.1	1300	3390
	290	192	192	226	2.1	2.1	1370	3500
	290	202	202	226	2.1	2.1	1480	3620
	310	175	175	229	2.1	2.1	1360	2920
	310	200	200	230	2.1	2.1	1550	3550
	310	200	200	230	2.1	2.1	1550	3550

Designations	Other dimensions (mm)			Abutment and fillet dimensions (mm)				Mass(kg) (approx.)
	D_1	b	k	d_{amin}	D_{amax}	r_{amax}[2]	r_{bmax}[2]	
FC4054170F3/C4YA3	247.6	9.5	5	210	260	2	2	28.8
FC4054170ZW/P64YAD1	245	9.5	4	210	260	2	2	29.9
FC4054170ZW/YAD	244	9.5	4	210	260	2	2	29.4
FC4054170ZW/C4YAD-2	244	9	4	210	260	2	2	29.8
FC4056170	254	9.5	5	210	270	2	2	33.3
FC4056170/C9YAB	254	9.5	5	210	270	2	2	33.3
FC4056170/C9YB2	254	9.5	5	210	270	2	2	33.8
FC4056170/P69YA3	254	9.5	5	210	270	2	2	33.8
FC4056170/P6YA3	254	9.5	5	210	270	2	2	33.8
FC4056170F3	254	9.5	5	210	270	2	2	33.6
FC4056188	255	9.5	5	210	270	2	2	35.7
FC4056188A	254	9.5	5	210	270	2	2	35.9
FC4056188A/HCEOIP5YA4	254	9.5	5	210	270	2	2	35.9
FC4056188S	255	9.5	5	210	270	2	2	35.7
FC4056200/YA3	254	9.5	5	210	270	2	2	38.8
FC4056200/YA34	254	9.5	5	210	270	2	2	38.8
FC4056200/YAD	254	9.5	5	210	270	2	2	38.4
FC4056200F3/YA3	254	9.5	5	210	270	2	2	38.3
FC4056200ZW/YAD	250.8	-	-	213	270	4	2	39.7
FC4056200ZW/YAD1	250.8	9.5	5	210	270	2	2	39.5
FC4058192/HCOIC4YAD3	261	12	6	210	280	2	2	42.7
FC4058192/YA34	261	12	6	210	280	2	2	42.7
FC4058192A/YA3	261	12	6	210	280	2	2	42.7
FC4058192AF3/YA3	261	12	6	210	280	2	2	42.5
FC4058192ZW/YAD	257	15	6	210	280	2	2	45.2
FC4058192ZWF3/P6YAD	258	12	6	210	280	2	2	45.2
FC4058202	261	15	6	210	280	2	2	43.5
FC4062175/YA3	270.6	9.5	5	210	300	2	2	49.8
FC4062200/YA4	270.5	12	6	210	300	2	2	57.0
FC4062200/YAB	270.5	12	6	210	300	2	2	57.0

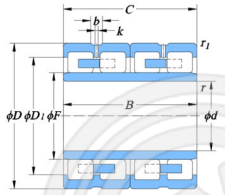
[**Note**] 1)p…Cage type

1P	2P	3P	4P	5P

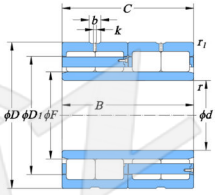
2) r_a: shaft fillet size corresponding to the inner ring chamfer size r; r_b: shell fillet size corresponding to the outer ring size r_1

d 200～220mm

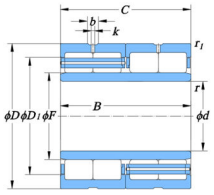
Figures[1)] FC-1P



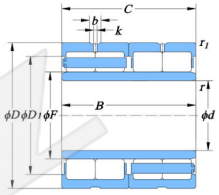
FC-2P



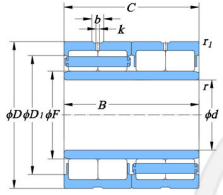
FC-3P

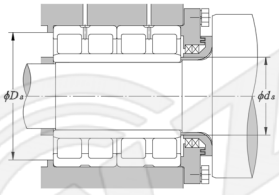


FC-4P

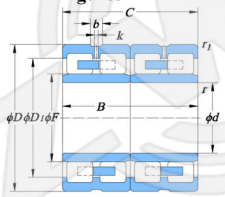


FC-5P

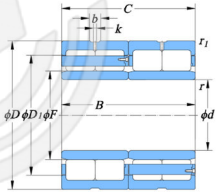




FCD-1P



FCD1-P



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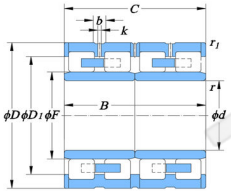

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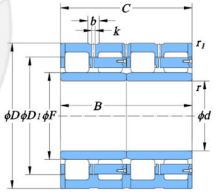

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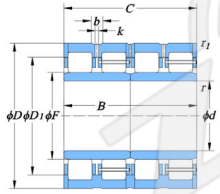

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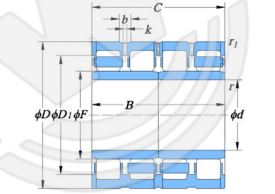


Principal dimensions(mm)							Basic load ratings(kN)	
d	*D*	*B*	*C*	*F*	r_{min}	r_{1min}	C_r	C_{or}
200	310	200	200	230	2.1	2.1	1540	3510
	310	230	230	229	2.1	2.1	1620	3630
205	282.575	190	190	227	2.1	2.1	1220	3250
210	290	192	192	236	2.1	2.1	1160	3370
	300	170	170	234	2.1	2.1	1270	3020
	300	210	210	234	2.1	2.1	1580	3970
	300	210	210	234	2.1	2.1	1580	3970
	300	210	210	234	2.1	2.1	1580	3970
	300	210	210	234	2.1	2.1	1580	3970
	300	210	210	234	2.1	2.1	1580	3970
	300	210	210	234	2.1	2.1	1580	3970
	300	210	210	234	2.1	2.1	1580	3970
	300	210	210	234	2.1	2.1	1580	3970
	300	260	260	234	2.1	2.1	1800	4710
	300	260	260	234	2.1	2.1	1800	4710
220	290	192	192	238	2.1	2.1	1060	2640
	300	192	192	242	2.5	2.5	1260	3330
	300	192	192	242	2.1	2.1	1230	3230
	300	192	192	242	2.1	2.1	1230	3230
	300	192	192	242	2.5	2.5	1260	3330
	300	192	192	242	2.5	2.5	1250	3180
	300	192	192	245	2.5	2.5	1390	3810
	310	192	192	246	2.1	2.1	1430	3570
	310	192	192	246	2.1	2.1	1340	3500
	310	192	192	246	2.1	2.1	1470	3680
	310	192	192	246	2.1	2.1	1430	3570
	310	192	192	246	2.1	2.1	1430	3570
	310	192	192	247	2.1	2.1	1370	3610
	310	192	192	246	2.1	2.1	1430	3570
	310	192	192	246	2.1	2.1	1470	3680

Designations	Other dimensions(mm)			Abutment and fillet dimensions(mm)				Mass(kg)
	D_1	b	k	d_{amin}	D_{amax}	r_{amax}[2)]	r_{bmax}[2)]	(approx.)
FC4062200ZWF3/YAB	270.5	12	6	210	300	2	2	58.8
FCD4062230/P5YAD	270.6	-	-	210	300	2	2	66.3
FC4156190X1F3/C4YA34	255.8	9.5	5	217	271	2	2	36.3
FC4258192/YA34	261.6	12	6	222	278	2	2	40.0
FC4260170	269	9.5	5	222	288	2	2	39.1
FC4260210	271	9.5	5	222	288	2	2	48.3
FC4260210/C9YA4	271	9.5	5	222	288	2	2	48.3
FC4260210/YA34	269	9.5	5	222	288	2	2	48.3
FC4260210/YAD	269	9.5	5	222	288	2	2	48.3
FC4260210A	269	9.5	5	222	288	2	2	48.3
FC4260210A/C9YA4	269	9.5	5	222	288	2	2	48.3
FC4260210S	271	9.5	5	222	288	2	2	48.3
FC4260210S/C9YA4	271	9.5	5	222	288	2	2	48.3
FC4260260	269	9.5	5	222	288	2	2	58.9
FC4260260/HC	269	9.5	5	222	288	2	2	58.9
FCDSP4458192/P6YAD	267	9.5	5	229	278	2	2	36.0
FC4460192/YA3	272	9.5	5	233	287	2	2	39.8
FC4460192/YAD	272.4	-	5	230	290	2	2	40.7
FC4460192/YAD1	272.4	9.5	5	232	288	2	2	40.7
FC4460192F3	272	9.5	5	233	287	2	2	39.6
FC4460192F3/YA4	274	9.5	5	233	287	2	2	38.5
FC4460192ZW	275	9	4	233	287	2	2	43.4
FC4462192	282.5	15	6	232	298	2	2	45.8
FC4462192/C9YAD	278	15	6	232	298	2	2	46.6
FC4462192/HCYA4	281.2	15	6	232	298	2	2	46.2
FC4462192/HCYAD	282.5	15	6	232	298	2	2	45.7
FC4462192/HG2	282.5	15	6	232	298	2	2	45.4
FC4462192/P5YAB	279	9.5	5	232	298	2	2	46.7
FC4462192/YA3	282.5	15	6	232	298	2	2	45.7
FC4462192/YA34	281.2	15	6	232	298	2	2	46.1

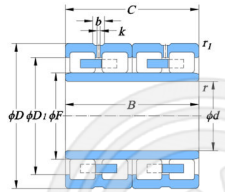
[**Note**] 1)p…Cage type

1P	2P	3P	4P	5P

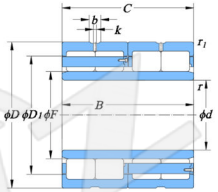
2) r_a: shaft fillet size corresponding to the inner ring chamfer size r; r_b: shell fillet size corresponding to the outer ring size r_1

d 220mm

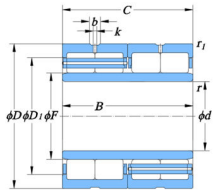
Figures[1)] FC-1P



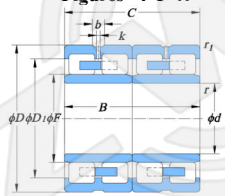
FC-2P



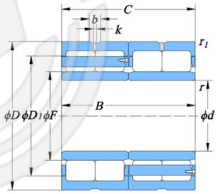
FC-3P



FCD-1P



FCD1-P



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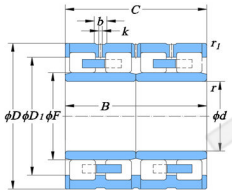
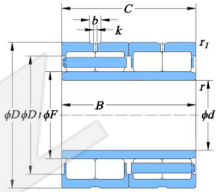
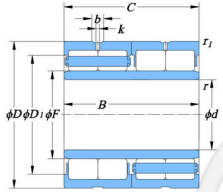


FC-4P



FC-5P



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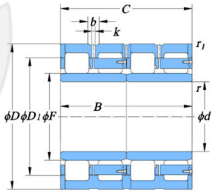
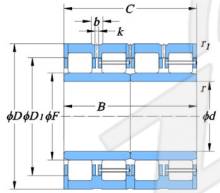


FCDP-3P



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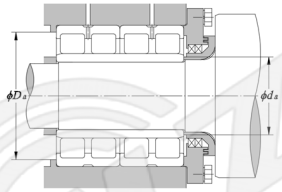


Principal dimensions(mm)							Basic load ratings(kN)	
d	*D*	*B*	*C*	*F*	r_{min}	r_{1min}	C_r	C_{or}
220	310	192	192	246	2.1	2.1	1170	3160
	310	192	192	246	2.1	2.1	1470	3680
	310	192	192	246	2.1	2.1	1470	3680
	310	192	192	246	2.1	2.1	1470	3680
	310	192	192	246	2.1	2.1	1470	3680
	310	192	192	246	2.1	2.1	1430	3570
	310	192	192	246	2.1	2.1	1430	3570
	310	192	192	246	2.1	2.1	1430	3570
	310	192	192	246	2.1	2.1	1250	3290
	310	225	225	244	0.6	2.1	1680	4360
	310	225	225	245	2.1	2.1	1560	4270
	310	225	225	244	2.1	2.1	1680	4360
	310	225	225	244	2.1	2.1	1680	4360
	310	225	225	246	2.1	2.1	1560	4270
	310	225	225	246	2.1	2.1	1490	4020
	310	265	265	246	2.1	2.1	1830	4890
	310	192	192	246	2.1	2.1	1470	3680
	320	210	210	248	2.1	2.1	1640	4020
	320	210	210	248	2.1	2.1	1640	4020
	320	210	210	248	2.1	2.1	1590	3840
	320	210	210	248	2.1	2.1	1640	4020
	320	210	210	248	2.1	2.1	1640	4020
	320	210	210	248	2.1	2.1	1640	4020
	320	210	210	248	2.1	2.1	1590	3840
	320	210	210	248	2.1	2.1	1640	4020
	320	210	210	248	2.1	2.1	1460	3440
	330	230	230	249	2.1	2.1	1760	4140
	330	230	230	249	2.1	2.1	1760	4140
	340	192	192	250	2.1	2.1	1540	3170
	340	200	200	250	4	4	1950	3940

Designations	Other dimensions(mm)			Abutment and fillet dimensions (mm)				Mass(kg) (approx.)
	D_1	b	k	d_{amin}	D_{amax}	r_{amax} [2)]	r_{bmax} [2)]	
FC4462192/YAD3	274.8	15	6	232	298	2	2	47.9
FC4462192A	281.2	15	6	232	298	2	2	45.8
FC4462192A/YA1	281.2	-	-	232	298	2	2	46.1
FC4462192A/YA3	281.2	15	6	232	298	2	2	46.1
FC4462192AF3	281.2	15	6	232	298	2	2	45.5
FC4462192F3	282.5	15	6	232	298	2	2	45.3
FC4462192S	282.5	15	6	232	298	2	2	45.8
FC4462192S/YA3	282.5	15	6	232	298	2	2	45.7
FC4462192ZW/YAD	277	15	6	232	298	2	2	49.4
FC4462225	280	-	-	227	298	0.6	2	53.9
FC4462225/YA34	277	9.5	5	232	298	2	2	54.8
FC4462225/YA46	280	-	-	232	298	2	2	53.9
FC4462225/YAD	280	10	6.5	232	298	2	2	53.9
FC4462225F3/HCYA4	278	9.5	5	232	298	2	2	54.4
FC4462225F3/YA3	278	5.5	3.5	232	298	2	2	54.0
FCD4462265	281.2	9.5	5	232	298	2	2	63.3
FCDSP4462192/HCP6YA4	281.2	15	6	232	298	2	2	46.8
FC4464210/C9YAD	286.4	9.5	5	232	308	2	2	58.2
FC4464210/QPC9W33XYAB	286.4	9.5	5	232	308	2	2	57.6
FC4464210/YA3	287	-	-	232	308	2	2	56.5
FC4464210/YA3W33	286.4	12.5	5	232	308	2	2	57.6
FC4464210A/YA3	286.4	-	-	232	308	2	2	58.2
FC4464210F3/YA3	286.4	12.5	5	232	308	2	2	57.2
FC4464210S/YA3	287	-	-	232	308	2	2	56.5
FCD4464210	286.4	9.5	5	232	308	2	2	57.1
FCDP4464210F3/C9YA34	287.4	9.5	5	232	308	2	2	59.2
FC4466230/P64	291.4	9.5	5	232	318	2	2	69.7
FCD4466230/C9YA4	291.4	9.5	5	232	318	2	2	69.6
FC4468192/YA3	298	9.5	5	232	328	2	2	64.6
FC4468200/YB2	308.3	15	6	237	323	3	3	63.4

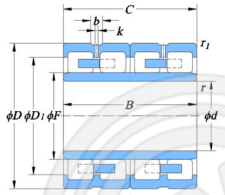
[**Note**] 1)p…Cage type

1P	2P	3P	4P	5P

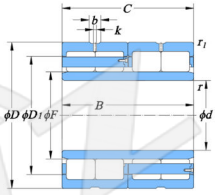
2) r_a: shaft fillet size corresponding to the inner ring chamfer size r; r_b: shell fillet size corresponding to the outer ring size r_1

d 220～240mm

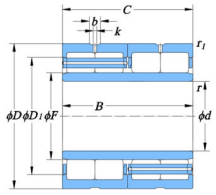
Figures[1] FC-1P



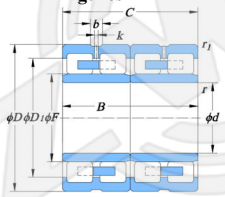
FC-2P



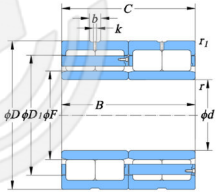
FC-3P



FCD-1P



FCD1-P



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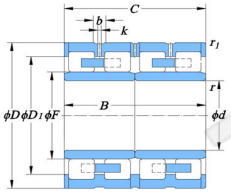
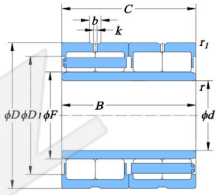
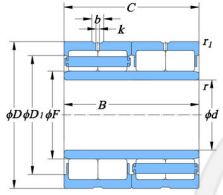


FC-4P



FC-5P



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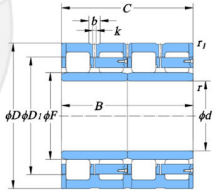

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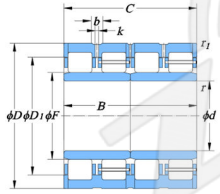

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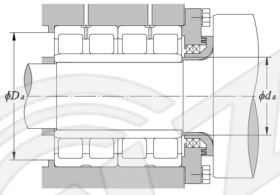


Principal dimensions(mm)							Basic load ratings(kN)	
d	*D*	*B*	*C*	*F*	r_{min}	r_{1min}	C_r	C_{or}
220	340	192	192	250	2.1	2.1	1540	3170
224.88	310	225	225	244.7	2.1	2.1	1490	3890
230	330	170	170	260	2.1	2.1	1270	3110
	330	170	170	260	2.1	2.1	1270	3110
	330	170	170	260	2.1	2.1	1270	3110
	330	206	206	258	2.1	2.1	1600	4170
	330	206	206	260	2.1	2.1	1590	4170
	330	206	206	260	2.1	2.1	1560	4040
	330	206	206	260	2.1	2.1	1590	4170
	330	206	206	260	2.1	2.1	1590	4170
	330	206	206	258	2.1	2.1	1620	3990
	330	206	206	260	2.1	2.1	1480	3790
	330	206	206	260	2.1	2.1	1590	4170
	330	206	206	260	2.1	2.1	1230	2990
	330	206	206	260	2.1	2.1	1590	4170
	330	206	206	260	2.1	2.1	1590	4170
	330	206	206	260	2.1	2.1	1760	4730
	330	206	206	260	2.1	2.1	1500	3840
	330	206	206	260	2.1	2.1	1500	3840
	340	260	260	261	2.1	2.1	2060	5170
	340	260	260	261	2.1	2.1	2060	5170
	340	260	260	261	2.1	2.1	2060	5170
	340	260	260	261	2.1	2.1	2060	5170
	365	250	250	266	2.1	2.1	2260	5070
	365	250	250	266	2.1	2.1	2260	5070
	365	250	250	266	2.1	2.1	2260	5070
	365	250	250	266	3	3	2360	5140
	365	250	250	266	3	3	2360	5140
240	330	220	220	264	2.1	2.1	1650	4360
	330	220	220	364	2.1	2.1	1550	4460

Designations	Other dimensions(mm)			Abutment and fillet dimensions(mm)				Mass(kg)
	D_1	b	k	d_{amin}	D_{amax}	r_{amax}[2]	r_{bmax}[2]	(approx.)
FCD4468192	298	9.5	5	232	328	2	2	64.0
FCD4562225X4/YA3	278	-	-	237	298	2	2	50.4
FC4666170/P5YAD1	295	9.5	5	242	318	2	2	49.6
FC4666170/YAD	295	-	-	242	318	2	2	49.6
FC4666170/YAD2	295	9.5	5	242	318	2	2	49.6
FC4666206/C4YA341	293	12	6	242	318	2	2	59.4
FC4666206/C4YAD1	295	12	6	242	318	2	2	59.5
FC4666206/C9YAD	295	12	6	242	318	2	2	59.3
FC4666206/P64YA34	295	12	6	242	318	2	2	59.5
FC4666206/YA34	295	12	6	242	318	2	2	59.5
FC4666206/YAD	293	-	-	242	318	2	2	59.1
FC4666206/YAD-6	295	12	6	242	318	2	2	58.8
FC4666206A/YA3	295	12	6	242	318	2	2	59.5
FC4666206AF3/C5YA34	295	12	6	242	318	2	2	59.6
FC4666206AF3/YA3	295	12	6	242	318	2	2	59.2
FC4666206F3/YA34	295	12	6	242	318	2	2	59.2
FC4666206ZW/P64YAD1	295	15	6	242	318	2	2	62.6
FC4666206ZW/YAD	295	15	6	242	318	2	2	62.3
FC4666206ZW/YAD-1	295	15	6	242	318	2	2	62.3
FC4668260/C91YA34	303	9.5	5	242	328	2	2	82.1
FC4668260/C9YA3	303	9.5	5	242	328	2	2	82.1
FC4668260/HCYA3	303	9.5	5	242	328	2	2	82.1
FC4668260/YA3	303	9.5	5	242	328	2	2	82.1
FC4673250/W281	317.2	9.5	5	242	353	2	2	102
FC4673250F3/W281	317.2	9.5	5	242	353	2	2	102
FCD4673250	317.2	9.5	5	242	353	2	2	102
FCDP4673250/HCP54	320.5	11.1	6	244	351	2.5	2.5	100
FCDP4673250/HCP59	320.5	11.1	6	244	351	2.5	2.5	100
FC4866220	301	-	-	252	318	2	2	56.7
FC4866220/C4YAD1	299	9.5	5	252	318	2	2	56.8

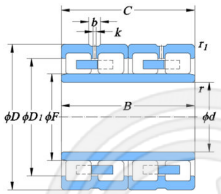
[**Note**] 1)p…Cage type

1P	2P	3P	4P	5P

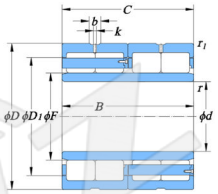
2) r_a: shaft fillet size corresponding to the inner ring chamfer size r; r_b: shell fillet size corresponding to the outer ring size r_1

d 240mm

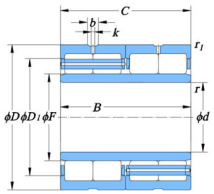
Figures[1] FC-1P



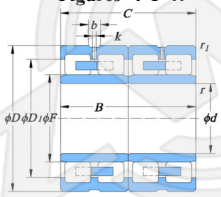
FC-2P



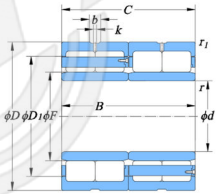
FC-3P



FCD-1P



FCD1-P



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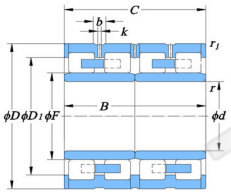
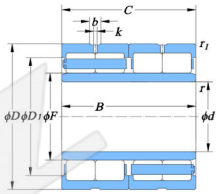
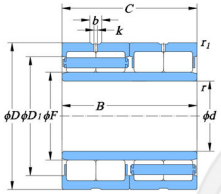
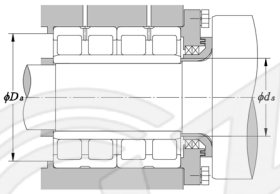


FC-4P



FC-5P





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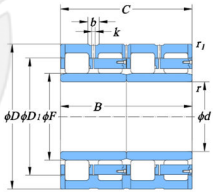

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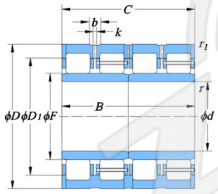

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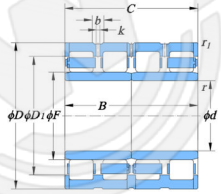


Principal dimensions(mm)							Basic load ratings(kN)	
d	*D*	*B*	*C*	*F*	r_{min}	r_{1min}	C_r	C_{or}
240	330	220	220	264	2.1	2.1	1650	4360
	330	220	220	270	2.1	2.1	1630	4820
	330	220	220	264	2.1	2.1	1650	4360
	330	220	220	264	2.1	2.1	1650	4360
	330	220	220	264	2.1	2.1	1370	3550
	330	220	220	264	2.1	2.1	1650	4360
	330	220	220	264	2.1	2.1	1650	4360
	330	220	220	264	2.1	2.1	1650	4360
	330	220	220	264	2.1	2.1	1650	4360
	330	220	220	264	2.1	2.1	1650	4360
	330	220	220	264	2.1	2.1	1750	4700
	330	220	220	264	2.1	2.1	1650	4360
	340	192	192	266	2.1	2.1	1450	3490
	340	192	192	266	2.1	2.1	1520	3720
	340	192	192	268	2.1	2.1	1520	3720
	340	192	192	265	2.1	2.1	1540	3670
	340	192	192	265	2.1	2.1	1450	3380
	350	224	224	270	3	3	1840	4640
	360	220	220	272	2.1	2.1	1800	4180
	360	220	220	272	2.1	2.1	1880	4410
	360	220	220	272	2.1	2.1	1880	4410
	360	220	220	272	2.1	2.1	1880	4410
	360	220	220	272	2.1	2.1	1880	4410
	360	220	220	272	2.5	2.5	1880	4410
	360	220	220	272	2.5	2.5	1880	4410
	360	220	220	272	2.1	2.1	1880	4410
	360	220	220	272	2.1	2.1	1880	4410
	360	220	220	272	2.1	2.1	1880	4410
	360	220	220	272	2.1	2.1	1800	4180
	360	220	220	272	2.1	2.1	1800	4180

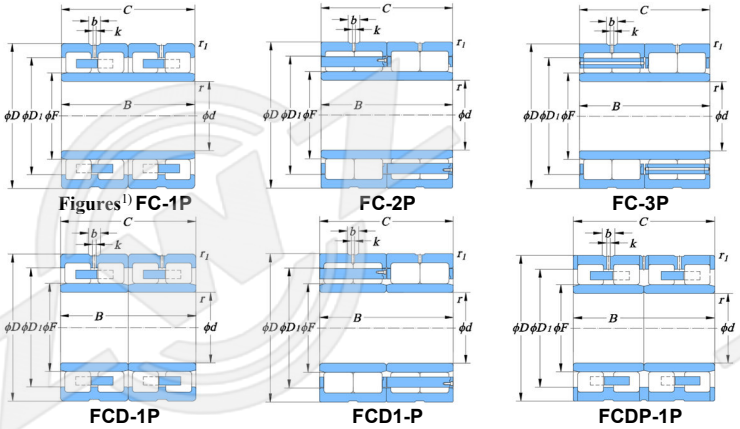
Designations	Other dimensions (mm)			Abutment and fillet dimensions (mm)				Mass(kg) (approx.)
	D_1	b	k	d_{amin}	D_{amax}	r_{amax}[2]	r_{bmax}[2]	
FC4866220/C4YAD2	299	9.5	5	252	318	2	2	56.9
FC4866220/HCYAD	300	9.5	4	252	318	2	2	58.5
FC4866220/HG2	308	-	-	252	318	2	2	57.1
FC4866220/YA3	301	9.5	5	252	318	2	2	56.5
FC4866220/YA3/P64	297	9.5	5	252	318	2	2	55.6
FC4866220/YA34	299	9.5	5	252	318	2	2	56.8
FC4866220A	299	-	-	252	318	2	2	57.1
FC4866220A/HG2	299	-	-	252	318	2	2	57.1
FC4866220A/YA3	299	9.5	5	252	318	2	2	56.8
FC4866220S/YA3	301	9.5	5	252	318	2	2	56.5
FC4866220ZW/C9YA4	299.6	12	5	252	318	2	2	59.6
FCD4866220	299	9.5	5	252	318	2	2	57.1
FC4868192/YA4	305.5	9.5	5	252	328	2	2	55.5
FC4868192/YA41	305.5	9.5	5	252	328	2	2	55.5
FC4868192/YAD	307.5	9.5	5	252	328	2	2	55.8
FC4868192A	305	9.5	5	252	328	2	2	54.7
FC4868192A1	308	9.5	5	252	328	2	2	52.8
FC4870224/HG2YAD	310	9.5	6	254	336	2.5	2.5	75.1
FC4872220	318	12	6	252	348	2	2	78.0
FC4872220/YA3/W283	316.8	9.5	6	252	348	2	2	80.0
FC4872220/YA34	316.8	9.5	5	252	348	2	2	81.0
FC4872220/YAD/W283	316.8	9.5	6	252	348	2	2	80.6
FC4872220A	316.8	12	6	252	348	2	2	80.0
FC4872220A/C4YA3	316.8	-	-	253	347	2	2	80.0
FC4872220A/W33AYA3	316.8	9.5	4	253	347	2	2	80.0
FC4872220AF3	316.8	12	6	252	348	2	2	78.7
FC4872220AQ1/HG2P5YAD1	316.8	12	6	252	348	2	2	79.1
FC4872220AQ1/HG2YA4	316.8	12	6	252	348	2	2	79.1
FC4872220Q1/HG2YA4	320	9.5	5	252	348	2	2	78.4
FC4872220S	318	12	6	252	348	2	2	78.0

[Note] 1)p…Cage type

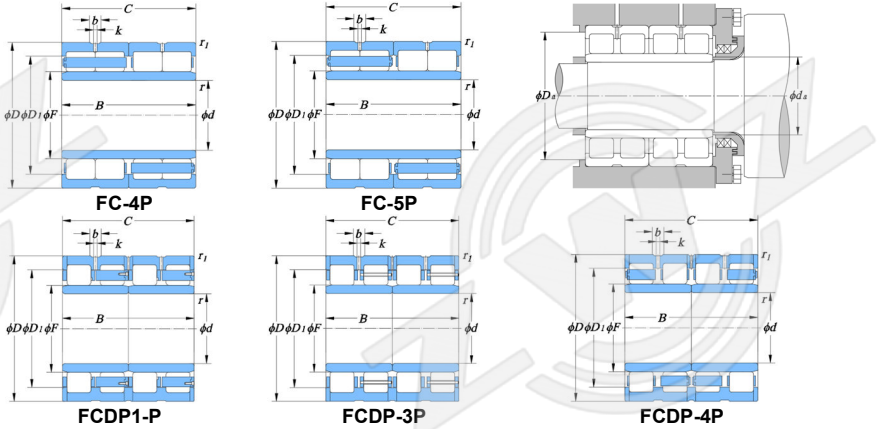
1P	2P	3P	4P	5P

2) r_a: shaft fillet size corresponding to the inner ring chamfer size r; r_b: shell fillet size corresponding to the outer ring size r_1

d 240～260mm



Figures[1)]



Principal dimensions(mm)							Basic load ratings(kN)	
d	*D*	*B*	*C*	*F*	r_{min}	r_{1min}	C_r	C_{or}
240	360	220	220	272	2.5	2.5	1800	4180
	360	290	290	270	4	4	2460	5940
	360	220	220	272	2.1	2.1	1750	4020
250	340	230	230	276	3.5	3.5	1720	4860
	340	230	230	276	3.5	3.5	1750	4800
	340	220	220	276	3	3	1680	4560
	340	230	230	276	3.5	3.5	1750	4800
	340	230	230	276	3.5	3.5	1750	4800
	350	220	220	278	3	3	1830	4780
	350	220	220	278	3	3	1810	4730
	350	220	220	278	3	3	1680	4280
	350	220	220	278	3	3	1830	4780
	350	220	220	278	3	3	1680	4280
	350	220	220	278	3	3	1790	4620
	360	220	220	282	3	3	1670	4290
	360	220	220	282	3	3	1820	4780
	360	220	220	282	3	3	1670	4290
	360	220	220	282	3	3	1850	5180
	360	220	220	282	3	3	1850	5180
260	360	192	192	288	3	3	1630	4170
	360	200	200	288	3	3	1710	4430
	360	200	200	288	3	3	1690	4370
	360	200	200	288	3	3	1710	4430
	360	200	200	288	3	3	1710	4430
	360	200	200	288	3	3	1690	4370
	360	200	200	288	3	3	1710	4430
	360	230	230	288	3	3	1840	4890
	360	260	260	288	3	3	1950	5590
	360	260	260	288	3	3	1710	4680
	370	200	200	292	3	3	1750	4350

Designations	Other dimensions (mm)			Abutment and fillet dimensions (mm)				Mass(kg) (approx.)
	D_1	b	k	d_{amin}	D_{amax}	r_{amax} 2)	r_{bmax} 2)	
FC4872220SA1/C4YA3	320	-	-	253	347	2	2	78.0
FCD4872290/YAD	318	9.5	5	257	343	3	3	102
FCDP4872220F3/YA34	317	9.5	5	252	348	2	2	105
FC5068230/HCYA34	309.6	9.5	5	264	326	3	3	62.3
FC5068230/YA34	312	9.5	5	264	326	3	3	60.9
FCD5068220/YA34	312	9.5	5	264	326	2.5	2.5	58.4
FCD5068230/HCOYA34	312	9.5	5	264	326	3	3	60.8
FCD5068230F3/HCOYA34	312	9.5	5	264	326	3	3	60.7
FC5070220/C4YAD	316.4	9.5	5	264	336	2.5	2.5	67.5
FC5070220/HCYA3	316.4	9.5	5	264	336	2.5	2.5	67.5
FC5070220/YA3	316	9.5	5	264	336	2.5	2.5	65.5
FC5070220A/YA3	316.4	9.5	5	264	336	2.5	2.5	67.5
FC5070220S/YA3	316	9.5	5	264	336	2.5	2.5	65.5
FC5070220ZW/YAD	318	12	6	264	336	2.5	2.5	70.0
FC5072220/YA3	320	9.5	5	264	346	2.5	2.5	76.9
FC5072220A/YA3	320	9.5	5	264	346	2.5	2.5	76.8
FC5072220S/YA3	320	9.5	5	264	346	2.5	2.5	76.9
FC5072220ZW	317.2	9.5	5	264	346	2.5	2.5	80.5
FC5072220ZW/HCO	317.2	9.5	5	264	346	2.5	2.5	80.5
FC5272192	327	9.5	5	274	346	2.5	2.5	59.6
FC5272200/YA3	326	9.5	5	274	346	2.5	2.5	63.0
FC5272200/YA34	326	9.5	5	274	346	2.5	2.5	63.0
FC5272200/YA3B2	328	9.5	5	274	346	2.5	2.5	63.0
FC5272200/YAD	326	9.5	5	274	346	2.5	2.5	63.0
FC5272200A/YA3B2	326	9.5	5	274	346	2.5	2.5	63.0
FC5272200S/YA3B2	328	9.5	5	274	346	2.5	2.5	63.0
FC5272230/YA3	327	9.5	5	274	346	2.5	2.5	72.3
FCD5272260/C4YA34	323.2	12	6	274	346	2.5	2.5	82.0
FCDSP5272260/YAD	324	9.5	5	274	346	2.5	2.5	85.5
FC5274200	335.2	15	6	274	356	2.5	2.5	73.0

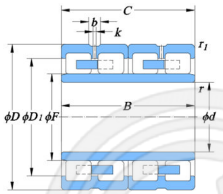
[**Note**] 1)p…Cage type

1P	2P	3P	4P	5P

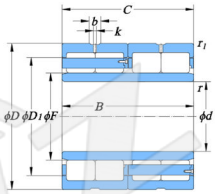
2) r_a: shaft fillet size corresponding to the inner ring chamfer size r; r_b: shell fillet size corresponding to the outer ring size r_1

d 260mm

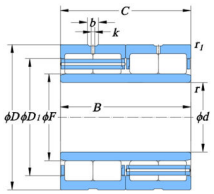
Figures[1] FC-1P



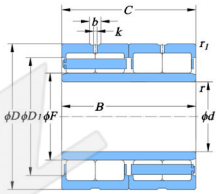
FC-2P



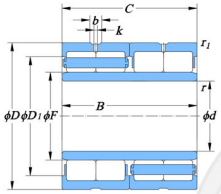
FC-3P

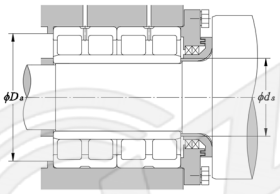


FC-4P

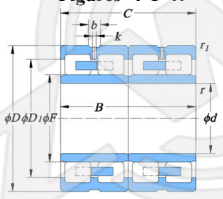


FC-5P

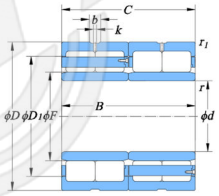




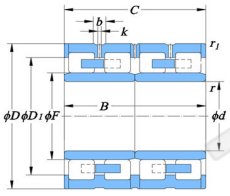
FCD-1P



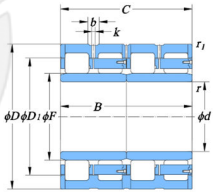
FCD1-P



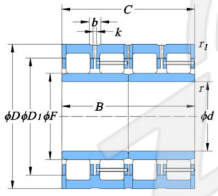
FCDP-1P



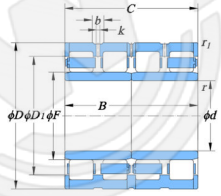
FCDP1-P



FCDP-3P



FCDP-4P



Principal dimensions(mm)							Basic load ratings(kN)	
d	*D*	*B*	*C*	*F*	r_{min}	r_{1min}	C_r	C_{or}
260	370	200	200	292	3	3	1750	4350
	370	200	200	292	3	3	1750	4350
	370	220	220	292	3	3	1860	4950
	370	220	220	292	3	3	1960	5000
	370	220	220	292	3	3	1880	4740
	370	220	220	292	3	3	1960	5000
	370	220	220	292	3	3	1960	5000
	370	220	220	292	3	3	1960	5000
	370	220	220	292	3	3	1840	4890
	370	220	220	292	3	3	1960	5000
	370	220	220	292	3	3	1860	4950
	370	220	220	292	3	3	1840	4890
	370	220	220	292	3	3	1950	5250
	370	220	220	292	3	3	1960	5000
	370	220	220	292	3	3	1960	5000
	370	220	220	292	3	3	1960	5000
	370	220	220	292	3	3	1700	4430
	370	220	220	292	3	3	1950	5250
	370	200	200	290	3	3	1660	4020
	370	220	220	292	3	3	1960	5000
	370	220	220	292	3	3	1960	5000
	370	220	220	292	4	3	1950	5250
	380	220	220	290	3	3	1880	4750
	380	280	280	294	3	3	2210	5850
	380	280	280	294	3	3	2210	5850
	380	280	280	294	3	3	2210	5850
	380	280	280	294	3	3	2210	5850
	380	280	280	294	3	3	2210	5850
	380	280	280	295	3	3	2180	5750
	400	290	290	296	4	4	2930	6890

Designations	Other dimensions (mm)			Abutment and fillet dimensions (mm)				Mass(kg) (approx.)
	D_1	b	k	d_{amin}	D_{amax}	r_{amax}[2]	r_{bmax}[2]	
FC5274200A	333.6	15	6	274	356	2.5	2.5	73.8
FC5274200S	335.2	15	6	274	356	2.5	2.5	73.0
FC5274220	330	9.5	5	274	356	2.5	2.5	77.7
FC5274220/HG2YA3	333.6	9.5	5	274	356	2.5	2.5	79.6
FC5274220/HG2YAD1	333.6	9.5	5	274	356	2.5	2.5	78.2
FC5274220/YA3	335.5	9.5	5	274	356	2.5	2.5	79.2
FC5274220/YA34	335.5	9.5	5	274	356	2.5	2.5	79.6
FC5274220A	333.6	9.5	5	274	356	2.5	2.5	80.4
FC5274220A/W33YAD	330	9.5	5	274	356	2.5	2.5	78.9
FC5274220A/YA3	335.5	9.5	5	274	356	2.5	2.5	79.6
FC5274220A/YA4	330	9.5	5	274	356	2.5	2.5	78.2
FC5274220A/YAD	330	-	-	274	356	2.5	2.5	79.2
FC5274220AZW/YAD	330.4	-	-	274	356	2.5	2.5	79.1
FC5274220F3/YA3	335.5	9.5	5	274	356	2.5	2.5	78.7
FC5274220S	335.5	9.5	5	274	356	2.5	2.5	80.4
FC5274220S/YA3	335.5	9.5	5	274	356	2.5	2.5	79.6
FC5274220S/YA4	330	9.5	5	274	356	2.5	2.5	81.0
FC5274220ZW/C4YAD	331	12	6	274	356	2.5	2.5	82.6
FCD5274200/C4YAB	332	-	-	274	356	2.5	2.5	73.0
FCD5274220	333.6	9.5	5	274	356	2.5	2.5	80.9
FCD5274220/C9YA34	335.5	9.5	5	272	358	2.5	2.5	80.1
FCD5274220ZW/C4	331	12	6	274	356	3	2.5	81.3
FC5276220/C4YA4	332	-	-	274	366	2.5	2.5	87.9
FC5276280/HCYA3	335.6	9.5	5	274	366	2.5	2.5	111
FC5276280/HCYA34	335.6	9.5	5	274	366	2.5	2.5	111
FC5276280/YA3	335.6	9.5	5	274	366	2.5	2.5	111
FCD5276280/C5YAD	335.6	9.5	5	274	366	2.5	2.5	110
FCD5276280/HC	335.6	9.5	5	274	366	2.5	2.5	110
FCD5276280/P5YAD1	336.6	9.5	5	274	366	2.5	2.5	110
FCD5280290/P63YA3	352	9.5	5	277	383	3	3	136

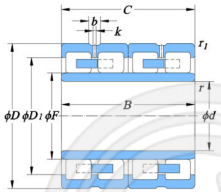
[**Note**] 1)p…Cage type

1P	2P	3P	4P	5P

2) r_a: shaft fillet size corresponding to the inner ring chamfer size r; r_b: shell fillet size corresponding to the outer ring size r_1

d 266.4～280mm

Figures[1)] FC-1P



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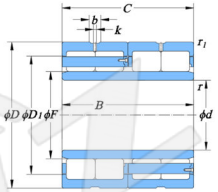

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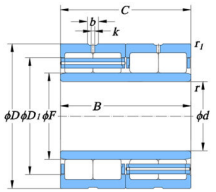

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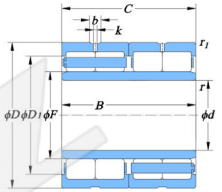
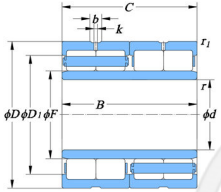
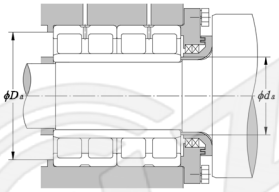
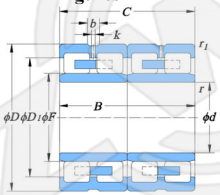


FC-5P





FCD-1P



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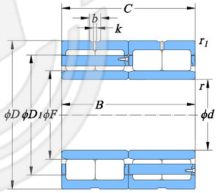

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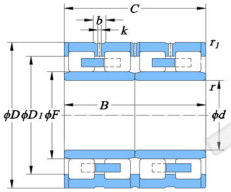

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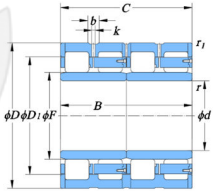

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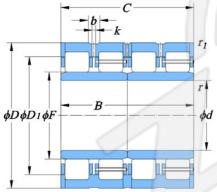

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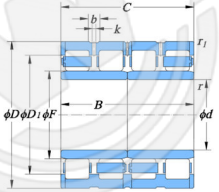
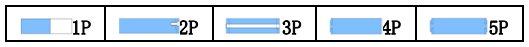


Principal dimensions(mm)							Basic load ratings(kN)	
d	*D*	*B*	*C*	*F*	r_{min}	r_{1min}	C_r	C_{or}
266.4	355.6	230	230	288	3	3	1740	4830
270	380	230	230	298	3	3	1930	4700
	380	230	230	298	3	3	1930	4700
	380	230	230	298	3	3	2010	4960
	380	230	230	298	3	3	2010	4960
	380	230	230	298	3	3	2010	4960
	380	230	230	298	3	3	2010	4960
	380	230	230	298	3	3	1930	4700
	380	230	230	298	3	3	2120	5270
	380	275	275	298	3	3	2340	6010
	390	236	236	312	3	3	2040	5700
	390	236	236	312	3	3	2040	5700
	390	236	236	312	3	3	2040	5700
280	375	200	200	306	3	3	1650	4600
	380	290	290	308	3	3	2250	6870
	380	290	290	306	3	3	2490	7320
	390	220	220	311	3	3	1980	5190
	390	220	220	312	3	3	1920	5270
	390	220	220	312	3	3	1530	4450
	390	220	220	312	3	3	1790	5140
	390	220	220	312	3	3	1790	5140
	390	220	220	312	3	3	1920	5270
	390	220	220	312	3	3	1920	5270
	390	220	220	312	3	3	1920	5270
	390	220	220	312	3	3	2000	5570
	390	220	220	312	3	3	2020	5620
	390	240	240	312	3	3	2090	5580
	390	240	240	312	3	3	2090	5580
	390	240	240	312	3	3	2090	5580
	390	240	240	312	3	3	2090	5580

[**Note**] 1)p…Cage type

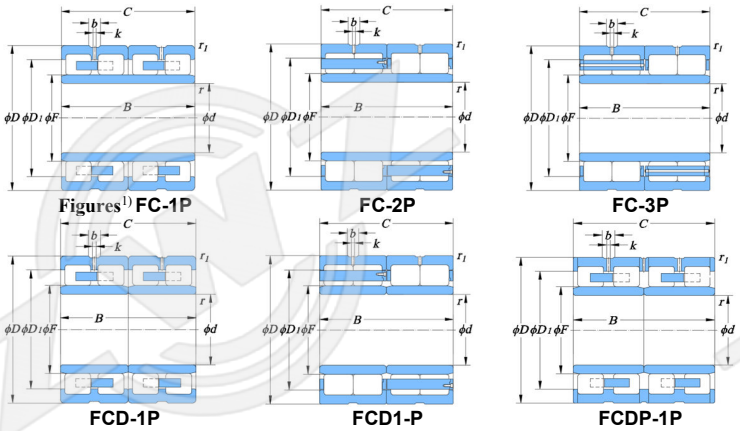


Designations	Other dimensions (mm)			Abutment and fillet dimensions (mm)				Mass(kg) (approx.)
	D_1	b	k	d_{amin}	D_{amax}	r_{amax} 2)	r_{bmax} 2)	
FC5371230X4/YA3	323.2	9.5	5	277	342	2.5	2.5	63.5
FC5476230/HG2YA3	343	9.5	5	284	366	2.5	2.5	81.8
FC5476230/YA3	346	9.5	5	284	366	2.5	2.5	80.2
FC5476230/YA34	342.8	9.5	5	284	366	2.5	2.5	82.1
FC5476230A	342.8	9.5	5	284	366	2.5	2.5	82.1
FC5476230A/YA3	342.8	9.5	5	284	366	2.5	2.5	81.9
FC5476230AF3/YA3	342.8	9.5	5	284	366	2.5	2.5	81.3
FC5476230S	346	9.5	5	284	366	2.5	2.5	80.5
FC5476230ZW/C4YA3	344	12	6	284	366	2.5	2.5	87.0
FC5476275/YA3	342.8	9.5	5	284	366	2.5	2.5	98.6
FC5478236	352	9.5	5	284	376	2.5	2.5	97.8
FC5478236A	350.4	9.5	5	284	376	2.5	2.5	98.3
FC5478236S	352	9.5	5	284	376	2.5	2.5	97.8
FC5675200/YA3	341	9.5	5	294	361	2.5	2.5	62.9
FC5676290/HCYAD	343.8	9.5	5	294	366	2.5	2.5	98.0
FCD5676290/YA3	345	9.5	5	294	366	2.5	2.5	96.8
FC5678220/C4YAD1	353.4	12	6	294	376	2.5	2.5	82.1
FC5678220/C4YAD3	350.4	12	6	294	376	2.5	2.5	83.4
FC5678220/YA34	350.4	12	6	294	376	2.5	2.5	83.4
FC5678220/YAB1	347.2	12	6	294	376	2.5	2.5	84.6
FC5678220A/C4YAB	347	12	6	294	376	2.5	2.5	84.6
FC5678220A/YA3	350.4	12	6	294	376	2.5	2.5	83.4
FC5678220AF3/C5YA34	350.4	12	6	294	376	2.5	2.5	83.5
FC5678220F3/YA34	350.4	12	6	294	376	2.5	2.5	83.5
FC5678220ZW/YA3	351	12	6	294	376	2.5	2.5	86.8
FC5678220ZW/YA3-1	351	12	6	294	376	2.5	2.5	87.0
FC5678240	354.5	12	6	294	376	2.5	2.5	90.4
FC5678240/HCYA34	354.5	12	6	294	376	2.5	2.5	90.4
FC5678240/HG2YA4	354.5	12	6	294	376	2.5	2.5	89.6
FC5678240/YA3	354.5	12	6	294	376	2.5	2.5	90.4

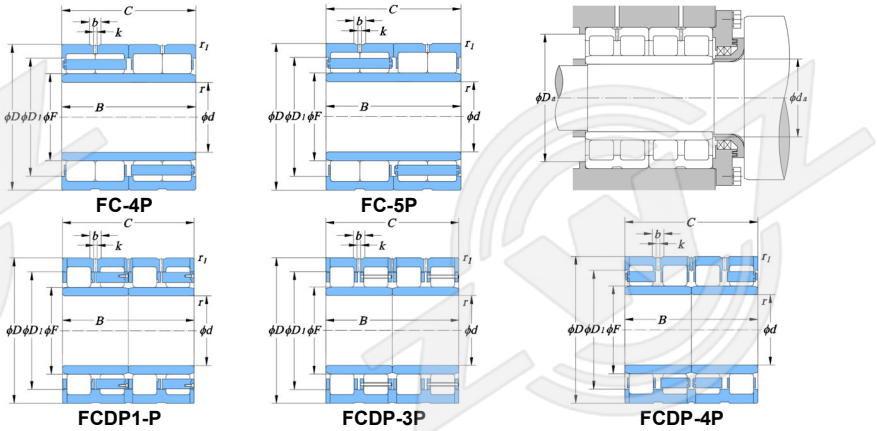
2) r_a: shaft fillet size corresponding to the inner ring chamfer size r; r_b: shell fillet size corresponding to the outer ring size r_1

ZWZ

d 280～300mm



Figures[1)]



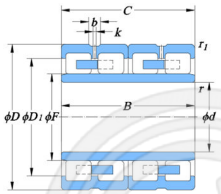
Principal dimensions(mm)						Basic load ratings(kN)		Designations	Other dimensions (mm)			Abutment and fillet dimensions (mm)				Mass(kg) (approx.)
d	*D*	*B*	*C*	*F*	r_{min}	r_{1min}	C_r	C_{or}		D_1	b	k	d_{amin}	D_{amax}	r_{amax} [2)]	r_{bmax} [2)]	
280	390	240	240	312	3	3	2090	5580	FC5678240/YA34	354.5	12	6	294	376	2.5	2.5	89.6
	390	240	240	312	3	3	2090	5580	FC5678240/YAD	354.5	12	6	294	376	2.5	2.5	90.4
	390	275	275	312	3	3	2370	6920	FC5678275/HCP64	351	9.5	5	294	376	2.5	2.5	106
	390	275	275	312	3	3	2370	6920	FC5678275/HG2P6YA4	351	9.5	5	294	376	2.5	2.5	106
	390	275	275	312	3	3	2370	6920	FC5678275/YA4	351	9.5	5	294	376	2.5	2.5	106
	390	275	275	308	3	3	2340	6560	FCD5678275	348	9.5	5	294	376	2.5	2.5	105
	390	275	275	308	3	3	2390	6230	FCD5678275/C3YA34	352.8	9.5	5	294	376	2.5	2.5	102
	390	275	275	308	7x15°	3	2340	6560	FCD5678275/HCYAB	348	9.5	5	288	376	1.5	2.5	105
	390	275	275	308	3	3	2340	6560	FCD5678275/YA3	348	9.5	5	294	376	2.5	2.5	105
	390	275	275	312	3	3	2370	6920	FCD5678275/YA41	351	9.5	5	294	376	2.5	2.5	105
	390	275	275	308	3	3	2340	6560	FCD5678275/YAD	348	9.5	5	294	376	2.5	2.5	105
	390	275	275	308	1.5	1.1	2390	6230	FCDP5678275	354.2	9.5	5	290	381	1.5	1.1	102
	400	244	244	312	4	7.5	2220	5700	FCD5680244F3/YAD	357	15	8	297	371	3	6	102
	400	285	285	312	4	4	2600	7010	FCD5680285/YA4	357	15	6	297	383	3	3	118
	400	300	300	312	4	4	2720	7430	FCD5680300/HCYAD	357	15	6	297	383	3	3	125
	400	300	300	312	4	4	2720	7430	FCD5680300/YAD	357	15	6	297	383	3	3	125
	410	300	300	313	4	4	2760	7570	FCD5682300/YA3	359.2	-	-	297	393	3	3	140
	420	280	280	318	4	4	2870	7010	FC5684280	373	12	6	297	403	3	3	139
290	410	240	240	320	4	4	2400	6080	FC5882240/C4YA3	368	15	8	307	393	3	3	102
	410	240	240	320	4	4	2390	6020	FC5882240/HG2YA34	368	15	8	307	393	3	3	102
	410	240	240	320	4	4	2390	6020	FC5882240/YA3	380	15	8	307	393	3	3	102
	410	240	240	320	4	4	2390	6020	FCD5882240/YA3	380	15	8	307	393	3	3	100
	420	300	300	327	4	4	2810	7840	FCD5884300	371.8	12	6	307	403	3	3	144
	430	280	280	330	4	4	2800	7150	FCD5886280F3/HG2	381.2	12	6	307	413	3	3	143
300	400	300	300	328	3	3	2520	7630	FC6080300/YA34	366.4	12	6	312	386	2.5	2.5	106
	400	300	300	328	3	3	2520	7630	FCD6080300/C4YA34	366.4	12	6	312	386	2.5	2.5	106
	420	218	218	332	4	4	2270	5700	FC6084218	380	9.5	5	317	403	3	3	94.3
	420	218	218	332	4	4	2270	5700	FC6084218/C9YA41	380	9.5	5	317	403	3	3	94.3
	420	218	218	332	4	4	2270	5700	FC6084218/YA4	380	9.5	5	317	403	3	3	94.3
	420	218	218	332	4	4	2270	5700	FC6084218F3/YA4	380	9.5	5	317	403	3	3	93.7

[**Note**] 1)p…Cage type

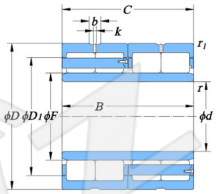
2) r_a: shaft fillet size corresponding to the inner ring chamfer size r; r_b: shell fillet size corresponding to the outer ring size r_1

d 300mm

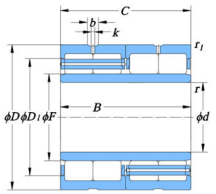
Figures[1] FC-1P



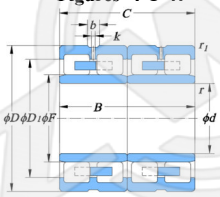
FC-2P



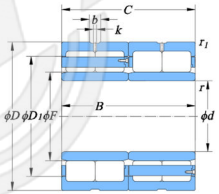
FC-3P



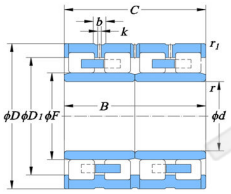
FCD-1P



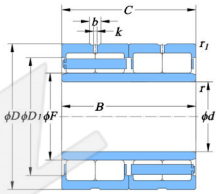
FCD1-P



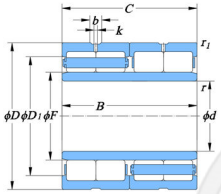
FCDP-1P

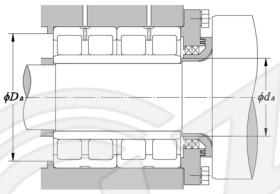


FC-4P

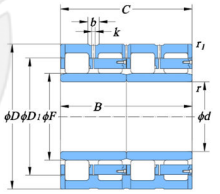


FC-5P

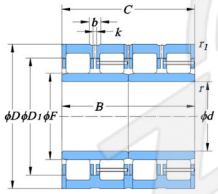




FCDP1-P



FCDP-3P



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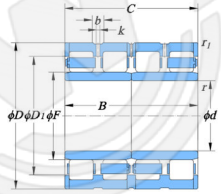


Principal dimensions(mm)							Basic load ratings(kN)	
d	*D*	*B*	*C*	*F*	r_{min}	r_{1min}	C_r	C_{or}
300	420	240	240	332	4	4	2450	6300
	420	240	240	332	4	4	2450	6300
	420	240	240	332	4	4	2450	6300
	420	240	240	332	4	4	2450	6300
	420	240	240	332	4	4	2450	6300
	420	240	240	332	4	4	2450	6300
	420	240	240	332	4	4	2450	6300
	420	240	240	332	4	4	2450	6300
	420	240	240	332	4	4	2450	6300
	420	240	240	332	4	4	2460	6320
	420	300	300	332	3	3	2960	8060
	420	240	240	332	4	4	2430	6240
	420	240	240	332	4	4	2450	6300
	420	240	240	332	4	4	2430	6240
	420	240	240	332	4	4	2480	6550
	420	240	240	332	4	4	1640	3940
	420	240	240	332	4	4	2480	6550
	420	300	300	332	3	3	2570	6680
	420	300	300	332	3	3	2570	6680
	420	300	300	332	3	3	2570	6680
	420	300	300	332	3	3	2570	6680
	420	300	300	332	3	3	2550	6620
	420	300	300	332	3	3	2570	6680
	420	300	300	332	3	3	2570	6680
	420	300	300	332	3	3	2570	6680
	420	300	300	332	3	3	2960	8060
	420	300	300	332	3	3	2820	7550
	420	300	300	332	3	3	2570	6680
	420	300	300	332	3	3	2570	6680
	420	300	300	332	3	3	2960	8060

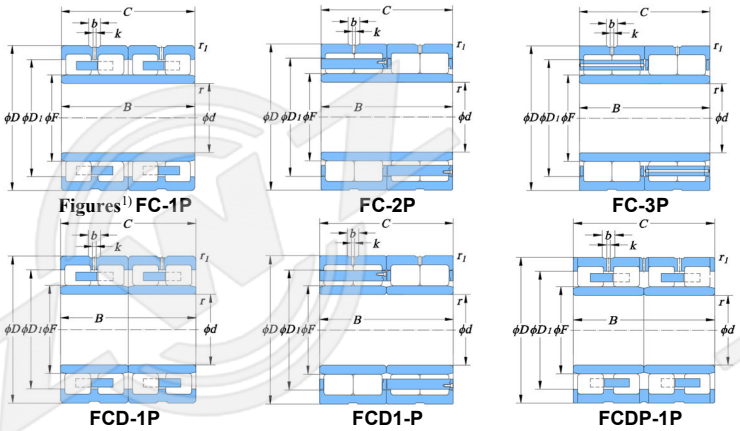
[**Note**] 1)p…Cage type

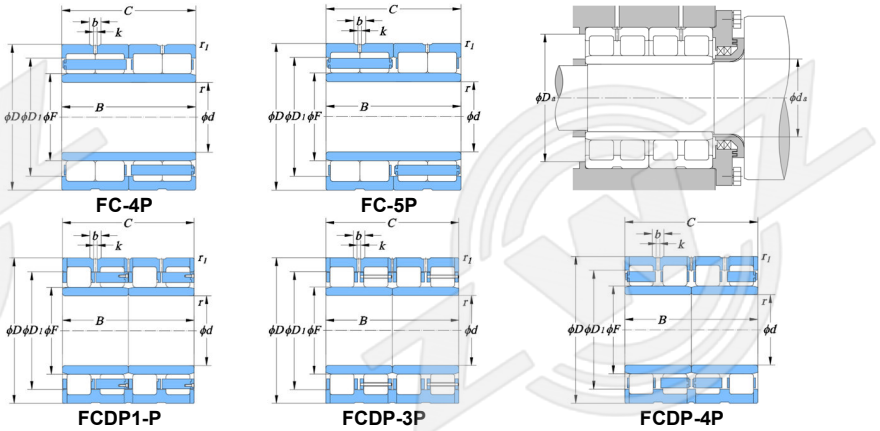
1P	2P	3P	4P	5P

Designations	Other dimensions (mm)			Abutment and fillet dimensions (mm)				Mass(kg) (approx.)
	D_1	b	k	d_{amin}	D_{amax}	r_{amax} 2)	r_{bmax} 2)	
FC6084240	382	15	8	317	403	3	3	111
FC6084240/C9YA341	380	15	8	317	403	3	3	105
FC6084240/HCYA3	380	15	8	317	403	3	3	104
FC6084240/YA3	382	15	8	317	403	3	3	111
FC6084240A	380	15	8	317	403	3	3	104
FC6084240A/YA3	380	15	8	317	403	3	3	111
FC6084240AF3/YA3	380	15	8	317	403	3	3	103
FC6084240S	382	15	8	317	403	3	3	111
FC6084240S/YA3	382	15	8	317	403	3	3	111
FC6084240ZW/YA3	381	-	-	317	403	3	3	110
FC6084300/YAD1	379.4	15	6	315	405	2.5	2.5	131
FCD6084240/C9YAD	380	-	-	317	403	3	3	105
FCD6084240/P6YAB	380	15	8	317	403	3	3	109
FCD6084240/YA3	382	15	8	317	403	3	3	110
FCD6084240ZW/C4YA3	379.5	12	6	317	403	3	3	110
FCD6084240ZW/C4YAD	378	-	-	317	403	3	3	106
FCD6084240ZW/YAB	379.5	-	-	317	403	3	3	110
FCD6084300/HC	382	12	6	315	405	2.5	2.5	129
FCD6084300/HCC4YA3/W283	382	12	6	315	405	2.5	2.5	127
FCD6084300/HCC4YAD1	382	12	6	315	405	2.5	2.5	129
FCD6084300/HCYA4	382	12	6	315	405	2.5	2.5	129
FCD6084300/P5YAD2	382	12	6	315	405	2.5	2.5	129
FCD6084300/W33AYA3	382	12	6	315	405	2.5	2.5	127
FCD6084300/YA3	382	-	-	315	405	2.5	2.5	129
FCD6084300/YA34	382	12	6	315	405	2.5	2.5	129
FCD6084300/YAD	379.4	15	6	315	405	2.5	2.5	131
FCD6084300F1/YAD	382	15	6	315	405	2.5	2.5	135
FCD6084300F3/YA3	382	-	-	315	405	2.5	2.5	128
FCD6084300F3/YA34	382	12	6	315	405	2.5	2.5	128
FCD6084300F3/YAD	379.4	15	6	315	405	2.5	2.5	130

2) r_a: shaft fillet size corresponding to the inner ring chamfer size r; r_b: shell fillet size corresponding to the outer ring size r_1

d 300～320mm





Figures[1] FC-1P

Principal dimensions(mm)							Basic load ratings(kN)	
d	*D*	*B*	*C*	*F*	r_{min}	r_{1min}	C_r	C_{or}
300	420	300	300	332	3	3	3640	10990
	420	240	240	332	4	4	1660	4210
	420	300	300	332	7×20°	3	3230	8990
	420	300	300	332	7×20°	3	3230	8990
	420	300	300	332	7×20°	3	3230	8990
	420	335	300	332	7×20°	3	2790	7440
	420	300	300	332	7×20°	3	3230	8990
	460	350	350	338	4	4	3910	9460
	460	350	350	340	5	4	3760	9680
	460	350	350	340	5	4	3760	9680
304.902	412.648	268.2	268.2	332	2.1	2.1	2500	6960
310	430	240	240	342	4	4	2540	6680
320	440	240	240	351	4	4	2450	6420
	440	240	240	351	4	4	2450	6420
	440	300	300	352	3	3	2910	8030
	450	240	240	355	4	4	2760	6880
	450	240	240	355	4	4	2520	6680
	450	240	240	355	4	4	2760	6880
	450	240	240	355	4	4	2390	6230
	450	240	240	355	4	4	2760	6880
	450	240	240	355	4	4	2760	6880
	450	240	240	355	4	4	2760	6880
	450	240	240	355	4	4	2520	6680
	450	240	240	355	4	4	2520	6680
	450	240	240	355	4	4	2480	6490
	450	240	240	355	4	4	2480	6490
	450	240	240	355	4	4	2230	5700
	460	240	240	364	3	3	2470	6260
	460	240	240	363	3	3	2470	6260
	460	240	240	364	3	3	2710	7060

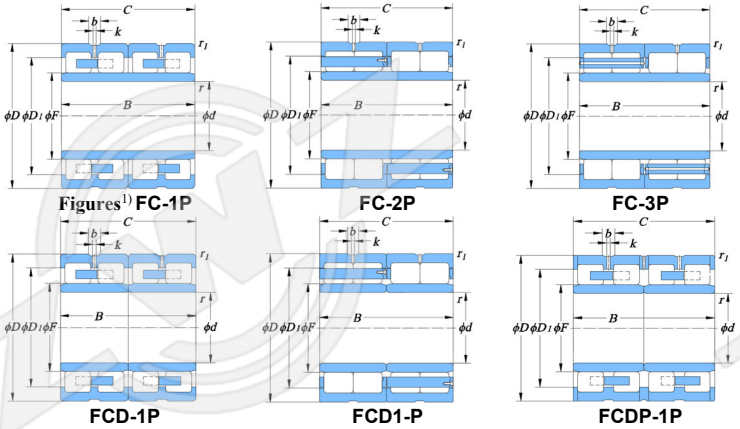
Designations	Other dimensions (mm)			Abutment and fillet dimensions (mm)				Mass(kg) (approx.)
	D_1	b	k	d_{amin}	D_{amax}	r_{amax}[2]	r_{bmax}[2]	
FCD6084300ZW/C4YAD	376.8	15	8	315	405	2.5	2.5	135
FCDFP6084240ZW/C9YAD1	373.6	-	-	317	403	3	3	103
FCDP6084300F1/YAD	379.4	12	6	309	407	2	2.5	133
FCDP6084300F3/HCYAD	379.4	12	6	309	407	2	2.5	133
FCDP6084300F3/YAD	379.4	12	6	309	407	2	2.5	133
FCDP6084300WB/HCEP59YAB	379.4	12	6	329	407	2	2.5	145
FCDP6084300WB/HCYAD	379.4	12	6	309	407	2	2.5	137
FCD6092350/HCC4YA34	402	12	6	317	443	3	3	212
FCD6092350ZWF3/HCYAD	399	20	10	319	443	4	3	226
FCD6092350ZWF3/HG2YAD	399	20	10	319	443	4	3	226
FC6183268X4/YAB	375.2	12	6	317	401	2	2	104
FC6286240/YA3	391	15	8	327	413	3	3	108
FC6488240/C4YA34	399	12	6	337	423	3	3	110
FCD6488240	399	12	6	337	423	3	3	110
FCD6488300/YA34	400	12	6	335	425	2.5	2.5	138
FC6490240/C4YA3	409.4	12	6	337	433	3	3	120
FC6490240/C9YAD2	403	12	6	337	433	3	3	123
FC6490240/HCOIC4YA3	409.4	12	6	337	433	3	3	120
FC6490240/HCYAD1	403.8	15	6	337	433	3	3	121
FC6490240/YA3	412	12	6	337	433	3	3	120
FC6490240/YA34	409.4	12	6	337	433	3	3	120
FC6490240/YA4	409.4	12	6	337	433	3	3	120
FC6490240/YAD	403	12	6	337	433	3	3	123
FC6490240F3/YAD	403	12	6	337	433	3	3	122
FC6490240ZW/YAD	404	12	6	337	433	3	3	127
FC6490240ZW/YAD1	404	-	-	337	433	3	3	127
FCDSP6490240/YAD	403	12	6	337	433	3	3	128
FC6492240/P6YAD	416	12	6	334	446	2.5	2.5	130
FC6492240/YAD1	415	12	6	334	446	2.5	2.5	133
FC6492240ZW/YA34	417	-	-	334	446	2.5	2.5	141

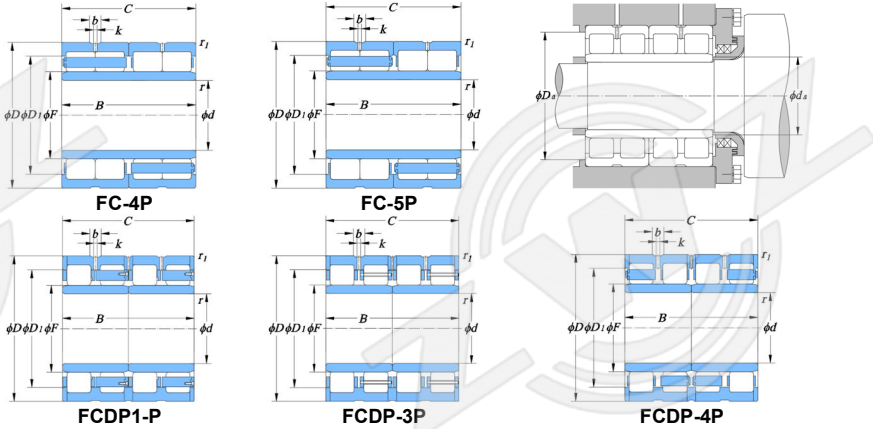
[**Note**] 1)p…Cage type

1P	2P	3P	4P	5P

2) r_a: shaft fillet size corresponding to the inner ring chamfer size r; r_b: shell fillet size corresponding to the outer ring size r_1

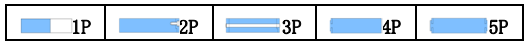
d 320～340mm





Principal dimensions(mm)						Basic load ratings(kN)			Designations	Other dimensions (mm)			Abutment and fillet dimensions (mm)				Mass(kg) (approx.)
d	*D*	*B*	*C*	*F*	r_{min}	r_{1min}	C_r	C_{or}		D_1	b	k	d_{amin}	D_{amax}	r_{amax} 2)	r_{bmax} 2)	
320	460	280	280	357	4	4	2820	7370	**FC6492280/W33YA34**	408	12	8	337	443	3	3	157
	460	280	280	357	4	4	2820	7370	**FC6492280/YA34**	408	-	-	337	443	3	3	157
	460	300	300	357	4	4	3000	8010	**FC6492300**	408	12	6	337	443	3	3	169
	460	240	240	364	3	3	2470	6260	**FCD6492240/C9YAD**	416	-	-	334	446	2.5	2.5	131
	460	240	240	364	3	3	2470	6260	**FCD6492240/HCOIC4YAD1**	416	12	6	334	446	2.5	2.5	131
	460	240	240	364	3	3	2470	6260	**FCD6492240/HCYA34**	416	-	-	334	446	2.5	2.5	130
	460	240	240	364	4	4	2470	6260	**FCD6492240/YA3**	415.5	12	6	336	444	3	3	131
	460	240	240	364	3	3	2710	7060	**FCD6492240ZW/HCC4YA3**	417	12	6	334	446	2.5	2.5	141
	460	240	240	364	3	3	2710	7060	**FCD6492240ZW/HCOIYAD**	417	15	8	334	446	2.5	2.5	141
	460	240	240	364	3	3	2710	7060	**FCD6492240ZW/HCP64YA3**	417	12	6	334	446	2.5	2.5	139
	460	240	240	364	3	3	2710	7060	**FCD6492240ZW/HG2IYA3**	417	-	-	334	446	2.5	2.5	141
	460	240	240	364	3	3	2710	7060	**FCD6492240ZW/P6YA3**	417	12	6	334	446	2.5	2.5	139
	460	240	240	364	3	3	2710	7060	**FCD6492240ZW/YA34/W281**	417	-	-	334	446	2.5	2.5	141
	460	300	300	357	4	4	3100	8330	**FCD6492300**	408	-	-	337	443	3	3	169
	460	300	300	357	4	4	3100	8330	**FCD6492300F3/YA3**	408	11	6	337	443	3	3	168
	460	300	300	357	4	4	3270	8560	**FCD6492300ZW/C4YA34**	412	12	6	337	443	3	3	172
	460	340	340	357	4	4	3730	10200	**FCD6492340/YA3**	413	12	6	337	443	3	3	189
	460	340	340	357	4	4	3730	10200	**FCD6492340F3/YA3**	413	12	6	337	443	3	3	187
	475	340	340	357	3	3	3700	8670	**FCDP6495340F3/HCEYAD**	425	15	8	334	461	2.5	2.5	212
	480	306	306	364	4	4	3370	8310	**FCD6496306/HCYA3**	427	12	6	337	463	3	3	197
	480	306	306	364	4	4	3370	8310	**FCD6496306/HG2YA3**	427	12	6	337	463	3	3	197
	480	350	350	364	4	4	4080	10600	**FCD6496350F3/HCYA34**	427	16	8	337	463	3	3	230
	480	350	350	364	4	4	4080	10600	**FCD6496350F3/HG2YA34**	427	16	8	337	463	3	3	230
330	460	340	340	365	4	4	3450	9630	**FCD6692340**	416.2	12	6	347	443	3	3	210
	460	340	340	365	4	4	3410	9480	**FCD6692340/YA41**	416.2	12	6	347	443	3	3	210
	460	340	340	365	4	1.5	3570	10080	**FCDP6692340/YA8**	416	12	6	347	450	3	1.5	186
	460	340	340	365	10.5x20°	1.5	3570	10080	**FCDP6692340/YAD**	416	12	6	342	450	3	1.5	186
338	480	260	260	374	4	4	2910	7480	**FC6896260X4**	429	12	6	355	463	3	3	153
340	450	250	250	371	4	4	2470	6930	**FC6890250/HG2**	416	-	-	357	433	3	3	107
	450	250	250	371	4	4	2470	6930	**FC6890250/P6YAD2**	416	12	6	357	433	3	3	107

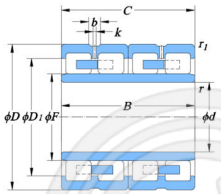
[**Note**] 1)p…Cage type



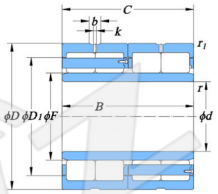
2) r_a: shaft fillet size corresponding to the inner ring chamfer size r; r_b: shell fillet size corresponding to the outer ring size r_1

d 340mm

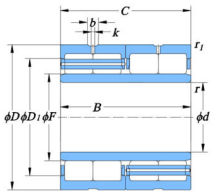
Figures[1] FC-1P



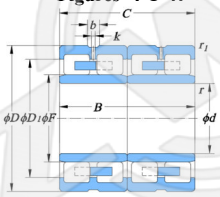
FC-2P



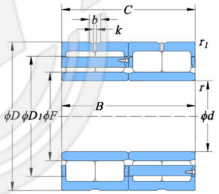
FC-3P



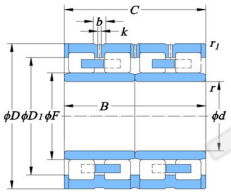
FCD-1P



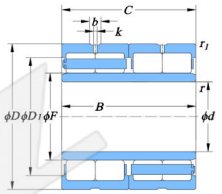
FCD1-P



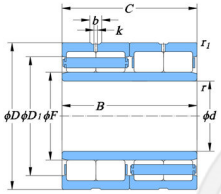
FCDP-1P



FC-4P



FC-5P



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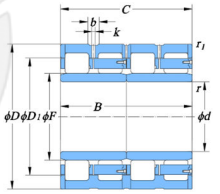

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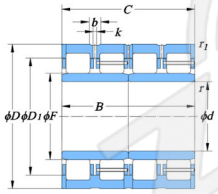

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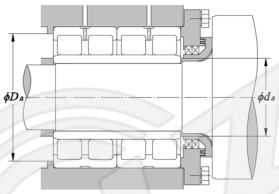
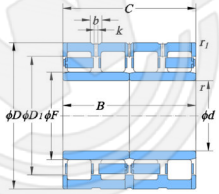




Principal dimensions(mm)							Basic load ratings(kN)	
d	*D*	*B*	*C*	*F*	r_{min}	r_{1min}	C_r	C_{or}
340	450	250	250	370	4	4	2100	6470
	450	250	250	369	4	4	2470	6930
	450	250	250	369	4	4	2260	6500
	450	250	250	371	4	4	2450	7240
	450	250	250	371	4	4	2170	6980
	450	250	250	369	4	4	2450	7240
	450	250	250	371	4	4	2170	6980
	450	250	250	371	4	4	2170	6980
	450	250	250	369	5	5	2450	7240
	450	250	250	369	4	4	2450	7240
	450	250	250	369	4	4	2260	6500
	450	250	250	369	4	4	2450	7240
	450	260	260	370	4	4	2410	7250
	450	250	250	369	4	4	2080	5810
	460	260	260	370	4	4	2670	7310
	460	260	260	370	4	4	2670	7310
	460	260	260	370	4	4	2410	6110
	460	260	260	370	4	4	2670	7310
	460	260	260	370	4	4	2500	6660
	460	260	260	370	4	4	2670	7310
	460	260	260	370	4	4	2670	7310
	460	260	260	370	4	4	2670	7310
	460	260	260	370	4	4	2670	7310
	460	300	300	370	4	4	2180	6050
	460	260	260	370	4	4	2100	5610
	480	350	350	378	4	4	3650	10300
	480	350	350	378	4	4	3700	10400
	480	280	280	378	4	4	2970	8050
	480	310	310	378	7x15°	4	3440	9130
	480	350	350	378	4	4	3650	10300

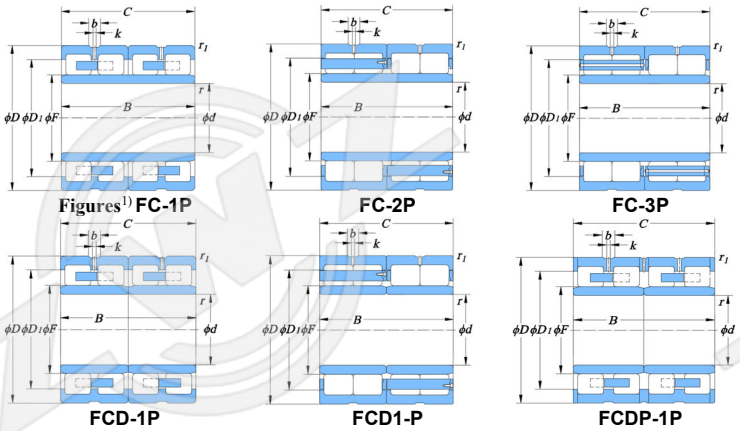
Designations	Other dimensions (mm)			Abutment and fillet dimensions (mm)				Mass(kg) (approx.)
	D_1	b	k	d_{amin}	D_{amax}	r_{amax} [2]	r_{bmax} [2]	
FC6890250/YAB	406.8	12	8	357	433	3	3	111
FC6890250/YAD	415	12	6	357	433	3	3	105
FC6890250/YAD1	411	12	6	357	433	3	3	108
FC6890250F3/C4YA341	413	12	6	357	433	3	3	109
FCD6890250/C3YA4	406.2	12	6	357	433	3	3	115
FCD6890250/C4YA34	410.6	12	6	357	433	3	3	109
FCD6890250/C9YAD1	406.2	-	-	357	433	3	3	115
FCD6890250/C9YAD3	406.2	12	6	357	433	3	3	115
FCD6890250/HCEYAB1	410.6	12	6	356	430	4	4	109
FCD6890250/HCYA34	410.6	12	6	357	433	3	3	109
FCD6890250/YAD4	411	12	6	357	433	3	3	108
FCD6890250F3/C4YA34	410.6	12	6	357	433	3	3	108
FCD6890260/YA3	411	16	8	357	433	3	3	115
FCDSP6890250/YAD	411	12	6	357	433	3	3	114
FC6892260/C9YA4	418	12	6	357	443	3	3	125
FC6892260/HC	418	12	6	357	443	3	3	125
FC6892260/HG2YAD	421.2	12	6	354	443	3	3	120
FC6892260/YAB	418	12	6	357	443	3	3	125
FC6892260/YAB1	418	12	8	357	443	3	3	123
FCD6892260	418	12	6	357	443	3	3	125
FCD6892260/C4S1YA1	418	16	8	357	443	3	3	124
FCD6892260/YA34	418	12	6	357	443	3	3	125
FCD6892260/YA41	418	12	6	357	443	3	3	125
FCD6892300ZW/HCC9YA4	412.6	12	6	357	443	3	3	156
FCDP6892260ZW/HG2YAD	415	12	8	357	443	3	3	131
FC6896350/YA34	430.8	-	-	357	463	3	3	202
FC6896350ZW/YA34	431	-	-	357	463	3	3	212
FCD6896280/YAB	429.2	12	6	357	463	3	3	164
FCD6896310/HCYAB	434	12	6	348	463	1.5	3	177
FCD6896350	430.8	12	6	357	463	3	3	202

[**Note**] 1)p…Cage type

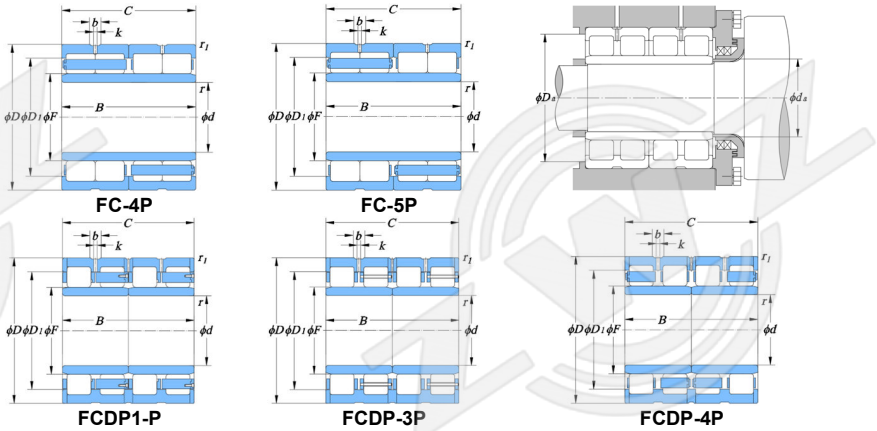
1P	2P	3P	4P	5P

2) r_a: shaft fillet size corresponding to the inner ring chamfer size r; r_b: shell fillet size corresponding to the outer ring size r_1

d 340～360mm

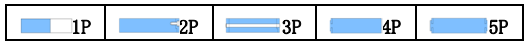


Figures[1)]



Principal dimensions(mm)							Basic load ratings(kN)		Designations	Other dimensions (mm)			Abutment and fillet dimensions (mm)				Mass(kg) (approx.)
d	*D*	*B*	*C*	*F*	r_{min}	r_{1min}	C_r	C_{or}		D_1	b	k	d_{amin}	D_{amax}	r_{amax} 2)	r_{bmax} 2)	
340	480	350	350	378	4	4	3650	10300	FCD6896350/HCC9YA3	430.8	12	6	357	463	3	3	202
	480	350	350	378	4	4	3430	9660	FCD6896350/YA4	429.2	12	6	357	463	3	3	203
	480	350	350	378	4	4	3140	10000	FCD6896350/YAB	419.6	12	6	357	463	3	3	212
	480	350	350	378	4	4	3840	10700	FCD6896350/YAD2	432.4	15	6	357	463	3	3	206
	480	350	350	378	4	4	3650	10300	FCD6896350F3/HC	430.8	12	6	357	463	3	3	200
	480	350	350	378	4	4	3980	11200	FCDP6896350/HCYA4	432.4	12	6	357	463	3	3	203
	480	370	350	376	3	1.5	3430	9220	FCDP6896350F3WB1/HCC9YAD/HC	430.4	12	6	355	470	2.5	1.5	210
	480	385	350	378	7x20°	4	3430	9220	FCDP6896350WB/HCC91YAD1	432.4	12	6	369	463	2	3	218
	480	385	350	378	7x20°	4	3430	9220	FCDP6896350WB/HCC92YAD1	432.4	12	6	369	463	2	2	218
	480	385	350	378	7x20°	4	3980	11200	FCDP6896350WB/HCC9YAD	432.4	12	6	369	463	2	3	209
	480	385	350	378	7x20°	4	3430	9220	FCDP6896350WB/HCC9YAD1	432.4	12	6	369	463	2	3	218
	480	350	350	378	4	4	3970	11100	FCDP6896350ZW/C4YAD	432.4	12	6	357	463	3	3	214
	480	350	350	378	4	4	3970	11100	FCDP6896350ZW/HCOYAD1	432.4	12	8	357	463	3	3	214
345	480	290	290	382	4	4	3110	8570	FC6996290	446	12	6	362	463	3	3	163
350	500	380	380	389	4	4	4130	11400	FCD70100380/P6YA41	447	12	6	367	483	3	3	243
	500	380	380	390	4	4	4130	11400	FCD70100380/YA4	448	12	6	367	483	3	3	245
	500	380	380	388	6	3	3890	10200	FCDSP70100380	440	12	6	372	486	5	2.5	225
	500	380	380	388	6	3	3890	10200	FCDSP70100380/HC	440	12	6	372	486	5	2.5	225
	520	300	300	401	5	5	3280	8580	FCD70104300/C3YB2	458.6	16	8	374	496	4	4	226
	520	300	300	401	4	4	3490	9300	FCD70104300/HCOC9YAD	459	15	8	367	503	3	3	229
360	480	290	290	392	4	4	3050	8830	FC7296290	441	12	6	374	463	3	3	147
	480	290	290	388	4	4	3270	8800	FC7296290/HG2YAD	443	12	6	377	463	3	3	143
	480	340	340	392	4	4	3610	10900	FCD7296340/HCYB2	441.5	12	6	377	463	3	3	172
	480	340	340	392	4	4	3610	10900	FCD7296340/P6YB2	441.5	12	6	377	463	3	3	172
	500	250	250	394	3	3	2970	7350	FC72100250/YA34	454	16	8	374	486	2.5	2.5	147
	500	250	250	394	3	3	2940	7250	FC72100250ZW/HCYA3	456	-	-	374	486	2.5	2.5	156
	500	250	250	394	3	3	2940	7250	FC72100250ZW/YA3	456	-	-	374	486	2.5	2.5	156
	500	250	250	394	3	3	2970	7350	FCD72100250/HCYA34	454	-	-	374	486	2.5	2.5	147
	500	250	250	394	3	3	2970	7350	FCD72100250F1/HCP54YA34	454	-	-	374	486	2.5	2.5	146
	500	250	250	394	3	3	3180	7620	FCD72100250F3/HC	460	-	-	375	486	2.5	2.5	146

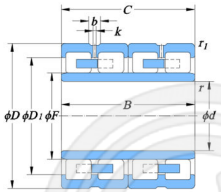
[**Note**] 1)p…Cage type



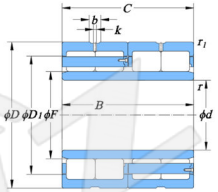
2) r_a: shaft fillet size corresponding to the inner ring chamfer size r; r_b: shell fillet size corresponding to the outer ring size r_1

d 360～380mm

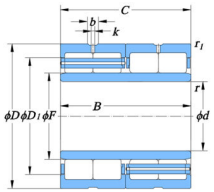
Figures[1)] FC-1P



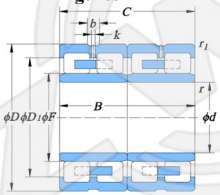
FC-2P



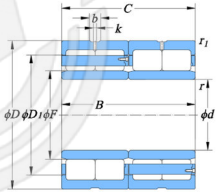
FC-3P



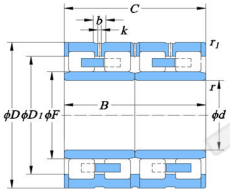
FCD-1P



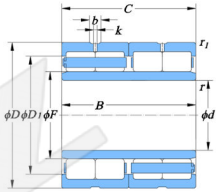
FCD1-P



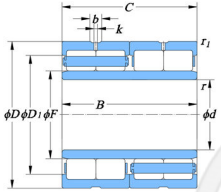
FCDP-1P



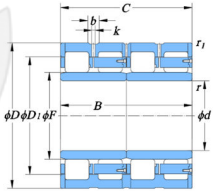
FC-4P



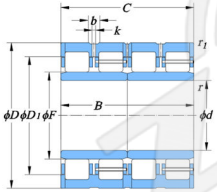
FC-5P



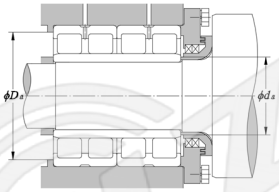
FCDP1-P



FCDP-3P



FCDP-4P



Principal dimensions(mm)						Basic load ratings(kN)		
d	*D*	*B*	*C*	*F*	r_{min}	r_{1min}	C_r	C_{or}
360	500	300	300	394	3	3	3800	9590
	500	250	250	394	3	3	2940	7250
	500	250	250	394	3	3	2940	7250
	510	370	370	397	4	4	4270	11600
	510	370	370	399.5	4	4	4270	11600
	510	370	370	397	4	4	4270	11600
	510	370	370	399	4	4	4390	12000
	510	370	370	397	4	4	4180	11200
	520	380	380	405	4	4	4550	12200
	520	380	380	405	4	4	4430	11800
365	540	300	300	421	2	2	5000	11000
370	520	380	380	409	4	4	4380	12000
	520	380	380	409	4	4	4380	12000
	520	400	400	409	4	4	4580	12800
	520	380	380	409	1.5	1.5	4380	12000
	520	380	380	409	4	4	4270	11700
	520	380	380	409	4	4	4380	12000
	520	380	380	409	1.5	1.5	4380	12000
	520	380	380	409	1.5	1.5	4380	12000
	530	400	400	413	4	4	4650	12600
	530	400	400	412.5	4	4	4650	12600
375	520	360	360	422	15×20°	5	3800	12000
	600	440	440	470	2	2	5300	15500
380	480	200	200	414.5	4	4	1680	5600
	500	315	315	412	4	4	3030	8900
	520	280	280	417	4	4	3280	9000
	520	280	280	417	4	4	3280	9000
	520	280	280	417	4	4	3280	9000
	520	280	280	417	4	4	2790	8400
	520	280	280	417	4	4	2900	8900

Designations	Other dimensions (mm)			Abutment and fillet dimensions (mm)				Mass(kg) (approx.)
	D_1	b	k	d_{amin}	D_{amax}	r_{amax} 2)	r_{bmax} 2)	
FCD72100300/YA3	460	11	6	374	486	2.5	2.5	179
FCDP72100250ZW/HCOIYAD1	454	15	8	374	486	2.5	2.5	160
FCDP72100250ZW/YAD	454	12	6	374	486	2.5	2.5	160
FCD72102370	460	12	6	377	493	3	3	240
FCD72102370/YA4	462	12	6	377	493	3	3	241
FCD72102370F3	460	12	6	377	493	3	3	249
FCD72102370F3/HCEYAD	460	15	8	377	493	3	3	240
FCDP72102370/HC	460	15	8	377	493	3	3	253
FCD72104380/C4YA3	470	12	6	377	503	3	3	268
FCDP72104380F3/HCYA4	471	12	6	377	503	3	3	277
FC73108300	490	12	6	376	529	2	2	225
FCD74104380/HC	472	12	6	387	503	3	3	254
FCD74104380/HG2	472	12	6	387	503	3	3	254
FCD74104400/HCYAD	470	12	6	387	503	3	3	267
FCDP74104380	474	12	6	380	511	1.5	1.5	256
FCDP74104380/HCYA8	474	12	6	387	505	3	3	261
FCDP74104380/HCYA81	474	16	8	381	505	3	3	260
FCDP74104380/HCYAD	474	12	6	380	511	1.5	1.5	258
FCDP74104380/YAD	474	12	6	380	511	1.5	1.5	258
FCDP74106400/HCG2I	478	12	6	387	513	3	3	299
FCDP74106400/HCYA4	478	12	6	387	513	3	3	300
FCD75104360/HG2IYAD	470	12	6	390	501	4.5	4	241
FCDP75120440/P63	535	15	6	386	589	2	2	527
FCD7696200/P5YB4	446.4	10	7	397	463	3	3	88.1
FCD76100300/YAG	460	-	-	397	483	3	3	157
FC76104280/C9YA41	472	12	6	397	503	3	3	177
FC76104280/HCP52YA4	472	12	6	397	503	3	3	177
FC76104280/P59YAB/HYBT	472	12	6	397	503	3	3	177
FC76104280/P59YAB2	461.8	12	6	397	503	3	3	182
FC76104280/YAB1	461.8	12	6	397	503	3	3	185

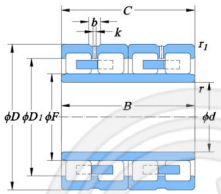
[**Note**] 1)p…Cage type

1P	2P	3P	4P	5P

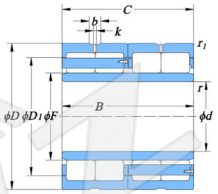
2) r_a: shaft fillet size corresponding to the inner ring chamfer size r; r_b: shell fillet size corresponding to the outer ring size r_1

d 380mm

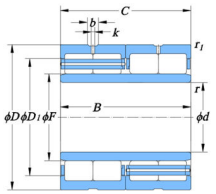
Figures[1] FC-1P



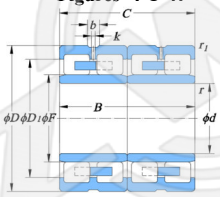
FC-2P



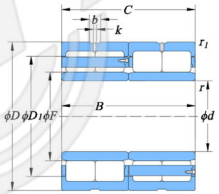
FC-3P



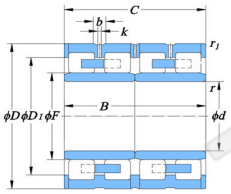
FCD-1P



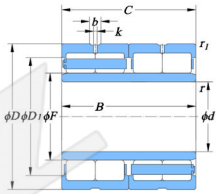
FCD1-P



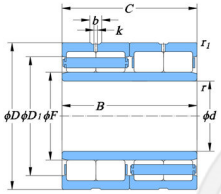
FCDP-1P



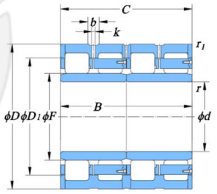
FC-4P



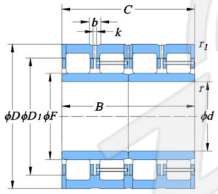
FC-5P



FCDP1-P



FCDP-3P



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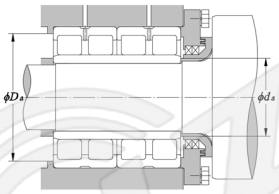
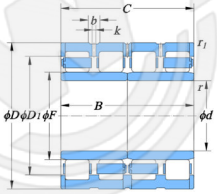




Principal dimensions(mm)							Basic load ratings(kN)	
d	*D*	*B*	*C*	*F*	r_{min}	r_{1min}	C_r	C_{or}
380	520	280	280	417	4	4	2790	8400
	520	290	290	426	4	4	2800	9300
	520	290	290	426	4	4	2800	9300
	520	300	300	415	4	4	3410	9500
	520	300	300	415	4	4	3410	9500
	520	340	340	416	4	4	3710	10600
	520	340	340	416	4	4	3680	10900
	520	340	340	416	4	4	3920	11900
	520	340	340	416	4	4	3670	10900
	520	340	340	416	4	4	3670	10900
	540	304	304	422	4	4	3970	10300
	540	340	340	422	4	4	4470	12100
	540	360	360	422	10X6	4	4520	13200
	540	260	260	428	4	4	3350	8550
	540	300	300	421	8.5×20°	2	4650	10100
	540	400	400	422	10×20°	4	5020	14000
	540	400	400	422	10×20°	4	5020	14000
	540	400	400	422	4	4	5020	14000
	540	300	300	422	4	4	3640	9200
	540	300	300	421	8.5x20°	2	3900	9800
	540	400	380	422	7x20°	4	4410	11800
	540	400	380	422	7x20°	4	4410	11800
	540	400	380	422	7x20°	4	5100	14300
	540	400	400	422	10x20°	2	5290	15000
	540	400	400	422	4	4	4740	13000
	540	400	400	422	10x20°	4	4740	13000
	540	360	360	422	6	4	4540	11900
	540	360	360	422	10x6	4	4540	11900
	540	360	360	422	6	4	4540	11900
	560	300	300	424	13.5×20°	2	4950	9650

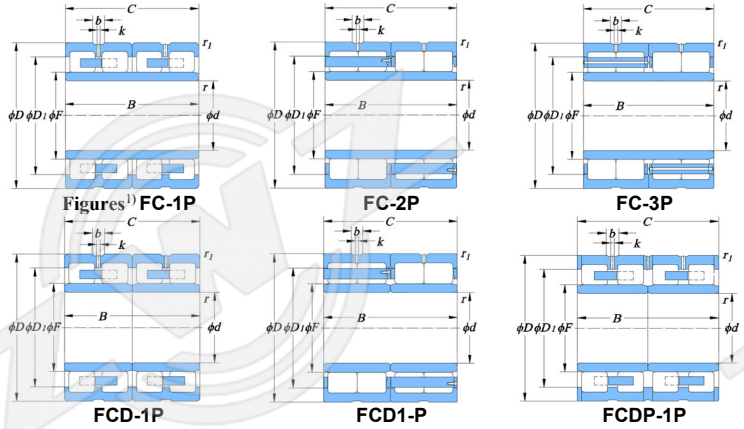
[**Note**] 1)p…Cage type

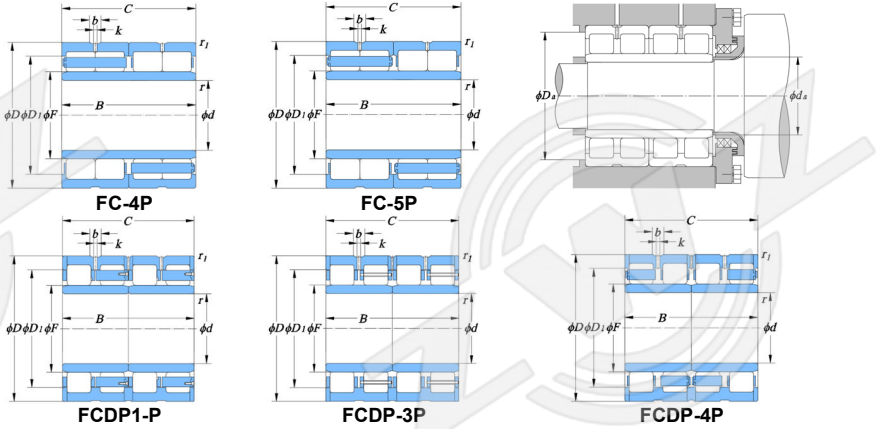
1P	2P	3P	4P	5P

Designations	Other dimensions(mm)			Abutment and fillet dimensions (mm)				Mass(kg) (approx.)
	D_1	b	k	d_{amin}	D_{amax}	r_{amax} 2)	r_{bmax} 2)	
FC76104280F3/P59YAB2	461.8	12	6	397	503	3	3	181
FCD76104290F1/YA3/W281	467	12	6	397	503	3	3	192
FCD76104290F3/YA3/W281	467	12	6	397	503	3	3	192
FCD76104300/HG2YA4	469.5	15	8	397	503	3	3	191
FCD76104300/YA4	469.5	12	6	397	503	3	3	191
FCD76104340/HCYAD	470.4	12	8	397	503	3	3	215
FCD76104340/P6	468	12	6	397	503	3	3	219
FCD76104340ZW/HCP6	468	12	6	397	503	3	3	227
FCD76104340ZW/HG2	468	12	6	397	503	3	3	224
FCD76104340ZW/YA3	468	12	6	395	503	3	3	224
FC76108304	488	12	6	397	523	3	3	227
FC76108340	488	12	6	397	523	3	3	256
FC76108360/HCC9	480	20	12	396	523	5	3	276
FCD76108260	495	-	-	397	523	3	3	198
FCD76108300	490	12	6	391	526	2	2.5	220
FCD76108400/HCOYA34	488	12	6	391	523	3	3	297
FCD76108400/HCYA34	488	12	6	391	523	3	3	297
FCD76108400/YA3	488	12	6	397	523	3	3	297
FCDP76108300/HCYA34	486	12	6	397	526	3	3	229
FCDP76108300/HCYAD	489	12	6	390	529	2.5	2	222
FCDP76108380WB/HCEP59YAB	488	15	8	399	523	2	3	294
FCDP76108380WB/HCP6YAB	488	15	8	399	523	2	3	294
FCDP76108380WB/HCP6YAB1	488	15	8	399	521	2	3	285
FCDP76108400/C4YA34	489	12	6	391	529	3	2	296
FCDP76108400/C4YAD2	488	15	8	397	523	3	3	316
FCDP76108400/YAD1	488	12	6	391	531	3	3	316
FCDSP76108360/HCC9	492	20	12	398	523	5	3	278
FCDSP76108360/HCIG2OC92YA8	492	20	12	398	523	12	3	274
FCDSP76108360/HCRG2C91	492	20	12	398	531	5	3	278
FCD76112300	488	13.9	7.5	391	543	2	3.5	261

2) r_a: shaft fillet size corresponding to the inner ring chamfer size r; r_b: shell fillet size corresponding to the outer ring size r_1

d 380～400mm





Principal dimensions(mm)							Basic load ratings(kN)	
d	*D*	*B*	*C*	*F*	r_{min}	r_{1min}	C_r	C_{or}
380	560	325	325	425	5	5	4840	10000
390	510	290	290	424	3	3	2950	9100
	540	320	320	431	4	4	3540	9700
	540	320	320	431	4	4	3660	9700
	540	320	320	431	4	4	3660	9700
	540	320	320	431	10x20°	4	3660	9700
	550	400	400	432.3	4	4	4950	13800
	550	400	400	432.3	4	4	4950	13800
	550	400	400	434	1.5	5	4950	13800
400	520	250	250	432	4	4	2830	8300
	520	250	250	433	4	4	2830	8300
	550	300	300	442	5	5	3460	9500
	550	300	300	442	5	5	3680	10300
	550	300	300	442	5	5	3680	10300
	550	300	300	442	5	5	3460	9500
	560	300	300	442	4	4	4550	10000
	560	300	300	445	5	5	3760	10200
	560	300	300	442	4	4	4380	11900
	560	410	410	445	13.5×20°	2	6250	15600
	560	410	410	445	12×20°	5	5230	15000
	560	410	410	445	5	5	5230	15000
	560	410	410	445	5	5	5230	15000
	560	410	410	445	5	5	4440	13600
	560	360	360	445	5	2	4110	11400
	560	410	410	445	2	2	5590	16400
	560	410	410	445	12x20°	2	5590	16400
	560	410	410	445	6	2	5590	16400
	560	410	410	445	5	5	5590	16400
	560	410	410	445	5	5	5590	16400
	560	410	410	445	5	2	5230	15000

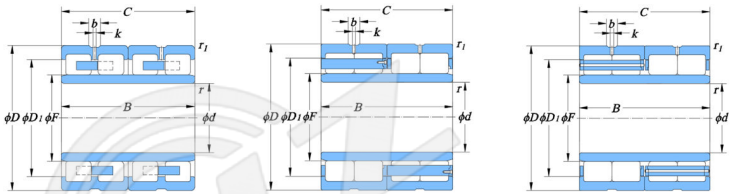
Designations	Other dimensions(mm)			Abutment and fillet dimensions (mm)				Mass(kg) (approx.)
	D_1	b	k	d_{amin}	D_{amax}	r_{amax} 2)	r_{bmax} 2)	
FCD76112325	506	-	-	399	541	4	4	263
FCD78102290/YA3	469	12	6	404	496	2.5	2.5	158
FCD78108320/HCYA34	489.6	15	8	407	523	3	3	222
FCDP78108320/HG2YAD1	494	15	8	407	526	3	3	230
FCDP78108320/HG2YAD2	494	15	8	407	529	3	3	230
FCDP78108320/YAD	494	15	8	401	526	3	3	230
FC78110400K/HCYA4	496.5	12	6	407	533	3	3	330
FC78110400K/HG2YA4	496.5	12	6	407	533	3	3	330
FCD78110400/HG2YAD	498	20	10	399	531	1.5	4	300
FC80104250/C9YAD	480	12	6	417	503	3	3	139
FC80104250/P5YA4	481	12	6	420	500	3	3	138
FC80110300	502	12	6	420	530	4	4	223
FC80110300A	499.6	12	6	420	530	4	4	225
FC80110300A/P52YAD	499.6	12	6	420	530	4	4	225
FC80110300S	502	12	6	420	530	4	4	223
FC80112300	513	-	-	417	543	3	3	242
FC80112300Q1/HG2P5	507	12	6	420	540	4	4	230
FC80112300ZW/C4YA3	506	-	-	417	543	3	3	244
FCD80112410	509	13.9	7.5	411	543	2	3.5	310
FCD80112410/HCYA34	509	13	7	413	541	3	4	320
FCD80112410/HG2IP6YA46	509	12	7	419	541	4	4	320
FCD80112410/HG2P64YAD	509	12	7	419	541	4	4	320
FCD80112410/HG2YA4	500	15	8	419	541	4	4	325
FCDP80112360/HG2I	506	15	8	419	549	4	2	290
FCDP80112410/HCEC4YA34/W283	510	15	8	410	549	2	2	313
FCDP80112410/HCEG2IC4YA34/W283	510	15	8	413	549	3	2	313
FCDP80112410/HCEYAB	510	15	8	424	549	5	2	313
FCDP80112410/HCEYAD	510	13	7	419	544	4	4	313
FCDP80112410/HCEYAD/W283	510	15	8	419	544	4	4	313
FCDP80112410/P5YA8	510	15	8	419	549	4	2	331

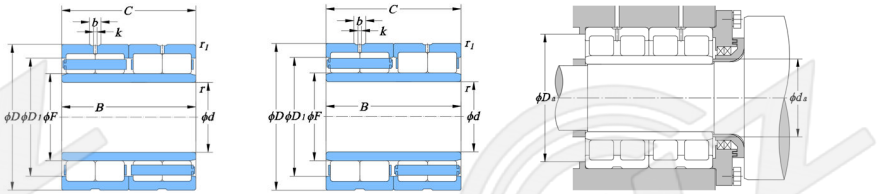
[**Note**] 1)p…Cage type

1P	2P	3P	4P	5P

2) r_a: shaft fillet size corresponding to the inner ring chamfer size r; r_b: shell fillet size corresponding to the outer ring size r_1

d 400～440mm





Figures[1] FC-1P

Principal dimensions(mm)							Basic load ratings(kN)	
d	*D*	*B*	*C*	*F*	r_{min}	r_{1min}	C_r	C_{or}
400	590	440	440	450	5	5	7250	16500
410	560	400	400	450	5	5	4640	13900
	560	400	400	450	5	5	4640	13900
	560	400	400	450	5	5	4640	13900
	560	400	400	450	11×20°	2	6400	15800
	560	400	400	450	5	5	4630	13300
	560	400	400	450	5	4	4330	12700
	560	400	400	450	11×20°	2	4640	13900
	560	400	400	450	5	5	4330	12700
	600	440	440	460	5	5	5840	16100
	600	440	440	460	5	5	6420	18200
	600	440	440	460	5	5	6420	18200
418.5	600	410	410	470	6.8	5	5220	14200
	600	410	410	470	6.8	5	5220	14200
	600	410	410	470	6.8	5	5220	14200
	600	410	410	470	10x6.8	5	5220	14200
420	580	260	260	468	4	4	4350	9600
	600	440	440	470	5	5	5550	16300
	600	440	440	470	5	5	5570	16500
	600	440	440	470	5	5	5570	16500
	600	440	440	470	5	5	5570	16500
	600	440	440	470	5	5	6290	18800
	600	440	440	470	5	5	6290	18800
	600	440	440	470	5	5	6290	18800
	600	440	440	470	5	5	5200	15100
	600	440	440	470	5	5	6290	18800
	600	440	440	470	10×20°	5	6290	18800
	600	440	440	470	5	5	6290	18800
	620	400	400	473	5	5	5570	14600
440	620	450	450	487	5	5	5790	16200

Designations	Other dimensions(mm)			Abutment and fillet dimensions (mm)				Mass(kg) (approx.)
	D_1	b	k	d_{amin}	D_{amax}	r_{amax}[2]	r_{bmax}[2]	
FCD80114440	530	-	-	419	571	4	4	410
FCD82112400/HC	508	16.7	9	430	540	4	4	295
FCD82112400/HCP5YA34	508	16.7	9	430	540	4	4	295
FCD82112400/HG2	508	16.7	9	430	540	4	4	295
FCDP82112400	515	16.7	9	421	543	2	3	287
FCDP82112400/HCOYAD1	511	18	10	427	540	4	4	303
FCDP82112400/HCYA8	508	15	8	430	540	4	3	301
FCDP82112400/HCYAD	508	16.7	9	422	549	3	2	286
FCDP82112400/YA8	508	15	8	430	540	4	4	301
FCD82120440/HCYAD	533	20	10	430	580	4	4	425
FCDP82120440/HCG2IYA34	533	20	10	430	580	4	4	432
FCDP82120440/HCYA34	533	20	10	430	580	4	4	432
FCDP84120410X4/HCEG2OC9YAD/W283	542	22	10	436	580	5	4	402
FCDP84120410X4/HCRG2C91YAD	542	22	10	436	591	5	4	402
FCDP84120410X4/HCXC9YAD	542	22	10	436	580	5	4	402
FCDP84120410X4/HG2OIC92YAD	542	22	10	436	580	5	4	398
FCD84116260	536	-	-	437	563	3	3	205
FCD84116320	535	18	8	439	581	4	4	414
FCD84120440	535	18	8	440	580	4	4	414
FCD84120440/HCP6YAB	535	18	8	444	576	4	4	414
FCD84120440/HG2	535	18	8	440	580	4	4	414
FCDP84120440/HCEP5YAD1	540	22	10	440	580	4	4	416
FCDP84120440/HCG2IYA34	540	22	10	440	580	4	4	416
FCDP84120440/HCYA34	540	22	10	440	580	4	4	416
FCDP84120440/HCYA8	535	22	10	440	580	4	4	426
FCDP84120440/HCYAB	540	22	10	440	580	4	4	416
FCDP84120440/HCYAD	540	29	12	431	580	3	4	417
FCDP84120440/HG2YAD2	540	22	10	440	580	4	4	416
FCD84124400/HC	550	15	8	440	600	4	4	423
FCDP88124450	563	15	8	460	600	4	4	456

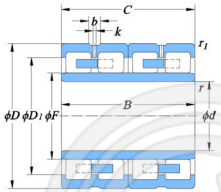
[**Note**] 1)p…Cage type

1P	2P	3P	4P	5P

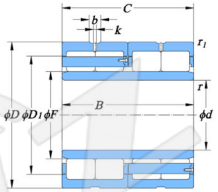
2) r_a: shaft fillet size corresponding to the inner ring chamfer size r; r_b: shell fillet size corresponding to the outer ring size r_1

d 440～455mm

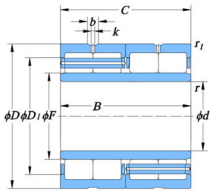
Figures[1)] FC-1P



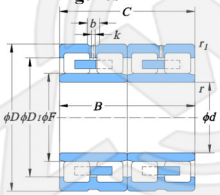
FC-2P



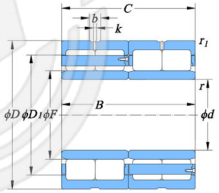
FC-3P



FCD-1P



FCD1-P



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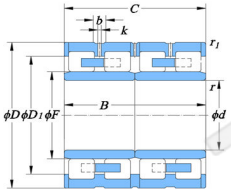
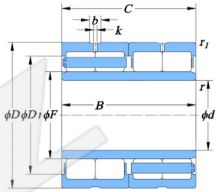
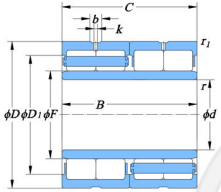


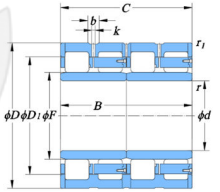
FC-4P



FC-5P



FCDP1-P



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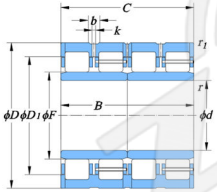

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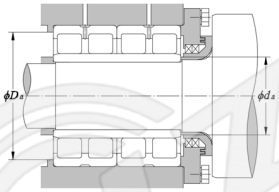
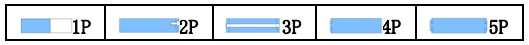


Principal dimensions(mm)							Basic load ratings(kN)	
d	*D*	*B*	*C*	*F*	r_{min}	r_{1min}	C_r	C_{or}
440	620	450	450	487	5	5	7160	20400
	620	450	450	487	2	2	7160	20400
	620	450	450	487	12×20°	2	7160	20400
	620	450	450	487	12×20°	2	7160	20400
	620	450	450	487	12×20°	5	7340	20500
	620	450	450	487	12×20°	2	7160	20400
	620	450	450	487	12×20°	2	7160	20400
	620	450	450	487	5	5	7160	20400
	620	450	450	487	5	5	7160	20400
	620	450	450	487	5	5	5780	15500
	620	450	450	487	12x20°	3	5920	17000
	620	450	450	487	12x20°	3	5920	17000
	620	450	450	487	5	5	5790	16190
	620	450	450	487	12x20°	3	5920	17000
	620	450	450	487	5	5	5790	16200
	620	450	450	487	12x20°	3	5790	16200
	620	485	450	487	12.5x20°	4	6180	17600
	640	420	420	492	12x20°	3	5880	15400
	650	355	355	509.5	3	3	6250	14600
	650	355	355	494	12.5×20°	4	6700	14700
	650	355	355	494	12.5×20°	4	5940	14900
	650	355	355	494	4.5	4	5940	14900
	660	340	340	492	6	6	5640	13500
	660	340	340	492	6	6	5640	13500
447.295	635.176	463.55	463.55	495	13.5x20°	5	7240	20800
	635.176	463.55	463.55	495	13.5×20°	5	7240	20800
450	590	300	300	490	14.5×45°	4	3900	12200
	590	300	300	490	4	4	3600	11000
455	700	310	310	532	6	6	5240	12900
	700	310	310	532	6	6	5240	12900

Designations	Other dimensions(mm)			Abutment and fillet dimensions (mm)				Mass(kg) (approx.)
	D_1	b	k	d_{amin}	D_{amax}	r_{amax} 2)	r_{bmax} 2)	
FCDP88124450/HC	564.5	20	10	460	600	4	4	428
FCDP88124450/HCC4YA34	564.5	20	10	450	609	2	2	428
FCDP88124450/HCEYA6	564.5	15	8	453	609	3	2	428
FCDP88124450/HCEYA6/W283	564.5	20	10	453	609	3	2	428
FCDP88124450/HCEYAD/HT	567	20	10	453	602	3	4	426
FCDP88124450/HCG2IC4YA34	564.5	20	10	453	609	3	2	428
FCDP88124450/HCYA36	564.5	20	10	453	609	3	2	428
FCDP88124450/HCYAB	564.5	20	10	460	600	4	4	428
FCDP88124450/HCYAD/W283	564.5	15	8	460	600	4	4	428
FCDP88124450/HCYAD1	564.5	20	10	460	600	4	4	428
FCDP88124450/HCYAD2	558	21	10	453	607	3	2.5	445
FCDP88124450/HG2YA8	558	21	10	453	607	3	2.5	445
FCDP88124450/YA6	563	15	8	459	601	4	4	452
FCDP88124450/YA8	558	21	10	453	607	3	2.5	445
FCDP88124450F1/HCO	563	15	8	460	600	4	4	452
FCDP88124450F3/HCP6YAD1/HC	563	15	8	453	606	3	2.5	448
FCDP88124450WB/HCEP5YAB	562	21	9	453	604	3.5	3	455
FCDP88128420/HC	572	21	10	453	627	3	2.5	482
FC88130355	585	11.1	6	454	636	2.5	2.5	400
FC88130355A	584	11.1	6	457	633	3	3.5	421
FCD88130355/HCYAD	582	15	8	453	633	3.5	3	405
FCD88130355/YA34	582	15	8	453	633	3.5	3	405
FC88132340ZW/HCC4YA3	582	-	-	464	636	5	5	425
FCD88132340ZW/HCC4YA3	582	-	-	464	636	5	5	425
FCDP89127463X4/HCEYAD/W283	575	21.3	10	461	615	3.5	4	478
FCDP89127463X4/HCYAD/W283	575	22	8	461	615	3.5	4	478
FC90114300	528	12	6	467	571	3	4	240
FCD90118300/HG2P6/HYBT	556	15	8	467	573	3	3	217
NNQP692KZW/P4YB5	550	-	-	479	676	5	5	422
NNQP692KZW/P5YB5	550	-	-	479	676	5	5	422

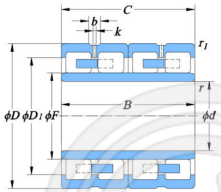
[**Note**] 1)p…Cage type



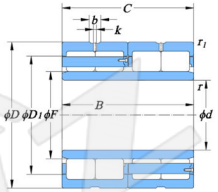
2) r_a: shaft fillet size corresponding to the inner ring chamfer size r; r_b: shell fillet size corresponding to the outer ring size r_1

d 460～480mm

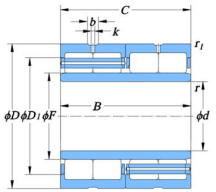
Figures[1)] FC-1P



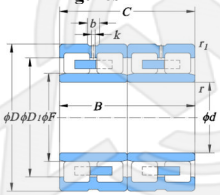
FC-2P



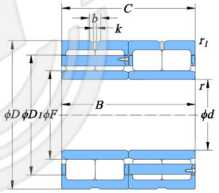
FC-3P



FCD-1P



FCD1-P



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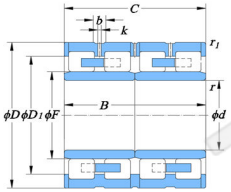
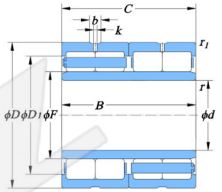
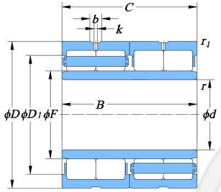


FC-4P



FC-5P



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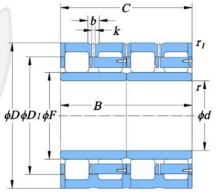
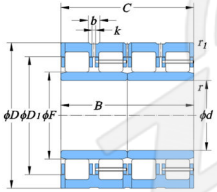


FCDP-3P



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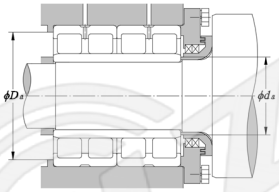


Principal dimensions(mm)							Basic load ratings(kN)	
d	*D*	*B*	*C*	*F*	r_{min}	r_{1min}	C_r	C_{or}
460	620	320	320	502	4	4	3990	11000
	620	400	400	502	4	4	5190	15400
	620	400	400	502	4	4	5190	15400
	620	425	400	504	12.5x20°	4	5750	17700
	650	355	355	509.5	12×20°	3	6250	14500
	650	424	424	510	12×20°	3	7800	18200
	650	470	470	509	12×20°	3	8750	22400
	650	470	470	509	12x20°	3	7210	20900
	650	470	470	509	5	5	6710	19000
	650	470	470	509	5	5	6700	18400
	650	355	355	509.5	12x20°	3	5430	14500
	650	470	470	509	12×20°	3	7210	20900
	650	470	470	509	12x20°	3	7210	20900
	650	470	470	509	12x20°	3	7210	20900
	650	470	470	509	12x20°	3	7210	20900
	650	470	470	509	12×20°	3	7210	20900
	680	400	400	518	6	6	8050	17400
	685.698	355	355	518	6	6	5510	13200
	685.698	355	355	518	6	6	5510	13200
462	615.95	386	386	495	2	4	3350	8000
475	600	368	368	504	3	3	5500	14700
	600	392	392	504	3	3	5500	14700
480	650	340	340	522	5	5	4740	13200
	650	340	340	522	5	5	4740	13200
	650	450	450	525	6	6	5310	15600
	650	420	420	525	6	6	5620	16800
	650	420	420	525	6	6	5620	16800
	650	450	450	525	6	6	5310	15600
	650	450	450	525	4.6	5	6160	18800
	650	450	450	525	6	6	5310	15600

Designations	Other dimensions(mm)			Abutment and fillet dimensions (mm)				Mass(kg) (approx.)
	D_1	b	k	d_{amin}	D_{amax}	r_{amax} 2)	r_{bmax} 2)	
FCD92124320/C4YA3	566	17.7	9	477	603	3	3	273
FCDP92124400/HCYAD	568	15	8	477	603	3	3	359
FCDP92124400/HG2CRYAD	568	15	8	477	603	3	3	359
FCDP92124400WB/HCEP59YAD1	568	20	10	482	603	3.5	3	352
FCD92130355	584	11.1	6	474	633	2.5	3	375
FCD92130424	594	16.7	9	474	633	2.5	3	452
FCD92130470	584	11.1	6	474	633	2.5	3	512
FCD92130470/HCYA4/W283	588	22	12	473	636	3	2.5	505
FCD92130470/P59YA41	588	15	8	480	630	4	4	495
FCD92130470/P59YAD	592	15	8	480	630	4	4	475
FCDP92130355/HCEYAD/W283	588.5	20	10	473	636	3	2.5	382
FCDP92130470	588	22	12	473	636	3	2.5	492
FCDP92130470/HCEYAD/W283	588	22	12	473	636	3	2.5	492
FCDP92130470/HCOR	588	22	12	473	636	3	2.5	492
FCDP92130470/HCYAD	588	22	12	473	636	3	2.5	492
FCDP92130470/HCYAD/W283	588	22	12	473	636	3	2.5	492
FC92136400	618	24	8	484	656	5	5	630
FCD92136355X1/HCYA3	612	15	8	484	662	5	5	451
FCD92136355X1/HG2	612	15	8	484	662	5	5	451
CCT6/462	570	-	-	474	599	2	3	338
FCDP95120368HC/YA3	563	16.7	9	489	586	2.5	2.5	237
FCDP95120392/YA3	577	16.7	9	489	586	2.5	2.5	242
FCD96130340/P591YAB1	591	15	8	500	630	4	4	322
FCD96130340F3/P591YAB1	591	15	8	500	630	4	4	320
FCD96130450	593	15	8	504	626	5	5	419
FCDP96130420/HCOP69YA34	593	20	10	504	632	5	5	419
FCDP96130420/HCYB2	593	15	8	504	632	5	5	424
FCDP96130450/HC	593	15	8	504	626	5	5	430
FCDP96130450/HCC4YAD2/W283	593	18	9	493	630	3.5	4	448
FCDP96130450/HCEYAD	593	15	8	504	626	5	5	430

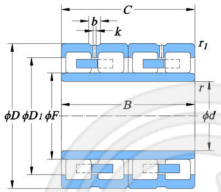
[**Note**] 1)p…Cage type

1P	2P	3P	4P	5P

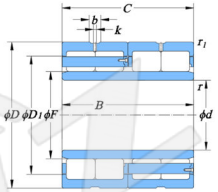
2) r_a: shaft fillet size corresponding to the inner ring chamfer size r; r_b: shell fillet size corresponding to the outer ring size r_1

d 480～500mm

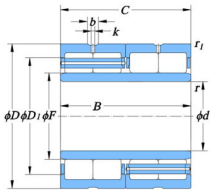
Figures[1)] FC-1P



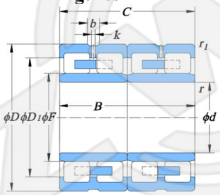
FC-2P



FC-3P



FCD-1P



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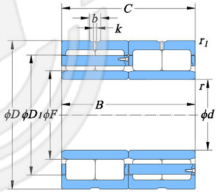

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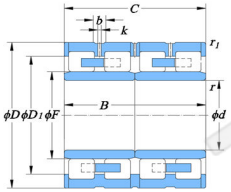
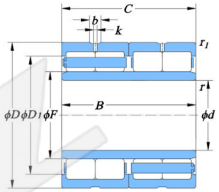
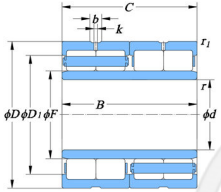


FC-4P



FC-5P



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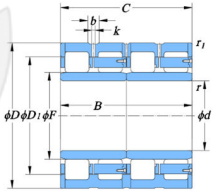
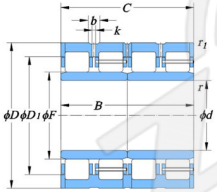


FCDP-3P



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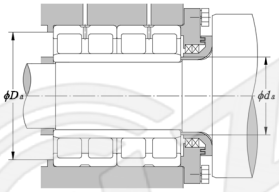
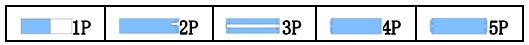


Principal dimensions(mm)							Basic load ratings(kN)	
d	*D*	*B*	*C*	*F*	r_{min}	r_{1min}	C_r	C_{or}
480	650	450	450	525	6	6	5310	15600
	650	450	450	525	6	6	5310	15600
	650	450	450	525	6	6	5310	15600
	680	420	420	528	12×20°	3	8400	19400
	680	500	500	532	6	6	7660	22200
	680	500	500	532	6	6	7660	22200
	680	420	420	528	12x20°	3	6910	18900
	680	420	420	528	12×20°	3	6910	18900
	680	500	500	532	6	6	8040	23700
	680	500	500	532	15x20°	6	8040	23700
	680	500	500	532	15x20°	6	8040	23700
	680	500	500	532	6	6	8040	23700
	680	500	500	532	6	6	8180	23500
	680	500	500	532	6	6	7970	23400
	680	500	500	532	6	6	7970	23400
	680	500	500	532	6	6	8040	23700
	680	500	500	532	15x20°	2.5	8040	23700
	680	500	500	532	15x20°	6	8040	23700
	680	500	500	532	6	6	7970	23400
	680	500	500	532	6	6	7470	21500
	680	500	500	532	6	6	7470	21500
	700	440	400	538	6	6	6160	16000
	700	420	420	533	12×20°	6	7510	19800
	720	550	550	544	13x20°	6	10000	27900
485	740	540	540	572.3	5	5	9240	27500
500	650	260	260	542	5	5	4000	10000
	650	320	320	542	5	5	4260	13200
	670	450	450	540	6	6	6740	20400
	670	450	450	540	5	5	8000	21500
	670	450	450	540	6	6	8640	23700

Designations	Other dimensions(mm)			Abutment and fillet dimensions (mm)				Mass(kg) (approx.)
	D_1	b	k	d_{amin}	D_{amax}	r_{amax} 2)	r_{bmax} 2)	
FCDP96130450/HCRG2/W283	593	15	8	504	626	5	5	430
FCDP96130450/HCYAD1	593	15	8	504	626	5	5	430
FCDP96130450/YAD1	593	15	8	504	626	5	5	430
FCD96136420	616	16.7	9	494	663	2.5	3	510
FCD96136500/HCYAD	612	15	8	504	656	5	5	588
FCD96136500/P64YA3	612	15	8	504	656	5	5	588
FCDP96136420/HCEYA34/W283	616	20	10	493	665	3	2.5	500
FCDP96136420/HCYA34	616	16.7	9	493	656	3	2.5	500
FCDP96136500/HCC4/W281	616	20	10	504	656	5	5	600
FCDP96136500/HCEP6YAD1	616	20	10	495	656	4.5	5	595
FCDP96136500/HCEYB2/W283	616	20	10	495	656	4.5	5	595
FCDP96136500/HCORC4/W281	616	20	10	504	656	5	5	600
FCDP96136500/HCORC4YA4	620	20	10	504	656	5	5	593
FCDP96136500/HCORP54	616	18	9	504	656	5	5	600
FCDP96136500/HCP64	616	18	9	504	656	5	5	600
FCDP96136500/HCR	616	20	10	504	656	5	5	600
FCDP96136500/HCYAB	616	20	10	495	666	4.5	2	595
FCDP96136500/HCYB2/W283	616	18	9	495	656	4.5	5	595
FCDP96136500/P54	616	15	9	504	656	5	5	600
FCDP96136500F3/HCEYAD/W283	616	20	10	504	656	5	5	602
FCDP96136500F3/HCYAD/W283	616	18	9	504	656	5	5	602
FC96140400WB/HC	626	18	8	504	676	5	5	528
FCD96140420/HCYA3	625	18	8	493	676	3	5	555
FCDP96144550/HCEYAD	643	22.5	12	493	700	3.5	5	805
FCDP97148540K/HCE	661.3	22.3	12	505	720	4	4	814
FCD100130260	600	-	-	519	631	4	4	220
FCD100130320/HG2P6/HYBT	603	15	8	520	632	4	4	261
FC100134450/P69	615	15	7	524	646	5	5	446
FCD100132450	612	16.7	9	519	651	4	4	455
FCD100134450/P69HCYA3	617	15	8	524	646	5	5	460

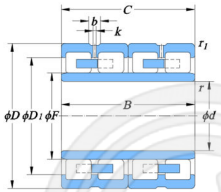
[**Note**] 1)p…Cage type



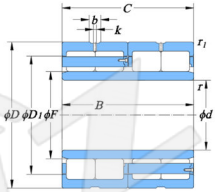
2) r_a: shaft fillet size corresponding to the inner ring chamfer size r; r_b: shell fillet size corresponding to the outer ring size r_1

d 500～510mm

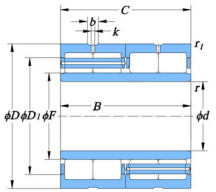
Figures[1)] FC-1P



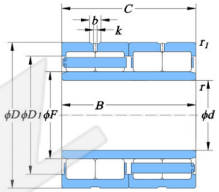
FC-2P



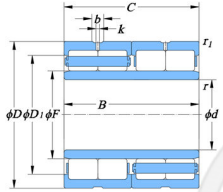
FC-3P

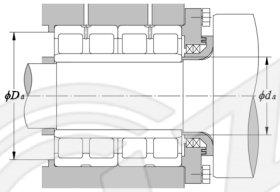


FC-4P

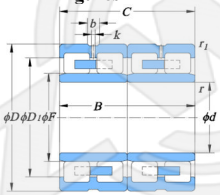


FC-5P

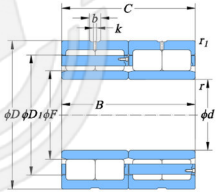




FCD-1P



FCD1-P



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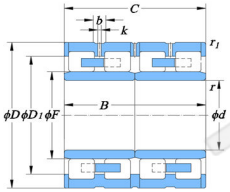

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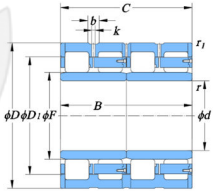

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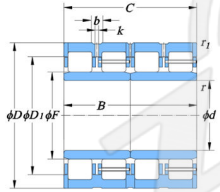

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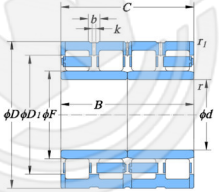


Principal dimensions(mm)							Basic load ratings(kN)	
d	*D*	*B*	*C*	*F*	r_{min}	r_{1min}	C_r	C_{or}
500	670	485	450	540	12.5x20°	5	7330	22800
	670	450	450	540	6	5	7840	23700
	670	450	450	540	6	5	7840	23700
	670	450	450	540	12.5×20°	5	7330	22800
	670	450	450	540	12.5×20°	5	7330	22800
	680	400	400	550	5	5	5750	17600
	680	450	450	550	2	5	8200	22000
	680	450	450	542	12.5×20°	5	7670	22500
	700	500	500	554	6	6	7280	21600
	710	480	480	558	17x20°	6	8090	23600
	710	480	480	558	17×20°	6	8090	23600
	710	480	480	558	17×20°	6	8090	23600
	710	480	480	558	17×20°	6	8090	23600
	710	480	480	558	17x20°	6	8090	23600
	710	480	480	558	18×20°	5	8780	21500
	720	400	400	558	3	6	7850	17500
	720	400	400	550	5	5	7070	17800
	720	530	530	568	13×20°	5	10500	28500
	720	400	400	558	6	3	6930	18600
	720	530	530	568	6	6	9060	28200
	720	530	530	568	15x20°	6	9060	28200
	720	530	530	568	15x20°	6	9060	28200
	720	530	530	568	15×20°	6	9060	28200
	720	530	530	568	6	6	9060	28200
	720	530	530	568	15x20°	6	7310	23000
	720	530	530	568	15x20°	6	8160	24600
	720	530	530	560	15x20°	6	8180	24600
	738	500	500	556	18×20°	6	10500	23000
	750	500	500	559	17x20°	3	9350	24100
510	680	500	500	560	7.5×20°	5	8950	26200

Designations	Other dimensions(mm)			Abutment and fillet dimensions (mm)				Mass(kg) (approx.)
	D_1	b	k	d_{amin}	D_{amax}	r_{amax} 2)	r_{bmax} 2)	
FCDP100134450/HCEP59YAD1	614	20	10	520	651	3.5	4	464
FCDP100134450/HCP69YA3	617	20	10	522	650	5	4	458
FCDP100134450/HCP6YA34	617	20	10	522	650	5	4	458
FCDP100134450/HCRG2YA4/W283	614	18	10	513	651	3.5	4	454
FCDP100134450/HCYA4/W283	614	18	10	513	651	3.5	4	454
FCD100136400/P59YAB/HYBT	618	15	8	520	660	4	4	432
FCD100136450	622	13.9	7.5	511	661	2	4	485
FCDP100136450/HCYAD	623	20	10	513	661	3.5	4	499
FCDP100140500/HC	633.6	18	10	524	676	5	5	637
FCDP100142480/HCEC9YA4/W283	642	22	12	516	690	5	5	614
FCDP100142480/HCERC9YA4/W283	642	22	12	516	690	5	5	614
FCDP100142480/HCG2IYAD	642	22	12	516	690	5	5	614
FCDP100142480/HG2CRYAD	642	22	12	516	690	5	5	614
FCDP100142480/HG2CRYAD/W283	642	22	12	516	690	5	5	614
FCDP100142480/YA6	642	13.9	7.5	519	686	4	5	604
FC100144400	656	22.3	12	514	696	2.5	5	526
FCD100144400ZW/HCYA3	646	-	-	520	700	4	4	469
FCD100144530/YA6	651	16.7	9	519	703	4	3.5	729
FCDP100144400/HCYA4	646	20	12	524	706	5	2.5	552
FCDP100144530/HCG2IYA3	650	20	10	524	696	5	5	751
FCDP100144530/HCORYA34	650	15	8	515	696	4.5	5	751
FCDP100144530/HCP54YAD4	650	20	10	524	705	4.5	5	751
FCDP100144530/HCRYA34	650	15	8	515	696	4.5	5	751
FCDP100144530/HCYA3	650	20	10	524	696	5	5	751
FCDP100144530F3/HCYAD1	642	15	10	515	696	4.5	5	750
FCDP100144530F3/HCYAD2	650	20	10	515	696	4.5	5	745
FCDP100144530F3/YA4	642	20	10	515	696	4.5	5	753
FCD100148500X1	671	22.3	12	524	714	5	5	732
FCDP100150500/HCC4	665	26	12	516	736	5	2.5	810
FCDP102136500	627	22	12	529	668	4	2	525

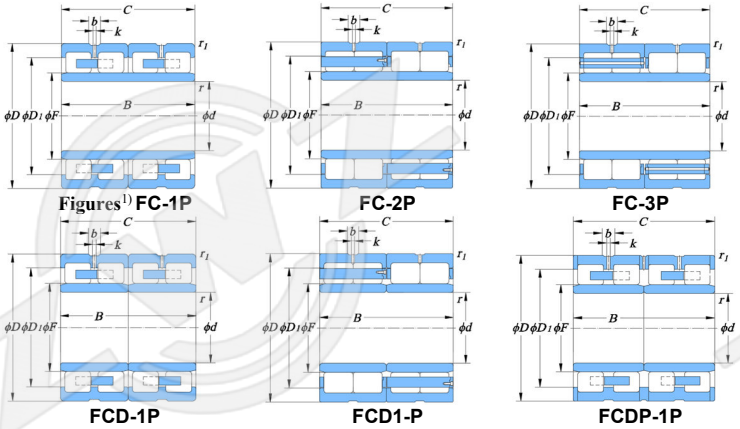
[**Note**] 1)p…Cage type

1P	2P	3P	4P	5P

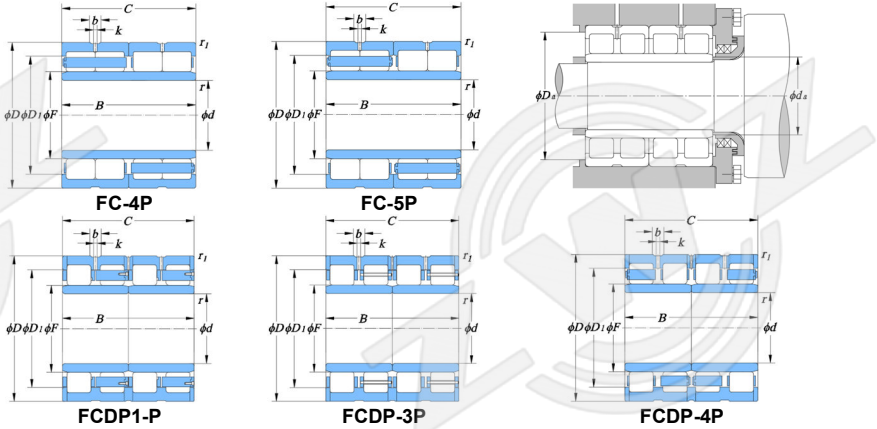
2) r_a: shaft fillet size corresponding to the inner ring chamfer size r; r_b: shell fillet size corresponding to the outer ring size r_1

ZWZ

d 510～530mm



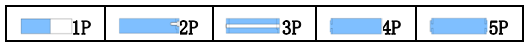
Figures[1)]



Principal dimensions(mm)							Basic load ratings(kN)	
d	*D*	*B*	*C*	*F*	r_{min}	r_{1min}	C_r	C_{or}
510	680	500	500	560	5	5	7740	25900
	680	500	500	560	5	5	7740	25900
	680	500	500	560	5	5	7740	25900
	680	500	500	560	5	5	7740	25900
	680	500	500	560	5	5	6880	23000
	680	500	500	560	14x20°	5	6880	23000
	730	520	520	569	17.5×20°	6	9480	21500
	730	520	520	565	6	6	9570	27300
	760	550	550	570	16×20°	3	12000	26500
520	735	535	535	574.5	20×20°	5	9450	28400
530	710	360	360	574	5	5	5220	14300
	710	360	360	574	5	5	5220	14300
	710	520	520	578	6	6	8110	26900
	760	520	520	587	12×20°	5	11500	28500
	760	520	520	587	12×20°	5	9570	27000
	760	520	520	587	12x20°	5	9570	27000
	760	520	520	587	12x20°	5	9570	27000
	760	520	520	587	12x20°	5	9570	27000
	760	520	520	587	12×20°	5	9570	27000
	760	520	520	587	12x20°	5	9570	27000
	760	520	520	587	12×20°	5	9570	27000
	760	520	520	587	20x20°	5	9570	27000
	760	520	520	587	12x20°	5	9570	27000
	760	520	520	587	12×20°	5	9570	27000
	760	520	520	587	12×20°	5	9650	27300
	760	520	520	587	6	6	9570	27000
	760	560	520	587	12.5x20°	5	9570	27000
	780	500	500	591	6	6	9300	20500
	780	570	570	601	14×20°	3	12700	32500
	780	500	500	595	6	6	9120	25500

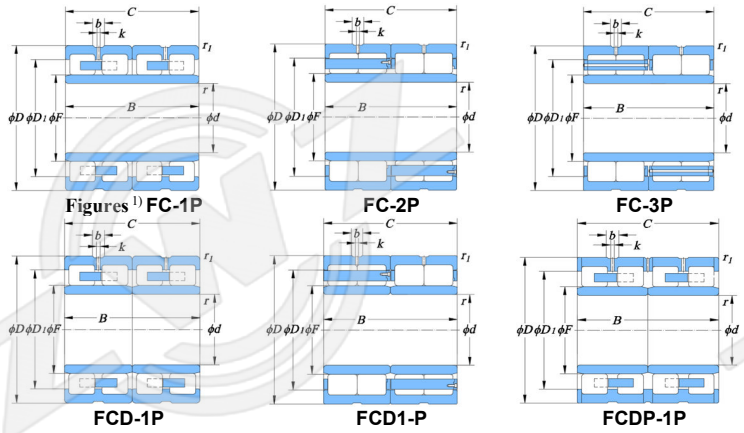
Designations	Other dimensions(mm)			Abutment and fillet dimensions (mm)				Mass(kg) (approx.)
	D_1	b	k	d_{amin}	D_{amax}	r_{amax}[2)]	r_{bmax}[2)]	
FCDP102136500/HCG2IYAD	628	22	12	530	660	4	4	522
FCDP102136500/HCRG2YAD	628	22	12	530	660	4	4	522
FCDP102136500/HCYAB/W283	628	22	12	530	660	4	4	522
FCDP102136500/HCYAD/W283	628	22	12	530	660	4	4	522
FCDP102136500/HG2C9	625	15	8	530	660	4	4	535
FCDP102136500/HG2C9YAD	625	18	10	524	660	4	4	535
FCD102146520	665	-	-	534	706	5	5	744
FCDP102146520/HCYB2	660	20	10	534	710	5	5	724
FCDP102152550	688	16.7	9	524	741	2.5	4.5	947
FCDP104147535/HCYAD	664.5	22	12	539	715	5.5	4	757
FCD106142360/P59	653	15	8	550	690	4	4	377
FCD106142360F3/P59	653	15	8	550	690	4	4	375
FCDP106142520/HC	650.4	22	10	554	686	5	5	597
FCDP106152520	683	16.7	9	549	743	4	3	773
FCDP106152520/HC	684	22.3	12	543	742	3	4	788
FCDP106152520/HCE/W283	684	22.3	12	543	742	3	4	788
FCDP106152520/HCEYAD/W283	684	22.3	12	543	742	3	4	788
FCDP106152520/HCEYAD1/W283	684	22.3	12	543	742	3	4	791
FCDP106152520/HCG2IYAD	684	22.3	12	543	742	3	4	788
FCDP106152520/HCG2IYAD1	684	22.3	12	543	742	3	4	788
FCDP106152520/HCRG2YAD	684	22.3	12	543	742	3	4	788
FCDP106152520/HCRG2YAD1	684	22.3	12	549	742	5.5	4	788
FCDP106152520/HCYAB	684	22.3	12	543	742	3	4	788
FCDP106152520/HCYAD	684	22.3	12	543	742	3	4	788
FCDP106152520/HCYAD2	684	22.3	12	543	742	3	4	788
FCDP106152520/HG2CRYA36	684	22.3	12	554	736	5	5	788
FCDP106152520WB/HCERYA2	684	22.3	12	547	742	3.5	4	801
FCD106156500	690	-	-	554	756	5	5	810
FCD106156570	697	22.3	12	544	761	2.5	4	954
FCDP106156500/HC	694	20	10	554	756	5	5	872

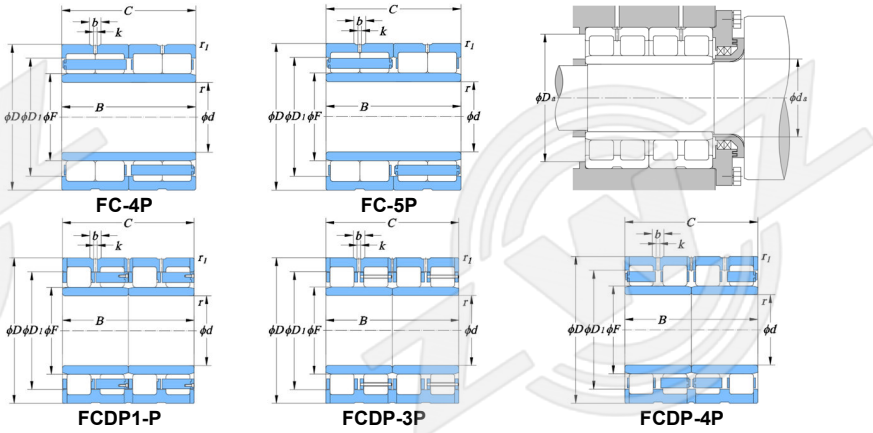
[**Note**] 1)p…Cage type



2) r_a: shaft fillet size corresponding to the inner ring chamfer size r; r_b: shell fillet size corresponding to the outer ring size r_1

d 530～560mm

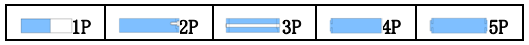




Principal dimensions(mm)							Basic load ratings(kN)	
d	*D*	*B*	*C*	*F*	r_{min}	r_{1min}	C_r	C_{or}
530	780	570	570	595	6	6	10600	31000
	780	570	570	595	6	6	10600	31000
	780	570	570	595	6	6	10600	31000
	780	570	570	595	6	6	10600	31000
540	670	450	450	540	3	5	7330	22800
	670	450	450	540	12.5x20°	5	7330	22800
	690	400	400	579.8	3	5	5460	17900
550	740	510	510	600	15×20°	2	8590	26900
	740	510	510	600	15x20°	2	8590	26900
	740	510	510	600	15×20°	2	10000	27500
	800	520	520	612	10×20°	6	11500	26000
	800	560	560	610	18.5×20°	6	12000	28000
	800	520	520	612	6	6	10300	28200
	800	520	520	612	6	6	10300	28200
	800	520	520	612	6	6	10300	28200
	800	520	520	612	6	6	10300	28200
	800	520	520	612	6	6	10300	28200
	800	560	560	610	18.5x18°	6	11200	31900
	800	560	560	612	6	6	11100	31300
	800	560	560	612	6	6	11100	31300
	800	560	560	609	6	6	11600	31200
	800	560	560	610	18.5x20°	6	11600	31300
	800	560	560	612	6	6	11100	31300
	800	560	560	612	6	6	11100	31300
	800	560	560	610	18.5×20°	6	11600	31300
	800	560	560	609	6	6	11600	31200
	800	560	560	610	15x20°	6	10500	27600
	800	560	560	610	15x18°	6	10500	27600
560	680	500	500	560	5	5	7740	25900
	800	600	600	620	7.5	7.5	13000	33500

Designations	Other dimensions(mm)			Abutment and fillet dimensions (mm)				Mass(kg) (approx.)
	D_1	b	k	d_{amin}	D_{amax}	r_{amax} 2)	r_{bmax} 2)	
FCDP106156570/HCEG2IYAD/W283	694	20	10	554	756	5	5	971
FCDP106156570/HCERG2YAD/W283	694	20	10	554	756	5	5	971
FCDP106156570/HCEYAD/W283	694	20	10	554	756	5	5	971
FCDP106156570/HCRG2YAD	694	19	10	554	756	5	5	971
FCDP100134450/HCEG2IYA4/W283	614	20	10	553	651	2.5	4	454
FCDP100134450/HCEYA4/W283	614	20	10	553	651	3.5	4	454
FCDP108138400/P5	641.4	22.3	10	560	675	2.5	4	372
FCDP110148510/HCC9YAB	680	22	12	565	729	4.5	2	634
FCDP110148510/HCEC9YA36	680	22	12	565	729	4.5	2	634
FCDP110148510/YA6	680	22.3	12	561	721	2	4.5	612
FCD110160520/YA6	721	-	-	574	786	5	3	890
FCD110160550/YA6	725	-	-	574	776	5	5	928
FCDP110160520	721	18	10	574	776	5	5	887
FCDP110160520/HC	721	18	10	574	776	5	5	887
FCDP110160520/HC/W283	721	18	10	574	776	5	5	887
FCDP110160520/HCE/W283	721	20	10	574	776	5	5	887
FCDP110160520/HCOR	721	20	10	574	776	5	5	887
FCDP110160560/HCC9YAD1/W283	716	24	10	566	776	5	5	971
FCDP110160560/HCE/W283	721	20	10	574	776	5	5	958
FCDP110160560/HCEG2I/W283	721	20	10	574	776	5	5	958
FCDP110160560/HCEYAD/W283	724	24	12	574	776	5	5	958
FCDP110160560/HCEYAD3/W283	725	24	12	567	776	5	5	952
FCDP110160560/HCG2I	721	18	10	574	776	5	5	958
FCDP110160560/HCP54	721	20	10	574	776	5	5	958
FCDP110160560/HCRG2/YL	725	24	12	567	776	5	5	952
FCDP110160560/HCYAD/W283	724	24	12	574	776	5	5	958
FCDP110160560F3/HCEYAD2/W283	725	24	12	565	776	4.5	5	962
FCDP110160560F3/HCYAD2/W283	725	24	12	564	776	3.5	5	962
FCDP102136500/HCEYAD/W283	628	22	12	580	660	4	4	522
FCDP112160600	710	16.7	9	589	771	6	6	1010

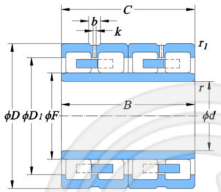
[**Note**] 1)p…Cage type



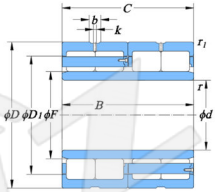
2) r_a: shaft fillet size corresponding to the inner ring chamfer size r; r_b: shell fillet size corresponding to the outer ring size r_1

d 560～600mm

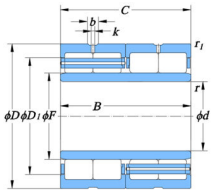
Figures [1] FC-1P



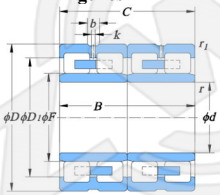
FC-2P



FC-3P



FCD-1P



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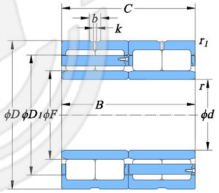

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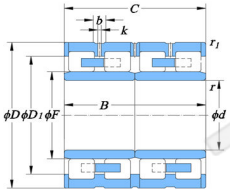
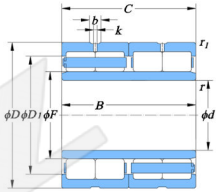


FC-4P



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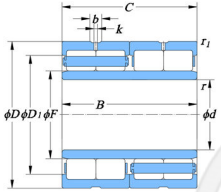

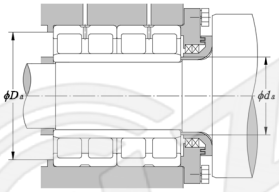

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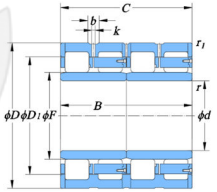

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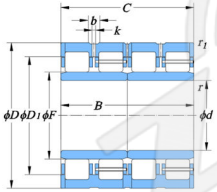

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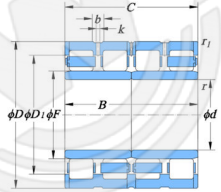


Principal dimensions(mm)							Basic load ratings(kN)	
d	*D*	*B*	*C*	*F*	r_{min}	r_{1min}	C_r	C_{or}
560	800	600	600	620	6	6	10200	31100
	820	600	600	625	20×20°	3	14200	34000
	820	600	600	625	20x20°	6	11800	34100
	820	600	600	625	20×20°	6	11800	34100
	820	630	630	625	3	3	12700	37240
	820	630	630	625	6	6	12300	36100
	820	630	630	625	6	6	12300	36100
	840	515	515	633	15x40°	6	10500	28300
570	750	530	530	622	6	6	7760	26900
	750	530	530	612	6	5	9570	32000
	780	550	550	625	15×20°	6	10400	33000
	800	514	514	626	6	6	10000	29200
	815	594	594	628	6	6	13000	35200
	815	594	594	628	6	6	10800	32100
	830	600	600	635	15x20°	6	11800	34100
580	780	520	486	634	12×20°	2	9900	27000
	780	520	520	630	15×20°	6	9070	29300
	850	540	540	652	6	6	11100	32000
	850	540	540	652	6	6	11100	32000
	850	540	540	652	6	6	11100	32000
590	820	590	590	649	6	6	12800	35100
600	820	575	575	660	6	6	9980	31700
	820	550	550	660	6	3	10300	32600
	820	575	575	660	15x20°	6	10800	35400
	820	575	575	660	6	3	10800	35400
	820	575	575	660	6	6	10800	35400
	820	575	575	660	6	3	10800	35400
	820	575	575	660	15x20°	3	10800	35400
	820	575	575	660	15x20°	3	10800	35400
	820	575	575	660	6	3	10800	35400

[**Note**] 1)p…Cage type

1P	2P	3P	4P	5P

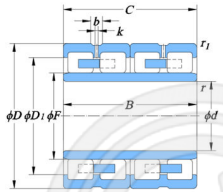
Designations	Other dimensions(mm)			Abutment and fillet dimensions (mm)				Mass(kg) (approx.)
	D_1	b	k	d_{amin}	D_{amax}	r_{amax} 2)	r_{bmax} 2)	
FCDP112160600/HCYAD	710	18	8	584	776	5	5	1010
FCDP112164600	743	16.7	9	574	796	2.5	5.5	1080
FCDP112164600/HCEYAD/W283	734	27.5	12	579	796	5.5	5	1090
FCDP112164600/HCYAD/W283	743	22	12	579	803	5.5	5	1080
FCDP112164630	743	16.7	9	574	806	2.5	2.5	1170
FCDP112164630/HCC3YA3	734	27.5	M12	584	796	5	5	1160
FCDP112164630/HCC4YA3	743	27.5	12	584	796	5	5	1160
FCDP112168515/HCYA3C4	744	26	12	589	811	10	5	1040
FC114150530/HCYA3	690	-	8	594	726	5	5	625
FCDP114150530/HCC9	692	18	10	594	731	5	4	641
FCDP114156550/HCEYAD	711	20	10	585	762	4.5	5	805
FCDP114160514/HCC9YAD	722	22	14	594	776	5	5	841
FCDP114163594	740	22	14	594	791	5	5	1010
FCDP114163594/HCYA3	725	27.5	12	594	791	5	5	1020
FCDP114166600/HCYA3	742	27.5	12	585	812	4.5	5	1100
FCDP116156486/WB	717	16.7	9	591	763	2	3	696
FCDP116156520/HCYA4	712	20	10	595	762	4.5	5	714
FCDP116170540/HCC9	756	27.5	12	604	826	5	5	1080
FCDP116170540/HCC9/W283	756	24	12	604	826	5	5	1080
FCDP116170540/HCEC9/W283	756	27.5	12	604	826	5	5	1080
FCDP118164590	748	16.7	9	614	796	5	5	990
FCD120164575/HCC3	750	18	9	624	796	5	5	931
FCDP120164550/HCYA3	750	27.5	12	624	805	5	2.5	870
FCDP120164575/HCC3HYAD	750	27.5	12	615	796	4.5	5	948
FCDP120164575/HCEORYA6/W283	750	27.5	12	624	805	5	2.5	948
FCDP120164575/HCEP5YAD1	750	27.5	12	624	796	5	5	948
FCDP120164575/HCEYA6/W283	750	27.5	12	624	805	5	2.5	948
FCDP120164575/HCEYAD/W283/CG	750	27.5	12	615	805	4.5	2.5	948
FCDP120164575/HCG2IYA6	750	27.5	12	615	805	4.5	2.5	948
FCDP120164575/HCORYA6	750	27.5	12	624	805	5	2.5	948

2) r_a: shaft fillet size corresponding to the inner ring chamfer size r; r_b: shell fillet size corresponding to the outer ring size r_1

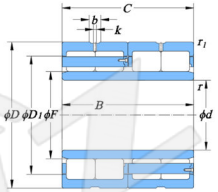
ZWZ

d 600～650mm

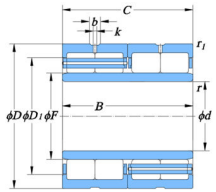
Figures [1] FC-1P



FC-2P



FC-3P



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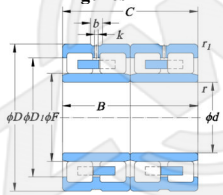

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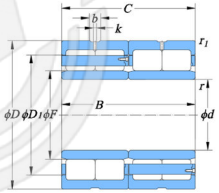

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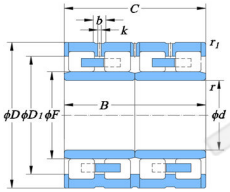

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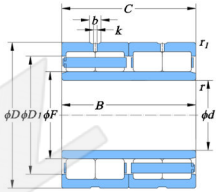
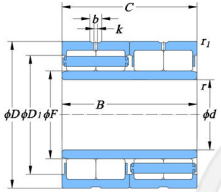


FC-5P



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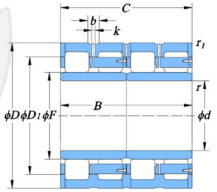

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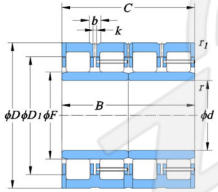

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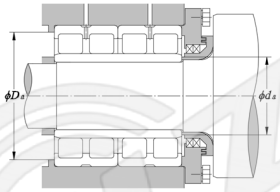


Principal dimensions(mm)							Basic load ratings(kN)	
d	*D*	*B*	*C*	*F*	r_{min}	r_{1min}	C_r	C_{or}
600	820	575	575	660	6	3	10800	35400
	820	575	575	660	6	3	10800	35400
	820	575	575	659	17×20°	3	11100	36000
	820	575	575	660	6	3	10800	35400
	820	575	575	660	6	3	10800	35400
	820	575	575	660	15×20°	3	10800	35400
	820	575	575	660	15×20°	3	10800	35400
	850	575	575	660	6	3	11700	34600
	870	540	540	672	22×20°	4	13000	31500
	870	540	540	672	6	6	11800	33200
	870	640	640	672	6	6	14000	41400
	870	640	640	672	6	6	14000	41400
	870	640	640	672	6	6	14000	41400
	870	640	640	669	6	6	13700	40100
	870	640	640	672	6	6	14000	41400
	870	640	640	672	6	6	14000	41400
	870	640	640	672	6	6	14000	41400
610	850	570	570	670	6	6	11500	34500
	870	660	660	680	12×20°	6	14500	44600
628	922	600	600	702	17.5x20°	6	14200	38900
630	800	360	360	675	5	5	6850	19500
	850	436	436	690	6	6	7450	23500
	850	536	536	690	6	6	7490	21900
	920	515	515	700	7.5	7.5	11900	32000
	920	515	515	701	6	6	11900	31900
640	880	600	600	700	6	6	13500	40000
650	900	650	650	704	20×20°	7.5	13500	40500
	900	650	650	704	20x20°	7.5	13900	41600
	900	650	650	704	20x20°	7.5	13900	41600
	900	650	650	704	7.5	7.5	13900	41600

Designations	Other dimensions(mm)			Abutment and fillet dimensions (mm)				Mass(kg) (approx.)
	D_1	b	k	d_{amin}	D_{amax}	r_{amax} [2]	r_{bmax} [2]	
FCDP120164575/HCRG2YA6	750	27.5	12	624	805	5	2.5	948
FCDP120164575/HCRYA6/W283	750	18	9	624	805	5	2.5	948
FCDP120164575/HCYA4	750	27.5	12	616	805	5	2.5	946
FCDP120164575/HCYA6	750	18	9	624	805	5	2.5	948
FCDP120164575/HCYA6/W283	750	18	9	624	805	5	2.5	948
FCDP120164575/HCYAD/CG	750	18	9	615	805	4.5	2.5	948
FCDP120164575/HG22ICRYA6	750	27.5	12	615	805	4.5	2.5	948
FCDP120170575/HCYA3	766	27.5	12	624	835	5	2.5	1090
FCDP120174540	780	16.7	9	617	841	3	6	1100
FCDP120174540/HCYAD	784	27.5	12	624	846	5	5	1090
FCDP120174640/HCC9YA4	784	27.5	12	624	846	5	5	1340
FCDP120174640/HCEP6YA4	784	27.5	12	620	846	5	5	1340
FCDP120174640/HCEYAD/W283	784	27.5	12	624	846	5	5	1340
FCDP120174640/HCYA34	781	27.5	12	624	846	5	5	1330
FCDP120174640/HCYA4	784	27.5	12	624	846	5	5	1340
FCDP120174640/HCYAD	784	27.5	12	624	846	5	5	1340
FCDP120174640/HCYAD/W283	784	18	10	624	846	5	5	1340
FCDP122170570/HC	773	20	10	634	826	5	5	1000
FCDP122174660/HCYA34	790	27.5	12	623	846	3	5	1310
FCDP126184600X4/HCEYAD	834	27.5	12	645	898	5	5	1400
FCD126160360	742	-	-	649	781	4	4	560
FCD126170436	770	-	-	654	826	5	5	720
NNU49/630/HCDT	780	24	10	654	826	5	5	778
FCD126184515/HC	825	25	12	659	891	6	6	1180
FCDP126184515/HCEYA34	826	27.5	12	654	896	5	5	1140
FCDP128176600	743	25	12	664	856	5	5	1120
FCDP130180650/HC	819.4	30	12	669	871	5.5	6	1250
FCDP130180650/HCC9YAD	819.4	30	12	669	871	5.5	6	1250
FCDP130180650/HCE/W283	819.4	30	12	669	871	5.5	6	1250
FCDP130180650/HCEYAD/W283	819.4	30	12	679	871	6	6	1250

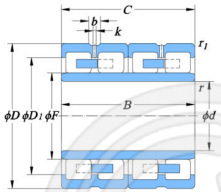
[Note] 1)p…Cage type

1P	2P	3P	4P	5P

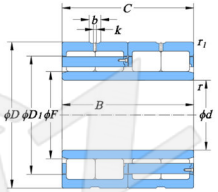
2) r_a: shaft fillet size corresponding to the inner ring chamfer size r; r_b: shell fillet size corresponding to the outer ring size r_1

d 650～680mm

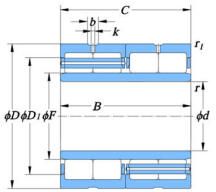
Figures [1] FC-1P



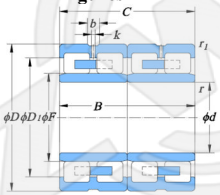
FC-2P



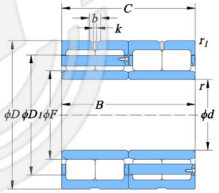
FC-3P



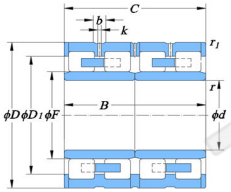
FCD-1P



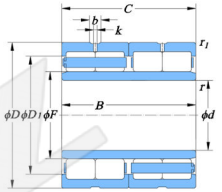
FCD1-P



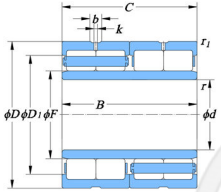
FCDP-1P



FC-4P



FC-5P



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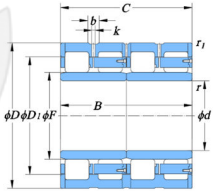

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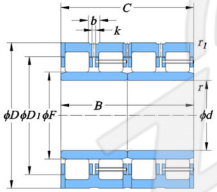

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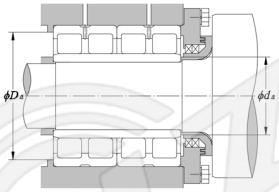
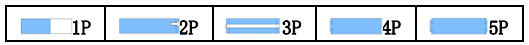


Principal dimensions(mm)							Basic load ratings(kN)	
d	*D*	*B*	*C*	*F*	r_{min}	r_{1min}	C_r	C_{or}
650	900	650	650	704	7.5	7.5	14800	44100
	900	650	650	704	20x20°	7.5	13900	41600
	900	650	650	704	25x20°	7.5	13900	41600
	900	650	650	704	7.5	7.5	13900	41600
	900	650	650	704	7.5	7.5	13900	41600
	900	720	650	704	20x20°	7.5	13900	41600
	920	670	670	723	17x20°	4	14500	45000
	920	670	670	723	17x20°	7.5	14500	45000
	920	670	670	723	18x20°	7.5	14700	44900
	920	670	670	723	7.5	7.5	14500	45000
	920	670	670	723	17×20°	4	14500	45000
	920	670	670	723	17×20°	4	14500	45000
	920	670	670	723	17×20°	4	14500	45000
	920	670	670	723	17x20°	4	14500	45000
	920	670	670	723	17×20°	4	14500	45000
	920	690	690	723	7.5	7.5	14500	45000
	920	690	690	723	18×20°	6	14400	47600
	920	690	690	723	18x20°	6	14400	47600
	950	650	650	726	7.5	7.5	15000	43500
660	820	440	440	702	4	7.5	7450	22700
	880	450	450	727	6	6	7500	23500
	1075	650	650	760	20x20°	7.5	18500	45100
680	920	600	600	743	18x20°	6	12100	40100
	920	600	600	743	18×20°	6	12100	40100
	920	600	600	714	18x20°	6	12400	40300
	950	650	650	742	18x45°	7.5	15400	45700
	950	650	650	742	7.5	7.5	15400	45700
	950	650	650	742	7.5	7.5	15400	45700
	980	640	640	760	20x20°	4	14600	44300
	980	640	640	760	20×20°	4	14600	44300

Designations	Other dimensions(mm)			Abutment and fillet dimensions (mm)				Mass(kg) (approx.)
	D_1	b	k	d_{amin}	D_{amax}	r_{amax} [2]	r_{bmax} [2]	
FCDP130180650/HCEYAD2/W283	822.5	27.5	14	679	871	6	6	1270
FCDP130180650/HCP5YAD	819.4	30	12	669	871	5.5	6	1250
FCDP130180650/HCRG2	819.4	30	12	672	871	6	6	1250
FCDP130180650/HCYA6	819.4	30	12	679	871	6	6	1250
FCDP130180650/HCYAD	821.4	30	12	679	871	6	6	1250
FCDP130180650WB/HCG2I	819.4	30	12	669	871	5.5	6	1280
FCDP130184670/HCEG2IYAD/W283	829	27.5	12	666	903	5	3	1460
FCDP130184670/HCEYAD/W283	829	27.5	12	666	903	5	6	1460
FCDP130184670/HCEYAD1/W283	837	27.5	12	667	897	5	6	1450
FCDP130184670/HCEYAD2/W283	829	45	15.9	679	903	6	6	1440
FCDP130184670/HCRG2YAD/W283	829	18	12	666	903	5	3	1460
FCDP130184670/HCYA3	829	27.5	12	666	903	5	3	1450
FCDP130184670/HCYA34	829	27.5	12	666	903	5	3	1450
FCDP130184670/HCYAD	829	27.5	12	666	903	5	3	1460
FCDP130184670/HCYAD/W283	829	18	12	666	903	5	3	1460
FCDP130184690	829	18	10	679	891	6	6	1490
FCDP130184690/HCEOYAD/W283	824	24	12	667	896	5	5	1540
FCDP130184690/HCEYAD/W283	824	27.5	12	667	896	5	5	1540
FCDP130190650/HC	850	25	12	679	921	6	6	1620
FCD132164440	766	-	-	677	791	3	6	532
FCD132176450	806	-	-	684	856	5	5	782
FCDP132215650/HCYAD	944	30	15	679	1051	5.5	6	2410
FCDP136184600/HCEG2IYAD/W283	839	27.5	12	697	896	5	5	1180
FCDP136184600/HCG2IYAD	839	22	12	697	896	5	5	1180
FCDP136184600/HCP59YAD1	839	27.5	12	697	896	5	5	1200
FCDP136190650/HCC4YA32	866	27.5	12	720	921	12	6	1400
FCDP136190650/HCEYA3	866	27.5	12	709	921	6	6	1400
FCDP136190650/HCYA3	866	27.5	12	709	921	6	6	1400
FCDP136196640/HCC4YAD	875	27.5	12	699	963	5.5	3	1650
FCDP136196640/HCC4YAD/W283	875	22	12	699	963	5.5	3	1650

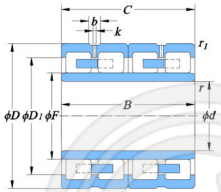
[**Note**] 1)p…Cage type



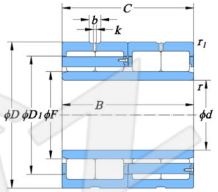
2) r_a: shaft fillet size corresponding to the inner ring chamfer size r; r_b: shell fillet size corresponding to the outer ring size r_1

d 680～710mm

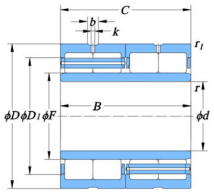
Figures [1] FC-1P



FC-2P



FC-3P



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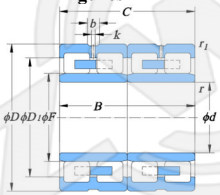

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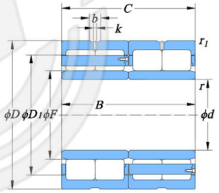

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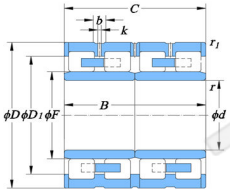

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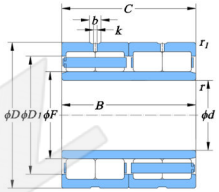

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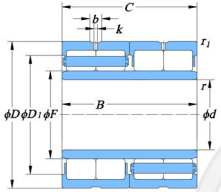

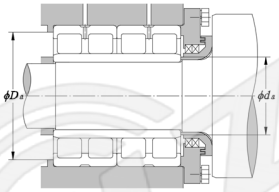

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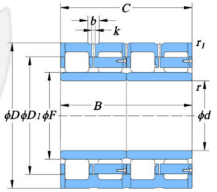

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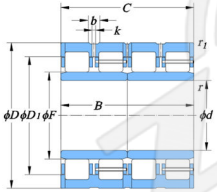

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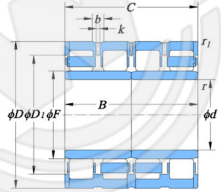


Principal dimensions(mm)						Basic load ratings(kN)		
d	*D*	*B*	*C*	*F*	r_{min}	r_{1min}	C_r	C_{or}
680	980	640	640	760	20x20°	4	15800	45800
	980	640	640	760	20×20°	4	14600	44300
	980	640	640	760	18x20°	4	14600	44300
	980	640	640	760	18x20°	4	14600	44300
	1020	680	680	775	6	6	20000	49500
690	980	715	715	767.5	20x20°	4	16300	52200
	980	715	715	767.5	20x20°	4	16300	52200
	980	715	715	767.5	20×20°	4	16300	52200
	980	750	750	766	11.4×20	7.5	16300	52200
	980	750	750	766.15	11.4	7.5	16300	52200
	980	750	750	766	7.5	7.5	16300	52200
	980	750	750	766	20x20°	7.5	16300	52200
	980	750	750	766	11.4	7.5	16300	52200
	980	750	750	766	20×20°	7.5	16300	52200
700	930	620	620	763	18×20°	3	15000	42800
	930	620	620	763	18×20°	3	12500	42900
	930	620	620	763	18x20°	3	12600	44900
	980	700	700	774	6	6	17500	48500
	980	700	700	774	20x20°	6	16200	51800
	1000	710	710	770	4	4	19000	47500
705	1000	715	715	787.5	7.5	7.5	16600	53900
710	1000	715	715	787.5	17x20°	7.5	16600	53900
	1000	715	715	787.5	7.5	7.5	16600	53900
	1000	715	715	787.5	17×20°	7.5	16600	53900
	1000	715	715	787.5	17x20°	7.5	16600	53900
	1000	715	715	787.5	17x20°	7.5	17000	54500
	1000	715	715	787.5	7.5	7.5	16600	53900
	1000	715	715	787.5	20x20°	7.5	16600	53900
	1000	715	715	787.5	7.5	7.5	16600	53900
	1000	715	715	787.5	7.5	7.5	16600	53900

Designations	Other dimensions(mm)			Abutment and fillet dimensions (mm)				Mass(kg) (approx.)
	D_1	b	k	d_{amin}	D_{amax}	r_{amax} [2]	r_{bmax} [2]	
FCDP136196640/HCC4YAD1/W283	888	22	9.5	699	963	5.5	3	1620
FCDP136196640/HCC9YAD/W283	875	22	12	699	963	5.5	3	1650
FCDP136196640/HCEC4YAD/W283	875	27.5	12	700	963	5	3	1650
FCDP136196640/HCEC9YAD/W283	875	27.5	12	700	963	5	3	1650
FCDP136204680	929	22	12	704	996	5	5	2050
FCDP138196715/HCEC9YAD/W283	879.5	27.5	12	709	964	5.5	3	1810
FCDP138196715/HCEYAD/W283	879.5	27.5	12	709	961	5.5	3	1810
FCDP138196715/HCP69YAD	879.5	27.5	12	709	964	5.5	3	1810
FCDP138196750/HCC9YA6	880	45	13	717	951	12	6	1880
FCDP138196750/HCEC9YA6/W283	880	45	13	717	951	8	6	1880
FCDP138196750/HCEC9YAD/W283	880	27.5	15	719	951	6	6	1880
FCDP138196750/HCEYAD/W283	880	45	13	709	951	5.5	6	1880
FCDP138196750/HCEYAD1/W283	880	15.9	13	717	951	8	6	1880
FCDP138196750/HCYAD/W283	880	45	13	709	951	5.5	6	1880
FCDP140186620	859	22.3	12	714	906	2.5	5	1170
FCDP140186620/HCEC9YAD/W283	854	27.5	12	717	916	5	2.5	1210
FCDP140186620/HCEYAD1/W283	852	27.5	12	717	916	5	2.5	1200
FCDP140196700	900	22.3	12	724	956	5	5	1680
FCDP140196700/HCYAD	886	30	12	719	956	5.5	5	1690
FCDP140200710	916	22.3	12	717	983	3	3	1820
FCDP141200715/HC	902	27.5	12	734	971	6	6	1880
FCDP142200715/HCE/W283	902	27.5	12	726	971	5	6	1850
FCDP142200715/HCEYA4/W283	902	27.5	12	739	971	6	6	1850
FCDP142200715/HCEYAB	902	27.5	12	726	971	5	6	1850
FCDP142200715/HCEYAD/W283	902	27.5	12	726	971	5	6	1850
FCDP142200715/HCEYAD1/W283	902	27.5	14	726	971	5	6	1840
FCDP142200715/HCG2IYA4	902	27.5	12	739	971	6	6	1850
FCDP142200715/HCP5YAD3	902	27.5	12	729	971	5.5	6	1850
FCDP142200715/HCRG2YA4	902	22.3	12	739	971	6	6	1850
FCDP142200715/HCYA4	902	27.5	12	739	971	6	6	1850

[**Note**] 1)p…Cage type

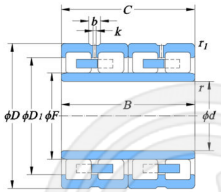
1P	2P	3P	4P	5P

2) r_a: shaft fillet size corresponding to the inner ring chamfer size r; r_b: shell fillet size corresponding to the outer ring size r_1

ZWZ

d 710～750mm

Figures [1] FC-1P



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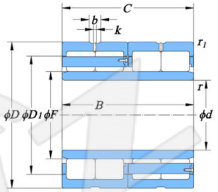

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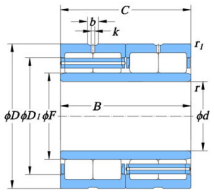

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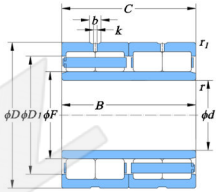

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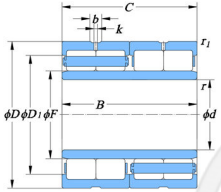

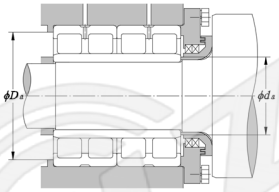

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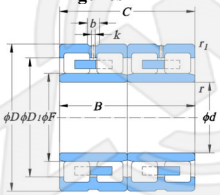

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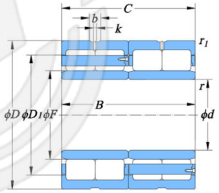

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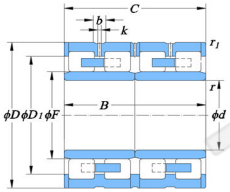
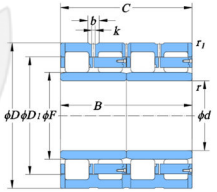


FCDP1-P



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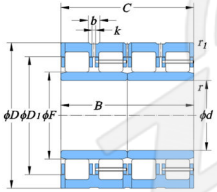

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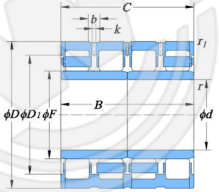
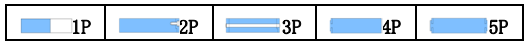


Principal dimensions(mm)						Basic load ratings(kN)		
d	*D*	*B*	*C*	*F*	r_{min}	r_{1min}	C_r	C_{or}
710	1000	715	715	787.5	7.5	7.5	16600	53900
	1000	715	715	787.5	17×20°	7.5	16600	53900
	1000	715	715	787.5	17×20°	7.5	16600	53900
	1000	715	715	787.5	17x20°	7.5	16600	53900
	1020	710	710	785	4	4	19500	49700
	1050	715	715	791	21x20°	7.5	18200	51400
	1050	715	715	791	21×20°	7.5	18200	51400
725	1000	700	700	796	6	6	18000	49500
730	960	620	620	790	20×20°	3	15400	45000
	960	620	620	790	6	6	12800	44300
	960	620	620	790	20x20°	6	12800	44300
	960	620	620	790	6	6	12800	44300
	1000	700	700	802	20×20°	4	16300	52800
	1030	750	750	809	21×20°	6	20500	58500
	1030	750	750	809	21x20°	6	17800	58200
	1030	750	750	809	21x20°	6	18500	58500
	1030	750	750	809	21x20°	6	18100	59000
	1030	750	750	809	21x20°	6	18100	59000
	1030	750	750	808.55	21x20°	6	18100	59000
	1030	750	750	809	21x20°	6	17800	58200
	1030	750	750	809	21x20°	6	17800	58200
	1030	750	750	809	21×20°	6	17800	58200
750	1000	630	630	813	15x25°	5	14400	47900
	1000	630	630	813	20x20°	5	14400	47900
	1000	670	670	813	20×20°	3	15200	51800
	1000	670	670	813	20×20°	3	15200	51800
	1000	670	670	813	20x20°	3	15200	51800
	1000	670	670	813	20x20°	3	15200	51800
	1000	670	670	813	20x20°	3	15200	51800
	1000	670	670	813	20x20°	3	15200	51800

Designations	Other dimensions(mm)			Abutment and fillet dimensions (mm)				Mass(kg) (approx.)
	D_1	b	k	d_{amin}	D_{amax}	r_{amax} [2]	r_{bmax} [2]	
FCDP142200715/HCYA4/W283	902	22.3	12	739	971	6	6	1850
FCDP142200715/HCYAD	902	27.5	12	726	971	5	6	1850
FCDP142200715/HCYAD/W283	902	22.3	12	726	971	5	6	1850
FCDP142200715/HCYAD2	902	27.5	12	726	971	5	6	1850
FCDP142204710	932	22.3	12	727	1003	3	3	1940
FCDP142210715/HCEYAD	938	30	15	729	1021	6	6	2130
FCDP142210715/HCYAD	938	30	15	729	1021	6	6	2130
FCDP145200700	920	22.3	12	749	976	5	5	1750
FCDP146192620	886	22.3	12	744	936	2.5	5.5	1220
FCDP146192620/HCC4YA6	886	27.5	12	754	936	5	5	1250
FCDP146192620/HCYAD	886	27.5	12	749	936	5.5	5	1220
FCDP146192620/YDJS	886	27.5	12	754	936	5	5	1250
FCDP146200700/HCEYAD/W283	916	45	13	749	983	5.5	3	1680
FCDP146206750	929	22.3	12	754	1001	5	6	2040
FCDP146206750/HCEC4YAD	924.2	30	15	749	1012	6	5	2080
FCDP146206750/HCEYA5/W283	933	30	15	749	1006	6	5	2040
FCDP146206750/HCEYAB	925.8	22	12	749	1012	6	5	2080
FCDP146206750/HCEYAB/W283	925.8	30	15	749	1012	6	5	2080
FCDP146206750/HCEYAB1/W283	925.8	30	15	749	1012	6	5	2080
FCDP146206750/HCEYAD1/W283	924.4	30	15	749	1012	6	5	2080
FCDP146206750/HCG2IYAD	924.2	30	15	749	1012	6	5	2080
FCDP146206750/HCRG2YAD	924.2	22	12	749	1012	6	5	2080
FCDP150200630/HCEC9	920	23.2	12	768	982	5.5	4	1410
FCDP150200630/HCP69YAB	920	23	12	769	982	5.5	4	1410
FCDP150200670/HCC9	916	27.5	12	769	985	5.5	2.5	1520
FCDP150200670/HCC91	916	27.5	12	769	985	5.5	2.5	1520
FCDP150200670/HCE	916	27.5	12	769	985	5.5	2.5	1520
FCDP150200670/HCEC9	916	27.5	12	769	985	5.5	2.5	1520
FCDP150200670/HCEC91	916	27.5	12	769	985	5.5	2.5	1520
FCDP150200670/HCP64	916	27.5	12	769	985	5.5	2.5	1520

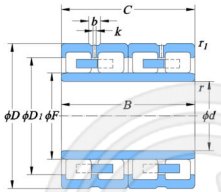
[**Note**] 1)p…Cage type



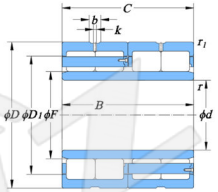
2) r_a: shaft fillet size corresponding to the inner ring chamfer size r; r_b: shell fillet size corresponding to the outer ring size r_1

d 750～800mm

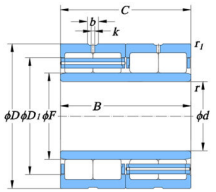
Figures [1] FC-1P



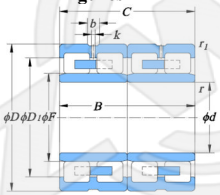
FC-2P



FC-3P



FCD-1P



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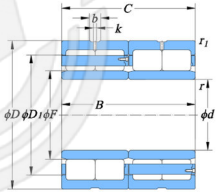

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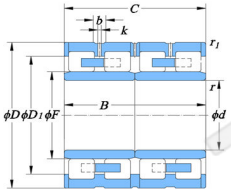
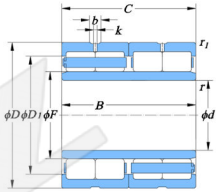
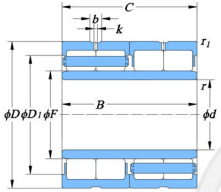
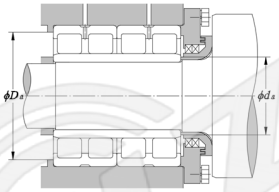


FC-4P



FC-5P





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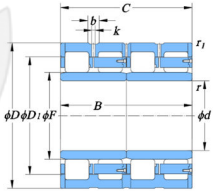

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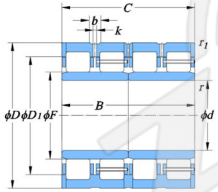

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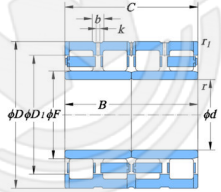


Principal dimensions(mm)							Basic load ratings(kN)	
d	*D*	*B*	*C*	*F*	r_{min}	r_{1min}	C_r	C_{or}
750	1000	670	670	813	20x20°	3	15200	51800
	1000	670	670	813	20×20°	3	15500	52000
	1050	750	750	828	20x20°	6	18400	59200
	1050	780	780	825	7.5	7.5	19600	61800
	1080	650	650	833	7.5	7.5	17000	49500
	1080	665	650	833	7.5	7.5	19500	48000
	1080	665	650	833	7.5	7.5	16770	48700
	1090	750	750	832	22×20°	7.5	21500	51500
	1133	670	670	848	6	6	21000	50500
760	1015	700	700	832	7.5	7.5	18500	55000
	1030	750	750	828	7.5	7.5	21000	61200
	1030	750	750	828	21x20°	6	17800	60000
	1030	750	750	828	21x20°	6	17800	60000
	1030	750	750	828	21x20°	6	17800	60000
	1030	750	750	828	21x20°	6	17800	60000
	1030	750	750	828	21x20°	6	17800	60000
	1080	790	790	846	7.5	7.5	23500	65000
	1080	790	790	846	6	6	23500	65000
761.425	1079.6	787.4	787.4	846	22×20°	5	20900	64800
	1079.6	787.4	787.4	846	22×20°	5	20900	64800
770	1075	770	770	847	6	6	19300	62600
780	1070	780	780	853	25×20°	6	22000	60000
	1070	780	780	853	7.5	7.5	19000	63900
	1070	780	780	853	7.5	7.5	19700	65500
	1070	780	780	853	17x20°	7.5	19700	65500
	1070	780	780	849	7.5	7.5	19000	63900
	1070	780	780	852.62	25x20°	7.5	19700	65500
	1100	670	670	855	7.5	7.5	17300	51200
790	1015.9	610	610	850	6	6	17500	50000
800	1080	700	700	878	3	3	13900	48400

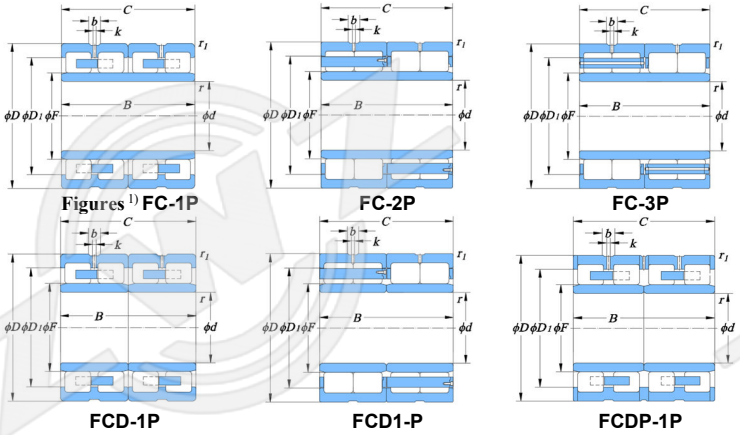
Designations	Other dimensions(mm)			Abutment and fillet dimensions (mm)				Mass(kg) (approx.)
	D_1	b	k	d_{amin}	D_{amax}	r_{amax} [2]	r_{bmax} [2]	
FCDP150200670/HCP69YA4	916	27.5	12	769	985	5.5	2.5	1520
FCDP150200670/HCYAD/W283	919	23.5	12	769	985	5.5	2.5	1500
FCDP150210750/HCP69	950	25	15	769	1026	5.5	5	2080
FCDP150210780/HC	955	25	15	779	1021	6	6	2130
FCDP150216650/HC	975	30	15	779	1051	6	6	2030
FCDP150216650/WB	989	22.3	12	779	1051	6	6	2020
FCDP150216650WB/HCYAD	975	30	15	779	1051	6	6	2040
FCDP150218750	993	22.3	12	779	1061	6	6	2410
FCDP150226670X1	1023	22.3	12	774	1109	5	5	2450
FCDP152203700	973	22.3	12	789	986	6	6	1600
FCDP152206750	988	22.3	12	789	1001	6	6	1870
FCDP152206750/HCC9YA3	940	30	15	779	1012	6	5	1850
FCDP152206750/HCEC9YA3	940	30	15	779	1012	6	5	1850
FCDP152206750/HCEYA3	940	30	15	779	1012	6	5	1850
FCDP152206750/HCYA3	940	30	15	779	1012	6	5	1850
FCDP152206750/HCYAD	940	30	15	779	1012	6	5	1830
FCDP152216790	974	22.3	12	789	1051	6	6	2420
FCDP152216790X1	974	22.3	12	784	1056	5	5	2450
FCDP152215787X4/HC	982	23.5	12	781	1060	6	4	2380
FCDP152215787X4/HC/W283	982	23.5	12	781	1060	6	4	2380
FCDP154215770/HCEYAB/W283	972	30	15	794	1051	5	5	2200
FCDP156214780	988	22.3	12	804	1049	5	6	2280
FCDP156214780/HC	971	30	15	809	1041	6	6	2180
FCDP156214780/HCEYAD2/W283	978	30	12	809	1041	6	6	2150
FCDP156214780/HCP6YAB	978	30	15	796	1041	5	6	2150
FCDP156214780/HCYAD	967	30	15	809	1041	6	6	2170
FCDP156214780/HCYAD3/W283	978	30	15	802	1041	6	6	2150
FCDP156220670/HCC4	992	30	16	809	1071	6	6	2040
FCDP158203610X1	960	22.3	12	814	992	5	5	1280
FCDP160216700/HC	982	30	15	815	1065	2.5	2.5	1820

[**Note**] 1)p…Cage type

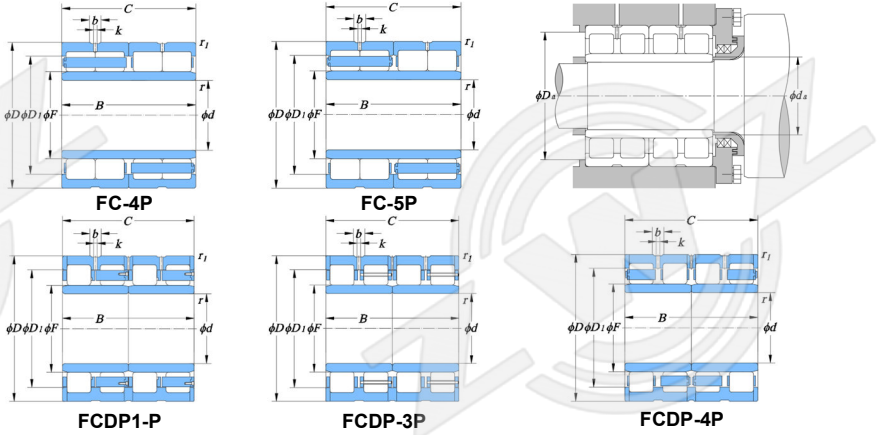
1P	2P	3P	4P	5P

2) r_a: shaft fillet size corresponding to the inner ring chamfer size r; r_b: shell fillet size corresponding to the outer ring size r_1

d 800～850mm



Figures [1]



Principal dimensions(mm)							Basic load ratings(kN)	
d	*D*	*B*	*C*	*F*	r_{min}	r_{1min}	C_r	C_{or}
800	1080	700	700	878	5	5	17500	59800
	1080	700	700	878	20x20°	5	17500	59800
	1080	700	700	878	5	5	17500	59800
	1080	700	700	878	14x20°	5	17500	59800
	1080	700	700	878	5	5	17500	59800
	1080	700	700	878	20x20°	5	17500	59800
	1080	700	700	878	5	5	17500	59800
	1080	700	700	878	14x20°	5	17500	59800
	1080	700	700	878	25x20°	5	17500	59800
	1080	750	750	880	6	6	20000	60000
820	1130	800	800	903	23×20°	4	19700	67000
	1130	800	800	903	23x20°	4	19900	67600
	1130	800	800	903	23x20°	4	19900	67600
	1130	800	800	903	23×20°	4	19900	67600
	1130	800	800	903	23×20°	4	19900	67600
	1130	800	800	903	23×20°	4	19900	67600
	1130	800	800	903	23x20°	4	19900	67600
	1130	800	800	903	23×20°	4	19900	67600
	1160	840	840	910	7.5	7.5	21600	68500
830	1080	710	710	896	25×20°	7.5	15500	58700
840	1160	840	840	920	7.5	7.5	24700	70800
850	1150	840	840	928	23×20°	4	25400	76500
	1150	840	840	928	23×20°	4	21200	74300
	1150	840	840	928	23x20°	6	22100	74800
	1150	840	840	928	23x20°	6	22100	74800
	1150	840	840	928	23×20°	6	22100	74800
	1150	840	840	928	23×20°	6	22110	74820
	1150	840	840	928	23×20°	6	22100	74800
	1180	650	650	945	7.5	7.5	19000	50500
	1180	850	850	940	20×20°	4	26100	74000

Designations	Other dimensions(mm)			Abutment and fillet dimensions (mm)				Mass(kg) (approx.)
	D_1	b	k	d_{amin}	D_{amax}	r_{amax} [2]	r_{bmax} [2]	
FCDP160216700/HCC4YAD/W283	990	30	12	820	1060	4	4	1940
FCDP160216700/HCEYAB/W283	990	30	M12	819	1060	5.5	4	1940
FCDP160216700/HCEYAD/W283	990	30	M12	820	1060	4	4	1940
FCDP160216700/HCEYAD1/W283	990	30	15	814	1060	4	4	1940
FCDP160216700/HCP64YAD	990	30	12	820	1060	4	4	1940
FCDP160216700/HCYAB	990	30	M12	819	1060	5.5	4	1940
FCDP160216700/HCYAD	990	30	M12	820	1060	4	4	1940
FCDP160216700/HCYAD1/W283	990	30	15	814	1060	4	4	1940
FCDP160216700/YAD/CJ	990	30	M12	822	1060	6	4	1940
FCDP160216750	1020	23.5	12	824	1056	5	5	2030
FCDP164226800/HC	1026	23.5	12	837	1109	3	6	2530
FCDP164226800/HCEYA3/W283	1026	30	15	841	1113	6	3	2510
FCDP164226800/HCEYA34/W283	1026	30	15	841	1113	6	3	2510
FCDP164226800/HCG2IYA3	1026	30	15	841	1113	6	3	2510
FCDP164226800/HCYA3	1026	30	15	841	1113	6	3	2510
FCDP164226800/HCYA3/W283	1026	23.5	12	841	1113	6	3	2510
FCDP164226800/HCYA34	1026	30	15	841	1113	6	3	2510
FCDP164226800/HCYA34/W283	1026	23.5	12	841	1113	6	3	2510
FCDP164232840	1045	23.5	12	849	1131	6	6	2750
FCDP166216710/HCC9YA3	995	30	15	852	1051	6	6	1780
FCDP168232840	1016	22.3	12	869	1131	6	6	2730
FCDP170230840/HC	1056	22.3	12	867	1129	3	6	2560
FCDP170230840/HCE/W283	1055	30	15	871	1133	6	3	2600
FCDP170230840/HCEG2IYAD/W283	1056	30	15	871	1126	6	5	2550
FCDP170230840/HCEYAD/W283	1056	30	15	871	1126	6	5	2550
FCDP170230840/HCG2IYAD/W283	1056	23.5	12	871	1126	6	5	2550
FCDP170230840/HCRG2YAD/W283	1056	23.5	12	871	1126	6	5	2550
FCDP170230840/HCYAD/W283	1056	23.5	12	871	1126	6	5	2550
FCDP170236650	1088	22.3	12	879	1151	6	6	2100
FCDP170236850/HC	1084	22.3	12	867	1156	3	5.5	2920

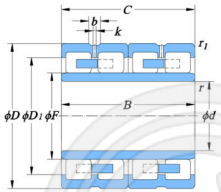
[**Note**] 1)p…Cage type

1P	2P	3P	4P	5P

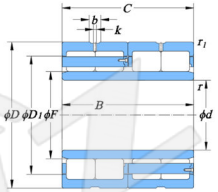
2) r_a: shaft fillet size corresponding to the inner ring chamfer size r; r_b: shell fillet size corresponding to the outer ring size r_1

d 850～950mm

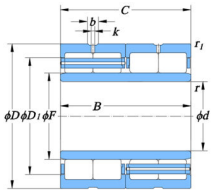
Figures[1)] FC-1P



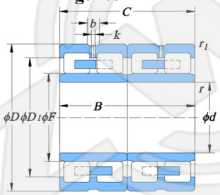
FC-2P



FC-3P



FCD-1P



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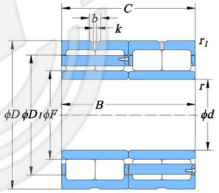

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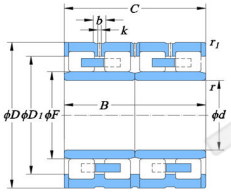
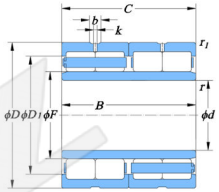
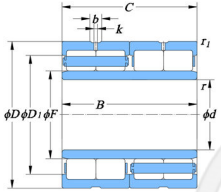
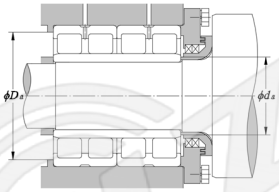


FC-4P



FC-5P





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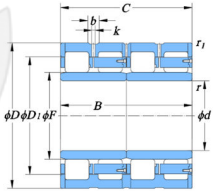

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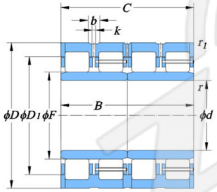

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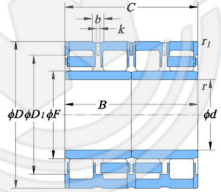


Principal dimensions(mm)							Basic load ratings(kN)	
d	*D*	*B*	*C*	*F*	r_{min}	r_{1min}	C_r	C_{or}
850	1180	875	850	940	7.5	7.5	26100	74000
	1250	840	840	954	23x20°	7.5	25200	76300
860	1140	750	750	938	7.5	7.5	20500	61000
	1160	735	710	940	6	6	21000	60000
865	1180	750	750	945.3	20x20°	7.5	20000	66100
880	1140	800	800	946	6	6	24000	76000
900	1220	840	840	989	24×20°	4	26300	80000
	1220	840	840	989	24x20°	4	21800	78500
	1220	840	840	989	24x20°	4	22700	79300
	1220	840	840	989	24x20°	4	22700	81400
	1220	840	840	989	24×20°	4	21800	78500
	1230	895	870	990	7.5	7.5	26400	80000
	1280	780	780	998	23×20°	7.5	28500	80500
	1280	1050	840	1000	7.5	7.5	28900	80500
	1280	930	930	1000	25×20°	4	32500	93500
920	1280	815	800	1010	7.5	7.5	28700	80000
	1280	865	850	1015	7.5	7.5	27600	77500
	1300	975	950	1019	7.5	7.5	32500	92500
949.85	1300	850	850	1044	25×20°	7.5	27400	91000
950	1300	850	850	1044	10	10	19400	62600
	1300	850	850	1044	7.5	7.5	24500	83000
	1300	850	850	1044	10	10	24500	83000
	1300	850	850	1044	10	10	24500	83000
	1300	850	850	1044	7.5	7.5	24500	83000
	1300	850	850	1044	10	10	19400	62600
	1300	850	850	1044	7.5	7.5	27400	91000
	1360	1000	1000	1075	22×20°	5	37500	105000
	1360	1000	1000	1075	22×20°	5	31900	111000
	1360	1000	1000	1075	5	5	37500	105000
	1360	975	975	1075	26×20°	6	34000	100000

[**Note**] 1)p…Cage type

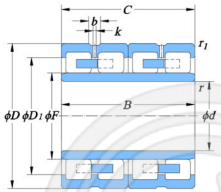
1P	2P	3P	4P	5P

Designations	Other dimensions(mm)			Abutment and fillet dimensions (mm)				Mass(kg) (approx.)
	D_1	b	k	d_{amin}	D_{amax}	r_{amax} 2)	r_{bmax} 2)	
FCDP170236850/WB	1084	22.3	12	879	1151	6	6	2950
FCDP170250840/HC	1124	23.5	16	871	1221	6	6	3610
FCDP172228750	1060	22.3	12	889	1111	6	6	2100
FCDP172232710/WB	1070	22.3	12	884	1136	5	5	2150
FCDP173236750/HCC4	1074	30	16	884	1151	5.5	6	2480
FCDP176228800	1040	22.3	12	904	1116	5	5	2210
FCDP180244840/HC	1117	22.3	12	917	1199	3	6	3050
FCDP180244840/HCEYAD/W283	1113	30	15	921	1203	6	3	2980
FCDP180244840/HCEYAD1/W283	1117	22.3	12	921	1203	6	3	2890
FCDP180244840/HCYAD	1113	30	15	921	1203	6	3	2960
FCDP180244840/HCYAD/W283	1113	22.3	12	921	1203	6	3	2980
FCDP180246870/WB	1123	22.3	12	929	1201	6	6	3150
FCDP180256780	1175	22.3	12	929	1259	6	6	3250
FCDP180256840/WB	1152	22.3	12	929	1251	6	6	3890
FCDP180256930/HC	1152	22.3	12	917	1259	3	6	4050
FCDP184256800/WB	1238	22.3	12	949	1251	6	6	3280
FCDP184256850/WB	1238	22.3	12	949	1251	6	6	3450
FCDP184268950/WB	1256	22.3	12	949	1271	6	6	4180
FCDP190260850X4E/HG2CRC9YAB	1196	30	14	972	1271	6	6	3550
FCD190260850/HCP69YAD	1186.8	32	12	984	1266	8	8	3360
FCDP190260850/C9HCYA3	1182	30	14	979	1266	6	6	3390
FCDP190260850/HCC9	1182	30	M16	984	1266	8	8	3450
FCDP190260850/HCC9	1182	30	16	984	1266	8	8	3450
FCDP190260850/HCC9YA3	1182	30	14	979	1266	6	6	3450
FCDP190260850/HCP69YAD	1186.8	32	12	984	1266	8	8	3360
FCDP190260850E/HCC9YA3	1196	30	14	979	1271	6	6	3550
FCDP1902721000	1229	22.3	12	969	1331	4	6	5010
FCDP1902721000/HCEYAD/W281	1233	30	18	970	1340	6	4	5030
FCDP1902721000/K30	1229	22.3	12	969	1341	4	4	4820
FCDP190272975	1227	22.3	12	974	1337	5	8	4900

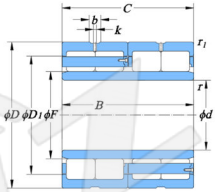
2) r_a: shaft fillet size corresponding to the inner ring chamfer size r; r_b: shell fillet size corresponding to the outer ring size r_1

d 970～1480mm

Figures[1)] FC-1P



FC-2P



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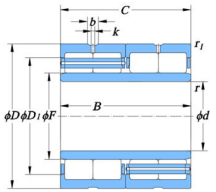

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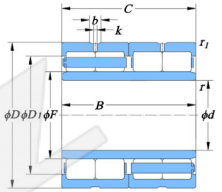

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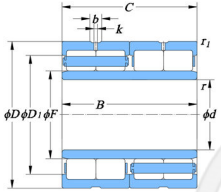

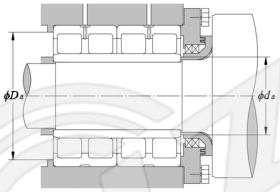

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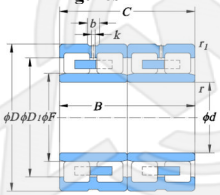
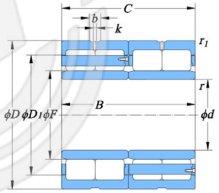


FCD1-P



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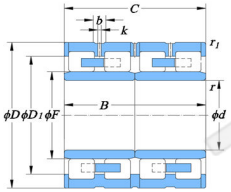

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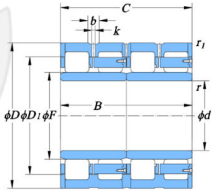

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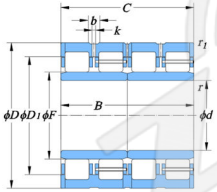

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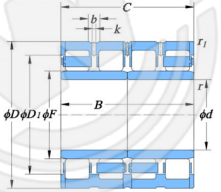
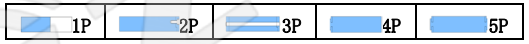


Principal dimensions(mm)							Basic load ratings(kN)	
d	*D*	*B*	*C*	*F*	r_{min}	r_{1min}	C_r	C_{or}
970	1145	705	685	940	6	6	20500	63000
980	1310	880	880	1061.7	20×20°	14	28500	86500
990	1360	760	760	1080	12	6	23100	73900
1000	1360	800	800	1101	23×20°	4	27000	82800
1030	1380	850	850	1124	7.5	7.5	29000	90500
1040	1440	1000	1000	1133	27×20°	7.5	37900	93500
	1440	1000	1000	1133	27x20°	7.5	30600	93800
1200	1590	1050	1050	1305	30×20°	6	41800	13500
1270	1602	850	850	1354	7.5	7.5	42000	13600
1300	1655	890	880	1391	7.5	7.5	37300	122000
1350	1765	1360	1360	1457	42×20°	7.5	40000	122000
1400	1780	1200	1200	1493	40×20°	9.5	52300	163000
	1900	1360	1360	1521	40×20°	12	61500	182000
1480	1849.74	1100	1100	1574	7.5	7.5	52500	164000

[**Note**] 1)p…Cage type



Designations	Other dimensions(mm)			Abutment and fillet dimensions(mm)				Mass(kg)
	D_1	b	k	d_{amin}	D_{amax}	r_{amax} 2)	r_{bmax} 2)	(approx.)
FCDP174229685/WB	1044	22.3	12	994	1121	5	5	1990
FCDP196262880	1198	30	16	1012	1286	10	5.5	3300
FCDP198272760/HCC4	1236	30	18	1026	1336	10	5	3430
FCDP200272800	1237	22.3	12	1017	1339	3	6	3560
FCDP206276850	1258	22.3	12	1059	1351	6	6	3650
FCDP2082881000	1335	22.3	12	1069	1417	6	8	5090
FCFP2082881000/HCC4YA3	1320	24	12	1064	1411	8	6	5160
FCDP2403181050	1465	24	15	1224	1567	5	8	5980
FCDP254320850X1	1568	22.3	12	1299	1573	6	6	6000
FCDP260331880HC/WB	1552	22.3	12	1329	1626	6	6	4800
FCDP2703531360	1620	22.3	12	1379	1733	6	12	9110
FCDP2703561200	1671	-	12	1423	1748	8	10	7380
FCDP2703801360	1670	22.3	12	28	1868	10	10	11300
FCDP296370110X1	1700	22.3	12	1509	1821	6	6	7450

2) r_a: shaft fillet size corresponding to the inner ring chamfer size r; r_b: shell fillet size corresponding to the outer ring size r_1

d 35～130mm

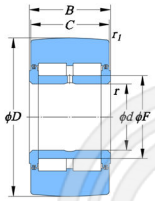


Figure 1

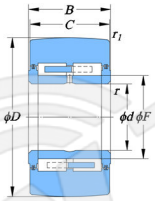


Figure 2

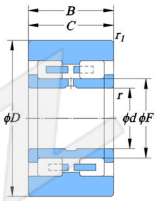


Figure 3

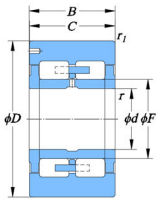


Figure 4

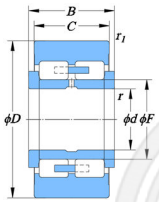


Figure 5

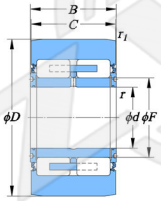


Figure 11

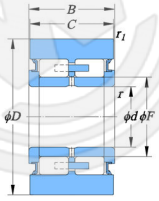
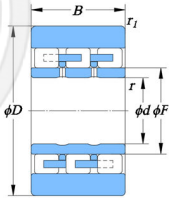


Figure 12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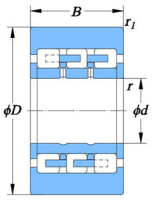
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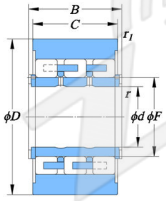
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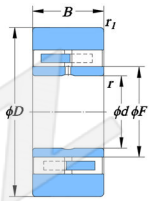
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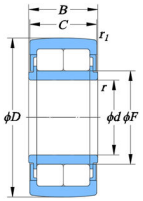
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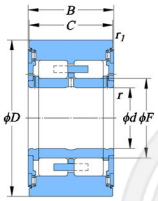
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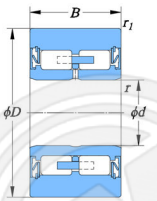
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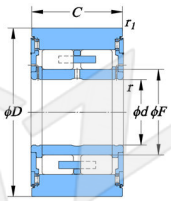
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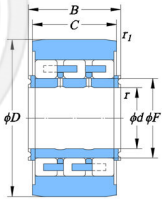
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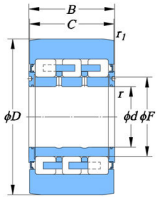
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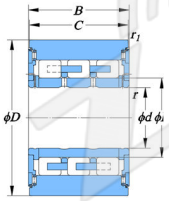
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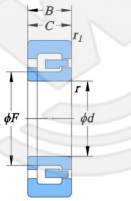
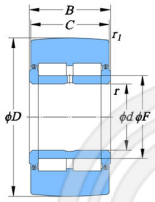


Figure 19

Principal dimensions(mm)						
d	*D*	*B*	*C*	*F*	r_{min}	r_{1min}
35	110	40	39	45	1.5	1
40	105	48	46	51	1	1
50	90	32	30	57.3	1	2
	110	32	30	57.3	1	2
	110	44.4	44.4	60	1.5	1.5
	130	75	73	66	1.5	1.5
51	98.4	60	54	61.14	0.3×45°	2
	98.4	60	54	61.14	0.3×45°	2
55	120	52	51.2	65	0.8	1.2
	126	64	63.2	69	0.3×45°	1
60	150	75	73	75	0.8	1
	150	75	73	75	1.2	1
	150	75	73	75	0.8	1
	150	75	73	76.5	0.8	1
70	160	75	74	82	1.5X45°	1
	160	90	89	82	1.5X45°	1
	160	90	90	82.9	1.1	1
85	185	125	122.5	102.6	0.8	1
90	220	96	94	111	3	3
100	225	96	93.5	119.5	0.8	1
	225	100	95	119.5	0.8	1
	225	120	119	119.55	3	2
	225	120	119	118	2	2.3
	225	120	120	119.5	2	2
130	300	172.6	172	159.3	2	1
	300	172.64	171	159.455	2	2.5
	300	172.64	171.6	159.5	3	2.5
	300	172.64	172.64	158.45	2	4
	300	172.64	172.64	158.36	2.5	4
	300	172.64	172.64	159.455	2.5	4

Designations	Basic load ratings(kN)		Mass(kg) (approx.)	Figures
	C_r	C_{or}		
SJ-NNUPTR2407X3/HCO	82.7	102	2.46	4
SJ-NUPT608Q1/HCO	114	148	2.43	19
SJ-NUTR5090-2Z/HCO	102	161	0.969	7
SJ-NUTR50110-2Z/HCO	102	161	1.70	7
BNPF102240X2/HCO	114	154	2.37	4
BNPF102675-2ZL	236	341	6.04	2
BNPF102060X1-2RZ	149	255	2.23	1
BNPF102060X1V-2RZ	149	255	2.25	1
SJ-NNUPTR3311X2/HCO	158	212	3.21	5
BNPF112564X1-2RZ	178	240	4.53	2
BNPF123075-2RZ	275	393	7.85	2
BNPF123075-2RZ-1	275	393	7.90	2
BNPF123075-2RZ-1/YB2	275	393	7.90	2
BNPF123075-2RZ/WN33YAD	285	398	7.71	2
BNPF143275-2RZ	286	378	8.66	2
BNPF143290-2RZ	328	451	10.2	2
SJ-TCNB70	377	662	10.6	13
BNPF1737125	588	1010	18.2	5
BNPF184496-2RZ	465	635	20.6	11
BNPF204596	525	806	21.1	5
BNPF2045100	525	806	21.6	5
SJ-NNFP100-XRS	692	1140	26.5	12
SJ-NNUP100-2RS	702	1120	26.7	11
SJ-TCNB100	790	1370	27.6	13
BNPF2660172	1500	2740	71.1	13
SJ-TCNP130-2	1300	2290	70.4	14
SJ-TCNB130-5	1460	2660	72.3	13
SJ-NNFP130	1390	2450	69.6	3
SJ-TCNB130	1480	2660	72.3	13
SJ-TCNB130-2	1560	2900	73.6	13

d 130～180mm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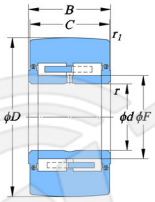
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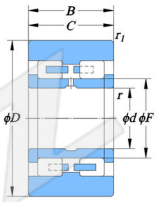
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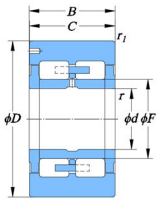
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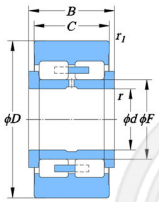
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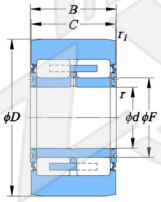
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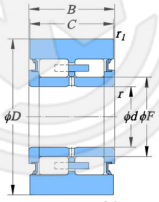
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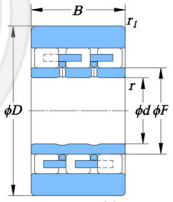
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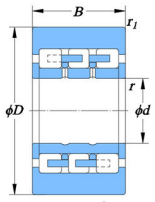
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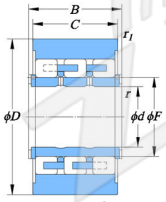
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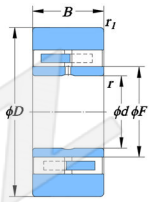
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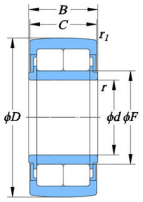
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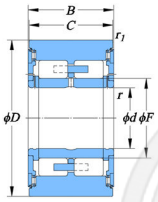
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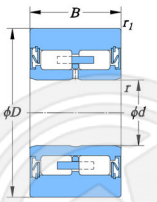
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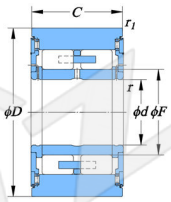
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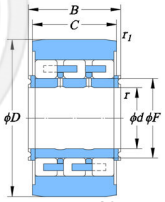
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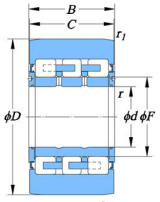
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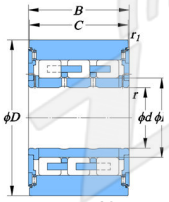
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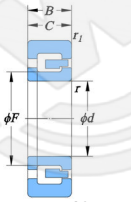


Figure 19

Principal dimensions(mm)						
d	*D*	*B*	*C*	*F*	r_{min}	r_{1min}
130	300	172.64	172.64	159.455	2	2.7
	300	172.64	172.64	158.36	2.5	4
	300	172.64	172.64	159.455	2	2.7
	300	172.64	172.64	159.455	2	2.7
	300	172.644	171.6	161	2.5	3.5
	300	172.644	171.6	161	2.5	3.5
	300	172.664	172.661	157	10×15°	6
	300	172.664	172.664	158.7	2.5	2.5
	300.02	132	129	156	2	2
	300.02	132	129	156	2	3.1
	300.02	172.65	170	159.5	2	2
	300.02	172.65	171.6	156	10×15°	2.5
	300.02	172.65	171.6	156	2.5	2.5
	300.02	172.65	171.6	156	2	3.1
	300.2	170	168	158.455	1.1	2.5
180	406.42	171	169	222	1.1	2.5
	406.42	171.04	169	222	1.1	2.5
	406.42	171.04	171.04	220	3.5	1
	406.42	171.04	171.04	222	3.5	1
	406.42	171.04	171.04	217.3	4	1.5
	406.42	171.04	171.04	217.3	4	1.5
	406.42	171.04	171.04	217.3	4	1.5
	406.42	171.04	171.04	217.3	4	1.5
	406.42	171.04	171.04	217	10×15°	4
	406.42	176	170	217.4	1.1	2.5
	406.42	182	179	222	1.1	2.5
	406.42	224	224	217.3	4	1.5
	406.42	224	224	217.3	4	1.5
	406.42	224	222	222	1.1	2.5
	406.42	224	222	222	1.1	2.5

Designations	Basic load ratings(kN)		Mass(kg) (approx.)	Figures
	C_r	C_{or}		
SJ-TCNB130-4	1560	2900	73.6	13
SJ-TCNB130/WN26	1480	2660	72.2	13
SJ-TCNB130-JM	1560	2900	73.6	13
SJ-TCNP130-1	1230	2120	70.6	14
SJ-TCNB130-3	1480	2810	72.0	13
SJ-TCNB130X2	1480	2810	72.0	13
SJ-NNJ130-2RS	1320	2210	68.9	9
SJ-TCNB130-1	1510	2790	72.9	13
SJ-NNFP130X2	1090	1820	53.1	3
SJ-NNUP130	1090	1820	53.8	4
SJ-NNJ130-2RS1	1240	2160	68.7	9
SJ-NNJ130-2RS2	1500	2520	68.9	9
SJ-NNUP130-2ZL	1470	2430	70.1	2
SJ-NNUP130-2ZL-1	1470	2430	69.8	2
SJ-TCNP130-XRS	1270	2210	68.5	17
SJ-TCNP180-XRS-2	1610	2870	124	17
SJ-TCNP180-XRS/HCO-2	1630	2920	124	17
BNPF3680170X3	2000	3670	128	13
BNPF3680170X3/YA5	2120	3830	128	13
SJ-TCNB180	2080	3860	130	13
SJ-TCNB180-1	2050	3780	129	13
SJ-TCNB180-PX	2080	3860	130	13
SJ-TCNB180/YAD	2050	3780	129	13
SJ-NNJ180-2RS	1670	2960	127	9
SJ-NNUP180/HCEO	1650	2850	128	4
SJ-TCNP180-XRS	1760	3230	133	17
SJ-TCNB180X2	2610	5160	169	13
SJ-TCNB180X2/YAD	2610	5160	169	13
SJ-TCNP180-XRS-3	2190	4270	163	17
SJ-TCNP180-XRS/HCO-3	2210	4320	163	17

d 180～215mm

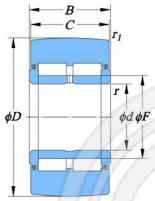
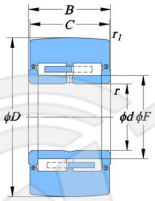


Figure 1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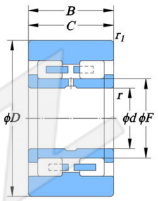
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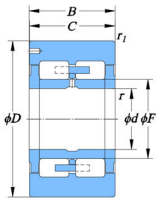
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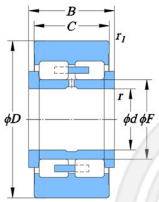
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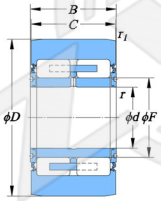
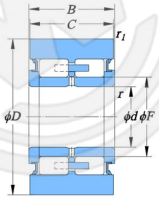


Figure 11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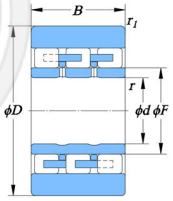
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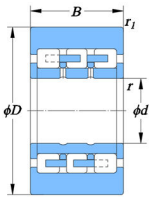
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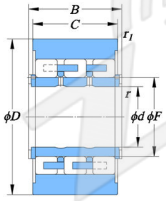
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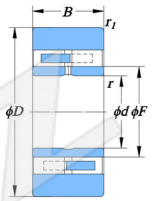
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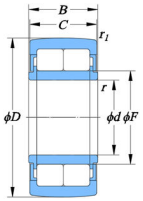
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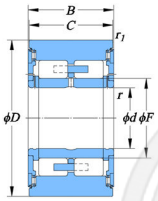
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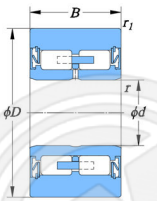
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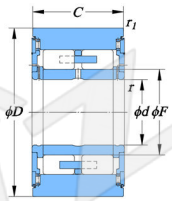
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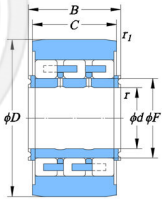
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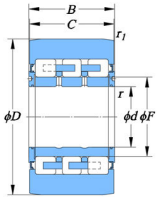
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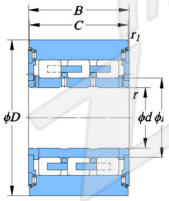
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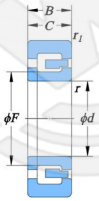
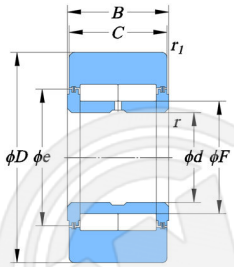


Figure 19

Principal dimensions(mm)							Designations	Basic load ratings(kN)		Mass(kg) (approx.)	Figures
d	*D*	*B*	*C*	*F*	r_{min}	r_{1min}		C_r	C_{or}		
180	406.6	181	179	222	1.1	2.5	**SJ-TCNP180-XRS-1**	1760	3230	133	17
	410	235	220	222	1.1	1.1	**SJ-TCNP180**	2360	4710	170	16
	410	235	220	222	1.1	1.1	**SJ-TCNP180-1**	2360	4710	170	16
	410	240	220	222	1.1	1.1	**SJ-TCNP180-2**	2360	4710	170	16
	410.2	240	220	218	1	3	**SJ-TCNP180/YAD**	2440	4740	169	16
	485	211.7	205.7	239	1.1	1.1	**BNPF3697212**	2410	3680	230	8
	485	344	338	239	1.1	1.1	**BNPF3697344**	4010	7080	380	18
	485	344	338	238	1.1	1.1	**BNPF3697344A**	3980	7010	385	8
190	485	217.5	211.1	239	1.1	1.1	**BNPF3897218X2A**	2570	3990	230	8
	485	217.7	211.7	238	1.1	1.1	**BNPF3897212X2**	2500	3850	230	10
	485	349.7	343.7	238	1.1	1.1	**BNPF3897350X2**	3980	7010	379	10
	485	349.5	343.5	239	1.1	1.1	**BNPF3897350X2A**	4010	7080	378	18
205	520	168	168	248	2	1.5	**BNNB41104168**	2440	3920	218	6
	520	240	216	255	-	1.1	**BNPF41104240**	3090	5360	277	15
215	550	205	200	275	1.1	1.1	**SJ-NNUP215-XRS**	2590	4560	292	11
	550	205	200	275	1.1	1.1	**SJ-NNUP215-XRS/HCO**	2590	4560	292	11
	520	160	160	258	3	1	**BNPF41104160**	2480	4140	207	6

d 35～80mm



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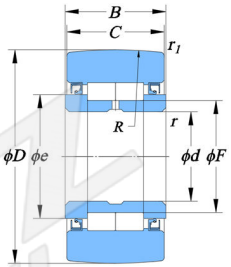

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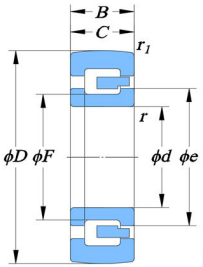
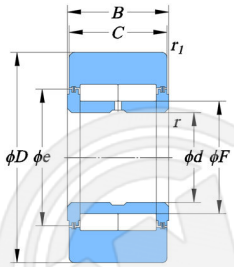


NUPTR

Principal dimensions(mm)						Basic load ratings(kN)		Designations	Abutment and fillet dimensions(mm)		Mass(kg)
d	*D*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}		*e*	*F*	(approx.)
35	110	31	30	1	1.5	91	93	NUPTR607/HCO	52	45.7	1.84
40	120	33	32	1.1	1.1	122	125	NUPTR608/HCO	65	56	2.23
45	90	30	30	0.7×45°	1.1	81.6	141	NNTR45	64	57	1.01
50	125	65	60	2×45°	1.5	216	303	NNTR50X3-2ZL	68	62.3	4.45
	125(140)	65	60	2×45°	1.5	216	303	NNTR50X3-2ZL/YA1	68	62.3	4.89
	130	65	63	2×45°	1.5	225	304	NNTR50-2ZL	63	60	5.09
55	130	52	50	2	5	198	264	NUTR55-2ZL	75	67.3	3.95
	130	52	50	2	5	198	264	NUTR55-2ZL/YAD	75	67.3	4.13
	130	67	65	2	5	278	409	NUTR55X2-2ZL	75	67.3	5.14
	130	67	65	2	3	278	409	NUTR55X2-2ZL/YAD	75	67.3	5.57
56	160	63	60	1.5	5	263	370	NUTR56160	82	72.3	7.87
	160	63	60	3	5	281	395	NUTR56160/YA7	101	77	7.69
60	130	65	62	1.5	5	231	384	NUTR60130	78	74.2	4.74
	150	75	73	1.5×45°	3	263	391	NNTR60-2ZL	83	76	7.86
	165	65	60	1.5	1.1	263	391	NUTR60165X	92.2	75.5	8.41
65	127	38	38	1×45°	2.1	161	263	NNTR65	91.6	81	2.48
	150	54	52	2	2	243	349	NUTR65150	94	85.7	5.26
	160	75	73	2	3	295	438	NNTR65-2ZL	82	78.5	8.77
70	180	85	83	2×45°	3	394	580	NNTR70-2ZL	92	86	12.9
	190	60	58	1.5	2	234	345	NUTR70	87	85.7	10.3
	220	66	64	2	3	344	417	NUPTR614/HCO	108	96	15.8
	260	56	55	2.5	3	477	630	NUPTR614X3V/HCOI	133	122	19.3
75	190(210)	70	70	1×45°	5	384	496	NUPTR615R	118.2	95.5	13.4
80	170	62	58	3	3	337	490	NUTR80170	125.2	98	7.55
	170	62	58	3	3	337	490	NUPTR80170/YAD	108.2	98	7.24
	170(190)	57.5	60	1.5	2×45°	277	409	NUPTR80R-2ZL	115	97	7.70
	190	80	80	2.5	2.5	466	754	NNTR80X3-2ZL	124	103.3	13.7
	190	80	80	2.5	2.5	466	754	NNTR80X3-2ZL/YA1	124	103.3	12.4
	190	80	80	2.5	2.5	466	754	NNTR80X3-2ZL/YA1-1	124	103.3	12.4
	190	75	80	1.5	1.5	331	540	NUTR616-2RS	105	96	13.2
	190	75	80	1.5	1.5	342	540	NUTR616-2RS-1	110.5	102	12.9
	190	75	80	1.5	1.3	342	540	NUTR616-2RS/YAB	110.5	102	12.8
	190(215)	75	100	1.5	1.5	342	540	NUTR616-2RS-1/YAD	110.5	102	17.3
	190(215)	75	100	1.5	1	342	540	NUTR616-2RS/YAB1	110.5	102	17.0
	190(215)	100	100	1.5	1.5	331	540	NUTR616-2RS/YAD	105	96	18.0
	200	90	88	2	4	515	800	NNTR80-2ZL	111	102.3	16.5
	200	90	88	2	4	515	800	NNTR80-2ZL/YAD	111	102.3	16.5
	200	90	88	1.5×45°	3	470	770	NNTR80DZ	101	94.2	16.7

d 80～130mm



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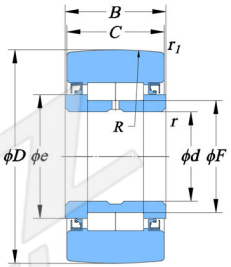

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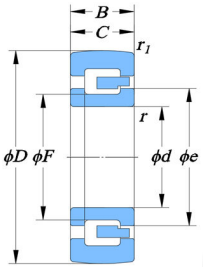
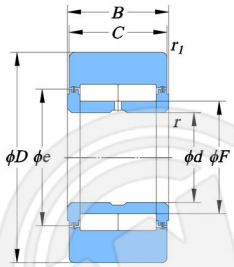


NUPTR

d	Principal dimensions(mm) *D*	*B*	*C*	r_{min}	r_{1min}	Basic load ratings(kN) C_r	C_{or}	Designations	Abutment and fillet dimensions(mm) *e*	*F*	Mass(kg) (approx.)
80	200	90	90	2	1.3	382	630	**NUTR616-2RS/YAB2**	110.5	102	16.9
	260	72	70	1×45°	1.5	517	715	**NNTR80-1**	127	111.5	24.7
85	160	80	80	2	2	300	625	**NNTR85-ORS/YB2**	112	98.8	8.56
	170	80	80	2	2	300	625	**NNTR85-ORS/YAB**	112	98.8	8.40
90	220	100	98	2	1	545	880	**NNTR90-2Z**	119	108.5	22.0
	220	100	98	2.5	4	629	996	**NNTR90-2ZL**	119	112.5	22.2
	220	160	159	2×30°	3	854	1480	**NNTR90V-2RS**	121	112.5	35.0
	260	150	120	4	4	779	1140	**NNTR90X3-2ZL/HG2O**	159	116.5	42.6
95	153	45	45	1	2.1	214	418	**NNTR95**	119.4	108.5	3.75
100	150	55	55	1.5	0.5	214	450	**NNTR100-2Z**	116	110	3.37
	150	65	65	1.5	0.5	214	450	**NNTR100WB-2Z**	110.15	110	3.42
	200(230)	93	90	2	4	530	885	**NNTR100R-2ZL/YA2**	126	116	16.7
	200(230)	93	90	3	6	473	867	**NNUPTR100R-2ZL1**	115	122.5	16.4
	215(240)	105	103	1.5×45°	3	724	1150	**NNTR100/YA1-1**	131	122	24.0
	230(240)	105	103	1.5×45°	1	724	1150	**NNTR100/YA1**	131	122	25.8
	240	105	103	1.5×45°	3	724	1150	**NNTR100**	131	122	27.6
	240	105	103	1.5×45°	3	680	1210	**NNTR100DZ**	131	122	27.6
	250	106	103	1.5×45°	5	653	967	**NNTR100-2ZL/HCO**	134	124.2	30.1
	300	82	80	1×45°	1.5	723	1030	**NNTR100-1**	152	134	36.7
	300	82	80	1×45°	1.5	723	1030	**NNTR100-1/YAD**	152	134	36.7
105	260(280)	135	135	2	2.1	1030	1790	**NNTRP105R-2ZL/S2YA2**	152.4	142	44.2
110	200	60	58	1.5×45°	4	471	706	**NUTR110 200**	126	126	8.93
	220(250)	85	95	3×45°	2.5	473	946	**NNTR110X3-2RS**	145	140	19.5
	240	190	188	3	4	1227	2620	**NNTR110X3-2ZL**	142	134	49.1
	250	80	100	1.1×45°	3	390	710	**NNTR110**	132	124	27.3
	260	115	113	2	4	859	1400	**NNTR110-2ZL**	143	133	35.6
	260	115	113	2	4	859	1400	**NNTR110X1-2ZL**	143	133	36.8
	320	170	170	8	5	1420	2780	**NNTR110X3-2ZL-1**	179.5	157.5	89.5
	320	170	170	8	5	1420	2780	**NNTR110X3-2ZL-1/YA1**	179.5	157.5	79.8
115	190	114	114	3	3	459	1040	**NNTR115/YAD**	145	130	14.5
120	210	114	114	4	2	497	1120	**NNTR120-2ZL/YB4**	157	141	18.6
	290	135	133	2	3	960	1570	**NNTR120-2Z**	157	143	50.9
130	230	120	120	3	4	970	1570	**NUTR130230XS**	186.5	149	23.6
	230	120	120	3	4	1020	1550	**NUTR130230XS/YAD**	173	146	23.5
	250	106	103	4	4	630	1271	**NNTR130-2ZL**	160	147	26.8
	250	106	103	4	4	630	1271	**NNTR130-2ZL-2**	160	147	26.8
	250(275)	110	110	7	2	666	1200	**NNTR130-XRS**	170	154	29.4
	310	146	144	3	5	1150	1930	**NNTR130-2ZL-1**	165	153	65.0

d 130～310mm



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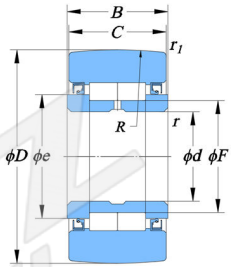

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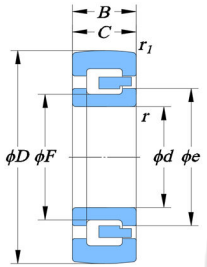
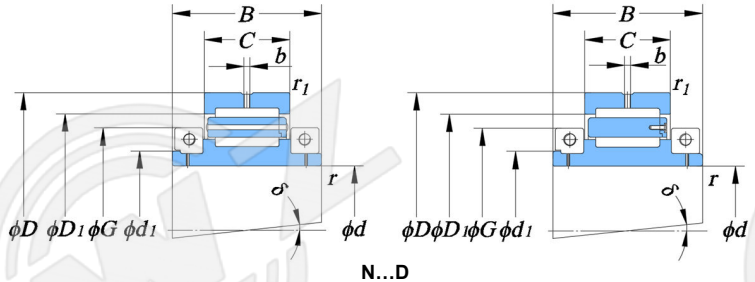


NUPTR

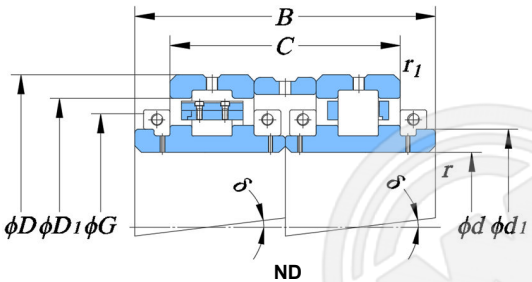
Principal dimensions(mm)						Basic load ratings(kN)		Designations	Abutment and fillet dimensions(mm)		Mass(kg)
d	*D*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}		*e*	*F*	(approx.)
130	310(338)	146	144	3	5	1150	1930	**NNTR130R-2ZL**	165	153	66.7
140	250	114	113.8	4	3	776	1440	**NNTR140/YAD**	191	162	26.7
	250	114	114	4	5	592	1250	**NNTR140-2ZL**	179	158	27.7
	250	114	113.8	4	2	601	1290	**NNTR140-2ZL/HCOYAB**	178.5	163	27.9
	250	115	115	4	20×23°	830	1590	**NUTR140250XS**	160	160	27.1
	320	170	170	2.5	5	1480	2740	**NNTR140-2ZL-1/HCO**	200	172	80.0
	320	170	170	2.5	5	1480	2740	**NNTR140-2ZL-1/HCOYA1**	200	172	70.2
150	360	173	171	3.75×45°	5	1570	3040	**NNTR150-2ZL**	196	191	105
310	500	130	130	4	6	1900	4670	**NNTR310**	401.4	353.2	122

ZWZ

d 200～710mm



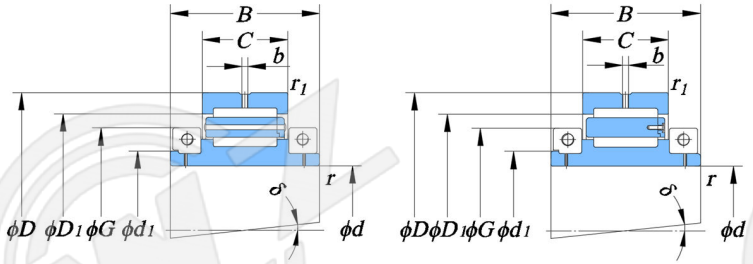
N...D



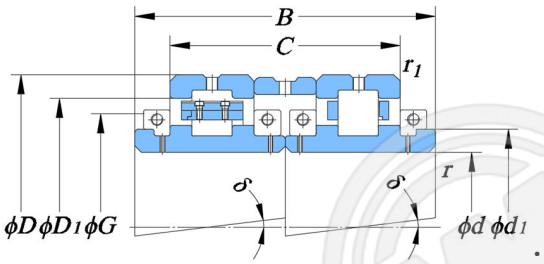
ND

Principal dimensions(mm)						Basic load ratings(kN)		Designations	Limiting speeds (r/min)		Other dimensions(mm)					Mass(kg) (approx.)
d	*D*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}		Grease	Oil	D_1	d_1	*G*	*b*	δ(°)	
200	368.3	156.369	90.488	4	4	624	769	**N640D**	940	920	312	244	290	8.5	6°	63.0
	368.3	156.369	90.488	4	4	624	769	**N640D-1**	940	920	-	244	290	8.5	6°	61.4
240	431.8	170	96.8	3	3	1240	1910	**N648D**	750	740	-	288	340	8	6°	87.0
250	440	290	190	18	5	3100	5880	**N650D**	720	710	384	308	385	-	6°	180
260	380	150	100	12×45°	4	1020	1950	**N652D**	800	790	338	293	336	8	6°	52.5
320	600	272	170	25	6	2380	3580	**N664D**	490	480	522	416	510	-	6°	330
400	615.95	200	115.9	3	3	1990	3420	**N680D-1**	420	410	542	454	526	8	6°	195
	685.8	292	166.7	8	3	3680	6280	**N680D**	380	380	596	458	548	12	6°	378
480	680	210	160	22×45°	6	3120	6760	**N696D**	350	350	612	546	602	12	6°	234
500	635	310	226	7.5×45°	5×45°	1990	5130	**ND6/500D/DR**	360	360	589	533	580	8	6°	210
	670	450	360	5	5	3260	8400	**ND69/500X2D/DR-SY**	350	340	613	543	610	-	6°	402
565	700	120	50	3	5	893	1900	**N6/565D**	310	310	658	613	655	8	6°	84.2
610	780	380	290	10	5	3160	8580	**ND6/610D/DR**	270	260	722	660	718	-	6°	424
620	820	380	290	12	5	3470	8640	**ND6/620D/DR**	250	250	752	671	740	-	6°	505
630	794	380	278	10	5	3340	8970	**ND6/630D/DR**	260	250	740	676	736	10	6°	407
	800	340	254	10	5	3100	8040	**ND6/630D-2/DR**	260	250	742	668	736	10	6°	383
	820	340	240	10	6	2770	6680	**ND6/630D-1/DR**	250	250	758	688	752	10	6°	437
	820	340	260	10	6	3220	8100	**ND6/630D-3/DR**	250	250	758	688	752	10	6°	455
650	820	380	290	12	5	3250	9060	**ND6/650D/DR**	250	240	762	700	758	-	6°	455
	820	380	290	10	5	3250	9060	**ND6/650D-2/DR**	250	240	762	700	758	10	6°	455
	820.3	380	290	12	5	3250	9060	**ND6/650D-3/DR**	250	240	762	700	758	-	6°	450
	840	390	300	6	6	4000	10800	**ND6/650D-1/DR**	240	240	-	706	772	10	6°	538
	840	390	300	10	5	4000	10800	**ND6/650D-4/DR**	240	240	776	696	772	10	6°	530
660	866.78	438	336.5	12×45°	5×45°	4590	12300	**ND6/660D/HCRYA8**	230	230	795.5	720	784	12	6°	651
	866.78	438	336.5	12×45°	5×45°	4590	12300	**ND6/660D/HCRYA8-1**	230	230	795.5	720	784	12	6°	646
690	864	196	94	6	2	1690	3930	**N6/690D**	220	220	-	738	800	10	6°	210
	865	390	284	12×45°	6	2900	7870	**ND6/690D/DR**	220	220	805	730	800	10	6°	466
700	870	380	290	12	6	3410	9840	**ND6/700D/HCRYA8**	220	220	811	749	809	10	6°	477
708.8	980	290	155	7.5	7.5	3870	7940	**N6/708.8D**	190	190	-	777	870	12	6°	552
710	890	370	280	12	6	3620	10200	**ND6/710D/YA8-1**	210	210	827	760	819	10	6°	508
	880	380	290	12	6	3520	10300	**ND6/710D/YA8**	210	210	821	759	819	10	6°	491
	900	380	290	6	6	3830	11000	**ND6/710X1D/YA8**	210	210	833	765	825	10	6°	554

d 711.2～775mm



N...D

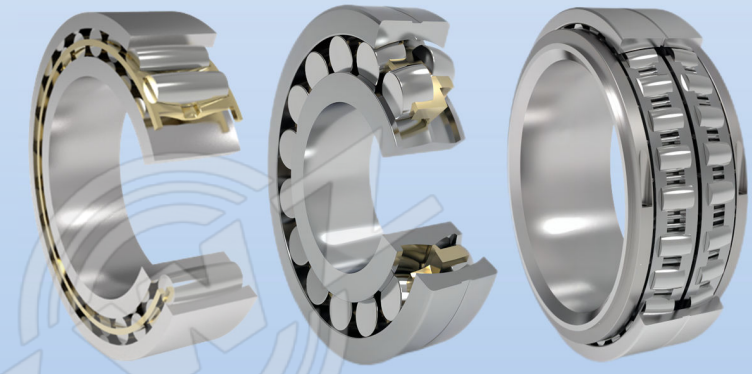


ND

Principal dimensions(mm)						Basic load ratings(kN)		Designations	Limiting speeds (r/min)		Other dimensions(mm)					Mass(kg) (approx.)
d	*D*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}		Grease	Oil	D_1	d_1	*G*	*b*	δ(°)	
711.2	892.2	184.15	87.3	7.5	5	1740	5440	**N6/711.2D**	210	210	823	767.5	820	8	6°	225
	892.2	184.15	87.3	7.5	5	1740	5440	**N6/711.2DF3**	210	210	823	767.5	820	8	6°	225
750	920	185	106	7.5	7.5	2330	5990	**N6/750D**	200	190	864	802	863	8	6°	241
	920	185	106	7.5	7.5	2330	5990	**N6/750DF3**	200	190	864	802	863	8	6°	241
	960	380	290	15	5	3930	10800	**ND6/750D/HCR**	190	180	887	806	870	-	6°	626
	960	380	290	15	5	3780	10200	**ND6/750D/HCRYAD**	190	180	887	806	870	-	6°	624
	960	380	290	15	5	3930	10800	**ND6/750DF3/HCR**	190	180	887	806	870	-	6°	626
	960	420	330	12	5	4580	13100	**ND6/750D/HCR-1**	190	180	887	806	870	-	6°	703
	960	420	330	12	5	4580	13100	**ND6/750DF3/HCR-1**	190	180	887	806	870	-	6°	703
756.2	994	250	140	12×45°	7.5	3690	7940	**N6/756X4D/HCR**	180	180	-	820.2	900	16	6°	438
770	950	380	290	6	6	3810	11200	**ND6/770D/HCR**	180	180	890	820	882	-	6°	550
	950	380	290	6	6	3810	11200	**ND6/770D/HCRYA8**	180	180	890	820	882	-	6°	550
775	945	330	245	10×45°	6	2810	7930	**ND6/775D/HCR/DR**	180	180	886	826	884	10	6°	462

ZWZ

Spherical Roller Bearings

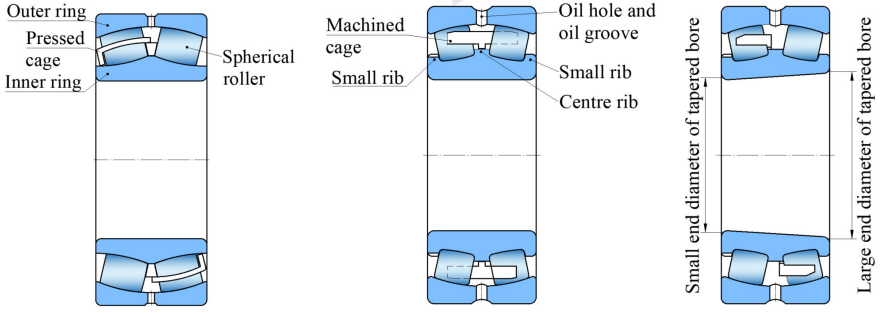


●Spherical roller bearings

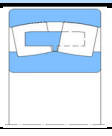
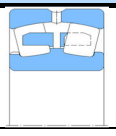
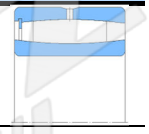
■ Product characteristics

Spherical roller bearings feature two rows of spherical rollers, with an outer ring having a common concave spherical raceway and an inner ring having two concave raceways inclined at an angle to the bearing axis. Self-aligning roller bearings are self-aligning and are unaffected by shaft misalignment or shaft flexure, thereby compensating for concentricity errors caused by these factors. These bearings can withstand both radial loads and double-direction axial loads, as well as combined loads, exhibiting high load-carrying capacity and excellent resistance to vibration and impact.

Widely utilized across various industries such as steel, mining, papermaking, marine, textile machinery, coal mills, and power generation, Spherical roller bearings stand as one of the most extensive bearing types in the mechanical industry.



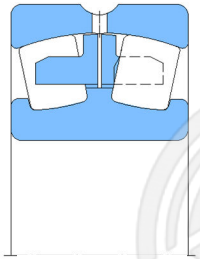
■ Product structural types

Structure	CA	CB	CC	SDB
Figure				
Inner diameter (mm)	300～2250	65～600	45～300	75～220
Outer diameter (mm)	62～2750	100～870	100～420	105～340
Width (mm)	20～360	35～200	36～90	40～90
Cage	Complete machined cage	Two-body machined cage	Steel plate pressed Cage	No cage or Solid cage
Inner ring	No central rib And ribs on both ends	central rib and Ribs on both ends	movable central rib and No rib on both ends	No ribs
※ Various structural patterns have cylindrical bores and tapered bores				

➢Spherical roller bearings for Vibration machinery

The new anti-vibration spherical roller bearings, developed based on the CB structure, are constructed with the VB structure design, with some also adopting the CA or CB types.

Bearings for vibration machinery feature standard external dimensions, with the inner ring incorporating fixed center ribs to withstand axial loads. The cage employs a special structural design with double-direction guidance for the inner and outer diameters, controlling clearance between guides and the amount of cage movement relative to the inner and outer rings, thereby providing vibration resistance and damping. These bearings are available with cylindrical or tapered bores.



VB structure

The VB structure is a newly developed bearing design by **ZWZ** specifically for the main vibrating machinery, also suitable for general mechanical equipment. Its characteristics include high load capacity, impact resistance, vibration resistance, low friction, low temperature rise, and long service life.

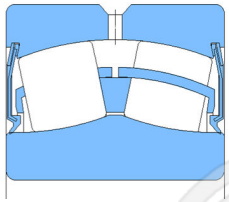
The suffix “VB” is used to denote self-aligning roller bearings for vibrating screens, as shown in the figure.

Range of dimensions, d: 80～190mm, D: 170～340mm, B: 58～120mm.

➢Sealed spherical roller bearings

For bearings operating under heavy loads, harsh working conditions, or with special sealing requirements, self-aligning roller bearings with sealing rings featuring steel frame contacts on both sides can be provided.

Sealed spherical roller bearings include variants with integral solid cage CA type, sealed on the basis of CB type, and sealed based on CC type.



CC sealing structure

The sealing ring is mounted on the upper end of the bearing's outer ring, rotating together with the outer ring without relative motion. Its lower lip contacts the inner ring's raceway. This steel frame seal is corrosion-resistant and aging-resistant. This type of seal is commonly used in elevator traction machines. It effectively prevents impurities from entering and grease from leaking.

➢ SDB type spherical roller bearings

The SDB type spherical roller bearing is a new type of radial roller bearing developed from cylindrical roller bearings and spherical roller bearings. It can automatically adjust alignment and accommodate significant axial displacement.

The single-row spherical roller bearing is equipped with slightly curved symmetrical rollers. The raceways of the rings are slightly concave, and the outer ring raceway has grooves on one or both sides to accommodate the installation of spring lock rings or seals if needed. This bearing type possesses self-aligning capabilities and a certain degree of axial displacement capacity. This type of bearing is primarily used in equipment such as the sector segment in a steel mill and in the textile industry. The main structural form is illustrated in the figure.

Range of dimensions, d: 75～220mm, D: 105～340mm, B: 40～90mm.

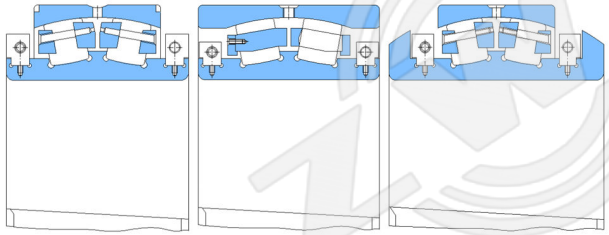
➢Split spherical roller bearings

This type of bearing is primarily used in locations where access is difficult, or in situations where non-separable bearings are used, requiring substantial time and manpower for maintenance or replacement, leading to expensive downtime costs. Examples include crankshafts or long shafts.

ZWZ can provide different designs of split spherical roller bearings based on user requirements. To meet installation requirements, this type of bearing typically characteristics split inner and outer rings, with a extended inner ring incorporating clamping rings on both sides, ensuring proper set-up and alignment.

Split spherical roller bearings are designated with the suffix “D”.

Range of dimensions,d: 110～1320mm, D: 180～1720mm, B: 69～580mm.



■ Basic information

Precision	**ZWZ** spherical roller bearings are available in P0 and P6 precision grades. For users with special requirements, P5 grade products can also be manufactured. The tolerances conform to GB/T307.1 standards, with specific tolerance values detailed in the preface.
Clearance	**ZWZ** spherical roller bearings are available with internal clearances of C2, standard (CN), C3, C4, and C5, all conforming to GB/T4604. For spherical roller bearing with tapered bores, the standard clearance is C3. The radial clearance values, applicable to bearings that are unmounted and under no load, are detailed in the preface. Bearings for vibrating machinery require larger radial clearances, typically C3, C4, or non-standard clearances between C3 and C4. The clearance values for SDB bearings are shown in Table 1 below.
Cage	For CA and CB type self-aligning roller bearings, the cages are typically made of solid brass, bronze, or carbon steel. For C and CC type self-aligning roller bearings, the cages are generally made of stamped steel.
Equivalent load	Dynamic equivalent load: when$F_a/F_r \leqslant e$, $P = F_r + Y_1 F_a$; when$F_a/F_r > e$, $P_r = 0.67F_r + Y_2 F_a$; In the formula, e, Y_1 and Y_2 values can be referenced with the bearing dimensions table. Static equivalent load: $P_0 = F_r + Y_0 F_a$; In the formula, the Y_0 value can be referenced with the bearing dimensions table.

Table 1 The radial clearance of the SDB (**ZWZ** Current Code) spherical roller bearings with cylindrical bore Unit: μm

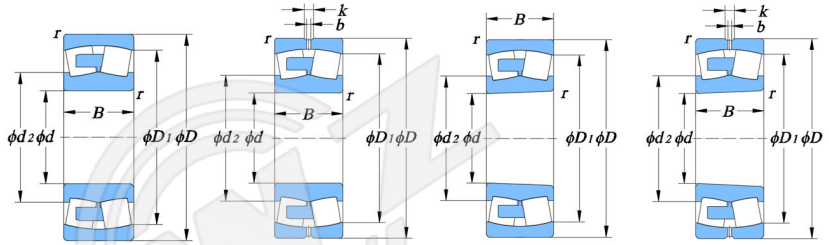
d mm		Group 3		Group 4	
Over	**Incl.**	**min**	**max**	**min**	**max**
18	**24**	39	51	51	65
24	**30**	46	60	60	76
30	**40**	55	73	73	93
40	**50**	65	85	85	109
50	**65**	79	104	104	139
65	**80**	96	124	124	164
80	**100**	120	158	158	206
100	**120**	144	186	186	244
120	**140**	166	215	215	280
140	**160**	195	252	252	321
160	**180**	217	280	280	361
180	**200**	238	307	307	394
200	**225**	262	337	337	434
225	**250**	282	368	368	478
250	**280**	307	407	407	519
280	**315**	330	434	434	570
315	**355**	360	483	483	620
355	**400**	395	528	528	675
400	**450**	435	577	577	745
450	**500**	475	633	633	811
500	**560**	518	688	688	890
560	**630**	567	751	751	975

■Supplementary code

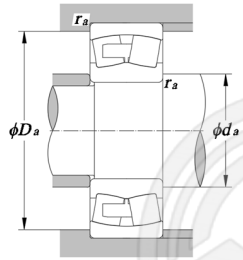
Code name	Code description
C	Spherical roller bearings with an inner ring that has no rib, featuring a movable central rib, equipped with symmetrical rollers, and fitted with a cage.
CA	Spherical roller bearings with an inner ring that has no central rib, featuring small ribs on both sides, equipped with symmetrical rollers, and fitted with a bronze cage.
CAB	CA type spherical roller bearings with perforated rollers and a pillar cage.
CABC	CAB type spherical roller bearings with improved roller guiding approach (roller surface roughness, raceway surface roughness, and changed heat treatment method, etc), to reduce friction.
CAC	CA type spherical roller bearings with improved roller guiding approach (roller surface roughness, raceway surface roughness, and changed heat treatment method, etc), to reduce friction.
CB	Continuous casting bearings.
CC	C type spherical roller bearings with improved roller guiding approach (roller surface roughness, raceway surface roughness, and changed heat treatment method, etc), to reduce friction.
/CRA9	The radial clearance of the bearing is non-standard, while there's requirement for the axial clearance.
F1	Carbon steel.
F3	Ductile cast iron.
/HA	The bearing rings, rolling elements, and cage (or just the bearing rings and rolling elements) are manufactured from vacuum-melted bearing steel.
/HCR	To distinguish from the same specification, only the rolling element is made of carburized steel.
Q1	Aluminum iron manganese bronze
-2RS2	Bearings with steel frame viton seals on both sides.
S	When the inner diameter is less than 65mm, the structure is similar to the CC type, and the outline of the cage is composed of two broken lines.
SDB	Structural code, single-row spherical roller bearings, with self-aligning and certain axial displacement capacity.
TN1	Nylon.
VB	Vibrating screen bearings.
/W20	There're three oil holes on the outer ring of the bearing (no oil groove).
/W33T	There're eight oil holes on the outer ring of the bearing.
/W33X	There're six oil holes and oil groove on the outer ring of the bearing.
YAB	The structure and technique are required to be changed simultaneously.
YAD	The same type bearing whose structure has two changes and above.

ZWZ

d 30～82.6mm



CA　CA(W33)　CAK　CAK(W33)



Principal dimensions(mm)				Basic load ratings (kN)		Limiting speeds (r/min)		Designations			Other dimensions(mm)				Abutment and fillet dimensions(mm)					Factor			Mass(kg) (approx.)	
d	*D*	*B*	r_{min}	C_r	C_{or}	Grease	Oil	*CA*	*CAK*	*CAK30*	d_2	D_1	*b*	*k*	d_{amin}	d_{amax}	D_{amin}	D_{amax}	r_{amax}	*e*	Y_1	Y_2	Y_0	*CA*	*CAK*
30	62	20	1	56.1	61.1	6100	7400	22206CA	22206CAK	-	41	53	5.5	3	34	39	54	58	1	0.32	2.09	3.11	2.04	0.295	0.289
35	72	23	1.1	72.5	81.6	6000	7500	22207CA	22207CAK	-	46	60	5.5	3	40	45	62	67	1.1	0.33	2.07	3.09	2.03	0.450	0.440
	82	23	0.5	87.1	100	6000	7500	21307X3CA	-	-	53	70	-	-	39	52	73	78	0.3	0.28	2.41	3.59	2.35	0.652	-
40	80	23	1.1	82.9	93.7	4700	5700	22208CA	22208CAK	-	53	69	5.5	3	45	51	72	75	1.1	0.29	2.35	3.50	2.30	0.544	0.533
	90	23	1.5	82.6	89	4400	5300	21308CA	21308CAK	-	56	75	5.5	3	46	54	77	84	1.5	0.28	2.43	3.61	2.37	0.751	0.740
	90	33	1.5	127	140	4500	5600	22308CA	22308CAK	-	57	74	5.5	2.5	46	54	78	84	1.5	0.39	1.75	2.61	1.71	1.02	0.997
45	85	23	1.1	88	102	5300	6700	22209CA	22209CAK	-	57	74	5.5	2	50	55	76	80	1.1	0.28	2.39	3.56	2.34	0.629	0.617
	100	36	1.5	153	179	3800	4800	22309CA	22309CAK	-	63	82	5.5	2.5	51	60	85	94	1.5	0.38	1.77	2.64	1.73	1.53	1.50
50	90	23	1.1	88	105	5000	6300	22210CA	22210CAK	-	62	79	5.5	2	55	59	81	85	1.1	0.26	2.60	3.87	2.54	0.658	0.644
	110	27	2	128	141	3400	4300	21310CA	21310CAK	-	69	92	-	-	57	67	96	103	2	0.24	2.81	4.18	2.75	1.34	1.32
	110	40	2	193	226	3400	4300	22310CA	22310CAK	-	69	91	5.5	2.5	57	65	95	103	2	0.38	1.78	2.65	1.74	2.02	1.98
55	100	25	1.5	114	138	4500	5600	22211CA	22211CAK	-	68	88	5.5	2	61	66	91	94	1.5	0.25	2.69	4.00	2.63	0.897	0.879
	120	29	2	153	164	3200	3900	21311CA	21311CAK	-	75	102	5.5	2.5	62	71	105	113	2	0.25	2.67	3.98	2.62	1.67	1.65
	120	43	2	214	249	3200	4000	22311CA	22311CAK	-	75	100	5.5	2.5	62	71	104	113	2	0.37	1.80	2.69	1.76	2.63	2.58
	120	43	2	214	249	3200	3900	22311CAF3	22311CAKF3	-	75	100	-	-	62	71	104	113	2	0.37	1.80	2.69	1.76	2.53	2.48
60	110	28	1.5	136	167	4000	5000	22212CA	22212CAK	-	75	95	5.5	2	66	72	98	104	1.5	0.24	2.77	4.13	2.71	1.03	1.01
	130	31	2.1	177	217	3000	3600	21312CA	21312CAK	-	86	111	5.5	3	69	84	113	121	2	0.24	2.84	4.23	2.78	2.08	2.05
	130	46	2.1	248	291	3000	3800	22312CA	22312CAK	-	81	109	5.5	3	69	78	112	121	2	0.37	1.85	2.75	1.80	3.25	3.18
	130	46	2.1	248	291	3000	3600	22312CAF3	22312CAKF3	-	81	109	-	-	69	78	112	121	2	0.37	1.85	2.75	1.80	3.30	3.23
65	100	35	1.1	130	205	3400	4200	24013CA	-	24013CAK30	76	87	5.5	2.5	70	74	89	95	1.1	0.32	2.12	3.15	2.07	1.01	0.994
	120	31	1.5	164	208	3800	4800	22213CA	22213CAK	-	82	104	5.5	2.5	71	79	107	114	1.5	0.25	2.69	4.00	2.63	1.58	1.55
	140	33	2.1	197	223	2800	3600	21313CA	21313CAK	-	87	119	5.5	3	74	85	123	131	2	0.25	2.69	4.00	2.63	2.58	2.54
	140	48	2.1	286	344	2600	3400	22313CA	22313CAK	-	88	117	5.5	3	74	85	121	131	2	0.35	1.92	2.86	1.88	3.58	3.50
	140	48	2.1	286	344	2600	3400	22313CAF3	22313CAKF3	-	88	117	-	-	74	85	121	131	2	0.35	1.92	2.86	1.88	3.56	3.48
70	125	31	1.5	164	208	3600	4500	22214CA	22214CAK	-	87	110	6	2.5	76	84	113	119	1.5	0.24	2.83	4.21	2.77	1.61	1.58
	150	35	2.1	215	247	2400	3200	21314CA	21314CAK	-	95	128	-	-	79	93	131	141	2	0.25	2.69	4.00	2.63	3.02	2.98
	150	51	2.1	321	394	2200	3000	22314CA	22314CAK	-	95	125	8.3	4	79	92	130	141	2	0.35	1.94	2.88	1.89	4.45	4.36
	150	51	2.1	321	394	2200	3000	22314CAF3	22314CAKF3	-	95	125	-	-	79	92	130	141	2	0.35	1.94	2.88	1.89	4.42	4.33
75	115	40	1.1	168	266	2900	3500	24015CA	-	24015CAK30	87	100	5.5	3	80	85	103	110	1.1	0.32	2.12	3.15	2.07	1.49	1.47
	130	31	1.5	170	225	3400	4300	22215CA	22215CAK	-	92	114	5.5	2.5	81	89	118	124	1.5	0.24	2.76	4.11	2.70	1.76	1.72
	160	37	2.1	245	325	2400	2900	21315CA	21315CAK	-	105	133	5.5	3	84	102	136	151	2	0.24	2.78	4.14	2.72	3.88	3.83
	160	55	2.1	366	454	2200	3000	22315CA	22315CAK	-	101	134	8.3	4	84	97	138	151	2	0.35	1.91	2.85	1.87	5.35	5.23
	160	55	2.1	366	454	2200	3000	22315CAF3	22315CAKF3	-	101	134	8.3	4	84	97	138	151	2	0.35	1.91	2.85	1.87	5.31	5.19
80	140	33	2	189	250	3200	4000	22216CA	22216CAK	-	99	123	5.5	2.5	87	96	127	133	2	0.24	2.84	4.23	2.78	2.03	1.99
	140	33	2	189	250	2600	3100	22216CAF3	22216CAKF3	-	99	123	5.5	2.5	87	96	127	133	2	0.24	2.84	4.23	2.78	2.00	1.96
	140	44.4	2	256	362	2600	3100	23216CA	23216CAK	-	99	121	5.5	2.5	87	96	123	133	2	0.31	2.17	3.24	2.12	2.92	2.84
	170	39	2.1	278	370	2200	2700	21316CA	21316CAK	-	111	141	8.3	4	89	109	143	161	2	0.24	2.81	4.18	2.75	4.59	4.53
	170	58	2.1	399	500	2000	2800	22316CA	22316CAK	-	109	142	8.3	4	89	106	146	161	2	0.34	1.96	2.93	1.92	6.48	6.34
	170	58	2.1	399	500	2000	2800	22316CAF3	22316CAKF3	-	109	142	-	-	89	106	146	161	2	0.34	1.96	2.93	1.92	6.39	6.25
82.6	170	58	2.1	399	500	2000	2800	206/82.6CA	-	-	109	142	-	-	92	106	146	161	2	0.34	1.96	2.93	1.92	6.37	-

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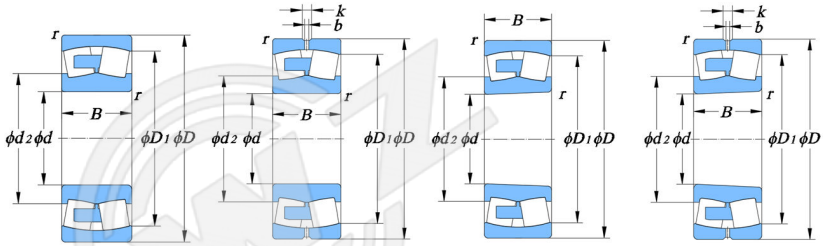
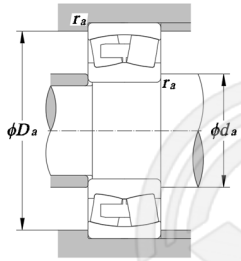
d 85～110mm



CA　CA(W33)　CAK　CAK(W33)



Principal dimensions(mm)				Basic load ratings (kN)		Limiting speeds (r/min)		Designations			Other dimensions(mm)				Abutment and fillet dimensions(mm)					Factor				Mass(kg) (approx.)	
d	*D*	*B*	r_{min}	C_r	C_{or}	Grease	Oil	*CA*	*CAK*	*CAK30*	d_2	D_1	*b*	*k*	d_{amin}	d_{amax}	D_{amin}	D_{amax}	r_{amax}	*e*	Y_1	Y_2	Y_0	*CA*	*CAK*
85	150	36	2	223	289	3000	3800	22217CA	22217CAK	-	105	132	6.5	3	93	103	136	142	2	0.24	2.84	4.23	2.78	2.66	2.60
	180	41	3	308	401	2000	2800	21317CA	21317CAK	-	118	152	5.5	3	96	116	157	169	2.5	0.24	2.84	4.23	2.78	5.42	5.35
	180	60	3	439	552	1900	2600	22317CA	22317CAK	-	115	151	8.3	4	96	111	155	169	2.5	0.34	1.99	2.96	1.94	7.96	7.80
	180	60	3	439	552	1900	2600	22317CAF3	22317CAKF3	-	115	151	8.3	4	96	111	155	169	2.5	0.34	1.99	2.96	1.94	7.91	7.75
90	140	50	1.5	254	415	2600	3400	24018CA	-	24018CAK30	106	123	5.5	3	96	103	126	134	1.5	0.33	2.07	3.09	2.03	3.25	3.20
	160	40	2	269	361	2600	3400	22218CA	22218CAK	-	111	139	8.3	2.5	98	108	143	152	2	0.25	2.72	4.05	2.66	3.45	3.38
	160	40	2	269	361	2600	3400	22218CAF3	22218CAKF3	-	111	139	-	-	98	108	143	152	2	0.25	2.72	4.05	2.66	3.42	3.35
	160	52.4	2	350	507	1900	2600	23218CA	23218CAK	-	112	137	5.5	2.5	98	109	140	152	2	0.31	2.15	3.20	2.10	4.60	4.47
	160	67	2	350	507	1900	2600	24218X2CA/YB2	-	-	112	136	-	-	98	108	140	152	2	0.31	2.15	3.20	2.10	5.87	-
	190	43	3	337	427	2400	3200	21318CA	21318CAK	-	123	161	7.5	3	101	121	163	179	2.5	0.24	2.84	4.23	2.78	5.82	5.73
	190	64	3	518	677	1800	2400	22318CA	22318CAK	-	123	159	8.3	5	101	120	164	179	2.5	0.34	1.98	2.94	1.93	9.66	9.47
	190	64	3	518	677	1800	2400	22318CAF3	22318CAKF3	-	123	159	-	-	101	120	164	179	2.5	0.34	1.98	2.94	1.93	9.71	9.52
95	170	43	2.1	308	422	2400	3200	22219CA	22219CAK	-	119	149	8.3	3	104	115	153	161	2	0.24	2.79	4.15	2.73	4.53	4.44
	200	67	3	569	745	1800	2400	22319CA	22319CAK	-	127	168	8.3	5	106	124	172	189	2.5	0.34	2.00	2.98	1.96	10.3	10.1
	200	67	3	569	745	1800	2400	22319CAF3	22319CAKF3	-	127	168	8.3	5	106	124	172	189	2.5	0.34	2.00	2.98	1.96	10.3	10.1
100	150	37	1.5	216	344	2400	3200	23020CA	23020CAK	-	115	135	5.5	3	106	112	139	144	1.5	0.23	2.98	4.44	2.92	2.52	2.45
	150	50	1.5	271	462	2400	3200	24020CA	-	24020CAK30	117	133	5.5	3	106	114	135	144	1.5	0.30	2.27	3.38	2.22	3.18	3.13
	165	52	2	347	544	2000	2800	23120CA	23120CAK	-	121	143	5.5	3	108	119	147	157	2	0.30	2.27	3.38	2.22	4.42	4.28
	165	65	2	403	659	2100	2600	24120CA	-	24120CAK30	118	140	5.5	2.5	108	115	143	157	2	0.37	1.83	2.73	1.79	5.60	5.51
	180	46	2.1	344	469	2200	3000	22220CA	22220CAK	-	124	157	8.3	3	109	121	161	171	2	0.24	2.84	4.23	2.78	5.04	4.93
	180	46	2.1	344	469	2200	3000	22220CAF3	22220CAKF3	-	124	157	-	-	109	121	161	171	2	0.24	2.84	4.23	2.78	5.01	4.90
	180	60.3	2.1	424	613	1700	2200	23220CA	23220CAK	-	125	153	9.5	4	109	121	157	171	2	0.33	2.06	3.06	2.01	6.52	6.33
	180	60.3	2.1	424	613	2000	2400	23220CAF3	23220CAKF3	-	125	153	9.5	4	109	121	157	171	2	0.33	2.06	3.06	2.01	6.32	6.13
	215	47	3	388	491	1700	2200	21320CA	21320CAK	-	137	179	8.3	4.5	111	135	183	204	2.5	0.23	2.92	4.35	2.86	8.74	8.63
	215	73	3	658	874	1700	2200	22320CA	22320CAK	-	137	179	11.1	5	111	134	183	204	2.5	0.35	1.92	2.86	1.88	13.3	13.0
	215	73	3	658	874	1700	2200	22320CAF3	22320CAKF3	-	137	179	-	-	111	134	183	204	2.5	0.35	1.92	2.86	1.88	13.2	12.9
105	175	56	2	380	584	1900	2700	23121CA	23121CAK	-	127	151	5.5	3	113	123	155	167	2	0.31	2.20	3.27	2.15	5.48	5.31
110	170	45	2	305	489	2200	3000	23022CA	23022CAK	-	128	151	7.5	3	118	126	155	162	2	0.25	2.69	4.00	2.63	3.52	3.40
	170	45	2	305	489	2200	3000	23022CAF3	23022CAKF3	-	128	151	7.5	3	118	126	155	162	2	0.25	2.69	4.00	2.63	3.54	3.42
	170	60	2	361	610	2100	2800	24022CA	-	24022CAK30	128	150	5.5	3	118	125	152	162	2	0.32	2.10	3.13	2.05	4.98	4.90
	170	60	2	361	610	2100	2800	24022CA	-	24022CAK30	128	150	5.5	3	118	125	152	162	2	0.32	2.10	3.13	2.05	4.90	4.82
	180	56	2	393	616	1900	2600	23122CA	23122CAK	-	132	157	5.5	3	118	128	160	172	2	0.30	2.27	3.38	2.22	5.73	5.55
	180	56	2	393	616	1900	2600	23122CAF3	23122CAKF3	-	132	157	5.5	3	118	128	160	172	2	0.30	2.27	3.38	2.22	5.69	5.51
	180	69	2	496	802	1000	1400	24122CA	-	24122CAK30	130	156	5.5	2.5	118	127	162	172	2	0.35	1.92	2.86	1.88	6.89	6.78
	200	53	2.1	424	592	2000	2800	22222CA	22222CAK	-	139	174	8.3	4	119	136	178	191	2	0.26	2.64	3.93	2.58	7.25	7.09
	200	53	2.1	424	592	2000	2800	22222CAF3	22222CAKF3	-	139	174	-	-	119	136	178	191	2	0.26	2.64	3.93	2.58	7.21	7.05
	200	69.8	2.1	531	792	1600	2000	23222CA	23222CAK	-	138	169	12	5	119	134	172	191	2	0.34	2.00	2.97	1.95	9.91	9.63
	200	69.8	2.1	531	792	1600	2000	23222CAF3	23222CAKF3	-	138	169	12	5	119	134	172	191	2	0.34	2.00	2.97	1.95	9.86	9.58
	240	50	3	462	554	1600	2000	21322CA	21322CAK	-	149	202	7.5	3	121	147	206	229	2.5	0.22	3.07	4.57	3.00	11.7	11.6
	240	80	3	772	1030	1600	2000	22322CA	22322CAK	-	150	198	13.9	5	121	147	202	229	2.5	0.34	1.98	2.94	1.93	18.2	17.8

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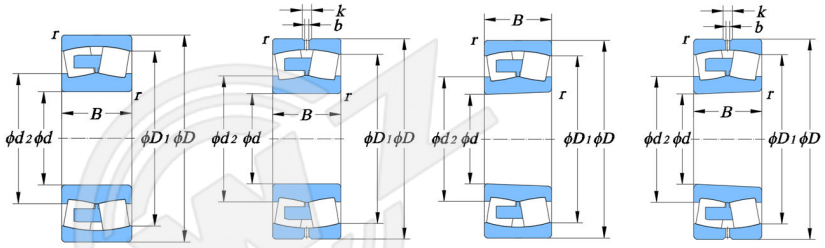
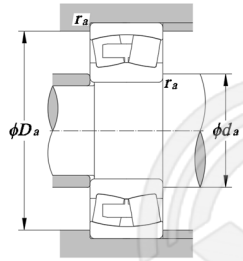
d 110～140mm



CA　CA(W33)　CAK　CAK(W33)

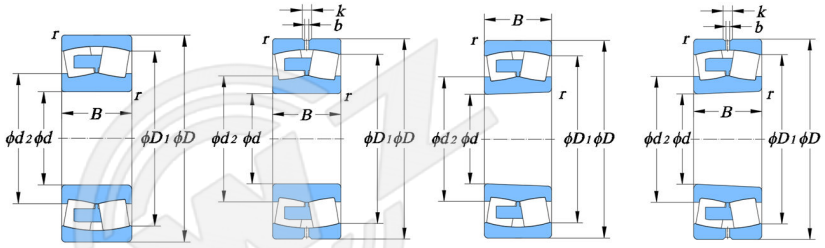


Principal dimensions(mm)				Basic load ratings (kN)		Limiting speeds (r/min)		Designations		
d	*D*	*B*	r_{min}	C_r	C_{or}	Grease	Oil	*CA*	*CAK*	*CAK30*
110	240	80	3	772	1030	1600	2000	22322CAF3	22322CAKF3	-
	240	92.1	3	811	1100	1500	1900	23322CA	23322CAK	-
120	180	46	2	319	532	2000	2800	23024CA	23024CAK	-
	180	46	2	319	532	2000	2800	23024CAF3	23024CAKF3	-
	180	60	2	393	698	1600	2000	24024CA	-	24024CAK30
	200	62	2	487	765	1800	2400	23124CA	23124CAK	-
	200	80	2	589	976	1400	1800	24124CA	-	24124CAK30
	200	80	2	589	976	1400	1800	24124CAF3	-	24124CAK30F3
	215	58	2.1	514	731	1900	2600	22224CA	22224CAK	-
	215	58	2.1	514	731	1900	2600	22224CAF3	22224CAKF3	-
	215	76	2.1	643	993	1500	1900	23224CA	23224CAK	-
	215	76	2.1	643	993	1500	1900	23224CAF3	23224CAKF3	-
	217	58	2.1	514	731	1600	1900	22224CAX1	-	-
	260	86	3	883	1190	1400	1800	22324CA	22324CAK	-
	260	86	3	883	1190	1400	1800	22324CAF3	22324CAKF3	-
130	200	52	2	411	681	1900	2600	23026CA	23026CAK	-
	200	52	2	411	681	1900	2600	23026CAF3	23026CAKF3	-
	200	69	2	487	849	1800	2400	24026CA	-	24026CAK30
	210	64	2	518	843	1700	2200	23126CA	23126CAK	-
	210	80	2	608	1040	1700	2200	24126CA	-	24126CAK30
	220	73	3	601	948	1500	1900	23226X3CAQ1	-	-
	230	64	3	600	876	1800	2400	22226CA	22226CAK	-
	230	64	3	600	876	1800	2400	22226CAF3	22226CAKF3	-
	230	80	3	706	1090	1300	1700	23226CA	23226CAK	-
	230	80	3	706	1090	1300	1700	23226CAF3	23226CAKF3	-
	280	93	4	1020	1390	1300	1700	22326CA	22326CAK	-
	280	93	4	1020	1390	1300	1700	22326CAF3	22326CAKF3	-
	280	93	4	1020	1390	1300	1700	22326CAQ1	-	-
140	210	53	2	436	749	1800	2400	23028CA	23028CAK	-
	210	53	2	436	749	1800	2400	23028CAF3	23028CAKF3	-
	210	69	2	523	967	1800	2400	24028CA	-	24028CAK30
	225	68	2.1	598	1000	1600	2000	23128CA	23128CAK	-
	225	85	2.1	691	1210	850	1100	24128CA	-	24128CAK30
	225	85	2.1	691	1210	850	1100	24128CAF3	-	24128CAK30F3
	239.992	80	3	731	1160	1400	1700	20628CA/HC	-	-
	250	68	3	684	1010	1700	2200	22228CA	22228CAK	-
	250	68	3	684	1010	1700	2200	22228CAF3	22228CAKF3	-
	250	88	3	982	1500	1200	1600	23228CA	23228CAK	-
	250	88	3	982	1500	1400	1600	23228CAF3	23228CAKF3	-
	300	102	4	1210	1700	1100	1500	22328CA	22328CAK	-

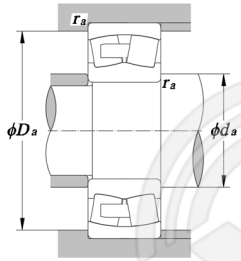
Other dimensions(mm)				Abutment and fillet dimensions(mm)					Factor				Mass(kg) (approx.)	
d_2	D_1	*b*	*k*	d_{amin}	d_{amax}	D_{amin}	D_{amax}	r_{amax}	*e*	Y_1	Y_2	Y_0	*CA*	*CAK*
150	198	-	-	121	147	202	229	2.5	0.34	1.98	2.94	1.93	18.1	17.7
151	194	13.9	6	121	147	196	229	2.5	0.40	1.70	2.54	1.67	20.8	20.3
140	162	5.5	3	128	137	166	172	2	0.23	2.92	4.35	2.86	4.16	4.03
140	162	5.5	3	128	137	166	172	2	0.23	2.92	4.35	2.86	4.20	4.07
139	160	5.5	4	128	136	163	172	2	0.31	2.18	3.24	2.13	5.83	-
147	175	5.5	3	128	144	179	192	2	0.30	2.27	3.38	2.22	12.2	12.0
146	167	5.5	3	128	142	174	192	2	0.38	1.76	2.62	1.72	10.0	-
146	167	-	-	128	142	174	192	2	0.38	1.76	2.62	1.72	9.95	-
150	188	11.1	4	129	146	192	206	2	0.26	2.60	3.87	2.54	9.89	9.68
150	188	11.1	4	129	146	192	206	2	0.26	2.60	3.87	2.54	9.56	9.35
150	182	8.3	5	129	146	186	206	2	0.35	1.95	2.90	1.91	12.1	11.7
150	182	8.3	5	129	146	186	206	2	0.35	1.95	2.90	1.91	12.0	11.6
150	188	11.1	4	129	146	192	208	2	0.26	2.60	3.87	2.54	9.91	-
165	216	13.9	6	131	161	220	249	2.5	0.34	1.98	2.95	1.94	22.8	22.3
165	216	13.9	6	131	161	220	249	2.5	0.34	1.98	2.95	1.94	22.7	22.2
153	179	9.5	4	138	150	183	192	2	0.24	2.76	4.11	2.70	6.18	6.00
153	179	9.5	4	138	150	183	192	2	0.24	2.76	4.11	2.70	6.15	5.97
151	175	5.5	3	138	148	177	192	2	0.32	2.08	3.10	2.04	7.76	-
1546	184	8.3	4	138	1543	187	202	2	0.28	2.45	3.65	2.40	8.66	8.38
153	180	8.3	4	138	149	184	202	2	0.35	1.95	2.90	1.91	10.6	-
157	189	-	-	141	153	193	209	2.5	0.32	2.08	3.10	2.04	11.3	-
161	201	10	5	141	157	205	219	2.5	0.26	2.58	3.84	2.52	11.4	11.1
161	201	-	-	141	157	205	219	2.5	0.26	2.58	3.84	2.52	11.3	11.0
160	195	12	5	141	156	198	219	2.5	0.33	2.02	3.01	1.98	15.9	15.5
160	195	12	5	141	156	198	219	2.5	0.33	2.02	3.01	1.98	15.9	15.5
177	233	16.7	6	144	174	237	266	3	0.34	1.99	2.96	1.94	28.3	27.7
177	233	16.7	6	144	174	237	266	3	0.34	1.99	2.96	1.94	28.2	27.6
177	233	-	-	144	174	237	266	3	0.34	1.99	2.96	1.94	28.2	-
162	188	8.3	4.5	138	159	192	202	2	0.23	2.89	4.30	2.83	6.70	6.51
162	188	-	-	138	159	192	202	2	0.23	2.89	4.30	2.83	6.68	6.49
162	184	5.5	3	138	159	188	202	2	0.30	2.22	3.31	2.17	8.31	-
166	196	8.3	5	139	162	200	216	2	0.29	2.36	3.51	2.31	10.9	10.6
165	193	8.3	4.5	139	161	197	216	2	0.37	1.85	2.75	1.80	13.5	-
165	193	-	-	139	161	197	216	2	0.37	1.85	2.75	1.80	13.5	-
171	207	10.4	6	151	168	211	229	2.5	0.32	2.12	3.15	2.07	15.4	-
175	218	11.1	5	151	172	222	239	2.5	0.26	2.62	3.90	2.56	15.2	14.9
175	218	11.1	5	151	172	222	239	2.5	0.26	2.62	3.90	2.56	15.1	14.8
173	216	15	6	151	168	220	239	2.5	0.33	2.03	3.02	1.98	19.7	19.1
173	216	15	6	151	168	220	239	2.5	0.33	2.03	3.02	1.98	19.6	19.0
191	249	16.7	7	154	187	254	286	3	0.35	1.95	2.90	1.91	35.6	34.8

ZWZ

d 140～180mm



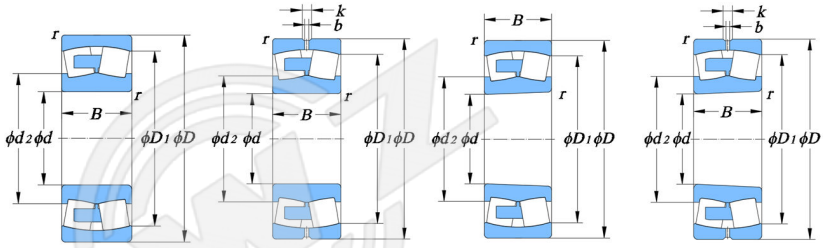
CA　CA(W33)　CAK　CAK(W33)



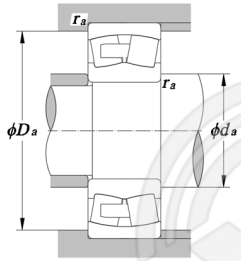
Principal dimensions(mm)				Basic load ratings(kN)		Limiting speeds (r/min)		Designations			Other dimensions(mm)				Abutment and fillet dimensions(mm)					Factor				Mass(kg) (approx.)	
d	*D*	*B*	r_{min}	C_r	C_{or}	Grease	Oil	*CA*	*CAK*	*CAK30*	d_2	D_1	*b*	*k*	d_{amin}	d_{amax}	D_{amin}	D_{amax}	r_{amax}	*e*	Y_1	Y_2	Y_0	*CA*	*CAK*
140	300	102	4	1210	1700	1100	1500	22328CAF3	22328CAKF3	-	191	249	-	-	154	187	254	286	3	0.35	1.95	2.90	1.91	35.4	34.6
	300	102	4	1210	1700	1200	1400	22328CAQ1	-	-	191	249	-	-	153	187	254	287	3	0.35	1.95	2.90	1.91	35.4	-
	300	118	4	1330	1890	1100	1500	23328CA	23328CAK	-	190	243	16.7	9	154	186	248	286	3	0.40	1.68	2.50	1.64	41.3	40.3
150	225	56	2.1	462	794	1700	2200	23030CA	23030CAK	-	174	202	8.3	4.5	159	171	206	216	2	0.22	3.04	4.53	2.97	8.01	7.77
	225	56	2.1	462	794	1700	2200	23030CAF3	23030CAKF3	-	174	202	-	-	159	171	206	216	2	0.22	3.04	4.53	2.97	7.89	7.65
	225	75	2.1	597	1110	1300	1700	24030CA	-	24030CAK30	175	197	5.5	3	159	171	201	216	2	0.31	2.21	3.29	2.16	9.28	9.11
	250	80	2.1	783	1310	1400	1800	23130CA	23130CAK	-	182	216	11.1	5	159	178	220	241	2	0.30	2.26	3.37	2.21	16.5	16.0
	250	80	2.1	783	1310	1400	1800	23130CAF3	23130CAKF3	-	182	216	11.1	5	159	178	220	241	2	0.30	2.26	3.37	2.21	16.4	15.9
	250	100	2.1	858	1470	800	1000	24130CA	-	24130CAK30	180	212	12	6	159	176	217	241	2	0.37	1.85	2.75	1.80	19.2	18.9
	270	73	3	770	1130	1600	2000	22230CA	22230CAK	-	188	235	12	6	161	185	239	259	2.5	0.26	2.60	3.87	2.54	18.5	18.1
	270	73	3	770	1130	1600	2000	22230CAF3	22230CAKF3	-	188	235	12	6	161	185	239	259	2.5	0.26	2.60	3.87	2.54	18.4	18.0
	270	96	3	997	1600	1100	1500	23230CA	23230CAK	-	188	228	11.1	6	161	185	232	259	2.5	0.35	1.93	2.87	1.89	24.4	23.7
	320	108	4	1290	1810	1000	1400	22330CA	22330CAK	-	203	265	16.7	9	164	199	270	306	3	0.34	1.96	2.93	1.92	42.6	41.7
	320	108	4	1290	1810	1100	1300	22330CAF3	22330CAKF3	-	203	265	-	-	164	199	270	306	3	0.34	1.96	2.93	1.92	42.4	41.5
160	240	60	2.1	540	939	1700	2200	23032CA	23032CAK	-	186	216	11.1	4	169	183	220	231	2	0.22	3.01	4.48	2.94	9.95	9.65
	240	60	2.1	540	939	1700	2200	23032CAF3	23032CAKF3	-	186	216	-	-	169	183	220	231	2	0.22	3.01	4.48	2.94	9.90	9.60
	240	80	2.1	685	1270	1100	1500	24032CA	-	24032CAK30	185	210	8.3	5	169	180	214	231	2	0.29	2.32	3.45	2.26	13.2	13.0
	240	80	2.1	685	1270	1100	1500	24032CAF3	-	24032CAK30F3	185	210	8.3	5	169	180	214	231	2	0.29	2.32	3.45	2.26	12.7	12.5
	270	86	2.1	880	1440	1300	1700	23132CA	23132CAK	-	196	234	13.9	6	169	192	238	261	2	0.29	2.32	3.45	2.26	20.2	19.6
	270	86	2.1	880	1440	1300	1700	23132CAF3	23132CAKF3	-	196	234	-	-	169	192	238	261	2	0.29	2.32	3.45	2.26	20.1	19.5
	270	109	2.1	1030	1770	700	900	24132CA	-	24132CAK30	192	228	8.3	4	169	189	233	261	2	0.38	1.78	2.65	1.74	24.6	24.2
	290	80	3	917	1380	1500	1900	22232CA	22232CAK	-	201	250	13.9	5	171	197	254	279	2.5	0.27	2.48	3.69	2.42	24.2	23.7
	290	80	3	917	1380	1100	1400	22232CAF3	22232CAKF3	-	201	250	-	-	171	197	254	279	2.5	0.27	2.48	3.69	2.42	24.1	23.6
	290	104	3	1150	1870	1000	1400	23232CA	23232CAK	-	200	244	13.9	7	171	196	248	279	2.5	0.35	1.95	2.90	1.91	30.2	29.3
	340	114	4	1540	2190	950	1300	22332CA	22332CAK	-	215	284	16.7	7	174	211	289	326	3	0.34	1.98	2.95	1.94	50.8	49.7
	340	114	4	1540	2190	950	1300	22332CAF3	22332CAKF3	-	215	284	16.7	7	174	211	289	326	3	0.34	1.98	2.95	1.94	50.6	49.5
170	230	45	2	359	717	1700	2200	23934CA	23934CAK	-	189	212	5.5	3	178	186	216	222	2	0.17	3.98	5.93	3.89	5.55	5.37
	260	67	2.1	660	1140	1600	2000	23034CA	23034CAK	-	198	232	11.1	5	179	194	236	251	2	0.23	2.89	4.30	2.83	14.1	13.7
	260	67	2.1	660	1140	1600	2000	23034CAF3	23034CAKF3	-	198	232	11.1	5	179	194	236	251	2	0.23	2.89	4.30	2.83	14.0	13.6
	260	90	2.1	842	1570	1000	1400	24034CA	-	24034CAK30	199	227	8.3	4	179	196	233	251	2	0.31	2.21	3.29	2.16	17.4	17.1
	280	88	2.1	919	1540	1200	1600	23134CA	23134CAK	-	205	243	13.9	6	179	202	248	271	2	0.29	2.36	3.51	2.31	21.7	21.0
	280	88	2.1	919	1540	1200	1600	23134CAF3	23134CAKF3	-	205	243	-	-	179	202	248	271	2	0.29	2.36	3.51	2.31	21.6	20.9
	280	109	2.1	1090	1920	670	850	24134CA	-	24134CAK30	203	240	8.3	5	179	199	245	271	2	0.36	1.89	2.81	1.85	25.4	25.0
	310	86	4	1030	1540	1300	1700	22234CA	22234CAK	-	215	268	16.7	6	184	210	273	296	3	0.27	2.49	3.71	2.43	26.7	26.0
	310	110	4	1280	2050	950	1300	23234CA	23234CAK	-	213	261	13.9	7	184	209	265	296	3	0.33	2.03	3.02	1.98	37.4	36.3
	310	110	4	1280	2050	950	1300	23234CAF3	23234CAKF3	-	213	261	13.9	7	184	209	265	296	3	0.33	2.03	3.02	1.98	36.9	35.8
	360	120	4	1600	2280	950	1300	22334CA	22334CAK	-	229	299	16.7	7	184	225	304	346	3	0.33	2.03	3.02	1.98	59.3	58.0
180	250	52	2	448	870	1700	2200	23936CAF3	23936CAKF3	-	204	231	9.5	4	188	201	234	242	2	0.19	3.58	5.33	3.50	7.34	7.09
	250	52	2	448	870	1200	1500	23936CA	23936CAK	-	204	231	9.5	4	188	201	234	242	2	0.19	3.58	5.33	3.50	7.40	7.15
	280	74	2.1	761	1360	1400	1800	23036CA	23036CAK	-	214	248	13.9	7.5	189	210	252	271	2	0.25	2.73	4.07	2.67	17.5	17.0

ZWZ

d 180～200mm



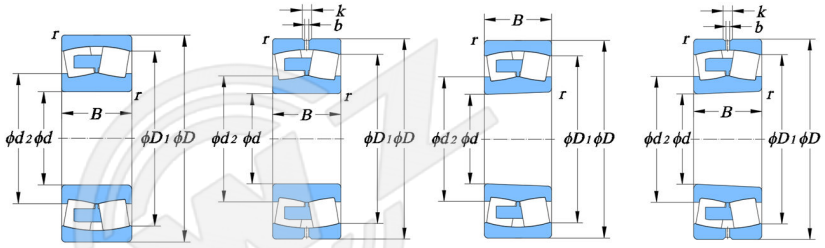
CA　CA(W33)　CAK　CAK(W33)



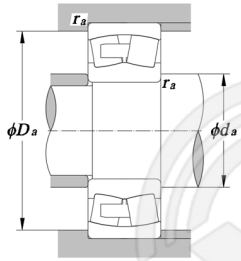
Principal dimensions(mm)				Basic load ratings(kN)		Limiting speeds (r/min)		Designations			Other dimensions(mm)				Abutment and fillet dimensions(mm)					Factor				Mass(kg) (approx.)	
d	*D*	*B*	r_{min}	C_r	C_{or}	Grease	Oil	*CA*	*CAK*	*CAK30*	d_2	D_1	*b*	*k*	d_{amin}	d_{amax}	D_{amin}	D_{amax}	r_{amax}	*e*	Y_1	Y_2	Y_0	*CA*	*CAK*
180	280	74	2.1	761	1360	1400	1800	23036CAF3	23036CAKF3	-	214	248	-	-	189	210	252	271	2	0.25	2.73	4.07	2.67	17.6	17.1
	280	100	2.1	996	1850	950	1300	24036CA	-	24036CAK30	210	243	8.3	4	189	206	247	271	2	0.33	2.06	3.07	2.02	25.7	25.3
	280	100	2.1	996	1850	950	1300	24036CAF3	-	24036CAK30F3	210	243	8.3	4	189	206	247	271	2	0.33	2.06	3.07	2.02	25.6	25.2
	300	96	3	1080	1820	1100	1500	23136CA	23136CAK	-	217	259	13.9	6	191	213	263	289	2.5	0.29	2.32	3.46	2.27	26.8	25.9
	300	96	3	1080	1820	1100	1500	23136CAF3	23136CAKF3	-	217	259	-	-	191	213	263	289	2.5	0.29	2.32	3.46	2.27	26.5	25.6
	300	118	3	1210	2120	630	800	24136CA	-	24136CAK30	216	252	11.1	6	191	211	261	289	2.5	0.37	1.80	2.69	1.76	33.3	32.8
	300	118	3	1210	2120	630	800	24136CAQ1	-	-	216	252	-	-	191	211	261	289	2.5	0.37	1.80	2.69	1.76	33.0	-
	320	86	4	1090	1660	1300	1700	22236CA	22236CAK	-	223	279	16.7	6	194	218	284	306	3	0.26	2.55	3.80	2.50	29.4	28.7
	320	86	4	1090	1660	1300	1700	22236CAF3	22236CAKF3	-	223	279	-	-	194	218	284	306	3	0.26	2.55	3.80	2.50	29.2	28.5
	320	86	4	1090	1660	960	1200	22236CAQ1	-	-	223	279	-	-	194	218	284	306	3	0.26	2.55	3.80	2.50	29.2	-
	320	112	4	1380	2270	900	1200	23236CA	23236CAK	-	222	271	13.9	7	194	218	276	306	3	0.35	1.95	2.90	1.91	38.3	37.1
	320	112	4	1380	2270	900	1200	23236CAF3	23236CAKF3	-	222	271	13.9	7	194	218	276	306	3	0.35	1.95	2.90	1.91	38.5	37.3
	380	126	4	1770	2560	900	1200	22336CA	22336CAK	-	242	316	22.3	8	194	238	321	366	3	0.34	1.99	2.96	1.94	69.9	68.4
	380	126	4	1770	2560	900	1200	22336CAF3	22336CAKF3	-	242	316	22.3	8	194	238	321	366	3	0.34	1.99	2.96	1.94	69.1	67.6
185	302	96	3	1070	1850	990	1300	20637CA	-	-	224	262	-	-	196	220	266	291	2.5	0.30	2.25	3.34	2.20	27.4	-
190	260	52	2	459	910	1600	2000	23938CA	23938CAK	-	212	239	5.5	3	198	209	243	252	2	0.18	3.85	5.73	3.76	8.29	8.03
	280	67	2.5	689	1270	1100	1300	20638CA	-	-	219	253	11.1	5	200	216	257	270	2	0.22	3.05	4.54	2.98	14.5	-
	290	75	2.1	807	1450	1300	1700	23038CA	23038CAK	-	223	260	13.9	5	197	219	264	283	2	0.23	2.92	4.35	2.86	17.2	16.6
	290	75	2.1	807	1450	1300	1700	23038CAF3	23038CAKF3	-	223	260	13.9	5	197	219	264	283	2	0.23	2.92	4.35	2.86	17.0	16.4
	290	100	2.1	1020	1930	950	1300	24038CA	-	24038CAK30	219	252	8.3	4.5	199	215	257	281	2	0.32	2.12	3.15	2.07	22.9	22.5
	290	100	2.1	1020	1930	950	1300	24038CAF3	-	24038CAK30F3	219	252	-	-	199	215	257	281	2	0.32	2.12	3.15	2.07	22.8	22.4
	320	104	3	1180	1960	1000	1400	23138CA	23138CAK	-	232	277	13.9	7	201	228	281	309	2.5	0.31	2.16	3.22	2.12	33.4	32.3
	320	128	3	1430	2520	600	750	24138CA	-	24138CAK30	226	267	11.1	6	201	222	272	309	2.5	0.39	1.74	2.59	1.70	41.9	41.3
	320	128	3	1430	2520	600	750	24138CAF3	-	24138CAK30F3	226	267	11.1	6	201	222	272	309	2.5	0.39	1.74	2.59	1.70	41.8	41.2
	340	92	4	1140	1710	1200	1600	22238CA	22238CAK	-	234	293	16.7	6	204	230	298	326	3	0.26	2.57	3.82	2.51	37.2	36.4
	340	92	4	1140	1710	1200	1600	22238CAF3	22238CAKF3	-	234	293	-	-	204	230	298	326	3	0.26	2.57	3.82	2.51	37.0	36.2
	340	120	4	1510	2500	850	1100	23238CA	23238CAK	-	236	288	16.7	7	204	233	293	326	3	0.35	1.95	2.90	1.91	44.8	43.4
	400	132	5	1950	2820	850	1100	22338CA	22338CAK	-	255	334	22.3	8	207	252	341	383	4	0.34	2.00	2.99	1.96	80.8	79.1
	400	132	5	1950	2820	850	1100	22338CAF3	22338CAKF3	-	255	334	-	-	207	252	341	383	4	0.34	2.00	2.99	1.96	80.4	78.7
200	280	60	2.1	604	1220	1600	2000	23940CAF3	23940CAKF3	-	226	255	9.5	4	209	223	258	271	2	0.19	3.61	5.38	3.53	12.1	11.7
	280	60	2.1	604	1220	1100	1300	23940CA	23940CAK	-	226	255	9.5	4	209	223	258	271	2	0.19	3.61	5.38	3.53	11.3	10.9
	310	82	2.1	972	1750	1200	1600	23040CA	23040CAK	-	237	277	13.9	7.5	209	233	282	301	2	0.23	2.89	4.30	2.83	23.2	22.5
	310	82	2.1	972	1750	940	1200	23040CAF3	23040CAKF3	-	237	277	13.9	7.5	209	233	282	301	2	0.23	2.89	4.30	2.83	22.9	22.2
	310	109	2.1	1210	2310	940	1200	24040CA	-	24040CAK30	233	268	11.1	5	209	229	272	301	2	0.32	2.10	3.13	2.05	30.9	30.4
	340	112	3	1400	2370	950	1300	23140CA	23140CAK	-	245	293	16.7	7	211	240	297	329	2.5	0.31	2.21	3.29	2.16	42.5	41.2
	340	140	3	1640	2920	5601	700	24140CA	-	24140CAK30F3	242	287	11.1	6	211	237	294	329	2.5	0.39	1.72	2.56	1.68	51.4	50.6
	360	98	4	1330	2080	1100	1500	22240CA	22240CAK	-	249	309	16.7	6	214	244	314	346	3	0.27	2.53	3.77	2.47	44.7	43.7
	360	98	4	1330	2080	1100	1500	22240CAF3	22240CAKF3	-	249	309	-	-	214	244	314	346	3	0.27	2.53	3.77	2.47	43.3	42.3
	360	128	4	1630	2660	850	1100	23240CA	23240CAK	-	250	305	16.7	8	214	247	309	346	3	0.35	1.92	2.86	1.88	56.9	55.2
	420	138	5	2130	3090	850	1100	22340CA	22340CAK	-	268	350	22.3	8	217	264	356	403	4	0.34	2.01	3.00	1.97	95.5	93.5

ZWZ

d 200～260mm



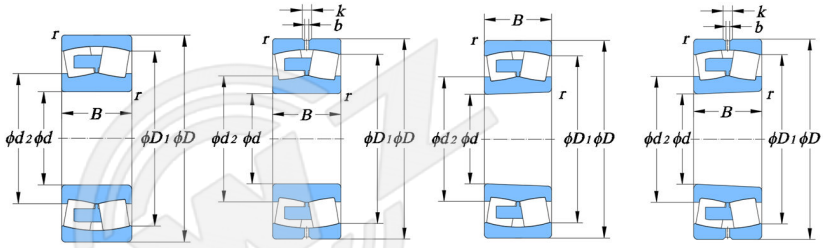
CA　CA(W33)　CAK　CAK(W33)



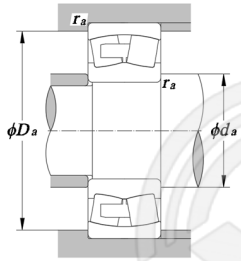
Principal dimensions(mm)				Basic load ratings(kN)		Limiting speeds (r/min)		Designations			Other dimensions(mm)				Abutment and fillet dimensions(mm)					Factor			Mass(kg) (approx.)	
d	*D*	*B*	r_{min}	C_r	C_{or}	Grease	Oil	*CA*	*CAK*	*CAK30*	d_2	D_1	*b*	*k*	d_{amin}	d_{amax}	D_{amin}	D_{amax}	r_{amax}	*e*	Y_1	Y_2	Y_0	*CA*	*CAK*
200	420	138	5	2130	3090	720	880	22340CAF3	22340CAKF3	-	268	350	-	-	217	264	356	403	4	0.34	2.01	3.00	1.97	95.2	93.2
	420	165	5	2440	3720	750	950	23340CAF3	23340CAKF3	-	266	341	-	-	217	261	347	403	4	0.40	1.68	2.50	1.64	113	110
220	300	60	2.1	614	1280	1500	1900	23944CA	23944CAK	-	245	275	8.3	4	229	242	278	291	2	0.18	3.66	5.46	3.58	12.9	12.5
	300	60	2.1	614	1280	910	1200	23944CAF3	23944CAKF3	-	245	275	8.3	4	229	242	278	291	2	0.18	3.66	5.46	3.58	12.8	12.4
	340	90	3	1120	2010	1100	1500	23044CA	23044CAK	-	260	303	13.9	6	231	256	308	329	2.5	0.25	2.75	4.09	2.69	30.1	29.2
	340	90	3	1120	2010	1100	1500	23044CAF3	23044CAKF3	-	260	303	-	-	231	256	308	329	2.5	0.25	2.75	4.09	2.69	31.9	31.0
	340	118	3	1370	2610	850	1100	24044CA	-	24044CAK30	256	296	11.1	5	231	252	302	329	2.5	0.32	2.12	3.15	2.07	38.1	37.5
	340	118	3	1370	2610	850	1100	24044CAF3	-	24044CAK30F3	256	296	11.1	5	231	252	302	329	2.5	0.32	2.12	3.15	2.07	37.9	37.3
	370	120	4	1640	2860	900	1200	23144CA	23144CAK	-	268	321	16.7	7	234	265	326	356	3	0.30	2.24	3.34	2.19	53.1	51.5
	370	120	4	1640	2860	900	1200	23144CAF3	23144CAKF3	-	268	321	16.7	7	234	265	326	356	3	0.30	2.24	3.34	2.19	53.1	51.5
	370	130	4	1740	3080	770	940	23144X2CA	-	-	267	317	16.7	7	234	263	322	356	3	0.33	2.03	3.02	1.98	57.8	-
	370	150	4	1890	3420	500	630	24144CA	-	24144CAK30	262	313	11.1	6	234	258	318	356	3	0.39	1.75	2.61	1.71	66.1	65.1
	400	108	4	1670	2610	950	1300	22244CA	22244CAK	-	276	345	16.7	8	234	271	350	386	3	0.26	2.55	3.80	2.50	60.6	59.3
	400	108	4	1670	2610	720	880	22244CAF3	22244CAKF3	-	276	345	-	-	234	271	350	386	3	0.26	2.55	3.80	2.50	59.9	58.6
	400	144	4	2020	3340	750	950	23244CA	23244CAK	-	272	335	16.7	8	234	268	340	386	3	0.36	1.89	2.81	1.85	77.7	75.3
	440	144	5	2240	3300	670	810	22344X3CA/HC	-	-	286	370	22.3	12	237	281	375	423	4	0.33	2.05	3.05	2.00	103	-
	460	145	5	2370	3470	980	1360	22344CA	22344CAK	-	293	385	22.3	12	237	288	391	443	4	0.32	2.08	3.10	2.04	119	117
240	320	60	2.1	664	1450	1300	1700	23948CA	23948CAK	-	265	295	9.5	4	249	262	300	311	2	0.16	4.18	6.22	4.08	15.1	14.7
	320	60	2.1	664	1450	1300	1700	23948CAF3	23948CAKF3	-	265	295	9.5	4	249	262	300	311	2	0.16	4.18	6.22	4.08	14.9	14.5
	330	60	2.1	677	1380	1200	1500	23948X1CAF3/HA	-	-	268	303	-	-	249	265	306	321	2	0.16	4.28	6.37	4.19	15.8	-
	360	92	3	1180	2200	1000	1400	23048CA	23048CAK	-	278	323	13.9	6	251	274	327	349	2.5	0.24	2.79	4.15	2.73	34.2	33.2
	360	92	3	1180	2200	1000	1400	23048CAQ1	-	-	278	323	-	-	251	274	327	349	2.5	0.24	2.79	4.15	2.73	34.2	-
	360	118	3	1470	2920	800	1000	24048CA	-	24048CAK30	278	318	11.1	5	251	274	324	349	2.5	0.29	2.32	3.45	2.26	42.2	41.5
	400	128	4	1820	3180	850	1100	23148CA	23148CAK	-	289	346	16.7	8	254	285	352	386	3	0.31	2.21	3.29	2.16	67.6	65.6
	400	160	4	1970	3530	480	600	24148CA	-	24148CAK30	286	336	11.1	6	254	281	343	386	3	0.39	1.75	2.61	1.71	79.0	77.7
	400	160	4	1970	3530	690	840	24148CAF3	-	24148CAK30F3	286	336	11.1	6	254	281	343	386	3	0.39	1.75	2.61	1.71	79.1	77.8
	440	120	4	2090	3250	900	1200	22248CA	22248CAK	-	303	380	18	7	254	298	386	426	3	0.27	2.51	3.74	2.45	84.8	83.0
	440	120	4	2090	3250	900	1200	22248CAF3	22248CAKF3	-	303	380	18	7	254	298	386	426	3	0.27	2.51	3.74	2.45	85.0	83.2
	440	160	4	2480	4160	670	850	23248CA	23248CAK	-	300	369	22.3	8	254	296	374	426	3	0.36	1.87	2.79	1.83	102	98.8
	440	160	4	2480	4160	670	850	23248CAF3	23248CAKF3	-	300	369	-	-	254	296	374	426	3	0.36	1.87	2.79	1.83	102	98.8
	500	155	5	2730	4040	650	800	22348CA	22348CAK	-	321	419	22.3	12	257	314	425	483	4	0.32	2.14	3.18	2.09	147	144
250	410	128	4	1930	3490	900	1200	2650CA	-	-	299	356	16.7	9	264	294	362	396	3	0.29	2.32	3.45	2.26	59.4	-
260	360	75	2.1	860	1850	1100	1500	23952CA	23952CAK	-	294	328	12	6	269	290	332	351	2	0.18	3.66	5.46	3.58	24.2	23.4
	360	75	2.1	860	1850	720	880	23952CAF3	23952CAKF3	-	294	328	12	6	269	290	332	351	2	0.18	3.66	5.46	3.58	24.6	23.8
	400	104	4	1480	2730	900	1200	23052CA	23052CAK	-	306	358	16.7	7	274	302	363	386	3	0.23	2.89	4.30	2.83	48.1	46.6
	400	104	4	1480	2730	900	1200	23052CAF3	23052CAKF3	-	306	358	-	-	274	302	363	386	3	0.23	2.89	4.30	2.83	47.9	46.4
	400	140	4	1860	3650	700	900	24052CA	-	24052CAK30	302	347	11.1	6	274	298	353	386	3	0.31	2.15	3.21	2.11	64.1	63.1
	400	140	4	1860	3650	700	900	24052CAF3	-	24052CAK30F3	302	347	11.1	6	274	298	353	386	3	0.31	2.15	3.21	2.11	64.0	63.0
	440	144	4	2230	3940	800	1000	23152CA	23152CAK	-	316	379	16.7	9	274	312	385	426	3	0.31	2.19	3.26	2.14	88.9	86.1
	440	180	4	2500	4560	430	530	24152CA	-	24152CAK30	311	371	13.9	8	274	307	378	426	3	0.39	1.72	2.56	1.68	114	112

ZWZ

d 260～300mm

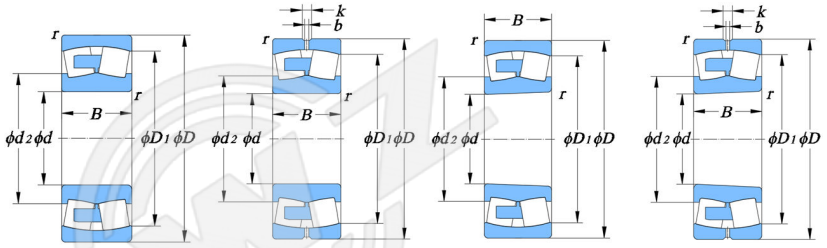


CA　CA(W33)　CAK　CAK(W33)

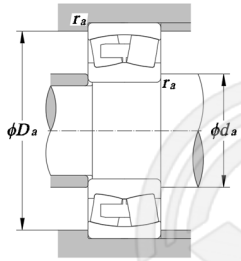


Principal dimensions(mm)				Basic load ratings(kN)		Limiting speeds (r/min)		Designations			Other dimensions(mm)				Abutment and fillet dimensions(mm)					Factor				Mass(kg) (approx.)	
d	*D*	*B*	r_{min}	C_r	C_{or}	Grease	Oil	*CA*	*CAK*	*CAK30*	d_2	D_1	*b*	*k*	d_{amin}	d_{amax}	D_{amin}	D_{amax}	r_{amax}	*e*	Y_1	Y_2	Y_0	*CA*	*CAK*
260	440	180	4	2500	4560	430	530	24152CAF3	-	24152CAK30F3	311	371	13.9	8	274	307	378	426	3	0.39	1.72	2.56	1.68	113	111
	440	180	4	2500	4560	620	750	24152CAQ1	-	-	311	371	-	-	274	307	378	426	3	0.39	1.72	2.56	1.68	114	-
	480	130	5	2290	3590	850	1100	22252CA	22252CAK	-	330	415	22.3	12	277	323	421	463	4	0.27	2.51	3.74	2.45	106	104
	480	174	5	2920	4940	630	800	23252CA	23252CAK	-	329	405	22.3	8	277	322	411	463	4	0.36	1.87	2.79	1.83	141	137
	480	174	5	2920	4940	630	800	23252CAF3	23252CAKF3	-	329	405	22.3	8	277	322	411	463	4	0.36	1.87	2.79	1.83	138	134
	480	174	5	2920	4940	630	800	23252CAL	23252CAKL	-	329	405	22.3	8	277	322	411	463	4	0.36	1.87	2.79	1.83	137	133
	540	165	6	3210	4760	630	800	22352CA	22352CAK	-	348	456	22.3	8	281	343	462	519	5	0.31	2.19	3.26	2.14	186	182
	540	165	6	3210	4760	630	800	22352CAF3	22352CAKF3	-	348	456	22.3	8	281	343	462	519	5	0.31	2.19	3.26	2.14	184	180
280	350	52	2	525	1300	1200	1500	23856CA	23856CAK	-	305	328	8.3	4.5	289	302	332	341	2	0.13	5.36	7.98	5.24	11.4	11.0
	380	75	2.1	844	1980	1000	1400	23956CA	23956CAK	-	316	346	12	6	289	312	351	371	2	0.18	3.80	5.66	3.72	25.3	24.5
	380	75	2.1	844	1980	1000	1400	23956CAQ1	-	-	316	346	12	6	289	312	351	371	2	0.18	3.80	5.66	3.72	25.7	-
	400	130	4	1710	3690	640	780	20656X3CA	-	-	315	353	16.7	9	294	310	359	386	3	0.29	2.32	3.45	2.26	53.3	-
	420	106	4	1600	3040	850	1100	23056CA	23056CAK	-	325	378	16.7	7	294	321	383	406	3	0.22	3.01	4.48	2.94	51.8	50.2
	420	106	4	1600	3040	620	750	23056CAF3	23056CAKF3	-	325	378	16.7	7	294	321	383	406	3	0.22	3.01	4.48	2.94	51.5	49.9
	420	140	4	1930	3890	670	850	24056CA	-	24056CAK30	320	367	11.1	6	294	315	372	406	3	0.31	2.16	3.22	2.12	69.0	67.9
	420	140	4	1930	3890	670	850	24056CAF3	-	24056CAK30F3	320	367	11.1	6	294	315	372	406	3	0.31	2.16	3.22	2.12	66.8	65.7
	460	130	5	2060	3610	750	950	23156X2CA	-	-	332	404	-	-	297	327	409	443	4	0.27	2.50	3.72	2.45	87.0	-
	460	146	5	2390	4370	750	950	23156CA	23156CAK	-	337	401	16.7	8	297	332	407	443	4	0.30	2.28	3.39	2.23	104	101
	460	146	5	2390	4370	750	950	23156CAF3	23156CAKF3	-	337	401	-	-	297	332	407	443	4	0.30	2.28	3.39	2.23	103	99.9
	460	180	5	2650	4990	400	500	24156CA	-	24156CAK30	333	394	13.9	8	297	328	400	443	4	0.37	1.82	2.70	1.78	118	116
	480	130	5	2250	3780	500	600	-	22256X1CAK	-	343	419	22.3	12	297	338	425	463	4	0.26	2.63	3.92	2.57	-	96.7
	480	130	5	2250	3780	550	670	-	22256X1CAKF3	-	343	419	22.3	12	297	338	425	463	4	0.26	2.63	3.92	2.57	-	96.1
	500	130	5	2290	3600	800	1000	22256CA	22256CAK	-	347	435	22.3	8	297	342	442	483	4	0.26	2.57	3.83	2.52	111	109
	500	130	5	2290	3600	800	1000	22256CAF3	22256CAKF3	-	347	435	-	-	297	342	442	483	4	0.26	2.57	3.83	2.52	117	115
	500	176	5	3100	5430	600	750	23256CA	23256CAK	-	349	424	22.3	8	297	342	431	483	4	0.34	2.00	2.98	1.96	147	142
	500	176	5	3100	5430	600	750	23256CAF3	23256CAKF3	-	349	424	22.3	8	297	342	431	483	4	0.34	2.00	2.98	1.96	146	141
	580	175	6	3700	5660	600	750	22356CA	22356CAK	-	364	486	22.3	8	301	357	492	559	5	0.31	2.17	3.24	2.12	221	217
	580	175	6	3700	5660	600	750	22356CAF3	22356CAKF3	-	364	486	22.3	8	301	357	492	559	5	0.31	2.17	3.24	2.12	221	217
300	380	60	3	667	1660	950	1400	23860CA	23860CAK	-	329	355	12	5	312	325	360	368	2.5	0.13	5.32	7.92	5.20	16.8	16.2
	420	90	3	1240	2640	950	1300	23960CA	23960CAK	-	339	382	15	6	312	334	386	408	2.5	0.19	3.49	5.19	3.41	40.7	39.4
	420	118	3	1580	3590	950	1300	24960CA	24960CAK	-	339	376	18	7	312	334	381	408	2.5	0.25	2.73	4.07	2.67	52.5	50.3
	440	105	4	1580	3060	870	1100	23060X3CA	-	-	343	397	16.7	9	314	339	402	426	3	0.21	3.16	4.71	3.09	54.7	-
	460	118	4	1940	3660	800	1000	23060CA	23060CAK	-	351	410	16.7	7	314	347	415	446	3	0.24	2.86	4.25	2.79	75.8	73.6
	460	118	4	1940	3660	800	1000	23060CAF3	23060CAKF3	-	351	410	16.7	7	314	347	415	446	3	0.24	2.86	4.25	2.79	74.9	72.7
	460	132	4	2060	4030	800	1000	23060X2CA	-	-	353	409	16.7	9	314	349	414	446	3	0.26	2.55	3.80	2.50	81.0	-
	460	160	4	2440	4940	600	750	24060CA	-	24060CAK30	347	400	13.9	7	314	342	406	446	3	0.32	2.09	3.11	2.04	99.0	97.4
	500	160	5	2760	5010	670	850	23160CA	23160CAK	-	361	434	16.7	8	317	356	440	483	4	0.30	2.23	3.32	2.18	127	123
	500	160	5	2760	5010	670	850	23160CAF1	23160CAKF1	-	361	434	-	-	317	356	440	483	4	0.30	2.23	3.32	2.18	143	139
	500	160	5	2760	5010	670	850	23160CAF3	23160CAKF3	-	361	434	16.7	8	317	356	440	483	4	0.30	2.23	3.32	2.18	127	123
	500	200	5	3160	5980	600	750	24160CA	-	24160CAK30	356	425	13.9	6	317	349	432	483	4	0.39	1.75	2.61	1.71	160	158

d 300～360mm

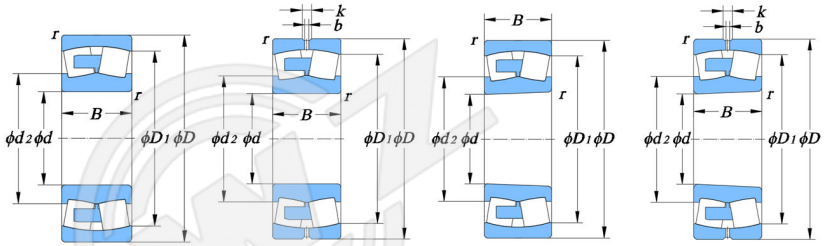


CA　CA(W33)　CAK　CAK(W33)

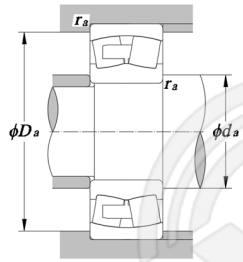


Principal dimensions(mm)				Basic load ratings(kN)		Limiting speeds (r/min)		Designations			Other dimensions(mm)				Abutment and fillet dimensions(mm)					Factor				Mass(kg) (approx.)	
d	*D*	*B*	r_{min}	C_r	C_{or}	Grease	Oil	*CA*	*CAK*	*CAK30*	d_2	D_1	*b*	*k*	d_{amin}	d_{amax}	D_{amin}	D_{amax}	r_{amax}	*e*	Y_1	Y_2	Y_0	*CA*	*CAK*
300	540	140	5	2660	4270	750	950	22260CA	22260CAK	-	374	468	22.3	8	317	370	474	523	4	0.26	2.62	3.90	2.56	138	135
	540	140	5	2660	4270	750	950	22260CAF3	22260CAKF3	-	374	468	22.3	8	317	370	474	523	4	0.26	2.62	3.90	2.56	136	133
	540	192	5	3450	5990	530	670	23260CA	23260CAK	-	372	456	22.3	10	317	366	462	523	4	0.35	1.95	2.90	1.91	190	184
	540	192	5	3450	5990	530	670	23260CAF1	23260CAKF1	-	372	456	22.3	10	317	366	462	523	4	0.35	1.95	2.90	1.91	194	188
	540	192	5	3450	5990	530	670	23260CAF3	23260CAKF3	-	372	456	22.3	10	317	366	462	523	4	0.35	1.95	2.90	1.91	192	186
	620	185	7.5	3960	5990	500	600	22360CA	22360CAK	-	396	524	22.3	12	326	389	529	594	6	0.31	2.21	3.29	2.16	271	266
320	440	90	3	1280	2810	900	1200	23964CA	23964CAK	-	360	403	15	6	332	354	407	428	2.5	0.18	3.66	5.46	3.58	41.8	40.5
	480	121	4	2020	3920	800	1000	23064CA	23064CAK	-	372	432	16.7	8	334	367	438	466	3	0.23	2.92	4.35	2.86	84.8	82.4
	480	121	4	2020	3920	800	1000	23064CAF3	23064CAKF3	-	372	432	16.7	8	334	367	438	466	3	0.23	2.92	4.35	2.86	84.7	82.3
	480	160	4	2440	5020	560	700	24064CA	-	24064CAK30	368	421	22	8	334	364	427	466	3	0.31	2.21	3.29	2.16	106	104
	480	160	4	2440	5020	560	700	24064CAF3	-	24064CAK30F3	368	421	22	8	334	364	427	466	3	0.31	2.21	3.29	2.16	106	104
	540	176	5	3290	6060	630	800	23164CA	23164CAK	-	389	465	22.3	8	337	384	472	523	4	0.31	2.20	3.27	2.15	172	167
	540	218	5	3620	6810	340	430	24164CA	-	24164CAK30	382	458	17.7	9.5	337	375	464	523	4	0.39	1.71	2.54	1.67	206	203
	540	218	5	3620	6810	470	570	24164CAF3	-	24164CAK30F3	382	452	17.7	9.5	337	375	459	523	4	0.39	1.71	2.54	1.67	204	201
	580	150	5	3030	4880	670	850	22264CA	22264CAK	-	400	503	22.3	8	337	395	509	563	4	0.26	2.62	3.90	2.56	175	171
	580	208	5	4070	7160	500	630	23264CA	23264CAK	-	400	490	22.3	10	337	393	497	563	4	0.35	1.92	2.86	1.88	250	243
	580	208	5	4070	7160	500	630	23264CAF3	23264CAKF3	-	400	490	22.3	10	337	393	497	563	4	0.35	1.92	2.86	1.88	248	241
	580	213	5	4070	7160	440	530	23264X2CA	-	-	400	488	22.3	10	337	393	494	563	4	0.35	1.92	2.86	1.88	246	-
	670	200	7.5	4530	6850	450	600	22364CA	22364CAK	-	430	566	22.3	12	346	423	573	644	6	0.31	2.21	3.29	2.16	351	344
340	460	75	3	1120	2360	520	630	22968X2CA	-	-	380	424	11.1	5	352	376	428	448	2.5	0.14	4.82	7.18	4.71	36.3	-
	460	90	3	1320	2950	900	1200	23968CA	22364CAK	-	378	423	15	6	352	373	427	448	2.5	0.17	3.90	5.81	3.81	46.0	44.6
	460	90	3	1320	2950	900	1200	23968CAF3	23968CAKF3	-	378	423	15	6	352	373	427	448	2.5	0.17	3.90	5.81	3.81	45.6	44.2
	520	133	5	2380	4650	700	900	23068CA	23068CAK	-	400	465	22.3	8	357	395	473	503	4	0.24	2.84	4.23	2.78	115	112
	520	133	5	2380	4650	700	900	23068CAF3	23068CAKF3	-	400	465	22.3	8	357	395	473	503	4	0.24	2.84	4.23	2.78	114	111
	520	180	5	2970	6090	530	670	24068CA	-	24068CAK30	394	452	16.7	8	357	389	460	503	4	0.32	2.13	3.17	2.08	137	135
	520	180	5	2970	6090	530	670	24068CAF1	-	24068CAK30F1	394	452	-	-	357	389	460	503	4	0.32	2.13	3.17	2.08	136	134
	520	180	5	2970	6090	530	670	24068CAF3	-	24068CAK30F3	394	452	16.7	8	357	389	460	503	4	0.32	2.13	3.17	2.08	136	134
	580	190	5	3680	6680	600	750	23168CA	22364CAK	-	411	497	22.3	8	357	407	504	563	4	0.31	2.17	3.24	2.12	211	205
	580	190	5	3680	6680	600	750	23168CAF3	23168CAKF3	-	411	497	22.3	8	357	407	504	563	4	0.31	2.17	3.24	2.12	210	204
	580	243	5	4380	8390	320	400	24168CA	-	24168CAK30	408	486	22.3	10	357	401	491	563	4	0.40	1.69	2.51	1.65	261	257
	580	243	5	4380	8390	320	400	24168CAF3	-	24168CAK30F3	408	486	22.3	10	357	401	491	563	4	0.40	1.69	2.51	1.65	262	258
	580	246	5	4380	8390	420	510	24168X2CA	-	-	408	486	22.3	10	357	401	491	563	4	0.40	1.69	2.51	1.65	267	-
	620	224	6	4620	8170	500	700	23268CA	23268CAK	-	425	524	22.3	12	361	419	530	599	5	0.35	1.93	2.87	1.88	299	290
	710	212	7.5	5020	7850	350	420	22368CA	22364CAK	-	458	592	22.3	12	366	451	601	684	6	0.31	2.21	3.29	2.16	407	399
360	480	90	3	1210	2920	850	1100	23972CA	23972CAK	-	402	441	11.1	6	372	399	446	468	2.5	0.16	4.11	6.12	4.02	45.9	44.4
	540	134	5	2490	4920	670	850	23072CA	23072CAK	-	419	486	22.3	8	377	415	493	523	4	0.23	2.98	4.44	2.92	126	123
	540	134	5	2490	4920	670	850	23072CAF3	23072CAKF3	-	419	486	22.3	8	377	415	493	523	4	0.23	2.98	4.44	2.92	125	122
	540	134	5	2490	4920	440	530	23072CAF1	23072CAKF1	-	419	486	-	-	377	415	493	523	4	0.23	2.98	4.44	2.92	125	122
	540	180	5	3040	6370	600	750	24072CA	-	24072CAK30	415	474	16.7	8	377	411	481	523	4	0.31	2.19	3.26	2.14	147	145
	600	192	5	3890	7250	560	700	23172CA	23172CAK	-	434	518	22.3	12	377	429	524	583	4	0.30	2.25	3.34	2.20	224	217

d 360～400mm



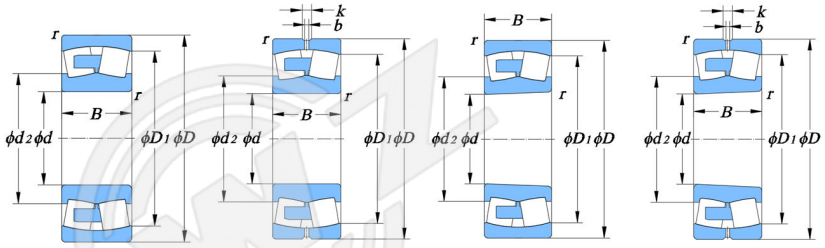
CA　CA(W33)　CAK　CAK(W33)



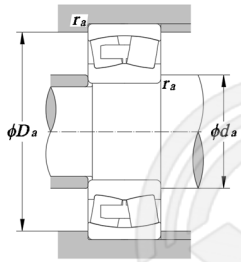
Principal dimensions(mm)				Basic load ratings(kN)		Limiting speeds (r/min)		Designations			Other dimensions(mm)				Abutment and fillet dimensions(mm)					Factor				Mass(kg) (approx.)	
d	*D*	*B*	r_{min}	C_r	C_{or}	Grease	Oil	*CA*	*CAK*	*CAK30*	d_2	D_1	*b*	*k*	d_{amin}	d_{amax}	D_{amin}	D_{amax}	r_{amax}	*e*	Y_1	Y_2	Y_0	*CA*	*CAK*
360	600	192	5	3890	7250	560	700	23172CAF1	23172CAKF1	-	434	518	22.3	12	377	429	524	583	4	0.30	2.25	3.34	2.20	229	222
	600	243	5	4500	8790	300	380	24172CA	-	24172CAK30	430	512	22.3	12	377	423	516	583	4	0.38	1.78	2.65	1.74	270	266
	600	243	5	4500	8790	300	380	24172CAF1	-	24172CAK30F1	430	512	22.3	12	377	423	516	583	4	0.38	1.78	2.65	1.74	269	265
	600	243	5	4500	8790	300	380	24172CAQ1	-	-	430	512	-	-	377	423	516	583	4	0.38	1.78	2.65	1.74	270	-
	600	243	5	4500	8790	400	480	24172CAF3	-	24172CAK30F3	430	512	22.3	12	377	423	516	583	4	0.38	1.78	2.65	1.74	268	264
	650	170	6	3760	6170	600	800	22272CA	22272CAK	-	449	563	22.3	8	381	444	570	629	5	0.26	2.60	3.87	2.54	248	243
	650	232	6	5050	9050	500	700	23272CA	23272CAK	-	443	547	22.3	10	381	436	554	629	5	0.35	1.94	2.88	1.89	332	322
	650	232	6	5050	9050	500	700	23272CAF3	23272CAKF3	-	443	547	22.3	10	381	436	554	629	5	0.35	1.94	2.88	1.89	337	327
	750	224	7.5	5740	8850	400	500	22372CA	22372CAK	-	477	632	22.3	12	386	471	638	724	6	0.31	2.21	3.29	2.16	468	459
	750	224	7.5	5740	8850	400	500	22372CAF3	22372CAKF3	-	477	632	-	-	386	471	638	724	6	0.31	2.21	3.29	2.16	466	457
380	520	106	4	1800	4100	800	1000	23976CA	23976CAK	-	425	477	15	10	394	421	482	506	3	0.18	3.80	5.66	3.72	69.9	67.7
	520	106	4	1800	4100	800	1000	23976CAF1	23976CAKF1	-	425	477	15	10	394	421	482	506	3	0.18	3.80	5.66	3.72	69.5	67.3
	520	106	4	1800	4100	440	530	23976CAF3	23976CAKF3	-	425	477	15	10	394	421	482	506	3	0.18	3.80	5.66	3.72	69.5	67.3
	560	135	5	2560	5260	630	800	23076CA	23076CAK	-	441	506	22.3	8	397	437	512	543	4	0.22	3.08	4.59	3.02	125	121
	560	135	5	2560	5260	630	800	23076CAF1	23076CAKF1	-	441	506	22.3	8	397	437	512	543	4	0.22	3.08	4.59	3.02	130	126
	560	135	5	2560	5260	630	800	23076CAF3	23076CAKF3	-	441	506	22.3	8	397	437	512	543	4	0.22	3.08	4.59	3.02	125	121
	560	180	5	3180	6850	480	600	24076CA	-	24076CAK30	437	495	22	10	397	430	503	543	4	0.29	2.32	3.45	2.26	151	148
	560	180	5	3180	6850	480	600	24076CAF3	-	24076CAK30F3	437	495	22.3	8	397	430	503	543	4	0.29	2.32	3.45	2.26	150	147
	620	194	5	4050	7750	450	500	23176CA	23176CAK	-	457	541	22	8	397	450	547	603	4	0.30	2.28	3.39	2.23	249	242
	620	194	5	4050	7750	450	500	23176CAF3	23176CAKF3	-	457	541	22	8	397	450	547	603	4	0.30	2.28	3.39	2.23	247	240
	620	243	5	4760	9580	400	500	24176CA	-	24176CAK30	448	531	16.7	9	397	441	538	603	4	0.37	1.85	2.75	1.80	296	291
	680	240	6	5230	9390	380	500	23276CA	23276CAK	-	468	574	22.3	10	401	461	581	659	5	0.35	1.95	2.90	1.91	389	378
	680	240	6	5230	9390	380	500	23276CAF3	23276CAKF3	-	468	574	22.3	10	401	461	581	659	5	0.35	1.95	2.90	1.91	397	386
	680	250	6	5430	9880	380	500	23276X2CA	-	-	468	572	-	-	401	461	579	659	5	0.36	1.88	2.80	1.84	397	-
	780	230	7.5	5980	9300	350	500	22376CAF3	22376CAKF3	-	504	660	22.3	12	406	497	666	754	6	0.30	2.26	3.37	2.21	518	508
385	565	135	5	2560	5260	400	490	20677CA	-	-	443	509	20	10	402	439	515	548	4	0.22	3.08	4.59	3.02	116	-
400	540	100	4	1760	3980	750	950	23980X2CAF3	-	-	445	499	13.9	7.5	414	440	504	526	3	0.16	4.23	6.30	4.14	67.8	-
	540	106	4	1820	4230	750	950	23980CA	23980CAK	-	445	498	15	10	414	440	503	526	3	0.17	4.04	6.02	3.95	72.9	70.6
	540	106	4	1820	4230	750	950	23980CAF1	-	-	445	497	15	10	414	440	503	526	3	0.17	4.04	6.02	3.95	72.4	-
	540	106	4	1820	4230	410	500	23980CAF3	-	-	445	498	15	10	414	440	503	526	3	0.17	4.04	6.02	3.95	72.4	-
	590	142	5	2800	5670	630	800	23080X3CA	-	-	461	533	22.3	12	417	455	542	573	4	0.21	3.14	4.68	3.07	133	-
	600	148	5	2970	5920	600	750	23080CA	23080CAK	-	462	539	22	12	417	456	548	583	4	0.22	3.01	4.48	2.94	147	142
	600	148	5	2970	5920	600	750	23080CAF3	23080CAKF3	-	462	539	22	12	417	456	548	583	4	0.22	3.01	4.48	2.94	147	142
	600	200	5	3780	8090	450	560	24080CA	-	24080CAK30	457	525	22	12	417	453	534	583	4	0.30	2.22	3.31	2.17	205	202
	600	200	5	3780	8090	450	560	24080CAF3	-	-	457	525	22	12	417	453	534	583	4	0.30	2.22	3.31	2.17	202	-
	650	200	6	4270	8200	450	560	23180CA	23180CAK	-	479	568	22.3	8	421	474	575	629	5	0.28	2.37	3.53	2.32	273	265
	650	200	6	4270	8200	450	560	23180CAF3	23180CAKF3	-	479	568	22.3	8	421	474	575	629	5	0.28	2.37	3.53	2.32	271	263
	650	250	6	4970	10000	320	400	24180CA	-	24180CAK30	476	563	22.3	8	421	469	569	629	5	0.36	1.87	2.79	1.83	326	321
	650	250	6	4970	10000	320	400	24180CAF3	-	-	476	563	22.3	8	421	469	569	629	5	0.36	1.87	2.79	1.83	326	-
	670	216	6	4760	8990	380	480	23180X3CA	-	-	480	580	22.3	8	421	473	586	649	5	0.32	2.12	3.15	2.07	293	-

ZWZ

d 400～460mm



CA　CA(W33)　CAK　CAK(W33)



Principal dimensions(mm)				Basic load ratings(kN)		Limiting speeds (r/min)		Designations			Other dimensions(mm)				Abutment and fillet dimensions(mm)					Factor				Mass(kg) (approx.)	
d	*D*	*B*	r_{min}	C_r	C_{or}	Grease	Oil	*CA*	*CAK*	*CAK30*	d_2	D_1	*b*	*k*	d_{amin}	d_{amax}	D_{amin}	D_{amax}	r_{amax}	*e*	Y_1	Y_2	Y_0	*CA*	*CAK*
400	720	185	6	4500	7530	320	390	22280CA	-	-	500	627	22.3	12	421	493	633	699	5	0.25	2.69	4.00	2.63	332	-
	720	256	6	6130	11230	400	600	23280CA	23280CAK	-	499	607	22	10	421	492	613	699	5	0.35	1.95	2.90	1.91	467	453
	720	256	6	6130	11230	400	600	23280CAF3	23280CAKF3	-	499	607	22	10	421	492	613	699	5	0.35	1.95	2.90	1.91	465	451
	720	315	6	6730	12680	320	390	24280CA	-	-	488	600	26	16	421	479	609	699	5	0.40	1.68	2.50	1.64	555	-
	820	243	7.5	6580	10290	400	700	22380CA	22380CAK	-	520	694	22.3	12	426	513	701	794	6	0.31	2.21	3.29	2.16	623	611
420	520	75	2.1	1090	2790	750	950	23884CA	23884CAK	-	454	491	13.9	5	429	451	496	511	2	0.12	5.51	8.21	5.39	35.9	34.7
	560	106	4	1840	4300	700	900	23984CA	-	-	465	517	16.7	9	434	461	524	546	3	0.16	4.10	6.10	4.01	75.4	-
	620	150	5	3120	6380	500	1000	23084CA	23084CAK	-	484	559	22	8	437	480	565	603	4	0.22	3.07	4.57	3.00	149	144
	620	150	5	3120	6380	500	1000	23084CAF3	23084CAKF3	-	484	559	22	8	437	480	565	603	4	0.22	3.07	4.57	3.00	148	143
	620	200	5	3870	8440	380	480	24084CA	-	24084CAK30	478	548	22.3	12	437	474	557	603	4	0.31	2.21	3.29	2.16	202	199
	620	200	5	3870	8440	380	480	24084CAF3	-	24084CAK30F3	478	548	22.3	12	437	474	557	603	4	0.31	2.21	3.29	2.16	201	198
	650	212	5	4340	9110	340	410	24084X3CA/HC	-	-	489	567	22.3	12	437	484	574	633	4	0.31	2.21	3.29	2.16	264	-
	700	224	6	5120	9740	360	450	23184CA	23184CAK	-	504	605	22.3	12	441	498	612	679	5	0.30	2.23	3.32	2.18	358	347
	700	224	6	5120	9740	360	450	23184CAF3	-	-	504	605	22.3	12	441	498	612	679	5	0.30	2.23	3.32	2.18	353	-
	700	280	6	6040	11850	300	380	24184CA	-	24184CAK30	497	599	22.3	12	441	490	605	679	5	0.38	1.79	2.67	1.75	436	429
	760	272	7.5	6740	12500	400	550	23284CA	23284CAK	-	525	643	22	12	446	518	652	734	6	0.36	1.87	2.79	1.83	550	534
	760	272	7.5	6740	12500	400	550	23284CAF3	-	-	525	643	22	12	446	518	652	734	6	0.36	1.87	2.79	1.83	546	-
440	600	118	4	2240	5100	450	560	23988CA	-	-	492	553	16.7	8	454	487	559	586	3	0.17	3.89	5.79	3.80	101	-
	600	118	4	2240	5100	450	560	23988CAF3	-	-	492	553	16.7	8	454	487	559	586	3	0.17	3.89	5.79	3.80	101	-
	650	157	6	3370	6930	500	900	23088CA	23088CAK	-	507	586	22.3	8	461	503	592	629	5	0.22	3.07	4.56	3.00	186	180
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	650	180	6	3590	7610	330	400	23088X2CA/YA2	-	-	508	582	28	12	461	504	590	629	5	0.25	2.69	4.00	2.63	198	-
	650	212	6	4130	9340	360	450	24088CA	-	-	502	574	22.3	12	461	498	582	629	5	0.30	2.25	3.35	2.20	251	-
	650	212	6	4130	9340	360	450	24088CAF3	-	24088CAK30F3	502	574	22.3	12	461	498	582	629	5	0.30	2.25	3.35	2.20	250	246
	720	226	6	5400	10560	400	750	23188CA	23188CAK	-	522	627	22.3	12	461	516	633	699	5	0.30	2.27	3.38	2.22	375	363
	720	280	6	6250	12510	300	380	24188CA	-	24188CAK30	517	618	22.3	12	461	510	624	699	5	0.37	1.83	2.72	1.79	463	456
	790	280	7.5	7220	13590	350	500	23288CA	23288CAK	-	552	669	22.3	12	466	545	678	764	6	0.34	1.98	2.94	1.93	611	593
450	700	200	6	4990	10320	310	370	24090X3CA	-	-	519	616	-	-	471	515	624	679	5	0.26	2.62	3.90	2.56	294	-
460	580	118	3	1750	4960	450	560	24892CA	-	-	502	539	16.7	7	472	499	545	568	2.5	0.17	3.95	5.88	3.86	77.0	-
	620	110	4	2080	4680	430	530	23992X2CA/YA1	-	-	510	574	16.7	9	474	506	580	606	3	0.16	4.28	6.37	4.19	96.8	-
	620	118	4	2280	5260	500	900	23992CA	-	-	511	572	16.7	9	474	506	579	606	3	0.16	4.14	6.17	4.05	105	-
	650	120	4	2540	5500	420	510	23992X3CA	-	-	519	592	16.7	9	474	515	598	636	3	0.17	4.08	6.07	3.99	132	-
	680	163	6	3680	7610	500	850	23092CA	23092CAK	-	531	613	23.5	12	481	524	620	659	5	0.22	3.07	4.57	3.00	229	223
	680	163	6	3680	7610	500	850	23092CAF3	23092CAKF3	-	531	613	23.5	12	481	524	620	659	5	0.22	3.07	4.57	3.00	227	221
	680	218	6	4630	10230	340	430	24092CA	-	-	527	600	24	12	481	522	606	659	5	0.29	2.35	3.50	2.30	308	-
	680	218	6	4630	10230	340	430	24092CAF3	-	-	527	600	24	12	481	522	606	659	5	0.29	2.35	3.50	2.30	304	-
	760	240	7.5	5930	11650	350	700	23192CA	23192CAK	-	556	660	22	8	486	550	667	734	6	0.30	2.25	3.34	2.20	442	428
	760	240	7.5	5930	11650	350	700	23192CAF3	23192CAKF3	-	556	660	22	8	486	550	667	734	6	0.30	2.25	3.34	2.20	440	426
	760	300	7.5	7220	14900	160	200	24192CA	-	24192CAK30	540	647	22.3	8	486	533	653	734	6	0.37	1.80	2.69	1.76	461	452
	760	300	7.5	7220	14900	160	200	24192CAF3	-	24192CAK30F3	540	647	22.3	8	486	533	653	734	6	0.37	1.80	2.69	1.76	459	450

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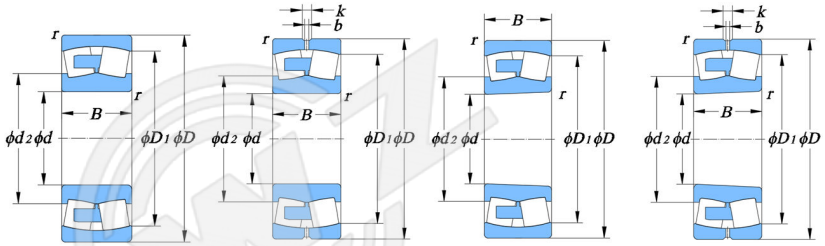
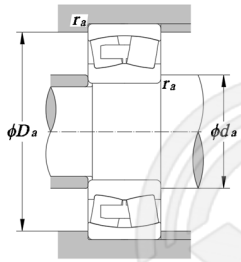
d 460～530mm



CA　CA(W33)　CAK　CAK(W33)



Principal dimensions(mm)				Basic load ratings(kN)		Limiting speeds (r/min)		Designations		
d	*D*	*B*	r_{min}	C_r	C_{or}	Grease	Oil	*CA*	*CAK*	*CAK30*
460	830	296	7.5	7820	14500	350	500	-	23292CAK	-
	830	296	7.5	7820	14500	260	320	-	23292CAKF3	-
479	790	258	7.5	6330	12620	300	380	-	231/479X2CAKF1/YB2	-
	790	258	7.5	6330	12620	270	320	-	231/479X2CAKF3/YB2	-
480	600	90	3	1540	4220	500	900	23896CA	-	-
	650	128	5	2570	6010	500	900	23996CA	-	-
	650	128	5	2570	6010	500	900	23996CAF1	23996CAKF1	-
	650	128	5	2570	6010	320	380	23996CAF3	23996CAKF3	-
	680	200	5	4280	9960	300	370	24096X3CA	-	-
	700	165	6	3760	7920	450	850	23096CA	23096CAK	-
	700	165	6	3760	7920	300	360	-	23096CAKF3	-
	700	218	6	4650	10410	340	430	24096CA	-	24096CAK30
	700	218	6	4650	10410	300	360	24096CAF3	-	-
	790	248	7.5	6330	12620	350	700	23196CA	23196CAK	-
	790	248	7.5	6330	12620	350	700	23196CAF1	23196CAKF1	-
	790	248	7.5	6330	12620	270	320	23196CAF3	23196CAKF3	-
	790	308	7.5	7520	15520	240	320	24196CAF3	-	24196CAK30F3
	790	308	7.5	7520	15520	240	320	24196CA	-	24196CAK30
	870	310	7.5	8660	16120	300	450	23296CA	23296CAK	-
	870	310	7.5	8660	16120	300	450	23296CAF3	23296CAKF3	-
500	620	90	3	1540	4140	420	520	238/500CA	238/500CAK	-
	620	118	3	2030	5480	320	390	248/500CA	-	-
	620	118	3	2030	5480	320	390	248/500CAF3	-	-
	670	128	5	2600	6200	450	900	239/500CA	239/500CAK	-
	670	128	5	2600	6200	450	900	239/500CAF1	-	-
	670	128	5	2600	6200	450	900	239/500CAF3	-	-
	720	167	6	3890	8360	450	800	230/500CAF3	230/500CAKF3	-
	720	167	6	3890	8360	450	800	230/500CA	230/500CAK	-
	720	218	6	4620	10460	420	520	240/500CA	-	240/500CAK30
	720	218	6	4620	10460	420	520	240/500CAF3	-	-
	730	250	6	5270	12430	280	340	240/500X3CA	-	-
	830	264	7.5	7030	13800	350	650	231/500CA	231/500CAK	-
	830	290	7.5	7410	14860	350	650	231/500X2CA	-	-
	830	325	7.5	7880	16010	300	380	241/500CA	-	241/500CAK30
	920	336	7.5	9910	18620	300	450	232/500CAF3	-	-
	920	336	7.5	9910	18620	300	450	232/500CA	232/500CAK	-
530	650	90	3	1530	4430	400	500	238/530CAF1	-	-
	650	90	3	1530	4430	300	360	238/530CA	-	-
	650	118	3	1800	5390	300	360	248/530CA	-	-
	710	136	5	3050	7100	400	800	239/530CA	239/530CAK	-

Other dimensions(mm)				Abutment and fillet dimensions(mm)					Factor				Mass(kg) (approx.)	
d_2	D_1	*b*	*k*	d_{amin}	d_{amax}	D_{amin}	D_{amax}	r_{amax}	*e*	Y_1	Y_2	Y_0	*CA*	*CAK*
566	698	22.3	10	486	559	707	804	6	0.35	1.95	2.90	1.91	-	703
566	698	22.3	10	486	559	707	804	6	0.35	1.95	2.90	1.91	-	698
578	687	22	12	505	571	696	764	6	0.31	2.21	3.29	2.16	-	497
578	687	22	12	505	571	696	764	6	0.31	2.21	3.29	2.16	-	497
523	563	13.9	7.5	492	518	568	588	2.5	0.13	5.36	7.98	5.24	60.4	-
532	597	16.7	10	497	527	603	633	4	0.18	3.83	5.70	3.75	126	-
532	597	16.7	10	497	527	603	633	4	0.18	3.83	5.70	3.75	125	121
532	597	16.7	10	497	527	603	633	4	0.18	3.83	5.70	3.75	125	121
539	608	22.3	10	497	534	615	663	4	0.26	2.55	3.80	2.50	240	-
551	634	22.3	12	501	546	641	679	5	0.21	3.14	4.68	3.07	215	208
551	634	22.3	12	501	546	641	679	5	0.21	3.14	4.68	3.07	-	203
546	622	22.3	12	501	541	629	679	5	0.28	2.43	3.61	2.37	285	280
546	622	22.3	12	501	541	629	679	5	0.28	2.43	3.61	2.37	284	-
578	687	22	12	506	571	696	764	6	0.31	2.21	3.29	2.16	520	505
578	687	22	12	506	571	696	764	6	0.31	2.21	3.29	2.16	516	501
578	687	22	12	506	571	696	764	6	0.31	2.21	3.29	2.16	516	501
568	678	22.3	8	506	561	686	764	6	0.37	1.82	2.71	1.78	582	573
568	678	22.3	8	506	561	686	764	6	0.37	1.82	2.71	1.78	594	585
581	733	22.3	12	506	574	739	844	6	0.35	1.95	2.90	1.91	858	834
581	733	22.3	12	506	574	739	844	6	0.35	1.95	2.90	1.91	858	834
547	587	16.7	8	512	544	591	608	2.5	0.12	5.61	8.36	5.49	62.0	59.9
539	585	22.3	12	512	536	591	608	2.5	0.16	4.28	6.37	4.19	79.1	-
539	585	22.3	12	512	536	591	608	2.5	0.16	4.28	6.37	4.19	78.6	-
555	619	22.3	12	517	549	626	653	4	0.17	4.04	6.02	3.95	120	116
555	619	22.3	12	517	549	626	653	4	0.17	4.04	6.02	3.95	120	-
555	619	22.3	12	517	549	626	653	4	0.17	4.04	6.02	3.95	119	-
568	653	22.3	12	521	562	660	699	5	0.21	3.16	4.71	3.09	224	217
568	653	22.3	12	521	562	660	699	5	0.21	3.16	4.71	3.09	225	218
572	650	22.3	12	521	566	657	699	5	0.27	2.49	3.71	2.43	297	292
572	650	22.3	12	521	566	657	699	5	0.27	2.49	3.71	2.43	295	-
568	644	25	10	521	561	650	709	5	0.31	2.21	3.29	2.16	359	-
602	720	22.3	12	526	595	726	804	6	0.30	2.25	3.35	2.20	588	570
600	714	-	-	526	593	723	804	6	0.33	2.04	3.03	1.99	641	-
590	707	22.3	12	526	583	713	804	6	0.37	1.80	2.69	1.76	719	708
624	775	22.3	12	526	617	781	894	6	0.35	1.93	2.87	1.88	977	-
624	775	22.3	12	526	617	781	894	6	0.35	1.93	2.87	1.88	982	953
575	613	22.4	12	542	570	618	638	2.5	0.12	5.85	8.71	5.72	64.2	-
575	613	22.4	12	542	570	618	638	2.5	0.12	5.85	8.71	5.72	64.6	-
571	610	-	7.5	542	568	615	638	2.5	0.15	4.54	6.75	4.43	86.6	-
586	659	22.3	12	547	581	665	693	4	0.17	4.01	5.97	3.92	155	150

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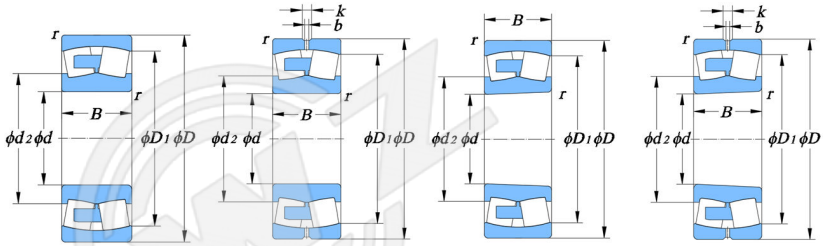
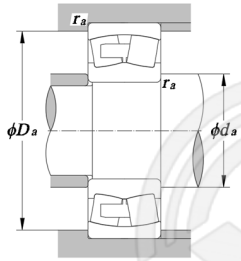
d 530～620mm



CA　CA(W33)　CAK　CAK(W33)



Principal dimensions(mm)				Basic load ratings(kN)		Limiting speeds (r/min)		Designations			Other dimensions(mm)				Abutment and fillet dimensions(mm)					Factor				Mass(kg) (approx.)	
d	*D*	*B*	r_{min}	C_r	C_{or}	Grease	Oil	*CA*	*CAK*	*CAK30*	d_2	D_1	*b*	*k*	d_{amin}	d_{amax}	D_{amin}	D_{amax}	r_{amax}	*e*	Y_1	Y_2	Y_0	*CA*	*CAK*
530	750	170	6	3960	8690	400	800	-	206/530CAK	-	599	685	23.5	8	551	592	691	729	5	0.20	3.34	4.98	3.27	-	233
	750	170	6	3960	8690	260	320	-	206/530CAKF3	-	599	685	23.5	8	551	592	691	729	5	0.20	3.34	4.98	3.27	-	234
	780	185	6	4680	10210	400	700	230/530CA	230/530CAK	-	614	704	24	12	551	608	710	759	5	0.22	3.14	4.67	3.07	339	330
	780	185	6	4680	10210	400	700	230/530CAF3	230/530CAKF3	-	614	704	24	12	551	608	710	759	5	0.22	3.14	4.67	3.07	335	326
	780	250	6	5660	12730	280	360	240/530CA	-	240/530CAK30	605	691	22.3	12	551	598	698	759	5	0.29	2.35	3.50	2.30	411	404
	870	272	7.5	7920	16090	300	600	231/530CA	231/530CAK	-	641	763	22.3	12	556	634	770	844	6	0.30	2.28	3.39	2.23	665	645
	870	272	7.5	7920	16090	230	280	231/530CAF3	-	-	641	763	22.3	12	556	634	770	844	6	0.30	2.28	3.39	2.23	657	-
	870	335	7.5	8780	18350	190	280	241/530CA	-	241/530CAK30	629	744	22.3	12	556	622	751	844	6	0.36	1.85	2.76	1.81	807	795
	980	355	9.5	11060	20850	250	400	232/530CA	232/530CAK	-	656	819	22.3	12	561	649	825	949	8	0.36	1.90	2.83	1.86	1208	1173
540	700	130	6	2710	6650	280	340	206/540CAF3	-	-	590	654	22	12	561	583	661	679	5	0.16	4.28	6.37	4.19	128	-
560	750	140	5	3290	8010	400	800	239/560CAF1	-	-	621	693	-	-	577	616	699	733	4	0.17	4.05	6.04	3.96	175	-
	750	140	5	3290	8010	400	800	239/560CA	239/560CAK	-	621	693	22.3	12	577	616	699	733	4	0.17	4.05	6.04	3.96	176	170
	750	140	5	3290	8010	260	310	239/560CAF3	-	-	621	693	-	-	577	616	699	733	4	0.17	4.05	6.04	3.96	175	-
	750	170	6	3750	9160	260	310	-	249/560X2CAKF3	-	623	692	22.3	12	581	618	698	729	5	0.20	3.38	5.03	3.30	-	203
	820	140	6	3690	7630	400	800	220/560X2CA	-	-	640	743	22.3	10	581	634	750	799	5	0.16	4.28	6.37	4.19	257	-
	820	195	6	5200	11220	400	800	230/560CA	230/560CAK	-	644	741	22.3	9	581	638	748	799	5	0.22	3.14	4.67	3.07	363	352
	820	195	6	5200	11220	400	800	230/560CAF3	230/560CAKF3	-	644	741	22.3	9	581	638	748	799	5	0.22	3.14	4.67	3.07	361	350
	820	258	6	5910	13800	220	300	240/560CA	-	240/560CAK30	640	727	22.3	12	581	633	734	799	5	0.28	2.39	3.56	2.34	465	457
	870	300	6	7940	16910	220	300	240/560X3CA	-	-	649	759	25	15	581	643	767	849	5	0.33	2.04	3.04	2.00	671	-
	920	280	7.5	8280	16590	300	550	231/560CA	231/560CAK	-	677	803	22.3	12	586	670	809	894	6	0.29	2.35	3.50	2.30	756	733
	920	280	7.5	8280	16590	300	550	231/560CAF3	-	-	677	803	22.3	12	586	670	809	894	6	0.29	2.35	3.50	2.30	745	-
	920	355	7.5	9530	20190	150	400	241/560CAF3	-	241/560CAF3K30	660	779	22.3	12	586	653	786	894	6	0.37	1.83	2.72	1.79	964	949
	920	355	7.5	9530	20190	120	160	241/560CA	-	241/560CAK30	660	779	22.3	12	586	653	786	894	6	0.37	1.83	2.72	1.79	969	954
	1030	365	9.5	11490	21490	190	230	232/560CAF3	-	-	705	868	22.3	12	591	698	873	999	8	0.36	1.87	2.79	1.83	1366	-
	1030	365	9.5	11490	21490	190	230	-	232/560CAK	-	705	868	22.3	12	591	698	873	999	8	0.36	1.87	2.79	1.83	-	1336
580	780	130	5	3130	7040	220	300	-	26/580CAKF3	-	647	726	22.3	12	597	642	732	763	4	0.14	4.67	6.96	4.57	-	176
600	800	150	5	3590	9030	400	700	239/600CA	239/600CAK	-	666	739	22.3	12	617	661	744	783	4	0.17	4.08	6.07	3.99	217	210
	800	200	5	4390	11680	320	400	249/600CAF1	-	-	666	729	22.3	12	617	660	735	783	4	0.22	3.01	4.48	2.94	287	-
	800	200	5	4390	11680	230	280	249/600CAF3	-	-	666	729	22.3	12	617	660	735	783	4	0.22	3.01	4.48	2.94	287	-
	870	200	6	5650	12420	350	650	230/600CAF3	230/600CAKF3	-	685	787	22.3	9	621	679	794	849	5	0.20	3.33	4.96	3.25	430	418
	870	200	6	5650	12420	350	650	230/600CA	230/600CAK	-	685	787	22.3	9	621	679	794	849	5	0.20	3.33	4.96	3.25	431	419
	870	272	6	6840	16080	300	500	240/600CA	-	-	680	771	22.3	12	621	674	778	849	5	0.30	2.25	3.34	2.20	551	-
	870	272	6	6840	16080	210	260	240/600CAF3	-	-	680	771	22.3	12	621	674	778	849	5	0.30	2.25	3.34	2.20	546	-
	980	300	7.5	9320	19320	300	500	231/600CAF3	-	-	717	855	22.3	12	626	710	862	954	6	0.29	2.35	3.50	2.30	894	-
	980	300	7.5	9320	19320	190	230	231/600CA	-	-	717	855	22.3	12	626	710	862	954	6	0.29	2.35	3.50	2.30	901	-
	980	375	7.5	10500	22500	300	500	241/600CA	-	241/600CAK30	709	839	40	25	626	702	845	954	6	0.36	1.90	2.82	1.85	1135	1118
	980	375	7.5	10500	22500	190	230	241/600CAF3	-	241/600CAK30F3	709	839	22	8	626	702	845	954	6	0.36	1.90	2.82	1.85	1131	1114
	1090	388	9.5	13070	24950	250	250	232/600CA	232/600CAK	-	750	920	22.3	12	631	743	926	1059	8	0.35	1.93	2.88	1.89	1596	1549
	1090	388	9.5	13070	24950	170	200	232/600CAF3	232/600CAKF3	-	750	920	22.3	12	631	743	926	1059	8	0.35	1.93	2.88	1.89	1588	1541
620	930	240	7.5	7240	15750	190	240	206/620CA	-	-	707	829	26	12	646	702	836	904	6	0.23	2.91	4.33	2.84	579	-

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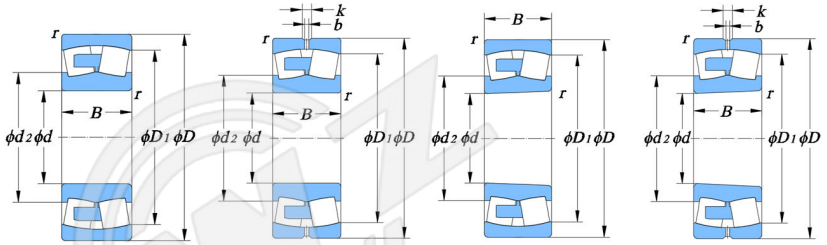
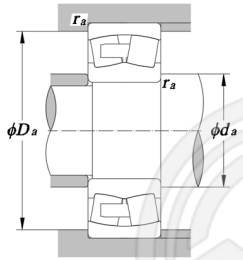
d 628～710mm



CA　CA(W33)　CAK　CAK(W33)



Principal dimensions(mm)				Basic load ratings(kN)		Limiting speeds (r/min)		Designations			Other dimensions(mm)				Abutment and fillet dimensions(mm)					Factor				Mass(kg) (approx.)	
d	*D*	*B*	r_{min}	C_r	C_{or}	Grease	Oil	*CA*	*CAK*	*CAK30*	d_2	D_1	*b*	*k*	d_{amin}	d_{amax}	D_{amin}	D_{amax}	r_{amax}	*e*	Y_1	Y_2	Y_0	*CA*	*CAK*
628	920	212	7.5	6130	13410	260	340	230/628CAF3	-	-	721	832	22.3	9	654	715	838	894	6	0.21	3.24	4.83	3.17	478	-
630	780	112	4	2400	6450	300	400	238/630CAF3	-	-	682	738	16.7	9	644	678	743	766	3	0.12	5.59	8.33	5.47	124	-
	780	112	4	2400	6450	230	280	238/630CA	-	-	682	738	16.7	9	644	678	743	766	3	0.12	5.59	8.33	5.47	123	-
	820	150	6	3570	8860	220	260	239/630X3CA	-	-	691	767	22.3	12	651	684	773	799	5	0.16	4.28	6.37	4.19	209	-
	850	150	6	3820	9090	210	250	239/630X2CAF3	-	-	700	786	22.3	12	651	694	793	829	5	0.15	4.43	6.60	4.33	246	-
	850	165	6	4340	10410	300	600	239/630CA	239/630CAK	-	698	784	22.3	12	651	691	791	829	5	0.17	3.98	5.93	3.89	292	283
	850	212	7.5	5010	13010	240	600	249/630X2CAF3	-	-	702	774	22.3	12	656	696	780	824	6	0.22	3.07	4.57	3.00	355	-
	920	212	7.5	6130	13410	300	600	230/630CA	-	-	721	832	22.3	9	656	715	838	894	6	0.21	3.24	4.83	3.17	470	-
	920	212	7.5	6130	13410	300	600	230/630CAF3	-	-	721	832	22.3	9	656	715	838	894	6	0.21	3.24	4.83	3.17	468	-
	960	180	7.5	5680	11080	200	550	206/630CAF3/YA1	-	-	726	868	22.3	12	656	721	874	934	6	0.17	3.95	5.88	3.86	470	-
	1030	315	7.5	10050	20210	200	500	231/630CA	231/630CAK	-	751	903	22.3	12	656	744	910	1004	6	0.29	2.35	3.50	2.30	1040	1008
	1030	400	7.5	11750	25470	160	210	241/630CA	-	241/630CAK30	742	878	22.3	12	656	735	885	1004	6	0.37	1.85	2.75	1.80	1333	1312
	1030	400	7.5	11750	25470	170	210	241/630CAF3	-	-	742	878	22.3	12	656	735	885	1004	6	0.37	1.85	2.75	1.80	1330	-
	1030	400	7.5	11750	25470	170	210	-	-	241/630CAK30F1	742	878	22.3	12	656	735	885	1004	6	0.37	1.85	2.75	1.80	-	1310
	1150	412	12	14040	27220	140	170	-	232/630CAK	-	789	970	22.3	12	667	782	976	1113	10	0.35	1.93	2.87	1.89	-	1858
650	860	200	7.5	4970	12850	300	600	206/650CA	-	-	717	791	-	-	676	713	797	834	6	0.20	3.42	5.09	3.34	325	-
	880	180	7.5	4640	11190	200	240	206/650CAF3	-	-	723	811	30	12	676	719	817	854	6	0.18	3.72	5.54	3.64	319	-
660	980	160	7.5	4860	9390	300	500	206/660CA	-	-	765	894	22	12	686	758	901	954	6	0.16	4.28	6.37	4.19	415	-
	980	160	7.5	4860	9390	180	210	206/660CAF3	-	-	765	894	22	12	686	758	901	954	6	0.16	4.28	6.37	4.19	412	-
670	820	112	4	2520	6980	300	600	238/670CA	-	-	721	778	16.7	9	684	717	783	806	3	0.11	5.92	8.81	5.78	128	-
	900	170	6	4590	11260	300	600	239/670CAF3	-	-	743	831	22.3	12	691	736	838	879	5	0.17	4.08	6.07	3.99	308	-
	900	170	6	4590	11260	190	230	239/670CA	239/670CAK	-	743	831	22.3	12	691	736	838	879	5	0.17	4.08	6.07	3.99	313	303
	903	170	6	4590	11260	300	600	239/670X1CA/YA3	-	-	743	831	22.3	12	691	736	838	882	5	0.17	4.08	6.07	3.99	315	-
	980	180	7.5	5590	11530	170	210	230/670X2CAF3	-	-	761	895	22.3	12	696	755	904	954	6	0.17	3.95	5.88	3.86	463	-
	980	230	7.5	6890	15090	300	500	230/670CAF3	230/670CAKF3	-	760	885	22.3	8	696	753	893	954	6	0.22	3.12	4.65	3.05	601	583
	980	230	7.5	6890	15090	300	500	230/670CA	230/670CAK	-	760	885	22.3	8	696	753	893	954	6	0.22	3.12	4.65	3.05	604	586
	980	308	7.5	8830	20780	250	450	240/670CA	-	-	760	871	22.3	8	696	752	879	954	6	0.28	2.37	3.53	2.32	807	-
	1090	336	7.5	11270	23930	200	450	231/670CA	231/670CAK	-	807	951	22.3	12	696	800	957	1064	6	0.29	2.35	3.50	2.30	1256	1217
	1090	412	7.5	13440	29400	150	200	241/670CA	-	241/670CAK30	786	934	22.3	12	696	779	941	1064	6	0.36	1.90	2.83	1.86	1527	1504
	1090	412	7.5	13440	29400	150	190	241/670CAF3	-	-	786	934	22.3	12	696	779	941	1064	6	0.36	1.90	2.83	1.86	1520	-
	1220	438	12	16080	31700	200	350	232/670CA	232/670CAK	-	836	1026	22.3	12	707	829	1030	1183	10	0.35	1.93	2.87	1.89	2320	2253
680	980	160	6	5130	10580	300	500	26/680CAF3	-	-	779	900	22.3	12	701	774	907	959	5	0.14	4.67	6.96	4.57	406	-
690	990	180	6	5840	12560	220	310	206/690CAF3	-	-	780	908	22.3	12	711	775	915	969	5	0.16	4.14	6.17	4.05	461	-
700	950	180	6	5190	12630	220	300	206/700CAF3	-	-	780	877	23.3	12	721	775	885	929	5	0.17	4.08	6.07	3.99	378	-
710	870	118	4	2810	7890	260	350	238/710CAF3	-	-	761	824	22.3	12	724	756	829	856	3	0.11	5.98	8.91	5.85	156	-
	950	180	6	5170	12760	300	550	239/710CAF1	-	-	787	882	22.3	12	731	780	889	929	5	0.17	4.00	5.96	3.91	364	-
	950	180	6	5170	12760	250	310	239/710CA	239/710CAK	-	787	882	22.3	12	731	780	889	929	5	0.17	4.00	5.96	3.91	367	355
	950	180	6	5170	12760	170	210	239/710CAF3	-	-	787	882	22.3	12	731	780	889	929	5	0.17	4.00	5.96	3.91	364	-
	950	243	6	6190	16880	170	210	249/710CA	-	-	791	864	22.3	12	731	785	870	929	5	0.22	3.01	4.48	2.94	497	-
	950	243	6	6190	16880	170	210	249/710CAF1	-	-	791	864	22.3	12	731	785	870	929	5	0.22	3.01	4.48	2.94	500	-

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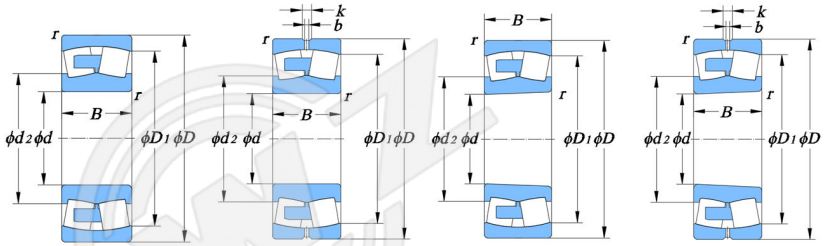
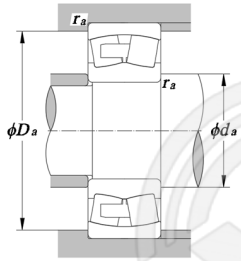
d 710～800mm



CA　CA(W33)　CAK　CAK(W33)



Principal dimensions(mm)				Basic load ratings(kN)		Limiting speeds (r/min)		Designations			Other dimensions(mm)				Abutment and fillet dimensions(mm)					Factor				Mass(kg) (approx.)	
d	*D*	*B*	r_{min}	C_r	C_{or}	Grease	Oil	*CA*	*CAK*	*CAK30*	d_2	D_1	*b*	*k*	d_{amin}	d_{amax}	D_{amin}	D_{amax}	r_{amax}	*e*	Y_1	Y_2	Y_0	*CA*	*CAK*
710	950	243	6	6190	16880	170	210	249/710CAF3	-	-	791	864	22.3	12	731	785	870	929	5	0.22	3.01	4.48	2.94	495	-
	980	200	6	5850	13620	170	200	206/710CAF3	-	-	794	902	22.3	12	731	787	908	959	5	0.18	3.66	5.46	3.58	459	-
	1030	200	7.5	6800	14750	160	190	220/710X2CAF3	-	-	807	939	22.3	12	736	802	946	1004	6	0.18	3.83	5.70	3.75	566	-
	1030	236	7.5	7570	17090	300	500	230/710CAF3	230/710CAKF3	-	810	931	22.3	12	736	803	937	1004	6	0.21	3.24	4.83	3.17	657	637
	1030	236	7.5	7570	17090	160	190	-	230/710CAK	-	810	931	22.3	12	736	803	937	1004	6	0.21	3.24	4.83	3.17	-	641
	1030	315	7.5	9340	22290	160	190	240/710CA	-	-	808	920	23.5	12.5	736	802	929	1004	6	0.28	2.43	3.61	2.37	885	-
	1150	438	9.5	14250	31190	90	120	241/710CAF1	-	-	836	985	22.3	12	741	829	992	1119	8	0.35	1.90	2.83	1.86	1791	-
	1150	438	9.5	14250	31190	90	120	241/710CA	-	241/710CAK30	836	985	40	25	741	829	992	1119	8	0.35	1.90	2.83	1.86	1777	1749
	1150	438	9.5	14250	31190	140	170	241/710CAF3	-	-	836	985	40	25	741	829	992	1119	8	0.35	1.90	2.83	1.86	1768	-
	1280	450	12	17640	34630	160	300	232/710CA	-	-	875	1085	22.3	12	747	868	1091	1243	10	0.34	1.98	2.95	1.94	2571	-
750	920	128	5	3160	9020	240	310	238/750CA	238/750CAK	-	810	873	24	12	766	805	878	904	4	0.12	5.72	8.51	5.59	186	180
	920	170	5	3770	11740	220	300	248/750CA	-	-	808	864	22.3	12	767	803	870	903	4	0.16	4.28	6.37	4.19	253	-
	1000	185	6	5520	13700	300	500	239/750CA	239/750CAK	-	829	929	22.3	12	771	823	936	979	5	0.16	4.16	6.20	4.07	414	401
	1000	200	6	5990	15210	160	190	239/750X2CA	-	-	829	926	22.3	15	771	823	933	979	5	0.17	3.95	5.88	3.86	447	-
	1000	250	6	6730	18500	250	450	249/750CA	-	-	831	915	22.3	12	771	825	921	979	5	0.22	3.01	4.48	2.94	566	-
	1090	250	7.5	8390	18860	250	450	230/750CA	-	-	847	987	22.3	12	776	840	994	1064	6	0.21	3.26	4.86	3.19	789	-
	1090	250	7.5	8390	18860	250	450	230/750CAF3	-	-	847	987	22.3	12	776	840	994	1064	6	0.21	3.26	4.86	3.19	784	-
	1090	335	7.5	10190	24690	170	220	240/750CA	-	240/750CAK30	856	967	22.3	12	776	849	976	1064	6	0.28	2.45	3.64	2.39	1057	1040
	1220	475	9.5	17220	37340	130	170	241/750CA	-	241/750CAK30	872	1052	22.3	12	781	865	1059	1189	8	0.35	1.90	2.83	1.86	2174	2139
	1220	475	9.5	17220	37340	130	170	-	-	241/750CAK30F3	872	1052	22.3	12	781	865	1059	1189	8	0.35	1.90	2.83	1.86	-	2128
	1360	475	15	19000	37930	-	-	232/750CAF1	-	-	930	1146	22.3	12	793	923	1152	1317	12	0.35	1.95	2.90	1.91	3100	-
	1360	475	15	19000	37930	-	-	232/750CAF3	232/750CAKF3	-	930	1146	22.3	12	793	925	1152	1317	12	0.35	1.95	2.90	1.91	3043	2955
	1360	475	15	19000	37930	-	-	-	232/750CAK	-	930	1146	22.3	12	793	925	1152	1317	12	0.35	1.95	2.90	1.91	-	2969
800	980	180	5	4140	13060	150	180	248/800CA	-	-	862	921	25	12	817	857	927	963	4	0.16	4.35	6.48	4.26	301	-
	1060	195	6	6040	15090	250	500	239/800CA	239/800CAK	-	880	987	22.3	12	821	874	995	1039	5	0.16	4.21	6.27	4.12	478	462
	1060	195	6	6040	15090	140	170	239/800CAF3	-	-	880	987	22.3	12	821	874	995	1039	5	0.16	4.21	6.27	4.12	475	-
	1060	258	6	7080	19390	250	400	249/800CA	-	-	885	976	23.5	12	821	880	983	1039	5	0.21	3.20	4.77	3.13	641	-
	1060	258	6	7080	19390	250	400	249/800CAF3	-	-	885	976	23.5	12	821	880	983	1039	5	0.21	3.20	4.77	3.13	634	-
	1090	230	7.5	7440	18220	130	160	230/800X31CA	-	-	892	1004	22.3	12	826	885	1011	1064	6	0.18	3.68	5.48	3.60	632	-
	1100	250	7.5	7850	19760	130	160	230/800X3CAF3	-	-	895	1005	23.3	12	826	888	1014	1074	6	0.20	3.37	5.02	3.30	731	-
	1150	258	7.5	8790	20070	250	450	230/800CA	230/800CAK	-	908	1044	22.3	12	826	902	1050	1124	6	0.20	3.40	5.07	3.33	883	856
	1150	258	7.5	8790	20070	120	150	230/800CAF3	-	-	908	1044	22.3	12	826	902	1050	1124	6	0.20	3.40	5.07	3.33	878	-
	1150	345	7.5	10620	25580	170	220	240/800CAF3	-	240/800CAK30F3	900	1029	22.3	12	826	893	1038	1124	6	0.30	2.28	3.39	2.23	1092	1072
	1150	345	7.5	10620	25580	170	220	240/800CA	-	-	900	1029	22.3	12	826	893	1038	1124	6	0.30	2.28	3.39	2.23	1094	-
	1150	400	7.5	12360	30940	150	200	240/800X2CA	-	-	897	1016	25	12	826	891	1025	1124	6	0.32	2.12	3.15	2.07	1330	-
	1220	500	7.5	16710	38140	-	-	240/800X3CA	-	-	904	1060	25	15	826	898	1069	1194	6	0.38	1.77	2.64	1.73	2071	-
	1280	375	9.5	14280	30400	-	-	231/800CA	231/800CAK	-	942	1121	22.3	12	831	935	1128	1249	8	0.28	2.45	3.65	2.40	1880	1822
	1280	475	9.5	17600	38600	-	-	241/800CAF1	-	-	938	1113	22.3	12	831	931	1120	1249	8	0.35	1.95	2.90	1.91	2350	-
	1280	475	9.5	17600	38600	-	-	-	-	241/800CAK30	938	1113	22.3	12	831	931	1120	1249	8	0.35	1.95	2.90	1.91	-	2294
	1280	475	9.5	17600	38600	-	-	241/800CAF3	-	-	938	1113	22.3	12	831	931	1120	1249	8	0.35	1.95	2.90	1.91	2317	-

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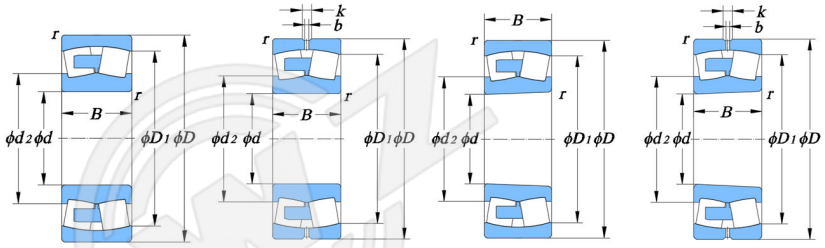
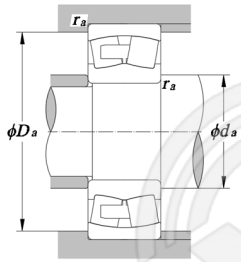
d 800～1000mm

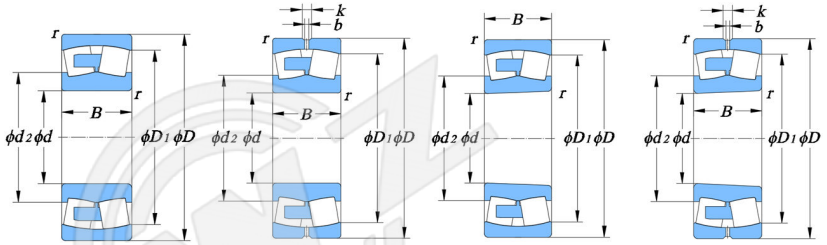


CA　CA(W33)　CAK　CAK(W33)

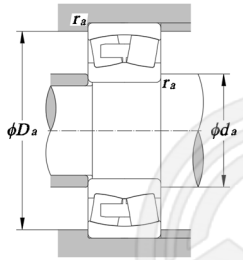


Principal dimensions(mm)				Basic load ratings(kN)		Limiting speeds (r/min)		Designations			Other dimensions(mm)				Abutment and fillet dimensions(mm)					Factor				Mass(kg) (approx.)	
d	*D*	*B*	r_{min}	C_r	C_{or}	Grease	Oil	*CA*	*CAK*	*CAK30*	d_2	D_1	*b*	*k*	d_{amin}	d_{amax}	D_{amin}	D_{amax}	r_{amax}	*e*	Y_1	Y_2	Y_0	*CA*	*CAK*
800	1420	488	15	20390	41510	-	-	-	232/800CAKF3	-	989	1199	24	12	843	982	1209	1377	12	0.33	2.02	3.01	1.98	-	3268
850	1030	136	5	3590	10490	180	250	238/850CA	238/850CAK	-	912	979	22.3	12	868	905	986	1012	4	0.11	5.94	8.84	5.81	232	224
	1120	200	6	6460	16430	250	450	239/850CA	239/850CAK	-	934	1045	22.3	12	872	927	1052	1098	5	0.16	4.34	6.47	4.25	538	521
	1120	200	6	6460	16430	120	150	239/850CAF3	-	-	934	1045	22.3	12	872	927	1052	1098	5	0.16	4.34	6.47	4.25	534	-
	1120	272	6	7820	21700	200	350	249/850CA	-	-	934	1027	22.3	12	872	927	1037	1098	5	0.22	3.14	4.67	3.07	750	-
	1120	272	6	7820	21700	120	150	249/850CAF3	-	-	934	1027	22.3	12	872	927	1037	1098	5	0.22	3.14	4.67	3.07	741	-
	1220	272	7.5	9970	23040	-	-	230/850CAF1	230/850CAKF1	-	954	1109	22.3	12	877	946	1116	1193	6	0.20	3.38	5.03	3.30	1074	1042
	1220	272	7.5	9970	23040	-	-	230/850CAF3	-	-	954	1109	22.3	12	877	946	1116	1193	6	0.20	3.38	5.03	3.30	1063	-
	1220	330	7.5	11610	28060	-	-	240/850X2CAF3	-	-	960	1096	22.3	12	877	952	1103	1193	6	0.24	2.79	4.16	2.73	1275	-
	1220	365	7.5	12520	30940	-	-	240/850CAF1	-	-	956	1087	22.3	12	877	948	1099	1193	6	0.27	2.50	3.72	2.45	1410	-
	1220	365	7.5	12520	30940	-	-	240/850CAF3	-	-	956	1087	22.3	12	877	948	1099	1193	6	0.27	2.50	3.72	2.45	1410	-
	1220	365	7.5	12520	30940	-	-	240/850CA	-	-	956	1087	22.3	12	877	948	1099	1193	6	0.27	2.50	3.72	2.45	1416	-
	1360	400	12	15600	33450	-	-	231/850CA	231/850CAK	-	1008	1204	22.3	12	887	999	1218	1323	10	0.28	2.40	3.60	2.50	2260	2190
	1360	500	12	19450	44500	-	-	241/850CA	-	241/850CAK30	996	1162	22.3	12	888	988	1170	1322	10	0.35	1.95	2.90	1.91	2854	2810
	1500	515	15	22290	45460	-	-	-	232/850CAKF3	-	1044	1272	40	25	894	1037	1282	1456	12	0.33	2.03	3.02	1.98	-	3789
900	1090	190	5	5130	16440	210	375	248/900CA	-	-	963	1031	22.3	12	918	955	1039	1072	4	0.14	4.67	6.96	4.57	370	-
	1180	206	6	6580	17320	-	-	239/900CAF1	-	-	988	1096	22.3	12	922	980	1104	1158	5	0.15	4.47	6.65	4.37	611	-
	1180	206	6	6580	17320	-	-	239/900CA	-	-	988	1096	22.3	12	922	980	1104	1158	5	0.15	4.47	6.65	4.37	616	-
	1180	206	6	6580	17320	-	-	239/900CAF3	239/900CAKF3	-	988	1096	22.3	12	922	980	1104	1158	5	0.15	4.47	6.65	4.37	611	591
	1280	280	7.5	10550	24760	-	-	230/900CA	230/900CAK	-	1017	1165	22.3	12	927	1009	1175	1253	6	0.20	3.37	5.02	3.30	1220	1184
	1280	280	7.5	10550	24760	-	-	230/900CAF3	-	-	1017	1165	22.3	12	927	1009	1175	1253	6	0.20	3.37	5.02	3.30	1168	-
	1280	375	7.5	13270	33570	-	-	240/900CA	-	-	1011	1146	22.3	12	927	1002	1153	1253	6	0.26	2.60	3.87	2.54	1560	-
	1280	480	7.5	16220	41600	-	-	240/900X2CA	-	-	1000	1132	25	15	927	993	1142	1253	6	0.34	2.01	3.00	1.97	1962	-
	1420	515	12	20740	47580	-	-	241/900CA	-	241/900CAK30	1055	1235	22.3	12	938	1047	1243	1382	10	0.35	1.95	2.90	1.91	3060	3011
	1420	515	12	20740	47580	-	-	241/900CAF3	-	241/900CAK30F3	1055	1235	22.3	12	938	1047	1243	1382	10	0.35	1.95	2.90	1.91	3042	2993
	1580	515	15	24220	50780	-	-	-	232/900CAKF3	-	1114	1356	35	20	944	1108	1364	1536	12	0.31	2.14	3.19	2.10	-	4233
	1580	515	15	24220	50780	-	-	-	232/900CAK	-	1114	1356	35	20	944	1108	1364	1536	12	0.31	2.14	3.19	2.10	-	4254
950	1250	224	7.5	7550	19770	-	-	239/950CA	-	-	1046	1163	22.3	12	977	1038	1171	1223	6	0.15	4.40	6.56	4.31	759	-
	1250	300	7.5	8900	25200	-	-	249/950CA	-	-	1048	1149	22.3	12	976	1039	1161	1224	6	0.21	3.20	4.80	3.20	1030	-
	1360	300	7.5	11600	27080	-	-	230/950CA	-	-	1075	1235	22.3	12	977	1067	1244	1333	6	0.20	3.37	5.02	3.30	1444	-
	1360	300	7.5	11600	27080	-	-	230/950CAF3	-	-	1075	1235	22.3	12	977	1067	1244	1333	6	0.20	3.37	5.02	3.30	1440	-
	1360	412	7.5	15750	40120	-	-	240/950CA	-	240/950CAK30	1068	1212	22.3	12	977	1060	1222	1333	6	0.27	2.51	3.74	2.45	1971	1938
	1360	412	7.5	15750	40120	-	-	240/950CAF3	-	-	1068	1212	22.3	12	977	1060	1222	1333	6	0.27	2.51	3.74	2.45	1961	-
	1500	438	12	19290	43100	-	-	231/950CA	-	-	1121	1320	-	-	988	1113	1329	1462	10	0.27	2.48	3.69	2.42	2997	-
	1500	545	7.5	22700	52200	-	-	241/950CA	-	241/950CAK30	1104	1304	22.3	12	976	1095	1316	1474	6	0.35	1.90	2.90	1.80	3600	3542
1000	1220	165	6	4760	14320	-	-	238/1000CAKF1A	-	-	1069	1155	-	9	1022	1063	1162	1198	5	0.11	5.92	8.81	5.78	402	-
	1220	165	6	4760	14320	-	-	238/1000CA	-	-	1069	1155	12	9	1022	1063	1162	1198	5	0.11	5.92	8.81	5.78	407	-
	1220	165	6	4760	14320	-	-	-	238/1000CAKF3A	-	1069	1155	-	9	1022	1063	1162	1198	5	0.11	5.92	8.81	5.78	-	402
	1280	200	7.5	7110	18870	-	-	229/1000X3CA	-	-	1083	1200	24	12	1027	1077	1207	1253	6	0.13	5.04	7.51	4.93	646	-
	1320	236	7.5	8720	22870	-	-	239/1000CA	-	-	1098	1226	22.3	12	1027	1090	1233	1293	6	0.15	4.40	6.56	4.31	892	-

d 1000～1280mm



CA　CA(W33)　CAK　CAK(W33)



Principal dimensions (mm)				Basic load ratings (kN)		Limiting speeds (r/min)		Designations			Other dimensions(mm)				Abutment and fillet dimensions(mm)					Factor				Mass(kg) (approx.)	
d	*D*	*B*	r_{min}	C_r	C_{or}	Grease	Oil	*CA*	*CAK*	*CAK30*	d_2	D_1	*b*	*k*	d_{amin}	d_{amax}	D_{amin}	D_{amax}	r_{amax}	*e*	Y_1	Y_2	Y_0	*CA*	*CAK*
1000	1320	315	7.5	10960	30700	-	-	249/1000CA	-	-	1097	1211	22.3	12	1027	1089	1219	1293	6	0.20	3.31	4.92	3.23	1188	-
	1420	260	7.5	11040	25480	-	-	220/1000X2CAF3	-	-	1129	1305	22.3	12	1027	1121	1315	1393	6	0.16	4.16	6.20	4.07	1332	-
	1420	308	7.5	12720	30430	-	-	230/1000CAF1	-	-	1140	1304	22.3	12	1027	1132	1311	1393	6	0.20	3.46	5.15	3.38	1590	-
	1420	308	7.5	12720	30430	-	-	230/1000CA	-	-	1140	1304	22.3	12	1027	1132	1311	1393	6	0.20	3.46	5.15	3.38	1602	-
	1420	308	7.5	12720	30430	-	-	230/1000CAF3	-	-	1140	1304	22.3	12	1027	1132	1311	1393	6	0.20	3.46	5.15	3.38	1590	-
	1420	412	7.5	15550	40760	-	-	240/1000CAF3	-	240/1000CAK30F3	1130	1271	22.3	12	1027	1122	1279	1393	6	0.26	2.62	3.90	2.56	2130	2095
	1580	462	12	20300	45600	-	-	231/1000CA	231/1000CAK	-	1181	1404	22.3	12	1037	1172	1418	1543	10	0.28	2.40	3.50	2.50	3520	3410
	1580	580	12	25300	58900	-	-	241/1000CA	-	241/1000CAK30	1160	1372	22.3	12	1037	1151	1386	1543	10	0.35	1.90	2.90	1.80	4350	4281
1040	1400	250	7.5	10010	25660	-	-	206/1040CAF3	-	-	1154	1297	22.3	12	1067	1146	1304	1373	6	0.16	4.21	6.27	4.12	1127	-
1060	1280	165	6	5090	15430	-	-	238/1060CA	238/1060CAK	-	1135	1217	22.3	12	1082	1130	1225	1258	5	0.11	6.28	9.35	6.14	426	411
	1280	218	6	5800	19000	-	-	248/1060CA	-	-	1136	1211	22.3	12	1081	1127	1220	1259	5	0.14	4.80	7.20	4.50	576	-
	1400	250	7.5	9870	26290	-	-	-	239/1060CAK	-	1169	1305	22.3	12	1087	1162	1312	1373	6	0.16	4.28	6.37	4.19	-	1040
	1400	250	7.5	9870	26290	-	-	239/1060CAF3	239/1060CAKF3	-	1169	1305	22.3	12	1087	1162	1312	1373	6	0.16	4.28	6.37	4.19	1067	1033
	1400	260	7.5	9820	26720	-	-	239/1060X2CAF3	-	-	1172	1300	22.3	12	1087	1166	1307	1373	6	0.16	4.11	6.12	4.02	1093	-
	1400	335	7.5	11870	33810	-	-	249/1060CAF3	-	-	1169	1288	22.3	12	1087	1161	1296	1373	6	0.21	3.27	4.87	3.20	1441	-
	1400	335	7.5	11150	31500	-	-	249/1060CA	-	-	1164	1285	22.3	12	1086	1155	1297	1374	6	0.21	3.20	4.80	3.20	1420	-
	1500	325	9.5	13380	32300	-	-	230/1060CA	230/1060CAK	-	1200	1377	22.3	12	1091	1191	1391	1469	8	0.19	3.60	5.30	3.60	2300	2242
	1500	438	9.5	17750	46610	-	-	240/1060CA	-	240/1060CAK30	1190	1340	22.3	12	1092	1181	1352	1468	8	0.26	2.64	3.93	2.58	2540	2498
	1500	438	9.5	17750	46610	-	-	240/1060CAF1	-	-	1190	1340	22.3	12	1092	1181	1352	1468	8	0.26	2.64	3.93	2.58	2540	-
	1500	530	9.5	20360	54260	-	-	240/1060X2CAF3	-	-	1182	1333	30	20	1092	1173	1346	1468	8	0.31	2.15	3.21	2.11	3010	-
1120	1360	243	6	7310	24800	-	-	248/1120CA	-	-	1204	1282	22.3	12	1142	1197	1289	1338	5	0.15	4.54	6.75	4.43	748	-
	1460	335	7.5	12300	36320	-	-	249/1120CAF3	-	-	1235	1348	22.3	12	1147	1225	1361	1433	6	0.20	3.38	5.03	3.30	1488	-
	1580	345	9.5	15400	40540	-	-	230/1120CAF3	-	-	1285	1443	40	25	1152	1275	1455	1548	8	0.19	3.51	5.23	3.43	2185	-
	1580	462	9.5	18100	48500	-	-	240/1120CA	-	240/1120CAK30	1268	1421	22.3	12	1151	1259	1435	1549	8	0.26	2.60	3.90	2.50	2940	2891
1180	1420	180	6	5830	18310	-	-	238/1180CAKF1A	-	-	1254	1350	-	9	1202	1248	1357	1398	5	0.11	6.28	9.35	6.14	577	-
	1420	180	6	5830	18310	-	-	238/1180CAF3A	-	-	1254	1350	-	9	1202	1248	1357	1398	5	0.11	6.28	9.35	6.14	580	-
	1420	243	6	7300	25600	-	-	248/1180CA	-	-	1250	1344	22.3	12	1201	1241	1353	1399	5	0.14	4.80	7.20	4.50	790	-
	1540	272	7.5	11120	31310	-	-	239/1180CAF3	239/1180CAKF3	-	1296	1433	24	12	1207	1288	1440	1513	6	0.16	4.35	6.48	4.26	1366	1321
	1540	272	7.5	11120	31310	-	-	-	239/1180CAKF1	-	1296	1433	24	12	1207	1288	1440	1513	6	0.16	4.35	6.48	4.26	-	1321
	1540	355	7.5	14390	41500	-	-	249/1180CAF1	-	-	1290	1423	22.3	12	1207	1282	1430	1513	6	0.20	3.42	5.09	3.34	1772	-
	1540	355	7.5	14390	41500	-	-	249/1180CAF3	249/1180CAK30F3	-	1290	1423	22.3	12	1207	1282	1430	1513	6	0.20	3.42	5.09	3.34	1772	1695
	1660	355	9.5	15190	37440	-	-	230/1180CA	-	-	1328	1509	24	12	1212	1319	1524	1628	8	0.20	3.34	4.98	3.27	2476	-
	1660	355	9.5	16810	41680	-	-	230/1180CAF3	-	-	1326	1520	24	12	1212	1316	1535	1628	8	0.19	3.56	5.30	3.48	2407	-
1200	1500	280	7.5	10120	31000	-	-	206/1200CA	-	-	1296	1406	22.3	12	1227	1288	1413	1473	6	0.16	4.28	6.37	4.19	1148	-
1242	1530	160	6	6780	18660	-	-	206/1242X2CAF3/YAD	-	-	1323	1457	-	-	1264	1315	1467	1508	5	0.09	7.73	11.50	7.55	531	-
1250	1630	280	7.5	12570	34200	-	-	239/1250CA	-	-	1366	1523	22.3	12	1277	1358	1530	1603	6	0.15	4.43	6.60	4.33	1569	-
	1750	375	9.5	17350	43650	-	-	230/1250CA	230/1250CAK	-	1412	1610	22.3	12	1281	1403	1624	1719	8	0.19	3.60	5.30	3.60	2850	2760
	1750	500	9.5	22460	61750	-	-	240/1250CA	-	-	1402	1570	40	25	1282	1392	1579	1718	8	0.25	2.69	4.00	2.63	3834	-
1270	1600	350	7.5	13510	42530	-	-	-	206/1270CAKF3	-	1378	1496	22.3	12	1297	1370	1503	1573	6	0.18	3.66	5.46	3.58	-	1676
1280	1750	360	7.5	17060	44160	-	-	206/1280CAF3	-	-	1430	1615	22.3	12	1307	1423	1622	1723	6	0.18	3.76	5.59	3.67	2545	-

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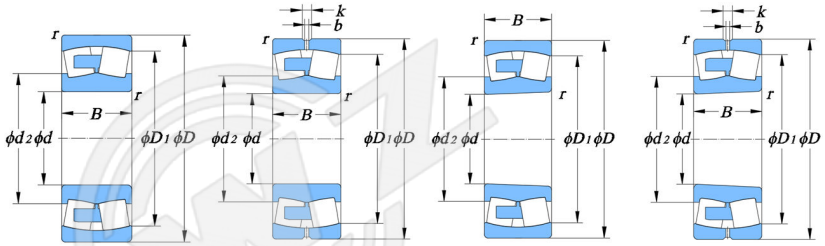
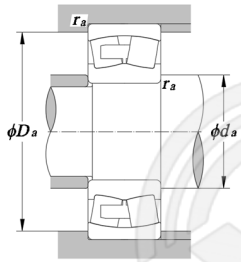
d 1320～1400mm



CA　CA(W33)　CAK　CAK(W33)



Principal dimensions (mm)				Basic load ratings (kN)		Limiting speeds (r/min)		Designations		
d	*D*	*B*	r_{min}	C_r	C_{or}	Grease	Oil	*CA*	*CAK*	*CAK30*
1320	1600	280	6	10120	34740	-	-	**248/1320CA**	-	-
	1720	400	7.5	16460	48910	-	-	**249/1320CA**	-	-
	1720	400	7.5	16460	48910	-	-	**249/1320CAF3**	-	-
	1850	530	12	25070	68370	-	-	**240/1320CAF3**	-	-
1350	1650	315	7.5	12070	41210	-	-	**206/1350CAF3**	-	-
	1650	315	7.5	12070	41210	-	-	**206/1350CA**	-	-
1400	1820	425	9.5	19530	58260	-	-	**249/1400CAF3**	-	-
1450	1810	400	9.5	17580	56800	-	-	**206/1450X2CAF3**	-	-
1500	1820	315	7.5	11700	40890	-	-	**248/1500CA**	-	-
1600	2100	450	9.5	24530	74370	-	-	**249/1600X3CA**	-	-
1800	2180	375	9.5	18300	62150	-	-	**248/1800CA**	-	-
	2180	375	9.5	18300	62150	-	-	**248/1800CAF3**	-	-
2250	2750	360	12	22260	75210	-	-	**238/2250X3CAF3**	-	-
1320	1600	280	6	10120	34740	-	-	**248/1320CA**	-	-
	1720	400	7.5	16460	48910	-	-	**249/1320CA**	-	-
	1720	400	7.5	16460	48910	-	-	**249/1320CAF3**	-	-
	1850	530	12	25070	68370	-	-	**240/1320CAF3**	-	-
1350	1650	315	7.5	12070	41210	-	-	**206/1350CAF3**	-	-
	1650	315	7.5	12070	41210	-	-	**206/1350CA**	-	-
1400	1820	425	9.5	19530	58260	-	-	**249/1400CAF3**	-	-

Other dimensions (mm)				Abutment and fillet dimensions (mm)					Factor				Mass (kg) (approx.)	
d_2	D_1	*b*	*k*	d_{amin}	d_{amax}	D_{amin}	D_{amax}	r_{amax}	*e*	Y_1	Y_2	Y_0	*CA*	*CAK*
1414	1510	22.3	12	1342	1406	1517	1578	5	0.15	4.54	6.75	4.43	1175	-
1446	1585	22.3	12	1347	1438	1594	1693	6	0.20	3.31	4.92	3.23	2510	-
1446	1585	22.3	12	1347	1438	1594	1693	6	0.20	3.31	4.92	3.23	2500	-
1485	1662	40	25	1358	1475	1677	1812	10	0.25	2.66	3.96	2.60	4478	-
1450	1554	22.3	12	1377	1442	1561	1623	6	0.16	4.11	6.12	4.02	1459	-
1450	1554	22.3	12	1377	1442	1561	1623	6	0.16	4.11	6.12	4.02	1469	-
1528	1682	22.3	12	1432	1520	1689	1788	8	0.20	3.35	4.99	3.28	2920	-
1559	1693	22.3	12	1482	1552	1700	1778	8	0.19	3.56	5.30	3.48	2407	-
1608	1711	24	12	1527	1600	1722	1793	6	0.14	4.67	6.96	4.57	1717	-
1755	1939	22.3	12	1633	1746	1947	2067	8	0.19	3.59	5.34	3.51	4300	-
1923	2070	30	16	1833	1912	2081	2147	8	0.14	4.82	7.18	4.71	2920	-
1923	2070	30	16	1833	1912	2081	2147	8	0.14	4.82	7.18	4.71	2847	-
2402	2601	40	25	2289	2393	2614	2711	10	0.11	6.18	9.20	6.04	4606	-
1414	1510	22.3	12	1342	1406	1517	1578	5	0.15	4.54	6.75	4.43	1175	-
1446	1585	22.3	12	1347	1438	1594	1693	6	0.20	3.31	4.92	3.23	2510	-
1446	1585	22.3	12	1347	1438	1594	1693	6	0.20	3.31	4.92	3.23	2500	-
1485	1662	40	25	1358	1475	1677	1812	10	0.25	2.66	3.96	2.60	4478	-
1450	1554	22.3	12	1377	1442	1561	1623	6	0.16	4.11	6.12	4.02	1459	-
1450	1554	22.3	12	1377	1442	1561	1623	6	0.16	4.11	6.12	4.02	1469	-
1528	1682	22.3	12	1432	1520	1689	1788	8	0.20	3.35	4.99	3.28	2920	-

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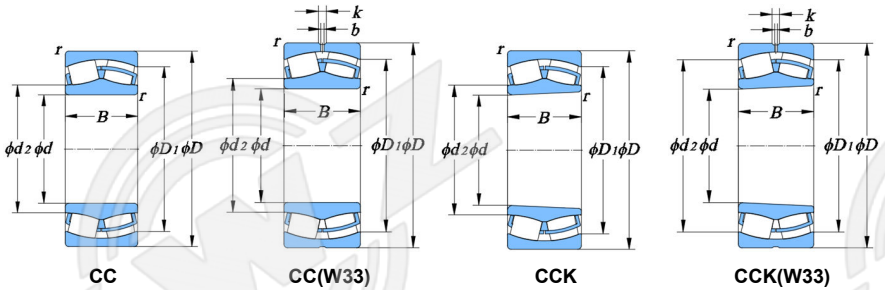
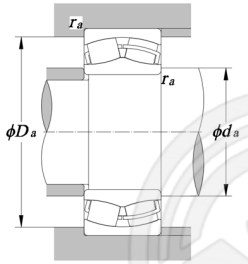
d 45～140mm



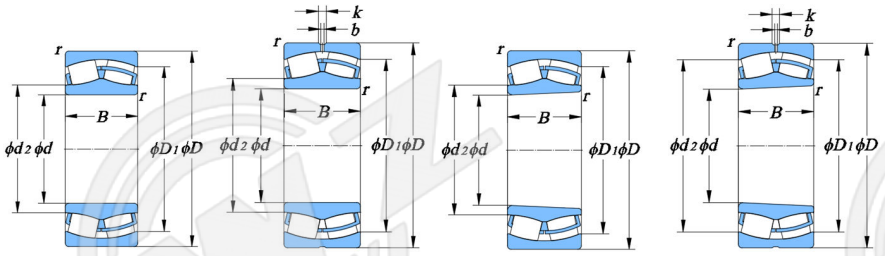
CC　CC(W33)　CCK　CCK(W33)



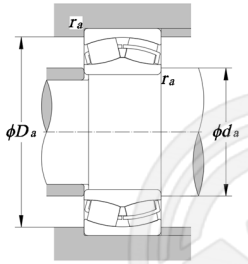
Principal dimensions(mm)				Basic load ratings (kN)		Limiting speeds (r/min)		Designations			Designations	Other dimensions (mm)				Abutment and fillet dimensions (mm)			Factor				Mass (kg)
d	*D*	*B*	r_{min}	C_r	C_{or}	Grease	Oil	*CC*	*CC/W33*	*CCK*	*CCK/W33*	d_2	D_1	*b*	*k*	d_{amin}	D_{amax}	r_{amax}	*e*	Y_1	Y_2	Y_0	(approx.)
45	100	36	1.5	186	160	3800	4800	22309CC	22309CC/W33	22309CCK	22309CCK/W33	57.6	82.5	5.5	3	54	91	1.5	0.37	1.80	2.70	1.80	1.37
50	90	23	1.1	114	100	5000	6300	22210CC	22210CC/W33	22210CCK	22210CCK/W33	60	79.2	5.5	3	57	83	1	0.24	2.80	4.20	2.80	0.608
55	100	25	1.5	134	118	4500	5600	22211CC	22211CC/W33	22211CCK	22211CCK/W33	66	88.1	5.5	3	64	91	1.5	0.24	2.80	4.20	2.80	0.776
60	110	28	1.5	155	146	4000	5000	22212CC	22212CC/W33	22212CCK	22212CCK/W33	72.7	96.6	5.5	3	69	101	1.5	0.24	2.8	4.20	2.80	1.10
	130	46	2.1	310	280	3000	3800	22312CC	22312CC/W33	22312CCK	22312CCK/W33	74.9	109	8.3	4.5	72	118	2	0.35	1.9	2.90	1.80	2.85
65	140	48	2.1	340	300	2600	3400	22313CC	22313CC/W33	22313CCK	22313CCK/W33	82	118	8.3	4.5	77	128	2	0.35	1.90	2.90	1.80	3.46
70	125	31	1.5	200	186	3600	4500	22214CC	22214CC/W33	22214CCK	22214CCK/W33	84.6	111	8.3	4.5	79	116	1.5	0.23	2.90	4.40	2.80	1.59
	150	51	2.1	410	380	2400	3200	22314CC	22314CC/W33	22314CCK	22314CCK/W33	88	127	8.3	4.5	82	138	2	0.35	1.90	2.90	1.80	4.26
75	130	31	1.5	210	208	3400	4300	22215CC	22215CC/W33	22215CCK	22215CCK/W33	89.7	116	5.5	3	84	121	1.5	0.22	3.00	4.60	2.80	1.68
	160	55	2.1	460	430	2200	3000	22315CC	22315CC/W33	22315CCK	22315CCK/W33	94.2	134	8.3	4.5	87	148	2	0.35	1.90	2.90	1.80	5.30
80	140	33	2	235	228	3200	4000	22216CC	22216CC/W33	22216CCK	22216CCK/W33	95.1	124	5.5	3	90	130	2	0.22	3.00	4.60	2.80	2.11
	170	58	2.1	500	455	2000	2800	22316CC	22316CC/W33	22316CCK	22316CCK/W33	100	144	8.3	4.5	92	158	2	0.35	1.90	2.90	1.80	6.16
85	150	36	2	280	270	3000	3800	22217CC	22217CC/W33	22217CCK	22217CCK/W33	100	132	5.5	3	95	140	2	0.22	3.00	4.60	2.80	2.67
	180	60	3	560	520	1900	2600	22317CC	22317CC/W33	22317CCK	22317CCK/W33	106	154	8.3	4.5	99	166	2.5	0.33	2.00	3.00	2.00	7.18
90	160	52.4	2	410	440	1900	2600	23218CC	23218CC/W33	23218CCK	23218CCK/W33	106	138	5.5	3	100	150	2	0.31	2.20	3.30	2.20	4.42
	190	64	3	640	610	1800	2400	22318CC	22318CC/W33	22318CCK	22318CCK/W33	112	160	11.1	6	104	176	2.5	0.35	1.90	2.90	1.80	8.62
95	170	43	2.1	380	375	2400	3200	22219CC	22219CC/W33	22219CCK	22219CCK/W33	113	149	8.3	4.5	107	158	2	0.24	2.80	4.20	2.80	4.07
	200	67	3	700	670	1800	2400	22319CC	22319CC/W33	22319CCK	22319CCK/W33	118	168	11.1	6	109	186	2.5	0.35	1.90	2.90	1.80	9.85
100	165	52	2	430	490	2000	2800	23120CC	23120CC/W33	23120CCK	23120CCK/W33	115	145	5.5	3	110	155	2	0.3	2.30	3.40	2.20	4.35
	180	46	2.1	410	415	2200	3000	22220CC	22220CC/W33	22220CCK	22220CCK/W33	120	157	8.3	4.5	112	168	2	0.24	2.80	4.20	2.80	4.95
	180	60.3	2.1	550	600	1700	2200	23220CC	23220CC/W33	23220CCK	23220CCK/W33	117	153	8.3	4.5	112	168	2	0.33	2.00	3.00	2.00	6.55
	215	73	3	820	800	1700	2200	22320CC	22320CC/W33	22320CCK	22320CCK/W33	125	180	11.1	6	114	201	2.5	0.35	1.90	2.90	1.80	12.6
110	170	45	2	360	440	2200	3000	23022CC	23022CC/W33	23022CCK	23022CCK/W33	125	152	5.5	3	120	160	2	0.23	2.90	4.40	2.80	3.65
	180	56	2	500	585	1900	2600	23122CC	23122CC/W33	23122CCK	23122CCK/W33	126	157	8.3	4.5	120	170	2	0.30	2.30	3.40	2.20	5.47
	200	53	2.1	550	560	2000	2800	22222CC	22222CC/W33	22222CCK	22222CCK/W33	132	173	8.3	4.5	122	188	2	0.25	2.70	4.00	2.50	7.14
	240	80	3	950	965	1600	2000	22322CC	22322CC/W33	22322CCK	22322CCK/W33	140	200	13.9	7.5	124	226	2.5	0.35	1.90	2.90	1.80	17.7
120	180	46	2	355	510	2000	2800	23024CC	23024CC/W33	23024CCK	23024CCK/W33	136	164	5.5	3	130	170	2	0.22	3.00	4.60	2.80	3.92
	180	60	2	440	670	1780	2200	24024CC	24024CC/W33	24024CCK	24024CCK/W33	133	158	5.5	3	130	170	2	0.31	2.20	3.30	2.20	5.53
	200	62	2	600	695	1800	2400	23124CC	23124CC/W33	23124CCK	23124CCK/W33	139	173	8.3	4.5	130	190	2	0.28	2.40	3.60	2.50	7.63
	200	80	2	770	950	900	1200	24124CC	24124CC/W33	24124CCK30	24124CCK30/W33	135	169	5.5	3	130	190	2	0.37	1.80	2.70	1.80	9.93
	215	58	2.1	620	670	1900	2600	22224CC	22224CC/W33	22224CCK	22224CCK/W33	143	186	11.1	6	132	203	2	0.25	2.70	4.00	2.50	8.85
	215	76	2.1	695	930	1500	1900	23224CC	23224CC/W33	23224CCK	23224CCK/W33	141	183	8.3	4.5	132	203	2	0.35	1.90	2.90	1.80	11.9
	260	86	3	1130	1120	1400	1800	22324CC	22324CC/W33	22324CCK	22324CCK/W33	152	216	13.9	7.5	134	246	2.5	0.35	1.90	2.90	1.80	22.1
130	210	64	2	650	780	1700	2200	23126CC	23126CC/W33	23126CCK	23126CCK/W33	148	184	8.3	4.5	140	200	2	0.28	2.40	3.60	2.50	8.41
	230	64	3	730	800	1800	2400	22226CC	22226CC/W33	22226CCK	22226CCK/W33	153	200	11.1	6	144	216	2.5	0.26	2.60	3.90	2.50	11.2
	230	80	3	930	1060	1300	1700	23226CC	23226CC/W33	23226CCK	23226CCK/W33	152	196	8.3	4.5	144	216	2.5	0.33	2.00	3.00	2.00	13.9
	280	93	4	1310	1320	1300	1700	22326CC	22326CC/W33	22326CCK	22326CCK/W33	164	233	16.7	9	148	262	3	0.35	1.90	2.90	1.80	27.5
140	225	68	2.1	730	900	1600	2000	23128CC	23128CC/W33	23128CCK	23128CCK/W33	159	196	8.3	4.5	152	213	2	0.28	2.40	3.60	2.50	10.3
	250	68	3	820	900	1700	2200	22228CC	22228CC/W33	22228CCK	22228CCK/W33	166	216	11.1	6	154	236	2.5	0.26	2.60	3.90	2.50	13.8

ZWZ

d 140～300mm

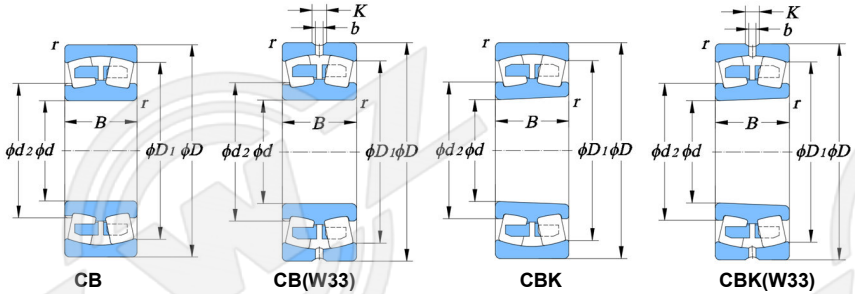


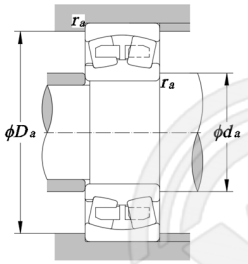
CC　CC(W33)　CCK　CCK(W33)



Principal dimensions(mm)				Basic load ratings (kN)		Limiting speeds (r/min)		Designations			Designations	Other dimensions (mm)				Abutment and fillet dimensions (mm)			Factor				Mass (kg) (approx.)
d	*D*	*B*	r_{min}	C_r	C_{or}	Grease	Oil	*CC*	*CC/W33*	*CCK*	*CCK/W33*	d_2	D_1	*b*	*k*	d_{amin}	D_{amax}	r_{amax}	*e*	Y_1	Y_2	Y_0	
140	250	88	3	940	1250	1300	1600	23228CC	23228CC/W33	23228CCK	23228CCK/W33	164	211	11.1	6	154	236	2.5	0.33	2.00	3.00	2.00	18.1
	300	102	4	1520	1560	1100	1500	22328CC	22328CC/W33	22328CCK	22328CCK/W33	175	247	16.7	9	158	282	3	0.35	1.90	2.90	1.80	35.2
150	225	56	2.1	590	750	1700	2200	23030CC	23030CC/W33	23030CCK	23030CCK/W33	169	203	8.3	4.5	162	213	2	0.22	3.00	4.60	2.80	7.58
	225	75	2.1	670	1040	1344	1632	24030CC	24030CC/W33	24030CCK	24030CCK/W33	165	197	5.5	3	161	214	2	0.30	2.30	3.40	2.20	10.3
	250	80	2.1	970	1200	1400	1800	23130CC	23130CC/W33	23130CCK	23130CCK/W33	173	216	11.1	6	162	238	2	0.30	2.30	3.40	2.20	15.4
	250	100	2.1	940	1578	1260	1530	24130CC	24130CC/W33	24130CCK	24130CCK/W33	170	209	14	8	158	242	2	0.37	1.83	2.72	1.79	19.6
	270	73	3	960	1080	1600	2000	22230CC	22230CC/W33	22230CCK	22230CCK/W33	179	234	13.9	7.5	164	256	2.5	0.26	2.60	3.90	2.50	17.6
	320	108	4	1700	1760	1000	1400	22330CC	22330CC/W33	22330CCK	22330CCK/W33	189	267	16.7	9	168	302	3	0.35	1.90	2.90	1.80	41.3
160	240	60	2.1	760	880	1700	2200	23032CC	23032CC/W33	23032CCK	23032CCK/W33	181	217	11.1	6	172	228	2	0.22	3.00	4.60	2.80	9.17
	270	86	2.1	1130	1370	1300	1700	23132CC	23132CC/W33	23132CCK	23132CCK/W33	185	234	13.9	7.5	172	258	2	0.30	2.30	3.40	2.20	19.6
	270	109	2.1	1400	1760	700	900	24132CC	24132CC/W33	24132CCK30	24132CCK30/W33	181	228	8.3	4.5	172	258	2	0.4	1.70	2.50	1.60	24.8
	290	80	3	1160	1290	1500	1900	22232CC	22232CC/W33	22232CCK	22232CCK/W33	191	250	13.9	7.5	174	276	2.5	0.26	2.60	3.90	2.50	22.7
	340	114	4	1850	1960	950	1300	22332CC	22332CC/W33	22332CCK	22332CCK/W33	201	282	16.7	9	178	322	3	0.35	1.90	2.90	1.80	49.3
170	260	67	2.1	830	1060	1600	2000	23034CC	23034CC/W33	23034CCK	23034CCK/W33	192	232	11.1	6	182	248	2	0.23	2.90	4.40	2.80	12.7
	280	88	2.1	1210	1500	1200	1600	23134CC	23134CC/W33	23134CCK	23134CCK/W33	195	244	13.9	7.5	182	268	2	0.30	2.30	3.40	2.20	21.3
	310	86	4	1310	1460	1300	1700	22234CC	22234CC/W33	22234CCK	22234CCK/W33	204	267	16.7	9	188	292	3	0.27	2.50	3.70	2.50	27.9
	360	120	4	2080	2160	950	1300	22334CC	22334CC/W33	22334CCK	22334CCK/W33	213	300	16.7	9	188	342	3	0.33	2.00	3.00	2.00	58.8
180	280	74	2.1	970	1250	1400	1800	23036CC	23036CC/W33	23036CCK	23036CCK/W33	204	248	13.9	7.5	192	268	2	0.24	2.80	4.20	2.80	16.3
	280	96	3	1020	1845	1100	1300	24036CC	24036CC/W33	24036CCK	24036CCK/W33	201	242	14	8	188	272	2	0.33	2.05	3.05	2	22.4
	300	96	3	1420	1760	1100	1500	23136CC	23136CC/W33	23136CCK	23136CCK/W33	207	259	13.9	7.5	194	286	2.5	0.3	2.3	3.4	2.2	27.3
	300	118	3	1310	2272	990	1200	24136CC	24136CC/W33	24136CCK	24136CCK/W33	204	252	16	10	190	290	2.5	0.37	1.83	2.73	1.79	33.2
	320	86	4	1350	1560	1300	1700	22236CC	22236CC/W33	22236CCK	22236CCK/W33	214	277	16.7	9	198	302	3	0.26	2.6	3.9	2.5	29.1
	380	126	4	2330	2450	900	1200	22336CC	22336CC/W33	22336CCK	22336CCK/W33	224	317	22.3	12	198	362	3	0.35	1.9	2.9	1.8	67.9
190	290	75	2.1	1010	1340	1300	1700	23038CC	23038CC/W33	23038CCK	23038CCK/W33	216	260	13.9	7.5	202	278	2	0.23	2.9	4.4	2.8	17.5
	340	92	4	1490	1700	1200	1600	22238CC	22238CC/W33	22238CCK	22238CCK/W33	226	294	16.7	9	208	322	3	0.19	3.6	5.3	3.6	35.3
	340	120	4	1960	2400	850	1100	23238CC	23238CC/W33	23238CCK	23238CCK/W33	223	287	16.7	9	208	322	3	0.35	1.9	2.9	1.8	46.2
	400	132	5	2520	2650	850	1100	22338CC	22338CC/W33	22338CCK	22338CCK/W33	237	333	22.3	12	212	378	4	0.35	1.9	2.9	1.8	79.0
	320	128	3	1500	2543	930	1130	24138CC	24138CC/W33	24138CCK	24138CCK/W33	214	268	20	12	200	310	2.5	0.38	1.76	2.62	1.72	40.8
200	360	98	4	1700	1930	1100	1500	22240CC	22240CC/W33	22240CCK	22240CCK/W33	238	312	16.7	9	218	342	3	0.26	2.6	3.9	2.5	42.2
	420	138	5	2720	2900	850	1100	22340CC	22340CC/W33	22340CCK	22340CCK/W33	249	351	22.3	12	222	398	4	0.33	2	3	2	91.0
	340	140	3	1710	2772	860	1045	24140CC	24140CC/W33	24140CCK	24140CCK/W33	226	284	20	12	210	330	2.5	0.395	1.71	2.55	1.67	50.6
220	370	150	4	2410	3350	500	630	24144CC	24144CC/W33	24144CCK30	24144CCK30/W33	248	310	11.1	6	238	352	3	0.4	1.7	2.5	1.6	64.5
	400	144	4	2710	3450	750	950	23244CC	23244CC/W33	23244CCK	23244CCK/W33	260	338	16.7	9	238	382	3	0.35	1.9	2.9	1.8	79.2
240	360	92	3	1480	2080	1000	1400	23048CC	23048CC/W33	23048CCK	23048CCK/W33	271	325	13.9	7.5	254	346	2.5	0.23	2.9	4.4	2.8	31.9
	360	118	3	1810	2700	800	1000	24048CC	24048CC/W33	24048CCK30	24048CCK30/W33	265	316	11.1	6	254	346	2.5	0.3	2.3	3.4	2.2	41.8
	400	128	4	2340	3200	850	1100	23148CC	23148CC/W33	23148CCK	23148CCK/W33	277	347	16.7	9	258	382	3	0.3	2.3	3.4	2.2	64.2
	400	160	4	2750	3900	480	600	24148CC	24148CC/W33	24148CCK30	24148CCK30/W33	271	337	11.1	6	258	382	3	0.4	1.7	2.5	1.6	80.4
280	420	140	4	2450	3800	670	850	24056CC	24056CC/W33	24056CCK30	24056CCK30/W33	309	368	11.1	6	298	402	3	0.31	2.2	3.3	2.2	68.0
300	420	90	3	1570	2500	950	1300	23960CC	23960CC/W33	23960CCK	23960CCK/W33	333	385	11.1	6	314	406	2.5	0.19	3.6	5.3	3.6	38.1

d 65～600mm



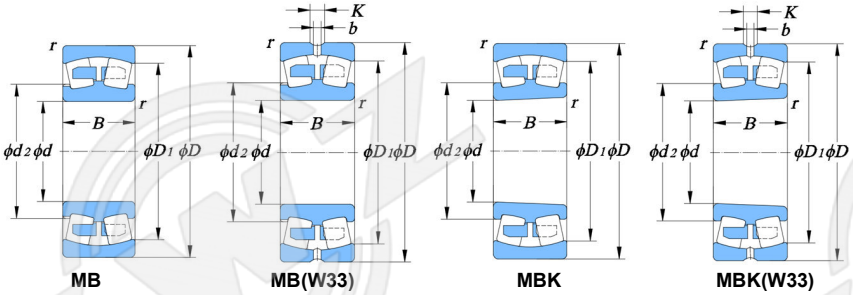


Principal dimensions(mm)				Basic load ratings (kN)		Limiting speeds (r/min)		Designations		
d	*D*	*B*	r_{min}	C_r	C_{or}	Grease	Oil	*CB*	*CBK*	*CBK30*
65	100	35	1.1	110	166	3800	4800	**24013CB**	-	-
75	115	40	1.1	159	248	2900	3500	**24015CB**	-	-
80	140	33	2	176	229	2500	3000	**22216CB**	-	-
90	150	72	2	319	494	1900	2600	**24118X2CB**	-	-
	160	52.4	2	316	444	1900	2600	**23218CB**	-	-
95	170	43	2.1	293	395	2400	3200	**22219CB**	-	-
100	170	65	3	410	637	2000	2400	**20620CB/YB4**	-	-
	180	46	2	316	434	1700	2200	-	**22220CBK/YB4**	-
	180	60.3	2.1	402	571	1700	2200	**23220CB/YB4**	-	-
110	170	60	2	360	609	1700	2200	**24022CBQ1/YB4**	-	-
	180	56	2	378	586	1700	2200	**23122CB/YB4**	-	-
	180	69	2	430	694	1700	2200	**24122CB**	-	-
120	180	60	2	380	667	1600	2000	**24024CB**	-	-
	200	80	2	573	943	1600	2000	**24124CB/YB4**	-	-
	200	62	2	455	700	1600	2000	**23124CB**	-	-
130	200	69	2	477	825	1800	2400	**24026CB**	-	-
	210	80	2	591	998	1600	2100	**24126CB/YB4**	-	-
	230	64	3	545	773	1800	2400	-	**22226CBK/YB4**	-
140	210	69	2	507	930	1800	2400	**24028CB**	-	-
150	225	75	2.1	642	1190	1700	2200	**24030CB/YB4**	-	-
160	240	80	2.1	652	1240	1100	1500	**24032CB**	-	-
190	320	128	3	1300	2230	900	1100	**24138CB**	-	-
220	460	180	5	2610	4020	630	750	**23344**	-	-
240	440	160	4	2320	3820	670	850	**23248Q1**	-	-
300	500	200	5	3030	5660	600	750	**24160Q1**	-	-
320	540	218	5	3510	6540	340	430	**24164+MT24164**	-	-
340	580	243	5	4150	7900	320	400	-	-	**24168CBK30**
600	870	200	6	5170	11080	220	280	-	**230/600CBK**	-

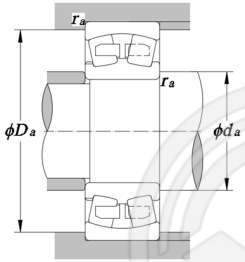
Other dimensions(mm)				Abutment and fillet dimensions(mm)					Factor				Mass(kg) (approx.)	
d_2	D_1	*b*	*k*	d_{amin}	d_{amax}	D_{amin}	D_{amax}	r_{amax}	*e*	Y_1	Y_2	Y_0	*CB*	*CBK*
73	92			70	72	93	95	1.1	0.3	2.25	3.34	2.2	0.966	-
88	101	5.5	3	80	85	103	110	1.1	0.33	2.03	3.02	1.98	1.48	-
100	123	5.5	2.5	87	98	125	133	2	0.25	2.69	4	2.63	2.21	-
104	128	5.4	3	98	101	131	142	2	0.39	1.71	2.54	1.67	5.00	-
111	137	9	5	98	107	140	152	2	0.33	2.03	3.02	1.98	4.50	-
120	149	8.4	4.5	104	116	152	161	2	0.26	2.64	3.93	2.58	4.29	-
122	143			111	118	146	159	2.5	0.39	1.75	2.61	1.71	6.70	-
126	156	8.3	4.5	108	123	159	172	2	0.26	2.58	3.84	2.52	-	5.06
125	153	9	5	109	121	157	171	2	0.35	1.95	2.9	1.91	6.44	-
130	149	8	4	118	126	152	162	2	0.34	1.99	2.96	1.94	5.02	-
132	157	8.4	4.5	118	129	160	172	2	0.31	2.21	3.29	2.16	5.69	-
131	156	12	6	118	128	159	172	2	0.36	1.85	2.76	1.81	6.95	-
138	160	10	5	128	136	163	172	2	0.32	2.14	3.18	2.09	5.53	-
142	169	10	6	128	139	172	192	2	0.39	1.72	2.56	1.68	10.2	-
146	175	9	5	128	142	179	192	2	0.31	2.17	3.24	2.12	7.97	-
151	175	10	5	138	148	177	192	2	0.34	2.01	3	1.97	7.76	-
152	179	10	6	138	149	183	202	2	0.37	1.8	2.69	1.76	10.8	-
161	201	10	4.5	141	158	204	219	2.5	0.28	2.38	3.55	2.33	-	11.1
160	184	10	5	148	157	187	202	2	0.32	2.12	3.15	2.07	8.51	-
171	199	10	5	159	167	203	216	2	0.32	2.09	3.11	2.04	10.8	-
184	210	10	5	169	180	214	231	2	0.31	2.15	3.21	2.11	12.9	-
227	272	11.1	6	201	223	276	309	2.5	0.39	1.71	2.54	1.67	41.7	-
295	374	22.3	10	237	290	381	443	4	0.41	1.64	2.44	1.6	146	-
299	369	22.3	8	254	295	374	426	3	0.38	1.79	2.67	1.75	109	-
356	425	13.9	6	317	349	432	483	4	0.39	1.71	2.54	1.67	160	-
377	454	19.5	8	337	372	460	523	4	0.42	1.62	2.42	1.59	260	-
408	486	22.3	10	357	401	491	563	4	0.41	1.64	2.45	1.61	-	262
685	792	22.3	9	621	679	798	849	5	0.22	3.07	4.56	3	-	392

ZWZ

d 80～150mm



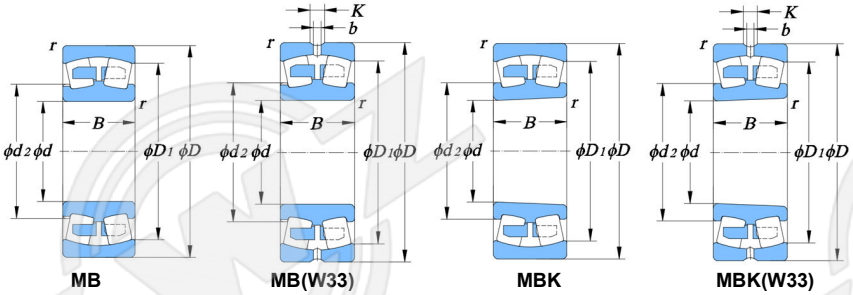
MB　MB(W33)　MBK　MBK(W33)

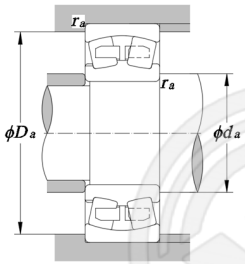


Principal dimensions(mm)				Basic load ratings(kN)		Limiting speeds (r/min)		Designations			Other dimensions(mm)				Abutment and fillet dimensions(mm)					Factor				Mass(kg) (approx.)	
d	*D*	*B*	r_{min}	C_r	C_{or}	Grease	Oil	*MB*	*MBK*	*MBK30*	d_2	D_1	*b*	*k*	d_{amin}	d_{amax}	D_{amin}	D_{amax}	r_{amax}	*e*	Y_1	Y_2	Y_0	*MB*	*MBK*
80	170	58	2.1	362	442	2200	2700	22316MB	-	-	108	142	8.3	4	89	105	146	161	2	0.37	1.83	2.73	1.79	6.49	-
85	150	36	2	217	286	2400	2900	22217MB	22217MBK	-	106	132	6.5	3	93	104	134	142	2	0.25	2.75	4.09	2.69	2.79	2.73
90	160	40	2	253	340	2200	2700	22218MB	22218MBK	-	113	139	8.3	4	98	111	142	152	2	0.25	2.66	3.96	2.6	3.54	3.47
	190	64	3	468	594	2000	2400	22318MB/YB24	-	-	121	159	8.3	5	101	116	164	179	2.5	0.36	1.88	2.8	1.84	8.78	-
100	180	46	2	316	434	2000	2400	22220MB	22220MBK	-	126	156	8.3	4.5	108	123	159	172	2	0.26	2.58	3.84	2.52	5.18	5.06
	215	73	3	595	742	1700	2100	22320MB/YB24	-	-	134	180	11.1	5	111	131	183	204	2.5	0.37	1.85	2.75	1.8	12.8	-
	215	73	3	595	742	1700	2100	22320MB/YB4	-	-	134	180	11.1	5	111	131	183	204	2.5	0.37	1.85	2.75	1.8	12.8	-
	165	52	2	311	473	2100	2600	23120MB	-	-	121	144	5.5	3	108	118	148	157	2	0.31	2.17	3.24	2.12	4.46	-
	180	60.3	2.1	402	571	2000	2400	23220MB	23220MBK	-	125	153	9.5	4	109	121	157	171	2	0.35	1.95	2.9	1.91	6.76	6.57
110	200	53	2.1	422	570	1800	2100	22222MB	22222MBK	-	139	174	8.3	4	119	136	178	191	2	0.27	2.46	3.67	2.41	7.38	7.22
	240	80	3	683	882	1500	1900	22322MB	22322MBK	-	150	198	13.9	6	121	145	202	229	2.5	0.37	1.8	2.69	1.76	17.9	17.5
	170	45	2	284	447	2000	2400	23022MB	-	-	129	151	5.5	3	118	125	154	162	2	0.26	2.61	3.88	2.55	3.80	-
	200	69.8	2.1	493	744	1800	2100	23222MB	23222MBK	-	139	169	12	5	119	136	173	191	2	0.35	1.95	2.9	1.91	9.54	9.29
	180	69	2	430	694	1900	2300	24122MB	-	-	131	156	5.5	2.5	118	128	159	172	2	0.36	1.85	2.76	1.81	6.95	-
120	215	58	2.1	480	661	1600	2000	22224MB	22224MBK	-	150	188	11.1	6	129	147	192	206	2	0.28	2.42	3.6	2.36	9.18	8.97
	260	86	3	774	999	1400	1700	22324MB	-	-	164	216	13.9	6	131	159	220	249	2.5	0.36	1.86	2.77	1.82	21.8	-
	180	46	2	306	504	1800	2200	23024MB	-	-	140	162	5.5	3	128	136	166	172	2	0.24	2.76	4.11	2.7	4.19	-
	200	62	2	455	700	1700	2100	23124MB	-	-	146	175	8.3	4.5	128	142	179	192	2	0.31	2.17	3.24	2.12	7.84	-
	215	76	2.1	599	892	1600	2000	23224MB	23224MBK	-	148	182	11.1	5	129	145	186	206	2	0.36	1.9	2.83	1.86	11.9	11.6
	180	60	2	380	667	1800	2200	24024MB	-	-	138	160	5.5	3	128	136	163	172	2	0.32	2.14	3.18	2.09	5.53	-
	200	80	2	573	943	1700	2100	24124MB	-	-	142	169	6	3	128	139	172	192	2	0.39	1.72	2.56	1.68	10.2	-
130	230	64	3	544	770	1500	1800	22226MB	22226MBK	-	161	201	11.1	4.5	141	158	204	219	2.5	0.28	2.38	3.55	2.33	11.4	11.1
	280	93	4	953	1230	1300	1500	22326MB	22326MBK	-	174	235	16.7	6	144	171	237	266	3	0.36	1.89	2.81	1.84	27.8	26.6
	200	52	2	372	671	1700	2000	23026MB	-	-	155	176	9.5	4	138	152	180	192	2	0.25	2.72	4.05	2.66	6.28	-
	230	80	3	652	987	1500	1800	23226MB	23226MBK	-	159	195	8.3	5	141	155	198	219	2.5	0.34	1.98	2.94	1.93	14.9	13.9
	200	69	2	477	825	1700	2000	24026MB	-	-	151	175	5.5	3	138	148	177	192	2	0.34	2.01	3	1.97	7.76	-
	210	80	2	591	998	1600	1900	24126MB	-	-	152	179	8.4	4	138	149	183	202	2	0.37	1.8	2.69	1.76	10.8	-
140	250	68	3	673	940	1400	1600	22228MB	22228MBK	-	173	219	11.1	5	151	170	223	239	2.5	0.27	2.47	3.67	2.41	14.3	13.9
	300	102	4	1100	1450	1200	1400	22328MB/YB4	-	-	186	252	16.7	7	154	181	257	286	3	0.37	1.85	2.75	1.8	34.3	-
	210	53	2	403	677	1500	1900	23028MB	-	-	162	188	8.3	4.5	148	160	192	202	2	0.24	2.78	4.14	2.72	5.67	-
	225	68	2.1	538	875	1500	1800	23128MB	-	-	168	198	11.1	5	149	165	202	216	2	0.3	2.28	3.39	2.23	10.5	-
	250	88	3	819	1190	1400	1600	23228MB	23228MBK	-	172	216	11.1	6	151	168	220	239	2.5	0.36	1.87	2.79	1.83	18.2	17.7
140	210	69	2	507	930	1500	1900	24028MB	-	24028MBK30	160	184	5.5	3	148	157	187	202	2	0.32	2.12	3.15	2.07	8.51	8.38
150	270	73	3	725	1050	1200	1500	22230MB	22230MBK	-	189	234	13.9	6	161	185	238	259	2.5	0.28	2.45	3.65	2.4	18.2	17.8
	320	108	4	1210	1610	1100	1300	22330MB/YB4	-	-	203	267	16.7	7	164	199	272	306	3	0.36	1.86	2.77	1.82	41.7	-
	225	56	2.1	475	823	1400	1700	23030MB	-	-	175	202	8.3	4.5	159	171	206	216	2	0.24	2.84	4.23	2.78	7.86	-
	250	80	2.1	735	1190	1300	1600	23130MB	-	-	182	218	11.1	5	159	178	221	241	2	0.31	2.14	3.19	2.1	16.1	-
	270	96	3	905	1390	1200	1500	23230MB	-	-	186	228	11.1	6	161	183	232	259	2.5	0.36	1.87	2.78	1.83	24.0	-

ZWZ

d 150～220mm

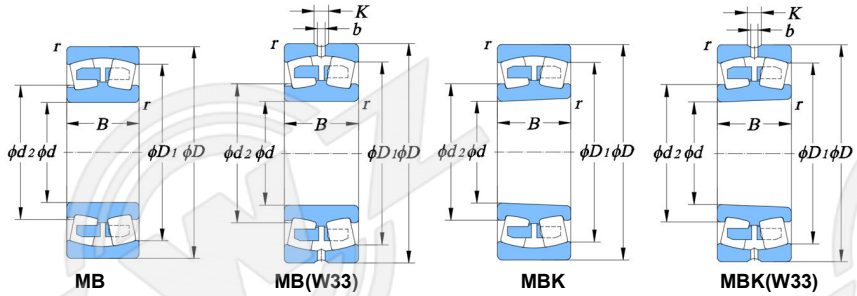




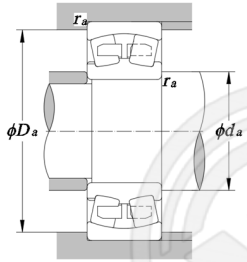
Principal dimensions(mm)				Basic load ratings (kN)		Limiting speeds (r/min)		Designations		
d	*D*	*B*	r_{min}	C_r	C_{or}	Grease	Oil	*MB*	*MBK*	*MBK30*
150	225	75	2.1	589	1090	1400	1700	24030MB	-	24030MBK30
	250	100	2.1	840	1420	1300	1600	24130MB	-	-
160	290	80	3	841	1210	1100	1400	22232MB	22232MBK	-
	340	114	4	1350	1810	960	1200	22332MB	22332MBK	-
	240	60	2.1	549	941	1300	1600	23032MB	-	-
	270	86	2.1	857	1360	1200	1500	23132MB	-	-
	290	104	3	1070	1700	1100	1400	23232MB	23232MBK	-
160	240	80	2.1	652	1240	1300	1600	24032MB	-	24032MBK30
	270	109	2.1	975	1640	1200	1500	24132MB	-	-
170	310	86	4	958	1400	1100	1300	22234MB	22234MBK	-
	360	120	4	1500	2030	890	1100	22334MB	-	-
	260	67	2.1	629	1070	1200	1500	23034MB	-	-
	310	110	4	1190	1850	1100	1300	23234MB	23234MBK	-
170	260	90	2.1	785	1430	1200	1500	24034MB	-	24034MBK30
180	320	86	4	995	1490	960	1200	22236MB	22236MBK	-
	380	126	4	1660	2340	830	1100	22336MB	-	-
	280	74	2.1	736	1290	1100	1300	23036MB	-	-
	320	112	4	1260	2020	960	1200	23236MB	-	-
180	280	100	2.1	920	1670	1100	1300	24036MB	-	24036MBK30
	300	118	3	1220	2120	1100	1300	24136MB	-	-
190	340	92	4	1130	1660	890	1100	22238MB	22238MBK	-
	400	132	5	1790	2470	770	940	22338MB	22338MBK	-
	290	75	2.1	784	1390	1100	1300	23038MB	-	-
	320	104	3	1140	1890	940	1200	23138MB	-	-
	340	120	4	1370	2200	890	1100	23238MB/YB4	-	-
200	360	98	4	1160	1710	830	1100	22240MB	-	-
	420	138	5	1940	2690	720	880	22340MB	-	-
	310	82	2.1	896	1570	940	1200	23040MB	23040MBK	-
	340	112	3	1300	2160	870	1100	23140MB	-	-
	360	128	4	1550	2500	830	1100	23240MB	23240MBK	-
200	310	109	2.1	1110	2080	940	1200	24040MB	-	24040MBK30
	340	140	3	1500	2600	870	1100	24140MB	-	-
220	400	108	4	1570	2410	720	880	22244MB	-	-
	460	145	5	2230	3200	640	780	22344MB	22344MBK	-
	340	90	3	1060	1890	830	1100	23044MB	23044MBK	-
	370	120	4	1530	2610	770	940	23144MB	23144MBK	-
	400	144	4	1920	3120	720	880	23244MB	-	-
	300	60	2.1	638	1230	910	1200	23944MB	-	-

Other dimensions(mm)				Abutment and fillet dimensions(mm)					Factor				Mass(kg) (approx.)	
d_2	D_1	*b*	*k*	d_{amin}	d_{amax}	D_{amin}	D_{amax}	r_{amax}	*e*	Y_1	Y_2	Y_0	*MB*	*MBK*
172	197	5.5	3	159	168	200	216	2	0.32	2.14	3.18	2.09	10.6	10.4
179	212	8.3	4.5	159	176	216	241	2	0.39	1.74	2.59	1.7	19.8	-
200	251	13.9	5	171	196	255	279	2.5	0.28	2.38	3.55	2.33	23.1	22.6
215	285	16.7	7	174	211	290	326	3	0.36	1.88	2.8	1.84	49.9	48.8
186	216	10	4.5	169	182	220	231	2	0.24	2.83	4.21	2.76	9.58	-
194	235	13.9	6	169	190	239	261	2	0.31	2.14	3.19	2.1	20.1	-
198	245	13.9	7	171	194	250	279	2.5	0.37	1.83	2.72	1.79	30.6	29.7
184	210	10	4.5	169	180	214	231	2	0.31	2.15	3.21	2.11	12.9	12.7
190	228	8.3	4	169	186	232	261	2	0.4	1.7	2.54	1.67	25.4	-
215	268	16.7	6	184	211	272	296	3	0.28	2.37	3.53	2.32	28.7	28.1
227	303	16.7	7	184	223	308	346	3	0.36	1.9	2.82	1.85	58.3	-
198	233	11.1	5	179	195	236	251	2	0.25	2.72	4.05	2.66	13.0	-
212	261	13.9	7	184	207	265	296	3	0.36	1.85	2.76	1.81	37.0	36.0
198	228	8.3	4	179	195	231	251	2	0.33	2.06	3.07	2.02	17.5	17.2
225	279	16.7	6	194	221	282	306	3	0.27	2.48	3.69	2.42	30.1	29.4
242	316	22.3	8	195	238	322	365	3	0.35	1.92	2.86	1.88	69.1	-
213	249	11.1	6	189	210	253	271	2	0.26	2.64	3.93	2.58	17.2	-
221	271	13.9	7	194	217	276	306	3	0.36	1.89	2.81	1.84	39.5	-
210	243	8.3	4	189	206	248	271	2	0.34	1.96	2.93	1.92	22.9	22.7
216	252	11.1	6	191	212	261	289	2.5	0.39	1.74	2.59	1.7	33.6	-
236	296	16.7	6	204	232	301	326	3	0.28	2.45	3.65	2.4	36.6	35.9
253	334	22.3	8	207	249	341	383	4	0.36	1.89	2.81	1.84	79.7	78.0
223	260	13.9	6	199	220	264	281	2	0.25	2.74	4.08	2.68	18.0	-
231	277	13.9	7	201	227	281	309	2.5	0.33	2.07	3.09	2.03	34.6	-
234	290	16.5	10	204	231	293	326	3	0.36	1.9	2.82	1.85	46.9	-
250	312	16.7	6	214	246	317	346	3	0.28	2.39	3.56	2.34	42.6	-
268	352	22.2	8	217	264	359	403	4	0.35	1.91	2.85	1.87	91.9	-
236	277	13.9	7.5	209	232	280	301	2	0.26	2.63	3.92	2.57	19.9	19.3
243	293	16.7	7	211	239	297	329	2.5	0.33	2.06	3.06	2.01	42.0	-
248	305	16.7	8	214	244	308	346	3	0.36	1.87	2.79	1.83	56.7	55.0
232	268	11.1	5	209	228	273	301	2	0.34	2	2.97	1.95	30.6	30.6
240	287	11.1	6	211	236	292	329	2.5	0.41	1.66	2.47	1.62	52.0	-
275	345	16.7	8	234	271	350	386	3	0.28	2.4	3.58	2.35	61.3	-
294	385	22.3	12	237	290	391	443	4	0.34	1.99	2.96	1.94	116	113
260	303	13.9	6	231	256	308	329	2.5	0.25	2.66	3.96	2.6	30.5	29.6
267	321	16.7	7	234	263	326	356	3	0.32	2.09	3.11	2.04	53.4	53.4
274	335	16.7	9	234	270	338	386	3	0.37	1.8	2.69	1.76	80.3	-
246	278	8.3	4	229	243	281	291	2	0.18	3.66	5.46	3.58	12.4	-

d 220～1600mm

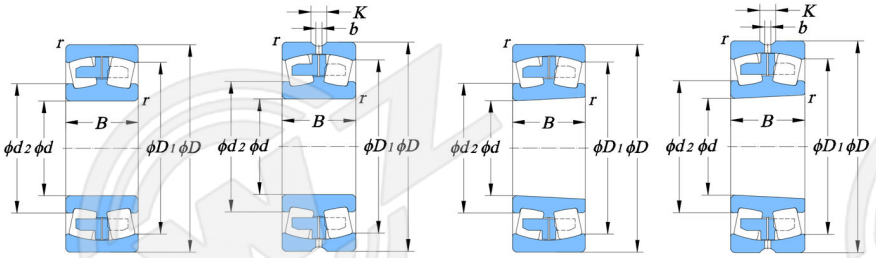


MB　MB(W33)　MBK　MBK(W33)

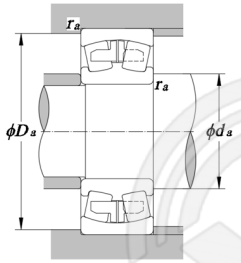


Principal dimensions(mm)				Basic load ratings(kN)		Limiting speeds (r/min)		Designations			Other dimensions(mm)				Abutment and fillet dimensions(mm)						Factor				Mass(kg) (approx.)	
d	*D*	*B*	r_{min}	C_r	C_{or}	Grease	Oil	*MB*	*MBK*	*MBK30*	d_2	D_1	*b*	*k*	d_{amin}	d_{amax}	D_{amin}	D_{amax}	r_{amax}	*e*	Y_1	Y_2	Y_0	*MB*	*MBK*
220	340	118	3	1410	2600	830	1100	24044MB	-	24044MBK30	252	297	11.1	5	231	249	301	329	2.5	0.34	2	2.98	1.96	39.4	38.8
	370	150	4	1840	3260	770	940	24144MB/YB4	-	24144MBK30/YB4	261	311	11.1	6	234	258	316	356	3	0.4	1.68	2.5	1.64	65.1	64.1
240	500	155	5	2540	3680	570	690	22348MB	22348MBK	-	320	419	22.3	12	257	313	425	483	4	0.33	2.03	3.02	1.98	147	144
	360	92	3	1130	2080	750	910	23048MB	23048MBK	-	278	323	13.9	6	251	274	327	349	2.5	0.25	2.72	4.05	2.66	33.3	32.2
	440	160	4	2320	3820	640	780	23248MB	23248MBK	-	299	369	22.3	8	254	295	374	426	3	0.38	1.79	2.67	1.75	109	106
	360	118	3	1370	2670	750	910	24048MB	-	24048MBK30	277	318	11.1	5	251	273	323	349	2.5	0.31	2.17	3.24	2.12	42.4	41.7
	400	160	4	2040	3710	690	840	24148MB	-	-	285	340	11.1	6	254	281	346	386	3	0.39	1.74	2.59	1.7	81.0	-
260	480	130	5	2170	3370	570	690	22252MB	-	-	329	415	22.3	12	277	324	420	463	4	0.28	2.4	3.58	2.35	106	-
	540	165	6	2910	4270	520	630	22352MB	22352MBK	-	348	454	22.3	8	281	341	461	519	5	0.33	2.06	3.07	2.02	184	180
	400	104	4	1450	2650	670	810	23052MB	-	-	304	358	16.7	7	274	299	363	386	3	0.25	2.69	4	2.63	41.3	-
	440	144	4	2110	3660	620	750	23152MB	-	-	315	380	16.7	9	274	311	385	426	3	0.33	2.06	3.06	2.01	91.7	-
	480	174	5	2780	4640	570	690	23252MB	-	-	325	405	22.3	8	277	319	411	463	4	0.37	1.82	2.7	1.78	138	-
	400	140	4	1750	3370	670	810	24052MB	-	-	302	348	11.1	6	274	298	355	386	3	0.33	2.03	3.02	1.98	64.3	-
	440	180	4	2440	4420	620	750	24152MB	-	-	309	370	13.9	8	274	305	377	426	3	0.4	1.68	2.5	1.64	112	-
280	580	175	6	3520	5310	470	570	22356MB	22356MBK	-	372	486	22.3	12	301	365	492	559	5	0.32	2.08	3.1	2.04	226	221
	420	106	4	1500	2880	620	750	23056MB	-	-	325	376	16.7	7	294	321	381	406	3	0.24	2.77	4.12	2.71	53.0	-
	460	146	5	2190	3910	570	690	23156MB	-	-	337	401	16.7	8	297	332	407	443	4	0.32	2.12	3.15	2.07	99.1	-
	500	176	5	2920	5020	530	650	23256MB	-	-	346	424	22.3	8	297	339	431	483	4	0.36	1.9	2.83	1.86	151	-
	380	75	2.1	860	1890	670	810	23956MB	-	-	315	349	12	6	289	312	353	371	2	0.18	3.77	5.62	3.69	25.6	-
	420	140	4	1840	3680	620	750	24056MB	-	24056MBK30	321	369	11.1	6	294	317	374	406	3	0.32	2.12	3.15	2.07	68.7	67.5
300	540	140	5	2560	4060	480	580	22260MB	-	-	374	468	22.3	8	317	369	474	523	4	0.27	2.53	3.77	2.47	141	-
	460	118	4	1840	3480	550	670	23060MB	-	-	351	410	16.7	8	314	347	415	446	3	0.24	2.76	4.11	2.7	72.9	-
	500	160	5	2650	4760	520	630	23160MB	-	-	360	434	16.7	9	317	355	438	483	4	0.33	2.07	3.09	2.03	131	-
	540	192	5	3280	5610	480	580	23260MB	-	-	370	456	22.3	10	317	363	462	523	4	0.36	1.87	2.79	1.83	193	-
	500	200	5	3030	5660	520	630	24160MB	-	-	356	425	13.9	6	317	349	432	483	4	0.39	1.71	2.54	1.67	160	-
320	580	208	5	3800	6550	440	530	23264MB	23264MBK	-	397	490	22.3	10	337	390	497	563	4	0.36	1.85	2.76	1.81	246	242
340	620	224	6	4360	7590	400	480	23268MB	23268MBK	-	424	524	22.3	12	361	417	530	599	5	0.37	1.83	2.72	1.78	300	291
380	620	194	5	3880	7340	370	450	23176MB	23176MBK	-	455	541	22	8	397	448	547	603	4	0.31	2.18	3.24	2.13	237	232
400	720	256	6	5600	9980	320	390	23280MB	23280MBK	-	498	608	36	16	421	491	614	699	5	0.36	1.87	2.79	1.83	458	446
	650	250	6	4890	9780	350	420	-	-	24180MBK30	478	560	22.3	12	421	471	567	629	5	0.37	1.83	2.72	1.78	-	322
420	700	224	6	5060	9610	320	390	23184MB	-	-	497	605	22.3	12	441	490	612	679	5	0.32	2.12	3.15	2.07	355	-
	700	280	6	5590	10740	320	390	-	-	24184MBK30	495	599	22.3	12	441	488	605	679	5	0.4	1.7	2.54	1.67	-	424
460	760	240	7.5	5530	11100	280	340	23192MB	-	-	558	656	36	16	486	551	662	734	6	0.31	2.17	3.24	2.12	450	-
	760	300	7.5	6610	13570	280	340	24192MB	-	24192MBK30	545	646	36	16	486	539	653	734	6	0.38	1.77	2.63	1.73	549	541
480	870	310	7.5	8290	15030	240	300	23296MB	-	-	597	735	22.3	12	506	590	742	844	6	0.37	1.85	2.75	1.81	813	-
530	710	136	5	2970	6650	280	340	239/530MB	-	-	584	660	22.3	10	547	578	666	693	4	0.17	3.95	5.88	3.86	151	-
1600	2200	450	12	26550	70170	-	-	206/1600MBF3	-	-	1780	2025	36	16	1639	1771	2038	2161	10	0.19	3.62	5.39	3.54	5142	-

d 80～190mm



VB　VB(W33)　VBK　VBK(W33)

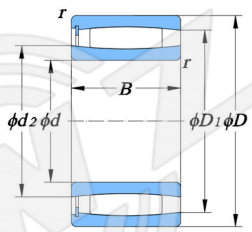


Principal dimensions(mm)				Basic load ratings (kN)		Limiting speeds (r/min)		Designations	
d	*D*	*B*	r_{min}	C_r	C_{or}	Grease	Oil	*VB*	*VBK*
80	170	58	2.1	383	475	2000	2800	**22316/VB**	-
85	180	60	3	380	458	1900	2600	**22317Q1/VB**	-
90	190	64	3	450	570	1800	2400	**22318/VB**	-
95	200	67	3	491	601	1800	2400	**22319Q1/VB**	-
100	215	73	3	563	713	1800	2400	**22320Q1/VB**	-
110	240	80	3	683	882	1600	2000	**22322Q1/VB**	-
120	260	86	3	774	999	1400	1800	**22324/VB**	-
	260	86	3	774	999	1400	1800	**22324Q1/VB**	-
130	230	64	3	533	751	1800	2400	-	**22226KQ1/VB**
	280	93	4	966	1290	1300	1700	**22326/VB**	-
140	300	102	4	1080	1460	1200	1600	**22328Q1/VB**	-
	300	118	4	1140	1570	1100	1500	**23328Q1/VB**	-
150	320	108	4	1240	1710	1100	1500	**22330Q1/VB**	-
160	290	80	3	823	1200	1500	1900	-	**22232KQ1/VB**
	340	114	4	1330	1810	950	1300	**22332Q1/VB**	-
	340	136	4	1370	1970	950	1300	**23332Q1/VB**	-
170	360	120	4	1570	2270	1300	1700	**22334Q1/VB**	-
	360	136	4	1710	2540	800	1000	**23334X2Q1/VB**	-
190	340	120	4	1360	2190	850	1100	-	**23238KQ1/VB**

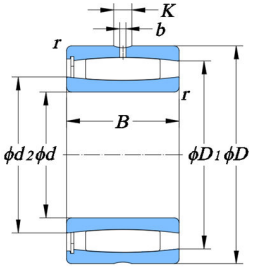
Other dimensions(mm)				Abutment and fillet dimensions(mm)					Factor					Mass (kg) (approx.)
d_2	D_1	*b*	*k*	d_{amin}	d_{amax}	D_{amin}	D_{amax}	r_{amax}	*e*	Y_1	Y_2	Y_0	*VB*	*VBK*
110	142	-	-	89	106	146	161	2	0.37	1.8	2.69	1.76	6.24	-
114	151	8.3	4	96	109	155	169	2.5	0.37	1.82	2.71	1.78	7.59	-
123	159	8.3	5	101	120	164	179	2.5	0.37	1.83	2.72	1.79	8.49	-
125	168	8.3	5	106	121	172	189	2.5	0.37	1.84	2.74	1.8	10.3	-
135	179	11.1	5	111	130	183	204	2.5	0.37	1.8	2.69	1.76	13.5	-
150	198	13.9	5	121	145	202	229	2.5	0.37	1.8	2.69	1.76	18.9	-
164	216	13.9	6	131	159	220	249	2.5	0.36	1.86	2.77	1.82	22.3	-
164	216	13.9	6	131	159	220	249	2.5	0.36	1.86	2.77	1.82	22.9	-
161	201	11.1	6	141	156	203	219	2.5	0.3	2.28	3.39	2.23	-	11.2
176	233	16.7	6	144	172	235	266	3	0.36	1.87	2.79	1.83	28.8	-
186	247	16.7	9	154	181	251	286	3	0.37	1.8	2.69	1.76	37.0	-
189	247	16.7	9	154	184	251	286	3	0.42	1.62	2.42	1.59	41.8	-
203	265	16.7	7	164	198	270	306	3	0.37	1.84	2.74	1.8	44.5	-
201	250	13.9	5	171	197	254	279	2.5	0.29	2.35	3.5	2.3	-	22.5
216	284	16.7	7	174	211	289	326	3	0.36	1.88	2.8	1.84	52.0	-
217	280	22	8	174	212	285	326	3	0.41	1.64	2.44	1.6	60.6	-
228	297	16.7	7	184	224	302	346	3	0.39	1.74	2.59	1.7	61.7	-
226	292	22.3	12	184	221	297	346	3	0.41	1.66	2.47	1.62	69.0	-
238	291	16.7	9	204	234	294	326	3	0.35	1.91	2.85	1.87	-	48.0

ZWZ

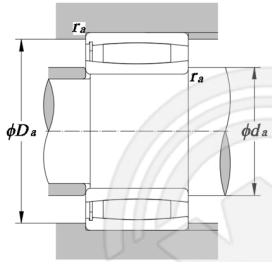
d 75～220mm



SDB



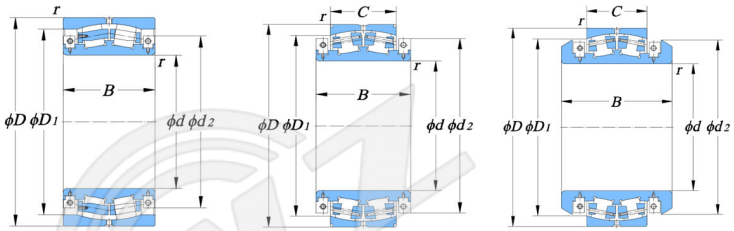
SDB(W33)



Principal dimensions(mm)				Basic load ratings (kN)		Limiting speeds (r/min)	Designations	Other dimensions(mm)				Abutment and fillet dimensions(mm)					Mass(kg) (approx.)
d	*D*	*B*	r_{min}	C_r	C_{or}			d_2	D_1	*b*	*k*	d_{amin}	d_{amax}	D_{amin}	D_{amax}	r_{amax}	
75	105	40	1	181	340	1800	**SDB5915V/HG2YAD**	83	96	-	-	80	81	97	100	1	1.07
	105	40	1	181	340	1800	**SDB5915V/YAD**	83	96	-	-	80	81	97	100	1	1.07
	105	54	1	182	342	130	**SDB6915V-2RS/HG2**	83	97	-	-	79	81	98	101	1	1.36
	105	54	1	182	342	1800	**SDB6915V/HG2C9**	83	97	-	-	79	81	98	101	1	1.35
85	120	46	1.1	220	388	1500	**SDB5917V/YAD**	95	111	-	-	90	93	113	115	1.1	1.52
90	125	46	1.1	203	419	1500	**SDB5918V/C9**	102	115	-	-	95	100	117	120	1.1	1.71
	125	46	1.1	203	419	100	**SDB5918V-2RS/C9**	102	115	-	-	95	100	117	120	1.1	1.71
100	150	50	1.5	330	580	1300	**SDB4020V/HG2W33AYAD**	112	136	10	5	106	110	138	144	1.5	3.05
	150	50	1.5	330	580	1300	**SDB4020V/W33AYAB4**	112	136	10	5	106	110	138	144	1.5	3.05
	150	67	1.5	423	798	1000	**SDB5020V/C9YA7**	115	138	-	-	106	112	140	144	1.5	4.09
	165	52	2	427	672	1200	**SDB3120V/HG2OIYB4**	119	150	-	-	107	116	152	158	2	4.45
110	180	69	2	596	1020	900	**SDB4122V**	132	166	-	-	117	130	168	173	2	7.02
120	180	60	2	471	909	1000	**SDB4024V/HG2C9**	140	167	-	-	127	138	169	173	2	5.48
	180	60	2	471	909	1000	**SDB4024V/HG2W33A**	140	167	10	5	127	138	169	173	2	5.45
	180	60	2	476	903	1000	**SDB4024V/W33YAD**	139	164	10	5	127	137	166	173	2	5.44
130	200	69	2	641	1160	800	**SDB4026V/HG2YAD**	149	183	-	-	138	146	184	192	2	8.04
	200	69	2	641	1160	800	**SDB4026V/YAD**	149	183	-	-	138	146	184	192	2	8.04
150	225	75	2.1	695	1350	700	**SDB4030V/C9**	173	206	-	-	159	170	208	216	2	10.4
160	240	80	2.1	802	1520	600	**SDB4032V/HG2W33AYAD**	180	220	11	4	169	177	222	231	2	12.6
170	280	109	2.1	1350	2350	270	**SDB4134V**	200	255	-	-	179	196	257	271	2	26.3
220	340	90	3	1170	2100	2100	**SDB3044/C9**	257	311	-	-	231	254	314	329	2.5	29.1

ZWZ

d 110～1320mm



Principal dimensions(mm)					Basic load ratings(kN)		Designations
d	*D*	*B*	*C*	r_{min}	C_r	C_{or}	
110	180	69	82	2	479	797	**24122X2D/HG2YB2-TC**
	180	69	82	2	479	797	**24122X2D-TC**
120	215	76	98	2.1	633	990	**23224X2D/HG2OIYB2-PMP**
	215	76	98	2.1	633	990	**23224X2D/HG2YB2-TC**
	215	76	98	2.1	633	990	**23224X2D-TC**
	220	83	95	2.1	686	1040	**23224X3D/CC**
280	500	260	176	5	2720	4610	**23256D**
300	500	160	160	5	1680	2840	**23160D**
420	620	150	150	5	1990	3670	**23084D**
460	720	270	167	6	3740	7200	**23092X3D**
530	780	265	185	6	4050	8210	**230/530D**
	870	475	335	7.5	7530	14700	**241/530D**
628	920	340	232	5	5360	11200	**230/628D/YA8**
630	820	340	240	6	4480	12100	**249/630X3D/HCC3H**
	820	340	240	6	4480	12100	**249/630X3D/HCC3HYA8**
	920	340	232	5	5360	11200	**230/630D/YA8**
710	950	330	180	6	4330	9970	**239/710D**
750	1090	340	250	7.5	7120	15200	**230/750D**
800	1060	370	258	6	6020	15300	**249/800D**
	1060	370	258	7.5	6020	15300	**249/800D/HA13YAD**
	1150	358	258	7.5	7530	16700	**230/800D**
	1150	540	258	7.5	7530	16700	**230/800WD**
850	1220	455	365	7.5	11200	26600	**240/850D**
	1220	540	365	7.5	11200	26600	**240/850WBD**
	1220	660	365	7.5	11200	26600	**240/850WD**
884	1320	478	365	9.5	10800	27000	**240/884D/HC**
900	1270	478	365	9.5	9660	26200	**240/900X3D**
	1270	470	365	9.5	9660	26200	**240/900X3D-1**
	1270	470	365	9.5	9660	26200	**240/900X3D-2**
	1270	470	365	9.5	9660	26200	**240/900X3D-3**
	1280	498	375	9.5	9660	26200	**240/900X2D/HC**
	1320	478	365	9.5	10700	25400	**240/900X3D/HCC9-2**
950	1360	420	300	7.5	10400	23700	**230/950D**
	1360	640	300	5	10400	23700	**230/950D-1**
	1360	542	412	7.5	12700	30500	**240/950D**
1000	1420	556	412	7.5	13900	36000	**240/1000D**
1060	1400	475	335	7.5	10600	28700	**249/1060D**
	1500	585	438	9.5	15800	41200	**240/1060D**
	1500	611.5	438	9.5	15800	41200	**240/1060D-1**
	1500	575	438	9.5	15800	41200	**240/1060D-2**
1180	1540	500	355	7.5	11700	31700	**249/1180D**
1250	1750	700	500	9.5	17900	44700	**240/1250D**
1320	1720	580	400	7.5	14400	41000	**249/1320D**

Other dimensions(mm)				Abutment and fillet dimensions(mm)					Factor			Mass(kg)
d_2	D_1	*b*	*k*	d_{amin}	d_{amax}	D_{amin}	D_{amax}	r_{amax}	*e*	Y_1	Y_2	Y_0	(approx.)
130	147	-	-	118	127	151	172	2	0.39	1.74	2.59	1.7	7.81
130	147	-	-	118	127	151	172	2	0.39	1.74	2.59	1.7	7.81
150	171	-	-	129	147	175	206	2	0.37	1.85	2.75	1.8	14.2
150	171	-	-	129	147	175	206	2	0.37	1.85	2.75	1.8	14.2
150	171	-	-	129	147	175	206	2	0.37	1.85	2.75	1.8	14.2
150	179	-	-	129	147	182	211	2	0.39	1.73	2.57	1.69	15.2
339	420	22.3	8	297	335	426	483	4	0.35	1.92	2.86	1.88	192
360	437	16.7	8	317	356	444	483	4	0.21	3.29	4.89	3.21	132
475	560	22.3	8	437	471	567	603	4	0.16	4.32	6.43	4.22	158
536	642	22.3	12	481	531	649	699	5	0.23	2.96	4.4	2.89	372
592	705	22.3	12	551	585	711	759	5	0.21	3.2	4.77	3.13	389
604	738	22.3	12	556	597	744	844	6	0.38	1.78	2.65	1.74	973
680	828	35	20	645	673	834	894	4	0.23	2.95	4.4	2.89	818
675	745	24	12	651	670	751	799	5	0.27	2.47	3.67	2.41	413
675	745	24	12	651	670	751	799	5	0.27	2.47	3.67	2.41	407
680	828	35	20	647	673	834	894	4	0.23	2.95	4.4	2.89	812
777	882	22.3	12	731	770	889	929	5	0.18	3.72	5.54	3.64	609
839	992	20	12	776	832	1003	1064	6	0.2	3.3	4.91	3.23	961
872	978	23.5	12	821	865	985	1039	5	0.21	3.2	4.77	3.13	819
872	978	23.5	16	837	865	985	1034	6	0.21	3.2	4.77	3.13	819
886	1044	20	12	826	879	1055	1124	6	0.2	3.42	5.09	3.34	1090
900	1044	20	12	826	894	1055	1124	6	0.2	3.42	5.09	3.34	1370
915	1092	27	18	877	907	1107	1193	6	0.27	2.5	3.72	2.45	1650
915	1092	27	18	877	907	1107	1193	6	0.27	2.5	3.72	2.45	1780
929	1092	27	18	889	922	1107	1193	6	0.27	2.5	3.72	2.45	1930
1018	1159	22	18	916	1010	1174	1288	8	0.25	2.75	4.09	2.69	2460
1010	1130	22	18	932	1002	1145	1238	8	0.25	2.74	4.08	2.68	1970
1010	1130	22	18	932	1002	1145	1238	8	0.25	2.74	4.08	2.68	1970
1010	1130	22	18	932	1002	1145	1238	8	0.25	2.74	4.08	2.68	1970
1010	1130	22	18	932	1002	1145	1238	8	0.25	2.74	4.08	2.68	1880
1010	1130	22	18	932	1002	1145	1248	8	0.25	2.74	4.08	2.68	2060
1030	1178	22	18	932	1022	1193	1288	8	0.24	2.84	4.23	2.78	2050
1056	1235	27	18	1012	1048	1249	1333	6	0.2	3.42	5.09	3.34	1960
1050	1235	27	18	962	1043	1249	1333	4	0.2	3.42	5.09	3.34	2340
1062	1220	40	20	977	1054	1235	1333	6	0.26	2.6	3.87	2.54	2310
1109	1274	22	18	1027	1101	1289	1393	6	0.25	2.69	4	2.63	2630
1141	1286	34	18	1087	1133	1295	1373	6	0.22	3.05	4.54	2.98	1780
1180	1345	22	18	1092	1172	1360	1468	8	0.25	2.69	4	2.63	3080
1180	1345	22	18	1092	1172	1360	1468	8	0.25	2.69	4	2.63	3090
1164	1345	22	18	1092	1156	1360	1468	8	0.25	2.69	4	2.63	3350
1274	1428	22.3	18	1207	1266	1443	1513	6	0.2	3.42	5.09	3.34	2250
1408	1590	50	24	1282	1400	1605	1718	8	0.24	2.76	4.11	2.7	4610
1434	1590	35	20	1347	1426	1605	1693	6	0.2	3.42	5.09	3.34	3190

Tapered Roller Bearings

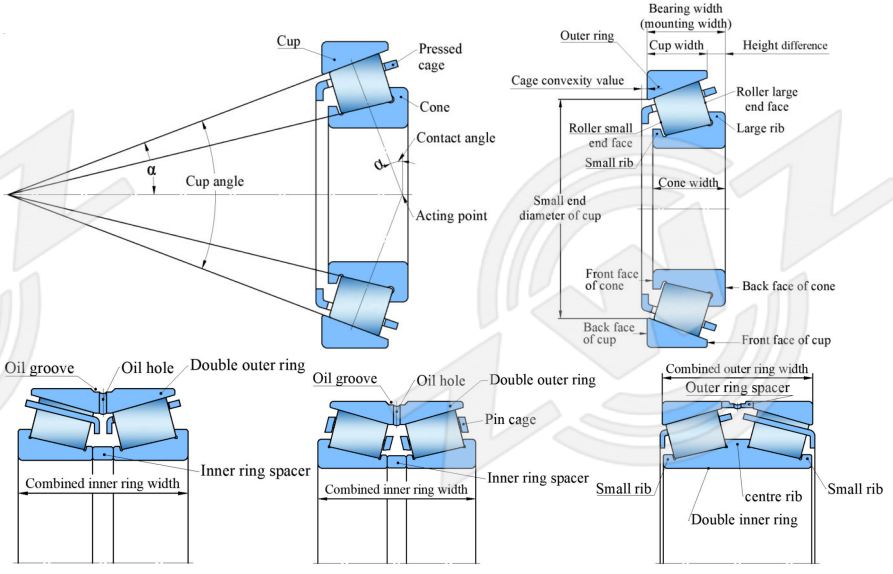
●Tapered roller bearings

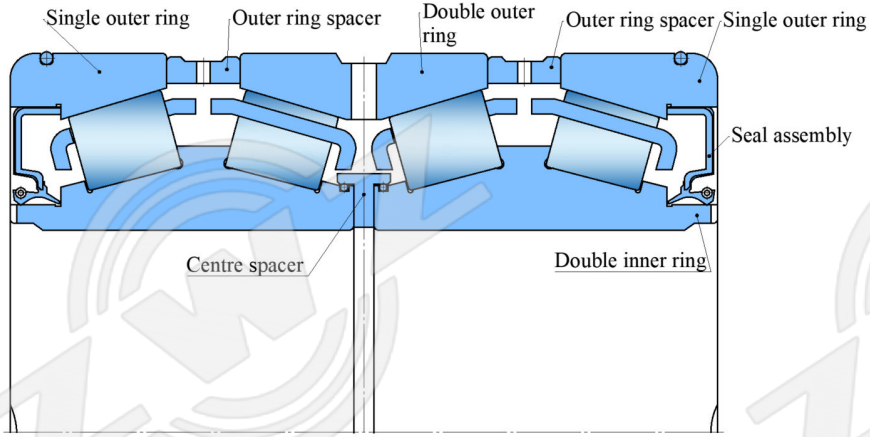
■ Product characteristics

Tapered roller bearings have tapered inner and outer rings, with tapered rollers positioned between the raceways. If the tapered surfaces are extended, they will converge at a point on the bearing axis. Tapered roller bearings are primarily used to withstand radial and axial combined loads predominantly based on radial loads. The axial load-carrying capacity of the bearing is determined by the contact angle; the larger the contact angle, the greater the axial load-carrying capacity. Tapered roller bearings are separable bearings, with the inner assembly composed of rollers and cage, allowing separate installation from the outer ring.

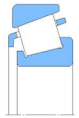
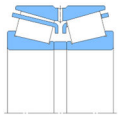
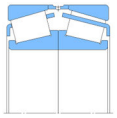
These bearings can limit axial displacement on one side of the shaft or housing and prevent any inclination between the shaft and the housing bore. Under radial loads, additional axial forces may arise, thus, typically, the outer and inner rings of the bearing should be installed with their respective end faces in opposition in the two supports of the bearing.

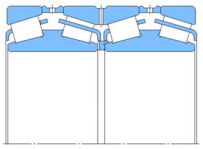
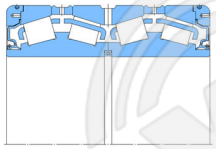
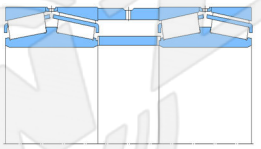
These bearings find applications in various fields such as automotive front and rear wheels, transmissions, differentials, small gear shafts, machine tool spindles, construction machinery, large agricultural machinery, gear reduction units in railway vehicles, and small reduction units in rolling mill rolls.





■ Product structural types

Main structural types of the tapered roller bearings					
Classification	Single-row tapered roller bearings	Dual-row tapered roller bearings		Matched dual-row tapered roller bearings	
Structure	——	**TDI** type	**TDO** type	**DF** type	**DB** type
Figure					
Inner diameter (mm)	17～2560	72～900	30～1600	34～857	34～900
Outer diameter (mm)	40～3200	120～1260	70～1850	65～1200	65～1180
Width (mm)	12～310	54～530	38～406	36～620	39～350
Load capacity	Radial loads and single-direction axial loads	● Radial loads and double-direction axial loads, as well as torque, can be accommodated simultaneously. The DB type has a larger distance between the points of action, thus enabling it to withstand greater torque. ● The type without a spacer (indicated by the postfix "D") only accommodates axial loads.			
Description	Under radial loads, axial component force is generated, thus often used in pairs.	● Bearings pre-set with spacers provide the required clearance, eliminating the need for further adjustment during use, making them convenient. ● The DF type dual-row tapered roller bearings offer a tapered bore variant structure, matching with the roller neck taper, suitable for applications requiring interference fit but frequent disassembly.			

Main structural types of the tapered roller bearings			
Classification	Four-row tapered roller bearings		Matched four-row tapered roller bearings
Structure	——	Fully sealed	——
Figure			
Inner diameter (mm)	110～1007	200～1001	180～1001
Outer diameter (mm)	166～1360	282～1220	210～1220
Width (mm)	57～880	177～840	186～840
Load capacity	Radial loads and double-direction axial loads		
Description	● The performance is essentially the same as that of dual-row tapered roller bearings, but it can withstand greater radial loads and has a slightly lower limit speed. It is mainly used in heavy machinery, such as rolling mills. ● **ZWZ** offers various fully sealed solutions, as shown in the dimensions table.		

■ Basic information

Precision	**ZWZ** metric tapered roller bearings are available in standard, P6X, P6, P5, and P4 precision grades. Inch tapered roller bearings are available in standard, CL2, CL3, CL0, and CL00 precision grades. Tolerance values can be found in the preface table.
Allowed angle error	For tapered roller bearings, any misalignment between the shaft and the housing bore should not exceed 2'.
Cage type	Tapered roller bearings are generally manufactured from pressed steel with basket cages. For larger sizes, machined solid pillar cages are also used. When the bearing outer diameter $D \leq 650$mm, a pressed steel cage is used, and no suffix is added to the cage. When the bearing outer diameter $D > 650$mm, a solid steel pillar cage is used, and no suffix is added to the cage.
Radial clearance	Single-row tapered roller bearings only exhibit clearance upon installation, which can be determined once adjusted with another bearing positioned in the opposite direction. The radial clearance for dual-row and four-row tapered roller bearings can be found in the preface table.

Equivalent radial load **(The calculation coefficients *e*, *Y*, Y_1, Y_2, and Y_0 are listed in the bearing dimensions table)**	**Single-row**	
	Dynamic equivalent load [kN]	When $F_a/F_r \leq e$ $P_r=F_r$ When $F_a/F_r > e$ $P_r=0.4F_r+YF_a$
	Static equivalent load [kN]	$P_{0r}=0.5F_r+Y_0F_a$ If $P_{0r}<F_r$ take $P_{0r}=F_r$
	Double-row and four-row	
	Dynamic equivalent load [kN]	When $Fa/Fr \leqslant e$ $P_r=F_r+Y_1F_a$ When $F_a/F_r > e$ $P_r=0.67F_r+Y_2F_a$
	Static equivalent load [kN]	$P_{0r}=F_r+Y_0F_a$
	※ When single-row tapered roller bearings are used in pairs (with potentially different basic external dimensions), the additional axial force caused by the radial load must be included in the calculation of the bearing's dynamic equivalent load. The additional axial force S for a single-row tapered roller bearing can be approximately calculated using the following formula: $S=F_r/2Y$	

■Supplementary code

➢Prefix code

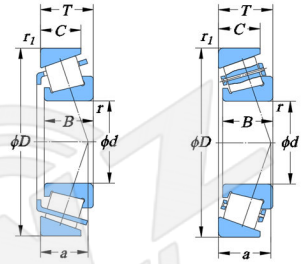
Code Name	Code description	Code Name	Code description
F	Indicating the cage for the Inch tapered roller bearings	G	In Inch tapered roller bearings, adding the prefix "G-" before the inner assembly code indicates the bearing inner spacer.
K	In Inch tapered roller bearings, the bearing rings and rolling elements, or only the rings, are made from high-carbon chromium bearing steel.	K1	In Inch tapered roller bearings, the bearing rings and rolling elements, or only the rings, are made from 100CrMo7.
K2	In Inch tapered roller bearings, the bearing rings and rolling elements, or only the rings, are made from ZGCr15.	R	In Inch tapered roller bearings, adding the prefix "R" before the bearing series code indicates the tapered roller.

➢Suffix code

Code Name	Code description	Code Name	Code description
A	For tapered roller bearings, if the contact angle α and the outer ring raceway diameter D1 do not conform to national standards, and there are two or more variations of α and D1 within the same bearing designation, these variations are denoted sequentially as A, A1, A2, and so on. Outer ring guiding	A6	For Inch tapered roller bearings, if the assembly chamfers differ from those specified by TIMKEN, and there are two or more variations within the same bearing designation, these variations are denoted as A61, A62, and so on.
B	Tapered roller bearings with increased contact angle (series with an increased angle)	C	For paired tapered roller bearings, if the axial clearance does not meet ZWZ standard requirements, the average value of the axial clearance is directly appended after the letter "C".
/CR	For paired tapered roller bearings, when there is radial clearance requirement, the average value of the radial clearance is appended after the letter "CR".	D	1. Dual-row tapered roller bearings without inner or outer spacer, with unground end faces. 2. In Inch tapered roller bearings, it indicates dual-raceway inner ring or dual-raceway outer ring.
/HA	The bearing rings, rolling elements, and cage (or just the bearing rings and rolling elements) are manufactured from vacuum-melted bearing steel.	/DBY	Two single-row tapered roller bearings for back-to-back mounting with inner spacer and no outer spacer
YBD	The same type bearing whose technique requires two changes and above.	D1	Dual-row tapered roller bearings without inner spacer, with unground end faces.
T	For paired tapered roller bearings, if the mounting higher dimensions do not meet standard requirements, the "mounting higher dimensions" is directly appended after the letter "T".	/HC	The bearing rings, rolling elements, or just the bearing rings or just the rolling elements are manufactured from carburized steel. /HC - 20Cr2Ni4A; /HC1 - 20Cr2Mn2MoA; /HC2 - 15Mn; /HC3 - G20CrMo.
-XRS	Four-row tapered roller bearings with multiple seals (two and above)	SC	With outer housing radial bearings

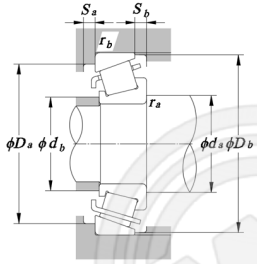
ZWZ

d 17～35mm



Pressed cage

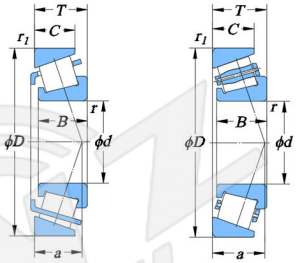
Machined cage



Principal dimensions(mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations
d	*D*	*T*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}	Grease	Oil	
17	47	15.25	14	12	1	1	32.6	27.2	9200	12000	**30303**
20	42	15	15	12	0.6	0.6	27.6	28.2	9400	12000	**32004**
	47	15	14	12	1	1	30.7	28.4	8800	12000	**30204X2/YB5**
	47	15.25	14	12	1	1	34.1	32.6	8800	12000	**30204/YA8**
	47	19.25	18	15	1	1	38.2	36.9	8800	12000	**32204**
	52	16.25	15	13	1.5	1.5	38.2	33.2	8200	11000	**30304**
	52	22.25	21	18	1.5	1.5	49.2	46.3	8200	11000	**32304**
	60	26	26	20	1.5	1.5	63.4	63.3	7500	9400	**30604**
22	40	12	12	9	0.3	0.3	16.5	20.0	9400	12000	**329/22**
25	47	15	15	11.5	0.6	0.6	30.8	34.1	8200	11000	**32005**
	47	17	17	14	0.6	0.6	35.7	42.4	8200	11000	**33005**
	52	16.25	15	13	1	1	40.6	41.6	7700	9800	**30205/YA8**
	52	19.25	18	16	1	1	45.6	46.4	7700	9800	**32205**
	52	22	22	18	1	1	51.8	55.7	7700	9800	**33205**
	62	18.25	17	15	1.5	1.5	54.1	48.1	6900	8700	**30305**
	62	18.25	17	13	1.5	1.5	46.8	45.9	6900	8700	**31305**
	62	19.25	18	15	1.5	1.5	54.1	48.1	6900	8700	**30305X2**
	62	25.25	24	20	1.5	1.5	70.7	68.3	6900	8700	**32305**
	72	28.75	27	23	1.5	1.5	88.6	89.0	6200	7900	**32306X4**
30	55	20	20	16	1	1	48.1	58.7	7100	8900	**33006**
	62	21.25	20	17	1	1	54.4	56.1	6500	8300	**32206**
	62	25	25	19.5	1	1	70.2	75.3	6500	8300	**33206**
	72	20.75	19	16	1.5	1.5	67.5	62.6	5900	7500	**30306/HA**
	72	20.75	19	14	1.5	1.5	60.0	59.7	5900	7500	**31306**
	72	20.75	19	14	1.5	1.5	56.4	51.2	5900	7500	**31306B/HA**
	72	20.75	20	14	1.5	1.5	60.0	59.7	5900	7500	**31306WB1**
	72	28.75	27	23	1.5	1.5	88.6	89.0	5900	7500	**32306**
32	53	14.5	15	10.5	0.6	0.6	26.9	31.0	7100	8900	**329/32X3**
34.925	72.233	25.4	23.5	17.9	2.4	1.5	52.5	54.2	5700	7100	**306/34X4-1/HCP6XLT2**
	72.233	25.4	23.5	17.9	2.4	1.5	52.5	54.2	5700	7100	**306/34X4-1/HCP6XLT**
	72.233	25.4	23.5	17.9	2.4	1.5	52.5	54.2	5700	7100	**306/34X4-1/P6XLT2**
	72.233	25.4	23.5	17.9	2.4	1.5	52.5	54.2	5700	7100	**306/34X4-1/P6XLT**
35	62	17	17.3	13.5	1	1	49.7	58.6	6200	7900	**32007X2**
	62	18	18	14	1	1	46.3	53.4	6200	7900	**32007**
	62	17	17	13	1	1	41.1	48.5	6200	7900	**32007X3/YA**
	62	18	18	14	3.3	1	48.2	50.5	6200	7900	**32007/YA6**
	65	18	18	14	3.5	1.2	49.5	55.8	6000	7600	**30607**
	70	24.25	22.7	18.2	1.5	1.5	76.1	82.8	5800	7300	**32207X3**
	72	18.25	17	15	1.5	1.5	56.8	56.0	5700	7200	**30207**
	72	18.25	17	15	1.5	1.5	62.4	63.4	5700	7200	**30207/YA8**
	72	24.25	23	19	1.5	1.5	74.1	78.9	5700	7200	**32207**
	72	24.25	23	19	1.5	1.5	81.4	89.4	5700	7200	**32207/YA8**

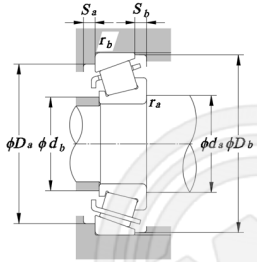
Abutment and fillet dimensions(mm)										Factor				Mass(kg) (approx.)
d_{amin}	d_{bmax}	D_{amax}	D_{amin}	D_{bmin}	$S_{a\,min}$	S_{bmin}	$r_{a\,max}$	$r_{b\,max}$	*e*	*Y*	Y_o	*a*	
25	25	41	39	42	3.5	4	1	1	0.29	2.11	1.16	10	0.129
25	25	38	35	39	3.5	3	0.6	0.6	0.37	1.60	0.88	10	0.0987
26	27	42	40	43	3.2	3	1	1	0.35	1.74	0.96	11	0.123
26	27	42	40	43	2.9	4	1	1	0.35	1.74	0.96	11	0.124
26	26	42	38	42	3.5	5	1	1	0.33	1.81	1.00	13	0.158
28	29	46	44	47	4	4	1.5	1.5	0.30	2.00	1.10	11	0.167
28	27	46	42	47	3.7	5	1.5	1.5	0.30	2.00	1.10	14	0.238
28	28	54	44	53	3.7	6	1.5	1.5	0.46	1.31	0.72	17	0.397
26	28	37	34	36	3.3	3	0.3	0.3	0.32	1.88	1.04	9	0.0644
30	29	43	39	44	4.5	4	0.6	0.6	0.43	1.39	0.77	12	0.110
30	31	43	40	44	2.9	3	0.6	0.6	0.29	2.07	1.14	11	0.129
31	31	47	44	48	3.3	4	1	1	0.37	1.60	0.88	13	0.166
31	31	47	44	49	3.7	4	1	1	0.36	1.67	0.92	14	0.199
31	30	47	43	49	3.9	4	1	1	0.35	1.71	0.94	14	0.216
33	35	56	53	57	4	4	1.5	1.5	0.30	2.00	1.10	13	0.267
33	33	56	47	58	2.5	6	1.5	1.5	0.83	0.73	0.40	20	0.263
33	35	56	53	57	3	5	1.5	1.5	0.30	2.00	1.10	13	0.275
33	34	56	51	57	3.3	6	1.5	1.5	0.30	2.00	1.10	16	0.422
33	38	66	58	65	3.3	6	1.5	1.5	0.31	1.90	1.05	19	0.601
36	36	50	47	52	3.7	4	1	1	0.29	2.06	1.13	13	0.205
36	37	57	51	57	3.7	5	1	1	0.37	1.60	0.88	16	0.285
36	36	57	51	58	3.4	6	1	1	0.34	1.76	0.97	16	0.343
38	40	66	61	65	2.6	5	1.5	1.5	0.31	1.90	1.05	15	0.397
38	38	66	54	67	3.5	7	1.5	1.5	0.83	0.73	0.40	23	0.394
38	40	66	58	66	2.8	7	1.5	1.5	0.55	1.10	0.60	19	0.370
38	38	66	54	67	2.6	7	1.5	1.5	0.83	0.73	0.40	23	0.398
38	38	66	58	65	6	6	1.5	1.5	0.31	1.90	1.05	19	0.554
37	37	49	47	49	4.7	4	0.6	0.6	0.26	2.27	1.25	10	0.115
43	40	65	51	67	4.7	8	2	1.5	0.83	0.73	0.40	28	0.444
43	40	65	51	67	4.7	8	2	1.5	0.83	0.73	0.40	28	0.445
43	40	65	51	67	4.7	8	2	1.5	0.83	0.73	0.40	28	0.444
43	40	65	51	67	4.7	8	2	1.5	0.83	0.73	0.40	28	0.445
41	40	57	52	59	4.7	4	1	1	0.45	1.32	0.73	15	0.223
41	41	57	53	59	4.7	4	1	1	0.45	1.32	0.73	15	0.222
41	41	57	52	58	4.7	4	1	1	0.44	1.35	0.74	14	0.214
46	41	57	53	56	4.7	4	2.5	1	0.31	1.90	1.05	15	0.222
46	42	60	56	60	4.7	4	3	1.1	0.38	1.59	0.88	14	0.229
43	43	64	58	65	5	7	1.5	1.5	0.37	1.60	0.88	17	0.427
43	44	66	62	66	5	4	1.5	1.5	0.37	1.60	0.88	15	0.318
43	44	66	62	66	5	4	1.5	1.5	0.37	1.60	0.88	15	0.331
43	42	66	60	67	5	6	1.5	1.5	0.37	1.60	0.88	18	0.452
43	42	66	60	67	5	6	1.5	1.5	0.37	1.60	0.88	18	0.465

d 35～45mm



Pressed cage

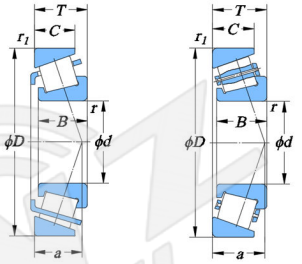
Machined cage



Principal dimensions(mm)							Basic load ratings(kN)		Limiting speeds (r/min)		Designations	Abutment and fillet dimensions(mm)										Factor			Mass(kg) (approx.)
d	*D*	*T*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}	Grease	Oil		d_{amin}	d_{bmax}	D_{amax}	D_{amin}	D_{bmin}	$S_{a\,min}$	S_{bmin}	$r_{a\,max}$	$r_{b\,max}$	*e*	*Y*	Y_o	*a*	
35	72	28	28	22	1.5	1.5	96.1	106	5700	7200	**33207**	43	41	66	60	68	4.6	6	1.5	1.5	0.35	1.70	0.93	18	0.519
	74	26	26	19	2	2	78.5	97.9	5600	7000	**306/35**	43	41	68	55	70	4.6	7	2	2	0.64	0.94	0.52	23	0.545
	80	18.25	17	15	1.5	1.5	56.8	56.0	5300	6700	**30207X1**	43	44	74	62	66	3.6	4	1.5	1.5	0.37	1.60	0.88	15	0.430
	80	22.75	21	15	2	1.5	75.2	76.1	5300	6700	**31307**	44	43	74	61	75	3	8	2	1.5	0.83	0.73	0.40	26	0.515
	80	29.15	28.5	22	2	2	98.6	106	5300	6700	**32307X2A/YAB**	44	44	73	63	77	4	8	2	2	0.55	1.10	0.60	22	0.697
	80	32.75	31	25	2	1.5	107	109	5300	6700	**32307**	44	44	74	66	73	5.5	8	2	1.5	0.31	1.90	1.05	20	0.755
	80	32.75	31	25	0.3	1.5	95.7	107	5300	6700	**32307A/HA**	39	44	74	61	74	3	8	0.3	1.5	0.47	1.27	0.70	24	0.768
	80	32.75	31	25	2	1.5	96.5	105	5300	6700	**32307B**	44	43	74	60	75	5.5	8	2	1.5	0.55	1.10	0.60	25	0.789
	89	38	38	27.5	1	1.5	129	148	4900	6200	**32307X3A/HA**	41	45	83	64	84	4	11	1	1.5	0.62	0.97	0.53	29	1.22
36.512	90	35.25	33	27	2	1.5	125	147	4800	6100	**323/36X4/YB2**	45	49	84	67	83	3	9	2	1.5	0.55	1.10	0.60	28	1.18
37	92	35.3	34	26	0.5	1.5	131	136	4700	5900	**306/37**	42	48	86	70	85	5.5	10	0.3	1.5	0.55	1.10	0.60	27	1.19
39.7	90	25.4	22	21	0.8	0.8	85.9	93.4	4700	5900	**306/39X4**	46	58	86	77	86	5.5	5	0.6	0.6	0.40	1.49	0.82	18	0.769
40	68	19	19	14.5	1	1	57.5	71.5	5600	7100	**32008**	46	47	63	59	64	4	5	1	1	0.38	1.58	0.87	15	0.297
	75	19	19	14.5	1	1	56.3	68.8	5300	6700	**32008R**	46	46	70	59	64	4	5	1	1	0.38	1.58	0.87	15	0.299
	68	19	19	14.5	1	1	57.5	71.5	5600	7100	**32008R/YA1**	46	47	63	59	64	4	5	1	1	0.38	1.58	0.87	15	0.296
	68	22	22	18	1	1	66.2	79.6	5600	7100	**33008**	46	45	63	60	64	4	4	1	1	0.28	2.12	1.17	14	0.306
	73	21	21	15.5	1	1	63.6	72.2	5400	6800	**32008X3**	46	46	68	62	68	4	6	1	1	0.43	1.38	0.76	17	0.362
	80	19.75	18	16	1.5	1.5	72.1	73.3	5100	6400	**30208**	48	49	74	68	74	4	4	1.5	1.5	0.37	1.60	0.88	17	0.432
	80	24.75	23	19	3	1.5	89.4	96.5	5100	6400	**32208**	50	48	74	67	74	5	6	2.5	1.5	0.37	1.60	0.88	19	0.561
	80	24.75	23	19	3	1.5	89.4	96.5	5100	6400	**32208/YA6**	50	48	74	67	74	5	6	2.5	1.5	0.37	1.60	0.88	19	0.561
	80	30	29	23	2	2	100	115	5100	6400	**33208X2A**	49	47	73	65	76	4	7	2	2	0.43	1.39	0.77	22	0.669
	90	25.25	23	20	2	0.5	104	107	4700	5900	**30308/YA6**	48	53	86	76	82	4	6	2	0.3	0.35	1.74	0.96	20	0.734
	90	25.25	23	17	2	1.5	93.2	95.6	4700	5900	**31308**	49	50	84	69	86	4	9	2	1.5	0.83	0.73	0.40	29	0.731
	90	35.25	33	27	2	1.5	132	147	4700	5900	**32308**	49	50	84	72	82	5.5	9	2	1.5	0.35	1.74	0.96	23	1.08
	90	35.25	33	27	2	1.5	125	147	4700	5900	**32308B**	49	49	84	67	83	3	9	2	1.5	0.55	1.10	0.60	28	1.06
	90	35.25	33	27	1.8	1.8	126	137	4700	5900	**32308/YA8**	50	51	82	73	82	4.5	9	1.5	1.5	0.35	1.74	0.96	23	1.02
	76	23.8	27.5	19.8	0.7	0.1	80.4	96.4	5200	6600	**306/42/YB2**	46	50	73	66	71	4.5	4	0.6	0.1	0.28	2.16	1.19	15	0.479
42	76	24	27.5	19.8	2	0.6	80.4	96.4	5100	6500	**306/42**	51	50	72	66	71	4.3	5	2	0.6	0.28	2.16	1.19	16	0.479
45	68	15	15	12	0.6	0.6	38.4	58.2	5400	6800	**32909**	51	52	64	61	64	4	3	0.6	0.6	0.32	1.88	1.04	13	0.195
	75	20	20	15.5	1	1	64.8	82.4	5100	6400	**32009**	51	52	70	66	71	5	5	1	1	0.39	1.53	0.84	17	0.343
	75	24	24	19	1	1	79.9	100	5100	6400	**33009**	51	50	70	66	71	5	5	1	1	0.29	2.04	1.12	16	0.414
	80	26	26	20.5	1.5	1.5	95.7	117	4900	6100	**33109**	53	52	74	68	76	5	6	1.5	1.5	0.38	1.57	0.86	19	0.535
	85	20.75	19	16	1.5	1.5	77.7	82.8	4700	5900	**30209**	53	54	79	73	79	5	5	1.5	1.5	0.40	1.48	0.81	19	0.464
	85	20.75	19	16	4	1.5	77.7	82.8	4700	5900	**30209/YA6**	57	54	79	73	79	5	5	3	1.5	0.40	1.48	0.81	19	0.464
	85	24.75	23	19	1.5	1.5	96.3	109	4700	5900	**32209**	53	53	79	73	80	5	6	1.5	1.5	0.40	1.48	0.81	20	0.576
	85	24.75	23.5	20	1.5	1.5	77.2	90.1	4700	5900	**32209X2A**	53	52	79	68	77	5	5	1.5	1.5	0.40	1.51	0.83	20	0.621
	86	32	32	25	1.5	1.5	128	153	4600	5900	**33209X1**	53	50	80	70	81	5	7	1.5	1.5	0.39	1.56	0.86	22	0.791
	90	21.75	20	17	1.5	1.5	87.3	96.3	4500	5700	**30609R/YA1**	53	58	84	77	85	5	5	1.5	1.5	0.42	1.43	0.79	20	0.646
	100	27.25	25	22	2	1.5	121	125	4200	5300	**30309**	54	59	94	85	92	5	6	2	1.5	0.35	1.74	0.96	21	0.987
	100	27.25	25	18	2	1.5	107	109	4200	5300	**31309**	54	55	94	78	95	5.5	10	2	1.5	0.83	0.73	0.40	32	0.977
	100	31.8	29	20.5	2	1.5	109	108	4200	5300	**32309X2A**	54	54	94	77	94	4.5	12	2	1.5	0.72	0.84	0.46	31	1.14
	100	32	29	20.5	2	1.5	108	106	4200	5300	**30309X2B**	54	54	94	76	93	4	12	2	1.5	0.72	0.84	0.46	31	1.08

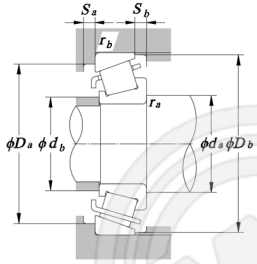
ZWZ

d 45～55mm



Pressed cage

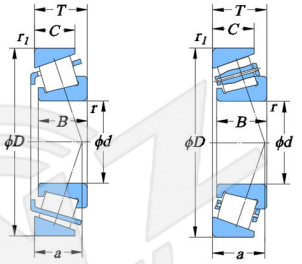
Machined cage



d	D	Principal dimensions(mm) T	B	C	r_{min}	r_{1min}	Basic load ratings (kN) C_r	C_{or}	Limiting speeds (r/min) Grease	Oil	Designations
45	100	32	29	20.5	2	1.5	124	132	4200	5300	**31309X2**
	100	38.25	36	30	2	1.5	164	185	4200	5300	**32309**
47	100	42.5	43	37	1.8	1.8	175	205	4100	5200	**306/47**
50	72	15	15	12	0.6	0.6	40.6	56.1	5000	6300	**32910**
	80	20	20	15.5	1	1	65.9	86.4	4700	5900	**32010**
	80	24	24	19	1	1	81.7	106	4700	5900	**33010**
	80	24	24	15.5	1	1	68.7	91.3	4700	5900	**32010X2-RS2**
	82	21.5	21.5	17	3	0.5	75.9	93.7	4600	5800	**30610**
	82	21.5	21.5	17	3.6	1.2	76.9	94.3	4600	5800	**30610/YAB**
	83	20.5	20.5	15.5	4	1	75.2	86.7	4600	5800	**32010X3A/HA**
	85	26	26	20	1.5	1.5	98.2	124	4500	5700	**33110**
	90	21.75	20	17	1.5	1.5	87.2	96.3	4300	5500	**30210**
	90	21.75	20	17	1.5	1.5	87.3	96.3	4300	5500	**30210R/YA1**
	90	23.75	20	19	1.5	1.5	87.3	96.3	4300	5500	**30210X2-HQ**
	90	24.75	23	19	1.5	1.5	98.8	113	4300	5500	**32210**
	90	24.75	23	19	1.3	1.3	80.9	96.2	4300	5500	**32210A**
	90	32	32	24.5	1.5	1.5	133	163	4300	5500	**33210**
	110	29.25	27	23	2.5	2	146	152	3800	4800	**30310**
	110	29.25	27	19	2.5	2	121	124	3800	4800	**31310**
	110	29.25	27	19	3	3	121	124	3800	4800	**31310/YAB**
	110	42.25	40	33	2.5	2	201	231	3800	4800	**32310**
	110	42.25	40	33	2.3	2.3	201	231	3800	4800	**32310/YA6**
50.8	100	35	35	29	2	2	158	194	4000	5100	**306/50.8**
	100	35	35	27	2.5	2.5	157	196	4000	5100	**339/50.8/YA6**
	100	35	35	27	2.5	1.5	157	196	4000	5100	**339/50.8/YAB**
55	90	23	23	17.5	1.5	1.5	85.9	113	4200	5300	**32011**
	90	23	23	17.5	1.5	1.5	85.9	113	4200	5300	**32011/YA8**
	90	27	27	21	1.5	1.5	106	140	4200	5300	**33011**
	95	30	30	23	1.5	1.5	121	163	4100	5100	**33111**
	100	22.75	21	18	2	1.5	105	114	3900	5000	**30211**
	100	22.75	21	18	2	1.5	100	108	3900	5000	**30211/YA**
	100	26.75	25	21	2	1.5	124	141	3900	5000	**32211**
	100	26.75	25	21	6	1.5	124	141	3900	5000	**32211/YA6**
	100	32	31	24.5	2	2	140	166	3900	5000	**33211X2A**
	100	35	35	27	2	1.5	157	196	3900	5000	**33211**
	120	31.5	29	25	2.5	2	173	182	3500	4400	**30311**
	120	31.5	29	21	2.5	2	146	153	3500	4400	**31311**
	120	31.5	29	21	2.5	2	132	133	3500	4400	**31311/YA8**
	120	31.5	29	21	2.5	2	142	148	3500	4400	**31311/YB4**
	120	31.5	29	25	2.5	2	173	182	3500	4400	**30311X3R**
	120	45.5	43	35	2.5	2	230	266	3500	4400	**32311**
	120	45.5	43	35	2.5	2	211	269	3500	4400	**32311A**

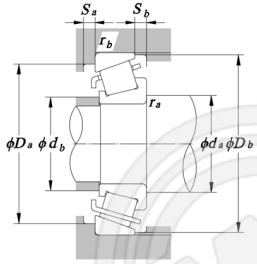
d	D	Abutment and fillet dimensions(mm) d_{amin}	d_{bmax}	D_{amax}	D_{amin}	D_{bmin}	$S_{a\,min}$	S_{bmin}	$r_{a\,max}$	$r_{b\,max}$	Factor e	Y	Y_0	a	Mass(kg) (approx.)
45	100	54	52	94	73	93	3	12	2	1.5	0.81	0.74	0.41	34	1.16
	100	54	55	94	82	92	5.5	9	2	1.5	0.35	1.74	0.96	26	1.44
47	100	57	55	92	80	92	5	6	1.5	1.5	0.31	1.94	1.07	26	1.66
50	72	56	54	68	65	68	4	3	0.6	0.6	0.34	1.76	0.97	13	0.184
	80	57	56	75	70	77	4	5	1	1	0.42	1.42	0.78	18	0.361
	80	57	55	75	70	76	5	5	1	1	0.32	1.90	1.04	17	0.442
	80	57	56	75	70	77	4	9	1	1	0.42	1.42	0.78	18	0.445
	82	61	58	78	72	78	5	5	2.5	0.3	0.31	1.97	1.08	16	0.331
	82	62	57	76	72	78	4.5	5	3	1.1	0.31	1.97	1.08	16	0.430
	83	64	57	78	74	78	4.5	5	3	1	0.36	1.66	0.92	17	0.430
	85	59	56	79	73	81	4.5	6	1.5	1.5	0.41	1.46	0.80	20	0.581
	90	59	58	84	77	85	5	5	1.5	1.5	0.42	1.42	0.78	21	0.550
	90	59	58	84	77	85	5	5	1.5	1.5	0.42	1.43	0.79	20	0.587
	90	59	57	84	76	85	4.5	5	1.5	1.5	0.42	1.43	0.79	22	0.576
	90	59	57	84	78	85	5	6	1.5	1.5	0.42	1.43	0.79	21	0.640
	90	59	59	83	77	84	4	6	1.1	1.1	0.42	1.43	0.78	21	0.612
	90	59	55	84	75	86	3.7	8	1.5	1.5	0.41	1.45	0.80	23	1.17
	110	61	65	103	94	101	5.5	7	2	2	0.35	1.74	0.96	23	1.26
	110	61	60	103	86	104	6	11	2	2	0.83	0.73	0.40	35	1.21
	110	62	60	100	86	104	5.5	11	2.5	2.5	0.83	0.73	0.40	35	1.21
	110	61	60	103	90	101	5.5	10	2	2	0.35	1.74	0.96	28	1.95
	110	62	60	100	90	101	5.5	10	2	2	0.35	1.74	0.96	28	1.95
50.8	100	60	61	93	84	93	5.5	6	2	2	0.30	2.00	1.10	23	1.27
	100	62	61	91	84	96	5.5	8	2	2	0.40	1.50	0.83	25	1.27
	100	62	61	93	84	96	5.5	8	2	1.5	0.40	1.50	0.83	25	1.27
55	90	64	63	84	79	86	4	6	1.5	1.5	0.41	1.48	0.81	20	0.564
	90	64	63	84	79	86	5	6	1.5	1.5	0.41	1.48	0.81	20	0.564
	90	64	62	84	79	85	5	6	1.5	1.5	0.31	1.92	1.06	19	0.839
	95	64	64	89	81	90	5.5	7	1.5	1.5	0.37	1.60	0.88	22	0.881
	100	65	64	94	88	94	5.5	5	2	1.5	0.40	1.48	0.81	21	0.713
	100	65	64	94	88	94	5.5	5	2	1.5	0.40	1.48	0.81	21	0.689
	100	65	62	94	86	94	5.5	6	2	1.5	0.40	1.48	0.81	23	0.878
	100	72	62	94	86	94	5.5	6	5	1.5	0.40	1.48	0.81	23	0.875
	100	65	63	93	85	96	4	8	2	2	0.41	1.47	0.81	25	1.01
	100	65	62	94	84	96	5	8	2	1.5	0.40	1.50	0.83	25	1.17
	120	66	70	113	103	111	6	7	2	2	0.35	1.74	0.96	25	1.63
	120	66	64	113	93	113	5.5	11	2	2	0.83	0.73	0.40	38	1.78
	120	66	64	113	93	113	4.5	11	2	2	0.83	0.73	0.40	38	1.71
	120	66	64	113	93	113	4.5	11	2	2	0.83	0.73	0.40	37	1.78
	120	66	70	113	103	111	5	7	2	2	0.35	1.74	0.96	25	1.82
	120	66	67	113	98	110	5	11	2	2	0.35	1.74	0.96	30	2.43
	120	66	65	113	90	112	4	11	2	2	0.55	1.10	0.60	36	2.51

d 55～65mm



Pressed cage

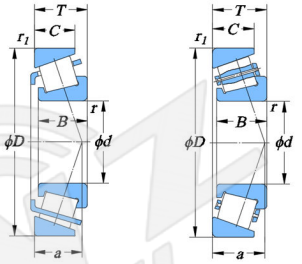
Machined cage



	Principal dimensions(mm)						Basic load ratings(kN)		Limiting speeds (r/min)		Designations
d	*D*	*T*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}	Grease	Oil	
55	120	45.5	43	35	7	2	230	266	3500	4400	**32311/YA6**
	120	45.5	44	35	2.5	2	235	272	3500	4400	**32311X2A1**
	125	37	36	25	3	2	176	188	3400	4300	**30611B**
	130	36.25	33	22	3	2	184	179	3300	4100	**30611**
60	85	17	16	14	1	1	46.8	67.6	4200	5300	**32912X2A**
	85	17	17	14	1	1	44.1	65.2	4200	5300	**32912**
	95	23	23	17.5	1.5	1.5	87.4	118	3900	5000	**32012**
	95	27	27	21	1.5	1.5	106	151	3900	5000	**33012**
	110	23.75	22	19	2	1.5	118	129	3600	4500	**30212**
	110	29.75	28	24	2	1.5	152	179	3600	4500	**32212**
	110	29.75	28	24	0.4	1.5	152	179	3600	4500	**32212/YA6**
	110	38	38	29	2	1.5	182	231	3600	4500	**33212**
	110	38	38	29	2	1.5	182	231	3600	4500	**33212/YB2**
	115	40	39	33	4	3	211	257	3500	4400	**33212X3**
	130	33.5	31	26	3	2.5	194	205	3200	4000	**30312**
	130	33.5	31	22	3	2.5	167	176	3200	4000	**31312**
	130	48.5	46	37	3	2.5	258	299	3200	4000	**32312**
	150	51	51	38	4	3	284	367	2900	3600	**30612**
65	100	23	23	17.5	1.5	1.5	91.2	128	3700	4700	**32013**
	100	23	23	17.5	3	1.5	91.2	128	3700	4700	**32013/YA6**
	100	23.3	22	19	1.5	1.5	88.9	116	3700	4700	**32013X2**
	100	23.3	22	19	1.5	1.5	88.9	116	3700	4700	**32013X2A**
	100	27	27	21	1.5	1.5	108	158	3700	4700	**33013**
	110	34	34	26.5	1.5	1.5	156	219	3500	4400	**33113**
	110	34	34	26.5	1.5	1.5	156	219	3500	4400	**33113/YB2**
	120	24.75	23	20	2	1.5	135	147	3300	4100	**30213**
	120	32.75	31	27	2	1.5	182	216	3300	4100	**32213**
	120	32.75	31	27	1.8	1.8	156	183	3300	4100	**32213A/YA6**
	120	41	41	32	2	1.5	221	280	3300	4100	**33213**
	120	41	41	32	2	1.5	221	280	3300	4100	**33213/HA**
	130	45	43	35	7	2	249	305	3100	3900	**30613**
	130	51	48	39	2.5	2.5	257	316	3100	3900	**32313X1**
	130	51	48	39	3	2.5	260	319	3100	3900	**32313X1A**
	140	36	33	28	3	2.5	222	237	3000	3700	**30313**
	140	36	33	28	6	2.5	222	237	3000	3700	**30313/YA6**
	140	36	33	23	3	2.5	188	198	3000	3700	**31313**
	140	36	33	23	3	2.5	190	199	3000	3700	**31313/YA5**
	140	36	33	23	5	2.5	188	198	3000	3700	**31313/YA6**
	140	36	33	23	3	2.5	184	193	3000	3700	**31313/YB4**
	140	36	33	23	3	2.5	188	198	3000	3700	**31313/YA8**
	140	40	37	30	3	2.5	211	255	3000	3700	**30313X2A**
	140	40	39	26	3	5	222	237	3000	3700	**30313X2/YA6**

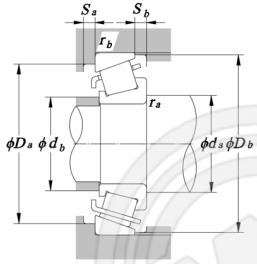
	Abutment and fillet dimensions(mm)										Factor				Mass(kg) (approx.)
d_{amin}	d_{bmax}	D_{amax}	D_{amin}	D_{bmin}	$S_{a\,min}$	S_{bmin}	$r_{a\,max}$	$r_{b\,max}$	*e*	*Y*	Y_o	*a*	
77	67	113	98	110	5	11	5.5	2	0.35	1.74	0.96	30	2.43
66	68	113	99	110	3	11	2	2	0.32	1.88	1.04	30	2.43
67	66	118	95	116	6	12	2.5	2	0.73	0.82	0.45	38	2.10
67	68	121	101	122	4	15	2.5	2	0.83	0.73	0.40	41	2.16
68	66	80	77	82	4	3	1	1	0.38	1.59	0.87	17	0.277
68	66	80	77	80	3	3	1	1	0.33	1.81	1.00	16	0.284
69	67	89	83	91	4	6	1.5	1.5	0.43	1.39	0.77	21	0.597
69	66	89	83	90	3.5	6	1.5	1.5	0.33	1.83	1.01	20	0.688
70	69	104	95	102	4	5	2	1.5	0.40	1.48	0.81	22	0.923
70	68	104	94	103	4	6	2	1.5	0.40	1.48	0.81	25	1.26
66	68	104	94	103	4	6	0.3	1.5	0.40	1.48	0.81	25	1.26
70	68	104	91	105	4	9	2	1.5	0.40	1.48	0.82	28	1.51
70	68	104	91	105	4	9	2	1.5	0.40	1.48	0.82	28	1.51
74	70	105	96	108	5	7	3	2.5	0.33	1.80	0.99	28	1.81
72	77	120	111	120	5.5	8	2.5	2	0.35	1.74	0.96	27	1.94
72	71	120	102	122	6	12	2.5	2	0.83	0.73	0.40	40	1.95
72	72	120	107	120	6	12	2.5	2	0.35	1.74	0.96	32	2.90
75	75	139	105	140	6	13	3	2.5	0.76	0.79	0.43	49	4.76
74	71	94	88	96	4	6	1.5	1.5	0.46	1.31	0.72	23	0.612
80	71	94	88	96	4	6	2.5	1.5	0.46	1.31	0.72	23	0.612
74	72	94	89	96	3	5	1.5	1.5	0.35	1.71	0.94	21	0.629
74	72	94	89	96	3	5	1.5	1.5	0.35	1.71	0.94	21	0.629
74	72	94	88	95	4	6	1.5	1.5	0.35	1.72	0.95	21	0.732
74	75	104	94	105	5	8	1.5	1.5	0.39	1.55	0.85	26	1.30
74	75	104	94	105	5	8	1.5	1.5	0.39	1.55	0.85	26	1.30
75	77	114	105	113	5	5	2	1.5	0.40	1.48	0.81	24	1.14
75	75	114	102	114	4	6	2	1.5	0.40	1.48	0.81	27	1.58
76	75	112	102	112	3.5	6	1.5	1.5	0.37	1.62	0.89	26	1.50
75	73	114	102	115	6	9	2	1.5	0.39	1.54	0.85	30	2.00
75	73	114	102	115	6	9	2	1.5	0.39	1.54	0.85	30	2.00
87	77	123	109	120	6.5	10	5.5	2	0.33	1.80	0.99	31	2.64
76	75	121	108	121	6.5	12	2	2	0.33	1.80	0.99	33	3.01
77	75	120	108	122	6.5	12	2.5	2	0.35	1.70	0.93	35	2.93
77	84	130	120	130	6.5	8	2.5	2	0.35	1.74	0.96	29	2.49
84	84	130	120	130	5	8	5	2	0.35	1.74	0.96	29	2.49
77	77	130	110	132	6	13	2.5	2	0.83	0.73	0.40	44	2.38
77	76	130	110	132	5	13	2.5	2	0.83	0.73	0.40	43	2.37
78	77	130	110	132	5	13	4	2	0.83	0.73	0.40	44	2.45
77	77	130	110	132	5	13	2.5	2	0.83	0.73	0.40	44	2.37
77	77	130	110	132	4.5	13	2.5	2	0.83	0.73	0.40	44	2.38
77	82	130	111	127	6.5	10	2.5	2	0.47	1.28	0.70	34	2.84
77	84	126	120	129	6.5	14	2.5	4	0.35	1.74	0.96	28	2.65

d 65～75mm



Pressed cage

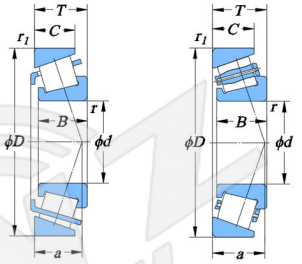
Machined cage



Principal dimensions(mm)							Basic load ratings(kN)		Limiting speeds (r/min)		Designations
d	*D*	*T*	*B*	*C*	r_{smin}	r_{1smin}	C_r	C_{or}	Grease	Oil	
65	140	51	48	39	6	3.5	296	345	3000	3700	**32313/YA6**
	140	51	48	39	3	2.5	296	345	3000	3700	**32313**
	140	51	48	39	3	2.5	277	353	3000	3700	**32313A**
	140	51	48	39	3	2.5	284	364	3000	3700	**32313B**
	140	51	49	37	3	2.5	272	362	3000	3700	**32313X2B**
	152	48	45.5	35	2.5	3	221	289	2800	3500	**31313X3A/YA6**
70	100	20	19	16	1	1	67.7	98.6	3600	4500	**32914X2A**
	100	20	20	16	1	1	78.0	115	3600	4500	**32914**
	110	25	25	19	1.5	1.5	113	156	3400	4300	**32014**
	110	25	25	19	1.5	1.5	116	162	3400	4300	**32014/YA8**
	110	25	25	19	1.5	1.5	113	156	3400	4300	**32014/YAD**
	110	31	31	25.5	1.5	1.5	144	212	3400	4300	**33014**
	120	33	33	27	2	2	174	220	3200	4000	**33114X2A/YA6**
	120	37	37	29	2	1.5	187	262	3200	4000	**33114**
	120	37	37	31.5	2	1.5	187	262	3200	4000	**33114X2R/YB2**
	120	45	42	37	2.5	2.5	162	215	3200	4000	**30614**
	125	26.25	24	21	2	1.5	147	167	3100	3900	**30214**
	125	33.25	31	27	2	1.5	190	231	3100	3900	**32214**
	125	33.25	31	27	2.5	2.5	190	231	3100	3900	**32214/YA6**
	125	41	41	32	2	1.5	220	281	3100	3900	**33214**
	130	57	56	35	11	1.5	266	333	3000	3800	**30214X3/YA6**
	130	57	56	35	10.5	2	266	333	3000	3800	**33214X3/YA6**
	145	59	59	47	8.5	2.5	361	475	2800	3600	**32314X3A**
	150	38	35	30	3	2.5	249	267	2800	3500	**30314**
	150	38	35	30	3	2.5	249	267	2800	3500	**30314/YA7**
	150	38	35	30	3	2.5	249	267	2800	3500	**30314R/YA7**
	150	38	35	30	3	0.5	249	267	2800	3500	**30314N**
	150	38	35	30	8.5	2.5	249	267	2800	3500	**30314/YA6**
	150	38	35	25	3	2.5	212	226	2800	3500	**31314**
	150	41	35	33	3	0.5	249	267	2800	3500	**30314X2N/YB2**
	150	54	51	42	6	2.5	331	388	2800	3500	**32314/YA6**
	150	54	51	42	3	2.5	316	407	2800	3500	**32314B**
	150	54	51	42	3	2.5	331	388	2800	3500	**32314**
	150	54	51	40	3	2.5	312	413	2800	3500	**32314X2B1**
	165	57	57	43	4	3	363	441	2600	3200	**31314X3A/YA6**
75	115	25	25	19	1.5	1.5	115	163	3200	4000	**32015**
	115	31	31	25.5	1.5	1.5	142	213	3200	4000	**33015**
	115	35	35	25.5	1.5	1.5	142	213	3200	4000	**33015X2-RS2**
	125	37	37	29	2	1.5	191	275	3000	3800	**33115**
	125	37	37	29	4	1.5	191	275	3000	3800	**33115/YA6**
	130	27.25	25	22	2	1.5	155	179	3000	3700	**30215**
	130	33.25	31	27	2	1.5	192	236	3000	3700	**32215**

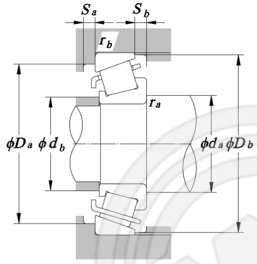
Abutment and fillet dimensions(mm)									Factor				Mass(kg) (approx.)
d_{amin}	d_{bmax}	D_{amax}	D_{amin}	D_{bmin}	$S_{a\,min}$	S_{bmin}	$r_{a\,max}$	$r_{b\,max}$	*e*	*Y*	Y_0	*a*	
83	79	128	116	130	8	12	5	3	0.35	1.74	0.96	34	3.68
77	79	130	116	130	6	12	2.5	2	0.35	1.74	0.96	34	3.68
77	76	130	106	130	6	12	2.5	2	0.55	1.10	0.60	42	3.72
77	75	130	107	131	4	12	2.5	2	0.55	1.10	0.60	42	3.78
77	75	130	102	133	6	14	2.5	2	0.70	0.86	0.47	46	3.78
76	78	141	100	145	6.5	13	2	2.5	1.05	0.57	0.31	60	4.32
78	76	95	90	95	5	4	1	1	0.36	1.67	0.92	20	0.477
78	76	95	90	95	4	4	1	1	0.32	1.90	1.05	18	0.475
79	78	104	96	105	5.5	6	1.5	1.5	0.43	1.38	0.76	24	0.856
79	78	104	96	105	5.5	6	1.5	1.5	0.43	1.38	0.76	24	0.877
79	78	104	96	105	5.5	6	1.5	1.5	0.43	1.38	0.76	24	0.856
79	78	104	97	105	4	6	1.5	1.5	0.28	2.11	1.16	22	1.09
81	79	111	106	112	3	6	2	2	0.28	2.16	1.19	24	1.51
80	80	114	102	114	4	8	2	1.5	0.38	1.58	0.87	28	1.72
80	80	114	102	116	4	6	2	1.5	0.38	1.58	0.87	28	1.83
83	75	109	99	114	7.5	8	2	2	0.39	1.53	0.84	35	1.89
80	81	118	109	118	6	6	2	1.5	0.42	1.43	0.79	26	1.29
80	80	118	106	119	5.5	7	2	1.5	0.42	1.43	0.79	29	1.66
81	80	117	106	119	5.5	7	2	2	0.42	1.43	0.79	29	1.66
80	79	118	105	120	5.5	9	2	1.5	0.41	1.47	0.81	31	2.08
84	80	123	111	123	6.5	22	8	1.5	0.33	1.80	0.99	31	2.92
96	80	122	111	123	4.9	22	8	2	0.33	1.80	0.99	31	2.99
94	83	135	117	135	4	12	6	2	0.35	1.74	0.96	38	4.50
82	89	140	129	139	6	8	2.5	2	0.35	1.74	0.96	31	3.08
82	88	140	129	139	6	8	2.5	2	0.35	1.74	0.96	31	3.13
82	88	140	129	139	6	8	2.5	2	0.35	1.74	0.96	31	3.23
82	88	145	129	139	6	8	2.5	0.3	0.35	1.74	0.96	31	2.96
92	88	141	129	139	4	8	6	2	0.35	1.74	0.96	31	2.98
82	82	140	117	141	6.5	13	2.5	2	0.83	0.73	0.40	47	2.87
82	88	145	128	139	6	8	2.5	0.3	0.35	1.74	0.96	34	3.11
87	84	140	124	139	5	12	5	2	0.35	1.74	0.96	37	4.33
82	82	140	114	141	6	12	2.5	2	0.55	1.10	0.60	45	4.54
82	84	140	124	139	7	12	2.5	2	0.35	1.74	0.96	37	4.33
82	80	140	109	143	6	14	2.5	2	0.70	0.86	0.47	49	4.59
85	83	154	121	157	10	14	3	2.5	0.70	0.86	0.47	52	5.71
84	83	109	100	110	5	6	1.5	1.5	0.46	1.31	0.72	25	0.922
84	82	109	102	110	5	6	1.5	1.5	0.30	2.01	1.11	23	1.10
84	82	109	102	110	5	10	1.5	1.5	0.30	2.01	1.11	23	1.23
85	85	118	107	120	4	8	2	1.5	0.40	1.51	0.83	30	1.80
88	85	118	107	120	4	8	3	1.5	0.40	1.51	0.83	30	1.80
85	85	123	114	123	6.5	6	2	1.5	0.44	1.38	0.76	27	1.40
85	83	123	112	125	5	7	2	1.5	0.44	1.38	0.76	30	1.76

d 75～80mm



Pressed cage

Machined cage

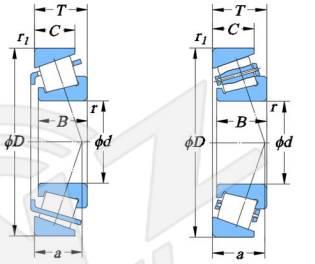


d	D	Principal dimensions(mm) T	B	C	r_{min}	r_{1min}	Basic load ratings(kN) C_r	C_{or}	Limiting speeds (r/min) Grease	Oil	Designations
75	130	33.25	31	27	3	2.5	192	236	3000	3700	**32215/YA6**
	130	33.5	31	27	1.8	1.8	171	204	3000	3700	**32215A/YA6**
	130	41	41	31	2	1.5	224	314	3000	3700	**33215**
	135	44	45	35	3	2.5	235	316	2900	3600	**30615A**
	135	44.5	45	35	2.3	2.3	226	300	2900	3600	**33215X2A**
	150	30.5	29	20	3	2.5	167	181	2700	3400	**31315X3**
	160	40	37	31	3	2.5	285	310	2600	3200	**30315**
	160	40	37	31	3	2.5	246	256	2600	3200	**30315/YAD**
	160	40	37	26	3	2.5	237	254	2600	3200	**31315**
	160	40	37	26	3	2.5	232	248	2600	3200	**31315/YB4**
	160	40	37	26	3	2.5	237	254	2600	3200	**31315/YB2**
	160	58	55	45	3	2.5	397	478	2600	3200	**32315**
	160	58	55	45	3	2.5	327	427	2600	3200	**32315B**
	160	58	55	45	3.5	2.5	358	446	2600	3200	**32315B/YA6**
	160	58	55	45	3	2.5	357	461	2600	3200	**32315B/YA5**
	160	58	55	45	3	2.5	375	506	2600	3200	**32315X3A**
	180	63.65	60	45	3	2.5	401	484	2400	3000	**32315X3**
76	141	28.25	26	22	0.5	2	180	206	2800	3500	**306/76**
80	110	20	19	16	1	1	70.3	106	3200	4000	**32916X2A**
	110	20	20	16	1	1	78.1	119	3200	4000	**32916**
	125	29	29	22	1.5	1.5	147	205	3000	3700	**32016**
	125	29	29	22	5.3	1.5	147	205	3000	3700	**32016/YA6**
	125	36	36	29.5	1.5	1.5	188	281	3000	3700	**33016**
	130	32	31	25	3.5	2	186	252	2900	3600	**33116X2A**
	130	37	37	29	2	1.5	202	300	2900	3600	**33116**
	140	28.25	26	22	2.5	2	180	206	2800	3500	**30216**
	140	29	29	22	0.3	2	172	204	2800	3500	**30216X2/YA6**
	140	35.25	33	28	2.5	2	224	272	2800	3500	**32216**
	140	35.25	33	28	2.3	2.3	193	241	2800	3500	**32216A/YA6**
	140	35.25	33	28	2.5	2	224	272	2800	3500	**32216/YB2**
	140	35.25	33	28	2.5	2	224	272	2800	3500	**32216/YB1**
	140	39.2	39.2	32	2.5	2	244	352	2800	3500	**32216X2A**
	140	45	45	36.5	3	2.5	270	363	2800	3500	**33216X2A**
	140	46	46	35	2.5	2	285	376	2800	3500	**33216**
	150	42	38	33	3	0.5	270	317	2600	3300	**33216X3AN/YB2**
	165	59.5	59.5	43	5	3	352	484	2500	3100	**31316X3**
	170	42.5	39	33	3	2.5	315	344	2400	3000	**30316**
	170	42.5	39	27	3	2.5	259	279	2400	3000	**31316**
	170	42.5	39	27	3	2.5	259	279	2400	3000	**31316/YB2**
	170	61.5	58	48	3	2.5	442	535	2400	3000	**32316**
	170	61.5	58	48	3	2.5	393	529	2400	3000	**32316B**
	180	63.65	60	45	3	2.5	387	542	2300	2900	**32316X3**

d	D	Abutment and fillet dimensions(mm) d_{amin}	d_{bmax}	D_{amax}	D_{amin}	D_{bmin}	$S_{a\,min}$	S_{bmin}	$r_{a\,max}$	$r_{b\,max}$	Factor e	Y	Y_0	a	Mass(kg) (approx.)
75	130	87	84	122	112	125	5	7	2.5	2	0.44	1.38	0.76	30	1.76
	130	86	85	122	111	120	6	7	1.5	1.5	0.35	1.70	0.93	-3	1.74
	130	85	84	124	109	124	5.5	10	2	1.5	0.43	1.40	0.77	32	2.27
	135	87	84	125	113	126	6	9	2.5	2	0.40	1.49	0.82	34	2.66
	135	87	84	125	113	126	9	10	2	2	0.40	1.49	0.82	34	2.58
	150	87	93	140	127	139	6	11	2.5	2	0.64	0.94	0.52	38	2.24
	160	87	95	150	138	148	7	9	2.5	2	0.35	1.74	0.96	32	3.71
	160	87	97	150	138	148	7	9	2.5	2	0.35	1.74	0.96	33	3.61
	160	87	88	150	126	151	7	14	2.5	2	0.83	0.73	0.40	50	3.40
	160	87	88	150	126	151	7	14	2.5	2	0.83	0.73	0.40	49	3.40
	160	87	88	150	126	151	7.5	14	2.5	2	0.83	0.73	0.40	50	3.40
	160	87	91	150	132	149	7	13	2.5	2	0.35	1.74	0.96	39	5.26
	160	87	89	150	121	150	5	13	2.5	2	0.55	1.10	0.60	47	5.46
	160	87	85	150	122	151	4	13	3	2	0.55	1.10	0.60	46	5.47
	160	87	87	150	121	150	6.5	13	2.5	2	0.55	1.10	0.60	47	5.54
	160	87	87	150	122	139	5	13	2.5	2	0.35	1.74	0.96	38	4.81
	180	87	94	170	132	171	5	19	2.5	2	0.70	0.86	0.47	55	7.83
76	141	82	91	132	123	131	6.5	7	0.3	2	0.42	1.43	0.79	28	1.83
80	110	88	86	105	101	105	4	4	1	1	0.33	1.83	1.00	20	0.500
	110	88	86	105	100	105	5	4	1	1	0.35	1.71	0.94	20	0.548
	125	89	88	119	110	120	5.5	7	1.5	1.5	0.42	1.42	0.78	27	1.26
	125	96	88	119	110	120	5.5	7	4	1.5	0.42	1.42	0.78	27	1.26
	125	89	89	118	110	119	5	7	1.5	1.5	0.28	2.16	1.19	25	1.62
	130	94	89	121	114	123	5.5	7	3	2	0.38	1.59	0.88	28	1.60
	130	90	90	123	111	125	5.5	8	2	1.5	0.42	1.44	0.79	31	2.79
	140	91	91	131	123	131	6.5	7	2	2	0.42	1.43	0.79	28	1.56
	140	86	93	131	123	131	5	7	0.3	2	0.42	1.43	0.79	28	1.77
	140	91	90	131	121	133	5.5	8	2	2	0.42	1.43	0.79	31	2.17
	140	92	92	130	120	131	7	8	2	2	0.40	1.49	0.82	31	2.13
	140	91	90	131	121	133	6.5	8	2	2	0.42	1.43	0.79	31	2.17
	140	91	90	131	121	133	5	8	2	2	0.42	1.43	0.79	31	2.17
	140	91	94	131	121	134	5	8	2	2	0.41	1.47	0.81	33	2.71
	140	92	91	130	122	132	5.5	9	2.5	2	0.28	2.16	1.19	30	2.77
	140	91	87	131	118	134	4.5	11	2	2	0.43	1.41	0.78	35	2.89
	150	92	92	145	128	141	4	9	2.5	0.3	0.39	1.55	0.85	35	3.17
	165	97	90	154	122	158	7	17	4	2.5	0.70	0.86	0.47	53	5.98
	170	92	102	160	147	158	8	10	2.5	2	0.35	1.74	0.96	34	4.32
	170	92	93	160	133	159	6.5	16	2.5	2	0.83	0.73	0.40	53	4.07
	170	92	93	160	133	159	7.5	16	2.5	2	0.83	0.73	0.40	53	4.07
	170	92	98	160	141	159	7.5	14	2.5	2	0.35	1.74	0.96	42	6.37
	170	92	95	160	129	160	3	14	2.5	2	0.55	1.10	0.60	50	6.62
	180	92	94	170	127	169	4	19	2.5	2	0.76	0.79	0.43	60	7.91

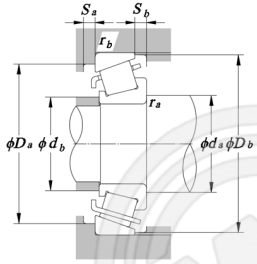
ZWZ

d 85～95mm



Pressed cage

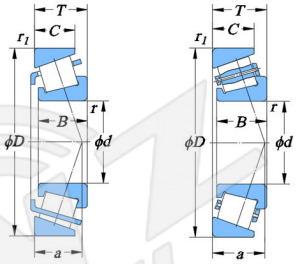
Machined cage



d	D	Principal dimensions(mm) T	B	C	r_{min}	r_{1min}	Basic load ratings(kN) C_r	C_{or}	Limiting speeds (r/min) Grease	Oil	Designations
85	120	23	23	18	1.5	1.5	107	164	3000	3700	**32917**
	130	29	29	22	1.5	1.5	150	214	2800	3600	**32017**
	130	29	29	22	2	2	150	214	2800	3600	**32017/YA6**
	130	36	36	29.5	1.5	1.5	198	305	2800	3600	**33017**
	140	41	41	32	2.5	2	237	353	2700	3400	**33117**
	150	30.5	28	24	2.5	2	203	234	2600	3200	**30217**
	150	38.5	36	30	2.5	2	258	319	2600	3200	**32217**
	150	38.5	36	30	2.5	2	261	322	2600	3200	**32217/YA5**
	150	38.5	36	30	2.5	2	258	319	2600	3200	**32217/YB2**
	150	38.5	36	30	2.5	2.5	258	319	2600	3200	**32217/YA6**
	150	49	49	37	2.5	2	315	412	2600	3200	**33217**
	150	49	49	37	7	2	315	412	2600	3200	**33217/YA6**
	180	44.5	41	34	4	3	345	380	2300	2800	**30317**
	180	44.5	41	28	4	3	287	311	2300	2800	**31317**
	180	63.5	60	49	4	3	480	584	2300	2800	**32317**
90	140	32	32	24	2	1.5	183	260	2600	3300	**32018**
	140	32.4	30	26	2	1.5	160	214	2600	3300	**32018X2A**
	140	39	39	32.5	2	1.5	244	365	2600	3300	**33018**
	140	39	39	32.5	2	1.5	248	373	2600	3300	**33018/YAD**
	145	35	32	27	6.5	1.5	178	261	2600	3200	**32018X3/YA6**
	150	38.5	36	30	2.5	2	228	295	2500	3200	**33118X2**
	150	45	45	35	2.5	2	266	392	2500	3200	**33118**
	150	45	45	35	2.5	2	266	392	2500	3200	**33118/YB2**
	150	45	45	35	2.5	2	274	408	2500	3200	**33118/YA8**
	160	32.5	30	26	2.5	2	227	264	2400	3000	**30218**
	160	32.5	30	26	5	3	227	264	2400	3000	**30218/YA6**
	160	42.5	40	34	2.5	2	300	377	2400	3000	**32218**
	160	42.5	40	34	2.3	2.3	253	316	2400	3000	**32218/YA6**
	160	42.5	40	34	2.5	2	300	377	2400	3000	**32218/YAB**
	160	42.5	40	34	2.5	2	300	377	2400	3000	**32218/YB2**
	160	50	46	39	3	3	272	343	2400	3000	**33218X2A**
	160	55	55	42	2.5	2	360	495	2400	3000	**33218**
	170	62	59.5	49	2.5	2.5	411	549	2300	2900	**30618**
	190	46.5	43	36	4	3	388	432	2100	2700	**30318**
	190	46.5	43	30	4	3	318	348	2100	2700	**31318**
	190	67.5	64	53	4	3	545	674	2100	2700	**32318**
95	130	23	22	18	1.5	1.5	87.8	135	2700	3400	**32919X2A**
	145	32	32	24	2	1.5	191	280	2500	3200	**32019**
	145	32.4	30	26	2	1.5	175	244	2500	3200	**32019X2A**
	145	39	39	32.5	2	1.5	243	367	2500	3200	**33019**
	145	39	40	32.5	2	1.5	240	362	2500	3200	**33019X2/YB2**
	160	47	47	38	3	3	314	433	2400	3000	**30619**

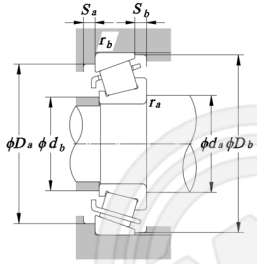
d	D	Abutment and fillet dimensions(mm) d_{amin}	d_{bmax}	D_{amax}	D_{amin}	D_{bmin}	$S_{a\,min}$	S_{bmin}	$r_{a\,max}$	$r_{b\,max}$	Factor e	Y	Y_o	a	Mass(kg) (approx.)
85	120	94	92	114	109	114	2.7	5	1.5	1.5	0.33	1.83	1.01	21	0.776
	130	94	93	123	114	125	4.3	7	1.5	1.5	0.44	1.36	0.75	28	1.33
	130	95	93	121	114	125	5.5	7	2	2	0.44	1.36	0.75	28	1.33
	130	94	94	123	115	124	4.5	7	1.5	1.5	0.29	2.06	1.13	26	1.70
	140	96	94	131	120	134	3.8	9	2	2	0.41	1.48	0.81	33	2.43
	150	96	97	141	130	140	6.5	7	2	2	0.42	1.43	0.79	30	2.05
	150	96	94	141	128	142	6.5	9	2	2	0.42	1.43	0.79	34	2.70
	150	96	95	141	128	142	6.5	9	2	2	0.42	1.44	0.79	34	2.79
	150	96	94	141	128	142	6.5	9	2	2	0.42	1.43	0.79	34	2.70
	150	96	94	141	128	142	6.5	9	2	2	0.42	1.43	0.79	34	2.70
	150	96	92	141	125	144	6.3	12	2	2	0.42	1.43	0.79	37	3.64
	150	106	92	141	125	144	6.3	12	5.5	2	0.42	1.43	0.79	37	3.64
	180	99	107	169	155	166	8	11	3	2.5	0.35	1.74	0.96	36	5.39
	180	99	98	169	142	168	3.5	17	3	2.5	0.83	0.73	0.40	56	4.92
	180	99	102	169	148	167	8	15	3	2.5	0.35	1.74	0.96	44	7.37
90	140	100	100	133	122	133	5	8	2	1.5	0.42	1.42	0.78	30	1.77
	140	100	100	133	124	132	6.5	7	2	1.5	0.34	1.76	0.97	29	1.71
	140	100	99	133	125	134	4	7	2	1.5	0.27	2.23	1.23	28	2.24
	140	100	99	133	125	134	5.5	7	2	1.5	0.27	2.23	1.23	28	2.19
	145	109	102	137	122	135	5.5	8	5	1.5	0.42	1.42	0.78	33	2.08
	150	101	102	141	129	144	6	9	2	2	0.42	1.44	0.79	34	2.57
	150	101	102	141	128	144	7	10	2	2	0.40	1.51	0.83	35	3.15
	150	101	103	141	128	144	7	10	2	2	0.40	1.51	0.83	35	3.15
	150	101	102	141	128	144	7	10	2	2	0.40	1.51	0.83	35	3.19
	160	101	103	151	139	149	7.5	7	2	2	0.42	1.43	0.79	32	2.73
	160	107	103	149	139	149	5.5	7	4	2.5	0.42	1.43	0.79	32	2.73
	160	101	101	153	136	152	7	9	2	2	0.42	1.43	0.79	37	3.48
	160	102	103	150	136	150	7.5	9	2	2	0.39	1.55	0.85	36	3.36
	160	107	101	149	136	152	7	9	2	2	0.42	1.43	0.79	37	3.48
	160	101	101	151	136	152	7	9	2	2	0.42	1.43	0.79	37	3.48
	160	104	102	148	134	147	8	11	2.5	2.5	0.34	1.76	0.97	37	3.82
	160	101	100	151	133	153	5	13	2	2	0.42	1.43	0.78	41	4.77
	170	103	102	159	140	160	7.5	13	2	2	0.36	1.67	0.92	44	6.05
	190	104	113	179	163	176	8	11	3	2.5	0.35	1.74	0.96	37	5.76
	190	104	104	179	150	179	8	17	3	2.5	0.83	0.73	0.40	58	5.53
	190	104	107	179	156	176	8.5	15	3	2.5	0.35	1.74	0.96	46	8.73
95	130	105	102	123	118	124	5	5	1.5	1.5	0.38	1.59	0.87	25	0.786
	145	105	104	138	127	139	5	8	2	1.5	0.44	1.36	0.75	31	1.87
	145	105	105	138	128	138	6.5	7	2	1.5	0.36	1.69	0.93	30	1.80
	145	105	105	138	129	138	6.5	7	2	1.5	0.28	2.16	1.19	29	2.32
	145	105	105	138	129	138	4	7	2	1.5	0.28	2.16	1.19	29	2.25
	160	107	106	149	139	152	5	9	2.5	2.5	0.34	1.77	0.97	35	3.70

d 95～110mm



Pressed cage

Machined cage

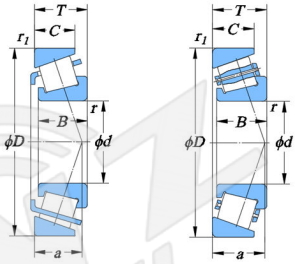


	Principal dimensions(mm)						Basic load ratings (kN)		Limiting speeds (r/min)		Designations
d	*D*	*T*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}	Grease	Oil	
95	160	49	49	38	2.5	2	315	470	2400	3000	**33119**
	170	34.5	32	27	3	2.5	257	303	2300	2800	**30219**
	170	45.5	43	37	3	2.5	345	443	2300	2800	**32219**
	170	45.5	43	37	3	2.5	332	421	2300	2800	**32219N1**
	170	45.5	43	37	3	2.5	345	443	2300	2800	**32219/YB1**
	170	58	58	44	3	2.5	412	562	2300	2800	**33219**
	200	49.5	45	38	4	3	419	468	2000	2500	**30319**
	200	49.5	45	32	4	3	352	390	2000	2500	**31319**
	200	71.5	67	55	4	3	589	728	2000	2500	**32319**
	200	71.5	67	55	12	3	589	728	2000	2500	**32319/YA6**
100	140	25	25	20	1.5	1.5	133	205	2500	3200	**32920**
	150	32	32	24	2	1.5	189	280	2400	3000	**32020**
	165	52	52	40	2.5	2	336	521	2300	2800	**33120**
	170	47	47	37	3	3	327	458	2200	2800	**33020X3A/HA**
	180	37	34	29	3	2.5	288	344	2100	2700	**30220**
	180	37	34	29	5	2.5	288	344	2100	2700	**30220/YA6**
	180	49	46	39	3	2.5	389	506	2100	2700	**32220**
	180	63	63	48	3	2.5	458	627	2100	2700	**33220**
	180	63	63	48	3	2.5	476	660	2100	2700	**33220/YA8**
	215	51.5	47	39	4	3	459	513	1900	2300	**30320**
	215	56.5	51	35	4	3	427	484	1900	2300	**31320**
	215	77.5	73	60	4	3	683	859	1900	2300	**32320**
	215	77.5	73	60	4	3	637	784	1900	2300	**32320/YA5**
	215	77.5	73	60	4	3	683	859	1900	2300	**32320/YB2**
	215	82.5	73	65	4	3	683	859	1900	2300	**32320X2**
101.6	160	35	35	26	4	2	220	324	2300	2900	**32021X4/YA6**
105	160	35	35	26	2.5	2	220	324	2300	2800	**32021**
	160	35.4	33	28	2.5	2	204	285	2300	2800	**32021X2A**
	160	43	43	34	2.5	2	269	408	2300	2800	**33021**
	160	43	43	34	5	2	269	408	2300	2800	**33021/YA6**
	170	56	56	44	3	2.5	409	603	2200	2700	**30621**
	190	39	36	30	3	2.5	324	392	2000	2500	**30221**
	190	53	50	43	3	2.5	435	573	2000	2500	**32221**
	190	68	68	52	3	2.5	523	726	2000	2500	**33221**
	215	77.5	73	60	3	3	620	779	1800	2300	**32321X3**
	225	53.5	49	41	4	3	489	548	1800	2200	**30321**
	225	58	53	36	4	3	456	519	1800	2200	**31321**
	225	81.5	77	63	4	3	737	931	1800	2200	**32321**
106	160	35	35	26	6.4	3	222	328	2200	2800	**320/106**
	160	35	35	26	6.4	2	222	328	2200	2800	**320/106/YA6**
	160	35	35	26	8.5	3	217	318	2200	2800	**320/106/YAB**
110	150	25	24	20	1.5	1.5	112	165	2300	2900	**32922X2A**

	Abutment and fillet dimensions(mm)									Factor				Mass(kg) (approx.)
d_{amin}	d_{bmax}	D_{amax}	D_{amin}	D_{bmin}	$S_{a\,min}$	S_{bmin}	$r_{a\,max}$	$r_{b\,max}$	*e*	*Y*	Y_o	*a*	
106	107	151	137	153	5.1	11	2	2	0.39	1.54	0.85	37	3.94
107	109	160	147	159	7.5	8	2.5	2	0.42	1.43	0.79	34	3.27
107	105	160	144	161	7.5	9	2.5	2	0.42	1.43	0.79	39	4.34
107	107	160	144	161	5.5	9	2.5	2	0.42	1.43	0.79	39	4.18
107	105	160	144	161	7	9	2.5	2	0.42	1.43	0.79	39	4.35
107	106	160	142	163	6	14	2.5	2	0.41	1.47	0.81	43	5.54
109	118	189	170	183	9	12	3	2.5	0.35	1.74	0.96	40	6.91
109	109	189	156	187	9	18	3	2.5	0.83	0.73	0.40	61	6.84
109	114	189	165	186	9	17	3	2.5	0.35	1.74	0.96	49	10.0
103	114	189	165	186	9	17	10	2.5	0.35	1.74	0.96	49	10.0
110	109	133	128	134	5.5	5	1.5	1.5	0.33	1.82	1.00	25	1.13
111	108	143	132	144	4	8	2	1.5	0.46	1.31	0.72	33	1.87
112	111	156	140	159	4.5	12	2	2	0.41	1.48	0.81	40	4.33
113	115	159	146	158	5	10	2.5	2.5	0.29	2.09	1.15	33	4.26
113	115	170	156	168	6	8	2.5	2	0.42	1.43	0.79	36	3.72
121	115	170	156	168	6	8	4	2	0.42	1.43	0.79	36	3.72
113	112	170	152	170	7.5	10	2.5	2	0.42	1.43	0.79	42	5.15
113	110	170	149	172	6	15	2.5	2	0.40	1.48	0.82	46	6.58
113	110	170	149	172	6	15	2.5	2	0.40	1.48	0.82	46	6.73
115	127	204	183	197	9	13	3	2.5	0.35	1.74	0.96	42	8.09
115	120	204	167	201	3.5	22	3	2.5	0.83	0.73	0.40	68	8.78
115	122	204	176	199	9.5	18	3	2.5	0.35	1.74	0.96	53	13.1
115	122	204	176	199	9	18	3	2.5	0.35	1.74	0.96	53	12.7
115	122	204	176	199	9	18	3	2.5	0.35	1.74	0.96	53	13.1
115	122	204	174	199	9	18	3	2.5	0.35	1.74	0.96	58	13.7
116	115	151	141	153	4.5	9	3	2	0.44	1.35	0.74	35	2.54
117	115	151	141	153	4.5	9	2	2	0.44	1.35	0.74	35	2.38
117	113	151	142	151	5.3	8	2	2	0.36	1.69	0.93	32	2.50
117	115	151	142	152	5.3	9	2	2	0.28	2.12	1.17	31	2.92
123	115	151	142	152	5.3	9	4	2	0.28	2.12	1.17	31	2.92
118	115	160	149	163	5.6	12	2.5	2	0.28	2.16	1.19	37	4.71
118	121	180	164	177	6.1	9	2.5	2	0.42	1.43	0.79	38	4.38
118	118	180	159	179	6.5	10	2.5	2	0.42	1.43	0.79	45	6.26
118	116	180	157	181	5.5	16	2.5	2	0.40	1.49	0.82	49	8.02
120	124	204	177	197	4	18	2.5	2.5	0.31	1.91	1.05	52	12.3
120	133	214	191	206	8.7	13	3	2.5	0.35	1.74	0.96	44	9.38
120	123	214	175	210	8.7	22	3	2.5	0.83	0.73	0.40	70	9.79
120	127	214	184	208	8.2	19	3	2.5	0.35	1.74	0.96	55	14.9
125	115	149	141	153	4.5	9	5	2.5	0.44	1.35	0.74	34	2.32
125	115	151	141	153	4.5	9	5	2	0.44	1.35	0.74	34	2.35
130	115	149	141	153	4	9	6	2.5	0.44	1.35	0.74	35	2.38
120	119	143	139	143	4.5	5	1.5	1.5	0.28	2.12	1.17	24	1.18

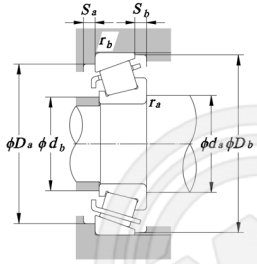
ZWZ

d 110～130mm



Pressed cage

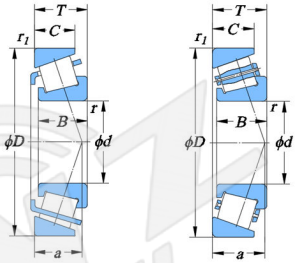
Machined cage



Principal dimensions(mm)							Basic load ratings(kN)		Limiting speeds (r/min)		Designations
d	*D*	*T*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}	Grease	Oil	
110	150	25	25	20	1.5	1.5	112	165	2300	2900	**32922**
	170	38	38	29	2.5	2	251	366	2100	2700	**32022-RS2**
	170	38	38	29	2.5	2	251	366	2100	2700	**32022**
	170	38	38	29	2.3	2.3	251	366	2100	2700	**32022/YA6**
	170	38	38	29	2.5	2	259	381	2100	2700	**32022/YA8**
	170	38.4	36	31	2.5	2	235	329	2100	2700	**32022X2A**
	170	47	47	37	2.5	2	299	464	2100	2700	**33022**
	170	47	47	37	2.5	2	326	520	2100	2700	**33022/YA8**
	170	47	47	37	6	2	319	505	2100	2700	**33022/YA6**
	170	52	52	42	2.5	2	341	571	2100	2700	**33022X2**
	180	56	56	43	2.5	2	384	610	2000	2600	**33122**
	190	49	49	39	3	3	343	522	2000	2500	**33022X3A/HA**
	200	41	38	32	3	2.5	358	437	1900	2400	**30222**
	200	56	53	46	3	2.5	491	656	1900	2400	**32222**
	200	56	53	46	3	2.5	472	623	1900	2400	**32222/YA8**
	240	54.5	50	42	4	3	534	597	1700	2100	**30322**
	240	63	57	38	4	3	527	610	1700	2100	**31322**
	240	63	57	38	4	3	527	610	1700	2100	**31322/YB4**
	240	84.5	80	65	4	3	825	1050	1700	2100	**32322**
	240	89.5	80	70	4	3	825	1050	1700	2100	**32322X2**
115	190	49	49	35	2.5	2.5	326	469	1900	2400	**30623**
120	165	29	29	23	1.5	1.5	188	316	2100	2600	**32924**
	180	38	38	29	2.5	2	262	396	2000	2500	**32024**
	180	38	38	29	2.5	2	273	426	2000	2500	**32024/YA5**
	180	38	38	29	6	6	262	396	2000	2500	**32024/YA6**
	180	38.4	36	31	2.5	2	247	359	2000	2500	**32024X2A**
	180	48	48	38	2.5	2	321	520	2000	2500	**33024A**
	200	62	62	48	2.5	2	489	772	1800	2300	**33124**
	215	43.5	40	34	3	2.5	382	473	1700	2200	**30224**
	215	61.5	58	50	3	2.5	544	747	1700	2200	**32224**
	260	59.5	55	46	4	3	637	730	1500	1900	**30324**
	260	68	62	42	4	3	606	707	1500	1900	**31324**
	260	90.5	86	69	4	3	942	1210	1500	1900	**32324**
	260	95.5	86	74	4	3	942	1210	1500	1900	**32324X2**
130	180	32	30	26	2	1.5	183	283	1900	2400	**32926X2A**
	200	45	45	34	2.5	2	372	577	1800	2200	**32026**
	200	45.5	42	36	2.5	2	306	436	1800	2200	**32026X2A**
	200	55	55	43	2.5	2	412	665	1800	2200	**33026**
	207	64	64	52	2.5	2	533	882	1700	2200	**30626**
	230	43.75	40	34	4	3	415	510	1600	2000	**30226**
	230	55.75	52	42	8	3	517	705	1600	2000	**30226X2**
	230	67.75	64	54	4	3	629	877	1600	2000	**32226**

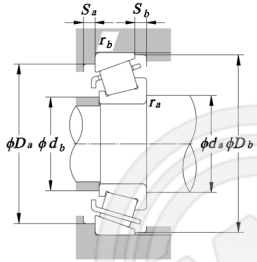
Abutment and fillet dimensions(mm)									Factor				Mass(kg) (approx.)
d_{amin}	d_{bmax}	D_{amax}	D_{amin}	D_{bmin}	$S_{a\,min}$	S_{bmin}	$r_{a\,max}$	$r_{b\,max}$	*e*	*Y*	Y_o	*a*	
120	119	143	139	143	5	5	1.5	1.5	0.28	2.12	1.17	24	1.27
122	121	163	149	163	5	9	2	2	0.43	1.39	0.77	37	3.11
122	121	163	149	163	5	9	2	2	0.43	1.39	0.77	37	3.03
123	121	160	149	163	5	9	2	2	0.43	1.39	0.77	37	3.03
122	121	163	149	163	5	9	2	2	0.43	1.39	0.77	37	3.06
122	121	161	151	161	5.3	8	2	2	0.35	1.73	0.95	34	3.10
122	121	161	149	160	5.2	10	2	2	0.29	2.09	1.15	33	3.75
122	121	161	149	160	5	10	2	2	0.29	2.09	1.15	33	3.85
130	122	161	149	160	5	10	5	2	0.29	2.09	1.15	33	3.80
122	122	161	150	162	4.7	10	2	2	0.29	2.09	1.15	36	4.27
122	123	171	152	173	5.1	13	2	2	0.42	1.43	0.79	44	5.50
123	130	179	159	173	2.2	10	2.5	2.5	0.30	1.98	1.09	38	5.74
123	128	190	172	186	5	9	2.5	2	0.42	1.43	0.79	40	5.16
123	123	190	168	190	6.5	10	2.5	2	0.42	1.43	0.79	47	7.47
123	123	190	168	190	7	10	2.5	2	0.42	1.43	0.79	47	7.58
125	142	229	204	219	8.7	13	3	2.5	0.35	1.74	0.96	45	11.1
125	131	229	185	224	9.5	25	3	2.5	0.83	0.73	0.40	75	12.5
125	131	229	185	224	9.5	25	3	2.5	0.83	0.73	0.40	75	12.5
125	136	229	196	222	9	20	3	2.5	0.35	1.74	0.96	58	17.9
125	136	229	194	222	9	20	3	2.5	0.35	1.74	0.96	63	18.6
129	126	179	162	178	7	14	2	2	0.44	1.35	0.74	43	5.13
130	130	158	151	159	4.3	6	1.5	1.5	0.35	1.72	0.95	29	1.79
132	130	171	158	173	5.2	9	2	2	0.46	1.31	0.72	39	3.27
132	130	171	158	173	4.5	9	2	2	0.46	1.31	0.72	40	3.29
140	130	163	158	173	5.2	9	5	5	0.46	1.31	0.72	39	3.27
132	130	171	160	172	5.3	8	2	2	0.37	1.62	0.89	36	3.18
132	130	171	159	171	5.2	10	2	2	0.31	1.97	1.08	36	4.17
132	134	191	169	192	5	14	2	2	0.40	1.51	0.83	48	7.74
133	139	205	185	201	6.5	10	2.5	2	0.44	1.38	0.76	44	6.17
133	134	205	179	204	6	12	2.5	2	0.44	1.38	0.76	52	9.25
135	153	248	219	236	9.5	14	3	2.5	0.35	1.74	0.96	49	14.2
135	142	248	201	243	9.5	26	3	2.5	0.83	0.73	0.40	82	15.6
135	147	248	211	239	9.5	22	3	2.5	0.35	1.74	0.96	62	22.4
135	147	248	209	239	10.5	22	3	2.5	0.35	1.74	0.96	67	23.2
142	140	173	165	171	5.3	6	2	1.5	0.27	2.21	1.22	29	2.31
143	141	191	175	192	4.9	11	2	2	0.43	1.38	0.76	44	5.06
143	142	191	176	189	6.1	10	2	2	0.35	1.72	0.95	41	4.66
143	143	191	175	192	5.3	12	2	2	0.34	1.76	0.97	42	6.04
143	145	198	178	198	6	12	2	2	0.33	1.80	0.99	47	8.33
146	151	219	201	216	7	10	3	2.5	0.44	1.38	0.76	46	7.02
159	149	219	197	214	8	14	6	2.5	0.39	1.56	0.86	49	9.25
146	144	219	191	218	7.3	14	3	2.5	0.44	1.38	0.76	57	11.5

d 130～170mm



Pressed cage

Machined cage

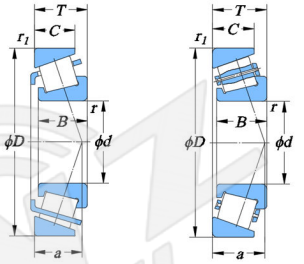


d	D	Principal dimensions(mm) T	B	C	r_{min}	r_{1min}	Basic load ratings(kN) C_r	C_{or}	Limiting speeds (r/min) Grease	Oil	Designations
130	230	67.75	64	54	4	3	620	860	1600	2000	**32226A**
	230	67.75	64	54	4	3	629	877	1600	2000	**32226/YB2**
	250	71.75	68	58	4	3	716	984	1500	1900	**32228X4**
	280	63.75	58	49	5	4	726	837	1400	1700	**30326**
	280	72	66	44	5	4	695	822	1400	1700	**31326**
	280	98.75	93	78	3.7	3.7	971	1270	1400	1700	**32326/YA6**
140	190	32	32	25	2	1.5	227	390	1800	2200	**32928**
	190	32	30	26	2	1.5	184	293	1800	2200	**32928X2A**
	210	45	45	34	2.5	2	358	558	1700	2100	**32028**
	210	45	45	34	6	6	358	558	1700	2100	**32028/YA6**
	210	45.5	42	36	2.5	2	322	476	1700	2100	**32028X2A**
	210	56	56	44	2.5	2	431	719	1700	2100	**33028**
	230	58	57	45	3	3	458	698	1500	1900	**30628**
	250	45.75	42	36	4	3	464	572	1500	1800	**30228**
	250	71.75	68	58	4	3	735	1040	1500	1800	**32228**
	300	67.75	62	53	5	4	828	967	1300	1600	**30328**
	300	77	70	47	5	4	776	920	1300	1600	**31328**
	300	89.5	82	60	3.7	3.7	738	935	1300	1600	**31328X2A**
	300	107.75	102	85	5	4	1190	1630	1300	1600	**32328**
150	210	38	38	30	2.5	2	294	458	1600	2000	**32930**
	210	38.5	36	31	2.5	2	248	397	1600	2000	**32930X2A**
	225	48	48	36	3	2.5	400	628	1500	1900	**32030**
	225	48	48	36	3	2.5	411	650	1500	1900	**32030T**
	225	48.5	45	38	3	2.5	314	468	1500	1900	**32030X2A**
	225	59	59	46	3	2.5	491	836	1500	1900	**33030**
	225	59	59	46	3	2.5	504	865	1500	1900	**33030T**
	270	49	45	38	4	3	509	628	1300	1700	**30230**
	270	77	73	60	4	3	822	1160	1300	1700	**32230**
	270	77	73	60	4	3	822	1160	1300	1700	**32230/YAB**
	320	72	65	55	5	4	917	1070	1200	1500	**30330**
	320	114	108	90	5	4	1430	1900	1200	1500	**32330**
160	220	38	36	31	2.5	2	277	444	1500	1900	**32932X2A**
	220	38	38	30	2.5	2	289	523	1500	1900	**32932N1**
	220	38	38	30	2.5	2	266	472	1500	1900	**32932N1/YAD**
	240	51	48	41	3	2.5	436	669	1400	1800	**32032X2A**
	240	51	51	38	3	2.5	457	726	1400	1800	**32032**
	290	52	48	40	4	3	578	720	1200	1500	**30232**
	290	84	80	67	4	3	977	1420	1200	1500	**32232**
	290	84	80	67	4	3	1010	1490	1200	1500	**32232/YA8**
	340	88	79	54	3.7	3.7	922	1100	1100	1300	**31332**
	340	121	114	95	5	4	1580	2130	1100	1300	**32332**
170	220	27	25	19.5	3	3	183	329	1500	1800	**32934X3**

Abutment and fillet dimensions(mm) d_{amin}	d_{bmax}	D_{amax}	D_{amin}	D_{bmin}	$S_{a\,min}$	S_{bmin}	$r_{a\,max}$	$r_{b\,max}$	Factor e	Y	Y_0	a	Mass(kg) (approx.)
146	143	219	191	219	5.9	14	3	2.5	0.44	1.38	0.76	57	11.7
146	143	219	191	218	5.9	14	3	2.5	0.44	1.38	0.76	57	11.5
146	153	239	206	234	5.9	14	3	2.5	0.42	1.43	0.79	59	15.6
148	165	266	237	255	9.5	15	4	3	0.35	1.74	0.96	53	17.4
148	152	266	217	260	9.5	28	4	3	0.83	0.73	0.40	86	18.9
148	162	266	228	256	10.2	21	3	3	0.32	1.88	1.04	67	26.4
152	149	183	174	183	4.4	7	2	1.5	0.36	1.67	0.92	34	2.55
152	151	183	175	182	5.3	6	2	1.5	0.29	2.07	1.14	31	2.43
153	151	201	184	202	5.8	11	2	2	0.46	1.31	0.72	46	5.75
160	151	190	184	202	5.8	11	5	5	0.46	1.31	0.72	46	5.75
153	152	201	186	200	7	10	2	2	0.37	1.62	0.89	43	4.94
153	150	201	184	201	4.5	12	2	2	0.36	1.67	0.92	45	6.47
155	155	218	196	218	8	13	2.5	2.5	0.44	1.35	0.74	94	8.97
156	163	239	216	233	7.8	10	3	2.5	0.44	1.38	0.76	49	8.80
156	156	239	208	238	8.7	14	3	2.5	0.44	1.38	0.76	61	14.7
158	176	286	253	272	11.2	15	4	3	0.35	1.74	0.96	57	21.2
158	164	286	233	280	11.2	30	4	3	0.83	0.73	0.40	94	23.4
158	168	286	223	276	12.9	30	3	3	0.73	0.82	0.45	94	29.0
158	170	286	238	275	2.9	23	4	3	0.37	1.63	0.90	76	35.8
163	161	201	190	201	4.8	8	2	2	0.33	1.83	1.01	36	3.83
163	162	201	191	199	6	8	2	2	0.27	2.20	1.21	34	4.56
164	161	215	197	216	6	12	2.5	2	0.46	1.31	0.72	49	6.40
164	161	215	197	216	6	12	2.5	2	0.46	1.31	0.72	49	6.48
164	163	215	197	213	7	11	2.5	2	0.39	1.54	0.85	48	6.84
164	163	215	198	217	5.3	13	2.5	2	0.36	1.65	0.90	48	8.06
165	163	215	198	217	5.3	13	2.5	2	0.36	1.65	0.90	48	8.14
166	174	258	232	249	7.4	11	3	2.5	0.44	1.38	0.76	52	10.7
166	168	258	223	254	8	17	3	2.5	0.44	1.38	0.76	65	18.4
166	168	258	223	254	8	17	3	2.5	0.44	1.38	0.76	65	18.4
168	189	306	271	291	11.2	17	4	3	0.35	1.74	0.96	61	25.5
168	182	306	262	298	11.2	24	4	3	0.35	1.74	0.96	78	42.2
173	173	211	204	211	6.1	7	2	2	0.27	2.23	1.23	35	3.79
173	174	211	202	212	4.5	8	2	2	0.35	1.73	0.95	39	3.86
173	175	211	202	212	3	8	2	2	0.35	1.73	0.95	40	4.10
174	174	230	213	229	6.8	10	2.5	2	0.37	1.62	0.89	47	7.67
174	172	230	211	230	6	13	2.5	2	0.46	1.31	0.72	53	7.67
176	188	278	250	268	8.6	12	3	2.5	0.44	1.38	0.76	55	13.4
176	179	278	239	274	8.5	17	3	2.5	0.44	1.38	0.76	71	23.3
176	179	278	239	274	8.5	17	3	2.5	0.44	1.38	0.76	71	23.7
178	189	326	265	315	12.9	34	3	3	0.76	0.79	0.43	101	29.9
178	191	326	274	313	12.5	26	4	3	0.35	1.74	0.96	84	51.7
183	181	210	204	212	3.11	8	2.5	2.5	0.47	1.28	0.70	43	2.33

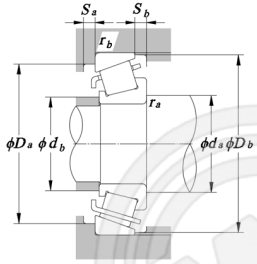
ZWZ

d 170～220mm



Pressed cage

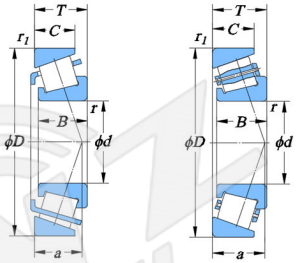
Machined cage



Principal dimensions(mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations
d	*D*	*T*	*B*	*C*	r_{1min}	r_{1min}	C_r	C_{or}	Grease	Oil	
170	230	38	38	30	2.5	2	308	562	1400	1800	**32934**
	230	38	36	31	2.5	2	281	460	1400	1800	**32934X2A**
	260	57	57	43	3	2.5	548	872	1300	1600	**32034**
	260	57	57	43	1.5	1.5	548	872	1300	1600	**32034/YA6**
	260	57	57	43	3	2.5	563	904	1300	1600	**32034/YA8**
	260	57.5	54	46	3	2.5	484	773	1300	1600	**32034X2A**
	310	91	86	71	5	4	1110	1620	1100	1400	**32234**
	360	80	72	62	5	4	1140	1360	960	1300	**30334**
	360	127	120	100	3.7	3.7	1580	2140	960	1300	**32334/YA6**
180	250	45	42	36	2.5	2	326	529	1300	1600	**32936X2A**
	250	45	45	34	2.5	2	378	714	1300	1600	**32936**
	250	45	45	34	2.5	2	378	714	1300	1600	**32936/HCE**
	250	45	45	34	2.5	2	378	714	1300	1600	**32936/HCEYB2**
	280	64	64	48	3	2.5	664	1060	1200	1500	**32036**
	280	64	64	48	3	2.5	702	1150	1200	1500	**32036/YAB**
	280	64.5	60	52	3	2.5	595	905	1200	1500	**32036X2A**
	280	64.5	60	52	3	2.5	557	830	1200	1500	**32036X2A/YA8**
	290	64.5	63.5	48	2.3	2.3	615	966	1200	1500	**32036X3A**
	300	73	70	60	3	3	808	1220	1100	1400	**30236X3**
	320	91	86	71	5	4	1140	1700	1100	1300	**32236**
	380	83	75	64	5	4	1250	1490	890	1200	**30336**
	380	98	88	60	5	4	1170	1510	890	1200	**31336**
190	260	45	45	34	2.5	2	355	708	1200	1500	**32938**
	260	45.5	42	36	2.5	2	370	635	1200	1500	**32938X2A**
	290	64	64	48	3	2.5	691	1120	1100	1400	**32038**
	290	64.5	60	52	3	2.5	595	929	1100	1400	**32038X2A**
	290	64.5	60	52	3	2.5	559	855	1100	1400	**32038X2A/YA8**
	340	97	92	75	5	4	1290	1890	960	1300	**32238**
	340	97	92	75	5	4	1230	1830	960	1300	**32238A**
	400	103	90	62	5	4	1240	1610	830	1100	**31338**
200	280	51	48	41	3	2.5	431	766	1100	1400	**32940X2A**
	280	51	51	39	3	2.5	481	886	1100	1400	**32940**
	310	70	66	56	3	2.5	636	1030	1000	1300	**32040X2A**
	310	70	66	56	3	2.5	599	954	1000	1300	**32040X2A/YA8**
	310	70	70	53	3	2.5	806	1310	1000	1300	**32040**
	360	64	58	48	5	4	876	1130	890	1200	**30240**
	360	104	98	82	5	4	1510	2170	890	1200	**32240**
	420	146	138	115	5	5	2000	2850	770	1000	**32340**
210	285	41	40	33	4	3	399	729	1100	1400	**30642N1**
	360	115	111	90	5	4	1480	2510	870	1100	**30642X3**
216.5	285	41	40	33	4	3	410	756	1100	1300	**306-216.5N1**
220	300	51	51	39	3	2.5	514	967	980	1300	**32944**

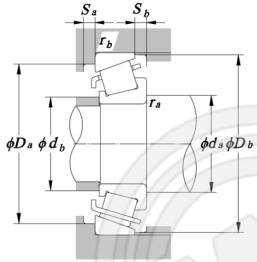
Abutment and fillet dimensions(mm)									Factor				Mass(kg) (approx.)
d_{amin}	d_{bmax}	D_{amax}	D_{amin}	D_{bmin}	$S_{a\,min}$	S_{bmin}	$r_{a\,max}$	$r_{b\,max}$	*e*	*Y*	Y_0	*a*	
183	181	221	210	222	4.8	8	2	2	0.38	1.57	0.86	42	4.51
183	183	221	214	221	6.1	7	2	2	0.28	2.12	1.17	36	3.86
184	186	249	227	249	5.7	14	2.5	2	0.44	1.35	0.74	56	10.6
180	186	253	227	249	5.7	14	1.5	1.5	0.44	1.35	0.74	56	10.6
184	186	249	227	249	5.7	14	2.5	2	0.44	1.35	0.74	56	10.6
184	190	249	230	244	7.8	12	2.5	2	0.31	1.94	1.07	49	10.1
188	192	296	257	293	4.8	20	4	3	0.44	1.38	0.76	76	30.0
190	215	346	305	329	6.5	18	4	3	0.35	1.74	0.96	68	35.8
188	205	346	288	331	14.6	27	3	3	0.36	1.67	0.92	89	63.5
193	189	241	226	240	6.1	9	2	2	0.37	1.63	0.90	48	6.44
193	192	241	222	240	4.3	11	2	2	0.48	1.25	0.69	54	6.57
193	192	241	222	240	4.5	11	2	2	0.48	1.25	0.69	54	6.57
193	192	241	222	240	4.5	11	2	2	0.48	1.25	0.69	54	6.57
194	197	269	244	267	6	16	2.5	2	0.42	1.42	0.78	60	13.9
194	196	269	244	267	7.2	16	2.5	2	0.42	1.42	0.78	60	14.2
194	201	269	247	262	7.2	13	2.5	2	0.28	2.16	1.19	52	13.0
194	201	269	247	262	8.7	13	2.5	2	0.28	2.16	1.19	52	12.6
193	202	280	248	272	8.7	17	2	2	0.44	1.36	0.75	62	15.6
194	203	288	257	284	5.4	13	2.5	2.5	0.39	1.55	0.85	63	19.8
198	200	306	265	303	9.5	20	4	3	0.45	1.33	0.73	79	30.2
200	227	366	324	349	6.6	19	4	3	0.35	1.74	0.96	71	41.4
198	212	366	289	350	4.2	38	4	3	0.83	0.73	0.40	120	46.4
203	204	250	232	250	5	11	2	2	0.48	1.26	0.69	55	6.94
203	201	250	235	250	8.1	10	2	2	0.38	1.57	0.86	50	6.52
204	207	280	254	278	6.8	16	2.5	2	0.44	1.36	0.75	63	14.5
204	210	279	255	276	8.7	13	2.5	2	0.37	1.62	0.89	59	15.3
204	210	279	255	276	3.1	13	2.5	2	0.37	1.62	0.89	59	15.0
210	213	326	284	323	7.1	22	4	3	0.44	1.38	0.76	82	36.1
210	216	326	282	320	7.1	22	4	3	0.43	1.40	0.77	80	36.1
208	228	386	307	371	4.5	41	4	3	0.83	0.72	0.40	126	53.3
215	215	269	252	269	7	10	2.5	2	0.39	1.53	0.84	55	8.86
215	217	269	253	270	5.1	12	2.5	2	0.39	1.52	0.84	54	9.56
215	225	299	268	293	8.6	14	2.5	2	0.39	1.53	0.84	67	18.0
215	225	299	268	293	10	14	2.5	2	0.39	1.53	0.84	67	17.8
215	220	299	270	296	6.5	17	2.5	2	0.43	1.39	0.77	67	19.5
219	235	346	312	335	9.5	16	4	3	0.44	1.38	0.76	69	25.4
221	221	346	300	339	11.2	22	4	3	0.41	1.48	0.81	85	42.5
221	243	403	334	385	13	31	4	4	0.37	1.62	0.89	103	90.5
227	232	273	266	277	5.7	8	3	2.5	0.32	1.88	1.04	45	7.39
231	233	346	298	340	6	25	4	3	0.40	1.49	0.82	89	47.8
234	232	273	266	277	5.7	8	3	2.5	0.32	1.88	1.04	45	6.79
235	234	289	271	290	5.3	12	2.5	2	0.43	1.41	0.78	59	10.0

d 220～300mm



Pressed cage

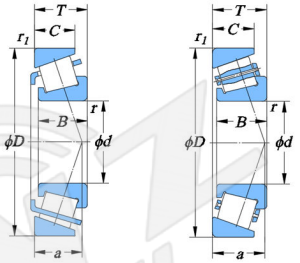
Machined cage



Principal dimensions(mm)							Basic load ratings (kN)		Limiting speeds(r/min)		Designations
d	*D*	*T*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}	Grease	Oil	
220	300	51.5	48	41	3	2.5	466	859	980	1300	**32944X2A**
	340	76	76	57	4	3	934	1520	890	1200	**32044**
	340	76	72	62	4	3	872	1360	890	1200	**32044X2A**
	340	76	72	62	4	3	826	1270	890	1200	**32044MB**
	360	85	82	70	4	4	1100	1790	850	1100	**32044X3**
	400	72	65	54	5	4	1090	1400	770	1000	**30244**
	400	72	65	54	3.7	3.7	963	1210	770	1000	**30244A/YA6**
	400	72	65	54	5	4	1090	1400	770	1000	**30244/HC**
	400	114	108	90	5	4	1770	2670	770	1000	**32244**
	460	154	145	122	5	5	2400	3420	690	900	**32344**
240	320	42	39	30	3	3	441	770	890	1200	**32948X2**
	320	51	48	41	3	2.5	440	793	890	1200	**32948X2A**
	320	51	51	39	3	2.5	572	1060	890	1200	**32948**
	360	76	76	57	4	3	943	1580	810	1100	**32048**
	360	76.5	72	62	4	3	872	1470	810	1100	**32048X2A**
	440	79	72	60	5	4	1180	1550	690	900	**30248**
	440	127	120	100	5	4	2060	3150	690	900	**32248**
	440	127	120	100	5	4	2060	3150	690	900	**32248/HC**
	500	165	155	132	6	5	2860	4120	610	800	**32348**
250	520	130	118	82	5	4	2000	2980	580	800	**30650**
254	422.275	86.1	79.8	66.7	4.7	2.5	1240	1790	690	900	**306/254**
255	560	123.05	104.8	70	6	6	2000	2500	540	700	**30651**
260	360	63.5	60	52	3	2.5	651	1210	770	1000	**32952X2A**
	360	63.5	63.5	48	3	2.5	707	1250	770	1000	**32952**
	400	87	87	65	5	4	1220	2030	710	900	**32052**
	400	87	87	65	5	4	1220	2030	710	900	**32052/HC**
	400	87.7	82	71	5	4	1120	1870	710	900	**32052X2A**
	480	89	80	67	6	5	1510	2040	610	800	**30252**
	480	133.5	141	102.5	6	5	2400	3680	610	800	**32252X2/HC**
	480	137	130	105	6	5	2400	3680	610	800	**32252**
	540	113	102	85	6	6	2130	2730	550	700	**30352**
280	380	63.5	63.5	48	3	2.5	786	1490	710	900	**32956**
	380	64.5	60	52	3	2.5	683	1320	710	900	**32956X2A**
	420	87	87	65	5	4	1270	2190	660	900	**32056**
	420	87	87	65	5	4	1270	2190	660	900	**32056/HC**
	420	87.7	82	71	5	4	1210	2010	660	900	**32056X2A**
	500	133	141	102	6	5	2520	3980	570	800	**32256X2/HC**
285	370	40	40	28	3	2.5	394	748	720	1000	**306/285**
300	420	76	76	57	4	3	982	1760	640	900	**32960**
	420	76	76	57	4	3	1030	1880	640	900	**32960/HCYA5**
	420	76.5	72	62	4	3	965	1810	640	900	**32960X2A**
	440	73	70	55	4	3	956	1470	610	800	**32960X3B**

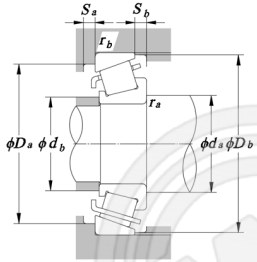
Abutment and fillet dimensions(mm)										Factor				Mass(kg) (approx.)
d_{amin}	d_{bmax}	D_{amax}	D_{amin}	D_{bmin}	$S_{a\,min}$	S_{bmin}	$r_{a\,max}$	$r_{b\,max}$	*e*	*Y*	Y_0	*a*	
235	238	289	274	287	7.1	11	2.5	2	0.31	1.94	1.07	51	10.1
237	240	328	297	325	8.5	19	3	2.5	0.43	1.39	0.77	73	23.9
237	242	328	298	323	11.2	14	3	2.5	0.35	1.73	0.95	68	23.3
239	242	328	298	323	4.9	14	3	2.5	0.35	1.73	0.95	67	24.8
237	246	346	306	338	4.9	15	3	3	0.40	1.51	0.83	77	32.9
241	257	386	344	370	10.5	18	4	3	0.42	1.43	0.79	76	36.8
239	264	386	345	367	12.9	18	3	3	0.37	1.60	0.88	72	37.6
241	257	386	344	370	7.4	18	4	3	0.42	1.43	0.79	76	36.8
241	249	386	331	379	12.9	24	4	3	0.44	1.38	0.76	97	62.7
241	270	443	372	426	13.5	32	4	4	0.37	1.62	0.89	112	114
255	256	309	294	308	7	12	2.5	2.5	0.46	1.31	0.72	62	8.43
255	256	309	293	306	7	10	2.5	2	0.32	1.88	1.04	54	10.8
255	250	309	290	311	7	12	2.5	2	0.46	1.31	0.72	65	10.8
257	259	348	315	345	7	19	3	2.5	0.46	1.31	0.72	79	26.0
257	264	348	316	338	7	15	3	2.5	0.31	1.91	1.05	67	23.8
261	287	425	375	405	3.4	19	4	3	0.44	1.36	0.75	87	46.8
261	275	425	361	414	6.5	27	4	3	0.44	1.38	0.76	107	81.4
261	275	425	361	414	6.5	27	4	3	0.44	1.38	0.76	107	81.4
266	293	482	399	459	15.3	33	5	4	0.37	1.62	0.89	122	146
271	298	505	388	473	5	48	4	3	0.83	0.73	0.40	161	119
275	291	412	371	397	11.5	20	3.5	2	0.36	1.65	0.90	81	45.4
279	318	540	434	508	11.5	54	5	5	0.87	0.69	0.38	173	127
276	282	349	325	342	9.5	12	2.5	2	0.30	1.98	1.09	62	19.1
276	280	349	325	347	7.8	16	2.5	2	0.41	1.48	0.81	72	17.9
281	285	386	349	382	7.2	22	4	3	0.43	1.38	0.76	86	37.5
281	285	386	349	382	7.2	22	4	3	0.43	1.38	0.76	86	37.5
281	290	386	352	375	11.2	17	4	3	0.30	2.03	1.11	73	37.8
286	311	462	407	441	12	22	5	4	0.44	1.38	0.76	95	63.9
284	298	463	397	450	12	31	5	4	0.43	1.39	0.77	111	105
284	298	463	395	449	8.3	32	5	4	0.43	1.39	0.77	114	104
286	322	518	451	479	15.5	28	5	5	0.32	1.88	1.04	93	112
296	297	370	344	367	6.2	16	2.5	2	0.43	1.39	0.76	75	20.0
296	300	369	343	361	7.8	13	2.5	2	0.32	1.87	1.03	66	21.3
301	303	406	367	402	7.1	22	4	3	0.46	1.31	0.72	91	40.4
301	303	406	367	402	7.1	22	4	3	0.46	1.31	0.72	91	40.4
301	305	405	371	400	11.2	17	4	3	0.37	1.62	0.89	84	39.6
304	316	483	415	469	11.2	31	5	4	0.43	1.39	0.77	113	110
301	307	359	344	355	3.5	12	2.5	2	0.40	1.49	0.82	61	10.1
319	322	407	379	405	4.5	19	3	2.5	0.39	1.52	0.84	81	30.4
319	321	407	379	405	6	19	3	2.5	0.39	1.52	0.84	80	30.6
319	325	407	378	397	9.5	15	3	2.5	0.28	2.12	1.17	70	30.2
319	329	427	395	421	7.5	18	3	2.5	0.44	1.36	0.75	91	34.2

d 300～420mm



Pressed cage

Machined cage

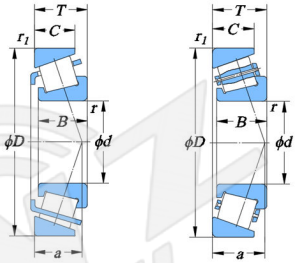


Principal dimensions(mm)							Basic load ratings(kN)		Limiting speeds (r/min)		Designations
d	*D*	*T*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}	Grease	Oil	
300	460	100	100	74	5	4	1570	2730	590	800	**32060**
	460	100	100	74	5	4	1570	2730	590	800	**32060/HC**
	460	100.7	95	77	5	4	1460	2440	590	800	**32060X2A**
	500	95	90	70	5	5	1490	2230	550	700	**31160X2**
	540	96	85	71	6	5	1770	2510	520	700	**30260**
	540	149	140	115	6	5	2930	4560	520	700	**32260/HCYB2**
	620	187	175	145	6	6	4190	6130	450	600	**30660/HC**
320	440	76	72	62	4	3	1060	1950	590	800	**32964X2A**
	440	76	76	57	4	3	1100	2180	590	800	**32964**
	440	76	76	57	4	3	1100	2180	590	800	**32964/HC**
	480	95	95	70	5	4	1570	2730	550	700	**32064X2**
	480	100	100	74	5	4	1630	2860	550	700	**32064**
	480	100	100	74	5	4	1630	2860	550	700	**32064/HC**
	580	104	92	75	6	5	1850	2510	470	600	**30264**
	620	141	125	107	7.5	7.5	2780	4180	440	600	**30664**
340	460	76	72	63	4	3	999	1930	550	700	**32968X2A**
	460	76	76	57	4	3	1060	2090	550	700	**32968**
	480	100	100	74	5	4	1450	2890	530	700	**30668**
	500	100	100	74	5	5	1690	3070	520	700	**32068X3/HCYB2**
	500	100	100	74	5	5	1690	3070	520	700	**32068X3/YB2**
	520	112	106	92	6	5	1890	3380	500	700	**32068**
360	480	76	76	57	4	4	1090	2290	520	700	**32972**
	480	76	76	57	4	4	1090	2290	520	700	**32972/HC**
	480	76	72	62	4	4	1110	2160	520	700	**32972X2**
	530	80	66	59	5	5	1130	1880	480	600	**30672**
	540	86	82	63.5	5	4	1390	2200	470	600	**31072X2**
	540	112	106	92	6	5	1960	3540	470	600	**32072**
368.249	523.875	117.602	117.602	94.47	20	6.35	1940	3990	470	600	**306/368X4/HCE**
380	520	66.5	65	46.5	4	4	1070	1900	470	600	**31976X2**
	520	87	82	71	5	4	1300	2650	470	600	**32976**
	620	112	106	92	5	5	2430	3890	400	500	**31176X2**
381	498	54	51	41	3.3	3.3	895	1710	480	700	**306/381**
400	500	60	57	47	4	3	680	1470	470	600	**30680**
	540	70	65	48	4	4	1060	1930	440	600	**31980**
	540	70	70	53	5	4	1150	2320	440	600	**31980X2**
	540	87	82	71	5	4	1350	2740	440	600	**32980**
	600	125	118	100	6	5	2390	4560	400	500	**32080**
406.4	660.4	127	102.93	72.93	16	16	2130	3700	370	500	**306/406X4/HC**
420	560	70	65	51	4	4	1120	2080	410	600	**31984**
	560	70	65	51	4	4	1120	2080	410	600	**31984/HC**
	560	87	82	72	5	4	1420	2940	410	600	**32984X2**
	620	95	90	67	5	5	1740	2990	380	500	**31084X2**

Abutment and fillet dimensions(mm)									Factor				Mass(kg) (approx.)
d_{amin}	d_{bmax}	D_{amax}	D_{amin}	D_{bmin}	$S_{a\,min}$	S_{bmin}	$r_{a\,max}$	$r_{b\,max}$	*e*	*Y*	Y_o	*a*	
322	326	445	401	439	6.3	26	4	3	0.43	1.38	0.76	98	56.6
322	326	445	401	439	6.3	26	4	3	0.43	1.38	0.76	98	56.6
322	330	445	401	434	12	24	4	3	0.36	1.65	0.90	92	57.0
325	343	483	434	459	4	25	4	4	0.32	1.88	1.04	85	66.4
325	355	523	458	494	13	25	5	4	0.44	1.36	0.75	106	84.7
325	338	522	452	511	5.5	34	5	4	0.43	1.39	0.77	126	138
325	357	600	504	569	6	42	5	5	0.37	1.62	0.89	141	251
339	342	427	400	422	3	14	3	2.5	0.31	1.91	1.05	75	32.1
339	342	427	398	425	6	19	3	2.5	0.42	1.44	0.79	85	33.2
339	343	427	398	425	6	19	3	2.5	0.42	1.44	0.79	85	33.2
342	349	465	421	458	9	25	4	3	0.46	1.31	0.72	102	57.7
342	346	465	421	461	12.5	26	4	3	0.46	1.31	0.72	104	62.7
342	346	465	421	461	12.5	26	4	3	0.46	1.31	0.72	104	62.7
347	380	562	494	531	16.3	29	5	4	0.44	1.38	0.76	112	103
352	381	593	494	572	4	34	6	6	0.59	1.02	0.56	158	178
359	361	448	415	446	8.5	13	3	2.5	0.41	1.45	0.80	91	31.6
359	361	448	416	445	4.1	19	3	2.5	0.44	1.37	0.75	92	31.6
362	363	465	423	463	7	26	4	3	0.46	1.31	0.72	105	54.8
363	368	482	442	478	7	26	4	4	0.40	1.49	0.82	99	62.8
363	368	482	442	478	7	26	4	4	0.40	1.49	0.82	99	62.8
365	374	500	453	492	7	20	5	4	0.37	1.62	0.89	104	81.9
379	382	465	436	465	8	19	3	3	0.46	1.31	0.72	96	36.7
379	382	465	436	465	8	19	3	3	0.46	1.31	0.72	96	36.7
379	382	465	440	465	8	14	3	3	0.37	1.60	0.88	88	35.2
382	405	513	473	500	6.2	21	4	4	0.40	1.49	0.82	100	53.2
382	397	525	482	509	12	23	4	3	0.37	1.61	0.89	97	73.1
385	393	523	473	514	6.9	20	5	4	0.38	1.58	0.87	108	85.7
415	397	510	468	499	8	24	12	5	0.29	2.06	1.13	94	79.7
399	411	505	476	495	5	20	3	3	0.38	1.58	0.87	85	37.2
402	408	505	466	498	2.7	16	4	3	0.39	1.54	0.85	98	50.0
403	427	602	535	586	6	20	4	4	0.46	1.30	0.72	126	123
401	405	483	464	479	7.6	13	2.5	2.5	0.37	1.60	0.88	78	26.1
420	418	487	462	486	9.5	13	3	2.5	0.44	1.36	0.75	93	25.1
420	427	525	492	516	3.5	22	3	3	0.45	1.33	0.73	101	39.7
423	431	525	491	518	6	17	4	3	0.45	1.33	0.73	101	44.0
423	427	525	487	520	4	16	4	3	0.40	1.50	0.82	103	54.1
426	439	583	527	568	11.5	25	5	4	0.36	1.67	0.92	118	118
448	438	626	527	640	8	55	12	12	1.26	0.48	0.26	282	153
440	449	545	514	535	8.5	19	3	3	0.38	1.58	0.87	94	41.7
440	449	545	514	535	8.5	19	3	3	0.38	1.58	0.87	94	41.7
443	445	545	508	542	5	15	4	3	0.41	1.46	0.80	107	56.8
443	463	603	554	584	4.2	28	4	4	0.41	1.46	0.80	112	88.3

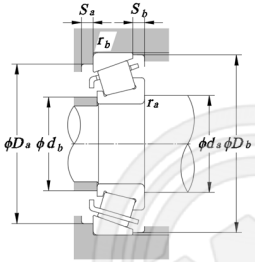
ZWZ

d 420～750mm



Pressed cage

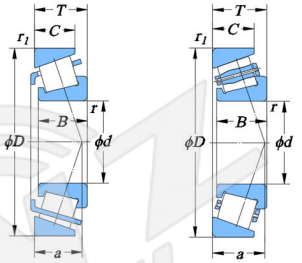
Machined cage



d	Principal dimensions(mm) D	T	B	C	r_{min}	r_{1min}	Basic load ratings(kN) C_r	C_{or}	Limiting speeds (r/min) Grease	Oil	Designations
420	620	125	118	100	6	5	2520	5110	380	500	**32084**
	700	130	122	92	6	6	2870	4550	340	500	**31184X2**
440	620	95	90	67	5	5	1540	2870	370	500	**32988X3**
	650	96.4	94	67	8	8	2000	3400	360	500	**31088X2**
	650	130	126	104	6	6	2880	5620	360	500	**32088X2**
	650	130	122	104	6	6	2780	5380	360	500	**32088**
460	600	87	82	71	5	4	1450	3100	370	500	**30692/HC**
	600	87	85	63.5	4	4	1440	3030	370	500	**31992X3/HC**
	660	115	110	90	5	4	2380	4680	340	500	**32992X3**
	680	105	100	78	6	6	2210	3770	330	500	**31092X2**
470	610	82	77	63	5	4	1370	2880	360	500	**30694/HC**
	630	80	80	62	5	5	1560	3110	350	500	**30694**
488.95	660.4	93.662	93.662	76.017	6.4	6.4	1880	4070	330	500	**306/488X4/HCE**
500	640	80	80	60	5	4	1480	3260	330	500	**306/500**
510	610	46	41	29	3	3.5	613	1530	340	500	**306/510X1**
530	670	100	95	82	5	5	1700	3850	310	400	**306/530**
	710	88	82	62	5	5	1720	3150	300	400	**319/530X2**
558.8	736.6	88.108	88.108	63.5	6.4	6.4	2010	4090	280	400	**306/558X4/HCE**
560	750	90	90	71	6	5	1960	3990	270	400	**319/560X2**
600	720	73	69	56	3	3	1350	3320	270	400	**306/600**
	870	124	118	89	6	6	3350	6330	230	300	**310/600X2**
610	820	105	95	80	6	6	2040	4280	240	300	**306/610**
	820	105	100	86	6	6	2040	4280	240	300	**319/610X2**
630	730	60	60	45	2	2	914	3060	260	400	**306/630X3**
	780	100	95	80	4	4	2090	5300	240	400	**338/630X2**
	850	132	132	95	6	6	3400	7210	230	300	**329/630**
	850	132	132	95	5	5	3220	6920	230	300	**329/630/YA8**
	920	134	128	94	7.5	7.5	3670	6910	210	300	**306/630**
660.4	1000	152.4	142.24	113.665	6.4	6.4	4820	9570	180	300	**306/660.4/HC**
670	1000	190	188	140	6	6	6160	12300	180	300	**306/670/HC**
680	1000	190	188	140	6	6	6140	12400	180	300	**306/680/HC**
682.625	1080	200	195	142	12	12	7470	13200	160	300	**306/682X4/HC**
710	950	113	105	80	6	6	3030	6620	180	300	**319/710X21/HC**
	950	114	106	80	6	6	3030	6620	180	300	**319/710**
	950	130	122	95	6	6	3500	7530	180	300	**319/710X2**
710.5	950	130	122	95	6	6	3500	7530	180	300	**319/710.5**
711	950	114	106	80	6	6	3030	6620	180	300	**319/711**
711.2	939.8	114.3	105.842	73.025	6.4	6.4	2590	5940	190	300	**306/711.2**
745	1000	175	172	138	6.4	6.4	4980	11700	170	300	**306/745/HC**
750	910	90	90	66	6	6	2240	5660	180	300	**306/750X3**
	1000	110	107	80	6	6	3260	6680	170	300	**319/750**
	1000	175	172	138	6.4	6.4	4980	11700	170	300	**306/750/HC**

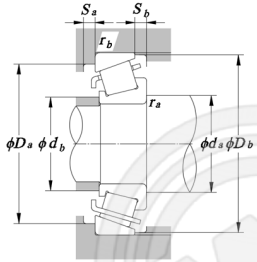
d	Abutment and fillet dimensions(mm) d_{amin}	d_{bmax}	D_{amax}	D_{amin}	D_{bmin}	$S_{a\,min}$	S_{bmin}	$r_{a\,max}$	$r_{b\,max}$	Factor e	Y	Y_0	a	Mass(kg) (approx.)
420	446	454	603	536	589	4	25	5	4	0.44	1.35	0.74	134	125
	446	488	680	608	642	15.5	38	5	5	0.32	1.88	1.04	117	175
440	463	477	603	556	586	4.3	28	4	4	0.41	1.46	0.80	114	81.3
	474	481	622	579	612	10	30	6	6	0.44	1.35	0.74	121	97.1
	468	480	628	574	618	5.2	26	5	5	0.36	1.67	0.92	125	141
	468	482	628	574	618	5.2	26	5	5	0.36	1.67	0.92	127	140
460	483	485	585	546	585	8	16	4	3	0.47	1.28	0.70	123	59.5
	481	487	585	550	579	5.3	24	3	3	0.40	1.49	0.82	108	59.4
	483	496	643	585	629	5.4	25	4	3	0.42	1.44	0.79	129	122
	486	511	660	613	639	5.8	27	5	5	0.31	1.94	1.07	106	117
470	493	496	595	558	587	10	19	4	3	0.40	1.49	0.82	110	56.6
	493	507	613	579	601	6.2	18	4	4	0.32	1.88	1.04	94	66.0
488.95	511	529	643	602	628	15	18	5	5	0.32	1.88	1.04	101	90.8
500	524	525	625	590	620	6	20	4	3	0.44	1.36	0.75	119	60.7
510	526	529	599	568	597	6	17	2.5	3	0.87	0.69	0.38	182	24.1
530	554	553	652	620	650	10	18	4	4	0.33	1.80	0.99	113	77.6
	554	568	693	655	682	7	26	4	4	0.39	1.54	0.84	118	81.5
558.8	582	597	719	684	707	7	25	5	5	0.34	1.75	0.96	111	93.6
560	587	602	733	686	719	6	19	5	4	0.40	1.49	0.82	127	105
600	621	622	707	680	702	9.5	17	2.5	2.5	0.37	1.64	0.90	113	53.0
	628	663	850	780	823	9	35	5	5	0.41	1.45	0.80	155	231
610	638	659	800	741	775	12.9	25	5	5	0.37	1.60	0.88	139	139
	638	659	800	741	778	12.9	19	5	5	0.37	1.60	0.88	139	144
630	648	650	720	683	717	12.9	15	2	2	0.62	0.97	0.53	167	41.2
	653	660	765	727	754	12.9	20	3	3	0.31	1.94	1.07	117	100
	658	665	830	766	818	12.9	37	5	5	0.46	1.31	0.72	172	200
	655	666	833	766	818	13	37	4	4	0.46	1.31	0.72	168	198
	665	700	893	820	867	13	40	6	6	0.43	1.41	0.78	165	286
660.4	690	744	979	878	937	13	39	5	5	0.43	1.39	0.77	187	408
670	698	730	980	874	948	16	50	5	5	0.43	1.39	0.77	201	499
680	708	737	980	877	951	13	50	5	5	0.43	1.39	0.77	203	483
682.625	725	755	1046	945	1020	23	58	10	10	0.43	1.39	0.77	211	659
710	739	768	930	863	905	13	33	5	5	0.46	1.31	0.72	179	209
	739	768	930	863	905	13	34	5	5	0.46	1.31	0.72	179	210
	739	758	930	863	910	13	35	5	5	0.43	1.41	0.78	177	238
710.5	740	758	930	863	910	13	35	5	5	0.43	1.41	0.78	177	238
711	740	768	930	863	905	13	34	5	5	0.46	1.31	0.72	179	209
711.2	736	750	922	837	904	13	42	5	5	0.75	0.80	0.44	254	195
745	781	795	973	906	961	13	37	5	5	0.32	1.88	1.04	161	376
750	779	772	890	851	888	13	24	5	5	0.47	1.27	0.70	169	114
	779	809	980	923	955	13	30	5	5	0.36	1.69	0.93	153	222
	786	795	973	906	961	13	37	5	5	0.32	1.88	1.04	161	368

d 760～2560mm



Pressed cage

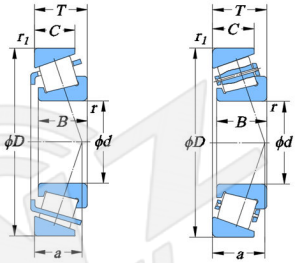
Machined cage



Principal dimensions(mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations
d	*D*	*T*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}	Grease	Oil	
760	980	78	75	59	4.7	4.7	1730	4560	170	300	**306/760/HC**
800	1060	122	115	89	6	6	3980	8230	150	200	**319/800X2**
	1150	122	115	89	7.5	7.5	4620	8400	130	200	**319/800X3**
830	1080	156	156	118	6	6	4930	11600	140	200	**306/830/HCYB2**
	1100	156	152	118	6	6	5220	12400	140	200	**306/830/HCR**
831	1080	156	156	118	6	6	4930	11600	140	200	**306/831/HCYB2**
	1100	156	152	118	6	6	5220	12400	140	200	**306/831/HCR**
850	1030	90	88	64	6	6	2430	5900	140	200	**318/850X2**
860	980	76	76	57	3	3	1380	5030	150	200	**306/860X3**
	980	76	76	57	3	3	1850	3100	150	200	**31080**
900	1180	124	122	87	6	6	4250	8820	-	-	**319/900X2**
	1180	124	122	87	6	6	4250	8820	-	-	**319/900X2/HC**
	1280	190	170	135	7.5	7.5	7000	14400	-	-	**306/900/HC**
950	1250	140	132	100	7.5	7.5	4820	10400	-	-	**319/950X2/HCR**
1000	1420	210	195	150	7.5	7.5	8750	18200	-	-	**306/1000**
1050	1335	134	118	94	7.5	7.5	4540	10500	-	-	**306/1050/HC**
1060	1280	100	100	76	8	8	3350	8520	-	-	**318/1060/HCR**
1120	1350	110	110	88	8	8	4000	11300	-	-	**306/1120/HCR**
1220	1500	120	120	82	6	6	4720	11600	-	-	**306/1220**
1850	2200	165	165	125	7	7	9060	25800	-	-	**306/1850/HC**
1900	2450	260	250	195	12	12	17100	46200	-	-	**306/1900/HC**
2100	2430	145	145	95	7	5	7310	21200	-	-	**306/2100/HC**
2560	3200	310	285	205	12	12	21100	65000	-	-	**306/2560/HC**

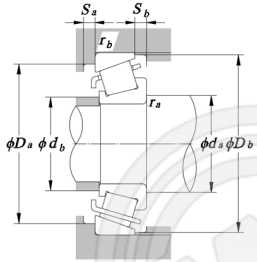
Abutment and fillet dimensions(mm)										Factor				Mass(kg) (approx.)
d_{amin}	d_{bmax}	D_{amax}	D_{amin}	D_{bmin}	$S_{a\,min}$	S_{bmin}	$r_{a\,max}$	$r_{b\,max}$	*e*	*Y*	Y_0	*a*	
786	782	963	849	868	13	19	3.5	3.5	0.32	1.88	1.04	121	75.3
830	860	1040	980	1015	23	33	5	5	0.35	1.71	0.94	163	278
837	881	1123	1047	1082	23	33	6	6	0.35	1.73	0.95	166	386
860	870	1060	987	1049	13	38	5	5	0.44	1.36	0.75	209	360
860	875	1080	995	1060	8.8	38	5	5	0.44	1.36	0.75	208	398
861	870	1060	987	1049	13	38	5	5	0.44	1.36	0.75	209	359
861	875	1080	995	1060	16	38	5	5	0.44	1.36	0.75	208	397
880	885	1010	970	1002	13	26	5	5	0.44	1.36	0.75	177	140
883	883	967	924	966	13	19	2.5	2.5	0.61	0.99	0.54	220	85.9
887	441	965	535	559	13	19	2.5	2.5	0.38	1.58	0.87	102	83.6
933	960	1158	1093	1136	13	37	5	5	0.40	1.49	0.82	194	327
933	960	1158	1093	1136		37	5	5	0.40	1.49	0.82	194	327
938	983	1253	1142	1213	13	55	6	6	0.44	1.35	0.74	247	717
988	1018	1223	1159	1194	13	40	6	6	0.33	1.82	1.00	183	416
1039	1086	1393	1270	1353	16	60	6	6	0.46	1.31	0.72	278	966
1089	1100	1308	1227	1289	16	40	6	6	0.56	1.07	0.59	287	397
1100	1110	1252	1215	1241	16	24	6	6	0.31	1.91	1.05	166	246
1161	1175	1322	1274	1304	16	22	6	6	0.31	1.91	1.05	177	315
1254	1285	1480	1417	1447	16	38	5	5	0.36	1.67	0.92	213	424
1894	1928	2176	2091	2138	16	40	5.5	5.5	0.33	1.79	0.99	299	1110
1959	2014	2412	2247	2350	16	65	10	10	0.43	1.39	0.77	426	3000
2145	2171	2412	2323	2373	16	50	5.5	4	0.44	1.35	0.74	395	976
2625	2667	3162	2907	3098	16	105	10	10	0.73	0.82	0.45	833	5370

d 17.462～31.75mm



Pressed cage

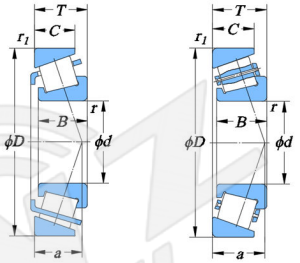
Machined cage



Principal dimensions(mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations
d	*D*	*T*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}	Grease	Oil	
17.462	39.878	13.843	14.605	10.668	1.3	1.3	25.5	23.5	11000	13000	KLM11749/KLM11710
	39.878	13.843	14.605	10.668	1.3	1.3	25.5	23.5	11000	13000	LM11749/LM11710
19.05	45.237	15.494	16.637	12.065	1.2	1.2	32.4	30.2	9100	12000	KLM11949/KLM11910
	49.225	18.034	19.05	14.288	1.3	1.3	41.6	37.9	8600	11000	K09067/K09195
	49.225	23.02	21.539	17.462	1.5	3.5	41.6	37.9	8600	11000	K09074/K09194
20.625	49.225	23.02	21.539	17.462	1.5	1.5	41.6	37.9	8500	11000	K09081/K09196
21.43	45.237	15.494	16.637	12.065	1.3	1.3	32.4	33.9	8800	12000	KLM12748/KLM12710/YB2
	50.005	17.526	18.288	13.97	1.4	1.3	42.2	39.8	8300	11000	K2M12649/K2M12610
	50.005	17.526	18.288	13.97	1.4	1.3	42.2	39.8	8300	11000	KM12649/KM12610
21.979	45.237	15.494	16.637	12.065	1.4	1.3	32.4	33.9	8800	12000	KLM12749/KLM12710
	45.974	15.494	16.637	12.065	1.4	1.3	32.4	33.9	8700	11000	KLM12749/KLM12711
22.225	50.8	15.011	14.26	12.7	1.5	1.5	29.5	28.9	8100	11000	K07087X/K07210X
25.4	50.292	14.224	14.732	10.668	1.3	1.3	30.9	32.9	7900	9900	KL44643/KL44610
	50.8	15.011	14.26	12.7	1.5	1.5	29.5	28.9	7800	9900	K07100S/K07210X
	56.896	19.368	19.837	15.875	0.8	1.3	44.7	44	7300	9200	K1780/K1729
	57.15	17.462	17.462	13.495	1.3	1.5	41.7	42.9	7300	9200	K15578/K15520
	57.15	19.431	19.431	14.732	1.5	1.5	46	48.6	7300	9200	KM84548/KM84510
	62	19.05	20.638	14.288	1.5	1.3	48.6	50.1	6900	8700	K15102/K15245
26	57.15	17.462	17.462	13.495	3.5	1.5	41.7	42.9	7200	9100	K15579X/K15520
26.988	50.292	14.224	14.732	10.668	3.6	1.3	30.9	32.9	7700	9800	KL44649/KL44610
	63.5	20.638	20.638	15.875	0.8	1.5	48.6	50.1	6600	8400	K15106/K15250X
28	57.15	17.462	17.462	13.495	3.5	1.5	41.7	42.9	7000	8900	KJ15585/K15520
28.575	57.15	19.845	19.355	15.875	0.8	1.5	41.9	41.3	7000	8900	K1985/K1922
	60.325	19.845	19.355	15.875	3.5	1.3	41.9	41.3	6800	8600	K1988/K1931
	64.292	21.433	21.433	16.67	1.5	1.5	58.6	67.2	6500	8200	KM86647/KM86610
	66.421	23.812	25.433	19.05	1.3	1.3	73.8	75.4	6400	8000	K2689/K2631
	68.262	22.225	22.225	17.462	0.8	1.5	56.2	61.4	6200	7900	K02474/K02420
	73.025	22.225	22.225	17.462	0.8	3.3	60.7	66	6000	7500	K02872/K02820
29.987	72	19	18.923	15.875	1.5	1.5	55.2	53.2	5900	7500	K26118/K26283
30	72.085	22.385	19.202	18.415	0.8	2.3	50.9	55.2	5900	7500	K14118/K14283
30.162	64.292	21.433	21.433	16.67	1.5	1.5	58.6	67.2	6400	8100	KM86649/KM86610
	68.262	22.225	22.225	17.462	2.3	0.8	61.9	71.4	6100	7800	KM88043/KM88012
	68.262	22.225	22.225	17.462	2.3	1.5	61.9	71.4	6100	7800	KM88043/KM88010
31.75	59.131	15.875	16.764	11.811	3.6	1.3	39.5	43.2	6600	8400	KLM67048A6/KLM67010A6
	59.131	15.875	16.764	11.811	3.6	1.3	39.5	43.2	6600	8400	KLM67048/KLM67010
	62	18.161	19.05	14.288	4.8	1.3	48.6	50.1	6400	8100	K15123/K15245
	66.421	25.4	25.357	20.638	0.8	3.3	78.7	85.4	6200	7800	K2580/K2520
	68.262	22.225	23.812	17.462	3.5	1.5	67.4	68.5	6000	7600	K2475/K2420
	69.012	19.845	19.583	15.875	3.5	1.3	50.9	55.2	6000	7600	K14125A/K14276
	69.85	23.812	25.357	19.05	0.8	1.3	78.7	85.4	6000	7500	K2580/K2523
	69.85	23.812	25.357	19.05	0.8	1.3	78.7	85.4	6000	7500	K2580/K2523/YAD
	73.025	29.37	27.783	23.02	1.3	3.3	82	101	5800	7300	KHM88542/KHM88510

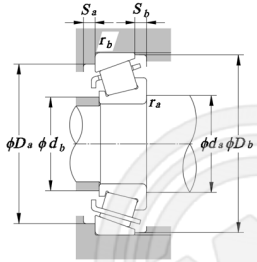
Abutment and fillet dimensions(mm)									Factor				Mass(kg) (approx.)
d_{amin}	d_{bmax}	D_{amin}	D_{amax}	D_{bmin}	r_{amax}	r_{bmax}	S_{amin}	S_{bmin}	*e*	*Y*	Y_0	*a*	
24	22	33	35	36	1.3	1.3	2	3	0.29	2.10	1.15	9	0.0758
24	22	33	35	36	1.3	1.3	2	3	0.29	2.10	1.15	9	0.0758
26	25	38	40	41	1.2	1.2	2	3	0.30	2.00	1.10	10	0.123
25	25	40	44	44	1.3	1.3	4	4	0.27	2.26	1.24	10	0.176
26	25	39	40	44	1.5	3	5	6	0.27	2.26	1.24	14	0.201
27	25	39	43	44	1.5	1.5	5	6	0.27	2.26	1.24	14	0.197
28	27	38	39	42	1.3	1.3	2	3	0.31	1.96	1.08	10	0.120
27	27	42	44	46	1.4	1.3	3	4	0.28	2.16	1.19	11	0.169
27	27	42	44	46	1.4	1.3	3	4	0.28	2.16	1.19	11	0.169
28	27	38	39	42	1.4	1.3	2	3	0.31	1.96	1.08	10	0.116
28	27	38	40	42	1.4	1.3	2	3	0.31	1.96	1.08	10	0.118
29	31	41	44	48	1.5	1.5	2	2	0.40	1.49	0.82	12	0.104
32	31	43	44	47	1.3	1.3	3	4	0.37	1.60	0.88	11	0.128
32	31	41	44	48	1.5	1.5	2	2	0.40	1.49	0.82	12	0.0908
31	32	45	51	51	0.8	1.3	3	3	0.31	1.95	1.07	13	0.241
32	34	47	50	53	1.3	1.5	2	4	0.35	1.73	0.95	13	0.214
32	31	44	50	53	1.5	1.5	3	5	0.55	1.10	0.60	16	0.237
32	37	52	56	58	1.5	1.3	4	5	0.35	1.71	0.94	13	0.298
37	34	47	50	53	3	1.5	2	4	0.35	1.73	0.95	13	0.207
38	31	43	44	47	3.6	1.3	3	4	0.37	1.60	0.88	11	0.126
32	36	52	57	58	0.8	1.5	2	5	0.35	1.71	0.94	15	0.316
38	34	47	50	53	3	1.5	2	4	0.35	1.73	0.95	13	0.207
34	34	49	50	54	0.8	1.5	3	4	0.33	1.82	1.00	14	0.209
39	34	49	54	54	3	1.3	3	4	0.33	1.82	1.00	14	0.244
35	36	49	58	60	1.5	1.5	3	5	0.55	1.10	0.60	18	0.351
35	34	53	60	59	1.3	1.3	4	5	0.26	2.31	1.27	14	0.420
34	40	54	62	62	0.8	1.5	2	5	0.42	1.44	0.79	17	0.410
34	43	58	63	67	0.8	3.3	2	5	0.45	1.32	0.73	19	0.825
37	40	57	65	64	1.5	1.5	3	3	0.36	1.67	0.92	14	0.384
35	42	57	64	63	0.8	2.3	3	4	0.38	1.57	0.86	19	0.430
37	36	49	58	60	1.5	1.5	3	5	0.55	1.10	0.60	18	0.339
39	38	53	62	64	2.3	0.8	3	5	0.55	1.10	0.60	19	0.412
39	38	53	62	64	2.3	1.5	3	5	0.55	1.10	0.60	19	0.411
43	37	50	53	55	3.6	1.3	4	4	0.41	1.46	0.80	13	0.175
43	37	50	53	55	3.6	1.3	4	4	0.41	1.46	0.80	13	0.175
43	36	52	56	58	4.8	1.3	3	4	0.35	1.71	0.94	13	0.242
37	39	56	56	63	0.8	3.3	3	5	0.27	2.19	1.21	16	0.411
43	38	56	62	62	3	1.5	3	5	0.34	1.77	0.97	16	0.387
43	42	58	63	63	3	1.3	3	4	0.38	1.57	0.86	16	0.357
37	39	57	64	63	0.8	1.3	4	5	0.27	2.19	1.21	14	0.451
37	39	57	64	63	0.8	1.3	4	5	0.27	2.19	1.21	14	0.451
38	40	54	63	69	1.3	3.3	3	6	0.55	1.10	0.60	23	1.00

d 33.338～39.688mm



Pressed cage

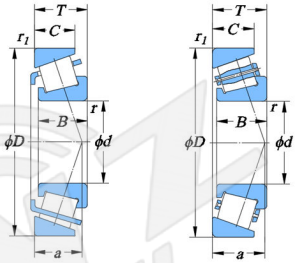
Machined cage



Principal dimensions(mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations
d	*D*	*T*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}	Grease	Oil	
33.338	68.262	22.225	22.225	17.462	0.8	1.5	61.9	71.4	6000	7500	KM88048/KM88010
	68.262	22.225	22.225	17.462	0.8	1.5	61.9	71.4	6000	7500	KM88048/KM88010/S0YB2
	76.2	23.812	25.654	19.05	1.5	3.3	81.6	92.5	5500	7000	K2790/K2720
	76.2	29.37	28.575	23.02	0.8	3.3	91.4	114	5500	7000	KHM89443/KHM89410
34.925	65.088	18.034	18.288	13.97	3.6	1.3	53.7	59.7	6000	7600	KLM48548/KLM48510
	65.088	18.034	18.288	13.97	3.6	1.3	53.7	59.7	6000	7600	KLM48548/KLM48510A6
	69.012	19.845	19.583	15.875	3.5	3.3	50.9	55.2	5800	7400	K14138A/K14274
	72.233	25.4	25.4	19.842	2.3	2.3	69.6	80.6	5700	7100	KHM88649/KHM88610
	73.025	23.812	24.608	19.05	0.5	0.8	79.9	88	5600	7100	K25877A6/K25821
	73.025	23.812	24.608	19.05	1.5	0.8	79.9	88	5600	7100	K25877/K25821
	73.025	23.812	24.608	19.05	1.5	2.3	79.9	88	5600	7100	K25877/K25820
	73.025	23.812	24.608	19.05	3.5	0.8	79.9	88	5600	7100	K25878/K25821
	76.2	23.812	25.654	19.05	3.5	3.3	81.6	92.5	5500	6900	K2796/K2720
	76.2	29.37	28.575	23.02	3.5	3.3	91.4	114	5500	6900	KHM89446/KHM89410
	76.2	29.37	28.575	23.812	1.5	3.3	89.5	98.2	5500	6900	K31594SH/K31520SH
	79.375	29.37	29.771	23.812	3.5	3.3	96.7	106	5300	6700	K3478/K3420
35	59.131	15.875	16.764	11.938	3.5	1.3	37	44.4	6400	8100	KL68149/KL68110
	59.974	15.875	16.764	11.938	3.5	1.3	37	44.4	6400	8000	KL68149/KL68111
	62	16.7	17	13.6	3.6	1.5	45.2	53	6200	7900	KLM78349/KLM78310A
	62	16.7	17	13.6	3.6	1.5	45.2	53	6200	7900	KLM78349SH/KLM78310ASH
36.487	76.2	23.812	25.654	19.05	1.5	3.3	81.6	92.5	5400	6800	K2780/K2720
36.512	72.238	20.638	20.638	18.575	3.5	1.3	54.7	61.2	5600	7000	K16143/K16284
	76.2	29.37	28.575	23.02	0.8	3.3	91.4	114	5400	6800	KHM89448/KHM89410
	76.2	29.37	28.575	23.02	3.5	3.3	91.4	114	5400	6800	KHM89449/KHM89410
	79.375	29.37	28.829	22.664	3.5	3.3	92.7	99.8	5200	6600	KHM89249/KHM89210
38	63	17	17	13.5	1.3	1.3	43.2	55.5	6000	7600	KJL69349/KJL69310
	63	17	19	13.5	1.3	1.3	43.2	55.5	6000	7600	KJL69345/KJL69310
38.1	65.088	18.034	18.288	13.97	2.3	1.3	47.5	56.7	5900	7400	KLM29749/KLM29710
	65.088	19.812	18.288	15.748	2.3	1.3	47.5	56.7	5900	7400	KLM29749/KLM29711
	69.012	26.195	26.195	15.083	1.5	0.8	54.5	62.3	5700	7100	K13686/K13620
	72.238	20.638	20.638	15.875	3.5	1.3	54.7	61.2	5500	6900	K16150/K16284
	76.2	23.812	25.654	19.05	3.5	3.3	81.6	92.5	5300	6700	K2788/K2720
	79.375	29.37	29.771	23.812	3.5	3.3	96.7	106	5200	6500	K3490/K3420
	82.931	23.812	25.4	19.05	0.8	0.8	85.9	101	5000	6300	K25572/K25520
	88.5	25.4	23.698	17.462	2.3	1.5	83.8	85.8	4800	6100	K44150/K44348
	88.5	26.988	29.083	22.225	3.5	1.5	108	112	4800	6100	K418/K414
39	72.014	21.4	20.638	16.637	3.5	0.4	54.7	61.2	5500	6900	KJ16154/KJ16285
39.688	73.025	23.812	25.654	19.05	3.5	0.8	81.6	92.5	5400	6800	K2789/K2735X
	73.025	25.654	22.098	21.336	0.8	2.3	69.8	81.7	5400	6800	KM201047/KM201011
	76.2	23.812	25.654	19.05	3.5	0.8	81.6	92.5	5200	6600	K2789/K2729
	76.2	23.812	25.654	19.05	3.5	0.8	81.6	92.5	5200	6600	K2789SH/K2729SH
	76.2	23.812	25.654	19.05	3.5	3.3	81.6	92.5	5200	6600	K2789/K2720

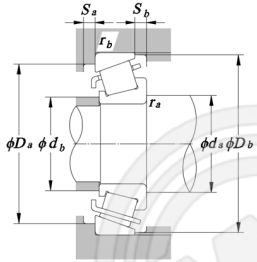
Abutment and fillet dimensions(mm)										Factor			Mass(kg) (approx.)
d_{amin}	d_{bmax}	D_{amin}	D_{amax}	D_{bmin}	r_{amax}	r_{bmax}	S_{amin}	S_{bmin}	*e*	*Y*	Y_o	*a*	
39	38	53	62	64	0.8	1.5	3	5	0.55	1.10	0.60	19	0.382
39	38	53	62	64	0.8	1.5	3	5	0.55	1.10	0.60	19	0.382
40	44	63	66	69	1.5	3.3	4	5	0.30	1.98	1.09	16	0.559
39	42	56	66	72	0.8	3.3	5	6	0.55	1.10	0.60	24	0.774
46	41	55	59	61	3.6	1.3	3	4	0.38	1.59	0.88	14	0.291
46	41	55	59	61	3.6	1.3	3	4	0.38	1.59	0.88	14	0.260
46	42	58	59	63	3	3.3	2	4	0.38	1.57	0.86	16	0.320
43	40	55	64	68	2.3	2.3	3	6	0.55	1.10	0.60	20	0.480
40	43	61	68	67	0.5	0.8	4	5	0.29	2.07	1.14	16	0.475
40	43	61	68	67	1.5	0.8	4	5	0.29	2.07	1.14	16	0.475
42	43	61	65	67	1.5	2.3	4	5	0.29	2.07	1.14	16	0.475
46	43	61	68	67	3	0.8	4	5	0.29	2.07	1.14	16	0.475
46	44	63	66	69	3	3.3	4	5	0.30	1.98	1.09	16	0.508
46	42	56	66	72	3	3.3	5	6	0.55	1.10	0.60	24	0.670
42	43	60	66	71	1.5	3.3	2	6	0.40	1.49	0.82	21	2.13
46	43	63	69	73	3	3.3	2	6	0.37	1.64	0.90	21	0.695
46	39	51	53	56	3	1.3	3	4	0.42	1.44	0.79	13	0.166
46	39	51	54	56	3	1.3	3	4	0.42	1.44	0.79	13	0.166
46	39	51	55	59	3.6	1.5	3	3	0.44	1.35	0.74	14	0.206
46	39	51	55	59	3.6	1.5	3	3	0.44	1.35	0.74	14	0.206
43	44	63	66	69	1.5	3.3	4	5	0.30	1.98	1.09	16	0.526
47	44	58	66	67	3	1.3	2	2	0.40	1.49	0.82	17	0.362
42	42	56	66	72	0.8	3.3	5	6	0.55	1.10	0.60	24	0.650
47	42	56	66	72	3	3.3	5	6	0.55	1.10	0.60	24	0.650
47	43	62	69	76	3	3.3	3	7	0.55	1.10	0.60	23	0.666
44	42	54	57	60	1.3	1.3	3	4	0.42	1.44	0.79	14	0.205
44	42	54	57	60	1.3	1.3	3	4	0.42	1.44	0.79	14	0.211
46	43	57	59	61	2.3	1.3	3	4	0.33	1.80	0.99	14	0.237
46	43	56	59	61	2.3	1.3	3	4	0.33	1.80	0.99	16	0.251
45	43	58	64	65	1.5	0.8	2	11	0.40	1.49	0.82	16	0.362
49	44	58	66	66	3	1.3	2	5	0.40	1.49	0.82	17	0.345
49	44	63	66	69	3	3.3	4	5	0.30	1.98	1.09	16	0.559
49	43	63	69	73	3	3.3	2	6	0.37	1.64	0.90	21	0.653
43	50	69	78	76	0.8	0.8	4	5	0.33	1.79	0.99	18	0.645
46	47	67	82	84	2.3	1.5	7	8	0.78	0.77	0.42	28	0.718
49	48	72	82	78	3	1.5	4	5	0.26	2.28	1.25	18	0.843
50	44	58	68	66	3	0.4	4	5	0.40	1.49	0.82	17	0.341
50	44	63	68	69	3	0.8	4	5	0.30	1.98	1.09	16	0.413
45	46	61	65	69	0.8	2.3	3	4	0.33	1.80	0.99	20	0.437
50	44	63	71	69	3	0.8	4	5	0.30	1.98	1.09	16	0.468
50	44	63	71	69	3	0.8	4	5	0.30	1.98	1.09	16	0.507
50	44	63	66	69	3	3.3	4	5	0.30	1.98	1.09	16	0.468

d 40～45mm



Pressed cage

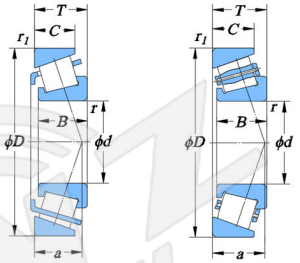
Machined cage



Principal dimensions(mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations
d	D	T	B	C	r_{smin}	r_{1smin}	C_r	C_{or}	Grease	Oil	
40	85	33	32.5	28	2.5	2	128	144	4900	6100	KJF4049/KJF4010
	90.119	23	21.692	21.808	0.8	2.3	79.6	82.7	4700	5900	K350A/K352
41	68	17.5	18	13.5	3.6	1.5	48.8	59.7	5600	7000	KLM300849/KLM300811
41.275	73.025	16.667	17.462	12.7	3.5	1.5	50.9	56	5300	6700	K18590/K18520
	73.431	19.558	19.812	14.732	3.5	0.8	64	73.3	5300	6700	KLM501349/KLM501310
	73.431	21.43	19.812	16.604	3.5	0.8	64	73.3	5300	6700	KLM501349/KLM501314
	76.2	18.009	17.384	14.288	1.5	1.5	55.2	61.1	5200	6500	K11162/K11300
	76.2	22.225	23.02	17.462	3.5	0.8	73.1	83.7	5200	6500	K24780/K24720
	80	21	22.403	17.826	0.8	1.3	75.5	75.7	5000	6300	K336/K332
	80.167	29.37	30.391	23.812	0.8	3.3	106	115	5000	6300	K3384/K3320
	82.55	26.543	25.654	20.193	3.5	3.3	93.7	107	4900	6200	K1M802048/K1M802011
	82.55	26.543	25.654	20.193	3.5	3.3	93.7	107	4900	6200	KM802048SH/KM802011SH
	82.55	26.543	25.654	20.193	3.5	3.3	93.7	107	4900	6200	KM802048/KM802011
	87.312	30.162	30.886	23.812	1.5	3.3	111	137	4700	6000	K3585/K3525
	88.5	26.988	29.083	22.225	3.5	1.5	108	112	4700	5900	K419/K414
	88.9	30.162	29.37	23.02	3.5	3.3	111	137	4700	5900	KHM803146/KHM803110
	104.775	36.512	36.512	28.575	1.5	3.3	161	195	4200	5300	K59162/K59412
42.07	90.488	39.688	40.386	33.338	3.5	3.3	154	181	4600	5800	K4395/K4335
42.862	82.55	26.195	26.988	20.638	3.5	3.3	94.2	119	4800	6100	K22780/K22720
42.875	80	21	22.403	17.826	3.5	2	75.5	75.7	4900	6200	K342S/K332US
	82.931	26.988	25.4	22.225	3.5	2.3	85.9	101	4800	6100	K25577/K25523
44.45	82.931	23.812	25.4	19.05	0.5	0.8	85.9	101	4800	6000	K25581/K25520
	82.931	23.812	25.4	19.05	3.5	0.8	85.9	101	4800	6000	K25580/K25520
	87.312	30.162	30.886	23.812	3.5	3.3	111	137	4600	5800	K3578/K3525
	87.312	30.162	30.886	23.812	3.6	3.3	107	122	4600	5800	K3578R/K3525
	88.9	30.162	29.37	23.02	3.5	3.3	111	137	4600	5800	KHM803149/KHM803110
	90.119	23	21.692	21.808	3.5	2.3	79.6	82.7	4500	5700	K355X/K352
	92.075	30.162	29.37	23.02	3.5	3.3	111	137	4400	5600	KHM803149/KHM803112
	93.264	30.162	30.161	23.812	3.5	3.3	112	135	4400	5600	K3782YB2/K3720
	93.264	30.162	30.302	23.812	3.5	3.3	112	135	4400	5600	K3782/K3720
	93.264	30.162	30.302	23.812	3.5	3.3	112	135	4400	5600	K3782SH/K3720SH
	95.25	27.783	28.575	22.225	0.8	0.8	121	143	4300	5500	K33885/K33822
	95.25	27.783	28.575	22.225	2	0.8	121	143	4300	5500	K33885A6/K33822
	95.25	30.162	29.37	23.02	3.5	3.3	118	144	4300	5500	KHM804843/KHM804810
	95.25	30.958	28.3	20.638	2	0.8	98.5	99.9	4300	5500	K53178/K53375
	95.25	30.958	28.575	22.225	3.5	0.8	111	122	4300	5500	KHM903249/KHM903210
	101.6	34.925	36.068	26.988	3.5	3.3	153	172	4200	5300	K527/K522
	104.775	30.162	30.958	23.812	0.8	3.3	139	167	4100	5100	K45280/K45220
	104.775	36.512	36.512	28.575	3.5	3.3	161	195	4100	5100	K59175/K59412
	104.775	36.512	36.512	28.575	3.5	3.3	156	197	4100	5100	KHM807040/KHM807010
44.988	104.986	32.512	31.75	23.368	2.5	2.5	132	160	4100	5100	KHM905843/KHM905810
45	95	29	26.5	20	2.5	2.5	94.1	104	4300	5500	KJW4549/KJW4510

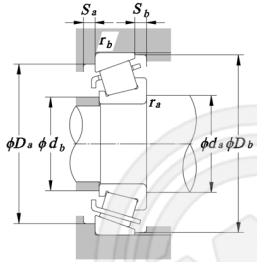
Abutment and fillet dimensions(mm)									Factor				Mass(kg) (approx.)
d_{amin}	d_{bmax}	D_{amin}	D_{amax}	D_{bmin}	r_{amax}	r_{bmax}	S_{amin}	S_{bmin}	e	Y	Y_o	a	
49	47	68	77	80	2.5	2	3	5	0.34	1.74	0.96	23	0.910
45	52	73	82	80	0.8	2.3	2	1	0.31	1.96	1.08	18	0.715
52	46	59	61	64	3.6	1.5	3	4	0.35	1.72	0.95	14	0.241
52	48	63	66	68	3	1.5	4	4	0.35	1.71	0.94	14	0.282
52	47	63	68	69	3	0.8	4	5	0.40	1.50	0.83	16	0.353
52	47	63	68	69	3	0.8	2	5	0.40	1.50	0.83	18	0.360
48	48	64	70	72	1.5	1.5	2	4	0.49	1.23	0.68	17	0.343
52	47	64	71	71	3	0.8	3	5	0.39	1.53	0.84	18	0.429
47	48	70	74	75	0.8	1.3	3	3	0.27	2.20	1.21	15	0.453
47	47	68	70	75	0.8	3.3	3	6	0.27	2.20	1.21	19	0.630
52	47	65	72	78	3	3.3	2	6	0.55	1.10	0.60	23	0.623
52	47	65	72	78	3	3.3	2	6	0.55	1.10	0.60	23	0.623
52	47	65	72	78	3	3.3	2	6	0.55	1.10	0.60	23	0.623
48	47	67	77	82	1.5	3.3	5	6	0.53	1.14	0.62	24	0.861
52	48	72	82	78	3	1.5	4	5	0.26	2.28	1.25	18	0.804
52	50	69	79	84	3	3.3	3	7	0.55	1.10	0.60	26	0.915
48	61	85	94	99	1.5	3.3	3	8	0.40	1.49	0.82	26	1.69
53	52	74	80	84	3	3.3	2	6	0.28	2.11	1.16	26	1.24
54	50	67	72	77	3	3.3	3	6	0.40	1.49	0.82	20	0.687
54	48	70	72	75	3	2	3	3	0.27	2.20	1.21	15	0.432
54	50	68	75	76	3	2.3	4	5	0.33	1.79	0.99	21	0.646
49	50	70	78	76	0.5	0.8	4	5	0.33	1.79	0.99	18	0.573
55	50	70	78	76	3	0.8	4	5	0.33	1.79	0.99	18	0.573
55	47	67	77	82	3	3.3	3	6	0.53	1.14	0.62	24	0.810
55	50	71	77	80	3.6	3.3	5	6	0.31	1.96	1.08	20	0.772
55	50	69	79	84	3	3.3	3	7	0.55	1.10	0.60	26	0.865
55	52	73	82	80	3	2.3	2	1	0.31	1.96	1.08	18	0.668
55	50	69	82	84	3	3.3	6	7	0.55	1.10	0.60	26	0.953
55	57	79	83	87	3	3.3	5	6	0.34	1.77	0.98	22	1.04
55	57	79	83	87	3	3.3	2	6	0.34	1.77	0.98	22	1.04
55	57	79	83	87	3	3.3	2	6	0.34	1.77	0.98	22	1.04
50	59	82	90	90	0.8	0.8	4	6	0.33	1.82	1.00	20	0.983
52	59	82	90	90	2	0.8	4	6	0.33	1.82	1.00	20	1.31
55	55	74	85	90	3	3.3	3	7	0.55	1.10	0.60	26	1.01
52	49	71	90	89	2	0.8	2	10	0.74	0.81	0.45	30	0.932
55	50	71	90	90	3	0.8	2	9	0.74	0.81	0.45	32	1.00
55	60	85	91	94	3	3.3	4	8	0.29	2.10	1.16	22	1.36
50	66	90	94	98	0.8	3.3	4	6	0.33	1.80	0.99	22	1.25
55	61	85	94	99	3	3.3	3	8	0.40	1.49	0.82	26	1.63
55	61	84	94	100	3	3.3	5	8	0.49	1.23	0.68	29	1.62
54	56	76	96	99	2.5	2.5	4	9	0.78	0.77	0.42	34	1.41
54	50	69	86	91	2.5	2.5	3	9	0.87	0.69	0.38	33	0.909

d 45.23～50.8mm



Pressed cage

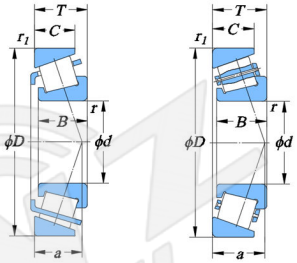
Machined cage



Principal dimensions(mm)						Basic load ratings (kN)		Limiting speeds (r/min)		Designations
d	*D*	*T*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}	Grease	Oil	
45.23	79.985	19.842	20.638	15.08	2	1.3	61	71.1	4800	6100	K17887/K17831
	84.138	30.162	30.886	23.812	3.5	3.3	107	122	4700	5900	K3586/K3520
45.237	87.312	30.162	30.886	23.812	3.5	3.3	107	122	4600	5800	K3586/K3525
45.242	73.431	19.558	19.812	15.748	3.5	0.8	61.7	78.3	5100	6500	KLM102949/KLM102910
	77.788	19.842	19.842	15.08	3.5	0.8	63.3	73.8	4900	6200	KLM603049/KLM603011
	77.788	21.43	19.842	16.667	3.5	0.8	63.3	73.8	4900	6200	KLM603049/KLM603012
45.618	82.931	23.812	25.4	19.05	3.5	0.8	85.9	101	4700	6000	K25590/K25520
	82.931	23.812	25.4	19.05	3.5	0.8	85.9	101	4700	6000	K25590SH/K25520SH
	82.931	26.988	25.4	22.225	3.5	2.3	85.9	101	4700	6000	K25590/K25523
	83.058	23.876	25.4	19.114	3.5	2	85.9	101	4700	6000	K25590/K25522
	83.058	23.876	25.4	19.114	3.5	2	85.9	101	4700	6000	K25590SH/K25522SH
45.987	74.976	18	18	14	2.3	1.6	58.5	74.9	5000	6300	KLM503349/KLM503310
	75	18	18	14	2.3	1.6	57.7	73.7	5000	6300	KLM503349YB2/KLM503310
46.038	79.375	17.462	17.462	13.495	2.8	1.5	52.3	59.4	4800	6100	K18690/K18620
	85	20.638	21.692	17.462	2.3	1.3	79.6	82.7	4600	5900	K359S/K354A
	85	20.638	21.692	17.462	2.3	1.5	79.6	82.7	4600	5900	K359S/K354X
47.625	93.264	30.162	30.302	23.812	3.5	3.3	112	135	4300	5400	K3779/K3720
	95.25	30.162	29.37	23.02	3.5	3.3	118	144	4300	5400	KHM804846/KHM804810
	104.775	30.162	30.958	23.812	3.5	3.3	139	167	4000	5000	K45282/K45220
	112.712	30.162	26.909	20.638	3.5	3.3	109	121	3800	4800	K55187/K55443
	123.825	36.512	32.791	25.4	3.5	3.3	171	190	3500	4500	K72187C/K72487
48.412	95.25	30.162	29.37	23.02	2.3	3.3	118	144	4200	5300	KHM804848/KHM804810
49.212	114.3	44.45	44.45	36.068	3.5	3.3	202	223	3700	4700	KHH506348/KHH506310
49.987	92.075	24.607	25.4	19.845	2.3	0.8	94.7	120	4300	5400	K28579/K28521
50	82	21.5	21.5	17	3.6	1.2	76.9	94.3	4600	5800	KJLM104948/KJLM104910
	84	22	22	17.5	3.5	1.5	77.9	96.6	4500	5700	KJLM704649/KJLM704610
	90	28	28	23	3	2.5	111	132	4300	5500	KJM205149/KJM205110
	93.264	30.162	30.302	23.812	3.5	3.3	112	135	4200	5400	K50KW01/K3720
	105	32	29	22	3	3	117	134	3900	5000	KJW5049/KJW5010
	105	37	36	29	3	2.5	156	197	3900	5000	KJHM807045/KJHM807012
	112.712	26.967	21.996	23.812	0.8	3.3	96.5	117	3700	4700	K396/K3920
50.8	82.55	21.59	22.225	16.51	3.5	1.3	67.9	84.5	4600	5800	KLM104949/KLM104911
	85	17.462	17.462	13.495	3.5	1.5	55.2	65.7	4500	5700	K18790/K18720
	88.9	20.638	22.225	16.513	3.5	1.3	82.5	88.3	4300	5500	K368A/K362A
	90	25	22.225	20	3.5	2	82.5	88.3	4300	5500	K368A/K362X
	92.075	24.608	25.4	19.845	3.5	0.8	94.7	120	4300	5400	K28580/K28521
	93.264	30.162	30.302	23.812	0.8	0.8	112	135	4200	5300	K3775/K3730
	93.264	30.162	30.302	23.812	3.5	3.3	112	135	4200	5300	K3780/K3720
	95.25	27.783	28.575	22.225	3.5	0.8	121	143	4200	5300	K33889/K33822
	95.25	27.783	28.575	22.225	5	0.8	121	143	4200	5300	K33889A6/K33822
	96.838	21	21.946	15.875	2.3	0.8	89.5	102	4100	5200	K385A/K382A
	97.63	24.608	24.608	19.446	3.6	0.8	100	132	4100	5200	K28678/K28622

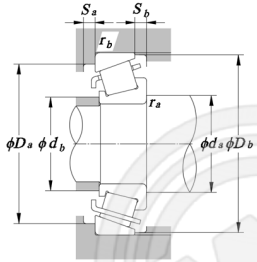
Abutment and fillet dimensions(mm)										Factor				Mass(kg) (approx.)
d_{amin}	d_{bmax}	D_{amin}	D_{amax}	D_{bmin}	r_{amax}	r_{bmax}	S_{amin}	S_{bmin}	*e*	*Y*	Y_0	*a*	
53	53	68	74	74	2	1.3	3	5	0.37	1.64	0.90	16	0.406
56	50	71	74	80	3	3.3	5	6	0.31	1.96	1.08	20	0.684
56	50	71	77	80	3	3.3	5	6	0.31	1.96	1.08	20	0.758
56	50	65	68	70	3	0.8	3	4	0.31	1.97	1.08	15	0.318
56	50	66	73	74	3	0.8	3	5	0.43	1.41	0.77	17	0.363
56	50	65	73	74	3	0.8	2	5	0.43	1.41	0.77	19	0.358
56	50	70	78	76	3	0.8	4	5	0.33	1.79	0.99	18	0.556
56	50	70	78	76	3	0.8	3	5	0.33	1.79	0.99	18	0.556
56	50	68	75	76	3	2.3	4	5	0.33	1.79	0.99	21	0.598
56	50	69	75	76	3	2	4	5	0.33	1.79	0.99	18	0.556
56	50	69	75	76	3	2	4	5	0.33	1.79	0.99	18	0.556
54	51	65	68	71	2.3	1.6	2	4	0.40	1.49	0.82	16	0.305
54	51	65	68	71	2.3	1.6	2	4	0.40	1.49	0.82	16	0.305
55	52	68	73	73	2.8	1.5	3	4	0.37	1.60	0.88	15	0.325
54	52	73	79	80	2.3	1.3	4	3	0.31	1.96	1.08	15	0.482
54	52	73	78	80	2.3	1.5	4	3	0.31	1.96	1.08	15	0.482
58	57	79	83	87	3	3.3	2	6	0.34	1.77	0.98	22	0.921
58	56	74	85	90	3	3.3	3	7	0.55	1.10	0.60	26	0.987
58	66	90	94	98	3	3.3	4	6	0.33	1.80	0.99	22	1.29
58	60	82	102	103	3	3.3	2	10	0.88	0.68	0.37	36	1.39
58	65	91	113	114	3	3.3	2	11	0.74	0.81	0.45	38	2.25
57	56	74	85	90	2.3	3.3	6	7	0.55	1.10	0.60	26	0.967
60	60	91	104	107	3	3.3	4	8	0.40	1.50	0.83	30	2.24
58	59	77	87	86	2.3	0.8	3	5	0.38	1.59	0.88	20	0.702
62	56	72	76	78	3.6	1.2	4	5	0.31	1.97	1.08	16	0.430
62	54	71	77	80	3	1.5	3	5	0.44	1.37	0.75	19	0.475
61	56	77	81	85	2.5	2.5	4	5	0.33	1.83	1.01	20	0.758
62	57	79	83	87	3	3.3	2	6	0.34	1.77	0.98	22	0.928
61	57	78	95	100	2.5	2.5	5	10	0.87	0.69	0.38	37	1.22
61	61	84	96	100	2.5	2.5	5	8	0.49	1.23	0.68	29	1.39
56	75	94	102	105	0.8	3.3	2	3	0.40	1.49	0.82	26	1.27
63	57	72	76	78	3	1.3	3	5	0.31	1.97	1.08	16	0.417
63	57	74	78	79	3	1.5	3	4	0.41	1.48	0.81	17	0.378
63	56	77	83	83	3	1.3	3	4	0.32	1.88	1.03	16	0.520
63	56	76	82	83	3	2	4	5	0.32	1.88	1.03	20	0.601
63	59	77	87	86	3	0.8	3	5	0.38	1.59	0.88	20	0.701
57	57	79	88	87	0.8	0.8	2	6	0.34	1.77	0.98	22	0.870
63	57	79	83	87	3	3.3	2	6	0.34	1.77	0.98	22	0.870
63	59	82	90	90	3	0.8	4	6	0.33	1.82	1.00	20	0.877
66	59	82	90	90	4	0.8	4	6	0.33	1.82	1.00	20	1.20
60	63	86	92	91	2.3	0.8	3	5	0.35	1.69	0.93	18	0.678
63	64	82	92	91	3.6	0.8	3	5	0.40	1.49	0.82	21	0.844

d 50.8～57.15mm



Pressed cage

Machined cage

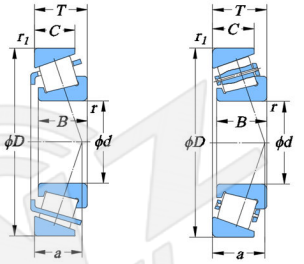


Principal dimensions(mm)						Basic load ratings (kN)		Limiting speeds (r/min)		Designations
d	*D*	*T*	*B*	*C*	r_{1min}	r_{1min}	C_r	C_{or}	Grease	Oil	
50.8	101.6	31.75	31.75	25.4	3.5	0.8	127	144	4000	5000	K49585/K49522
	104.775	30.162	30.958	23.812	0.8	3.3	139	167	3900	4900	K45285ASH/K45220SH
	104.775	30.162	30.958	23.812	2.3	0.8	139	167	3900	4900	K45285/K45221
	104.775	30.162	30.958	23.812	6.4	3.3	139	167	3900	4900	K45284/K45220
	104.775	36.512	36.512	28.575	3.5	3.3	161	195	3900	4900	K59200/K59412
	104.775	36.512	36.512	28.575	3.5	3.3	156	197	3900	4900	KHM807046/KHM807010
	107.95	27.783	29.317	22.225	0.8	0.8	122	146	3800	4800	K455/K453A
	107.95	27.795	29.317	27	0.8	0.8	122	146	3800	4800	K455/K453
	107.95	32.558	29.317	27	0.8	0.8	122	146	3800	4800	K455/K452
	107.95	36.512	36.957	28.575	3.5	3.3	160	185	3800	4800	K537/K532X
	112.712	30.162	30.048	23.812	3.5	3.3	128	173	3700	4700	K3975/K3920
	112.712	33.338	30.048	26.988	3.5	3.3	128	173	3700	4700	K3975/K3926
	123.825	36.513	32.791	25.4	3.5	3.3	171	190	3500	4400	K72200C/K72487
51.75	104.775	30.162	29.317	24.605	2.3	3.3	122	146	3900	4900	K462/K453X
52.388	92.075	24.608	25.4	19.845	3.5	0.8	94.7	120	4200	5300	K28584A6/K28521
	92.075	24.608	25.4	19.845	3.5	0.8	94.7	120	4200	5300	K28584/K28521
53.975	88.9	19.05	19.05	13.492	2.3	2	63.3	75.1	4300	5400	KLM806649/KLM806610
	100	21	21.946	17.862	0.8	2	89.5	102	3900	5000	K389A/K383A
	104.775	36.512	36.512	28.575	3.5	3.3	156	197	3800	4800	KHM807049/KHM807010
	107.95	36.512	36.957	28.575	3.5	0.5	160	185	3800	4700	K539/K532XA6
	122.238	33.338	31.75	23.812	3.5	3.3	147	162	3400	4400	K66584/K66520
	123.825	36.512	32.791	25.4	3.5	3.3	171	190	3400	4300	K72212C/K72487
	123.825	36.512	32.791	25.4	3.6	3.3	171	190	3400	4300	K72212CA6/K72487
	130.175	36.512	33.338	23.812	3.5	3.3	169	169	3300	4200	KHM911242SH/KHM911210SH
54.488	104.775	36.512	36.512	28.575	3.5	3.3	156	197	3800	4800	KHM807048/KHM807010
	104.775	36.512	36.512	28.575	3.5	3.3	156	197	3800	4800	KHM807048YB2/KHM807010
55	90	23	23	18.5	1.5	0.5	90.3	115	4200	5300	KJLM506849SH/KJLM506810SH
	90	23	23	18.5	1.5	0.5	85.9	113	4200	5300	KJLM506849/KJLM506810
	90	23	23	18.5	1.5	0.5	90.3	115	4200	5300	KJLM506849SH/KJLM506810SH
	95	29	29	23.5	1.5	2.5	122	151	4100	5100	KJM207049/KJM207010
	110	39	39	32	3	2.5	178	201	3700	4700	KJH307749/KJH307710
	120	29.002	29.007	23.444	0.8	3.3	141	178	3500	4400	K475/K472A
	120	29.002	29.007	23.444	0.8	3.3	143	182	3500	4400	K475/K472A/YB2
55.562	97.63	24.608	24.608	19.446	3.5	0.8	100	132	4000	5000	K28680/K28622
	97.63	24.608	24.608	19.446	3.5	0.8	100	132	4000	5000	NEV-K28680/K28622
57.15	96.838	21	21.946	15.875	3.5	0.8	89.5	102	3900	5000	K387A/K382A
	96.838	21	21.946	15.875	5	0.8	89.5	102	3900	5000	K387AS/K382A
	96.838	21	21.946	17.826	3.5	0.8	89.5	102	3900	5000	K387A/K382B
	97.63	24.608	24.608	19.446	3.5	0.8	100	132	3900	5000	K28682/K28622
	104.775	30.162	29.317	24.605	2.3	3.3	122	146	3800	4700	K462A/K453X
	104.775	30.162	29.317	24.605	3.5	3.3	122	146	3800	4700	K469/K453X
	104.775	32.545	29.317	26.988	3.5	3.3	122	146	3800	4700	K469/K453E

Abutment and fillet dimensions(mm)									Factor			Mass(kg) (approx.)
d_{amin}	d_{bmax}	D_{amin}	D_{amax}	D_{bmin}	r_{amax}	r_{bmax}	S_{amin}	S_{bmin}	*e*	*Y*	Y_o	*a*	
63	60	85	96	95	3	0.8	4	6	0.40	1.50	0.82	24	1.13
57	66	90	94	98	0.8	3.3	4	6	0.33	1.80	0.99	22	1.23
60	66	89	99	98	2.3	0.8	4	6	0.33	1.80	0.99	22	1.23
68	66	90	94	98	6.4	3.3	4	6	0.33	1.80	0.99	22	1.23
63	61	85	94	99	3	3.3	3	8	0.40	1.49	0.82	26	1.49
63	61	84	94	100	3	3.3	5	8	0.49	1.23	0.68	29	1.48
57	68	89	103	98	0.8	0.8	4	6	0.34	1.79	0.98	21	1.26
57	68	90	103	100	0.8	0.8	3	1	0.34	1.79	0.98	21	1.31
57	68	87	103	98	0.8	0.8	5	6	0.34	1.79	0.98	26	1.38
63	63	87	98	97	3	3.3	2	8	0.30	2.02	1.11	24	1.54
63	75	94	102	105	3	3.3	4	6	0.40	1.49	0.82	26	1.53
63	75	93	102	105	3	3.3	5	6	0.40	1.49	0.82	29	1.62
63	65	91	113	114	3	3.3	2	11	0.74	0.81	0.45	38	2.13
61	68	89	93	98	2.3	3.3	2	6	0.34	1.79	0.98	24	1.06
64	59	77	87	86	3	0.8	3	5	0.38	1.59	0.88	20	0.678
64	59	77	87	86	3	0.8	3	5	0.38	1.59	0.88	20	0.678
64	59	76	81	84	2.3	2	3	6	0.55	1.10	0.60	21	0.431
61	63	86	92	92	0.8	2	3	3	0.35	1.69	0.93	18	0.692
66	61	84	94	100	3	3.3	5	8	0.49	1.23	0.68	29	1.41
66	63	87	103	97	3	0.5	2	8	0.30	2.02	1.11	24	1.47
66	71	98	112	116	3	3.3	3	10	0.67	0.90	0.50	35	1.82
66	65	91	113	114	3	3.3	2	11	0.74	0.81	0.45	38	2.12
66	65	91	113	114	3.6	3.3	2	11	0.74	0.81	0.45	38	2.12
66	66	98	120	122	3	3.3	5	13	0.81	0.74	0.41	41	2.24
66	61	84	94	100	3	3.3	5	8	0.49	1.23	0.68	29	1.39
66	61	84	94	100	3	3.3	5	8	0.49	1.23	0.68	29	1.39
63	60	77	85	86	1.5	0.5	3	5	0.40	1.49	0.82	20	0.553
64	62	78	85	87	1.5	0.5	3	5	0.41	1.48	0.81	20	0.568
63	60	77	85	86	1.5	0.5	3	5	0.40	1.49	0.82	20	0.553
63	62	81	86	91	1.5	2.5	4	6	0.33	1.79	0.99	21	0.831
66	61	91	101	103	2.5	2.5	5	7	0.35	1.69	0.93	26	1.69
62	79	102	110	112	0.8	3.3	3	6	0.38	1.56	0.86	25	1.64
62	79	102	110	112	0.8	3.3	3	6	0.38	1.56	0.86	25	1.64
68	64	82	92	91	3	0.8	3	5	0.40	1.49	0.82	21	0.76
68	64	82	92	91	3	0.8	4	5	0.40	1.49	0.82	21	0.76
69	63	86	92	91	3	0.8	3	5	0.35	1.69	0.93	18	0.581
72	63	86	92	91	4	0.8	4	5	0.35	1.69	0.93	18	0.573
69	63	86	92	92	3	0.8	4	3	0.35	1.69	0.93	18	0.593
69	64	82	92	91	3	0.8	3	5	0.40	1.49	0.82	21	0.74
67	68	89	93	98	2.3	3.3	2	6	0.34	1.79	0.98	24	1.06
69	68	89	93	98	3	3.3	5	6	0.34	1.79	0.98	24	1.07
69	68	88	94	98	3	3.3	5	6	0.34	1.79	0.98	26	1.14

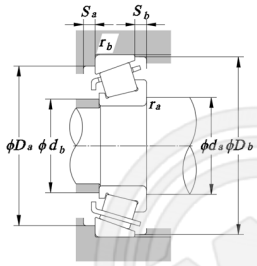
ZWZ

d 57.15～65mm



Pressed cage

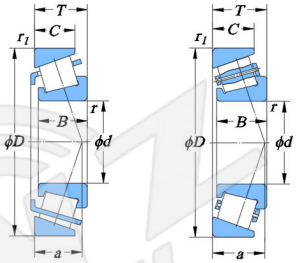
Machined cage



Principal dimensions(mm)						Basic load ratings (kN)		Limiting speeds (r/min)		Designations
d	*D*	*T*	*B*	*C*	r_{smin}	r_{1smin}	C_r	C_{or}	Grease	Oil	
57.15	112.712	26.967	21.996	23.812	2.3	3.3	96.5	117	3600	4500	K390/K3920
	123.825	38.1	36.678	30.162	3.5	3.3	178	223	3400	4200	K555S/K552A
	140.03	36.512	33.236	23.52	3.5	2.3	166	178	3100	3900	K78225C/K78551
59.987	130.175	36.513	30.924	23.812	3.5	3.3	168	183	3200	4000	KHM911244SH1/KHM911210SH1
	146.05	41.275	39.688	25.4	3.5	3.3	223	238	2900	3700	KH913840/KH913810
60	112.712	30.162	30.048	23.812	3.5	3.3	128	173	3500	4400	K3977/K3920
	120	29.795	29.007	24.237	2	2	141	178	3400	4300	K476/K472
	125	37	33.5	26	3	3	156	181	3300	4100	KJW6049/KJW6010
	135	33.45	30.95	22	3.5	3.5	166	175	3100	3900	KHM911244B/KHM911216B
60.325	100	25.4	25.4	19.845	3.5	3.3	108	140	3800	4800	K28985/K28921
	101.6	25.4	25.4	19.845	3.5	3.3	108	140	3800	4700	K28985/K28920
	122.238	38.1	38.354	29.718	8	3.3	209	250	3300	4200	KHM212044/KHM212011
	122.238	43.658	43.764	36.512	3.5	3.3	241	314	3300	4200	K5583/K5535
	123.825	38.1	36.678	30.162	2.3	3.3	178	223	3300	4200	K558/K552A
	127	44.45	44.45	34.925	3.5	3.3	228	269	3200	4100	K65237/K65500
	130.175	36.512	33.338	23.812	5	3.3	168	183	3200	4000	KHM911245SH2/KHM911210SH2
	136.525	46.038	46.038	36.512	3.5	3.3	253	365	3100	3900	KH715332/KH715311
61.912	112.712	26.967	21.996	23.812	0.8	3.3	96.5	117	3500	4400	K392/K3920
	127	36.512	36.512	26.988	3.5	3.3	181	231	3200	4100	KHM813843/KHM813810
	136.525	46.038	46.038	36.512	3.5	3.3	253	365	3100	3900	KH715334/KH715311
	146.05	41.275	39.688	25.4	3.5	3.3	223	238	2900	3700	KH913842/KH913810
62.738	101.6	25.4	25.4	19.845	3.5	3.3	108	140	3700	4700	K28995/K28920
63.5	94.458	19.05	19.05	15.083	1.5	1.5	68.1	105	3800	4900	KL610549/KL610510
	104.775	21.433	22	15.875	2	2	102	119	3600	4600	K39250/K39412
	107.95	25.4	25.4	19.05	1.5	0.8	103	144	3500	4500	K29586/K29522
	107.95	25.4	25.4	19.05	1.5	3.3	103	144	3500	4500	K29586/K29520
	107.95	25.4	25.4	19.05	3.5	0.8	103	144	3500	4500	K29585/K29522
	107.95	25.4	25.4	19.05	5	3.2	103	144	3500	4500	K29585/K29520
	110	22	21.996	18.824	3.5	1.3	96.5	117	3500	4400	K395/K394A
	110	25.4	25.4	19.05	3.5	1.3	103	144	3500	4400	K29585/K29521
	112.712	26.967	21.996	23.812	1.5	3.3	96.5	117	3400	4400	K390A/K3920
	112.712	30.162	30.048	23.812	3.5	3.3	128	173	3400	4400	K3982/K3920
	112.712	30.162	30.162	23.812	3.5	3.3	147	189	3400	4400	K39585/K39520
	112.712	30.162	30.162	23.812	3.5	3.3	147	189	3400	4400	K39585/K39520/HE1
	122.238	38.1	38.354	29.718	7	1.5	209	250	3300	4100	KHM212047/KHM212010
	122.238	38.1	38.354	29.718	7	3.3	209	250	3300	4100	KHM212047/KHM212011
	123.825	38.1	36.678	30.162	3.5	3.3	178	223	3200	4100	K559/K552A
	127	36.512	36.17	28.575	3.5	3.3	174	228	3200	4000	K565/K563
	127	36.512	36.512	26.988	3.5	3.3	181	231	3200	4000	KHM813842/KHM813810
	130.175	41.275	41.275	31.75	3.5	3.3	217	267	3100	4000	K639/K633
	136.525	41.275	41.275	31.75	3.5	3.3	265	307	3000	3800	KH414235/KH414210
65	110	28	28	22.5	3	2.5	145	184	3500	4400	KJM511946/KJM511910

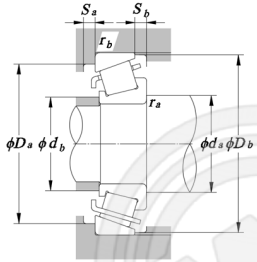
Abutment and fillet dimensions(mm)										Factor				Mass(kg) (approx.)
d_{amin}	d_{bmax}	D_{amin}	D_{amax}	D_{bmin}	r_{amax}	r_{bmax}	S_{amin}	S_{bmin}	*e*	*Y*	Y_0	*a*	
67	75	94	102	105	2.3	3.3	2	3	0.40	1.49	0.82	26	1.14
69	77	101	113	113	3	3.3	7	8	0.35	1.73	0.95	29	2.04
69	75	104	132	129	3	2.3	3	13	0.87	0.69	0.38	45	2.53
72	74	99	120	124	3	3.3	2	13	0.82	0.73	0.40	44	2.11
72	79	114	136	138	3	3.3	5	16	0.78	0.77	0.42	45	3.28
72	75	94	102	105	3	3.3	4	6	0.40	1.49	0.82	26	1.30
69	79	101	112	112	2	2	2	6	0.38	1.56	0.86	26	1.54
71	70	93	115	119	2.5	2.5	3	11	0.82	0.73	0.40	42	2.00
72	70	100	124	123	3	3	3	11	0.82	0.73	0.40	40	2.06
72	66	86	90	96	3	3.3	5	6	0.43	1.41	0.77	23	0.812
72	66	86	91	96	3	3.3	5	6	0.43	1.41	0.77	23	0.851
81	73	103	113	115	8	3.3	4	8	0.34	1.78	0.98	27	2.08
72	73	100	112	115	3	3.3	3	7	0.36	1.67	0.92	31	2.39
70	77	101	113	113	2.3	3.3	7	8	0.35	1.73	0.95	29	2.09
72	69	97	117	118	3	3.3	3	10	0.49	1.23	0.68	35	2.65
75	73	101	120	125	4	3.3	3	13	0.82	0.73	0.40	42	2.12
72	84	111	126	132	3	3.3	3	10	0.47	1.27	0.70	37	3.47
69	75	94	102	105	0.8	3.3	2	3	0.40	1.49	0.82	26	1.06
74	80	104	117	120	3	3.3	2	10	0.50	1.20	0.66	33	2.16
74	84	111	126	132	3	3.3	3	10	0.47	1.27	0.70	37	3.41
74	79	114	136	138	3	3.3	4	16	0.78	0.77	0.42	45	3.14
75	66	86	91	96	3	3.3	5	6	0.43	1.41	0.77	23	0.821
72	69	83	88	90	1.5	1.5	3	4	0.42	1.41	0.78	19	0.453
73	71	93	97	100	2	2	4	6	0.39	1.55	0.85	20	0.711
72	74	92	103	102	1.5	0.8	3	6	0.46	1.31	0.72	25	0.914
72	74	92	98	102	1.5	3.3	3	6	0.46	1.31	0.72	25	0.914
76	74	92	103	102	3	0.8	3	6	0.46	1.31	0.72	25	0.914
79	74	92	98	102	4	3.2	5	6	0.46	1.31	0.72	25	0.914
76	75	96	104	105	3	1.3	4	3	0.40	1.49	0.82	21	0.853
76	74	92	104	102	3	1.3	3	6	0.46	1.31	0.72	25	0.965
72	75	94	102	105	1.5	3.3	2	3	0.40	1.49	0.82	26	1.04
76	75	94	102	105	3	3.3	4	6	0.40	1.49	0.82	26	1.22
76	73	97	102	106	3	3.3	5	6	0.35	1.70	0.93	24	1.27
76	73	97	102	106	3	3.3	5	6	0.35	1.70	0.93	24	1.27
83	73	103	115	115	5.5	1.5	7	8	0.34	1.78	0.98	27	1.90
83	73	103	113	115	5.5	3.3	7	8	0.34	1.78	0.98	27	1.90
76	77	101	113	113	3	3.3	7	8	0.35	1.73	0.95	29	1.99
76	83	106	117	119	3	3.3	2	8	0.36	1.65	0.91	29	2.09
76	80	104	117	120	3	3.3	2	10	0.50	1.20	0.66	33	2.12
76	81	110	120	123	3	3.3	3	10	0.36	1.66	0.91	30	2.52
76	82	118	126	130	3	3.3	4	10	0.36	1.67	0.92	30	2.86
76	72	94	101	104	2.5	2.5	4	6	0.40	1.49	0.82	24	1.06

d 65.088～73.025mm



Pressed cage

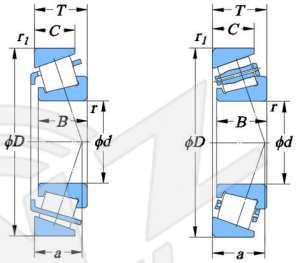
Machined cage



d	Principal dimensions(mm) D	T	B	C	r_{min}	r_{1min}	Basic load ratings (kN) C_r	C_{or}	Limiting speeds (r/min) Grease	Oil	Designations
65.088	135.755	53.975	56.007	44.45	3.5	3.3	292	356	3000	3800	K6379/K6320
66.675	107.95	25.4	25.4	19.05	3.5	0.8	103	144	3500	4400	K29590A6/K29522
	107.95	25.4	25.4	19.05	3.5	0.8	103	144	3500	4400	K29590/K29522
	110	22	21.996	18.824	0.8	1.3	96.5	117	3400	4300	K395A/K394A
	110	22	21.996	18.824	3.5	1.3	96.5	117	3400	4300	K395S/K394A
	112.712	26.967	21.996	23.812	0.8	3.3	96.5	117	3400	4300	K395A/K3920
	112.712	30.162	30.162	23.812	3.5	3.3	147	189	3400	4300	K39590/K39520
	112.712	30.162	30.162	23.812	3.5	3.3	147	189	3400	4300	K39590SH/K39520SH
	117.475	30.162	30.162	23.812	3.5	3.3	131	180	3300	4200	K33262/K33462
	122.238	38.1	38.354	29.718	3.556	1.5	209	250	3200	4100	KHM212049/KHM212010
	122.238	38.1	38.354	29.718	3.632	3.3	209	250	3200	4100	KHM212049/KHM212011
	122.238	38.1	38.354	29.718	7.05	3.1	209	250	3200	4100	KHM212049A6/KHM212010A6
	122.238	38.1	38.496	29.718	3.632	3.3	209	250	3200	4100	KHM212049YB2/KHM212011
	127	36.512	36.512	26.988	3.5	3.3	181	231	3100	4000	KHM813844/KHM813810
	135.755	53.975	56.007	44.45	4.3	3.3	292	356	3000	3800	K6386/K6320
	136.525	41.275	41.275	31.75	3.5	3.3	217	267	3000	3800	K641/K632
	136.525	46.038	46.038	36.512	3.5	3.3	253	365	3000	3800	KH715341/KH715311
68.262	136.525	41.275	41.275	31.75	3.5	3.3	217	267	3000	3700	K642/K632
	136.525	41.275	41.275	31.75	3.5	3.3	265	307	3000	3700	KH414245/KH414210
	136.525	46.038	46.038	36.512	3.5	3.3	253	365	3000	3700	KH715343/KH715311
	152.4	47.625	46.038	31.75	3.5	3.3	270	279	2700	3500	K9185/K9121
	161.925	49.212	46.038	31.75	3.5	3.3	271	288	2600	3300	K9278/K9220
69.85	112.712	25.4	25.4	19.05	1.5	3.3	108	156	3300	4200	K29675/K29620
	117.475	30.162	30.162	23.812	3.5	3.3	131	180	3200	4100	K33275/K33462
	120	29.795	29.007	24.237	3.5	2	141	178	3200	4000	K482/K472
	120	32.545	32.545	26.195	3.5	3.3	167	220	3200	4000	K47487/K47420
	127	36.512	36.17	28.575	3.5	3.3	174	228	3100	3900	K566/K563
	130.175	41.275	41.275	31.75	3.5	3.3	217	267	3000	3800	K643/K633
	146.05	41.275	39.688	25.4	3.5	3.3	223	238	2800	3500	KH913849/KH913810
	146.05	41.275	39.688	25.4	3.6	3.3	223	238	2800	3500	KH913849A6/KH913810
	149.225	41.275	41.275	31.75	3.5	3.3	239	316	2800	3500	K655/K652A
	150.089	44.45	46.672	36.512	3.5	3.3	290	367	2800	3500	K745A/K742
70	110	26	25	20.5	1	2.5	114	159	3400	4300	KJLM813049/KJLM813010
	120	29.795	29.007	24.237	2	2	141	178	3200	4000	K484/K472
	130	43	42	35	7	2.5	243	312	3000	3800	KJF7049A/KJF7010
71.438	117.475	30.162	30.162	23.812	3.5	3.3	131	180	3200	4100	K33281/K33462
	120	32.545	32.545	26.195	3.5	3.3	167	220	3200	4000	K47490/K47420
	136.525	41.275	41.275	31.75	3.5	3.3	265	307	2900	3700	KH414249/KH414210
	136.525	41.275	41.275	31.75	6.4	3.3	217	267	2900	3700	K645/K632
73.025	112.712	25.4	25.4	19.05	3.5	3.3	108	156	3300	4100	K29685/K29620
	112.712	25.4	25.4	19.05	3.56	3.3	108	156	3300	4100	K29685YAB/K29620
	117.475	30.162	30.162	23.812	3.5	3.3	131	180	3200	4000	K33287/K33462

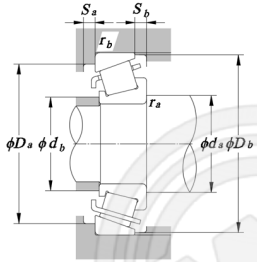
d	Abutment and fillet dimensions(mm) d_{amin}	d_{bmax}	D_{amin}	D_{amax}	D_{bmin}	r_{amax}	r_{bmax}	S_{amin}	S_{bmin}	Factor e	Y	Y_0	a	Mass(kg) (approx.)
65.088	77	76	108	125	125	3	3.3	2	10	0.32	1.85	1.02	36	3.63
66.675	79	74	92	103	102	3	0.8	3	6	0.46	1.31	0.72	25	0.853
	79	74	92	103	102	3	0.8	3	6	0.46	1.31	0.72	25	0.853
	73	75	96	104	105	0.8	1.3	4	3	0.40	1.49	0.82	21	0.797
	79	75	96	104	105	3	1.3	4	3	0.40	1.49	0.82	21	0.797
	73	75	94	102	105	0.8	3.3	2	3	0.40	1.49	0.82	26	0.981
	79	73	97	102	106	3	3.3	5	6	0.35	1.70	0.93	24	1.23
	79	73	97	102	106	3	3.3	4	6	0.35	1.70	0.93	24	1.23
	79	79	100	107	111	3	3.3	5	6	0.44	1.38	0.76	28	1.37
	78	74	103	115	115	3.5	1.5	7	8	0.34	1.78	0.98	27	1.90
	78	74	103	113	115	3.6	3.3	7	8	0.34	1.78	0.98	27	1.90
	85	74	103	113	115	7	3.1	5	8	0.34	1.78	0.98	27	1.90
	78	74	103	113	115	3.6	3.3	7	8	0.34	1.78	0.98	27	1.85
	79	80	104	117	120	3	3.3	2	10	0.50	1.20	0.66	33	2.01
	80	76	108	125	125	4.3	3.3	2	10	0.32	1.85	1.02	36	3.56
	79	81	110	126	123	3	3.3	3	10	0.36	1.66	0.91	30	2.74
	79	84	111	126	132	3	3.3	3	10	0.47	1.27	0.70	37	3.24
68.262	80	81	110	126	123	3	3.3	3	10	0.36	1.66	0.91	30	2.69
	80	82	118	126	130	3	3.3	4	10	0.36	1.67	0.92	30	2.70
	80	84	111	126	132	3	3.3	3	10	0.47	1.27	0.70	37	3.18
	80	80	118	142	144	3	3.3	5	16	0.66	0.91	0.50	44	3.79
	80	88	125	152	153	3	3.3	2	17	0.71	0.85	0.47	50	4.58
69.85	78	80	97	102	108	1.5	3.3	3	6	0.49	1.23	0.68	26	0.952
	82	79	100	107	111	3	3.3	5	6	0.44	1.38	0.76	28	1.28
	82	79	101	112	112	3	2	2	6	0.38	1.56	0.86	26	1.32
	82	78	103	110	113	3	3.3	3	6	0.36	1.67	0.92	26	1.50
	82	83	106	117	119	3	3.3	2	8	0.36	1.65	0.91	29	1.91
	82	81	110	120	123	3	3.3	3	10	0.36	1.66	0.91	30	2.30
	82	79	114	136	138	3	3.3	5	16	0.78	0.77	0.42	45	2.97
	82	79	114	136	138	3.6	3.3	5	16	0.78	0.77	0.42	45	2.97
	82	94	123	139	138	3	3.3	3	10	0.41	1.47	0.81	33	3.54
	82	93	127	140	142	3	3.3	7	8	0.33	1.84	1.01	32	3.88
70	77	76	93	101	105	1	2.5	3	6	0.49	1.23	0.68	26	0.894
	79	79	101	112	112	2	2	2	6	0.38	1.56	0.86	26	1.32
	89	80	109	121	122	5.5	2.5	3	8	0.33	1.80	0.99	30	2.50
71.438	83	79	100	107	111	3	3.3	2	6	0.44	1.38	0.76	28	1.24
	83	78	103	110	113	3	3.3	3	6	0.36	1.67	0.92	26	1.46
	83	82	118	126	130	3	3.3	4	10	0.36	1.67	0.92	30	2.59
	89	81	110	126	123	6.4	3.3	3	10	0.36	1.66	0.91	30	2.55
73.025	85	80	97	102	108	3	3.3	5	6	0.49	1.23	0.68	26	0.878
	85	80	97	102	108	3.5	3.3	3	6	0.49	1.23	0.68	26	0.878
	85	79	100	107	111	3	3.3	5	6	0.44	1.38	0.76	28	1.21

d 73.025～82.55mm



Pressed cage

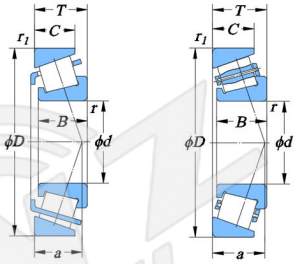
Machined cage



Principal dimensions(mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations
d	*D*	*T*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}	Grease	Oil	
73.025	127	36.512	36.17	28.575	3.5	3.3	174	228	3000	3800	K567/K563
	139.992	36.512	36.098	28.575	3.5	3.3	194	262	2800	3600	K576/K572
	150.089	44.45	46.672	36.512	3.5	3.3	290	367	2700	3400	K744/K742
73.817	127	36.512	36.17	28.575	0.8	3.3	174	228	3000	3800	K568/K563
75	115	25	25	19	3	2.5	108	144	3200	4000	KJLM714149/KJLM714110
	120	31	29.5	25	3	2.5	142	207	3100	3900	KJM714249/KJM714210
	145	51	51	42	3	2.5	332	435	2800	3500	KJH415647/KJH415610
75.987	131.976	39	39	32	7	3.5	223	306	2900	3700	KHM215249/KHM215210
76.2	125.412	25.4	25.4	19.845	3.5	1.5	116	172	3000	3800	K27684/K27620
	127	30.162	31	22.225	3.5	3.3	167	212	3000	3800	K42687/K42620
	127	30.162	31	22.225	6.4	3.3	167	212	3000	3800	K42688/K42620
	133.35	33.338	33.338	26.195	3.5	3.3	161	228	2900	3700	K47679/K47620
	135.733	44.45	46.1	34.925	3.5	3.3	236	339	2900	3600	K5760/K5735
	136.525	30.162	29.769	22.225	3.5	3.251	146	197	2800	3600	K495A/K493
	139.992	36.512	36.098	28.575	3.5	3.175	194	262	2800	3500	K575/K572A6
	139.992	36.512	36.098	28.575	3.5	3.3	194	262	2800	3500	K575/K572
	150.089	44.45	46.672	36.512	3.5	3.3	290	367	2700	3400	K748S/K742
	161.925	47.625	48.26	38.1	3.5	3.3	300	390	2500	3200	K755/K752
	161.925	49.212	46.038	31.75	3.5	3.3	271	288	2500	3200	9285/9220/HCOI
	161.925	49.212	46.038	31.75	3.5	3.3	271	288	2500	3200	9285/9220
	161.925	53.975	55.1	42.862	3.5	3.3	347	470	2500	3200	K6576/K6535
	171.45	49.212	46.038	31.75	3.5	3.3	290	322	2400	3100	K9380/K9321
	171.45	49.212	46.038	31.75	3.5	3.3	350	551	2400	3100	K9380/K9321/YB4
	171.45	49.212	46.038	31.75	3.5	3.3	290	322	2400	3100	K9380/K9321/YB2
	171.45	49.212	46.038	31.75	3.6	3.3	290	322	2400	3100	K9380A6/K9321
	180.975	53.975	53.183	35.72	3.5	3.3	351	397	2300	2900	KH917840/KH917810
	180.975	53.975	53.183	35.72	3.5	3.3	351	397	2300	2900	KH917840/KH917810/YA8
77.788	117.475	25.4	25.4	19.05	3.5	3.3	112	166	3100	3900	KLM814849/KLM814810
	121.442	24.608	23.012	17.462	3.5	2	101	130	3000	3800	K34306/K34478
	135.733	44.45	46.1	34.925	3.5	3.3	236	339	2800	3600	K5795/K5735
79.375	146.05	41.275	41.275	31.75	3.5	3.3	239	316	2700	3400	K661/K653/YB4
80	130	35	34	28.5	3	2.5	193	280	2900	3600	KJM515649/KJM515610
	160	45	41	31	3	3	233	301	2500	3200	KJW8049/KJW8010
80.962	136.525	30.162	29.769	22.225	3.632	3.251	146	197	2800	3500	K496/K493
	150.089	44.45	46.672	36.512	5	3.3	290	367	2600	3300	K740/K742
82.55	125.412	25.4	25.4	19.845	3.5	1.5	121	180	2900	3700	K27687/K27620
	125.412	25.4	25.4	19.845	3.5	1.5	128	187	2900	3700	K27687SH/K27620SH
	133.35	33.338	33.338	26.195	3.5	3.3	161	228	2800	3500	K47686/K47620
	133.35	33.338	33.338	26.195	6.8	3.3	161	228	2800	3500	K47687/K47620
	133.35	39.688	39.688	32.545	3.5	3.3	204	312	2800	3500	KHM516449/KHM516410
	139.7	36.512	36.098	28.575	3.632	3.3	194	262	2700	3400	K580/K572X
	139.992	36.512	36.098	28.575	3.632	3.175	194	262	2700	3400	K580/K572A6

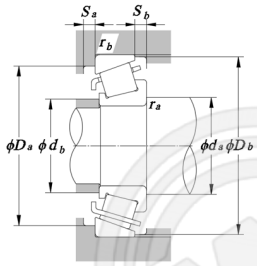
Abutment and fillet dimensions(mm)									Factor				Mass(kg) (approx.)
d_{amin}	d_{bmax}	D_{amin}	D_{amax}	D_{bmin}	r_{amax}	r_{bmax}	S_{amin}	S_{bmin}	*e*	*Y*	Y_0	*a*	
85	83	106	117	119	3	3.3	2	8	0.36	1.65	0.91	29	1.80
85	90	118	130	131	3	3.3	3	8	0.40	1.49	0.82	31	2.54
85	93	127	140	142	3	3.3	7	8	0.33	1.84	1.01	32	3.74
80	83	106	117	119	0.8	3.3	2	8	0.36	1.65	0.91	29	1.78
86	80	100	106	110	2.5	2.5	2	6	0.46	1.31	0.72	26	0.858
87	82	103	111	115	2.5	2.5	2	6	0.44	1.35	0.74	28	1.28
86	87	120	136	139	2.5	2.5	5	9	0.36	1.66	0.91	36	3.89
95	83	113	121	125	5.5	3	4	7	0.33	1.80	0.99	28	2.14
88	93	111	119	119	3	1.5	3	6	0.42	1.44	0.79	26	1.25
88	83	112	117	121	3	3.3	7	8	0.42	1.43	0.79	27	1.44
94	83	112	117	121	6.4	3.3	4	8	0.42	1.43	0.79	27	1.44
88	91	115	123	126	3	3.3	3	7	0.40	1.48	0.82	29	1.97
88	85	113	125	129	3	3.3	2	10	0.41	1.48	0.81	34	2.73
88	92	117	127	128	3	3.2	4	8	0.44	1.35	0.74	29	1.82
88	90	117	131	131	3	3.1	3	8	0.40	1.49	0.82	31	2.44
88	90	118	130	131	3	3.3	3	8	0.40	1.49	0.82	31	2.44
88	93	127	140	142	3	3.3	3	8	0.33	1.84	1.01	32	3.62
88	99	132	152	148	3	3.3	3	10	0.34	1.76	0.97	35	4.85
88	88	125	152	153	3	3.3	2	17	0.71	0.85	0.47	50	4.28
88	88	125	152	153	3	3.3	2	17	0.71	0.85	0.47	50	4.28
88	99	132	152	153	3	3.3	3	11	0.40	1.50	0.82	41	5.46
88	95	132	161	163	3	3.3	3	17	0.76	0.79	0.43	55	5.17
88	94	132	161	163	3	3.3	3	17	0.76	0.79	0.43	347	5.17
88	95	132	161	163	3	3.3	3	17	0.76	0.79	0.43	55	5.17
88	95	132	161	163	3.6	3.3	3	17	0.76	0.79	0.43	55	5.17
88	94	137	170	169	3	3.3	3	18	0.73	0.82	0.45	55	6.56
88	94	137	170	169	3	3.3	3	18	0.73	0.82	0.45	55	6.66
90	82	102	107	113	3	3.3	3	6	0.51	1.18	0.65	28	0.979
90	84	106	114	114	3	2	4	7	0.45	1.33	0.73	26	0.934
90	85	113	125	129	3	3.3	2	10	0.41	1.48	0.81	34	2.66
91	94	123	136	138	3	3.3	3	10	0.41	1.47	0.81	33	3.01
91	89	110	121	124	2.5	2.5	3	7	0.41	1.48	0.81	30	1.82
91	92	119	150	152	2.5	2.5	3	14	0.87	0.69	0.38	55	4.02
93	94	117	127	128	3.6	3.2	4	8	0.44	1.35	0.74	29	1.75
93	93	127	140	142	4	3.3	4	8	0.33	1.84	1.01	32	3.31
95	91	110	119	119	3	1.5	4	6	0.40	1.49	0.82	25	1.06
95	91	111	119	120	3	1.5	4	6	0.45	1.32	0.73	27	1.10
95	91	115	123	126	3	3.3	3	7	0.40	1.48	0.82	29	1.80
101	91	115	123	126	6.8	3.3	3	7	0.40	1.48	0.82	29	1.74
95	88	113	123	128	3	3.3	3	7	0.40	1.49	0.82	32	2.12
94	93	116	129	131	3.6	3.3	3	8	0.40	1.49	0.82	31	2.21
94	93	117	131	131	3.6	3.1	3	8	0.40	1.49	0.82	31	2.21

d 82.55～90mm



Pressed cage

Machined cage

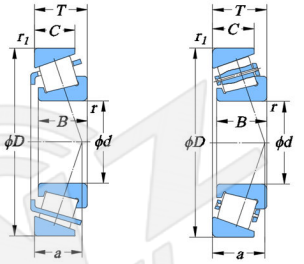


d	Principal dimensions(mm) D	T	B	C	r_{min}	r_{1min}	Basic load ratings(kN) C_r	C_{or}	Limiting speeds (r/min) Grease	Oil	Designations
82.55	139.992	36.512	36.098	28.575	3.632	3.3	194	262	2700	3400	K580/K572
	139.992	36.512	36.098	28.575	3.632	3.3	194	262	2700	3400	K580/K572-2X/V1S0
	139.992	36.512	36.098	28.575	6.8	3.3	194	262	2700	3400	K582/K572
	139.992	36.512	36.099	28.575	3.632	3.3	194	262	2700	3400	K580YB2/K572
	146.05	41.275	41.275	31.75	3.175	3.632	239	316	2600	3300	K663/K653/YAD
	146.05	41.275	41.275	31.75	3.5	3.3	239	316	2600	3300	663/653
	146.05	41.275	41.275	31.75	3.632	3.175	239	316	2600	3300	K663/K653
	150	44.45	46.672	36.512	3.5	3.3	290	367	2600	3300	K749A/K742A
	168.275	53.975	56.363	41.275	3.5	3.3	377	466	2400	3000	K842/K832
	180.975	53.975	53.183	35.72	3.3	3.3	351	397	2300	2900	KH917849/KH917810
83.345	125.412	25.4	25.4	19.845	3.5	1.5	116	172	2900	3700	K27690/K27620
84.138	133.35	30.162	29.769	22.225	3.5	3.3	146	197	2800	3500	K498/K492A
84.976	125.412	25.4	25.4	19.845	5	1.5	116	172	2900	3600	K27695/K27620
85	130	30	29	24	3	2.5	158	230	2800	3600	KJM716649/KJM716610
85.026	150.089	44.45	46.672	36.512	3.5	3.3	290	367	2600	3200	K749/K742
	150.089	44.45	46.672	36.512	5	3.3	290	367	2600	3200	K749S/K742
85.725	133.35	30.162	29.769	22.225	3.556	3.3	146	197	2800	3500	K497/K492A
	136.525	30.163	29.769	22.225	3.556	3.175	146	197	2700	3400	K497/K493
	142.138	42.862	42.862	34.133	4.8	3	240	347	2700	3300	KHM617049/KHM617010
	146.05	41.275	41.275	31.75	3.5	3.3	239	316	2600	3300	K665/K653A6
	146.05	41.275	41.275	31.75	6.4	3.175	239	316	2600	3300	K665A/K653
	147.638	35.717	36.322	26.192	3.5	0.8	203	287	2600	3300	K596/K592XE
	152.4	39.688	36.322	30.162	3.5	3.175	203	287	2500	3200	K596/K592A
88.9	152.4	39.688	39.688	30.162	6.426	3.632	280	366	2900	3700	KHM518445/KHM518410
	152.4	39.688	36.322	30.162	3.5	3.175	203	287	2500	3100	K593/K592A
	152.4	39.688	36.322	30.162	6.4	3.175	203	287	2500	3100	K593A/K592A
	152.4	39.688	39.688	30.162	6.4	3.1	280	366	2500	3100	KHM518445A6/KHM518410A6
	152.4	39.688	39.688	30.162	6.4	3.1	280	366	2500	3100	KHM518445A6/KHM518410A6/YB2
	161.925	47.625	48.26	38.1	3.5	3.3	300	390	2400	3000	K759/K752
	161.925	47.625	48.26	39.675	3.5	3.3	300	390	2400	3000	K759/K752BX2
	161.925	53.975	55.1	42.862	3.5	3.3	347	470	2400	3000	K6580/K6535
	168.275	41.275	41.275	30.162	3.5	3.3	249	350	2300	2900	K679/K672
	168.275	53.975	56.363	41.275	3.5	3.3	394	496	2300	2900	K850/K832
	190.5	57.15	57.531	44.45	8	3.3	422	562	2100	2700	855/854B
	190.5	57.15	57.531	44.45	8	3.3	422	562	2100	2700	K855/K854
	190.5	57.15	57.531	44.45	8	3.3	422	562	2100	2700	K855/K854B
	190.5	57.15	57.531	46.038	8	3.3	489	612	2100	2700	KHH221434/KHH221410
90	145	35	34	27	3	2.5	216	293	2600	3200	KJM718149/KJM718110
	145	35	34	27	6	2.5	216	293	2600	3200	KJM718149A/KJM718110
	147	40	40	32.5	5.8	3.5	241	334	2500	3200	KHM218248SH/KHM218210SH/YB2
	147	40	40	32.5	5.8	3.5	241	334	2500	3200	KHM218248SH/KHM218210SH
	147	40	40	32.5	7	3.5	252	343	2500	3200	KHM218248/KHM218210

Abutment and fillet dimensions(mm) d_{amin}	d_{bmax}	D_{amin}	D_{amax}	D_{bmin}	r_{amax}	r_{bmax}	S_{amin}	S_{bmin}	Factor e	Y	Y_0	a	Mass(kg) (approx.)
94	93	118	130	131	3.6	3.3	3	8	0.40	1.49	0.82	31	2.21
94	93	118	130	131	3.6	3.3	3	8	0.40	1.49	0.82	31	2.21
101	92	118	130	131	6.8	3.3	3	8	0.40	1.49	0.82	31	2.19
94	92	118	130	131	3.6	3.3	3	8	0.40	1.49	0.82	31	2.21
94	94	123	137	138	3.1	3.6	3	10	0.41	1.47	0.81	33	2.87
95	94	122	136	138	3	3.3	3	10	0.41	1.47	0.81	33	2.87
94	94	123	137	138	3.6	3.1	3	10	0.41	1.47	0.81	33	2.87
95	93	127	140	142	3	3.3	3	8	0.33	1.84	1.01	32	3.33
95	99	140	158	155	3	3.3	10	13	0.30	2.00	1.10	35	5.36
94	94	137	170	169	3.3	3.3	3	18	0.73	0.82	0.45	55	6.25
95	93	111	119	119	3	1.5	3	6	0.42	1.44	0.79	26	1.08
96	92	117	123	128	3	3.3	4	8	0.44	1.35	0.74	29	1.47
100	93	111	119	119	4	1.5	3	6	0.42	1.44	0.79	26	1.01
97	91	113	120	125	2.5	2.5	4	6	0.44	1.35	0.74	30	1.39
97	93	127	140	142	3	3.3	4	8	0.33	1.84	1.01	32	3.22
100	93	127	140	142	4	3.3	4	8	0.33	1.84	1.01	32	3.22
98	93	117	123	128	3.5	3.3	4	8	0.44	1.35	0.74	29	1.47
98	93	117	127	128	3.5	3.1	4	8	0.44	1.35	0.74	29	1.60
100	93	119	132	136	4.8	2.5	4	9	0.43	1.39	0.76	35	2.63
98	94	123	136	138	3	3.3	3	10	0.41	1.47	0.81	33	2.74
104	94	123	137	138	6.4	3.1	3	10	0.41	1.47	0.81	33	2.74
98	102	127	142	141	3	0.8	4	10	0.44	1.36	0.75	33	2.46
98	102	125	143	141	3	3.1	4	10	0.44	1.36	0.75	37	2.87
106	99	132	142	146	6.4	3.6	4	10	0.40	1.49	0.82	33	2.70
101	102	125	143	141	3	3.1	4	10	0.44	1.36	0.75	37	2.58
107	102	125	143	141	6.4	3.1	4	10	0.44	1.36	0.75	37	2.75
107	99	132	143	146	6.4	3.1	5	10	0.40	1.49	0.82	33	2.70
107	99	132	143	146	6.4	3.1	5	10	0.40	1.49	0.82	33	2.70
101	99	132	152	148	3	3.3	3	10	0.34	1.76	0.97	35	4.26
101	99	132	152	149	3	3.3	4	8	0.34	1.76	0.97	35	4.40
101	99	132	152	153	3	3.3	3	11	0.40	1.50	0.82	41	4.73
101	112	139	158	157	3	3.3	3	11	0.47	1.28	0.70	38	4.03
101	99	140	158	155	3	3.3	5	13	0.30	2.00	1.10	35	5.34
110	114	158	180	173	8	3.3	4	13	0.33	1.79	0.99	40	7.92
110	114	158	180	173	8	3.3	4	13	0.33	1.79	0.99	40	7.69
110	114	158	180	173	8	3.3	4	13	0.33	1.79	0.99	40	7.71
110	114	161	180	179	8	3.3	6	11	0.33	1.79	0.99	42	7.87
101	96	125	136	139	2.5	2.5	5	8	0.44	1.35	0.74	33	2.10
107	96	125	136	139	5	2.5	5	8	0.44	1.35	0.74	33	2.17
107	100	129	136	140	5.8	3	4	8	0.33	1.80	0.99	31	2.57
107	100	129	136	140	5.8	3	4	8	0.33	1.80	0.99	31	2.58
109	98	128	136	140	5.5	3	4	8	0.33	1.80	0.99	31	2.51

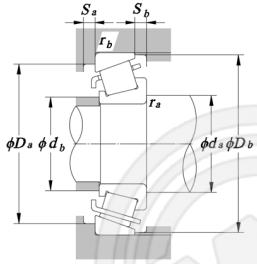
ZWZ

d 90～109.538mm



Pressed cage

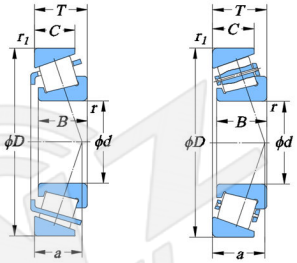
Machined cage



d	Principal dimensions(mm) D	T	B	C	r_{min}	r_{1min}	Basic load ratings(kN) C_r	C_{or}	Limiting speeds (r/min) Grease	Oil	Designations
90	147	40	40	32.5	7.05	3.1	252	343	2500	3200	KHM218248A6/KHM218210A6
	190	50.8	46.038	31.75	3.6	3.3	294	343	2100	2700	KJ90354/KJ90748
92.075	146.05	33.338	34.925	26.195	3.5	3.3	197	295	2500	3200	K47890/K47820
	152.4	39.688	36.322	30.162	3.5	3.3	203	287	2500	3100	K598/K592A
	152.4	39.688	36.322	30.162	6.426	3.175	203	287	2500	3100	598A/592A
	180.975	47.625	48.006	38.1	3.5	3.3	318	437	2200	2800	K778/K772
95	135	20	20	14	5	2.5	104	150	2600	3300	KJL819349/KJL819310
	150	35	34	27	3	2.5	208	296	2500	3100	KJM719149/KJM719113
95.25	147.638	35.717	36.322	26.192	5	0.8	205	292	2500	3100	594A/592XE
	152.4	39.688	36.322	30.162	5.232	3.175	203	287	2400	3100	K594A/K592A
	152.4	39.688	36.322	30.162	5.232	3.175	203	287	2400	3100	K594A/K592A-2X/V1S0
	152.4	39.688	36.322	30.162	8	3.3	203	287	2400	3100	K594R/K592A
	168.275	41.275	41.275	30.162	3.5	3.3	249	350	2300	2900	K683/K672
	190.5	57.15	57.531	46.038	8	3.3	489	612	2100	2600	KHH221440/KHH221410
96.838	148.43	28.575	28.971	21.433	3.5	3	163	235	2500	3100	K42381/K42584
	149.225	31.75	28.971	24.608	3.5	3.3	163	235	2400	3100	K42381/K42587B
	188.912	50.8	46.038	31.75	3.5	3.3	294	343	2100	2600	K90381/K90744
	188.912	50.8	46.038	31.75	3.5	3.3	308	364	2100	2600	K90381/K90744/YA8
99.974	156.975	42	42	34	8	3.5	270	395	2300	2900	KHM220149/KHM220110
99.975	212.725	66.675	66.675	53.975	3.5	3.3	622	802	1900	2400	KHH224334/KHH224310
100	145	24	22.5	17.5	5	3	128	170	2500	3100	KJP10049A/KJP10010
	157	42	42	34	7.05	3.1	270	395	2300	2900	KHM220149A6/KHM220110A6
101.6	136.525	21.433	21.433	16.67	1.5	1.5	95.3	163	2500	3200	KL420449/KL420410
	157.162	36.512	36.116	26.195	3.5	3.3	212	312	2300	2900	K52400/K52618
	168.275	41.275	41.275	30.162	3.5	3.3	249	350	2200	2800	K687/K672
	180.975	47.625	48.006	38.1	3.5	3.3	318	437	2100	2600	K780/K772
	190.5	57.15	57.531	44.45	8	3.3	422	562	2000	2600	K861/K854
	190.5	57.15	57.531	46.038	8	3.3	489	612	2000	2600	KHH221449/KHH221410
	190.5	57.15	57.531	46.038	8	3.3	489	612	2000	2600	HH221449/HH221410
	212.725	66.675	66.675	53.975	7	3.3	495	673	1900	2400	K941/K932
	212.725	66.675	66.675	53.975	7	3.3	622	802	1900	2400	KHH224335/KHH224310
	214.312	55.562	52.388	39.688	3.5	3.3	429	549	1900	2300	KH924033/KH924010
	250.825	76.2	73.025	50.8	6.4	3.3	604	693	1600	2100	KHH923649/KHH923611
	250.825	76.2	73.025	50.8	6.4	6.4	604	693	1600	2100	KHH923649/KHH923610
	250.825	76.2	73.025	50.8	6.4	6.4	604	693	1600	2100	HH923649/HH923610
104.775	180.975	47.625	48.006	38.1	3.5	3.3	318	437	2100	2600	K782/K772
	180.975	47.625	48.006	38.1	6.4	3.3	318	437	2100	2600	K786/K772
	180.975	47.625	48.006	38.1	7	3.3	318	437	2100	2600	K787/K772
107.95	146.05	21.433	21.433	16.67	1.5	1.5	117	182	2400	3000	KL521949/KL521910
	158.75	23.02	21.438	15.875	3.5	3.3	115	171	2200	2800	K37425/K37625
	165.1	36.512	36.512	26.988	3.5	3.3	215	324	2200	2800	K56425/K56650
109.538	158.75	23.02	21.438	15.875	3.5	3.3	115	171	2200	2800	K37431/K37625
109.538	158.75	23.02	21.438	15.875	5	3.3	115	171	2200	2800	K37431A/K37625

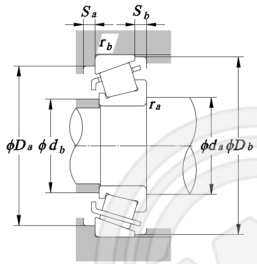
d	Abutment and fillet dimensions(mm) d_{amin}	d_{bmax}	D_{amin}	D_{amax}	D_{bmin}	r_{amax}	r_{bmax}	S_{amin}	S_{bmin}	Factor e	Y	Y_0	a	Mass(kg) (approx.)
90	108	99	128	138	140	7	3.1	4	8	0.33	1.80	0.99	31	2.51
	102	109	146	179	179	3.6	3.3	2	19	0.87	0.69	0.38	64	6.07
92.075	104	102	124	136	139	3	3.3	4	7	0.45	1.34	0.74	32	2.08
	104	102	125	143	141	3	3.3	3	10	0.44	1.36	0.75	37	2.61
	109	102	125	143	141	6.4	3.1	3	10	0.44	1.36	0.75	37	2.62
	104	114	150	170	166	3	3.3	3	10	0.39	1.56	0.86	39	5.55
95	110	101	120	126	130	4	2.5	4	6	0.58	1.04	0.57	31	0.82
	106	101	128	141	142	2.5	2.5	3	8	0.44	1.36	0.75	33	2.23
95.25	110	102	127	142	141	4	0.8	4	10	0.44	1.36	0.75	33	2.08
	110	102	125	143	141	5.2	3.1	4	10	0.44	1.36	0.75	37	2.54
	110	102	125	143	141	5.2	3.1	4	10	0.44	1.36	0.75	37	2.49
	116	102	125	143	141	8	3.3	4	10	0.44	1.36	0.75	37	2.52
	107	112	139	158	157	3	3.3	3	11	0.47	1.28	0.70	38	3.75
	116	114	161	180	179	8	3.3	5	11	0.33	1.79	0.99	42	7.50
96.838	109	103	127	139	139	3	2.5	3	7	0.49	1.22	0.67	33	1.68
	109	103	125	139	139	3	3.3	6	7	0.49	1.22	0.67	36	1.89
	109	109	146	178	179	3	3.3	5	19	0.87	0.69	0.38	64	5.63
	109	109	146	178	179	3	3.3	5	19	0.87	0.69	0.38	64	5.72
99.974	121	109	138	146	151	8	3	2	8	0.33	1.80	0.99	32	2.89
99.975	112	128	182	202	202	3	3.3	6	13	0.33	1.84	1.01	48	11.2
100	118	107	130	134	140	4	2.5	3	7	0.47	1.27	0.70	30	1.13
	119	109	138	148	151	7	3.1	2	8	0.33	1.80	0.99	32	2.89
101.6	111	108	124	130	131	1.5	1.5	3	5	0.37	1.63	0.90	24	0.846
	115	110	138	147	151	3	3.3	3	10	0.47	1.26	0.69	36	2.48
	115	112	139	158	157	3	3.3	3	11	0.47	1.28	0.70	38	3.43
	115	114	150	170	166	3	3.3	2	10	0.39	1.56	0.86	39	5.00
	124	114	158	180	173	8	3.3	4	13	0.33	1.79	0.99	40	6.80
	124	114	161	180	179	8	3.3	5	11	0.33	1.79	0.99	42	7.87
	124	114	161	180	179	8	3.3	5	11	0.33	1.79	0.99	42	7.87
	122	130	173	202	193	5.5	3.3	3	13	0.33	1.84	1.01	47	11.0
	122	128	182	202	202	5.5	3.3	3	13	0.33	1.84	1.01	48	11.1
	115	128	170	204	203	3	3.3	2	16	0.67	0.89	0.49	62	9.15
	120	127	183	240	229	6.4	3.3	7	25	0.71	0.85	0.47	74	17.6
	120	127	183	234	229	6.4	6.4	7	25	0.71	0.85	0.47	74	17.6
	120	127	183	234	229	6.4	6.4	7	25	0.71	0.85	0.47	74	17.6
104.775	118	114	150	170	166	3	3.3	2	10	0.39	1.56	0.86	39	4.81
	124	114	150	170	166	6.4	3.3	2	10	0.39	1.56	0.86	39	4.79
	125	114	150	170	166	5.5	3.3	2	10	0.39	1.56	0.86	39	4.78
107.95	117	114	133	139	141	1.5	1.5	4	5	0.39	1.54	0.85	26	0.993
	121	116	137	148	149	3	3.3	3	7	0.61	0.99	0.54	36	1.36
	121	115	142	155	158	3	3.3	4	10	0.50	1.21	0.66	39	2.67
109.538	123	116	137	148	149	3	3.3	3	7	0.61	0.99	0.54	36	1.32
109.538	126	116	137	148	149	4	3.3	3	7	0.61	0.99	0.54	36	1.32

d 110～142.875mm



Pressed cage

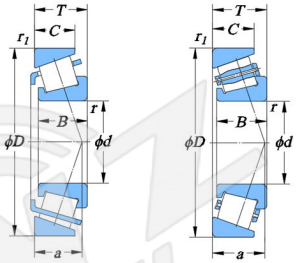
Machined cage



Principal dimensions(mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations
d	D	T	B	C	r_{smin}	r_{1smin}	C_r	C_{or}	Grease	Oil	
110	165	35	35	26.5	3	2.5	224	342	2200	2700	KJM822049/KJM822010
	165	35	35	26.5	3	2.5	224	342	2200	2700	KM822049/KM822010
	180	47	46	38	3	2.5	350	508	2000	2600	KJHM522649/KJHM522610
	180	47	46	38	3	2.5	350	508	2000	2600	KRJHM522649/JHM522610
	180	47	46	38	3	2.5	350	508	2000	2600	JHM522649/JHM522610
114.3	177.8	41.275	41.275	30.162	3.5	3.3	258	379	2000	2600	K64450/K64700
	190.5	47.625	49.212	34.925	3.5	3.3	335	481	1900	2400	K71450/K71750
	212.725	66.675	66.675	53.957	7	3.3	495	673	1800	2200	K938/K932
	212.725	66.675	66.675	53.975	7	3.3	622	802	1800	2200	KHH224346/KHH224310
	228.6	53.975	49.428	38.1	3.5	3.3	440	589	1700	2100	KHM926740/KHM926710
114.975	212.725	66.675	66.675	53.975	7	3.3	649	849	1800	2200	KHH224349/KHH224310
114.976	180.975	41.275	41.275	30.162	9	3.3	258	379	2000	2500	K64452A/K64713
117.8	247.65	47.625	47.625	38.1	10.5	3.3	386	758	1600	2000	K67791/K67720
120	170	27	25	19.5	3	3	170	242	2000	2600	KJP12049/KJP12010
120.65	174.625	35.72	36.512	27.783	3.5	1.5	230	364	2000	2500	KM224749/KM224710
	182.562	39.688	38.1	33.338	3.5	3.3	251	431	1900	2400	K48282/K48220
	206.375	47.625	47.625	34.925	3.3	3.3	359	547	1800	2200	K795/K792
	254	77.788	82.55	69.912	9.7	6.4	798	1050	1500	1900	KHH228340/KHH228310
	273.05	82.55	82.55	53.975	6.4	6.4	819	956	1400	1800	KHH926749/KHH926710
	273.05	82.55	82.55	53.975	6.4	6.4	819	956	1400	1800	HH926749/HH926710
123.825	254	77.788	82.55	61.912	9.7	6.4	798	1050	1500	1900	KHH228344/KHH228310
125.298	228.6	53.975	49.428	38.1	3.5	3.3	440	589	1600	2100	HM926745/HM926710
127	182.562	39.688	38.1	33.338	3.5	3.3	251	431	1900	2400	48290/48220
	182.562	39.688	38.1	33.338	3.5	3.3	251	431	1900	2400	K48290/K48220
	196.85	46.038	46.038	38.1	3.5	3.3	338	550	1800	2300	K67388/K67322
	228.6	53.975	49.428	38.1	3.5	3.3	440	589	1600	2000	KHM926747/KHM926710
	234.95	63.5	63.5	49.212	6.4	3.3	577	825	1600	2000	K95500/K95925
	254	77.788	82.55	61.912	9.7	6.4	798	1050	1500	1900	KHH228349/KHH228310
	304.8	88.9	82.55	57.15	6.4	6.4	925	1150	1300	1600	KHH932132/KHH932110/YA8
127.792	228.6	53.975	49.428	38.1	3.5	3.3	440	589	1600	2000	HM926749/HM926710
128.588	206.375	47.625	47.625	34.925	3.3	3.3	359	547	1700	2200	K799/K792
130.175	196.85	46.038	46.038	38.1	3.5	3.3	349	566	1800	2200	67389/67322
133.35	190.5	39.688	39.688	33.338	3.5	3.3	264	438	1800	2300	K48385/K48320
	196.85	46.038	46.038	38.1	3.5	3.3	349	566	1800	2200	67390/67322
	234.95	63.5	63.5	49.212	4.8	3.3	577	825	1600	2000	95528/95925
	234.95	63.5	63.5	49.212	9.7	3.3	577	825	1600	2000	95525/95925
	234.95	63.5	63.5	49.212	9.7	3.3	577	825	1600	2000	K95525/K95925
136.525	190.5	39.688	39.688	33.338	3.5	3.3	264	438	1800	2200	K48393/K48320
139.7	228.6	57.15	57.15	44.45	3.5	3.3	446	679	1600	2000	K898/K892
	236.538	57.15	56.642	44.45	3.5	3.3	534	786	1500	1900	KHM231132/KHM231110
	254	66.675	66.675	47.625	7	3.3	649	927	1400	1800	K99550/K99100
139.7	295.275	82.55	87.312	57.15	9.7	6.4	906	1100	1300	1600	KHH231649/KHH231615
142.875	194.975	33	33	27.5	3.5	3.5	236	396	1700	2200	KLM229147C/KLM229110

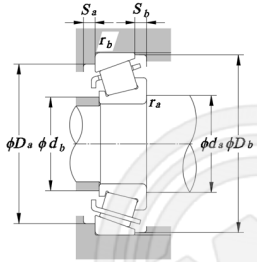
Abutment and fillet dimensions(mm)									Factor				Mass(kg) (approx.)
d_{amin}	d_{bmax}	D_{amin}	D_{amax}	D_{bmin}	r_{amax}	r_{bmax}	S_{amin}	S_{bmin}	e	Y	Y_0	a	
123	116	143	155	158	2.5	2.5	5	9	0.50	1.21	0.66	38	2.63
122	116	143	156	158	2.5	2.5	4	9	0.50	1.21	0.66	38	2.63
122	120	154	171	172	2.5	2.5	4	9	0.41	1.48	0.81	41	4.56
122	120	154	171	172	2.5	2.5	4	9	0.41	1.48	0.81	41	4.56
122	120	154	171	172	2.5	2.5	4	9	0.41	1.48	0.81	41	4.56
128	122	153	167	171	3	3.3	3	11	0.52	1.16	0.64	43	3.50
128	126	160	180	178	3	3.3	5	13	0.42	1.44	0.79	41	5.26
135	130	173	202	193	5.5	3.3	3	13	0.33	1.84	1.01	47	9.95
134	128	182	202	202	5.5	3.3	6	13	0.33	1.84	1.01	48	10.4
128	142	185	218	219	3	3.3	4	16	0.74	0.81	0.45	68	9.78
135	128	182	202	202	5.5	3.3	6	13	0.33	1.84	1.01	48	10.2
139	122	153	170	171	9	3.3	3	11	0.52	1.16	0.64	43	3.72
145	189	219	237	238	10.5	3.3	4	10	0.44	1.36	0.75	52	6.82
133	128	153	160	164	2.5	2.5	3	8	0.47	1.27	0.70	35	1.75
134	130	156	167	166	3	1.5	3	8	0.33	1.80	0.99	32	2.66
134	137	163	172	174	3	3.3	5	6	0.31	1.97	1.08	34	3.56
134	142	175	196	195	3.3	3.3	4	13	0.46	1.31	0.72	46	6.28
146	151	209	237	237	9.7	6.4	8	8	0.32	1.87	1.03	54	18.2
140	142	214	254	254	6.4	6.4	7	29	0.63	0.95	0.52	76	22.1
140	142	214	254	254	6.4	6.4	7	29	0.63	0.95	0.52	76	22.1
150	151	209	237	234	9.7	6.4	8	16	0.32	1.87	1.03	54	18.6
139	142	185	218	219	3	3.3	4	16	0.74	0.81	0.45	68	9.00
140	137	163	172	174	3	3.3	5	6	0.31	1.97	1.08	34	3.20
140	137	163	172	174	3	3.3	5	6	0.31	1.97	1.08	34	3.20
140	143	175	186	189	3	3.3	4	8	0.34	1.74	0.96	40	5.18
140	142	185	218	219	3	3.3	4	16	0.74	0.81	0.45	68	8.88
146	149	196	224	217	6.4	3.3	5	14	0.37	1.62	0.89	50	11.6
153	151	209	237	234	9.7	6.4	8	16	0.32	1.87	1.03	54	18.2
146	165	238	286	288	6.4	6.4	6	32	0.73	0.82	0.45	92	27.7
141	142	185	218	219	3	3.3	4	16	0.74	0.81	0.45	68	8.80
141	142	175	196	195	3.3	3.3	4	13	0.46	1.31	0.72	46	5.70
143	143	175	186	189	3	3.3	7	8	0.34	1.74	0.96	40	4.96
147	143	172	180	183	3	3.3	3	6	0.32	1.88	1.04	35	3.52
147	143	175	186	189	3	3.3	4	8	0.34	1.74	0.96	40	4.71
149	149	196	224	217	4.8	3.3	5	14	0.37	1.62	0.89	50	11.1
159	149	196	224	217	9.7	3.3	5	14	0.37	1.62	0.89	50	11.1
159	149	196	224	217	9.7	3.3	5	14	0.37	1.62	0.89	50	11.1
150	143	172	180	183	3	3.3	3	6	0.32	1.88	1.04	35	3.32
153	153	191	218	214	3	3.3	4	13	0.42	1.43	0.79	51	8.85
153	164	207	226	223	3	3.3	5	13	0.32	1.88	1.04	45	10.1
160	163	213	243	237	5.5	3.3	7	19	0.41	1.47	0.81	54	14.0
165	168	241	277	265	9.7	6.4	10	25	0.32	1.88	1.04	55	24.7
156	151	179	184	188	3	3	3	6	0.33	1.82	1.00	33	2.80

d 142.875～184.15mm



Pressed cage

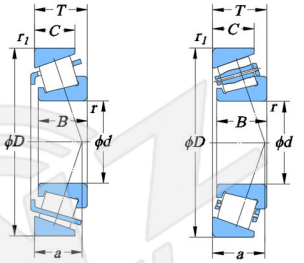
Machined cage



d	Principal dimensions(mm) D	T	B	C	r_{min}	r_{1min}	Basic load ratings(kN) C_r	C_{or}	Limiting speeds (r/min) Grease	Oil	Designations
142.875	200.025	41.275	39.688	34.13	7.9	3.3	576	512	1700	2100	K48684/K48620
	241.3	57.15	56.642	44.45	8	3.3	447	694	1500	1900	82562A/82950/HCDI
	241.3	57.15	56.642	44.45	8	3.3	447	694	1500	1900	82562A/82950
146.05	193.675	28.575	28.575	23.02	1.5	1.5	197	351	1700	2200	K36690/K36620B
	236.538	57.15	56.642	44.45	3.5	3.3	447	694	1500	1900	K82576/K82931
	304.8	88.9	82.55	57.15	6.4	6.4	881	1080	1200	1500	KHH932145/KHH932110
	304.8	88.9	82.55	57.15	6.4	6.4	925	1150	1200	1500	KHH932145/KHH932110/YA8
152.4	203.2	41.275	41.275	34.925	3.3	3.3	266	532	1600	2000	KLM330448/KLM330410
	222.25	46.83	46.83	34.925	3.5	1.5	318	538	1500	1900	KM231649/KM231610
	222.25	46.83	46.83	34.925	3.5	1.5	318	538	1500	1900	M231649/M231610
	222.25	46.83	46.83	34.925	3.5	1.5	318	538	1500	1900	KM231649/KM231610/YAD
	254	66.675	66.675	47.625	7	3.3	649	927	1400	1700	K99600/K99100
	268.288	74.612	74.612	57.15	6.4	6.4	748	1090	1300	1700	EE107060/107105
	268.288	74.612	74.612	57.15	6.4	6.4	748	1090	1300	1700	KEE107060/K107105
	307.975	88.9	93.622	61.912	9.7	6.8	873	1150	1200	1500	KEE450601/K451212/YB2
	307.975	88.9	93.662	66.675	9.7	6.8	1100	1450	1200	1500	KHH234048/KHH234010
155.575	330.2	85.725	79.375	53.975	6.4	6.4	905	1130	1100	1400	KH936340/KH936310
158.75	205.583	23.812	23.812	18.258	1.5	1.5	162	254	1600	2000	KL432349/KL432310
	225.425	41.275	39.688	33.338	3.5	3.3	293	583	1500	1900	K46780/K46720
165.1	225.425	41.275	39.688	33.338	3.5	3.3	293	583	1400	1800	K46790/K46720
	225.425	41.275	39.688	33.338	3.5	3.3	293	583	1400	1800	46790/46720
	247.65	47.625	47.625	38.1	3.5	3.3	386	758	1400	1700	K67780/K67720
	288.925	63.5	63.5	47.625	7	3.3	692	971	1200	1500	KHM237535/KHM237510
170	240	46	44.5	37	3	2.5	398	685	1400	1700	JM734449/JM734410
	240	46	44.5	37	3	2.5	398	685	1400	1700	KJM734449/KJM734410
171.45	260.35	66.675	66.675	52.388	3.5	3.3	592	1030	1300	1600	KHM535349/KHM535310
174.625	288.925	63.5	63.5	47.625	7	3.3	692	971	1200	1500	HM237542/HM237510
	288.925	63.5	63.5	47.625	7	3.3	692	971	1200	1500	KHM237542/KHM237510
	311.15	82.55	82.55	65.088	6.4	6.4	961	1370	1100	1400	KH238148/KH238110/YB2
	311.15	82.55	82.55	65.088	6.4	6.4	999	1440	1100	1400	KH238148/KH238110/YAD
177.8	227.012	30.162	30.162	23.02	1.5	1.5	198	409	1400	1700	K36990/K36920
	247.65	47.625	47.625	38.1	3.5	3.3	386	758	1300	1600	K67790/K67720
	247.65	47.625	47.625	38.1	3.5	3.3	386	758	1300	1600	67790/67720/HCDI
	247.65	47.625	47.625	38.1	3.5	3.3	386	758	1300	1600	67790/67720
	247.65	47.625	47.625	38.1	3.5	3.3	386	758	1300	1600	67790/67720/HE
	260.35	53.975	53.975	41.275	3.5	3.3	476	839	1300	1600	KM236849/KM236810
	260.35	53.975	53.975	41.275	3.5	3.3	497	831	1300	1600	KM236849/KM236810/YAD
	288.925	63.5	63.5	47.625	7	3.3	607	958	1200	1500	K94700/K94113
	288.925	63.5	63.5	47.625	7	3.3	692	971	1200	1500	KHM237545/KHM237510
	319.964	88.9	85.725	65.088	3.5	4.8	1020	1410	1100	1400	KH239640/KH239610
177.8	428.628	106.362	95.25	61.912	6.4	6.4	1400	1750	800	1100	KEE350701/K351687
180	250	47	45	37	3	2.5	406	711	1300	1600	JM736149/JM736110
184.15	280	46.525	46.833	36	3.5	3.3	396	759	1200	1500	K67883/K67830

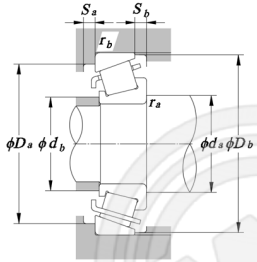
d	Abutment and fillet dimensions(mm) d_{amin}	d_{bmax}	D_{amin}	D_{amax}	D_{bmin}	r_{amax}	r_{bmax}	S_{amin}	S_{bmin}	Factor e	Y	Y_0	a	Mass(kg) (approx.)
142.875	165	152	178	189	191	7.9	3.3	3	7	0.34	1.78	0.98	37	3.88
	165	163	201	231	225	8	3.3	6	13	0.44	1.36	0.75	54	10.4
	165	163	201	231	225	8	3.3	6	13	0.44	1.36	0.75	54	10.4
146.05	155	154	176	186	186	1.5	1.5	3	6	0.37	1.63	0.90	33	2.22
	159	162	201	226	225	3	3.3	6	13	0.44	1.36	0.75	54	9.56
	165	165	238	286	288	6.4	6.4	6	32	0.73	0.82	0.45	92	28.3
	165	165	238	286	288	6.4	6.4	6	32	0.73	0.82	0.45	92	27.7
152.4	165	160	183	192	197	3.3	3.3	3	6	0.35	1.71	0.94	39	3.61
	166	168	196	215	210	3	1.5	3	12	0.33	1.80	0.99	41	5.67
	166	168	196	215	210	3	1.5	3	12	0.33	1.80	0.99	41	5.67
	166	168	196	215	210	3	1.5	6	12	0.33	1.80	0.99	41	5.91
	173	163	213	243	237	5.5	3.3	6	19	0.41	1.47	0.81	54	12.5
	171	168	225	250	248	6.4	6.4	4	17	0.39	1.55	0.85	60	16.8
	171	168	225	250	248	6.4	6.4	4	17	0.39	1.55	0.85	60	16.8
	178	184	252	288	275	9.7	6.8	5	27	0.33	1.84	1.01	61	28.1
	178	183	261	288	286	9.7	6.8	8	22	0.33	1.84	1.01	63	30.9
155.575	175	191	256	312	312	6.4	6.4	3	32	0.81	0.74	0.41	105	31.6
158.75	173	167	193	198	200	1.5	1.5	3	6	0.37	1.62	0.89	33	1.86
	172	177	202	215	216	3	3.3	3	8	0.38	1.57	0.86	43	5.24
165.1	178	177	202	215	216	3	3.3	3	8	0.38	1.57	0.86	43	4.64
	178	177	202	215	216	3	3.3	3	8	0.38	1.57	0.86	43	4.64
	178	189	219	237	238	3	3.3	4	10	0.44	1.36	0.75	52	8.16
	185	198	253	276	271	5.5	3.3	7	16	0.32	1.88	1.04	53	16.8
170	182	178	213	231	232	2.5	2.5	5	9	0.44	1.37	0.75	50	6.28
	182	178	213	231	232	2.5	2.5	5	9	0.44	1.37	0.75	50	6.28
171.45	185	184	222	250	249	3	3.3	4	14	0.40	1.49	0.82	58	12.3
174.625	195	198	253	276	271	5.5	3.3	7	16	0.32	1.88	1.04	53	15.6
	195	198	253	276	271	5.5	3.3	7	16	0.32	1.88	1.04	53	15.6
	194	200	262	292	288	6.4	6.4	6	17	0.33	1.82	1.00	64	26.0
	194	200	262	292	288	6.4	6.4	4	17	0.33	1.82	1.00	64	26.2
177.8	187	188	207	220	220	1.5	1.5	4	7	0.44	1.36	0.75	43	3.06
	191	189	219	237	238	3	3.3	5	10	0.44	1.36	0.75	52	7.12
	191	188	219	237	238	3	3.3	5	10	0.44	1.36	0.75	52	7.12
	191	188	219	237	238	3	3.3	5	10	0.44	1.36	0.75	52	7.12
	191	189	219	237	238	3	3.3	5	10	0.44	1.36	0.75	52	7.12
	191	196	232	250	247	3	3.3	5	13	0.33	1.80	0.99	47	9.08
	191	192	232	250	247	3	3.3	5	13	0.33	1.80	0.99	47	9.24
	198	198	242	276	270	5.5	3.3	7	16	0.47	1.28	0.71	62	15.5
	198	198	253	276	271	5.5	3.3	7	16	0.32	1.88	1.04	53	15.2
	191	208	279	304	301	3	4.8	2	24	0.32	1.88	1.04	65	28.2
177.8	197	231	326	410	383	6.4	6.4	7	44	0.76	0.79	0.44	121	67.7
180	192	188	220	241	243	2.5	2.5	4	10	0.48	1.25	0.69	56	6.80
184.15	197	204	235	270	256	3	3.3	4	11	0.48	1.26	0.69	58	10.1

d 187.325～237.33mm



Pressed cage

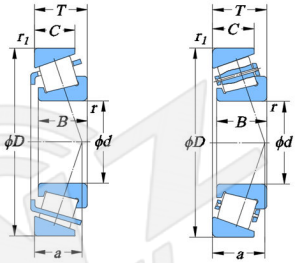
Machined cage



d	Principal dimensions(mm) D	T	B	C	r_{min}	r_{1min}	Basic load ratings(kN) C_r	C_{or}	Limiting speeds (r/min) Grease	Oil	Designations
187.325	269.875	55.562	55.562	42.862	3.5	3.3	513	859	1200	1500	KM238849/KM238810
	320.675	88.9	85.725	65.088	5.5	4.8	1020	1410	1100	1300	KH239649/KH239612
190	260	46	44	36.5	3	2.5	389	750	1200	1500	KJM738249/KJM738210
190.5	266.7	47.625	46.833	38.1	3.5	3.3	396	759	1200	1500	K67885/K67820
	336.55	98.425	95.25	73.025	6.4	6.4	1060	1710	960	1300	KHH840249/KHH840210
	365.049	92.075	88.897	63.5	6.4	3.3	1040	1460	900	1200	KEE420751/K421437
	428.625	106.362	95.25	61.912	6.4	6.4	1400	1750	780	980	EE350750/351687/YB2
196.85	241.3	23.812	23.017	17.462	1.5	1.5	176	329	1300	1600	KLL639249/KLL639210
	241.3	23.812	23.017	17.462	1.5	1.5	176	329	1300	1600	KLL639249/KLL639210/XYB2
	254	28.575	27.783	21.433	1.5	1.5	224	439	1200	1500	L540049/L540010/HCOIP6X
	254	28.575	27.783	21.433	1.5	1.5	224	439	1200	1500	L540049/L540010/X
	257.175	39.688	39.688	30.162	3.5	3.3	289	613	1200	1500	KLM739749/KLM739710
	266.7	39.688	39.688	30.162	3.5	3.3	289	613	1200	1500	KLM739749/KLM739719
	317.5	63.5	63.5	46.038	4.3	3.3	665	1130	990	1300	K93775/K93125
198.5	257.175	39.688	39.688	30.162	3.5	3.3	289	613	1200	1500	JKLM739749AX/JKLM739710
200	254	28.575	27.783	21.433	1.5	1.5	224	439	1200	1500	KL540048/KL540010
	300	65	62	51	3.5	2.5	676	1180	1100	1300	JHM840449/JHM840410
200.025	317.5	63.5	63.5	46.038	4.3	3.3	665	1130	990	1300	K93787/K93125
	393.7	111.125	111.125	84.138	6.4	6.4	1650	2350	820	1100	KHH144642/KHH144614
	393.7	111.125	111.125	84.138	6.4	6.4	1650	2350	820	1100	HH144642/HH144614
203.2	292.1	57.945	57.945	46.038	3.5	3.3	577	1060	1100	1400	KM241547/KM241510
	292.1	57.945	57.945	46.038	9.7	3.3	577	1060	1100	1400	M241547A6/M241510/HCOI
	292.1	57.945	57.945	46.038	9.7	3.3	577	1060	1100	1400	M241547A6/M241510
206.375	336.55	98.425	100.012	77.788	3.3	3.3	1230	2000	930	1200	KH242649/KH242610
209.55	317.5	63.5	63.5	46.038	4.3	3.3	665	1130	960	1300	93825/93125
	317.5	63.5	63.5	46.038	4.3	3.3	665	1130	960	1300	K93825/K93125
215.9	285.75	46.038	46.038	34.925	3.6	3.3	392	778	1100	1300	KLM742749/KLM742710
219.969	290.01	31.75	31.75	22.225	3.5	3.3	287	494	1000	1300	K543086/K543114
220.662	314.325	61.912	61.912	49.212	6.4	3.3	642	1160	940	1200	KM244249/KM244210
228.397	431.8	92.075	85.725	49.212	6.4	6.4	1140	1510	710	900	KEE113089/K113170
228.6	295.275	33.338	31.75	23.812	3.6	3.3	279	539	970	1300	K544090/K544116
	355.6	68.262	66.675	47.625	7	3.3	714	1290	840	1100	K96900/K96140
	355.6	69.85	69.85	49.212	6.8	1.5	780	1280	840	1100	EE130902/131400
	358.775	71.438	71.438	53.975	3.5	3.3	811	1480	830	1100	KM249732/KM249710
	488.95	123.825	111.125	73.025	6.4	6.4	1860	2370	640	810	HH949549/HH949510
	488.95	123.825	111.125	73.025	6.4	6.4	1800	2380	640	810	HH949549/HH949510/YAD
231.775	300.038	33.338	31.75	23.812	3.5	2.3	276	554	950	1200	K544091/K544118
	336.55	65.088	65.088	50.8	6.4	3.3	778	1370	870	1100	KM246942/KM246910
234.95	314.325	49.212	49.212	36.512	3.5	3.3	510	926	910	1200	LM545849/LM545810/HCOI
	314.325	49.212	49.212	36.512	3.5	3.3	510	926	910	1200	KLM545849/KLM545810
	384.175	112.712	112.712	90.488	6.4	6.4	1490	2530	780	980	KH247549/KH247510
	384.175	112.712	112.712	90.488	6.4	6.4	1490	2530	780	980	H247549/H247510
237.33	336.55	65.088	65.088	50.8	6.4	3.3	778	1370	860	1100	KM246949/KM246910

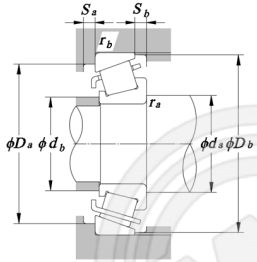
d	Abutment and fillet dimensions(mm) d_{amin}	d_{bmax}	D_{amin}	D_{amax}	D_{bmin}	r_{amax}	r_{bmax}	S_{amin}	S_{bmin}	Factor e	Y	Y_0	a	Mass(kg) (approx.)
187.325	201	202	241	257	259	3	3.3	4	13	0.33	1.81	1.00	49	9.63
	205	208	279	305	301	4.5	4.8	3	24	0.32	1.88	1.04	65	26.7
190	202	200	231	251	252	2.5	2.5	5	10	0.48	1.26	0.69	56	7.01
190.5	204	206	235	256	257	3	3.3	9	10	0.48	1.26	0.69	58	8.00
	210	208	266	318	317	6.4	6.4	7	25	0.58	1.04	0.57	93	35.8
	210	235	298	353	331	6.4	3.3	7	29	0.40	1.50	0.83	79	39.3
	210	231	326	410	383	6.4	6.4	7	44	0.76	0.79	0.44	121	64.6
196.85	206	205	227	234	235	1.5	1.5	3	6	0.42	1.44	0.79	41	2.10
	206	205	227	234	235	1.5	1.5	3	6	0.42	1.44	0.79	41	2.10
	206	211	234	247	244	1.5	1.5	6	7	0.40	1.51	0.83	43	3.48
	206	211	234	247	244	1.5	1.5	6	7	0.40	1.51	0.83	43	3.48
	210	208	232	246	247	3	3.3	3	10	0.45	1.34	0.74	51	5.20
	210	208	232	256	247	3	3.3	3	10	0.45	1.34	0.74	51	6.14
	212	223	267	305	295	4.3	3.3	4	17	0.52	1.15	0.63	73	18.8
198.5	212	208	232	246	247	3	3.3	3	10	0.45	1.34	0.74	51	5.08
200	210	211	234	246	244	1.5	1.5	3	7	0.40	1.51	0.83	43	3.26
	214	214	258	288	289	3	2.5	5	14	0.52	1.15	0.63	73	15.5
200.025	216	223	267	304	295	4.3	3.3	4	17	0.52	1.15	0.63	73	18.2
	220	242	326	374	357	6.4	6.4	4	27	0.30	2.00	1.10	77	59.0
	220	242	326	374	357	6.4	6.4	4	27	0.30	2.00	1.10	77	59.0
203.2	217	221	259	279	278	3	3.3	5	12	0.33	1.80	0.99	53	12.6
	230	221	259	279	278	9.7	3.3	5	12	0.33	1.80	0.99	53	12.6
	230	221	259	279	278	9.7	3.3	5	12	0.33	1.80	0.99	53	12.6
206.375	220	228	290	323	322	3.3	3.3	6	21	0.34	1.78	0.98	74	33.0
209.55	225	223	267	304	295	4.3	3.3	4	17	0.52	1.15	0.63	73	16.6
	225	223	267	304	295	4.3	3.3	4	17	0.52	1.15	0.63	73	16.6
215.9	230	226	258	272	277	3.6	3.3	3	11	0.48	1.25	0.69	61	7.66
219.969	234	234	270	277	278	3	3.3	4	10	0.39	1.55	0.85	47	5.08
220.662	241	240	281	301	301	6.4	3.3	4	13	0.33	1.80	0.99	58	14.9
228.397	248	266	342	414	397	6.4	6.4	9	43	0.88	0.68	0.37	135	51.9
228.6	243	247	274	282	285	3.6	3.3	2	10	0.40	1.49	0.82	50	5.27
	250	256	299	342	334	5.5	3.3	4	21	0.59	1.02	0.56	86	23.8
	249	258	314	346	330	6.8	1.5	5	21	0.33	1.82	1.00	61	23.5
	243	274	321	345	343	3	3.3	5	17	0.33	1.80	0.99	65	27.2
	249	266	371	469	457	6.4	6.4	10	51	0.94	0.64	0.35	167	101
	249	269	371	469	457	6.4	6.4	10	51	0.94	0.64	0.35	164	102
231.775	246	245	271	289	281	3	2.3	3	10	0.40	1.50	0.82	49	5.36
	252	257	303	323	323	6.4	3.3	2	14	0.33	1.80	0.99	61	18.5
234.95	249	248	286	301	304	3	3.3	6	13	0.40	1.51	0.83	57	10.0
	249	248	286	301	304	3	3.3	6	13	0.40	1.51	0.83	57	10.0
	255	261	325	364	362	6.4	6.4	5	22	0.33	1.80	0.99	84	50.0
	255	261	325	364	362	6.4	6.4	5	22	0.33	1.80	0.99	84	50.0
237.33	257	257	303	323	323	6.4	3.3	2	14	0.33	1.80	0.99	61	17.5

d 241.3～377.825mm



Pressed cage

Machined cage

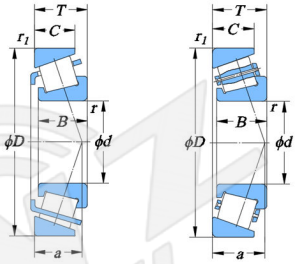


Principal dimensions(mm)						Basic load ratings(kN)		Limiting speeds (r/min)		Designations
d	*D*	*T*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}	Grease	Oil	
241.3	327.025	52.388	52.388	36.512	6.4	3.3	523	953	870	1100	K8578/K8520
	444.5	101.6	100.012	76.2	6.4	4.8	1540	2230	680	860	KEE923095/K923175
247.65	304.8	22.225	22.225	15.875	1.5	1.5	160	344	900	1200	K28880YB2/K28820YB2
	406.4	115.888	117.475	93.662	6.4	6.4	1670	2800	720	910	HH249949/HH249910
253.975	324.95	39	41.5	28	3.3	3.3	366	755	850	1100	L848849SH/L848810SH
254	324.975	39	41.5	28	1.5	3.3	366	755	850	1100	JL848849/JL848811/YB2
	533.4	133.35	120.65	77.788	6.4	6.4	2000	2660	560	710	HH953749/HH953710
255.6	342.9	57.15	63.5	44.45	1.5	3.3	567	1190	810	1100	KM349547/KM349510
	342.9	57.15	63.5	44.45	3.3	3.3	674	1280	810	1100	M349547SH/M349510SH
257.175	342.9	57.15	57.15	44.45	6.4	3.3	674	1280	810	1100	KM349549/KM349510
	358.775	71.438	76.2	53.975	1.5	3.3	875	1640	780	990	KM249747/KM249710
	358.775	71.438	76.2	53.975	1.5	3.3	847	1570	780	990	M249747/M249710/YAD
260.35	409.981	69.85	67.673	53.975	3.3	3.3	844	1470	700	880	KEE128102/KEE128161
	422.275	86.121	79.771	66.675	6.8	3.3	1210	1800	680	860	HM252348/HM252310
	422.275	86.121	79.771	66.675	6.8	3.3	1210	1800	680	860	HM252348/HM252310/YB
263.525	325.438	28.575	28.575	25.4	1.5	1.5	229	505	830	1100	K38880/K38820
266.7	325.438	28.575	28.575	25.4	1.5	1.5	229	505	820	1100	K38885/K38820
	355.6	57.15	57.15	44.45	3.5	3.3	694	1350	770	970	KLM451349/KLM451310
	355.6	57.15	57.15	44.45	3.5	3.3	625	1180	770	970	KLM451349/KLM451310/YA5
	393.7	73.817	69.85	50.005	6.4	6.4	850	1470	710	900	KEE275105/K275155
	444.5	120.65	117.475	88.9	6.4	6.4	1730	2970	650	820	KH852849/KH852810
273.05	393.7	73.817	69.85	50.005	6.4	6.4	850	1470	700	890	KEE275108/K275155
279.4	317.5	24.383	24.383	18.288	1.5	1.5	203	503	810	1100	KLL352149/KLL352110
288.925	406.4	77.788	77.788	60.325	6.4	3.3	1100	2070	670	840	M255449/M255410
	406.4	77.788	77.788	60.325	6.4	3.3	1100	2070	670	840	M255449/M255410/HE
300.038	422.275	82.55	82.55	63.5	6.4	3.3	1100	2030	630	800	HM256849/HM256810
304.8	393.7	50.8	50.8	38.1	6.4	3.3	642	1210	660	840	KL357049/KL357010
	406.4	63.5	63.5	47.625	6.4	3.3	781	1490	650	820	KLM757049/KLM757010
	406.4	63.5	63.5	47.625	6.4	3.3	781	1490	650	820	LM757049/LM757010
	495.3	95.25	92.075	69.85	16	6.4	1420	2370	550	700	EE724120/724195
314.325	495.3	120.65	119.062	88.9	6.4	6.4	1770	3130	540	690	KH859049/KH859010
317.5	447.675	85.725	85.725	68.262	3.5	3.3	1160	2330	590	740	HM259048/HM259010
	447.675	85.725	85.725	68.262	3.5	3.3	1160	2330	590	740	KHM259049/KHM259010
	622.3	147.638	131.762	82.55	14.3	12.7	2390	3430	440	550	H961649/H961610
330.2	415.925	47.625	47.625	34.925	3.5	3.3	503	1090	610	770	KL860049/KL860010
	415.925	47.625	47.625	34.925	12.7	3.5	503	1090	610	770	KL860048/KL860010
333.375	469.9	90.488	90.488	71.438	6.4	3.3	1340	2580	550	690	KHM261049/KHM261010
342.9	450.85	66.673	66.675	52.388	8.5	3.5	851	1760	560	710	LM361649/LM361610
342.9	450.85	66.673	66.675	52.388	8.5	3.5	851	1760	560	710	KLM361649/KLM361610
346.075	488.95	95.25	95.25	74.612	6.4	3.3	1550	2880	520	660	KHM262749/KHM262710
349.25	501.65	90.488	84.138	69.85	6.4	3.3	1370	2540	510	640	KEE333137/KEE333197
355.6	501.65	90.488	84.138	69.85	6.4	3.3	1370	2540	500	630	KEE333140/KEE333197
377.825	522.288	85.725	84.138	61.912	6.4	3.3	1280	2580	470	590	KLM565946/KLM565910

Abutment and fillet dimensions(mm)										Factor				Mass(kg) (approx.)
d_{amin}	d_{bmax}	D_{amin}	D_{amax}	D_{bmin}	r_{amax}	r_{bmax}	S_{amin}	S_{bmin}	*e*	*Y*	Y_o	*a*	
261	251	294	314	310	6.4	3.3	4	16	0.41	1.48	0.81	60	11.3
261	289	378	426	407	6.4	4.8	2	25	0.34	1.78	0.98	84	65.9
258	265	286	297	291	1.5	1.5	3	6	0.32	1.87	1.03	39	3.29
268	276	346	378	385	6.4	6.4	5	22	0.33	1.80	0.99	87	58.0
268	265	297	311	314	3.3	3.3	2	11	0.56	1.07	0.59	71	8.06
264	265	297	311	314	1.5	3.3	6	11	0.56	1.07	0.59	71	8.06
274	298	404	514	496	6.4	6.4	10	56	0.94	0.64	0.35	179	129
266	269	304	329	329	1.5	3.3	6	13	0.46	1.30	0.71	71	16.1
272	272	312	329	331	3.3	3.3	6	13	0.35	1.73	0.95	60	14.4
277	271	313	329	331	6.4	3.3	6	13	0.35	1.73	0.95	60	14.0
267	273	321	345	344	1.5	3.3	5	17	0.33	1.80	0.99	65	21.7
267	273	322	345	343	1.5	3.3	5	17	0.33	1.80	0.99	64	21.7
276	307	360	396	384	3.3	3.3	5	16	0.39	1.55	0.85	76	32.0
291	297	376	406	400	6.8	3.3	6	19	0.33	1.80	0.99	77	42.8
291	297	376	406	400	6.8	3.3	6	19	0.33	1.80	0.99	77	42.8
277	279	303	316	313	1.5	1.5	3	3	0.37	1.64	0.90	48	5.06
280	279	303	316	313	1.5	1.5	3	3	0.37	1.64	0.90	48	4.78
281	282	324	342	343	3	3.3	6	13	0.36	1.67	0.92	62	15.1
281	283	324	342	343	3	3.3	6	13	0.36	1.67	0.92	64	14.7
287	301	355	374	378	6.4	6.4	5	24	0.40	1.49	0.82	75	27.8
292	288	360	422	425	6.4	6.4	6	32	0.58	1.04	0.57	121	73.1
293	301	355	374	378	6.4	6.4	5	24	0.40	1.49	0.82	75	26.3
292	287	306	308	313	1.5	1.5	3	6	0.35	1.70	0.93	45	2.54
309	310	362	391	388	6.4	3.3	3	17	0.34	1.77	0.98	74	30.7
309	311	362	391	388	6.4	3.3	3	17	0.34	1.77	0.98	74	30.7
332	322	377	406	403	6.4	3.3	3	19	0.34	1.78	0.98	78	33.5
326	322	366	380	382	6.4	3.3	6	13	0.36	1.68	0.92	64	14.6
326	321	373	393	395	6.4	3.3	6	16	0.44	1.38	0.76	79	21.2
326	322	371	393	395	6.4	3.3	6	16	0.44	1.38	0.76	79	21.2
345	349	428	470	459	16	6.4	2	25	0.40	1.49	0.82	97	67.1
338	338	411	475	474	6.4	6.4	10	32	0.58	1.03	0.57	131	82.7
333	342	401	434	426	3	3.3	5	17	0.33	1.80	0.99	80	41.3
333	342	401	434	426	3	3.3	4	17	0.33	1.80	0.99	80	41.3
365	373	484	581	582	14.3	12.7	16	65	0.94	0.64	0.35	210	180
345	346	380	402	402	3	3.3	3	13	0.50	1.20	0.66	83	14.3
363	346	380	402	402	12.7	3	3	13	0.50	1.20	0.66	83	14.3
354	360	423	459	449	6.4	3.3	4	19	0.33	1.79	0.99	84	46.7
376	365	413	434	434	8.5	3	3	14	0.35	1.70	0.94	76	26.5
376	365	413	434	434	8.5	3	3	14	0.35	1.70	0.94	76	26.5
367	372	440	475	470	6.4	3.3	4	21	0.34	1.77	0.97	88	52.1
370	383	449	490	479	6.4	3.3	5	21	0.37	1.62	0.89	95	53.8
377	383	449	490	479	6.4	3.3	5	21	0.37	1.62	0.89	95	51.5
410	408	469	506	497	6.4	3.3	7	24	0.38	1.56	0.86	93	51.9

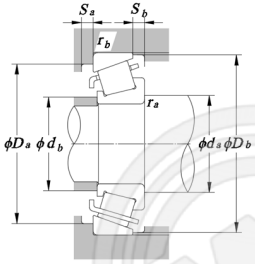
ZWZ

d 381～930mm



Pressed cage

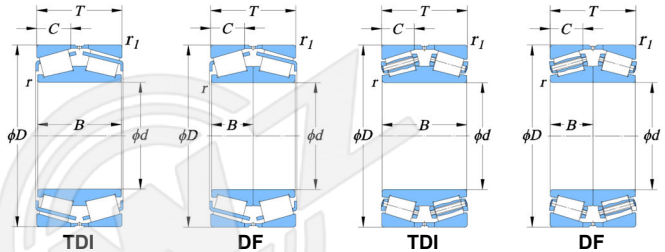
Machined cage

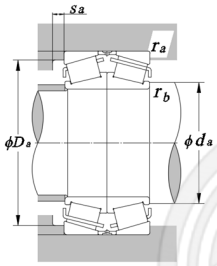


Principal dimensions(mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations
d	*D*	*T*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}	Grease	Oil	
381	479.425	49.212	47.625	34.925	6.4	3.3	672	1360	500	630	KL865547/KL865512
	522.288	85.725	84.138	61.912	6.4	3.3	1280	2580	470	590	KLM565949/KLM565910
	546.1	104.775	104.775	82.55	6.4	6.4	2010	3970	450	570	KHM266446/KHM266410
	590.55	114.3	114.3	88.9	6.4	6.4	2030	4130	420	530	M268730/M268710/HE
	590.55	114.3	114.3	88.9	6.4	6.4	2030	4130	420	530	M268730/M268710
384.175	546.1	104.775	104.775	82.55	6.4	6.4	2010	3970	450	560	HM266449/HM266410
385.762	514.35	82.55	82.55	63.5	6.4	3.3	1310	2780	470	590	LM665949/LM665910
396.875	546.1	76.2	61.12	55.562	6.4	6.4	928	1830	440	550	KEE234156/K234215
406.4	508	61.912	61.912	47.625	3.3	3.3	855	1970	460	580	L467549/L467510
	546.1	76.2	61.12	55.562	6.4	6.4	928	1830	430	540	KEE234160/K234215
	546.1	87.312	87.312	68.262	6.4	6.4	1370	2740	430	540	M667944/M667911
409.575	546.1	87.312	87.312	68.262	10	6.4	1570	3260	430	540	KM667948/KM667911
415.925	590.55	114.3	114.3	88.9	6.4	6.4	2030	4130	400	500	M268749/M268710/HE
	590.55	114.3	114.3	88.9	6.4	6.4	2030	4130	400	500	M268749/M268710
	590.55	114.3	144.3	88.9	4	4	2030	4130	400	500	M268749/M268710/YAD
431.8	571.5	74.612	74.612	52.388	3.3	3.3	1050	2060	400	500	KLM869448/KLM869410
447.675	552.45	44.45	41.618	32.545	3.3	3.3	690	1520	400	500	LL469949/LL469910
	635	120.65	120.65	95.25	6.4	6.4	2420	4970	360	450	M270749/M270710
457.2	573.088	74.612	74.612	57.15	6.4	6.4	1140	2730	380	480	KL570649/KL570610
	573.088	74.612	74.612	57.15	6.4	6.4	1140	2730	380	480	L570649/L570610
	596.9	76.2	73.025	53.975	9.7	3.3	1190	2490	370	470	EE244180/244235
	596.9	76.2	73.025	53.975	9.7	3.3	1190	2490	370	470	KEE244180/K244235
476.25	565.15	41.275	41.275	31.75	3.3	3.3	478	1260	380	480	KLL771948/KLL771911
482.6	634.873	80.962	80.962	63.5	6.4	3.3	1350	2970	340	430	KEE243190/K243250
498.475	634.873	80.962	80.962	63.5	6.4	3.3	1350	2970	340	430	EE243196/243250/HE
501.65	711.2	136.525	136.525	106.363	6.4	6.4	2970	5920	310	390	M274149/M274110
549.275	692.15	80.962	80.962	61.912	6.4	6.4	1480	3480	300	370	KL476549/KL476510
602.945	787.4	93.662	93.662	69.85	6.4	6.4	2200	5020	250	320	EE649237/649310
607.72	787.4	93.662	93.662	69.85	6.4	6.4	2200	5020	250	310	EE649239/649310
	787.4	93.662	93.662	69.85	6.4	6.4	2200	5020	250	310	KEE649239/K649310
609.6	762	95.25	92.075	71.438	6.4	6.4	1900	4590	260	320	KL879947/KL879910
	787.4	93.662	93.662	69.85	6.4	6.4	2200	5020	250	310	EE649240/649310
	787.4	93.662	93.662	69.85	6.4	6.4	2200	5020	250	310	KEE649240/K649310
660.4	812.8	95.25	95.25	73.025	6.4	6.4	1980	4960	230	290	KL281147/KL281110
723.9	914.4	84.138	80.962	60.325	5.5	6.4	2030	4730	190	240	EE755285/755360/YB2
760	889	88.9	88.9	72	3.3	3.3	2110	6060	190	240	L183448/L183410/HCE
	889	88.9	88.9	72	3.3	3.3	2110	6060	190	240	L183448/L183410/HE
	889	88.9	88.9	72	4	4	2110	6060	190	240	L183448/L183410
762	889	88.9	88.9	72	3.3	3.3	2110	6060	190	230	L183449/L183410/HCE
	889	88.9	88.9	72	3.3	3.3	2110	6060	190	230	L183449/L183410/HE
	889	88.9	88.9	72	4	4	2110	6060	190	230	L183449/L183410
928	1060	92	90	76	3.3	3.3	2340	7420	130	160	JL286948H/JL286910
930	1060	92	90	76	3.3	3.3	2340	7420	130	160	JL286949H/JL286910

Abutment and fillet dimensions(mm)										Factor			Mass(kg) (approx.)
d_{amin}	d_{bmax}	D_{amin}	D_{amax}	D_{bmin}	r_{amax}	r_{bmax}	S_{amin}	S_{bmin}	*e*	*Y*	Y_o	*a*	
413	397	448	463	464	6.4	3.3	4	14	0.45	1.34	0.74	85	19.4
413	408	469	506	497	6.4	3.3	7	24	0.38	1.56	0.86	93	51.2
407	415	486	526	520	6.4	6.4	5	22	0.33	1.80	0.99	98	77.7
404	451	527	571	563	6.4	6.4	5	25	0.33	1.80	0.99	106	116
404	451	527	571	563	6.4	6.4	5	25	0.33	1.80	0.99	106	116
410	415	486	526	520	6.4	6.4	5	22	0.33	1.80	0.99	98	76.1
407	406	465	501	495	6.4	3.3	5	19	0.42	1.43	0.79	100	47.4
429	436	486	518	516	6.4	6.4	5	21	0.48	1.26	0.69	114	45.6
426	425	470	492	491	3.3	3.3	3	14	0.37	1.63	0.90	82	27.1
439	436	486	517	516	6.4	6.4	5	21	0.48	1.26	0.69	114	42.8
428	430	498	528	530	6.4	6.4	4	19	0.42	1.44	0.79	106	55.4
439	429	496	528	530	10	6.4	4	19	0.42	1.44	0.79	103	55.4
440	452	527	570	563	6.4	6.4	5	25	0.33	1.80	0.99	106	96.6
440	452	527	570	563	6.4	6.4	5	25	0.33	1.80	0.99	106	96.6
437	451	527	573	563	3	3	5	25	0.33	1.80	0.99	106	96.6
453	455	513	554	549	3.3	3.3	5	22	0.55	1.10	0.60	125	47.2
466	473	517	537	531	3.3	3.3	3	12	0.36	1.67	0.92	80	21.1
481	485	565	609	605	6.4	6.4	6	25	0.33	1.80	0.99	112	118
490	478	528	544	556	6.4	6.4	3	17	0.40	1.49	0.82	101	41.9
490	478	528	544	556	6.4	6.4	3	17	0.40	1.49	0.82	101	41.9
495	486	545	581	571	9.7	3.3	3	22	0.40	1.48	0.82	106	50.8
495	486	545	581	571	9.7	3.3	3	22	0.40	1.48	0.82	106	50.8
494	494	530	551	546	3.3	3.3	3	10	0.47	1.28	0.70	100	18.4
512	522	584	619	609	6.4	3.3	4	17	0.34	1.76	0.97	100	66.2
528	522	584	619	609	6.4	3.3	4	17	0.34	1.76	0.97	100	58.3
536	539	635	691	679	6.4	6.4	5	30	0.35	1.71	0.94	132	163
574	577	639	671	666	6.4	6.4	5	19	0.38	1.59	0.88	113	69.0
638	647	725	757	756	6.4	6.4	7	24	0.37	1.61	0.89	127	117
643	647	725	757	756	6.4	6.4	7	24	0.37	1.61	0.89	127	113
643	647	725	757	756	6.4	6.4	7	24	0.37	1.61	0.89	127	113
636	631	700	740	743	6.4	6.4	5	24	0.49	1.23	0.67	153	92.8
645	647	725	757	756	6.4	6.4	7	24	0.37	1.61	0.89	127	112
645	647	725	757	756	6.4	6.4	7	24	0.37	1.61	0.89	127	112
687	691	758	791	788	6.4	6.4	4	22	0.33	1.82	1.00	122	101
752	769	851	890	877	4.5	6.4	6	24	0.38	1.58	0.87	139	116
779	782	846	875	872	3.3	3.3	6	17	0.32	1.88	1.04	127	92.5
779	782	846	875	872	3.3	3.3	6	17	0.32	1.88	1.04	127	92.5
780	782	846	874	872	3	3	6	17	0.32	1.88	1.04	127	93.5
781	782	846	875	872	3.3	3.3	6	17	0.32	1.88	1.04	127	90.9
781	782	846	875	872	3.3	3.3	6	17	0.32	1.88	1.04	127	90.9
782	782	846	874	872	3	3	6	17	0.32	1.88	1.04	127	91.9
954	950	1011	1041	1046	3.3	3.3	7	16	0.38	1.59	0.88	165	117
956	950	1011	1041	1046	3.3	3.3	7	16	0.38	1.59	0.88	165	115

d 55～140mm

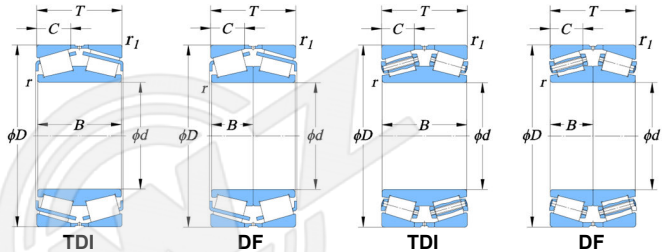


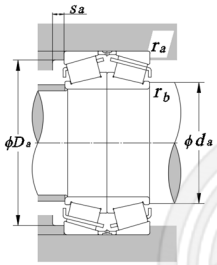


Principal dimensions(mm)							Basic load ratings (kN)		Limiting speeds (r/min)	
d	*D*	*T*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}	Grease	Oil
55	90	54	27	21	0.5	1.5	182	280	3100	3900
60	95	46	23	17.5	0.5	1.5	150	236	2900	3700
	130	67	31	22	1	2.5	287	352	2400	3000
70	110	55.5	25	19	0.5	1.5	132	192	2500	3200
75	130	54.5	50	22	2	2.3	272	367	2200	2800
	130	55	25	22	0.5	1.5	266	358	2200	2800
80	110	50	20	16	0.5	1	134	239	2400	3000
	125	58	29	22	0.5	1.5	253	409	2200	2800
	140	56.5	26	22	0.7	2	308	412	2000	2600
	140	56.75	26	22	0.7	2	308	412	2000	2600
	140	56.75	52	22	1	3	322	434	2000	2600
	170	85	39	27	0.8	2.5	444	558	1800	2200
	170	85	39	33	0.8	2.5	541	688	1800	2200
85	130	72	36	29.5	0.6	1.5	339	609	2100	2600
	150	77	36	30	2	2.5	442	638	1900	2400
90	140	78	39	32.5	0.3	1.5	419	731	1900	2500
	160	85	40	34	0.6	2	514	755	1800	2200
	190	93	43	30	1	3	546	696	1600	2000
95	145	64	32	24	0.5	1.5	328	560	1900	2300
100	150	64	32	24	0.5	1.5	325	561	1800	2200
	150	66	66	27	2×30°	1.5	323	558	1800	2200
	180	74	68	29	0.8	2.5	492	701	1600	2000
	215	110	110	40	2x10	3	663	939	1400	1700
101.6	250.825	145	145	50.5	1.5	3.3	1050	1490	1200	1500
110	170	66	70	27	1.5	2	383	690	1600	2000
	170	76	38	29	0.6	2	431	732	1600	2000
	170	94	47	37	0.5	2	513	928	1600	2000
	200	76	38	38	0.8	2.5	439	628	1400	1800
	200	102	102	42	2.1	3	728	1200	1400	1800
	200	102	102	42	2.1	3	728	1200	1400	1800
	200	112	53	46	0.8	2.5	842	1310	1400	1800
120	215	87	40	34	0.8	2.5	655	945	1300	1600
	260	136	62	42	1	3	1040	1410	1100	1400
130	180	64	32	25	0.5	1.5	370	714	1400	1800
	200	90	45	34	0.6	2	639	1160	1300	1700
	230	87.5	40	34	1	3	711	1020	1200	1500
	230	135.5	64	54	1	3	1080	1750	1200	1500
	280	144	66	44	1.3	4	1190	1650	970	1300
135	320	160	160	58	3.3	3.3	1560	2170	850	1100
140	210	90	45	34	0.6	2	613	1120	1200	1500

Designations	Factor				Abutment and fillet dimensions(mm)						Mass(kg) (approx.)
	e	Y_1	Y_2	Y_o	d_{amax}	D_{amax}	D_{amin}	S_{amin}	r_{amax}	r_{bmax}	
33011/DF	0.31	2.16	3.22	2.12	64	82.4	80.1	3	0.5	1.5	1.73
32012/DF	0.43	1.57	2.34	1.53	69	87.4	84.1	3	0.5	1.5	1.25
31312/DF	0.83	0.82	1.22	0.80	75	119	102.7	3	1	2.5	4.05
32014/DFYA8	0.43	1.55	2.31	1.52	80	102.4	97.1	3	0.5	1.5	1.95
370215/YAB	0.44	1.55	2.31	1.52	88	119.4	114.9	3	2	2.3	2.95
30215/DFYB2	0.44	1.55	2.31	1.52	88	121.4	114.9	3	0.5	1.5	3.00
32916/DF	0.35	1.92	2.86	1.88	88	103.2	100.4	4	0.5	1	1.28
32016/DF	0.42	1.60	2.38	1.56	91	117.4	110.8	4	0.5	1.5	2.61
30216/DF-1	0.42	1.61	2.39	1.57	94	130	124.2	4	0.7	2	3.28
30216/DF	0.42	1.61	2.39	1.57	94	130	124.2	4	0.7	2	3.28
370216/YAB	0.42	1.61	2.39	1.57	94	130	124.2	4	1	2.5	3.71
31316/DF	0.83	0.82	1.22	0.80	99	159	134.1	4	0.8	2.5	8.70
30316/DF	0.35	1.96	2.91	1.91	106	159	148	4	0.8	2.5	9.02
33017/DF	0.29	2.32	3.45	2.26	96	121.4	116.3	4	0.6	1.5	3.49
32217/DF	0.42	1.61	2.39	1.57	98	140	129.2	4	2	2.5	5.59
33018/DF	0.27	2.51	3.74	2.45	102	131.4	125.8	4	0.3	1.5	4.58
32218/DF	0.42	1.61	2.39	1.57	104	151.4	136.9	4	0.6	2	7.24
31318/DF	0.83	0.82	1.22	0.80	110	178	150.8	4	1	2.5	11.7
32019/DF	0.44	1.53	2.27	1.49	107	136.4	128.4	4	0.5	1.5	3.85
32020/DF	0.46	1.47	2.19	1.44	111	141.4	132.7	4	0.5	1.5	3.89
370620/YAD	0.32	2.12	3.15	2.07	112	142.4	133.5	4	2	1.5	4.04
370220/YAB	0.42	1.61	2.39	1.57	120	169	156.6	3	0.8	2.5	7.89
370620X3/HCIYA3	0.81	0.83	1.24	0.81	128	203	160.7	4	2	2.5	19.4
3706/101X4/HC	0.70	0.97	1.44	0.94	140	239.5	186.4	3	1.5	3.3	35.1
370622	0.32	2.12	3.15	2.07	127	160	151.6	3	1.5	2	5.66
32022/DF	0.43	1.57	2.34	1.53	124	161.4	149.7	3	0.6	2	6.28
33022/DF	0.29	2.35	3.50	2.30	124	160	149.7	3	0.5	2	7.79
30622/DF	0.42	1.62	2.42	1.59	136	188	169.4	2	0.8	2.5	10.3
372222X2	0.39	1.72	2.56	1.68	132	188	167.8	4	2	2.5	14.4
372222X2/YB4	0.39	1.72	2.56	1.68	132	188	167.8	4	2	2.5	14.4
32222/DF	0.42	1.61	2.39	1.57	128	189	168.9	3	0.8	2.5	15.1
30224/DF	0.44	1.55	2.31	1.52	144	204	186.5	3	0.8	2.5	13.1
31324/DF	0.83	0.82	1.22	0.80	150	247	202.3	3	1	2.5	33.5
32926/DF	0.34	1.99	2.96	1.94	142	171.4	166.1	4	0.5	1.5	4.92
32026/DF	0.43	1.55	2.31	1.52	145	190	176.3	4	0.6	2	10.5
30226/DF	0.44	1.55	2.31	1.52	156	218	201.7	4	1	2.5	14.6
32226/DF	0.44	1.55	2.31	1.52	149	218	192.3	4	1	2.5	23.7
31326/DF	0.83	0.82	1.22	0.80	160	265	217.8	4	1.3	3	40.9
370627/HCEYA3	0.73	0.92	1.38	0.90	179	307	242.2	4	3.3	3.3	64.5
32028/DF	0.46	1.47	2.19	1.44	156	199	192	4	0.6	2	11.8

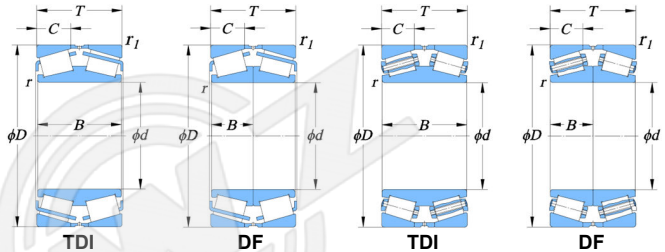
d 140～180mm

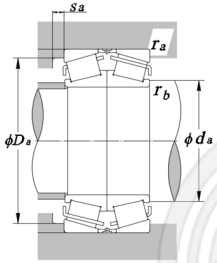




Principal dimensions(mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations	Factor				Abutment and fillet dimensions(mm)					Mass(kg) (approx.)
d	*D*	*T*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}	Grease	Oil		*e*	Y_1	Y_2	Y_o	d_{amax}	D_{amax}	D_{amin}	S_{amin}	r_{amax}	r_{bmax}	
140	225	68	68	26	3	2.5	514	822	1200	1500	372128X2	0.37	1.80	2.69	1.76	165	213	200.4	4	2.5	2.5	10.5
	240	100	100	40	1.5	3	875	1440	1100	1400	370628X3/GW/HC	0.39	1.74	2.59	1.70	164	228	207.4	3	1.5	2.5	18.8
	250	91.5	42	36	1	3	795	1140	1100	1400	30228/DF	0.44	1.55	2.31	1.52	168	237	217.5	6	1	2.5	18.3
	250	143.5	68	58	1	3	1260	2070	1100	1400	32228/DF	0.44	1.55	2.31	1.52	162	237	209.3	4	1	2.5	30.2
	250	143.5	68	58	2	3	1260	2080	1100	1400	32228/DFYAD	0.44	1.55	2.31	1.52	162	237	209.3	6	2	2.5	30.2
	270	120	120	41	3	3	987	1510	970	1300	370628D/HCYA3	0.70	0.97	1.44	0.94	173	256	217.2	3	2.5	2.5	29.5
	300	154	70	47	1.3	4	1330	1840	890	1200	31328/DF	0.83	0.82	1.22	0.80	173	284	234	1	1.3	3	50.3
	300	154	70	47	4	4	1340	1870	890	1200	31328/DFYAD	0.83	0.82	1.22	0.80	171	284	234	6	3	3	50.3
150	210	76	38	30	0.5	2	504	916	1200	1500	32930/DF	0.33	2.06	3.06	2.01	163	199	191.4	4	0.5	2	7.99
	210	76	38	30	3	2.5	504	916	1200	1500	32930/HCEDFYAB	0.33	2.06	3.06	2.01	163	198	191.4	5	2.5	2.5	7.99
	225	96	48	36	0.6	2.5	686	1260	1100	1400	32030/DF	0.46	1.47	2.19	1.44	166	213	198.5	5	0.6	2.5	13.2
	225	97	45	38	1.1	2.5	539	936	1100	1400	32030X2A/DF	0.39	1.73	2.58	1.69	168	213	198.3	5	1.1	2.5	14.1
	270	98	45	38	1	3	872	1260	940	1200	30230/DF	0.44	1.55	2.31	1.52	179	256	233.5	5	1	2.5	22.5
	270	154	73	60	1	3	1410	2330	940	1200	32230/DF	0.44	1.55	2.31	1.52	174	256	224.4	4	1	2.5	38.4
	320	164	75	50	1.3	4	1520	2120	820	1100	31330/DF	0.83	0.82	1.22	0.80	186	305	250.3	5	1.3	3	58.5
160	240	76	76	29	1.5	3	524	888	1000	1300	370632	0.47	1.43	2.12	1.40	179	228	212.4	1	1.5	2.5	11.4
	240	86	86	27	2	2.5	499	861	1000	1300	372032X2	0.46	1.47	2.19	1.44	183	228	214	5	2	2.5	12.8
	240	102	51	38	0.8	2.5	783	1450	1000	1300	32032/DF	0.46	1.47	2.19	1.44	177	228	212.1	5	0.8	2.5	15.8
	240	102	51	41	0.9	2.5	747	1340	1000	1300	32032X2A/DF	0.37	1.83	2.72	1.79	179	228	214.7	5	0.9	2.5	15.7
	270	150	150	60	2	2.5	1280	2300	910	1200	372132	0.44	1.52	2.26	1.49	183	257	225.2	5	2	2.5	35.2
	290	168	80	67	1	3	1680	2830	860	1100	32232/DF	0.44	1.55	2.31	1.52	186	276	240.2	5	1	2.5	48.1
	290	168	80	67	1	3	1680	2830	860	1100	32232/DFYA8	0.44	1.55	2.31	1.52	186	276	240.2	4	1	2.5	48.6
	343	160	160	53.975	3.3	3.3	1510	2290	750	950	370632/HCE	0.81	0.83	1.23	0.81	203	329	260.4	3	3.3	3.3	70.4
	343	160	160	53.975	3.3	3.3	1510	2290	750	950	370632D/HC	0.81	0.83	1.23	0.81	203	329	260.4	3	3.3	3.3	65.3
170	229.5	65.6	65.6	27	2	2	386	817	1000	1300	370634X3/YA3	0.70	0.97	1.44	0.94	183	218.5	202.4	3	2	2	7.86
	230	65	65	27	0.7	2	486	947	1000	1300	370634	0.29	2.36	3.51	2.31	186	220	213.5	3	0.7	2	6.79
	230	76	38	30	0.6	2	528	1120	1000	1300	32934/DF	0.38	1.76	2.62	1.72	185	219	210.8	4	0.6	2	9.31
	230	76	38	30	0.6	2	528	1120	1000	1300	32934/DF-XD	0.38	1.76	2.62	1.72	185	219	210.8	4	0.6	2	9.31
	260	84	84	33	1.5	3	724	1310	910	1200	370634X3	0.47	1.43	2.12	1.40	192	248	228.2	5	1.5	2.5	16.4
	260	114	57	43	1.3	2.5	939	1740	910	1200	32034/DF	0.44	1.52	2.26	1.49	190	247	227.9	5	1.3	2.5	21.9
	260	114	57	43	1.3	2.5	939	1740	910	1200	32034/HCDF	0.44	1.52	2.26	1.49	190	247	227.9	5	1.3	2.5	21.9
	295	100	100	35	2.5	4	808	1360	830	1100	370634-1	0.87	0.78	1.16	0.76	207	280	245.2	2	2.5	3	27.8
	295	100	100	35	2.5	4	808	1360	830	1100	370634-1D	0.87	0.78	1.16	0.76	207	280	245.2	2	2.5	3	26.7
	310	114	52	43	1.3	4	1150	1690	800	1100	30234/DF	0.44	1.55	2.31	1.52	206	294	268.5	5	1.3	3	35.8
	310	182	86	71	1.3	4	1900	3230	800	1100	32234/HCDF	0.44	1.55	2.31	1.52	200	294	257.9	5	1.3	3	61.9
	310	182	86	71	1	4	1900	3230	800	1100	32234/DF	0.44	1.55	2.31	1.52	199	294	257.9	5	1	3	62.1
	310	182	86	71	1	4	1900	3230	800	1100	32234/DFYH	0.44	1.55	2.31	1.52	199	294	257.9	5	1	3	61.9
180	250	90	45	34	0.6	2	648	1430	910	1200	32936/DF	0.48	1.41	2.09	1.37	196	239	223.4	4	0.6	2	13.5
	250	90	45	34	0.6	2	648	1430	910	1200	32936/HCDF	0.48	1.41	2.09	1.37	196	239	223.4	4	0.6	2	13.5
	250	90	45	36	0.7	2	558	1060	910	1200	32936X2A-1/DF	0.37	1.84	2.74	1.80	199	239	227.2	5	0.7	2	12.7

d 180～228.6mm

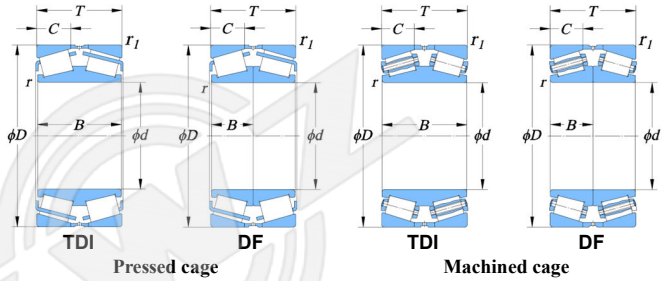


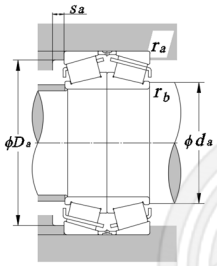


Principal dimensions(mm)							Basic load ratings (kN)		Limiting speeds (r/min)	
d	*D*	*T*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}	Grease	Oil
180	280	92	92	28	2	2.5	662	1110	840	1100
	280	100	100	32	2	2.5	761	1330	840	1100
	280	128	64	48	0.6	2.5	1140	2130	840	1100
	280	128	64	48	0.6	2.5	1140	2130	840	1100
	330	190	190	76	1.5	5	1940	3550	740	940
190	290	100	100	39	2.5	2.5	857	1580	800	1100
	290	128	64	48	1	2.5	1190	2240	800	1100
	320	114	114	40	2	3	1040	1820	740	940
	320	164	164	38	2	4	979	1590	740	940
	340	120	55	46	1.3	4	1350	2010	700	890
	340	120	55	46	1.3	4	1350	2010	700	890
	400	206	90	62	1.3	4	2130	3220	610	770
200	310	140	66	56	1.3	2.5	1090	2070	740	940
	310	140	70	53	1	2.5	1380	2610	740	940
	310	140	70	53	1	2.5	1380	2610	740	940
	310	140	70	53	0.8	2.5	1380	2610	740	940
	310	140	70	53	1	2.5	1260	2600	740	940
	310	140	140	56	3	3	1380	2610	740	940
	340	140	140	50	3	3	1300	2430	680	870
	340	140	140	50	3	3	1300	2430	680	870
	360	165	165	68	3	3	1880	3570	650	830
	380	180	180	64	20x7°	4	2080	3420	620	790
	380	200	200	4	4		2190	4020	620	790
203.2	292.1	107.95	107.95	46.038	3	3.3	966	2070	770	970
210	300	100	100	38	2	3	844	1790	740	940
	365	170	170	68	4	4	2080	3660	630	800
219.2	360	198	198	82	1.5	6.4	2250	4470	620	790
220	300	102	51	39	1	2.5	881	1930	720	910
	340	152	76	57	1.1	3	1600	3050	650	830
	360	120	120	39	3	4	1100	2030	620	790
	360	120	120	39	3	4	1100	2030	620	790
	360	120	120	41	15x15°	3	977	1880	620	790
	360	174	174	65	1.1	2.5	1720	3370	620	790
	380	195	195	70	1.5	4	2050	4040	590	750
	400	228	108	90	1	4	3030	5350	570	720
	400	228	108	90	1	4	3030	5350	570	720
	450	210	210	74	2.5	4	2880	4590	510	650
	460	194	88	73	1.3	5	2690	3940	500	640
228.6	431.8	177.8	177.8	61	5	5	2170	3780	520	670
	431.8	177.8	177.8	70	5	5	2430	3940	520	670

Designations	Factor				Abutment and fillet dimensions(mm)						Mass(kg) (approx.)
	e	Y_1	Y_2	Y_o	d_{amax}	D_{amax}	D_{amin}	S_{amin}	r_{amax}	r_{bmax}	
372036X2	0.43	1.57	2.34	1.53	209	268	248.4	5	2	2.5	20.0
372036X21	0.43	1.57	2.34	1.53	208	268	246.2	5	2	2.5	22.1
32036/DF	0.42	1.60	2.38	1.56	203	267	244.7	5	0.6	2.5	28.9
32036/HG2DF	0.42	1.60	2.38	1.56	203	267	244.7	5	0.6	2.5	28.9
370636D/HCYA3	0.58	1.16	1.72	1.13	208	311	257.7	5	1.5	4	71.6
372038X2A	0.40	1.68	2.50	1.64	219	277	258.4	4	2.5	2.5	23.8
32038/DF	0.44	1.53	2.27	1.49	212	278	254.7	6	1	2.5	30.1
370638D/HCYA3	0.87	0.78	1.16	0.76	216	306	262.2	4	2	2.5	35.3
370638D-XRS/HCYAT	0.87	0.78	1.16	0.76	210	306	264	1	2	3	49.2
30238/DF	0.44	1.55	2.31	1.52	229	324	297.1	7	1.3	3	43.3
30238/DFYB2	0.44	1.55	2.31	1.52	229	324	297.1	7	1.3	3	43.3
31338/DF	0.83	0.81	1.21	0.79	238	384	308.4	4	1.3	3	117
32040X2A/DF	0.39	1.72	2.56	1.68	229	297	269.3	2	1.3	2.5	37.4
32040/DF	0.43	1.57	2.34	1.53	224	297	270.9	6	1	2.5	40.2
32040/DFYB2	0.43	1.57	2.34	1.53	224	297	270.9	6	1	2.5	40.2
32040/HCDF	0.43	1.57	2.34	1.53	224	297	270.9	6	0.8	2.5	40.2
32040A/DF	0.50	1.34	2.00	1.32	225	297	263.8	6	1	2.5	39.5
372040/HCEYAB	0.43	1.57	2.34	1.53	224	295	270.9	6	2.5	2.5	40.3
370640	0.87	0.78	1.16	0.76	232	327	271.2	3	2.5	2.5	52.7
370640D	0.87	0.78	1.16	0.76	232	327	271.2	3	2.5	2.5	50.6
370640/HCW26	0.40	1.68	2.50	1.64	256	346	311.4	4	2.5	2.5	75.5
370640-1/HCI	0.80	0.84	1.26	0.82	236	364	300.5	4	2.5	3	91.8
370640X2/YB2	0.75	0.90	1.34	0.88	232	363	287.4	5	3	0	108
3706/203.2/YA3	0.33	2.03	3.02	1.98	226	278.1	260.7	5	2.5	3.3	24.3
370642-FM	0.58	1.17	1.75	1.15	231	286	263	5	2	2.5	23.2
370642/HC	0.42	1.61	2.40	1.58	246	349	309.5	5	3	3	76.1
3706/219.2	0.33	2.03	3.02	1.98	253	339.8	308	4	1.5	6.4	83.0
32944/DF	0.43	1.59	2.36	1.55	239	287	271.9	5	1	2.5	20.8
32044/DF	0.43	1.57	2.34	1.53	246	326	297.7	5	1.1	2.5	49.5
370644	0.87	0.78	1.16	0.76	251	344	301.4	2	2.5	3	47.5
370644D	0.87	0.78	1.16	0.76	251	344	301.4	2	2.5	3	44.4
370644D/YAD	0.87	0.78	1.16	0.76	256	346	298.4	5	4	2.5	45.7
370644X3-1	0.58	1.17	1.75	1.15	252	347	299.9	5	1.1	2.5	70.3
370644X3/YAD	0.73	0.92	1.37	0.90	247	363	299.8	5	1.5	3	94.5
32244/DF	0.44	1.55	2.31	1.52	257	384	332.5	3	1	3	130
32244/DFYH	0.44	1.55	2.31	1.52	257	384	332.5	7	1	3	130
370644X3/HCYAB	0.65	1.03	1.54	1.01	272	433	356	6	2.5	3	163
30344/DF	0.37	1.83	2.72	1.79	284	441	386	7	1.3	4	147
3706/228.6/HCYAD	0.93	0.73	1.08	0.71	270	412.8	332.8	7	4	4	121
3706/228.6	0.40	1.68	2.50	1.64	281	412.8	364.4	3	4	4	119

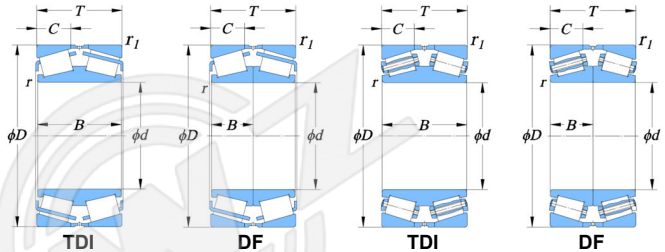
d 228.6～300mm

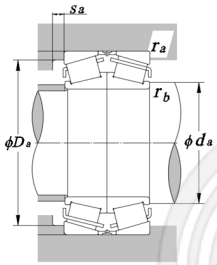




Principal dimensions(mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations	Factor				Abutment and fillet dimensions(mm)						Mass(kg) (approx.)
d	*D*	*T*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}	Grease	Oil		*e*	Y_1	Y_2	Y_o	d_{amax}	D_{amax}	D_{amin}	S_{amin}	r_{amax}	r_{bmax}	
228.6	431.8	177.8	177.8	70	5	5	2430	3940	520	670	**3706/228.6/HC**	0.40	1.68	2.50	1.64	281	412.8	364.4	3	4	4	119
230	350	92	92	33	3	4	874	1640	620	790	**370646/HG2**	0.55	1.24	1.84	1.21	262	334	308.4	2	2.5	3	31.9
240	360	152	72	62	1.3	3	1490	2940	590	750	**32048X2A/DF**	0.31	2.15	3.20	2.10	269	346	317.2	3	1.3	2.5	49.4
	360	152	76	57	1	3	1620	3160	590	750	**32048/DF**	0.46	1.47	2.19	1.44	266	346	315.6	6	1	2.5	54.0
	360	152	76	57	1	3	1620	3160	590	750	**32048/HCDF**	0.46	1.47	2.19	1.44	266	346	315.6	6	1	2.5	53.9
	360	152	76	57	1	3	1520	3260	590	750	**32048A/DF**	0.53	1.27	1.89	1.24	267	346	307.7	4	1	2.5	55.4
	440	254	120	100	1.3	4	3530	6310	500	640	**32248/DF**	0.44	1.55	2.31	1.52	282	423	361.8	6	1.3	3	169
	480	220	200	78	2.5	5	3280	5400	470	590	**370648/HC**	0.72	0.94	1.39	0.92	292	461	378.9	9	2.5	4	185
250	370	90	90	45	3	3	826	1640	570	720	**370650**	0.40	1.68	2.50	1.64	288	356	328.2	4	2.5	2.5	33.8
259.5	481	250	250	95	2.5	5	3710	6740	450	570	**370652X4/HC**	0.52	1.31	1.95	1.28	308	462	390	8	2.5	4	205
	481	250	250	98	2.5	5	3940	7040	450	570	**3706/259.5**	0.45	1.50	2.23	1.47	308	462	395.5	10	2.5	4	214
	481	250	250	106	2	5	3820	7140	450	570	**3706/259.5-1/HC**	0.49	1.38	2.06	1.35	311	462	385.2	3	2	4	211
260	360	127	63.5	48	0.9	2.5	1200	2480	570	720	**32952/DF**	0.41	1.66	2.47	1.62	286	347	326	2	0.9	2.5	37.3
	400	104	104	40	5	4	1270	2270	520	670	**370652-1/HC**	0.40	1.68	2.50	1.64	300	384	357.2	6	4	3	47.4
	400	174	87	65	1.3	4	2090	4060	520	670	**32052/DF**	0.43	1.55	2.31	1.52	291	384	350.5	7	1.3	3	78.0
	420	170	170	70	5	5	2170	4020	500	640	**370652D**	0.48	1.41	2.09	1.37	297	401	358.7	7	4	4	88.4
	420	170	170	70	5	5	2170	4020	500	640	**370652D/HC**	0.48	1.41	2.09	1.37	297	401	358.7	7	4	4	88.4
	480	274	130	105	1.3	5	4110	7360	450	570	**32252/DF**	0.43	1.57	2.34	1.53	306	461	396.4	8	1.3	4	218
	540	226	102	85	1	6	3700	5540	410	520	**30352/DF**	0.32	2.12	3.15	2.07	328	516	449.4	5	1	5	245
279.4	482.6	177.8	177.8	63	6	5	2520	4450	430	550	**3706/279.4/HC**	0.70	0.97	1.44	0.94	327	463.6	402.4	4	5	4	135
280	380	127	63.5	48	1	2.5	1350	2980	520	670	**32956/DF**	0.43	1.56	2.32	1.53	302	368	345	6	1	2.5	41.5
	380	127	63.5	48	1	2.5	1350	2980	520	670	**32956/HCDF**	0.43	1.56	2.32	1.53	302	368	345	6	1	2.5	41.5
	380	127	63.5	48	0.6	3.5	1380	3070	520	670	**32956/DFYAD**	0.43	1.56	2.32	1.53	302	366	344	6	0.6	3	41.7
	380	129	60	52	0.9	2.5	1170	2650	520	670	**32956X2A/DF**	0.32	2.10	3.13	2.05	306	367	344.5	1	0.9	2.5	44.1
	389.5	92	92	30	4	4	956	1880	510	650	**370656**	0.82	0.82	1.22	0.80	305	374.5	349	5	3	3	33.3
	389.5	92	92	30	4	4	956	1880	510	650	**370656/HC**	0.82	0.82	1.22	0.80	305	374.5	346.8	5	3	3	33.3
	389.5	92	92	30	4	4	819	1540	510	650	**370656/YAD**	0.82	0.82	1.22	0.80	308	374.5	349	5	3	3	30.8
	420	174	87	65	1.5	4	2180	4380	490	620	**32056/DF**	0.46	1.47	2.19	1.44	309	404	367.9	7	1.5	3	84.0
	420	175.4	82	71	1.3	4	2080	4020	490	620	**32056X2A/DF**	0.37	1.83	2.72	1.79	312	403	371.7	4	1.3	3	81.7
290	450	180	180	65	3	4	2010	4320	450	570	**370658D/HCEYAT**	0.87	0.78	1.16	0.76	315	433	365.4	4	2.5	3	103
295.3	557	172	180	52	5	5	2360	4130	370	470	**370660-RS/HC-1**	0.81	0.83	1.23	0.81	340	538	451.6	1	4	4	195
300	420	152	76	57	1.3	3	1680	3530	470	590	**32960/DF**	0.39	1.71	2.54	1.67	328	403	380.2	5	1.3	2.5	62.9
	420	152	152	53	3	3	1480	3330	470	590	**372960/HCYAD**	0.67	1.01	1.50	0.99	326	403	368.4	2	2.5	2.5	64.4
	423	152	152	53	3	3	1480	3330	470	590	**372960X1/HCYAD**	0.67	1.01	1.50	0.99	326	406	368.4	2	2.5	2.5	65.8
	440	104.749	105	35	4	4	1020	2040	450	570	**370660D/HCYAD-1**	0.88	0.77	1.14	0.75	334	422	384.4	6	3	3	55.4
	440	105	105	35	4	4	1020	2040	450	570	**370660/HCYAB**	0.88	0.77	1.14	0.75	334	422	384.4	6	3	3	58.0
	440	105	105	35	4	4	1020	2040	450	570	**370660/YA3**	0.88	0.77	1.14	0.75	334	422	384.4	6	3	3	58.8
	440	105	105	35	4	4	1020	2040	450	570	**370660D/HCYAD**	0.88	0.77	1.14	0.75	334	422	384.4	6	3	3	55.5
	440	105	105	35	3	3	1020	2040	450	570	**370660D/HCYAD1**	0.88	0.77	1.14	0.75	334	426	384.4	6	2.5	2.5	55.5
	440	105	105	35	4	4	1060	2160	450	570	**370660D/HCYAD-2**	0.88	0.77	1.14	0.75	334	422	384.4	6	3	3	56.0

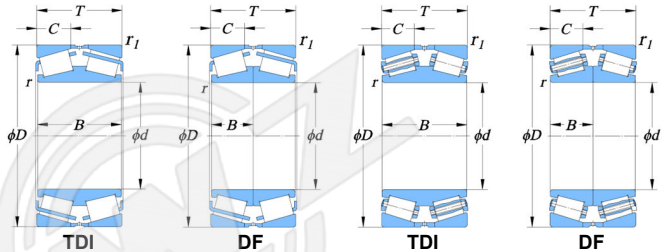
d 300～305.07mm

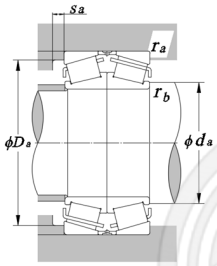




d	Principal dimensions(mm) D	T	B	C	r_{min}	r_{1min}	Basic load ratings (kN) C_r	C_{or}	Limiting speeds (r/min) Grease	Oil	Designations	Factor e	Y_1	Y_2	Y_o	d_{amax}	Abutment and fillet dimensions(mm) D_{amax}	D_{amin}	S_{amin}	r_{amax}	r_{bmax}	Mass(kg) (approx.)
300	440	105	105	35	4	4	1060	2160	450	570	370660D/HCYAT	0.88	0.77	1.14	0.75	334	422	384.4	6	3	3	56.3
	440	105	105	35	4	4	1020	2040	450	570	370660D/YAB	0.88	0.77	1.14	0.75	334	422	384.4	6	3	3	49.2
	440	105	105	35	4	4	1020	2040	450	570	370660D/YAD	0.88	0.77	1.14	0.75	334	422	384.4	6	3	3	55.5
	460(440)	105	105	35	4	2	1020	2040	440	550	370660/YAD	0.88	0.77	1.14	0.75	334	426	384.4	6	3	2	62.2
	460(440)	105	105	35	4	4	1070	2090	440	550	370660X3/HCE+M370660X3	0.87	0.78	1.16	0.76	330	421	381.4	6	3	3	62.5
	460	160	160	65	5	5	2330	4600	440	550	370660X2/HCYB2	0.34	2.01	3.00	1.97	340	439	407.4	6	4	4	97.5
	460	200	100	74	1.5	4	2700	5450	440	550	32060/DF	0.43	1.55	2.31	1.52	334	441	401.7	6	1.5	3	120
	480(460)	180	180	67	2.5	5	2050	4450	420	530	370660/HC+M370660	0.87	0.78	1.16	0.76	323	445	373.4	6	2.5	4	128
	500	200	200	70	5	5	2710	4980	410	520	371160X2	0.70	0.97	1.44	0.94	344	479	414.9	6	4	4	153
	540	298.3	280	115	2	5	5020	9120	380	480	372260X2/HC	0.43	1.57	2.34	1.53	347	518	452.8	6	2	4	285
	560	170	170	44	5	5	2330	3620	370	470	370660-RS/HC	0.81	0.83	1.23	0.81	340	539	467	2	4	4	189
	560	170	170	50	5	5	2420	3810	370	470	370660/HC	0.81	0.83	1.23	0.81	371	539	460.4	11	4	4	197
305	480	200	200	74	15x7°	4	2120	4380	420	530	370661X1/HCI	0.87	0.78	1.16	0.76	337	461	400.4	6	1.8	3	132
	500	200	200	63.5	6.4	6.4	2350	4620	400	510	370661D/HCEYAB	0.88	0.77	1.15	0.75	346	472.2	413.4	6	6.4	6.4	145
	500	200	200	63.5	6.4	6.4	2350	4620	400	510	370661D/HCEYAB1	0.88	0.77	1.15	0.75	346	472.2	413.4	6	6.4	6.4	145
	500	200	200	63.5	6.4	6.4	2350	4620	400	510	370661D/HCEYAB2	0.88	0.77	1.15	0.75	346	472.2	413.4	6	6.4	6.4	145
	500	200	200	63.5	6.4	6.4	2350	4620	400	510	370661D/HCEYAD	0.88	0.77	1.15	0.75	346	472.2	413.4	6	6.4	6.4	145
	500	200	200	63.5	4.3	6	2350	4620	400	510	370661D/HCEYADT	0.88	0.77	1.15	0.75	355	480	413.4	6	4.3	5	144
	500	200	200	63.5	6.4	6.4	2350	4620	400	510	370661D/HCYAB	0.88	0.77	1.15	0.75	346	472.2	413.4	6	6.4	6.4	145
	500	200	200	63.5	6.4	6.4	2350	4620	400	510	370661D/HCYAB1	0.88	0.77	1.15	0.75	346	472.2	413.4	6	6.4	6.4	145
	500	200	200	63.5	4.3	6	2350	4620	400	510	370661D/HCYADT-1	0.88	0.77	1.15	0.75	355	480	413.4	6	4.3	5	144
	500	200	200	63.5	4.3	6	2350	4620	400	510	370661D/YADT	0.88	0.77	1.15	0.75	355	480	413.4	6	4.3	5	144
	500	200	200	67	6.4	6.4	2410	4880	400	510	3706/305X4D/HCEYAD-2	0.88	0.77	1.15	0.75	357	472.2	411	6	6.4	6.4	155
	510	200	200	79.38	5	5	2550	5430	400	500	3706/305/HCE	0.69	0.98	1.46	0.96	360	488	411.7	6	4	4	164
	560	200	200	67	6	6	2670	4390	360	460	3706/305X1D/HCYAD	0.87	0.78	1.16	0.76	362	536	450.4	6	5	5	190
305.034	499.948	200.025	200.025	63.5	3.3	6.4	2350	4620	400	510	3706/305X4/HCEYAB3	0.88	0.77	1.15	0.75	355	477.7	413.4	6	3.3	6.4	150
	499.948	200.025	200.025	63.5	3.3	6.4	2350	4620	400	510	3706/305X4D/HCEYAD	0.88	0.77	1.15	0.75	355	477.7	413.4	6	3.3	6.4	143
	499.948	200.025	200.025	63.5	3.3	6.4	2350	4620	400	510	3706/305X4D/HCEYAD-1	0.88	0.77	1.15	0.75	355	477.7	413.4	6	3.3	6.4	143
	499.948	200.025	200.025	63.5	3.3	4	2350	4620	400	510	3706/305X4D/HCEYADT	0.88	0.77	1.15	0.75	355	482.5	413.4	6	3.3	3	144
	499.948	200.025	200.025	63.5	3.3	4	2350	4620	400	510	3706/305X4D/HCEYADT-1	0.88	0.77	1.15	0.75	355	482.5	413.4	6	3.3	3	144
	499.948	200.025	200.025	63.5	3.3	4	2350	4620	400	510	3706/305X4D/YADT1	0.88	0.77	1.15	0.75	355	482.5	413.4	6	3.3	3	144
	499.948	200.025	200.025	64	3.3	6.4	2250	4530	400	510	3706/305X4/HCYAB31	0.87	0.78	1.16	0.76	347	477.7	406.1	6	3.3	6.4	156
305.07	499.5	200	200	67	6.4	4.8	2410	4880	400	510	3706/305X4D/YA3-3	0.88	0.77	1.15	0.75	357	480.5	411	6	6.4	4.8	151
	500	200	200	67	3	5	2410	4880	400	510	3706/305X4/HCYAB	0.88	0.77	1.15	0.75	348	481	411	6	2.5	4	163
	500	200	200	67	6.5	5	2410	4880	400	510	3706/305X4/HCYB2	0.88	0.77	1.15	0.75	357	479	411	6	5	4	164
	500	200	200	67	6.4	4.8	2410	4880	400	510	3706/305X4D/HCYAB2	0.88	0.77	1.15	0.75	357	481	411	6	6.4	4.8	155
	500	200	200	67	4.8	6.4	2410	4880	400	510	3706/305X4D/HCRYAD	0.88	0.77	1.15	0.75	357	477.8	411	6	4.8	6.4	155
	500	200	200	67	6.4	4.8	2410	4880	400	510	3706/305X4D/HCYA3-1	0.88	0.77	1.15	0.75	357	481	411	6	6.4	4.8	155
	500	200	200	67	6.4	4.8	2410	4880	400	510	3706/305X4D/HCYA3-2	0.88	0.77	1.15	0.75	357	481	411	6	6.4	4.8	155
	500	200	200	67	6.4	4.8	2500	4500	400	510	3706/305X4D/HCYAD1	0.87	0.78	1.16	0.76	338	480.4	408.4	6	6.4	4.8	143

d 305.07～360mm

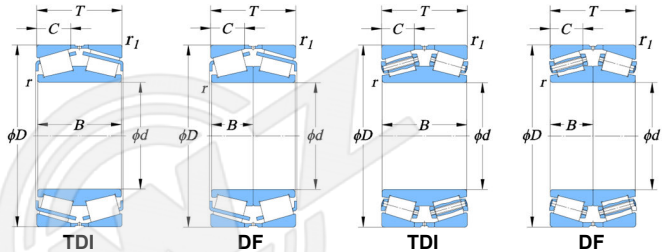


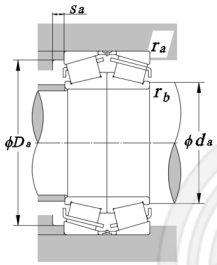


d	Principal dimensions(mm) D	T	B	C	r_{min}	r_{1min}	Basic load ratings(kN) C_r	C_{or}	Limiting speeds (r/min) Grease	Oil
305.07	500	200	200	67	6.4	4.8	2410	4880	400	510
	500	200	200	70	6.4	4.8	2300	4080	400	510
	500	200	200	70	6.4	4.8	2300	4080	400	510
	500	200	200	70	6.4	4.8	2300	4080	400	510
305.079	500	200	200	63.5	3.3	4	2350	4620	400	510
	500	200	200	67	5	5	2410	4880	400	510
	500	200	200	67	6	6.4	2410	4880	400	510
305.1	500	200	200	70	6.4	4.8	2300	4080	400	510
305.2	500	200	200	70	6.4	4.8	2300	4080	400	510
320	440	152	76	57	1.5	3	1880	4350	440	550
	459.5	140	140	57	3	2	1710	3760	420	530
	460	160	160	60	1.5	3	1910	4370	420	530
	480	160	160	64	1.3	4	2280	4340	410	520
	480	200	100	74	1.3	4	2800	5730	410	520
	500	242	242	105	3.3	6	3330	7410	390	500
	500	242	242	105	3.3	6	3330	7410	390	500
	620	280	280	115	3	5	5670	10200	320	410
	620	280	280	115	3	5	5670	10200	320	410
	620	280	280	115	6	5	5670	10200	320	410
	620	282	250	85	2.5	5	4910	7610	320	410
	620	282	250	85	6	6	4910	7610	320	410
	620	282	250	105	2.5	5	5170	8680	320	410
330	520	180	180	70	3	3	2470	5050	370	470
	520	180	180	70	3	3	2470	5050	370	470
	520	180	180	70	3	3	2470	5050	370	470
	540	176	176	62	5	5	2520	4850	360	460
	540	186	186	73	5	5	3250	6080	360	460
335	490	180	180	56	1.5	3	1870	3790	390	490
339	600.5	264	132	100	3	6	5000	9130	320	410
340	460	152	152	62	1.3	4	2030	4800	410	520
	550	200	200	75	5	5	3330	6110	350	440
	580	190	190	74	6	5	3500	6010	330	420
	580	243	243	94	4	4	4580	8530	330	420
360	480	152	76	57	1.3	4	1870	4580	380	480
	480	152	76	57	1.3	4	2080	5070	380	480
	480	160	160	54	1.5	3.3	1570	3560	380	480
	540	172	82	63.5	1.3	4	2390	4400	340	440
	540	180	180	75	5	5	3090	6180	340	440
	540	180	180	75	5	5	3090	6180	340	440
	540	185	185	72	5	5	2990	5940	340	440

Designations	Factor e	Y_1	Y_2	Y_0	Abutment and fillet dimensions(mm) d_{amax}	D_{amax}	D_{amin}	S_{amin}	r_{amax}	r_{bmax}	Mass(kg) (approx.)
3706/305X4D/YA3-2	0.88	0.77	1.15	0.75	357	481	411	6	6.4	4.8	155
3706/305X4	0.79	0.85	1.27	0.83	351	480.4	412.4	6	6.4	4.8	122
3706/305X4D/HCR	0.79	0.85	1.27	0.83	351	480.4	412.4	6	6.4	4.8	115
3706/305X4D/YAB3	0.79	0.85	1.27	0.83	351	480.4	412.4	6	6.4	4.8	115
3706/305X4D/HCE	0.88	0.77	1.15	0.75	355	482.6	413.4	6	3.3	3	143
3706/305X4D/YAB-2	0.88	0.77	1.15	0.75	357	480.6	411	6	4	4	155
3706/305X4D/YAD-1	0.88	0.77	1.15	0.75	357	477.8	411	6	5	6.4	155
3706/305.1D/HCYAB	0.79	0.85	1.27	0.83	351	480.4	412.4	6	6.4	4.8	115
3706/305.2D	0.79	0.85	1.27	0.83	351	480.4	412.4	6	6.4	4.8	115
32964/DF	0.42	1.62	2.42	1.59	349	423	398.7	6	1.5	2.5	69.5
375964X3	0.41	1.66	2.47	1.63	357	446.5	406.1	4	2.5	2	79.2
370664-2/HCYAB	0.70	0.97	1.44	0.94	347	443	393.2	4	1.5	2.5	87.0
370664X3/HCYB2	0.33	2.03	3.02	1.98	361	461	428.2	4	1.3	3	100
32064/DF	0.46	1.47	2.19	1.44	353	461	421.7	10	1.3	3	130
370664-1/HCYB2	0.32	2.12	3.15	2.07	365	476	431.9	2	3.3	5	181
370664-1/HG2YB2	0.32	2.12	3.15	2.07	365	476	431.9	2	3.3	5	181
370664X2	0.43	1.58	2.35	1.54	400	599	513.4	6	2.5	4	408
370664X2/HC	0.43	1.58	2.35	1.54	400	599	513.4	6	2.5	4	408
370664X2/HCYA6	0.43	1.58	2.35	1.54	400	599	513.4	6	5	4	408
370664/HC	0.73	0.92	1.37	0.90	380	599	505.4	6	2.5	4	353
370664/YAB	0.73	0.92	1.37	0.90	380	596	505.4	6	5	5	353
370664/HCYA8	0.61	1.11	1.66	1.09	388	599	501.4	2	2.5	4	374
370666D/HCEYAB	0.87	0.78	1.16	0.76	366	504	426	5	2.5	2.5	142
370666D/HCRYAB	0.87	0.78	1.16	0.76	366	504	426	5	2.5	2.5	142
370666D/YAB	0.87	0.78	1.16	0.76	366	504	426	5	2.5	2.5	142
370666/HCYAB	0.87	0.78	1.16	0.76	369	519	445	6	4	4	173
370666/HCYA3-1	0.33	2.03	3.02	1.98	386	519	472.5	10	4	4	174
3706/335/HC	0.87	0.78	1.16	0.76	356	474	412.4	10	1.5	2.5	109
306/339/HCDFYAB	0.43	1.57	2.34	1.53	403	576.5	509.4	10	2.5	5	324
370668X3/HCYB2	0.44	1.54	2.29	1.50	366	441	415.2	6	1.3	3	73.3
371168X21	0.58	1.15	1.72	1.13	385	529	470.4	9	4	4	183
371168X2	0.39	1.73	2.58	1.70	400	559	504.4	8	5	4	203
370668/HC	0.42	1.60	2.38	1.56	395	562	494	9	3	3	271
32972/DF	0.46	1.47	2.19	1.44	391	461	436.7	8	1.3	3	79.2
32972/HG2DF	0.46	1.47	2.19	1.44	386	462	435.9	8	1.3	3	77.4
372972X2/YAB	0.47	1.44	2.14	1.40	389	464	435.4	8	1.5	3.3	75.5
31072X2/DF	0.37	1.82	2.70	1.78	406	521	483.5	8	1.3	3	123
371072X2/HC	0.34	2.00	2.97	1.95	402	519	482.4	3	4	4	146
371072X2/HCYB2	0.34	2.00	2.97	1.95	402	519	482.4	3	4	4	146
371072X21/HCYA3	0.37	1.82	2.70	1.78	402	519	481.4	5	4	4	147

d 360～380mm

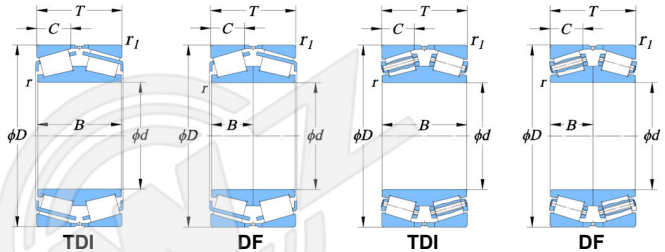


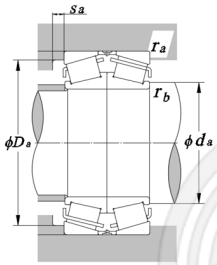


Principal dimensions(mm)							Basic load ratings(kN)		Limiting speeds (r/min)	
d	*D*	*T*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}	Grease	Oil
360	540	185	185	72	5	5	2990	5940	340	440
	560	160	160	55	3	5	2410	4520	330	420
	600	192	192	79.5	6	5	3910	7260	310	400
	600	242	242	94	3.3	6	4210	7820	310	400
	600	242	242	94	3.3	6	4210	7820	310	400
	600	242	242	94	3.3	6	4050	7550	310	400
	600	255	255	95	5	5	4420	8610	310	400
	680	310	310	115	5	5	6260	11400	280	350
	680	330	150	110	6	6	5900	10400	280	350
	680	330	150	110	6	6	5900	10400	280	350
	680	330	150	110	6	6	5900	10400	280	350
	680	330	300	128	4	7.5	6730	12300	280	350
	680	330	300	128	4	7.5	6730	12300	280	350
	680	330	300	128	4	7.5	6730	12300	280	350
	680	330	300	128	4	7.5	6730	12300	280	350
	680	330	300	128	2.5	5	6730	12300	280	350
	680	330	300	128	4	7.5	6730	12300	280	350
	680	330	320	128	4	7.5	6730	12300	280	350
	680	330	330	128	2.5	7.5	6730	12300	280	350
365.6	514.35	140	140	52	2.5	4	1950	3990	360	450
	514.35	140	140	52	2.5	4	1950	3990	360	450
377	563(548)	180	180	70	2	4	2230	5330	320	410
379	681.5	307	153.5	115	5	6	6250	11400	270	340
	681.5	307	307	128	6	6	6790	13900	270	340
380	520	145	145	56	4	4	2230	4910	340	440
	560	180	180	72	1.3	5	2900	5840	320	410
	567.5	180	180	70	2	4	2040	4200	320	400
	568(550)	180	180	63	2	5	2280	5460	320	400
	568(550)	180	180	63	2	5	2280	5460	320	400
	568(550)	180	180	63	2	5	2280	5460	320	400
	568(548)	180	180	65	2	5	2290	5320	320	400
	570	180	180	65	6	5	2420	5870	320	400
	570	180	180	65	6	5	2420	5870	320	400
	570	180	180	65	2	4	2420	5870	320	400
	570	180	180	65	2	5	2420	5870	320	400
	570	180	180	65	2	5	2420	5870	320	400
	570	180	180	65	2	5	2420	5870	320	400
	570	180	180	65	2	5	2420	5870	320	400
	570	180	180	65	2	5	2420	5870	320	400

Designations	Factor				Abutment and fillet dimensions(mm)						Mass(kg) (approx.)
	e	Y_1	Y_2	Y_0	d_{amax}	D_{amax}	D_{amin}	S_{amin}	r_{amax}	r_{bmax}	
371072X21/HG2YA3	0.37	1.82	2.70	1.78	402	519	481.4	5	4	4	147
370672/HCYA3-1	0.72	0.94	1.40	0.92	413	539	484	5	2.5	4	133
370672/HCR	0.39	1.74	2.59	1.70	423	579	519.1	12	5	4	231
370672/HCYAB	0.44	1.53	2.27	1.49	417	576	512.4	4	3.3	5	269
370672/HCYB2-1	0.44	1.53	2.27	1.49	417	576	512.4	4	3.3	5	269
370672/YB2-1	0.44	1.53	2.27	1.49	417	576	512.4	4	3.3	5	269
371172X2/HC	0.72	0.94	1.39	0.92	406	579	491	8	4	4	289
370672X2/HCEYAD	0.59	1.14	1.70	1.12	428	659	646.4	10	4	4	671
30672/DFYAB	0.62	1.10	1.63	1.07	432	656	550.1	3	5	5	503
30672/HCDFYAB	0.62	1.10	1.63	1.07	432	656	550.1	3	5	5	503
30672/HCDFYAB1	0.62	1.10	1.63	1.07	432	656	550.1	6	5	5	527
370672	0.62	1.10	1.63	1.07	430	649	547.4	7	3	6	523
370672/HC	0.62	1.10	1.63	1.07	430	649	547.4	7	3	6	523
370672/HCYA10	0.62	1.10	1.63	1.07	430	649	547.4	7	3	6	523
370672/HCYAD-1	0.62	1.10	1.63	1.07	430	649	547.4	7	3	6	523
370672/HCYA8	0.62	1.10	1.63	1.07	430	659	547.4	7	2.5	4	540
370672/HF	0.62	1.10	1.63	1.07	430	649	547.4	7	3	6	523
370672X2/HC	0.62	1.10	1.63	1.07	430	649	547.4	7	3	6	530
370672/HCYAD	0.62	1.10	1.63	1.07	430	649	547.4	7	2.5	6	532
3706/365X4D/HCYATYAB	0.75	0.90	1.33	0.88	397	499	455.6	4	2.5	3	87.4
3706/365X4D/HCYAT	0.75	0.90	1.33	0.88	397	498.3	455.6	4	2.5	3	87.4
3706/377/HCE+M3706/377	0.87	0.78	1.16	0.76	403	529	454.2	6	2	3	160
306/379/DF	0.43	1.57	2.34	1.53	456	657.5	577.6	6	4	5	492
3706/379	0.40	1.69	2.52	1.65	463	657.5	563.9	16	5	5	519
371976	0.38	1.77	2.64	1.73	413	501	475	5	3	3	89.2
370676/HCYB2	0.33	2.03	3.02	1.98	429	539	502.8	6	1.3	4	150
371076X3-2RS/HCYAB	0.87	0.78	1.16	0.76	420	549.5	501	6	2	3	153
370676HS/HC+M370676HS	0.87	0.78	1.16	0.76	416	529	468.1	6	2	4	163
370676HS/HCE+M370676HS	0.87	0.78	1.16	0.76	416	529	468.1	6	2	4	163
370676HS/HCO+M370676HS	0.87	0.78	1.16	0.76	416	529	468.1	6	2	4	163
370676/HCE+M370676	0.64	1.06	1.58	1.04	417	527	471.4	4	2	4	163
371076X3/YAD	0.83	0.81	1.21	0.79	422	548	469.8	4	5	4	165
371076X3/HCEYAB	0.83	0.81	1.21	0.79	421	548	469.8	4	5	4	165
371076X3/HCEYB2	0.83	0.81	1.21	0.79	421	551	469.8	4	2	3	165
371076X3/HCEYAB1	0.83	0.81	1.21	0.79	422	549	469.8	5	2	4	165
371076X3D/HCEYAD1	0.83	0.81	1.21	0.79	422	549	469.8	5	2	4	157
371076X3D/HCEYAB	0.83	0.81	1.21	0.79	422	549	469.8	5	2	4	157
371076X3D/HCRYAB	0.83	0.81	1.21	0.79	422	549	469.8	5	2	4	157
371076X3D/HCYAD	0.83	0.81	1.21	0.79	422	549	469.8	5	2	4	157
371076X3D/YAB	0.83	0.81	1.21	0.79	422	551	469.8	5	2	4	157

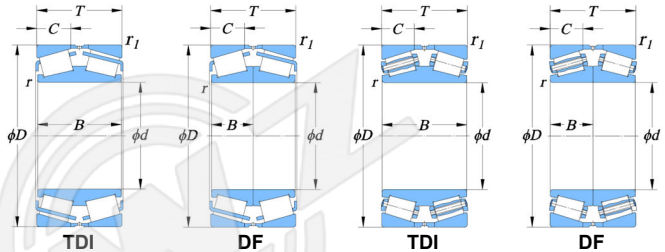
d 380～400mm

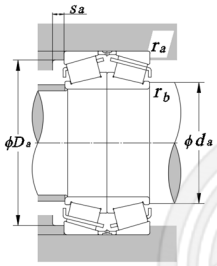




Principal dimensions(mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations	Factor				Abutment and fillet dimensions(mm)						Mass(kg) (approx.)
d	*D*	*T*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}	Grease	Oil		*e*	Y_1	Y_2	Y_o	d_{amax}	D_{amax}	D_{amin}	S_{amin}	r_{amax}	r_{bmax}	
380	570	180	180	65	2	4	2420	5870	320	400	371076X3-HCOYB2	0.83	0.81	1.21	0.79	421	551	469.8	4	2	3	165
	650	240	240	80	5	6	3940	7700	280	360	370676X3D/HCRYAD	0.87	0.78	1.16	0.76	430	626	524.4	5	4	5	312
385	530	180	180	65	2	4	2450	5710	340	430	3706/385	0.38	1.77	2.64	1.73	419	511	480.2	5	2	3	116
390	567.5	180	180	70	3	5	2630	5720	310	400	370678/HCOIYA31	0.73	0.92	1.37	0.90	430	548.1	489.5	6	2.5	4	157
	567.5	180	180	70	3	5	2630	5720	310	400	370678/HCYA3	0.73	0.92	1.37	0.90	430	548.1	489.5	6	2.5	4	157
	568(548)	180	180	62.5	2	5	2200	5270	310	400	370678/HC+M370678	0.83	0.81	1.21	0.79	414	527	467.4	6	2	4	157
	568	180	180	63	3	5	2340	5240	310	400	370678/HC-1	0.83	0.81	1.21	0.79	424	547	474.4	6	2.5	4	153
	568	180	180	67	3	5	2090	4390	310	400	370678-2RS/HC	0.80	0.85	1.26	0.83	427	546	473	2	2.5	4	148
	570	200	200	69	5	5	2970	6810	310	400	370678	0.83	0.81	1.21	0.79	423	549	482	6	4	4	166
400	600	189	190	63	5	4	2890	5490	290	370	371080X2	0.38	1.78	2.65	1.74	451	579	535.2	8	4	3	174
	600	250	118	100	2.2	5	4090	9120	290	370	32080/DF	0.36	1.87	2.79	1.83	449	577	528.4	8	2.2	4	245
	620	148	148	54	6	5	2320	4560	290	360	370680X2-3/HC+M370680	0.79	0.86	1.28	0.84	451	603	522.4	8	5	4	160
	650	200	200	60	6	6	3020	5940	280	350	370680X2-2/HCYAB	1.05	0.64	0.96	0.63	455	624	542.4	8	5	5	264
	650	200	200	68.25	6	5	3060	6090	280	350	370680X2D/HCRYAB1	0.87	0.78	1.16	0.76	470	627	553.2	8	5	4	252
	650	200	200	68.25	6	5	3060	6090	280	350	370680X2D/HCYAB	0.87	0.78	1.16	0.76	470	627	553.2	8	5	4	252
	650	200	200	70	6	6	3240	6440	280	350	370680X2D/HCYAB-1	0.87	0.78	1.16	0.76	465	624	553.2	8	5	5	244
	650	200	200	70	6	5	3060	6090	280	350	370680X2D/HCYAB-3	0.87	0.78	1.16	0.76	470	627	553.2	8	5	4	252
	650	240	240	77	6	6	3890	7250	280	350	370680	0.87	0.78	1.16	0.76	450	624	544.9	8	5	5	293
	650	240	240	77	6	6	3890	7250	280	350	370680/YA3	0.87	0.78	1.16	0.76	450	624	544.9	8	5	5	293
	650	240	240	77	6	6	3890	7250	280	350	370680D/HCEYAD	0.87	0.78	1.16	0.76	450	624	544.9	8	5	5	279
	650	240	240	77	6	6	3890	7250	280	350	370680D/HCEYAD-2	0.87	0.78	1.16	0.76	450	624	544.9	8	5	5	279
	650	240	240	77	6	6	3890	7250	280	350	370680D/HCYA38	0.87	0.78	1.16	0.76	450	624	544.9	8	5	5	279
	650	240	240	77	6	6	3890	7250	280	350	370680D/HCYAD	0.87	0.78	1.16	0.76	450	624	544.9	8	5	5	279
	650	240	240	77	6	6	3890	7250	280	350	370680D/YAD	0.87	0.78	1.16	0.76	450	624	544.9	8	5	5	279
	650	240	240	79	6.4	6.4	4170	8210	280	350	370680X2D/HCYAB-2	0.87	0.78	1.16	0.76	454	621	539.4	8	6.4	6.4	289
	650	240	240	79	6.4	6.4	4170	8210	280	350	370680X2D/HCYAB-4	0.87	0.78	1.16	0.76	454	621	539.4	8	6.4	6.4	290
	650	240	240	80	6	6	4120	8270	280	350	370680/HCYAB	0.87	0.78	1.16	0.76	450	624	539.4	8	5	5	313
	650	240	240	80	6.4	6	4170	8210	280	350	370680/HCYAB1	0.87	0.78	1.16	0.76	454	624	539.4	8	6.4	5	304
	650	240	240	80	6	6	4120	8270	280	350	370680/HCYAD	0.87	0.78	1.16	0.76	450	624	539.4	8	5	5	313
	650	240	240	80	6.4	6.4	4120	8270	280	350	370680D/HCERYA361	0.87	0.78	1.16	0.76	455	621	539.4	8	6.4	6.4	299
	650	240	240	80	6.4	6.4	4170	8210	280	350	370680D/HCEYAB	0.87	0.78	1.16	0.76	454	621	539.4	8	6.4	6.4	289
	650	240	240	80	6	6	4120	8270	280	350	370680D/HCEYAD-1	0.87	0.78	1.16	0.76	450	624	539.4	8	5	5	299
	650	240	240	80	6.4	6.4	4170	8210	280	350	370680D/HCEYAT	0.87	0.78	1.16	0.76	454	621	539.4	8	6.4	6.4	290
	650	240	240	80	6.4	6.4	4170	8210	280	350	370680D/HCEYATB1	0.87	0.78	1.16	0.76	454	621	539.4	8	6.4	6.4	290
	650	240	240	80	6.4	6.4	4170	8210	280	350	370680D/HCEYATB3	0.87	0.78	1.16	0.76	454	621	539.4	8	6.4	6.4	290
	650	240	240	80	6	6	4170	8210	280	350	370680D/HCYAB1	0.87	0.78	1.16	0.76	454	624	539.4	8	5	5	289
	650	240	240	80	6.4	6.4	4170	8210	280	350	370680D/HCRYAB-1	0.87	0.78	1.16	0.76	454	621	539.4	8	6.4	6.4	289
	650	240	240	80	6	6	4120	8270	280	350	370680D/HCYA3	0.87	0.78	1.16	0.76	455	624	539.4	8	5	5	299
	650	240	240	80	2	6	4120	8270	280	350	370680D/HCYA36	0.87	0.78	1.16	0.76	450	624	539.4	8	2	5	299
	650	240	240	80	6	6	4120	8270	280	350	370680D/HCYAD1	0.87	0.78	1.16	0.76	455	624	539.4	8	5	5	300

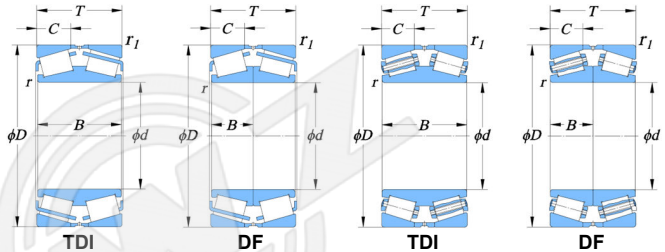
d 400～460mm

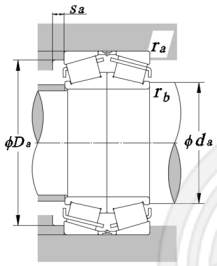




Principal dimensions(mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations	Factor				Abutment and fillet dimensions(mm)						Mass(kg) (approx.)
d	*D*	*T*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}	Grease	Oil		*e*	Y_1	Y_2	Y_o	d_{amax}	D_{amax}	D_{amin}	S_{amin}	r_{amax}	r_{bmax}	
400	650	240	240	80	6	6	4120	8270	280	350	370680D/HCYAD-1	0.87	0.78	1.16	0.76	450	624	539.4	8	5	5	299
	650	240	240	80	6	6	4120	8270	280	350	370680D/HCYADT	0.87	0.78	1.16	0.76	455	624	539.4	8	5	5	300
	650	240	240	80	6.4	6.4	4170	8210	280	350	370680D/HCYATB	0.87	0.78	1.16	0.76	454	621	539.4	8	6.4	6.4	290
	650	240	240	80	6.4	6.4	4170	8210	280	350	370680D/HCYATB1	0.87	0.78	1.16	0.76	454	621	539.4	8	6.4	6.4	290
	650	240	240	80	6.4	6.4	4170	8210	280	350	370680D/HCYATB3	0.87	0.78	1.16	0.76	454	621	539.4	8	6.4	6.4	290
	650	240	240	80	6.4	6.4	4170	8210	280	350	370680D/YAB-2	0.87	0.78	1.16	0.76	454	621	539.4	8	6.4	6.4	289
	650	240	240	80	6.4	6.4	4170	8210	280	350	370680D/YATB2	0.87	0.78	1.16	0.76	454	621	539.4	8	6.4	6.4	290
	650	240	240	80	6.4	6.4	4170	8210	280	350	370680X2D/HCYATB	0.87	0.78	1.16	0.76	454	627.6	539.4	8	6.4	6.4	290
	650	240	240	90	6.4	6.4	3950	7740	280	350	370680D/HCRYAT1	0.87	0.78	1.16	0.76	451	621	532.4	8	6.4	6.4	288
	780	380	380	135	5	6	8030	14800	230	300	370680/HC-3	0.70	0.97	1.44	0.94	485	754	610.4	8	4	5	854
	780	380	380	135	5	6	8030	14800	230	300	370680X3/HBCR	0.70	0.97	1.44	0.94	485	754	610.4	10	4	5	856
	780	380	380	135	5	6	8030	14800	230	300	370680X3/YAB	0.70	0.97	1.44	0.94	485	754	610.4	10	4	5	856
	780	380	380	155	7.5	7.5	9560	17900	230	300	370680X3/HCYAD	0.38	1.78	2.65	1.74	502	747	646.4	10	6	6	883
406.4	762	330	330	116.5	3.3	6.4	6400	12700	240	300	3706/406.4/HCYAD	0.75	0.90	1.34	0.88	495	729	603.4	2	3.3	6.4	660
	762	330	330	116.5	3.3	6.4	6400	12700	240	300	3706/406.4D/HC	0.75	0.90	1.34	0.88	495	729	603.4	2	3.3	6.4	659
410	580	160	160	55	7	4	2290	5140	300	380	370682/HCYA3	0.87	0.78	1.16	0.76	445	559	506	6	5.5	3	133
420	560	145	145	55	4	4	2130	5160	300	380	371984/HC	0.55	1.24	1.84	1.21	454	540	506	7	3	3	99.0
	690	290	290	108	3	6	5550	11700	260	320	370684/HC-1	0.58	1.17	1.75	1.15	484	662	575.9	6	2.5	5	439
	700	224	224	86	6	5	5070	9480	250	320	373184	0.32	2.12	3.15	2.07	497	677	613.8	8	5	4	382
	700	224	224	86	6	5	5070	9480	250	320	373184/HC	0.32	2.12	3.15	2.07	497	677	613.8	8	5	4	382
	700	224	224	86	6	5	5020	9220	250	320	373184A/HC	0.43	1.57	2.34	1.53	494	677	610.4	12	5	4	358
	720	300	300	113	6	6	6250	12700	250	310	370684X3-HC	0.70	0.97	1.44	0.94	483	694	583.4	10	5	5	531
	740	330	330	135	3	6	7880	15900	240	300	370684/HC	0.29	2.32	3.45	2.26	502	714	627.4	7	2.5	5	642
425	600	160	160	55	2	2	1970	4100	280	360	3706/425D/HCEYAD	0.87	0.78	1.16	0.76	468	582	519.4	9	2	2	127
431.902	685.698	254	253.873	106	3.5	8	5300	10500	250	320	3706/431X4/HC	0.33	2.03	3.02	1.98	495	658.2	602.6	9	3	8	358
	685.698	254	253.873	106	3.5	0.8	5270	10400	250	320	3706/431X4/HCRG2	0.33	2.03	3.02	1.98	495	658.2	602.6	9	3	0.8	358
	685.698	254	254	106	3.3	6.4	5300	10500	250	320	3706/431X4	0.33	2.03	3.02	1.98	495	661.4	602.6	9	3.3	6.4	358
	685.698	254	254	106	3.3	6.4	5300	10500	250	320	3706/431X4/HCEYAD	0.33	2.03	3.02	1.98	495	661.4	602.6	9	3.3	6.4	358
440	720	283	283	103	6	6	5960	11800	240	300	371188X2/HC	0.56	1.20	1.79	1.18	502	694	610.4	18	5	5	464
	750	300	150	105	5	5	6320	12400	230	290	30688/HCDF	0.47	1.44	2.14	1.40	518	726	634.4	12	4	4	559
	820	360	360	135	4	7.5	8570	16900	210	270	370688/HC	0.58	1.17	1.75	1.15	532	787	661.4	9	3	6	892
450	702(680)	180	180	58	2.5	6	3080	6030	240	47	370690X3/HC+M370690	0.87	0.78	1.16	0.76	503	654	585.4	4	2.5	5	251
	850	390	390	144	3	8	9820	18700	200	260	370690/HC	0.61	1.11	1.66	1.09	538	822	684.4	18	2.5	8	1040
460	650	184	184	64	2	5	2830	6390	260	320	370692D/HCYAT	0.83	0.81	1.21	0.79	491	628.6	560	6	2	4	177
	655	184	212	63	2.5	5	3220	7470	250	320	370692/HC	0.79	0.86	1.27	0.84	490	631	570	6	2.5	4	209
	655	184	212	66	2.5	6	2840	6630	250	320	370692/HCE	0.87	0.78	1.16	0.76	490	629	564.4	3	2.5	5	215
	680	180	180	63	2.5	6	3190	6560	250	310	371092X2	0.80	0.85	1.26	0.83	509	654	588	5	2.5	5	219
	680	180	180	63	2.5	6	3190	6560	250	310	371092X2/HCYA3	0.80	0.85	1.26	0.83	509	654	588	5	2.5	5	219
	680	180	180	63	2.5	6	3190	6560	250	310	371092X2D/HG2	0.80	0.85	1.26	0.83	509	654	588	5	2.5	5	206
	680	230	230	85	4	4	4260	9380	250	310	371092	0.61	1.11	1.66	1.09	505	659	586.8	7	3	3	293

d 460～500mm

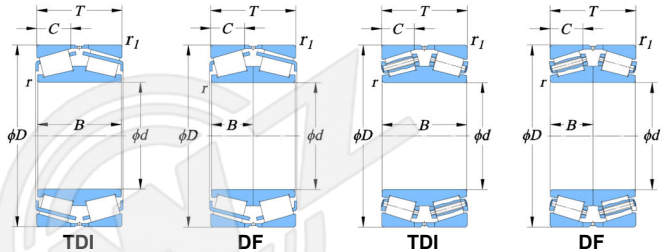


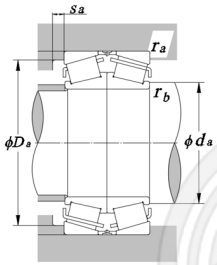


d	D	T	B	C	r_{min}	r_{1min}	Basic load ratings (kN) C_r	C_{or}	Limiting speeds (r/min) Grease	Oil
460	680	230	230	85	4	4	4260	9380	250	310
	680	230	230	85	4	4	4260	9380	250	310
	800	340	170	130	5	7.5	7860	15300	210	270
	860	380	340	150	2.5	7.5	9220	17500	200	250
	860	420	210	155	7.5	7.5	9980	19600	200	250
	860	420	380	162	2.5	5	9790	20300	200	250
	860	420	380	162	3	7.5	9790	20300	200	250
	860	420	380	162	6	5	9790	20300	200	250
	860	420	380	162	6	5	9790	20300	200	250
	860	420	380	162	3	7.5	9790	20300	200	250
	910	420	420	165	6	6	11400	22400	190	240
	950	480	225	180	6	9.5	11800	24300	180	230
	950	480	450	180	6	5	12800	24800	180	230
465	845	410	205	155	7.5	7.5	10200	19600	200	260
470	720	216	216	76	6	6	4160	9040	230	290
480	770	320	320	124	4	7.5	6990	15500	220	270
	820	340	340	126	2.5	5	8320	16700	200	260
	820	340	340	126	2.5	5	8320	16700	200	260
	890	390	390	145	5	7.5	10400	19700	190	240
	950	430	400	160	5	7.5	11600	21500	180	220
	950	440	220	160	9.5	9.5	11600	21500	180	220
	950	440	400	165	5	7.5	11600	21500	180	220
	950	440	440	160	9.5	9.5	11600	21500	180	220
	950	480	225	165	5.5	5	12500	22900	180	220
	950	480	450	180	4	7.5	12000	24500	180	220
	950	480	450	180	4	7.5	12000	24500	180	220
	950	480	450	180	6.5	7.5	12000	24500	180	220
	950	480	450	180	4	7.5	12000	24500	180	220
	950	480	450	180	4	7.5	12000	24500	180	220
	950	500	500	185	9	9	12700	25500	180	220
	950	500	500	185	9	9	12700	25500	180	220
	950	500	500	185	9	9	12700	25500	180	220
482	655	170	160	70	4	4	3060	6920	250	310
482.6	733.425	190	190	63.5	3.3	3.3	3420	8030	230	290
	733.425	190	190	63.5	3.3	3.3	3420	8030	230	290
	733.425	199.263	200	65	3.3	4	3430	7130	230	290
	733.425	199.263	200	65	3.3	4	3430	7130	230	290
	733.425	199.263	200	65	3.3	4	3430	7130	230	290
	733.425	199.263	200	65	3.3	4	3430	7130	230	290
500	670	173	173	67	5	5	3190	7490	240	300

Designations	Factor e	Y_1	Y_2	Y_o	Abutment and fillet dimensions(mm) d_{amax}	D_{amax}	D_{amin}	S_{amin}	r_{asmax}	r_{bmax}	Mass(kg) (approx.)
371092/HC	0.61	1.11	1.66	1.09	505	659	586.8	7	3	3	293
371092/HCE	0.61	1.11	1.66	1.09	505	659	586.8	7	3	3	292
30692/HCDFYB2	0.61	1.11	1.66	1.09	536	767	662.4	10	4	6	724
370692X2/HC	0.58	1.16	1.73	1.13	547	827	687.9	7	2.5	6	1020
30692-1/HCDF	0.57	1.18	1.76	1.16	557	827	694.6	7	6	6	1110
370692/HC-1	0.68	0.99	1.48	0.97	545	836	667.9	7	2.5	4	1130
370692/HCYAD-1	0.68	0.99	1.48	0.97	545	827	667.9	7	2.5	6	1130
370692-1/HCYA6	0.68	0.99	1.48	0.97	545	836	667.9	7	5	4	1130
370692-1/YA6	0.68	0.99	1.48	0.97	545	836	667.9	7	5	4	1130
370692-2/HCYAD	0.68	0.99	1.48	0.97	545	827	667.9	7	2.5	6	1130
370692X1/HC	0.48	1.4	2.09	1.37	576	884	727.4	7	5	5	1330
30692X3/HCDFYAB	0.47	1.43	2.12	1.40	596	912	737.4	7	5	8	1690
370692/HCYAD	0.70	0.97	1.44	0.94	568	926	716.9	7	5	4	1670
30693/DF	0.42	1.62	2.42	1.59	558	812	707.6	8	6	6	1020
370694/HCYAD	0.83	0.81	1.21	0.79	523	694	604.8	8	5	5	324
370696X3-2/HCE	0.47	1.43	2.14	1.40	548	737	650.4	9	3	6	600
370696X3/HBCR	0.58	1.17	1.75	1.15	555	797	679.4	10	2.5	4	754
370696X3/HC	0.58	1.17	1.75	1.15	555	797	679.4	10	2.5	4	754
370696X3-1/HC	0.60	1.13	1.68	1.11	572	857	719.4	8	4	6	1130
370696X2/HCE	0.58	1.17	1.75	1.15	593	917	759.6	10	4	6	1430
30696/HCDF	0.58	1.17	1.75	1.15	593	912	759.6	10	8	8	1470
370696X2/HCE-1	0.58	1.17	1.75	1.15	593	917	761.6	10	4	6	1450
370696X2/HCYB2	0.58	1.17	1.75	1.15	593	917	759.6	10	8	8	1470
30696X2/HCEDF	0.54	1.26	1.87	1.23	582	926	762.4	15	4.5	4	1610
370696/HCEYB2	0.73	0.92	1.37	0.90	583	917	716.1	10	3	6	1640
370696/HCEYB2-1	0.73	0.92	1.37	0.90	583	917	716.1	10	3	6	1640
370696/HCYAB	0.73	0.92	1.37	0.90	583	917	716.1	10	5	6	1640
370696/HCYB2-1	0.73	0.92	1.37	0.90	583	917	716.1	10	3	6	1640
370696/YB2	0.73	0.92	1.37	0.90	583	917	716.1	10	3	6	1640
370696/HCYB2-2	0.70	0.97	1.44	0.94	582	923	721.6	10	9	9	1720
370696/HCFYB4	0.70	0.97	1.44	0.94	582	923	721.6	10	9	9	1720
370696/HCFIYB4	0.70	0.97	1.44	0.94	582	923	721.6	10	9	9	1720
3706/482D/HC	0.47	1.44	2.14	1.4	518	634	593.4	10	3	3	157
3706/482.6D/HCRYAB	0.87	0.78	1.16	0.76	568	713.8	642.4	10	3.3	3.3	289
3706/482.6D/HCYAB	0.87	0.78	1.16	0.76	568	713.8	642.4	10	3.3	3.3	289
3706/482.6/HC	0.78	0.86	1.29	0.85	560	714	635.2	10	3.3	3	285
3706/482.6/HCYAD1	0.78	0.86	1.29	0.85	460	714	635.2	10	3.3	3	305
3706/482.6/HCRYAD1	0.78	0.86	1.29	0.85	560	714	635.2	10	3.3	3	303
3706/482.6/HCYAD	0.78	0.86	1.29	0.85	560	714	635.2	10	3.3	3	305
3719/500	0.42	1.62	2.42	1.59	540	647	613	11	4	4	175

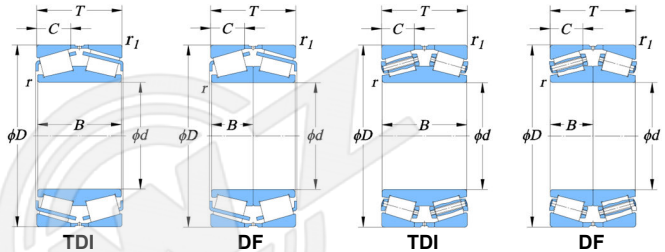
d 500～560mm

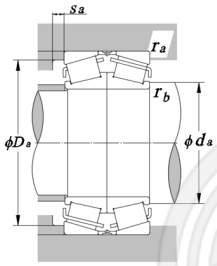




Principal dimensions(mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations	Factor				Abutment and fillet dimensions(mm)						Mass (kg)
d	*D*	*T*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}	Grease	Oil		*e*	Y_1	Y_2	Y_o	d_{amax}	D_{amax}	D_{amin}	S_{amin}	r_{amax}	r_{bmax}	(approx.)
500	720	218	185	80	6	6	3350	7530	220	280	3706/500-1	0.70	0.97	1.44	0.94	552	692	619.4	11	5	5	288
	720	218	185	90	1	4	4380	9480	220	280	3706/500-2/HC	0.40	1.68	2.50	1.64	552	699	643.4	11	1	3	275
	730	280	280	120	3.2	6	6380	14400	220	280	3706/500-3	0.31	2.18	3.24	2.13	554	704	656.4	11	3.2	5	403
501.65	711.2	250.825	250.825	106.363	3.2	6.4	5600	13500	230	290	3706/500/HC	0.35	1.92	2.86	1.88	548	687	636.7	11	3.2	6.4	321
508	762	219.075	219.075	75	6.4	6.4	4490	9230	210	270	3706/508/HC	0.73	0.92	1.37	0.90	570	737.8	664.8	11	6.4	6.4	343
509.948	733.425	199.263	200.025	68	3.3	4.8	3440	7930	220	280	3706/509X4D/HCYAT-1	0.87	0.78	1.16	0.76	566	711.8	642.1	11	3.3	4.8	263
	733.425	200.025	200.025	68	3.3	4.8	3440	7930	220	280	3706/509X4D/HCYAT	0.87	0.78	1.16	0.76	566	711.8	641.7	11	3.3	4.8	265
509.998	733.5	200.02	200.02	68	3.3	4.8	3440	7930	220	280	3706/509X4D/HCYA3	0.87	0.78	1.16	0.76	566	711.9	641.7	11	3.3	4.8	265
510	733.5	200	200	68	3.3	5	3440	7930	220	280	3706/510/HG2CRYAB1	0.87	0.78	1.16	0.76	566	709.5	641.7	11	3.3	4	277
	733.5	200	200	68	3.3	3.3	3440	7930	220	280	3706/510D/HCYAB	0.87	0.78	1.16	0.76	566	714.9	641.7	11	3.3	3.3	265
	733.5	200.025	200.025	68	3.3	4.8	3440	7930	220	280	3706/510X2D/HCEYAB	0.87	0.78	1.16	0.76	566	711.9	647.4	11	3.3	4.8	265
	800	285	285	100	5	10	5660	12600	200	260	3706/510X3D/HCRYADT	0.87	0.78	1.16	0.76	557	768	654.4	11	4	10	522
	880	350	175	121	7.5	7.5	9230	17700	180	230	306/510/HCDF	0.47	1.44	2.14	1.40	596	847	747.4	13	6	6	914
	950	440	440	165	7.5	7.5	12300	23800	170	220	3706/510X3/HC	0.59	1.14	1.70	1.12	604	917	768	11	6	6	1420
	950	440	440	165	7.5	7.5	12300	23800	170	220	3706/510X3/HCYA10	0.59	1.14	1.70	1.12	604	917	768	11	6	6	1430
510.13	800	285	285	100	5	8	5720	12800	200	260	332171	0.88	0.76	1.14	0.75	565	766	654.3	11	4	8	532
	800	285	285	100	5	10	5720	12800	200	260	3706/510X4D/HCYA3	0.88	0.76	1.14	0.75	565	762	654.3	11	4	10	532
	800	285	285	100	5	10	5720	12800	200	260	3706/510X4D/HCYA31	0.88	0.76	1.14	0.75	565	762	654.3	11	4	10	532
520	715	180	180	63	2	5	3130	7170	220	280	3706/520X3/HCYA3	0.80	0.85	1.26	0.83	561	692	631.4	5	2	4	209
530	710	190	190	65	5	5	2850	7400	220	280	3719/530	0.73	0.92	1.37	0.90	572	687	631.2	8	4	4	212
	730	250	250	104	6	6	5430	13400	210	270	3706/530	0.34	2.00	2.97	1.95	574	704	662.8	8	5	5	323
	730	250	250	104	6	6	5430	13400	210	270	3706/530/HC	0.34	2.00	2.97	1.95	574	704	662.8	8	5	5	323
	730	250	250	104	6	6	5540	13300	210	270	3706/530/HC-1	0.34	2.00	2.97	1.95	572	704	662.8	4	5	5	318
	760	255	255	96	5	6	5220	12800	210	260	3706/530X3/HC-2	0.67	1.01	1.50	0.99	576	734	656.4	7	4	5	385
	760	255	255	96	5	6	5220	12800	210	260	3706/530X3/HCR-2	0.67	1.01	1.50	0.99	576	734	656.4	7	4	5	385
	940	390	390	160	3	3	11700	24300	170	210	3706/530X3/HC	0.42	1.60	2.38	1.57	636	921	787.4	5	2.5	2.5	1220
	940	390	390	160	4	6	11400	23500	170	210	3706/530X3/HC-1	0.42	1.60	2.38	1.57	636	914	787.4	17	3	5	1220
540	860	256	256	92	7.5	7.5	5940	12400	180	230	3706/540/HC	0.70	0.97	1.44	0.94	619	827	728.4	9	6	6	581
550	920	330	330	107	10	10	7860	16100	170	210	3706/550/HCYAD	0.87	0.78	1.16	0.76	612	882	748.9	8	10	10	902
560	750	200	200	80	2	5	4000	10700	200	260	3706/560/YAB	0.67	1.01	1.50	0.99	608	727	674	8	2	4	255
	750	200	225	78	6	5	3940	9670	200	260	3706/560	0.43	1.57	2.34	1.53	598	727	682.5	8	5	4	254
	780	230	230	85	2	6	4690	12100	190	250	3706/560/YAD	0.67	1.01	1.50	0.99	604	754	678.8	10	2	5	350
	820	242	242	81	6	6	4570	10600	190	240	3706/560X31/HC	0.88	0.77	1.14	0.75	602	794	690.4	10	5	5	435
	820	242	242	81	6	6	4570	10600	190	240	3706/560X31/HCYAB	0.88	0.77	1.14	0.75	602	794	690.4	10	5	5	435
	820	242	242	81	3	6	4570	10600	190	240	3706/560X31/HCRYAD	0.88	0.77	1.14	0.75	602	794	690.4	10	2.5	5	435
	820	242	242	81	3	6	4570	10600	190	240	3706/560X31/HCYAD	0.88	0.77	1.14	0.75	602	794	690.4	10	2.5	5	435
	820	242	242	81	6	6	4570	10600	190	240	3706/560X31/HG2CRYAB	0.88	0.77	1.14	0.75	602	794	690.4	10	5	5	431
	890	350	350	135	4	9.5	9180	20300	170	220	3706/560X33/HC	0.59	1.14	1.70	1.12	625	852	748.4	13	3	8	876
	920	350	350	131	4	9.5	9310	19200	170	210	3706/560X33/HC-1	0.61	1.11	1.66	1.09	634	882	773.4	13	3	8	953
	1000	450	450	190	9.5	6	14000	29700	150	190	3706/560/HC	0.42	1.59	2.37	1.55	670	974	831.4	13	8	5	1620

d 560～635mm

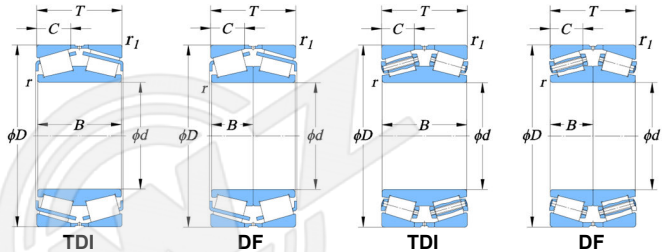


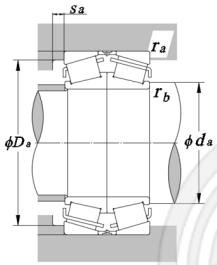


d	D	Principal dimensions(mm) T	B	C	r min	r1 min	Basic load ratings(kN) Cr	Cor	Limiting speeds (r/min) Grease	Oil
560	1080	470	470	175	9.5	9.5	14500	28200	140	180
	1080	470	470	175	11.5	11.5	14500	28200	140	180
	1080	530	530	200	9.5	9.5	15700	32000	140	180
570	750	240	240	100	6	6	4170	11500	200	250
580	830	280	280	115	3	6	7030	16800	180	230
	900	348.8	348.8	123	3.3	6.4	7580	17900	170	210
	990	390	195	145	7.5	7.5	11700	24000	150	190
600	800	160	160	57	2	4	3260	7360	180	230
	800	160	160	57	2	4	3260	7360	180	230
	800	190	190	68	5	4	3800	9170	180	230
	800	190	190	68	5	4	3800	9170	180	230
	800	190	190	68	2	4	3800	9170	180	230
	800	190	190	68	5	4	3800	9170	180	230
	870	270	270	98	6	6	6240	14500	170	210
	870	270	270	98	6	6	6240	14500	170	210
	870	270	270	98	6	6	6240	14500	170	210
	955	330	330	91.808	3.3	12	6850	13700	150	190
	1170	510	510	176	5	7.5	16800	31900	120	150
	1200	480	480	168	5	7.5	16900	30800	120	150
	1200	480	480	168	5	7.5	16900	30800	120	150
	1200	620	310	225	5	7.5	21100	42000	120	150
600.5	819	172	172	66	2	2	3700	8480	180	230
620	1030	370	370	148	15	10	11700	23600	140	170
630	1030	400	400	143	3.3	6.4	11100	23400	140	170
	1030	400	400	143	3.3	6.4	11100	23400	140	170
635	939.8	304.8	304.8	107.95	3.2	6.4	6810	16700	150	190
	939.8	304.8	304.8	107.95	3.3	6.4	6810	16700	150	190
	939.8	304.8	304.8	110	3.3	6.4	7140	17000	150	190
	939.8	304.8	304.8	110	7.5	6.4	7140	17000	150	190
	939.8	304.8	304.8	110	3.3	6.4	7140	17000	150	190
	939.8	304.8	304.8	110	7.5	6.4	7140	17000	150	190
	939.8	304.8	304.8	110	7.5	6.4	7140	17000	150	190
	939.8	304.8	304.8	110	7.5	6.4	7140	17000	150	190
	939.8	304.8	304.8	110	3.3	6.4	7140	17000	150	190
	939.8	304.8	304.8	110	7.5	6.4	7140	17000	150	190
	939.8	304.8	304.8	110	7.5	6.4	7140	17000	150	190
	939.8	304.8	304.8	110	3.3	6.4	7140	17000	150	190
	939.8	304.8	305.105	110	3.3	6.4	7140	17000	150	190
	939.8	305	305	107.95	3.3	6.4	6810	16700	150	190

Designations	e	Factor Y1	Y2	Yo	Abutment and fillet dimensions(mm) damax	Damax	Damin	Samin	ramax	rbmax	Mass(kg) (approx.)
3706/560X3/HC	0.59	1.14	1.70	1.12	680	1047	863.4	12	8	8	2010
3706/560X3/HCEYAB	0.59	1.14	1.70	1.12	680	1047	863.4	12	11.5	11.5	2020
3706/560X32/HCE	0.65	1.03	1.54	1.01	670	1047	838.4	13	8	8	2310
3706/570/HC	0.50	1.36	2.02	1.33	607	724	671.5	13	5	5	287
3706/580/HCEYB2	0.31	2.17	3.24	2.12	645	804	744.4	14	2.5	5	546
3706/580X3D/HCYADT	0.87	0.78	1.16	0.76	630	875.8	730.4	14	3.3	6.4	798
306/580/HCDFYB2	0.33	2.03	3.02	1.98	690	957	853.4	14	6	6	1300
3719/600X3/HCYAB	0.61	1.11	1.66	1.09	660	779	740.2	14	2	3	251
3719/600X3/HCRYAB	0.61	1.11	1.66	1.09	660	779	740.2	14	2	3	251
3719/600X2	0.61	1.11	1.66	1.09	643	777	721.7	14	4	3	270
3719/600X2/HCYB2	0.61	1.11	1.66	1.09	643	779	721.7	14	4	3	270
3719/600X2/HCRYAB	0.61	1.11	1.66	1.09	643	779	721.7	14	2	3	270
3719-600X2-HCEYB2	0.61	1.11	1.66	1.09	643	779	721.7	14	4	3	270
3710/600	0.61	1.11	1.66	1.09	656	844	756.8	14	5	5	544
3710/600/HCEYB2	0.61	1.11	1.66	1.09	656	844	756.8	14	5	5	544
3710/600/HCYB2	0.61	1.11	1.66	1.09	656	844	756.8	14	5	5	544
3706/600D/HCYATYAD	0.94	0.72	1.07	0.70	670	921	793.4	14	3.3	10	798
3706/600X3/HCE	0.59	1.14	1.70	1.12	736	1137	943.4	21	4	6	2640
3706/600/HC	0.59	1.14	1.70	1.12	753	1171	972.4	28	4	6	2660
3706/600/HCE	0.59	1.14	1.70	1.12	753	1167	972.4	19	4	6	2610
306/600/HCDF	0.54	1.26	1.87	1.23	745	1167	950.4	21	4	6	3470
3706/600.5/HCYA6	0.61	1.11	1.66	1.09	656	803	738.8	8	2	2	265
3706/620/HC	0.32	2.12	3.15	2.07	725	998	894.9	8	12	10	1270
3706/630	0.75	0.90	1.34	0.88	700	1000.2	845.4	8	3.3	6.4	1330
3706/630/HCR	0.75	0.90	1.34	0.88	700	1000.2	845.4	8	3.3	6.4	1330
3706/635	0.88	0.77	1.14	0.75	698	909	784.4	8	3.2	6.4	762
3706/635D/HC1	0.88	0.77	1.14	0.75	698	909	784.4	3	3.3	6.4	731
3706/635/HC	0.83	0.82	1.22	0.80	703	915.6	794.4	3	3.3	6.4	712
3706/635/HC-CD	0.83	0.82	1.22	0.80	687	915.6	794.4	3	6	6.4	721
3706/635/HCER-2	0.83	0.82	1.22	0.80	703	915.6	794.4	3	3.3	6.4	719
3706/635/HCEYA6	0.83	0.82	1.22	0.80	703	915.6	794.4	3	6	6.4	712
3706/635/HCEYA6-1	0.83	0.82	1.22	0.80	703	915.6	794.4	3	6	6.4	712
3706/635/HCYA3	0.83	0.82	1.22	0.80	703	915.6	794.4	3	6	6.4	712
3706/635/HCR	0.83	0.82	1.22	0.80	705	915.6	794.4	3	3.3	6.4	721
3706/635/HCRYA2	0.83	0.82	1.22	0.80	703	915.6	794.4	3	6	6.4	712
3706/635/HCRYA6	0.83	0.82	1.22	0.80	705	915.6	794.4	3	6	6.4	721
3706/635D/HCER-2	0.83	0.82	1.22	0.80	703	915.6	794.4	3	3.3	6.4	695
3706/635D/HCR-2	0.83	0.82	1.22	0.80	703	915.6	794.4	3	3.3	6.4	695
3706/635D/HC	0.83	0.82	1.22	0.80	705	915.6	794.4	3	3.3	6.4	697
3706/635D/HCER-1	0.88	0.77	1.14	0.75	698	909	784.4	3	3.3	6.4	731

d 635～900mm





Principal dimensions(mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations	Factor				Abutment and fillet dimensions(mm)						Mass(kg) (approx.)
d	*D*	*T*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}	Grease	Oil		*e*	Y_1	Y_2	Y_0	d_{amax}	D_{amax}	D_{amin}	S_{amin}	r_{amax}	r_{bmax}	
635	940	305	305	107.95	3.3	6.4	6810	16700	150	190	**3706/635/HC-1**	0.88	0.77	1.14	0.75	698	909.2	784.4	3	3.3	6.4	762
650	1260	550	550	200	10	10	19600	37600	98	130	**3706/650/HCE**	0.59	1.14	1.70	1.12	796	1226	1016	21	10	10	3280
670	980	230	230	78	7.5	9.5	5810	12400	140	170	**3706/670/HCYA3**	0.70	0.97	1.44	0.94	744	943	864.2	6	6	8	576
685.8	939.8	227.81	234.8	80	3.3	6.4	4860	11700	140	180	**3706/685.8D/HCYAB**	0.87	0.78	1.16	0.76	730	915.6	823.4	7	3.3	6.4	444
	939.8	228.6	234.95	82.55	6.4	6.4	4860	11700	140	180	**3706/685.8D/HCYADT**	0.87	0.78	1.16	0.76	730	915.6	823	7	6.4	6.4	447
690	980	355	355	152	6.5	6.5	10100	25100	130	170	**3706/690/HCYB2**	0.35	1.95	2.90	1.91	756	953	875.1	11	5	5	880
	980	355	355	152	6.5	6.5	10100	25100	130	170	**3706/690/HCEYB2**	0.35	1.95	2.90	1.91	756	953	875.1	11	5	5	880
700	950	250	250	91	2	6	5910	15500	140	170	**3706/700**	0.70	0.97	1.44	0.94	749	924	837	11	2	5	524
	980	280	280	102.5	2	6	7110	18400	130	170	**3706/700/YAD**	0.70	0.97	1.44	0.94	755	954	851.6	10	2	5	666
710	900	197	197	79	3	6	5030	13700	140	180	**3706/710/HC**	0.35	1.91	2.85	1.87	755	874	839.3	11	2.5	5	314
	900	197	197	79	3	6	4700	12600	140	180	**3706/710/HC/YAD1**	0.35	1.91	2.85	1.87	758	874	839.3	11	2.5	5	309
	900	197	197	79	3	6	5030	13700	140	180	**3706/710/HCEYAD**	0.35	1.91	2.85	1.87	755	874	839.3	11	2.5	5	313
	900	197	197	79	3	6	5030	13700	140	180	**3706/710/HCYAD**	0.35	1.91	2.85	1.87	755	874	839.3	11	2.5	5	313
724	915	187	187	70	5	5	3960	11200	140	180	**3706/724/HC**	0.38	1.77	2.64	1.73	775	892	848.6	9	4	4	293
	915	187	187	70	5	5	3960	11200	140	180	**3706/724/HCR**	0.38	1.77	2.64	1.73	775	892	847.2	9	4	4	293
800	1100	300	300	112	1.5	6	7690	20700	99	130	**3706/800/HC**	0.79	0.85	1.27	0.84	851	1072	959.4	5	1.5	5	862
	1100	300	300	112	1.5	6	7690	20700	99	130	**3706/800/HC-1**	0.79	0.85	1.27	0.84	851	1072	959.4	5	1.5	5	863
	1100	300	300	112	1.5	6	7690	20700	99	130	**3706/800D**	0.79	0.85	1.27	0.84	851	1072	959.4	5	1.5	5	838
900	1220	300	300	108	3.3	12.7	8310	22400	-	-	**3706/900/HCYA6**	0.81	0.83	1.23	0.81	965	1180.6	1067.4	8	3.3	12.7	997
	1220	300	300	108	4	11	8310	22400	-	-	**3706/900/HCYAD**	0.81	0.83	1.23	0.81	965	1188	1067.4	8	3	11	997

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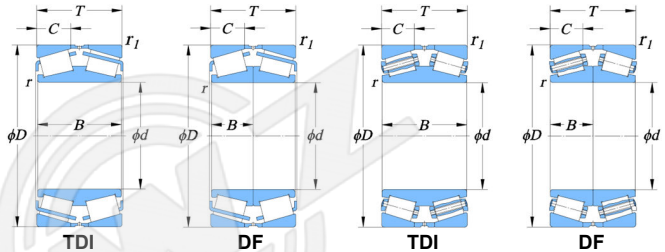
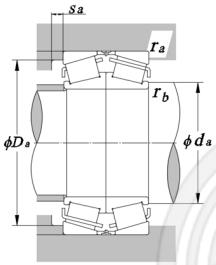
d 34.925～260.35mm



Pressed cage　　Machined cage

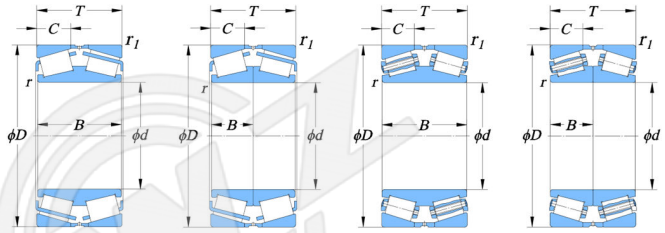


Principal dimensions(mm)							Basic load ratings (kN)		Limiting speeds (r/min)	
d	*D*	*T*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}	Grease	Oil
34.925	65.088	36.068	18.288	13.97	0.7	1.3	92.0	119	4400	5600
63.5	112.712	60.452	30.048	23.812	0.6	3.3	219	346	2500	3200
72.072	120	69.04	67.539	24.237	0.8	2	255	382	2300	3000
76.2	171.45	98.424	46.038	31.75	0.8	3.3	498	643	1800	2300
85	130	60	29	24	0.6	2.5	271	460	2100	2600
	150	92	46	38	0.6	2.5	489	740	1900	2400
	150	92	46	38	0.6	2.5	489	740	1900	2400
90	147	80	40	32.5	0.5	3.5	432	687	1900	2400
100.211	168.275	95.25	95.25	30.162	0.8	3.3	430	706	1600	2100
101.6	214.312	111.124	52.388	39.688	0.7	3.3	735	1100	1400	1700
127	182.562	76.2	76.2	33.338	1.5	3.3	430	862	1400	1800
133.35	196.85	92.075	92.075	38.1	1.5	3.3	598	1130	1300	1700
	196.85	92.075	92.075	38.1	1.5	3.3	598	1130	1300	1700
136.525	215.9	123.825	123.825	34.925	1.5	3.3	610	1020	1200	1500
139.7	200.025	77.788	75.408	34.13	0.8	3.3	472	1030	1300	1600
147.638	241.3	133.35	132.334	44.45	1.5	3.3	766	1390	1100	1400
150	210	64	30	23	1.1	3	376	700	1200	1500
152.4	298.45	107.95	111.125	44.45	3.3	3.3	1180	1690	860	1100
161	231.775	84.138	90.488	34.925	1.5	3.3	647	1230	1100	1300
177.8	247.65	90.488	90.488	38.1	1.5	3.3	661	1520	920	1200
180.975	288.925	158.75	158.75	47.625	1.5	3.3	1040	1920	820	1100
187.325	319.964	168.275	161.925	65.088	3.3	4.8	1750	2820	740	940
190.5	266.7	90.488	89.695	38.1	1.5	3.3	678	1520	850	1100
199.975	317.5	133.35	133.35	46.038	6.4	3.3	1140	2270	720	920
203.2	317.5	123.825	123.825	46.038	1.5	3.3	1140	2270	720	910
	317.5	123.825	123.825	46.038	1.5	3.3	1140	2270	720	910
	317.5	133.35	133.35	46.038	6.4	3.3	1140	2270	720	910
215.9	355.6	127	130.175	47.625	6.4	3.3	1220	2570	630	810
220.662	314.325	115.886	115.888	49.213	1.5	3.3	1100	2320	690	880
	314.325	115.886	115.888	49.213	1.5	3.3	1100	2320	690	880
231.775	317.5	95.25	52.388	36.512	0.8	3.3	918	1850	670	850
234.95	327.025	93.662	93.662	36.512	1.5	3.3	897	1910	650	830
	384.175	209.55	209.55	90.488	1.5	6.4	2550	5060	570	720
241.224	355.6	107.95	107.95	44.45	1.5	3.3	1180	2400	600	760
247.65	406.4	215.9	219.075	93.662	3.3	6.4	2870	5600	530	670
254	358.775	130.175	130.175	53.975	3.3	3.3	1430	3090	580	730
	438.15	165.1	165	63.5	3.3	6.4	2340	3930	490	630
	438.15	165.1	165	63.5	3.3	6.4	2340	3930	490	630
	444.5	133.35	133.35	50.8	3.3	6.4	2290	3620	490	620
260.35	406.4	155.575	152.4	66.675	6.4	3.3	1790	3540	520	660

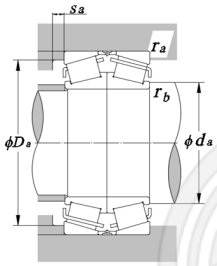
Designations	Factor				Abutment and fillet dimensions(mm)						Mass(kg) (approx.)
	e	Y_1	Y_2	Y_o	d_{max}	D_{amax}	D_{amin}	S_{amin}	r_{amax}	r_{bmax}	
KLM48548/KLM48510/DF	0.38	1.79	2.67	1.75	44	58.3	56.6	3	0.7	1.3	0.546
K3982/K3920YA4/DF	0.40	1.68	2.50	1.64	78	102.8	95.8	4	0.6	3.3	2.57
K487TD/K472/YA10	0.38	1.75	2.61	1.72	83	112.7	102.8	2	0.8	2	2.84
K9380/K9321/DF	0.76	0.88	1.31	0.86	102	161.1	134	3	0.8	3.3	10.3
KJM716649/KJM716610/DF	0.44	1.52	2.26	1.49	95	120	114.3	4	0.6	2.5	2.89
KJH217249/KJH217210/DF	0.33	2.03	3.02	1.98	99	140	129.8	5	0.6	2.5	6.89
JH217249/JH217210/DF	0.33	2.03	3.02	1.98	99	140	129.8	5	0.6	2.5	6.87
KHM218248/KHM218210/DF	0.33	2.03	3.02	1.98	102	136.7	129.8	5	0.5	3	5.19
K688TD/K672	0.47	1.43	2.14	1.40	116	158.3	141	3	0.8	3.3	8.29
KH924033/KH924010/DF	0.67	1.00	1.49	0.98	135	204	171.6	2	0.7	3.3	18.3
K48290DW/K48220	0.31	2.21	3.29	2.16	141	172.2	164.5	2	1.5	3.3	6.38
K67390D/K67322	0.34	1.96	2.92	1.92	148	186.5	176.6	4	1.5	3.3	9.68
K67390TD/K67322	0.34	1.96	2.92	1.92	148	186.5	176.6	4	1.5	3.3	9.66
K74539TD/K74850	0.32	2.12	3.15	2.07	158	205.6	193.4	3	1.5	3.3	9.90
K48680D/K48620	0.34	2.01	2.99	1.96	158	189.7	179.7	3	0.8	3.3	8.18
K82581TD/K82950	0.44	1.52	2.27	1.49	169	231	202.2	3	1.5	3.3	32.6
T4DB150/DF	0.46	1.47	2.18	1.43	168	199	193.1	3	1.1	2.5	6.76
KEE517060D/K517117	0.33	2.05	3.05	2.00	193	286.4	255.8	8	3.3	3.3	35.7
KM333546TD/KM333510	0.33	2.03	3.02	1.98	178	221.4	209.9	5	1.5	3.3	13.2
67790D/67720	0.44	1.54	2.29	1.50	194	237.3	220.6	4	1.5	3.3	13.9
K94713TD/K94113	0.47	1.44	2.15	1.41	203	276.9	243.4	4	1.5	3.3	39.8
H239649D/H239610/YB2	0.32	2.12	3.15	2.07	214	304.9	280.2	4	3.3	4.8	53.8
K67885DW/K67820	0.48	1.41	2.11	1.38	210	256.4	236.5	4	1.5	3.3	15.9
93788D/93125	0.52	1.29	1.92	1.26	229	305.5	268.4	4	6.4	3.3	39.7
93800D/93125/ZP	0.52	1.29	1.92	1.26	228	305.5	268.4	4	1.5	3.3	37.3
K93800D/K93125	0.52	1.29	1.92	1.26	228	305.5	268.4	4	1.5	3.3	37.3
K93801D/K93125	0.52	1.29	1.92	1.26	229	305.5	268.4	4	6.4	3.3	38.8
96851D/96140/YB2	0.59	1.14	1.70	1.12	262	343.6	300.2	3	6.4	3.3	52.9
KM244249DW/KM244210	0.33	2.03	3.02	1.98	245	302.3	282.7	3	1.5	3.3	28.6
M244249DW/M244210/YB2	0.33	2.03	3.02	1.98	245	302.3	282.7	2	1.5	3.3	28.6
KLM245848/KLM245810/DF	0.33	2.03	3.02	1.98	253	305.5	293.2	7	0.8	3.3	22.8
8576DW/8520/YB2	0.41	1.66	2.47	1.62	258	315	295.2	6	1.5	3.3	24.0
H247549D/H247510	0.33	2.03	3.02	1.98	268	365.9	326.9	5	1.5	6.4	98.5
EE127094D/127140/YAD	0.35	1.91	2.85	1.87	270	343.6	312.6	4	1.5	3.3	37.7
KHH249949D/KHH249910	0.33	2.03	3.02	1.98	282	379.4	347.2	6	3.3	6.4	114
M249748DW/M249710	0.33	2.03	3.02	1.98	280	346.7	322.9	6	3.3	3.3	42.5
EE738101DW/738172	0.35	1.92	2.86	1.88	300	419.9	379.7	8	3.3	6.4	104
KEE738101DW/K738172	0.35	1.92	2.86	1.88	300	419.9	379.7	8	3.3	6.4	104
EE822101D/822175	0.33	2.06	3.06	2.01	306	426.3	392.2	5	3.3	6.4	88.3
EE324103D/324160	0.33	2.03	3.02	1.98	302	392.8	355.5	5	6.4	3.3	79.9

ZWZ

d 260.35～368.3mm



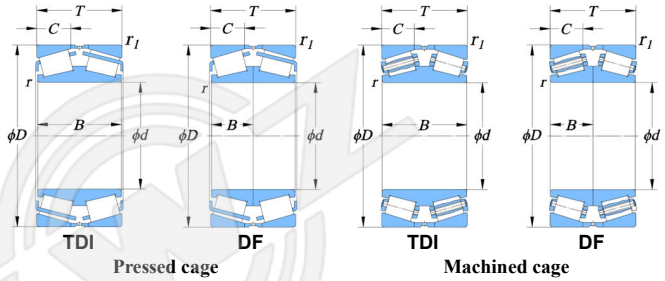
Pressed cage　　Machined cage

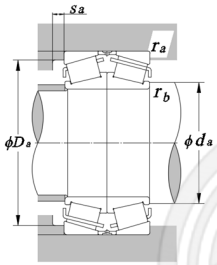


Principal dimensions(mm)							Basic load ratings (kN)		Limiting speeds (r/min)	
d	*D*	*T*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}	Grease	Oil
260.35	444.5	196.85	196.85	73.025	6.4	5	2860	5050	480	610
	444.5	196.85	196.85	73.025	6.4	5	2860	5050	480	610
269.875	381	136.525	136.525	57.15	3.3	3.3	1710	3790	530	680
279.4	457.2	244.475	244.475	106.362	1.5	6.4	3510	7180	450	580
279.578	380.898	117.475	117.475	49.212	1.5	3.3	1250	2820	520	670
	380.898	117.475	117.475	49.212	1.5	3.3	1250	2820	520	670
288.925	406.4	144.462	144.462	60.325	3.3	3.3	1890	4150	490	620
	406.4	144.462	144.462	60.325	3.3	3.3	1890	4150	490	620
	406.4	144.462	144.462	60.325	3.3	3.3	1890	4150	490	620
	406.4	144.462	144.462	60.325	3.3	3.3	1870	4100	490	620
297.523	422.275	150.812	160.338	63.5	3.3	3.3	1880	4060	470	590
300	479.5	180	180	64	2.5	4	2250	4500	420	530
	479.5	180	180	64	2.5	4	2250	4500	420	530
	479.5	180	180	64	2.5	4	2250	4500	420	530
	479.5	180	180	64	2.5	4	2250	4500	420	530
	479.5	180	180	64	2.5	4	2250	4500	420	530
300.038	422.275	150.812	150.812	63.5	3.3	3.3	1880	4060	470	590
	422.275	150.812	150.812	63.5	3.3	3.3	1880	4060	470	590
303.212	495.3	263.525	263.525	114.3	3.3	6.4	4270	8840	410	520
304.8	406.4	127	63.5	47.625	2.5	3.3	1420	3230	480	600
	501.65	161.922	161.925	61.117	3.3	6.4	2650	4810	400	510
305.034	499.948	200.025	200.025	63.5	3.3	6.4	2580	4760	400	510
	499.948	200.025	200.025	63.5	3.3	6.4	2580	4760	400	510
317.5	422.275	128.587	128.588	53.975	1.5	3.3	1560	3640	450	570
	422.275	128.587	128.588	53.975	1.5	3.3	1560	3640	450	570
	447.675	158.75	158.75	68.262	3.3	3.3	1820	4130	430	550
	447.675	158.75	158.75	68.262	3.3	3.3	1820	4130	430	550
333.375	469.9	166.688	166.688	71.438	3.3	3.3	2300	5160	400	510
	469.9	166.688	166.688	71.438	3.3	3.3	2300	5160	400	510
	469.9	166.688	166.688	71.438	3.3	3.3	2300	5160	400	510
	469.9	166.688	166.688	71.438	3.3	3.3	2300	5160	400	510
	469.9	166.688	166.688	71.438	3.3	3.3	2300	5160	400	510
346.075	488.95	174.625	174.625	74.612	3.3	3.3	2190	4850	380	490
	488.95	174.625	174.625	74.612	3.3	3.3	2650	5760	380	490
	488.95	174.625	174.625	74.612	3.3	3.3	2650	5760	380	490
	488.95	174.625	174.625	74.612	3.3	3.3	2190	4850	380	490
	488.95	174.625	174.625	74.612	3.3	3.3	2650	5760	380	490
347.662	469.9	138.112	138.112	57.15	3.3	3.3	1870	4190	390	500
355.6	488.95	153.988	153.988	63.5	1.5	3.3	2220	5030	380	480
368.3	523.875	185.738	185.738	79.375	3.3	6.4	2810	6180	350	440

Designations	Factor				Abutment and fillet dimensions(mm)						Mass(kg) (approx.)
	e	Y_1	Y_2	Y_0	d_{max}	D_{amax}	D_{amin}	S_{amin}	r_{amax}	r_{bmax}	
EE823103D/823175A6/WN33YB2	0.55	1.24	1.84	1.21	299	429.1	374.2	5	6.4	4	125
EE823103D/823175A6/YB2	0.55	1.24	1.84	1.21	299	429.1	374.2	5	6.4	4	126
M252349D/M252310	0.33	2.03	3.02	1.98	296	370.8	342.5	5	3.3	3.3	51.5
HH255149D/HH255110	0.37	1.80	2.69	1.76	316	436.2	384.2	2	1.5	6.4	164
KLM654644D/KLM654610	0.43	1.57	2.34	1.53	307	368.8	348	3	1.5	3.3	39.2
LM654644D/LM654610	0.43	1.57	2.34	1.53	307	368.8	348	3	1.5	3.3	39.2
KM255449D/KM255410	0.34	2.00	2.97	1.95	316	394.4	363.4	3	3.3	3.3	63.4
KM255449TD/KM255410	0.34	2.00	2.97	1.95	316	394.4	363.4	3	3.3	3.3	60.5
M255449D/M255410	0.34	2.00	2.97	1.95	316	392.8	363.4	3	3.3	3.3	63.3
M255449D/M255410/YB2	0.34	2.00	2.97	1.95	316	392.8	363.4	3	3.3	3.3	63.4
HM256846TD/HM256810	0.34	2.00	2.98	1.96	328	407.2	379.2	3	3.3	3.3	71.9
JHM957540D/JHM957519/HCEYA3	0.73	0.92	1.37	0.90	338	466.1	394	4	2.5	3	127
JHM957540DW/JHM957519W	0.73	0.92	1.37	0.90	338	466.1	394	4	2.5	3	119
JHM957540DW/JHM957519W/HCE	0.73	0.92	1.37	0.90	338	466.1	394	4	2.5	3	119
JHM957540DW/JHM957519W/HCOI	0.73	0.92	1.37	0.90	338	466.1	394	4	2.5	3	119
JHM957540DW/JHM957519W/YADT	0.73	0.92	1.37	0.90	338	466.1	394	4	2.5	3	119
HM256849D/HM256810	0.34	2.00	2.98	1.96	328	407.2	379.2	4	3.3	3.3	65.9
KHM256849D/KHM256810	0.34	2.00	2.98	1.96	328	407.2	379.2	4	3.3	3.3	65.9
KHH258249TD/KHH258210	0.33	2.03	3.02	1.98	342	468.3	423.4	8	3.3	6.4	215
LM757049/KLM757010/DFYH	0.44	1.55	2.31	1.52	329	394.4	372	7	2.5	3.3	44.9
HM258949D/HM258910	0.33	2.03	3.02	1.98	358	477.8	439.3	7	3.3	6.4	129
HM959741DW/HM959710	0.88	0.77	1.15	0.75	345	481.7	411	7	3.3	6.4	149
KHM959741DW/KHM959710	0.88	0.77	1.15	0.75	345	481.7	411	7	3.3	6.4	149
LM258648DW/LM258610/YB2	0.32	2.12	3.15	2.07	344	408.6	390.2	4	1.5	3.3	49.7
LM258649D/LM258610/YB2	0.32	2.12	3.15	2.07	344	408.6	390.2	4	1.5	3.3	49.7
HM259049D/HM259010	0.33	2.03	3.02	1.98	352	435.6	402.9	6	3.3	3.3	80.7
HM259049DW/HM259010	0.33	2.03	3.02	1.98	352	435.6	402.9	6	3.3	3.3	80.7
HM261049D/HM261010	0.33	2.02	3.00	1.97	367	460	424.4	6	3.3	3.3	91.5
HM261049D/HM261010/YA2	0.33	2.02	3.00	1.97	367	460	424.4	7	3.3	3.3	92.7
HM261049DW/HM261010	0.33	2.02	3.00	1.97	367	460	424.4	7	3.3	3.3	91.5
KHM261049D/KHM261010	0.33	2.02	3.00	1.97	367	460	424.4	6	3.3	3.3	91.5
KHM261049TD/KHM261010	0.33	2.02	3.00	1.97	367	460	421.6	6	3.3	3.3	96.3
HM262749D/HM262710	0.34	1.99	2.96	1.95	378	476.9	441.5	8	3.3	3.3	97.8
HM262749TD/HM262710/YA10	0.34	1.99	2.96	1.95	376	476.9	441.5	8	3.3	3.3	100
HM262749TD/HM262710	0.34	1.99	2.96	1.95	378	476.9	441.5	8	3.3	3.3	97.8
KHM262749D/KHM262710	0.34	1.99	2.96	1.95	378	476.9	441.5	8	3.3	3.3	97.8
KHM262749TD/KHM262710	0.34	1.99	2.96	1.95	378	476.9	441.5	8	3.3	3.3	97.8
M262449D/M262410/YAD	0.33	2.03	3.02	1.98	376	457.9	428.8	8	3.3	3.3	68.4
M263349D/M263310/YB2	0.33	2.03	3.02	1.98	387	473.9	442.9	6	1.5	3.3	86.6
HM265049DW/HM265010	0.33	2.03	3.02	1.98	404	503	467.7	3	3.3	6.4	128

d 368.3～447.675mm

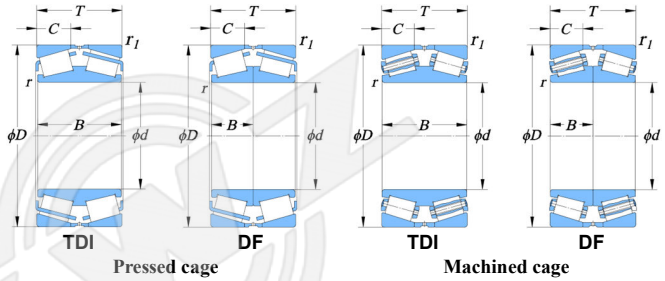


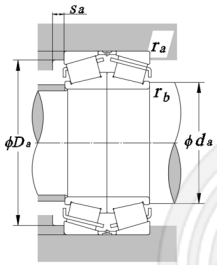


Principal dimensions(mm)							Basic load ratings (kN)		Limiting speeds (r/min)	
d	*D*	*T*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}	Grease	Oil
368.3	523.875	185.738	185.738	79.375	3.3	6.4	2810	6180	350	440
374.65	501.65	130.175	120.65	50.8	1.5	3.3	1670	3800	360	450
	514.35	127	117.475	50.8	1.5	3.3	1900	4170	350	440
380	567.5	180	180	70	2	4	2620	5640	320	400
	567.5	180	180	70	2	4	2630	5720	320	400
	567.5	180	180	70	2	4	2630	5720	320	400
	567.5	180	180	70	2	4	2620	5640	320	400
	569	180	180	70	2	4	2620	5640	320	400
384.175	546.1	193.675	193.675	82.55	3.3	6.4	3440	7940	330	420
	546.1	193.675	193.675	82.55	11.5x15°	6.4	3440	7940	330	420
	546.1	193.675	193.675	82.55	3.3	6.4	3440	7940	330	420
	546.1	193.675	193.675	82.55	3.3	6.4	3440	7940	330	420
	546.1	193.675	193.675	82.55	3.3	6.4	3240	7340	330	420
390	567.5	180	180	70	2	4	2630	5720	310	400
	567.5	180	180	70	2	4	2630	5720	310	400
	567.5	180	180	70	2	4	2630	5720	310	400
	567.5	180	180	70	2	4	2630	5720	310	400
	567.5	180	180	70	2	4	2910	6720	310	400
	568	180	180	70	2	4	2630	5720	310	400
	568	180	180	70	2	4	2630	5720	310	400
	570	180	180	63	1.5	4	2410	5230	310	400
393.7	546.1	138.112	138.112	53.975	1.5	6.4	2020	4680	320	410
	546.1	138.112	138.112	53.975	1.5	6.4	2020	4680	320	410
	546.1	141.288	120.65	55.562	3.3	6.4	1590	3660	320	410
406.4	549.275	171.45	84.138	61.912	6.4	3.3	2390	5410	310	400
	590.55	193.674	193.675	80.692	3.3	6.4	3400	7140	290	370
409.575	546.1	161.925	161.925	66.675	1.5	6.4	2350	5470	310	400
	546.1	161.925	161.925	66.675	1.5	6.4	2350	5470	310	400
	546.1	161.925	161.925	66.675	1.5	6.4	2350	5470	310	400
	546.1	161.925	161.925	66.675	1.5	6.4	2350	5470	310	400
415.925	590.55	209.55	209.55	88.9	3.3	6.4	3480	8260	290	370
	590.55	209.55	209.55	88.9	3.3	6.4	3890	9270	290	370
	590.55	209.55	209.55	88.9	3.3	6.4	3480	8260	290	370
	590.55	209.55	209.55	88.9	3.3	6.4	3700	8970	290	370
	590.55	209.55	209.55	88.9	3.3	6.4	3630	8730	290	370
	590.55	209.55	209.55	88.9	3.3	6.4	3700	8970	290	370
	590.55	209.55	209.55	88.9	3.3	6.4	3700	8970	290	370
431.8	571.5	149.224	74.612	52.388	1	3.3	1820	4160	290	370
431.902	685.698	330.2	330.2	142.875	6.4	6.4	7430	16000	250	320
447.675	635	223.838	223.838	95.25	3.3	6.4	4150	9930	260	330

Designations	Factor				Abutment and fillet dimensions(mm)						Mass (kg) (approx.)
	e	Y_1	Y_2	Y_o	d_{max}	D_{amax}	D_{amin}	S_{amin}	r_{amax}	r_{bmax}	
KHM265049TD/KHM265010	0.33	2.03	3.02	1.98	404	503	467.7	3	3.3	6.4	135
KLM765149DW/KLM765110	0.47	1.44	2.14	1.40	406	486.6	454.8	2	1.5	3.3	69.4
EE231475D/232025/YA5	0.40	1.69	2.51	1.65	410	502.3	467.2	5	1.5	3.3	76.7
JM966741DW/JM966711W/HCEZP-1	0.73	0.92	1.37	0.90	418	554.1	483	6	2	3	158
JM966741DW/JM966711W/YADT	0.73	0.92	1.37	0.90	430	554.1	489.5	6	2	3	155
JM966741DW/JM966711W/ZP	0.73	0.92	1.37	0.90	430	554.1	489.5	6	2	3	155
JM966741DW/JM966711W/ZP-1	0.73	0.92	1.37	0.90	418	554.1	483	6	2	3	158
JM966741DW/JM966711W/ZP-2	0.73	0.92	1.37	0.90	418	555.6	483	6	2	3	160
HM266449D/HM266410	0.33	2.03	3.02	1.98	420	527.9	487.9	6	3.3	6.4	151
HM266449D/HM266410/YAD	0.33	2.03	3.02	1.98	420	527.9	487.9	6	3	6.4	147
HM266449DW/HM266410	0.33	2.03	3.02	1.98	410	527.9	487.9	6	3.3	6.4	150
HM266449TD/HM266410	0.33	2.03	3.02	1.98	420	527.9	487.9	6	3.3	6.4	150
KHM266449D/KHM266410/YAB	0.33	2.03	3.02	1.98	422	527.9	489.1	6	3.3	6.4	147
JM966748D/JM966711/HCEYA3	0.73	0.92	1.37	0.90	430	554.1	489.5	6	2	3	150
JM966748DWA/JM966711W	0.73	0.92	1.37	0.90	430	554.1	489.5	6	2	3	147
JM966748DWA/JM966711W/HCE	0.73	0.92	1.37	0.90	430	554.1	489.5	6	2	3	147
JM966748DWA/JM966711W/HCOI	0.73	0.92	1.37	0.90	430	554.1	489.5	6	2	3	147
JM966748DWA/JM966711W/YAD	0.73	0.92	1.37	0.90	425	554.1	485	5	2	3	153
JM966748DW/JM966711X1	0.73	0.92	1.37	0.90	430	554.6	489.5	6	2	3	147
JM966748DW/JM966711X1/YAD	0.73	0.92	1.37	0.90	430	554.6	489.5	6	2	3	147
KJM966748DW/KJM966710	0.83	0.81	1.21	0.79	433	556.6	488.5	4	1.5	3	158
LM767745D/LM767710/HE	0.47	1.42	2.12	1.39	441	522.3	496.7	5	1.5	6.4	100
LM767745D/LM767710/YB2	0.47	1.42	2.12	1.39	441	522.3	496.7	4	1.5	6.4	100
EE234157D/234215	0.48	1.42	2.11	1.39	442	519.1	487.4	2	3.3	6.4	95.2
KLM567949/KLM567910/DF	0.41	1.66	2.47	1.62	440	534.2	501.2	7	6.4	3.3	111
EE833161XD/833232/YB2	0.33	2.08	3.09	2.03	451	566.7	531	6	3.3	6.4	186
KM667947D/KM667910	0.42	1.62	2.42	1.59	441	530	498	6	1.5	6.4	104
M667947D/M667910	0.42	1.62	2.42	1.59	441	530	498	6	1.5	6.4	104
M667947D/M667910/YA2	0.42	1.62	2.42	1.59	441	530	498	6	1.5	6.4	104
M667947DW/M667910	0.42	1.62	2.42	1.59	441	530	498	6	1.5	6.4	104
M268749D/M268710	0.33	2.03	3.02	1.98	460	574.1	528.7	5	3.3	6.4	183
M268749DGW/M268710/HEYAD	0.33	2.03	3.02	1.98	457	574.1	528.7	7	3.3	6.4	192
M268749DW/M268710	0.33	2.03	3.02	1.98	460	572.3	528.7	5	3.3	6.4	179
M268749DW/M268710-1	0.33	2.03	3.02	1.98	460	572.3	528.7	5	3.3	6.4	182
M268749DWH/M268710S/YAD	0.33	2.03	3.02	1.98	460	572.3	528.7	5	3.3	6.4	188
M268749DWH/M268710S	0.33	2.03	3.02	1.98	460	572.3	528.7	5	3.3	6.4	182
M268749TD/M268710S/YA10	0.33	2.03	3.02	1.98	462	572.3	528.7	5	3.3	6.4	195
LM869448/KLM869410/DF	0.55	1.24	1.84	1.21	464	556.5	515	2	1	3.3	101
EE650171D/650270/YA6	0.32	2.12	3.15	2.07	488	665.8	596.4	8	6.4	6.4	488
KM270749ADW/KM270710	0.33	2.03	3.02	1.98	493	608	566.8	8	3.3	6.4	232

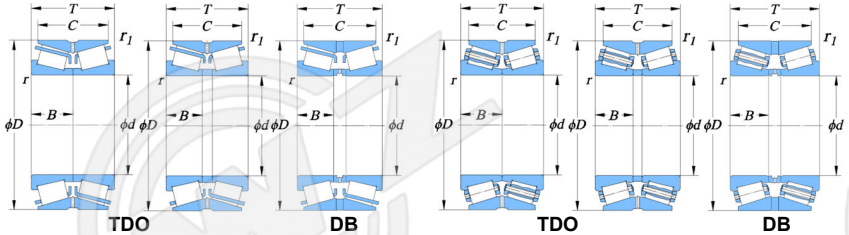
d 447.675～857.25mm

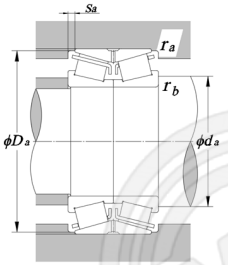




Principal dimensions(mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations	Factor				Abutment and fillet dimensions(mm)					Mass(kg) (approx.)
d	*D*	*T*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}	Grease	Oil		*e*	Y_1	Y_2	Y_o	d_{max}	D_{amax}	D_{amin}	S_{amin}	r_{amax}	r_{bmax}	
447.675	635	223.838	223.838	95.25	3.3	6.4	4150	9930	260	330	KM270749D/KM270710	0.33	2.03	3.02	1.98	493	608	566.8	8	3.3	6.4	232
	635	223.838	223.838	95.25	3.3	6.4	4150	9930	260	330	M270749ADW/M270710	0.33	2.03	3.02	1.98	493	611.2	566.8	8	3.3	6.4	232
	635	223.838	223.838	95.25	3.3	6.4	4150	9930	260	330	M270749ADW/M270710/ZP	0.33	2.03	3.02	1.98	493	611.2	566.8	8	3.3	6.4	232
	635	223.838	223.838	95.25	3.3	6.4	4150	9930	260	330	M270749TD/M270710/YAB	0.33	2.03	3.02	1.98	493	611.2	568.6	8	3.3	6.4	243
	635	223.838	223.838	95.25	3.3	6.4	4150	9930	260	330	M270749TD/M270710/YB2	0.33	2.03	3.02	1.98	493	611.2	568.6	8	3.3	6.4	243
449.948	594.949	178	178	75	3	6	3040	7540	280	350	M270449DW/M270410	0.33	2.03	3.02	1.98	480	577.5	545.4	6	2.5	5	147
457.073	749.3	419.1	412.75	184.15	3.3	6.4	9500	20900	230	290	EE925179D/925295	0.31	2.21	3.29	2.16	527	731.1	638.6	7	3.3	6.4	750
457.2	603.25	171.45	84.138	60.325	1.3	6.4	2530	6480	270	340	KLM770949/KLM770910/DF	0.46	1.47	2.19	1.44	495	576.2	551.4	7	1.3	6.4	130
479.425	679.45	238.125	238.125	101.6	3.3	6.4	4800	11500	240	310	KJM272749DA6/KJM272710/YA3	0.33	2.03	3.02	1.98	530	661.2	611.4	6	3.3	6.4	276
	679.45	238.125	238.125	101.6	3.3	6.4	4800	11500	240	310	M272749TD/M272710	0.33	2.03	3.02	1.98	530	661.2	611.4	6	3.3	6.4	282
	679.45	238.125	239.125	101.6	7.5	6.4	4800	11500	240	310	KJM272749DA6/KJM272710/YA31	0.33	2.03	3.02	1.98	530	661.2	611.4	6	6	6.4	282
	679.45	257.176	128.588	101.6	6.4	6.4	4800	11500	240	310	KJM272749/KJM272710/DF	0.33	2.03	3.02	1.98	528	661.2	611.4	7	6.4	6.4	298
482.6	615.95	158.75	158.75	66.675	3.3	6.4	2820	7610	260	330	KLM272249D/KLM272210	0.33	2.03	3.02	1.98	515	592.1	571.7	7	3.3	6.4	122
488.95	660.4	187.324	94.458	69.85	1.3	6.4	3210	7300	240	310	EE640192/640260/DF	0.31	2.21	3.28	2.16	534	636.6	610.4	7	1.3	6.4	179
501.65	711.2	250.825	250.825	106.363	3.2	6.4	5570	13400	230	290	KM274149DGW/KM274110/HCR	0.35	1.92	2.86	1.88	548	693	636.7	8	3.2	6.4	326
	711.2	250.825	250.825	106.363	3.2	6.4	5570	13400	230	290	M274149DGW/M274110/HEYAB	0.35	1.92	2.86	1.88	548	693	636.7	8	3.2	6.4	326
505.181	838.2	266.7	266.7	104.775	6.4	9.7	6480	12200	190	250	EE426198D/426330	0.48	1.41	2.10	1.38	600	806.2	726.5	8	6.4	9.7	590
508	695.325	200.025	200.025	80.962	3.3	6.4	4090	9550	230	290	LM274049DW/LM274010	0.33	2.03	3.02	1.98	554	668.3	636.3	8	3.3	6.4	225
	762	219.075	219.075	85.725	6.4	6.4	5110	10200	210	270	KEE531201D/K531300	0.38	1.78	2.65	1.74	570	735	682.6	8	6.4	6.4	347
519.112	736.6	258.762	258.762	111.125	3.3	6.4	5750	13400	210	270	M275349D/M275310	0.33	2.03	3.02	1.98	562	718.4	660.1	8	3.3	6.4	352
536.575	761.873	269.875	269.875	114.3	3.3	6.4	6080	14500	200	260	M276449DW/M276410	0.33	2.03	3.02	1.98	590	743.6	682.4	6	3.3	6.4	400
	761.873	269.875	269.875	114.3	3.3	6.4	6080	14500	200	260	M276449DW/M276410/HCRG2	0.33	2.03	3.02	1.98	590	743.6	682.4	6	3.3	6.4	400
558.8	736.6	196.85	196.85	80.962	3.3	6.4	3770	9250	210	260	LM377448D/LM377410/YAD1	0.35	1.95	2.90	1.91	602	709.6	675.4	8	3.3	6.4	224
571.5	812.8	285.75	285.75	120.65	3.3	6.4	7210	17600	190	230	KM278749DGW/KM278710	0.33	2.03	3.02	1.98	631	791.6	730.2	8	3.3	6.4	524
	812.8	285.75	285.75	120.65	3.3	6.4	7210	17600	190	230	KM278749DW/KM278710	0.33	2.03	3.02	1.98	631	791.6	730.2	8	3.3	6.4	524
	812.8	285.75	285.75	120.65	3.3	6.4	7210	17600	190	230	KM278749DW/KM278710/HCR	0.33	2.03	3.02	1.98	631	791.6	730.2	8	3.3	6.4	524
	812.8	285.75	285.75	120.65	3.3	6.4	7210	17600	190	230	KM278749DWK/KM278710/YB4	0.33	2.03	3.02	1.98	631	791.6	730.2	8	3.3	6.4	524
	812.8	285.75	285.75	120.65	3.3	6.4	7210	17600	190	230	M278749DW/M278710	0.33	2.03	3.02	1.98	631	791.6	730.2	8	3.3	6.4	524
708.025	930.275	273.05	273.05	115.888	3.3	6.4	7370	19800	140	180	LM282549D/LM282510	0.33	2.03	3.02	1.98	756	903.2	856.3	11	3.3	6.4	510
717.55	946.15	273.05	273.05	115.888	3.3	6.4	7750	20400	140	170	LM282847D/LM282810/YB2	0.33	2.03	3.02	1.98	765	922.3	867.6	9	3.3	6.4	534
762	1079.5	381	381	161.925	4.8	12.7	12000	31000	110	140	M284249DW/M284210/YB2	0.33	2.06	3.06	2.01	836	1047.5	964	8	4.8	12.7	1140
857.25	1092.2	241.3	111.25	76.2	6.4	6.4	5170	13000	94	120	EE157337/157430/DF	0.45	1.50	2.24	1.47	915	1065.2	1013.4	6	6.4	6.4	499

d 30～76mm

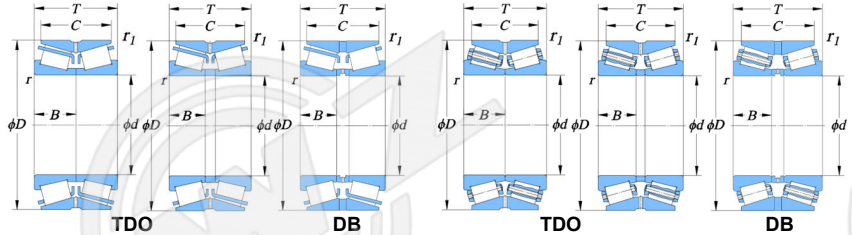


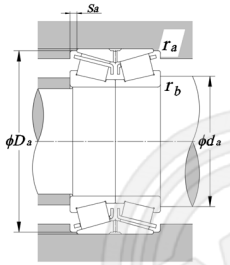


d	Principal dimensions(mm) D	T	B	C	r_{min}	r_{1min}	Basic load ratings(kN) C_r	C_{or}	Limiting speeds (r/min) Grease	Oil
30	72	44	18	45	1.5	6	71.3	91.2	4400	5500
	89	51	20	49.5	1.5	4	101	125	3800	4800
40	70	70	19	64	1	0.3	98.6	143	4100	5100
	73	55	27.5	55	4.2	0.8	110	162	3900	5000
	80	45	22.5	44	2.5	1.5x15°	125	164	3700	4700
45	88	55	27.5	55	5.5	0.4	166	216	3400	4300
50	90	49	20	39	1.8	0.5	150	193	3200	4100
	90	55	23	43.5	1.5	0.6	169	226	3200	4100
	90	55	23	45	1.3	0.5	139	192	3200	4100
	90	84	32	69	1.5	1.5	227	327	3200	4100
	100	47.5	20	50	1	1.5	109	166	3000	3800
55	90	52	23	41	1.5	0.6	147	226	3100	3900
	90	52	26	41	1.5	0.6	158	245	3100	3900
	90	56	23	45	3	2	147	226	3100	3900
	90	60	30	60	3.5	0.3	161	249	3100	3900
	100	52	21	42	2	0.5	172	215	2900	3700
	100	56	25	42.5	2.5	0.5	206	272	2900	3700
	100	60	25	48.5	2	0.6	212	283	2900	3700
60	110	52	22	38	2	0.5	171	222	2600	3300
	110	52	22	42.5	2	0.5	203	258	2600	3300
	110	53	22	43.5	2	0.3	203	258	2600	3300
63.5	110(114.673)	68.255	24	61.903	1.5	0.5	191	289	2600	3300
65	100	57.5	23	46.5	1.5	1.5	156	255	2700	3400
68.6	115(121)	74.2	29.5	65.3	1.5	0.3	234	379	2400	3100
69.86	117(126)	64	27.5	54	2.5	0.3	202	308	2400	3000
70	110	38	16	28	1.5	0.6	110	158	2500	3200
	117(126)	71.5	27.5	58.3	1.5	0.3	207	319	2400	3000
	117(126)	71.5	27.5	58.3	1.5	1.2*15°	207	319	2400	3000
	125	71.5	31	59	2	0.5	326	462	2300	2900
	125	74	31	61.5	2	0.6	326	462	2300	2900
	125	75	31	62	2	0.6	326	462	2300	2900
	150	83	35	57	3	1	363	453	2000	2600
	199.974	74.615	37.308	76.2	3.5	5	371	461	1600	2100
70.35	117(126)	72	27.5	58.5	1.5	0.3	207	319	2400	3000
71.6	115(121)	74.2	29.5	65.3	1.5	0.3	214	379	2400	3000
75	115	58	25	46	1.5	0.6	197	325	2400	3000
	130	74.5	31	62	1.8	0.3	330	471	2200	2800
	137	65	25	54.5	2	0.4	266	358	2100	2700
	160	88	37	60	3	1	406	507	1900	2400
76	119.4(125.4)	68.33	29	59.43	1.5	0.5	214	377	2300	2900

Designations	Factor e	Y_1	Y_2	Y_o	Abutment and fillet dimensions(mm) d_{amin}	D_{amin}	S_{amin}	r_{amax}	r_{bmax}	Mass(kg) (approx.)
351306X2-2RS	0.43	1.57	2.34	1.53	37.6	56	1	1.5	5	0.963
SJ-350606-2Z/HCO	0.37	1.80	2.69	1.76	37.6	61	0.8	1.5	3	1.93
350608/YWG	0.38	1.78	2.65	1.74	46.2	65	3	1	0.3	0.985
352208X1D1TN1-2RS	0.38	1.77	2.64	1.73	52.4	68	1	4.2	0.8	1.04
352208X2D1TN1	0.37	1.82	2.71	1.78	49.8	73	0.5	2.5	1.5	1.04
352209X1D1TN1-2RS	0.40	1.69	2.52	1.65	60	82	1	4.5	0.4	1.49
350210X2	0.42	1.61	2.39	1.57	58.6	84	5	1.8	0.5	1.24
352210	0.42	1.61	2.39	1.57	58.6	85	5.8	1.5	0.6	1.37
352210X2	0.42	1.60	2.39	1.57	59.4	85	5	1.3	0.5	1.34
33210/DBY	0.41	1.63	2.43	1.60	58.6	86	7.5	1.5	1.5	1.75
350610-2Z	0.43	1.58	2.35	1.54	57.2	82	1	1	1.5	1.98
352011/YA10	0.41	1.66	2.47	1.62	63.6	86	5.5	1.5	0.6	1.26
352011X2D1	0.41	1.66	2.47	1.62	63.6	86	5.5	1.5	0.6	1.23
32011/DBY	0.41	1.66	2.47	1.62	67	86	5.5	2.5	2	1.19
352011X2D1TN1-2RS	0.39	1.72	2.56	1.68	68	86	1	3	0.3	1.59
350211X2	0.40	1.67	2.48	1.63	64.6	94	5	2	0.5	1.60
352211X2/YA6	0.40	1.67	2.48	1.63	66	94	6.8	2.5	0.5	1.87
352211	0.40	1.67	2.48	1.63	64.6	94	5.8	2	0.6	1.95
350212X2B	0.55	1.24	1.84	1.21	69.6	103	7	2	0.5	1.94
350212X2	0.40	1.67	2.48	1.63	69.6	102	4.8	2	0.5	2.01
30212T53/DBYB2	0.40	1.67	2.48	1.63	69.6	102	4.8	2	0.3	2.43
3506/63.5R	0.47	1.43	2.12	1.40	71.6	104	3.2	1.5	0.5	2.49
32013T57.5/DBY	0.46	1.47	2.19	1.44	73.6	96	5.5	1.5	1.5	1.29
3506/68.6R	0.48	1.41	2.09	1.37	76.7	109	4.5	1.5	0.3	2.96
350614X4DR	0.58	1.16	1.73	1.13	78.5	112	5	2.5	0.3	2.59
350614/YA10	0.46	1.46	2.17	1.42	78.6	102	5	1.5	0.6	1.20
350614X4DR-1	0.58	1.16	1.73	1.13	78.6	112	6.6	1.5	0.3	2.93
350614X4DR-1-YA10	0.58	1.16	1.73	1.13	78.6	112	6.6	1.5	1.2	2.94
32214T71.5/DBY	0.42	1.61	2.39	1.57	79.6	119	6.3	2	0.5	3.41
352214	0.42	1.61	2.39	1.57	79.6	119	6.3	2	0.6	3.66
352214X2	0.42	1.61	2.39	1.57	79.6	119	6.5	2	0.6	3.66
351314	0.83	0.82	1.22	0.80	82	141	13	2.5	1	6.25
350614D1-2Z	0.43	1.57	2.34	1.53	84	152	1	3	4	14.4
350614X4DR-2	0.58	1.16	1.73	1.13	79	109	6.8	1.5	0.3	2.93
3506/71.6R	0.48	1.41	2.09	1.37	79.7	109	4.5	1.5	0.3	2.90
352015	0.46	1.47	2.19	1.44	83.6	110	6	1.5	0.6	2.04
352215X2	0.44	1.55	2.31	1.52	84.6	125	6.3	1.8	0.3	3.72
350215R	0.44	1.55	2.31	1.52	84.6	123	5.3	2	0.4	3.35
351315	0.83	0.82	1.22	0.80	87	151	14	2.5	1	7.49
3506/76X2DR	0.30	2.26	3.37	2.21	84.6	111	4.5	1.5	0.5	2.72

d 76～100mm



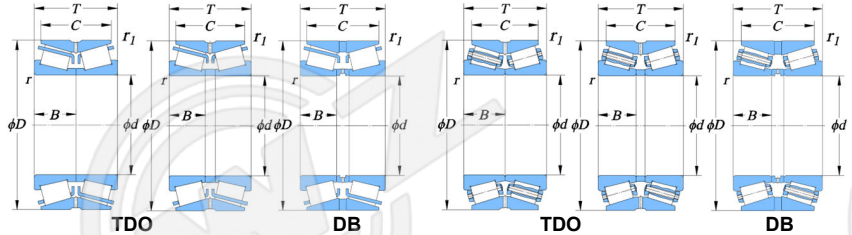


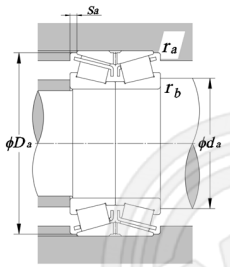
d	D	T	B	C	r_{min}	r_{1min}	C_r	C_{or}	Limiting speeds (r/min) Grease	Oil
76	119.4(125.4)	74.2	29	65.3	1.5	0.5	215	366	2300	2900
	119.4(125.4)	74.2	29	65.3	1.5	0.5	214	377	2300	2900
80	110	46	20	38	1.5	0.3	134	239	2400	3000
	123.4(129.4)	74.2	28.5	65.3	1.5	0.3	220	410	2200	2800
	125	66	29	52	1.5	0.6	253	409	2200	2800
	140	64	26	51.5	2.5	0.6	270	364	2000	2600
	140	64	26	51.5	2.5	0.7	309	412	2000	2600
	140	64	26	51.5	2.5	0.6	270	364	2000	2600
	140	78	33	63.5	2.5	0.6	383	544	2000	2600
	140	79.5	33	65	2.3	0.7	331	481	2000	2600
	170	94	39	63	3	1	444	558	1800	2200
85	150	82	36	65	2.5	0.6	442	638	1900	2400
	150	84	36	66	2.5	0.5	442	638	1900	2400
	150	85	36.5	66	2.5	0.5	442	638	1900	2400
	150	86	36	69	2.5	0.6	442	638	1900	2400
	150	86	36	69	2.5	0.6	442	638	1900	2400
	150	86	36	69	2.5	0.6	442	638	1900	2400
	150	106	49	82	2.5	0.5	541	824	1900	2400
	180	99	41	66	4	1	491	621	1700	2100
	180	99	41	66	4	1	491	621	1700	2100
90	155	85	37.547	63.5	3.5	0.5	362	594	1800	2300
	160	94	40	77	2.5	0.6	514	755	1800	2200
	160	94	40	78	2.5	0.6	514	755	1800	2200
	160	96	40.8	78	2.5	0.6	514	755	1800	2200
	190	103	43	70	4	1	546	696	1600	2000
95	170	100	43	83	3	1	591	885	1700	2100
	170	110	43	93	3	1	591	885	1700	2100
100	140	57	25	47	1.5	0.5	228	410	1900	2300
	145	56	22.5	43	3	0.6	219	340	1800	2300
	150	73	32	57	2	0.6	325	561	1800	2200
	165(175)	80	36	60	2.3	0.5	381	594	1600	2000
	165	112	52	88	2.5	0.5	519	1010	1700	2100
	180	83	34	67	3	1	494	689	1600	2000
	180	108	46	88	3	0.8	667	1010	1600	2000
	180	111	46	92	3	0.8	667	1010	1600	2000
	180	112	46.5	92	3	0.8	667	1010	1600	2000
	190	125	62.5	100	3	1.3	696	1050	1500	1900
	203.2	91.2	39	108	2	1.5	432	779	1400	1800
	215	280	73	245	4	0.8	1170	1720	1400	1700
	225	124	51	81	4	1	732	968	1300	1700

Designations	e	Y_1	Y_2	Y_o	d_{amin}	D_{amin}	S_{amin}	r_{amax}	r_{bmax}	Mass(kg) (approx.)
3506/76ADR	0.55	1.24	1.84	1.21	84.6	115	4.5	1.5	0.5	2.95
3506/76DR	0.30	2.26	3.37	2.21	84.6	111	4.5	1.5	0.5	2.93
352916X3	0.35	1.92	2.86	1.88	88.6	105	4	1.5	0.3	1.12
350616R/YA10	0.30	2.26	3.37	2.21	88.1	114	4.5	1.5	0.3	3.10
352016	0.42	1.60	2.38	1.56	88.6	120	7	1.5	0.6	2.76
350616	0.42	1.61	2.39	1.57	91	130	6.3	2.5	0.6	3.64
30216T64/DB	0.42	1.61	2.39	1.57	91	131	6.3	2.5	0.7	3.45
350616/YA10	0.42	1.61	2.39	1.57	91	130	6.3	2.5	0.6	3.67
352216/YA10	0.42	1.61	2.39	1.57	91	133	7.3	2.5	0.6	4.60
352216X2	0.40	1.68	2.50	1.64	92	131	7.3	2.3	0.7	4.97
351316	0.83	0.82	1.22	0.80	92	159	15.5	2.5	1	9.02
352217X2-1	0.42	1.61	2.39	1.57	96	142	8.5	2.5	0.6	5.52
352217X2	0.42	1.61	2.39	1.57	96	141	9	2.5	0.5	5.59
352217X2-2	0.42	1.61	2.39	1.57	96	141	9.5	2.5	0.5	5.96
352217	0.42	1.61	2.39	1.57	96	142	8.5	2.5	0.6	5.94
352217/YA1	0.42	1.61	2.39	1.57	96	142	8.5	2.5	0.6	5.88
352217/YAD	0.42	1.61	2.39	1.57	96	142	8.5	2.5	0.6	5.94
33217/DB	0.42	1.61	2.40	1.58	96	144	12	2.5	0.5	7.58
351317	0.83	0.82	1.22	0.80	99	168	16.5	3	1	11.1
351317/YA10	0.83	0.82	1.22	0.80	99	168	16.5	3	1	11.0
350618/YA10	0.44	1.52	2.26	1.49	104	142	10.8	3	0.5	6.12
352218	0.42	1.61	2.39	1.57	101	152	8.5	2.5	0.6	7.55
352218X2	0.42	1.61	2.39	1.57	101	152	8	2.5	0.6	7.54
352218X2-1	0.42	1.61	2.39	1.57	101	152	9	2.5	0.6	7.57
351318	0.83	0.82	1.22	0.80	104	179	16.5	3	1	12.3
352219	0.42	1.61	2.39	1.57	107	161	8.5	2.5	1	9.50
32219T110/DB	0.42	1.61	2.39	1.57	107	161	8.5	2.5	1	9.84
352920X3	0.33	2.05	3.05	2.00	109.6	134	5	1.5	0.5	1.95
32920X3/DBYAB	0.47	1.43	2.12	1.40	113	139	6.5	2.5	0.6	2.53
352020	0.46	1.47	2.19	1.44	110.6	144	8	2	0.6	4.14
350620DRTN1	0.39	1.72	2.56	1.68	113	154	10	2.3	0.5	5.09
350620/YA10	0.41	1.66	2.47	1.63	112	154	12	2.5	0.5	8.31
352220X2	0.42	1.61	2.39	1.57	113	168	8	2.5	1	6.51
32220/DB	0.42	1.61	2.39	1.57	113	170	10	2.5	0.8	11.1
352220X2-1	0.42	1.61	2.39	1.57	113	170	9.5	2.5	0.8	11.6
352220X2-2	0.42	1.61	2.39	1.57	113	170	10	2.5	0.8	11.4
350620D1	0.36	1.85	2.76	1.81	115.4	176	12.5	2.5	1.3	14.9
353020X3-2RZ	0.29	2.35	3.50	2.30	110.6	149	1	2	1.5	18.1
32320T280/DB	0.35	1.96	2.91	1.91	115	199	17.5	3	0.8	40.7
351320X1	0.83	0.82	1.22	0.80	115	201	21.5	3	1	21.4

ZWZ

d 100～120mm

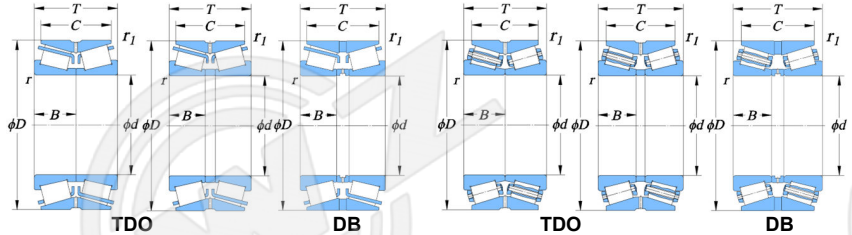


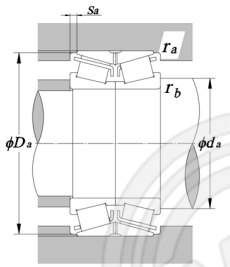


d	D	Principal dimensions(mm) T	B	C	r_{min}	r_{1min}	Basic load ratings(kN) C_r	C_{or}	Limiting speeds (r/min) Grease	Oil
100	260	149	74.5	146	3.5	5	930	1380	1200	1500
105	160	95	43	77	2.5	0.5	461	815	1700	2100
	190	115	50	95	3	1	745	1150	1500	1900
	190	115	50	95	3	1	745	1150	1500	1900
	190	117	50	96	3	0.8	745	1150	1500	1900
	190	117	50	96	3	0.8	745	1150	1500	1900
	190	118	50	96	3	0.8	745	1150	1500	1900
110	150	80	24	70	1.5	0.5	191	331	1700	2200
	150	80	30	63	0.8	0.3	218	432	1700	2200
	170	86	38	68	2.5	0.6	431	732	1600	2000
	180	95	42	76	2	0.6	541	897	1500	1900
	180	95	42	76	2	0.6	541	897	1500	1900
	180	95	42	76	2	0.6	541	897	1500	1900
	180	95	42	76	2	0.6	541	897	1500	1900
	180	95	42	76	2	0.6	541	897	1500	1900
	200	86	38	86	2.5	2.1	471	687	1400	1800
	200	90	38	72	3	0.8	563	816	1400	1800
	200	92	38	74	3	0.8	614	874	1400	1800
	200	92	38	74	3	0.8	614	874	1400	1800
	200	92	46	74	3	3	553	829	1400	1800
	200	121	53	101	3	1	842	1310	1400	1800
	200	121	53	101	3	0.6	842	1310	1400	1800
	200	122	53	102	3	1	842	1310	1400	1800
	200	122	53	102	3	1	842	1310	1400	1800
	200	122	53	102	3	1	842	1310	1400	1800
	200	122.36	53	102.36	3	0.6	842	1310	1400	1800
	200	124	53	102	3	0.6	842	1310	1400	1800
	200	124	53	102	3	0.6	842	1310	1400	1800
	200	124	53	102	3	0.6	842	1310	1400	1800
	200	125	53.5	102	3	0.6	842	1310	1400	1800
115	230	116	49.5	84	3	2.5	715	1020	1200	1600
120	180(188)	85	36	66	2.5	0.7	424	719	1500	1800
	180	88	38	70	2.5	0.6	450	793	1500	1800
	180	88	38	70	2.5	0.5	450	793	1500	1800
	200	110	48	90	2	0.6	663	1060	1400	1700
	200	110	48	90	2	0.6	663	1060	1400	1700
	200	110	48	90	2	0.6	663	1060	1400	1700
	200	110	48	90	2	0.6	663	1060	1400	1700
	215	97	41	78	3	1	593	877	1300	1600
	215	129	58	106	3	0.6	933	1490	1300	1600

Designations	e	Factor Y_1	Y_2	Y_o	Abutment and fillet dimensions(mm) d_{amin}	D_{amin}	S_{amin}	r_{amax}	r_{bmax}	Mass(kg) (approx.)
350620X3D1-2RS	0.36	1.89	2.81	1.85	114	192	1.5	3	4	46.3
33021/DB	0.28	2.39	3.56	2.34	117	152	9	2.5	0.5	6.22
352221	0.42	1.61	2.39	1.57	118	179	10	2.5	1	13.5
352221/W513	0.42	1.61	2.39	1.57	118	179	10	2.5	1	13.5
352221X2	0.42	1.61	2.39	1.57	118	179	10.5	2.5	0.8	13.5
352221X2/YB4	0.42	1.61	2.39	1.57	118	179	10.5	2.5	0.8	13.5
352221X2-1	0.42	1.61	2.39	1.57	118	179	11	2.5	0.8	13.8
32922X2A/ADB	0.28	2.39	3.56	2.34	119.6	143	5	1.5	0.5	3.34
350622	0.37	1.82	2.72	1.78	118.2	144	8.5	0.8	0.3	3.61
352022	0.43	1.57	2.34	1.53	122	163	9	2.5	0.6	6.65
352122	0.32	2.09	3.11	2.04	120.6	169	9.5	2	0.6	9.10
352122/YA1	0.32	2.09	3.11	2.04	120.6	169	9.5	2	0.6	9.10
352122/YA10	0.32	2.09	3.11	2.04	120.6	169	9.5	2	0.6	9.08
352122/YA10-1	0.32	2.09	3.11	2.04	120.6	169	9.5	2	0.6	9.08
352122/YAD	0.32	2.09	3.11	2.04	120.6	169	9.5	2	0.6	9.08
350622X3/YB4	0.42	1.62	2.42	1.59	124	185	1	2.5	2	11.6
352222X2-1	0.45	1.51	2.25	1.48	123	186	9	2.5	0.8	11.1
350222X2	0.42	1.61	2.39	1.57	123	186	9	2.5	0.8	8.21
350222X2/YA10	0.42	1.61	2.39	1.57	123	186	9	2.5	0.8	8.21
350222X2D1/HG2	0.35	1.95	2.90	1.91	125	183	9	2.5	2.5	11.7
352222	0.42	1.61	2.39	1.57	123	190	10	2.5	1	15.7
352222/W513	0.42	1.61	2.39	1.57	123	190	10	2.5	0.6	15.6
352222X2-3	0.42	1.61	2.39	1.57	123	190	10	2.5	1	16.0
352222X2-3/YA10	0.42	1.61	2.39	1.57	123	190	10	2.5	1	16.0
352222X2-4/YA10	0.42	1.61	2.39	1.57	123	190	10	2.5	1	16.0
32222/DB	0.42	1.61	2.39	1.57	123	190	10	2.5	0.6	15.7
352222X2	0.42	1.61	2.39	1.57	123	189	11	2.5	0.6	16.5
352222X2/YA10	0.42	1.61	2.39	1.57	123	189	11	2.5	0.6	16.5
352222X2/YB4	0.42	1.61	2.39	1.57	123	189	11	2.5	0.6	16.5
352222X2-2	0.42	1.61	2.39	1.57	123	189	11.5	2.5	0.6	16.2
350623	0.73	0.93	1.38	0.91	128	219	16	2.5	2.5	20.2
352024X2DR	0.37	1.83	2.72	1.79	132	171	9.5	2.5	0.7	6.77
352024	0.46	1.47	2.19	1.44	132	173	9	2.5	0.6	7.24
32024T88/DBYAB	0.46	1.47	2.19	1.44	132	173	9	2.5	0.5	7.23
352124	0.30	2.25	3.34	2.20	132	188	10	2	0.6	12.6
352124/YA10	0.30	2.25	3.34	2.20	132	188	10	2	0.6	12.6
352124/YA10-1	0.30	2.25	3.34	2.20	132	188	10	2	0.6	12.6
352124/YB4	0.30	2.25	3.34	2.20	132	188	10	2	0.6	12.6
352224X2-1	0.42	1.61	2.39	1.57	133	200	9.5	2.5	1	14.1
32224T129/DBYAB	0.44	1.55	2.31	1.52	133	204	11.5	2.5	0.6	19.3

d 120～140mm

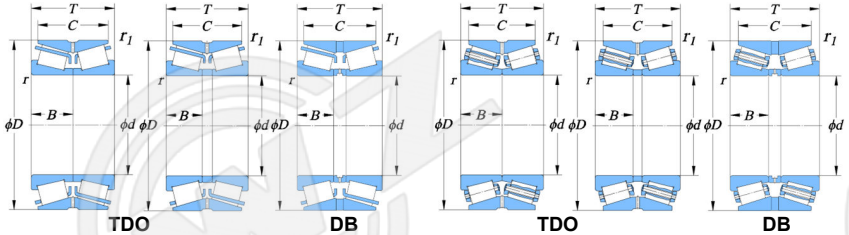




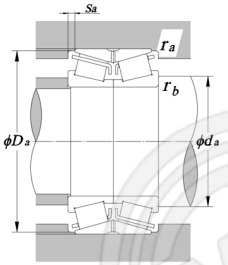
Principal dimensions(mm)							Basic load ratings(kN)		Limiting speeds (r/min)	
d	*D*	*T*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}	Grease	Oil
120	215	132	58	106	3	1	842	1390	1300	1600
	215	132	58	106	2.5	0.8	842	1390	1300	1600
	215	132	58	109	3	1	842	1390	1300	1600
	215	132	58	109	3	1	842	1390	1300	1600
	215	132	58	109	3	1	842	1390	1300	1600
	215	133	40	114	3	0.8	655	945	1300	1600
	260	132	55	105	4	1	1090	1460	1100	1400
	280	185	83.5	155	5	1.5	1480	2100	1000	1300
127	230	126	55	84	4	1	802	1170	1200	1500
130	180	69	30	56	2	0.5	313	565	1400	1800
	200	95	42	75	2.5	0.7	525	872	1300	1700
	200	95	42	75	2.5	0.7	525	872	1300	1700
	210	80	35	64	2.5	0.6	503	809	1300	1600
	214	115	48	98	2.3	0.7	657	1070	1300	1600
	230	145	64	117.5	4	1	1080	1750	1200	1500
	230	145	64	117.5	4	1	1080	1750	1200	1500
	230	145	64	117.5	4	1	1080	1750	1200	1500
	230	149	64	120	4	0.8	1080	1750	1200	1500
	230	149	64	120	4	0.8	1080	1750	1200	1500
	230	149	64	120	4	0.8	1080	1750	1200	1500
	230	149	69	120	4	0.8	956	1650	1200	1500
	230	150	64.5	120	4	0.8	1080	1750	1200	1500
	235	145	72.5	115	2.3	1.3	975	1560	1200	1500
	280	164	66	108	5	1.3	1190	1640	970	1300
140	210	95	42	75	2.5	0.7	552	951	1200	1500
	210(220)	95	42	75	2.5	0.7	552	951	1200	1500
	210	100	45	78	2.5	0.5	614	1120	1200	1500
	210	102	45	80	2.5	0.5	614	1120	1200	1500
	210	104	45	82	2.5	0.6	614	1120	1200	1500
	210	104	45	82	2.5	0.6	614	1120	1200	1500
	215(225)	100	45	80	2.3	0.7	527	897	1200	1500
	225	115	50	90	2.5	1	695	1180	1200	1500
	240	132	57	106	4	2	920	1680	1100	1400
	250	102	42	82.5	4	2	721	1030	1100	1400
	250	106	42	86.5	4	1	795	1140	1100	1400
	250	153	68	125.5	4	1	1260	2070	1100	1400
	250	156.5	68	129	4	1	1260	2070	1100	1400
	250	157	68	128	4	1	1260	2070	1100	1400
	250	158	68	130.5	4	1	1260	2070	1100	1400
	300	168	70	108	5	1.1	1330	1840	890	1200

Designations	Factor				Abutment and fillet dimensions(mm)					Mass(kg) (approx.)
	e	Y_1	Y_2	Y_0	d_{amin}	D_{amin}	S_{amin}	r_{amax}	r_{bmax}	
352224X2	0.41	1.64	2.44	1.60	133	200	13	2.5	1	19.1
352224X2D	0.41	1.64	2.44	1.60	133	200	13	2.5	0.8	19.6
352224	0.41	1.64	2.44	1.60	133	201	11.5	2.5	1	19.2
352224/YAD	0.41	1.64	2.44	1.60	133	201	11.5	2.5	1	19.2
352224/YB4	0.41	1.64	2.44	1.60	133	201	11.5	2.5	1	19.2
30224T133/DB	0.44	1.55	2.31	1.52	133	201	9.5	2.5	0.8	17.7
30324T132/DB	0.35	1.96	2.91	1.91	135	236	13.5	3	1	31.3
350624-1	0.39	1.74	2.59	1.70	138	255	15	4	1.5	54.5
3506/127	0.55	1.23	1.83	1.20	145	219	21	3	1	20.5
352926X2	0.27	2.49	3.71	2.43	142	171	6.5	2	0.5	4.87
352026X2	0.35	1.94	2.88	1.89	143	189	10	2.5	0.7	9.72
352026X2/YA10	0.35	1.94	2.88	1.89	143	189	10	2.5	0.7	9.74
352126X2-1	0.39	1.74	2.59	1.70	143	197	8	2.5	0.6	9.81
352126X2	0.32	2.13	3.17	2.08	142	198	8.5	2.3	0.7	15.7
352226	0.44	1.55	2.31	1.52	146	218	13.8	3	1	24.0
352226/YA10	0.44	1.55	2.31	1.52	146	218	13.8	3	1	24.0
352226/YAD	0.44	1.55	2.31	1.52	146	218	13.8	3	1	24.3
352226X2	0.44	1.55	2.31	1.52	146	218	14.5	3	0.8	26.7
352226X2/YA10	0.44	1.55	2.31	1.52	146	218	14.5	3	0.8	26.7
352226X2/YA10-1	0.44	1.55	2.31	1.52	146	218	14.5	3	0.8	26.9
352226X2-RS/HCR	0.43	1.57	2.34	1.53	146	215	14.5	3	0.8	26.1
352226X2-1/YA10	0.44	1.55	2.31	1.52	146	218	15	3	0.8	26.8
350626D1	0.39	1.74	2.59	1.70	143	217	15	2.3	1.3	24.7
31326T164/DB	0.83	0.82	1.22	0.80	148	260	28	4	1.3	43.2
352028X2	0.37	1.83	2.72	1.79	153	200	10	2.5	0.7	10.0
352028X2DR	0.37	1.83	2.72	1.79	153	200	10	2.5	0.7	8.41
32028T100/DBYB2	0.46	1.47	2.19	1.44	153	202	11	2.5	0.5	12.4
32028T102/DB	0.46	1.47	2.19	1.44	153	202	11	2.5	0.5	12.5
352028	0.46	1.47	2.19	1.44	153	202	11	2.5	0.6	11.9
352028/HC	0.46	1.47	2.19	1.44	153	202	11	2.5	0.6	12.1
350628DR	0.37	1.80	2.69	1.76	153	204	10	2.3	0.7	13.0
352128	0.34	2.00	2.98	1.96	153	209	12.5	2.5	1	15.5
352228X3	0.44	1.54	2.29	1.50	156	227	13	3	2	24.7
350228/YAB	0.44	1.54	2.29	1.50	156	227	9.8	3	2	19.5
30228T106/DB	0.44	1.55	2.31	1.52	156	233	9.8	3	1	19.8
352228	0.44	1.55	2.31	1.52	156	238	13.8	3	1	31.0
32228T156.5/DB	0.44	1.55	2.31	1.52	156	238	13.8	3	1	30.9
352228X2	0.44	1.55	2.31	1.52	156	237	14.5	3	1	31.5
32228T158/DB	0.44	1.55	2.31	1.52	156	238	13.8	3	1	30.8
351328	0.83	0.82	1.22	0.80	158	280	30	4	1.1	51.2

d 150～160mm

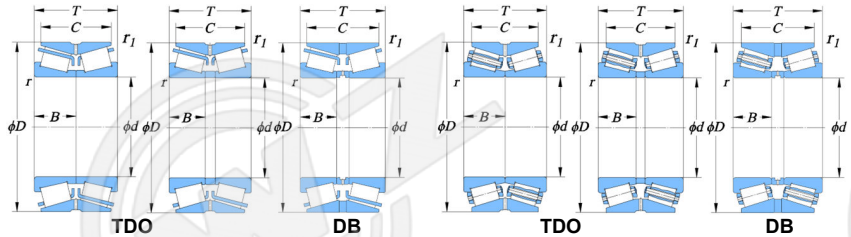


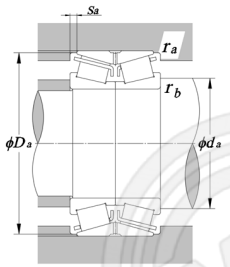
Pressed cage　　Machined cage



Principal dimensions(mm)							Basic load ratings(kN)		Limiting speeds (r/min)		Designations	Factor				Abutment and fillet dimensions(mm)					Mass(kg) (approx.)
d	*D*	*T*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}	Grease	Oil		*e*	Y_1	Y_2	Y_o	d_{amin}	D_{amin}	S_{amin}	r_{amax}	r_{bmax}	
150	210	79	36	62	2.5	0.7	425	795	1200	1500	**352930X2**	0.27	2.48	3.69	2.42	163	198	8.5	2.5	0.7	9.32
	210	79	36	62	2.5	0.7	425	795	1200	1500	**352930X2D**	0.27	2.48	3.69	2.42	163	198	8.5	2.5	0.7	9.12
	210	86	38	70	2.5	0.6	505	916	1200	1500	**352930**	0.33	2.06	3.06	2.01	163	201	8	2.5	0.6	9.64
	225	79	36	62	2.5	0.7	425	795	1100	1400	**352930X3**	0.27	2.48	3.69	2.42	163	198	8.5	2.5	0.7	11.8
	225(236)	105	45	80	3	0.7	533	923	1100	1400	**352030X2DR**	0.39	1.73	2.58	1.69	164	212	12.5	2.5	0.7	13.8
	225	112	45	88	3	1	539	936	1100	1400	**350630**	0.39	1.73	2.58	1.69	164	212	12	2.5	1	14.1
	225	112	45	88	3	1	539	936	1100	1400	**350630/YB2**	0.39	1.73	2.58	1.69	164	212	12	2.5	1	14.1
	250	80	34	71	3	1	545	851	1000	1300	**352130X2**	0.40	1.70	2.54	1.67	164	231	4.5	2.5	1	15.0
	250	100	44	80	3	1	768	1270	1000	1300	**352130X2-1/YA10**	0.35	1.91	2.85	1.87	164	232	10	2.5	1	18.5
	250	138	60	112	2.5	1	943	1560	1000	1300	**352130**	0.25	2.74	4.08	2.68	163	233	13	2.5	1	25.8
	255	145	72.5	110	3	1.3	1050	1830	980	1300	**350630D1**	0.39	1.74	2.59	1.70	164	239	17.5	2.5	1.3	28.3
	270	109	45	87	4	1	840	1190	940	1200	**350630-1**	0.44	1.55	2.31	1.52	166	249	11	3	1	24.5
	270	164	73	130	4	1	1410	2330	940	1200	**352230**	0.44	1.55	2.31	1.52	166	254	17	3	1	38.8
	270	164	73	130	4	1	1410	2330	940	1200	**352230/YA10**	0.44	1.55	2.31	1.52	166	254	17	3	1	38.7
	270	169	73	138	4	1	1410	2330	940	1200	**352230X2**	0.44	1.55	2.31	1.52	166	255	15.5	3	1	39.4
	270	172	74.5	136	4	1	1410	2330	940	1200	**352230X2-2/YA10**	0.44	1.55	2.31	1.52	166	254	18	3	1	39.9
	270	172	74.5	138	4	1	1410	2330	940	1200	**352230X2-1**	0.44	1.55	2.31	1.52	166	255	17	3	1	39.8
	270	172	74.5	138	4	1	1410	2330	940	1200	**352230X2-1/YA10**	0.44	1.55	2.31	1.52	166	255	17	3	1	39.7
159	270	140	65	120	2.5	1	1060	1930	920	1200	**352132X2K1/HAYA1**	0.32	2.12	3.15	2.07	172	249	10	2.5	1	31.8
	270	150	70	120	2.5	1	1050	1720	920	1200	**3521/159X2**	0.36	1.86	2.76	1.81	172	254	15	2.5	1	28.4
	270	150	70	120	2.5	1	1060	1930	920	1200	**352132X2/YAB1**	0.32	2.12	3.15	2.07	172	249	15	2.5	1	33.2
159.5	270	150	70	120	2.5	1	1060	1930	910	1200	**352132X2/YAB**	0.32	2.12	3.15	2.07	172.5	249	15	2.5	1	33.1
159.8	270	140	65	120	2.5	1	1060	1930	910	1200	**3506/159.8**	0.32	2.12	3.15	2.07	172.8	249	10	2.5	1	31.8
	270	140	65	120	2.5	1	1060	1930	910	1200	**352132X2/HAYB2**	0.32	2.12	3.15	2.07	172.8	249	10	2.5	1	31.8
160	220	81	36	65	2.5	0.7	475	888	1100	1400	**352932X2**	0.27	2.51	3.74	2.45	173	211	8	2.5	0.7	8.15
	220	90	38	74	2.5	0.7	495	1050	1100	1400	**32932/DB**	0.35	1.95	2.90	1.91	173	212	8	2.5	0.7	8.52
	220	104	38	88	2.5	2	495	1050	1100	1400	**32932/DBY**	0.35	1.95	2.90	1.91	173	212	8	2.5	2	8.43
	240	112	51	86	3	0.8	783	1450	1000	1300	**32032T112/DB**	0.46	1.47	2.19	1.44	174	230	13	2.5	0.8	15.9
	240	114	51	84	3	0.6	783	1450	1000	1300	**352032X2-1**	0.46	1.47	2.19	1.44	174	230	15	2.5	0.6	16.7
	240	115	48	90	3	0.9	747	1340	1000	1300	**352032X2**	0.37	1.83	2.72	1.79	174	228	12.5	2.5	0.9	16.5
	270	140	65	120	2.5	1	1060	1930	910	1200	**352132X2/HA**	0.32	2.12	3.15	2.07	173	249	10	2.5	1	31.8
	270	140	65	120	2.5	1	1060	1930	910	1200	**352132X2/HAYA1**	0.32	2.12	3.15	2.07	173	249	10	2.5	1	31.8
	270	140	65	120	2.5	1	1060	1930	910	1200	**352132X2/YB**	0.32	2.12	3.15	2.07	173	249	10	2.5	1	32.1
	270	140	70	110	2.5	0.9	1180	2000	910	1200	**350632D1**	0.36	1.86	2.76	1.81	173	254	15	2.5	0.9	27.3
	270	150	70	120	2.5	1	1050	1720	910	1200	**352132X2**	0.36	1.86	2.76	1.81	173	254	15	2.5	1	28.3
	270	150	70	120	2.5	1	1060	1930	910	1200	**352132X2/HA-1**	0.32	2.12	3.15	2.07	173	249	15	2.5	1	32.9
	270	150	70	120	2.5	1	1050	1720	910	1200	**352132X2/YB4**	0.36	1.86	2.76	1.81	173	254	15	2.5	1	28.3
	270	150	70	120	2.5	1	1060	1930	910	1200	**352132X2/YB41**	0.32	2.12	3.15	2.07	173	249	15	2.5	1	32.9
	290	178	80	144	4	1	1670	2830	860	1100	**352232**	0.44	1.55	2.31	1.52	176	274	17	3	1	49.1
	290	178	80	144	4	1	1670	2830	860	1100	**32232/DB**	0.44	1.55	2.31	1.52	176	274	17	3	1	48.6

d 160～190mm

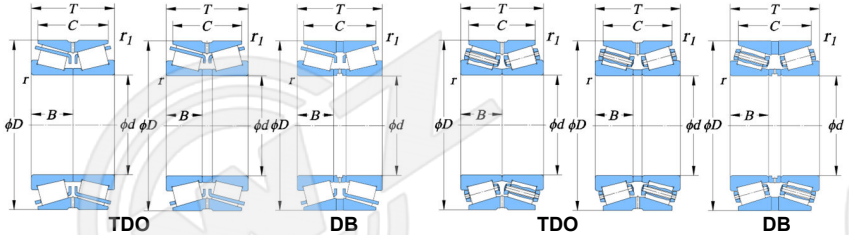


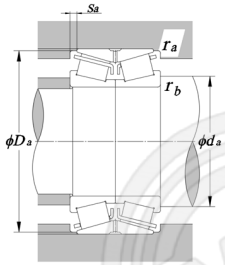


Principal dimensions(mm)							Basic load ratings(kN)		Limiting speeds (r/min)	
d	*D*	*T*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}	Grease	Oil
160	290	178	80	144	4	1	1670	2830	860	1100
	290	178	80	178	4	1.1	1440	2420	860	1100
	290	179	80	145	4	1	1670	2830	860	1100
	290	180	80	140	3	1.1	1440	2420	860	1100
	290	210	80	176	4	1	1670	2830	860	1100
	300	178	80	144	4	1	1650	2760	840	1100
165	290	150	70	125	3	1.3	1310	2270	850	1100
170	230	81.5	36	65	2.5	0.7	481	920	1000	1300
	260	120	54	95	3	0.9	830	1550	910	1200
	260	120	54	95	3	0.9	830	1550	910	1200
	260	128	57	100	3	1	830	1550	910	1200
	280	150	66	120	2.5	1	1170	2000	860	1100
	280	150	66	120	2.5	1	1140	2140	860	1100
	280	150	66	130	2.5	1	1140	2140	860	1100
171.45	260.35	141.288	66.675	112.712	3.5	0.6	1030	2090	910	1200
175	305	210	97.0625	192	4.8	1	1450	2650	800	1100
	305	210	97.0625	196	4.8	1	1460	2670	800	1100
180	250	95	42	74	2.5	0.7	558	1060	910	1200
	250	95	47.5	74	2.5	0.7	558	1290	910	1200
	259.5	70	35	70	2.5	1	454	767	890	1200
	270	109.538	47	84.138	2.5	0.6	792	1450	860	1100
	280	130.25	60	108	3	0.9	1020	1810	840	1100
	280	134	60	108	3	0.9	1020	1810	840	1100
	280	142	64	110	3	1	1140	2130	840	1100
	280	150	63.5	118	3	1	1020	1810	840	1100
	280	150	64	118	3	1	1140	2130	840	1100
	285	108	54	79.4	2.5	2.3	785	1280	830	1100
	300	120	53.5	96	4	1.5	1020	1720	800	1100
	300	164	72	134	3	1	1330	2350	800	1100
	300	164	72	134	3	1	1330	2350	800	1100
	320	189	86	145	3.7	1.3	1680	2750	760	960
	320	192	86	152	5	1.3	1820	3060	760	960
	320	192	86	152	5	1.1	1680	2750	760	960
	320	192	86	152	5	1.1	1680	2750	760	960
	320	192	86	152	5	1.3	1680	2750	760	960
	320	196	86	156	5	1.3	1950	3400	760	960
	340	180	83	140	5	1.3	1880	2870	720	910
	340	180	83	140	5	2	1810	3180	720	910
190	260	95	42	75	2.5	0.7	634	1270	860	1100
	260	102	45	80	2.5	0.7	634	1270	860	1100

Designations	Factor				Abutment and fillet dimensions(mm)					Mass(kg) (approx.)
	e	Y_1	Y_2	Y_0	d_{amin}	D_{amin}	S_{amin}	r_{amax}	r_{bmax}	
352232/YA10	0.44	1.55	2.31	1.52	176	274	17	3	1	49.0
352232-2Z	0.40	1.70	2.53	1.66	177	276	1	3	1.1	51.6
32232T179/DB	0.44	1.55	2.31	1.52	176	274	17	3	1	48.9
352232X2/YA6	0.40	1.70	2.53	1.66	175.4	269	20	2.5	1.1	46.2
32232/DBYA10	0.44	1.55	2.31	1.52	176	274	17	3	1	53.5
352232X3/YAD	0.43	1.55	2.31	1.52	176	280	17	3	1	53.8
350633/HC	0.31	2.20	3.27	2.15	180.4	267	12.5	2.5	1.3	41.1
352934X2	0.28	2.39	3.56	2.34	183	221	8.3	2.5	0.7	8.11
352034X2	0.31	2.18	3.24	2.13	184	244	12.5	2.5	0.9	20.4
352034X2D	0.31	2.18	3.24	2.13	184	244	12.5	2.5	0.9	20.0
352034A	0.31	2.18	3.24	2.13	184	244	14	2.5	1	22.1
352134	0.38	1.78	2.65	1.74	183	263	15	2.5	1	35.6
352134/HA	0.33	2.02	3.00	1.97	183	258	15	2.5	1	35.9
352134-1	0.33	2.02	3.00	1.97	183	261	10	2.5	1	36.3
3506/171X4	0.40	1.68	2.50	1.64	184.8	248	14.3	3	0.6	25.9
197735Y-1	0.35	1.95	2.90	1.91	190.9	284	9	4.8	1	62.3
197735Y	0.35	1.95	2.90	1.91	190.9	284	7	4.8	1	62.3
352936X2	0.37	1.84	2.74	1.80	193	239	10.5	2.5	0.7	12.3
352936X2BD1	0.48	1.41	2.09	1.37	193	240	10.5	2.5	0.7	13.8
350636D1-1	0.72	0.94	1.40	0.92	193	249	1	2.5	1	11.3
352936X3	0.37	1.80	2.69	1.76	193	253	12.7	2.5	0.6	19.2
352036X2-1	0.28	2.43	3.61	2.37	194	263	11.2	2.5	0.9	27.3
352036X2	0.28	2.43	3.61	2.37	194	262	13	2.5	0.9	27.9
352036	0.42	1.60	2.38	1.56	194	267	16	2.5	1	29.8
32036X2AT150/DB	0.28	2.43	3.61	2.37	194	262	16	2.5	1	29.4
352036X21/HCYAD	0.42	1.60	2.38	1.56	194	267	16	2.5	1	31.3
350636D1	0.35	1.95	2.90	1.91	194	264	14.3	2.5	2.3	23.2
352136X2/YA6	0.35	1.96	2.91	1.91	196	277	12	3	1.5	32.4
352136	0.26	2.64	3.93	2.58	194	276	15	2.5	1	39.9
352136/HC	0.26	2.64	3.93	2.58	194	276	15	2.5	1	39.9
352236X2/YA6	0.36	1.85	2.76	1.81	197.6	297	22	3.7	1.3	52.3
352236/HCYAD	0.36	1.85	2.76	1.81	198	298	20	4	1.3	61.7
352236/YAB	0.36	1.85	2.76	1.81	198	298	20	4	1.1	60.0
352236/YAB1	0.36	1.85	2.76	1.81	198	298	20	4	1.1	60.0
352236/YA6	0.36	1.85	2.76	1.81	198	298	20	4	1.3	60.0
32236T196/DB	0.45	1.50	2.23	1.47	198	303	20	4	1.3	67.5
350636	0.35	1.96	2.91	1.91	198	318	20	4	1.3	71.9
350636-1	0.32	2.12	3.15	2.07	198	307	20	4	2	71.2
352938X2	0.38	1.76	2.62	1.72	203	249	10	2.5	0.7	13.2
32938X2/DB	0.38	1.76	2.62	1.72	203	250	11	2.5	0.7	14.4

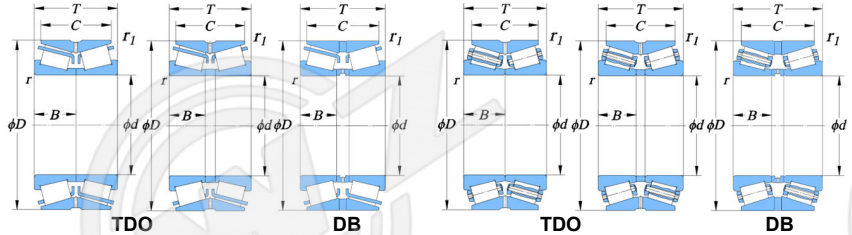
d 190～220mm

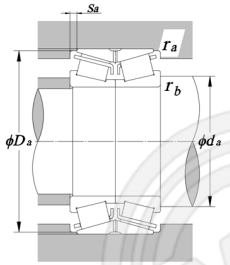




Principal dimensions(mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations	Factor				Abutment and fillet dimensions(mm)					Mass(kg) (approx.)
d	*D*	*T*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}	Grease	Oil		*e*	Y_1	Y_2	Y_0	d_{amin}	D_{amin}	S_{amin}	r_{amax}	r_{bmax}	
190	290	134	60	104	3	0.9	1020	1860	800	1100	**352038X2**	0.37	1.83	2.72	1.79	204	275	15	2.5	0.9	28.8
	290	134	60	104	3	0.9	1020	1860	800	1100	**352038X2/YA1**	0.37	1.83	2.72	1.79	204	275	15	2.5	0.9	28.8
	290	135	60	104	3	0.9	1020	1860	800	1100	**352038X2-1**	0.37	1.83	2.72	1.79	204	275	15.5	2.5	0.9	29.3
	290	146	64	114	3	1	1180	2240	800	1100	**32038T146/DB**	0.44	1.53	2.27	1.49	204	278	16	2.5	1	31.6
	320	170	76	130	3	1	1430	2480	740	940	**352138X2**	0.31	2.15	3.20	2.10	204	293	20	2.5	1	52.0
	320	171	76.5	134	3	1	1520	2700	740	940	**352138X2-2**	0.31	2.15	3.20	2.10	204	293	18.5	2.5	1	53.1
	320	172	77	134	3	1	1520	2700	740	940	**352138X2-1/HC**	0.31	2.15	3.20	2.10	204	293	19	2.5	1	53.2
	320	172	77	134	3	1	1520	2700	740	940	**352138X2-1/HCE**	0.31	2.15	3.20	2.10	204	293	19	2.5	1	53.2
	340	204	92	160	5	1.5	2020	3500	700	890	**352238/YAD**	0.44	1.55	2.31	1.52	210	323	22	4	1.5	75.0
	340	204	92	160	5	1.5	2020	3500	700	890	**352238/YAD-TD**	0.44	1.55	2.31	1.52	205	323	22	4	1.5	75.0
200	280	105	48	85	3	1	756	1580	800	1100	**352940X2-4**	0.39	1.72	2.56	1.68	215	268	10	2.5	1	17.8
	280	106	48.5	85	3	1	756	1580	800	1100	**352940X2/YAD**	0.39	1.72	2.56	1.68	215	268	10.5	2.5	1	17.9
	280	109	48	85	3	1	739	1530	800	1100	**352940X2**	0.39	1.72	2.56	1.68	215	268	12	2.5	1	18.1
	280	110	48.5	85	3	1	739	1530	800	1100	**352940X2-3**	0.39	1.72	2.56	1.68	215	268	12.5	2.5	1	18.2
	280	112	51	88	3	0.9	825	1770	800	1100	**32940T112/DB**	0.39	1.71	2.54	1.67	215	270	12	2.5	0.9	20.4
	280	112	51	88	3	0.5	825	1770	800	1100	**352940X2-5**	0.39	1.71	2.54	1.67	215	270	12	2.5	0.5	20.6
	280	116	51	92	3	1	825	1770	800	1100	**352940**	0.39	1.71	2.54	1.67	215	270	12	2.5	1	21.0
	280	116	51.5	85	3	1	739	1530	800	1100	**352940X2-1**	0.39	1.72	2.56	1.68	215	268	15.5	2.5	1	18.9
	280	117	55	97	3	0.6	739	1530	800	1100	**352940X2-2**	0.39	1.72	2.56	1.68	215	271	10	2.5	0.6	20.7
	310	151	66	118	3	1	1090	2070	740	940	**352040X2-1**	0.39	1.72	2.56	1.68	215	292	16.5	2.5	1	38.9
	310	151	66	120	3	1	1090	2070	740	940	**352040X2**	0.39	1.72	2.56	1.68	215	293	15.5	2.5	1	38.3
	310	151	66	123	3	1	1090	2070	740	940	**352040X2-2**	0.39	1.72	2.56	1.68	215	293	14	2.5	1	38.6
	310	154	70	120	3	1	1380	2610	740	940	**352040**	0.43	1.57	2.34	1.53	215	296	17	2.5	1	41.9
	310	155	66	127	3	0.8	1090	2070	740	940	**32040X2/DB**	0.39	1.72	2.56	1.68	215	293	14	2.5	0.8	38.9
	310	156	66	128	3	1	1090	2070	740	940	**32040X2T156/DB**	0.39	1.72	2.56	1.68	215	293	14	2.5	1	38.9
	320	110	48.5	85	3	1	981	1560	720	910	**352940X3/YA10**	0.42	1.60	2.38	1.57	215	300	12.5	2.5	1	30.3
	330	180	83	140	3	1	1690	3100	700	890	**350640-1**	0.42	1.62	2.42	1.59	216	311	20	2.5	1	58.0
	340	112	50.5	100	3	1.5	1160	1840	690	870	**350640**	0.25	2.74	4.08	2.68	216	311	6	2.5	1.5	40.0
	340	112	50.5	100	3	1.5	1160	1840	690	870	**350640/YA10**	0.25	2.74	4.08	2.68	216	311	6	2.5	1.5	40.0
	340	165	52.5	130	4	2.5	1660	2860	690	870	**352140X2D1/YAD**	0.40	1.68	2.50	1.64	217	318	17.5	3	2.5	58.0
	340	165	52.5	130	4	2.5	1660	2860	690	870	**352140X2D1/HCEYAD**	0.40	1.68	2.50	1.64	217	318	17.5	3	2.5	58.0
	340	184	82	150	3	1	1750	3100	690	870	**352140**	0.25	2.74	4.08	2.68	215	313	17	2.5	1	63.8
	360	148	58	116	5	1.3	1500	2260	650	830	**30240T148/DB**	0.44	1.55	2.31	1.52	219	335	16	4	1.3	57.8
	360	218	98	174	5	1.1	2590	4350	650	830	**352240/HCYA10**	0.41	1.66	2.47	1.62	221	339	22	4	1.1	88.5
	360	218	98	174	5	1.1	2590	4350	650	830	**352240/YA10**	0.41	1.66	2.47	1.62	221	339	22	4	1.1	88.5
205	320	150	75	110	3.7	1.3	1090	2070	710	900	**351041X2D1**	0.39	1.72	2.56	1.68	223.6	293	20	3.7	1.3	40.2
220	300	109	47.5	88	3	0.9	798	1720	720	910	**352944X2-1**	0.31	2.18	3.24	2.13	235	286	10.5	2.5	0.9	20.8
	300	110	48	88	3	0.9	798	1720	720	910	**352944X2**	0.31	2.18	3.24	2.13	235	286	11	2.5	0.9	21.2
	300	110	48	88	3	0.9	798	1720	720	910	**352944X2/HC**	0.31	2.18	3.24	2.13	235	286	11	2.5	0.9	21.2
	340	113	56.5	90	4	1.5	1090	1980	650	830	**352044X2D1/YAB**	0.36	1.87	2.79	1.83	237	316	11.5	3	1.5	34.5

d 220～240mm



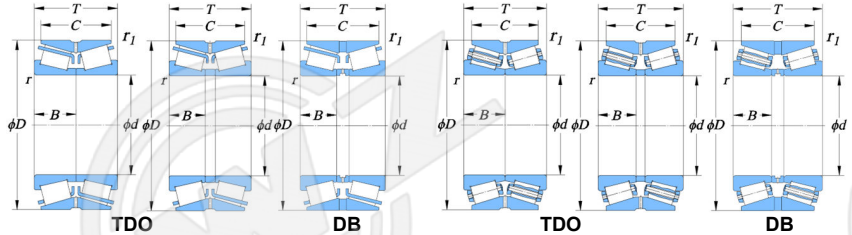


d	Principal dimensions(mm) D	T	B	C	r_{min}	r_{1min}	Basic load ratings(kN) C_r	C_{or}	Limiting speeds (r/min) Grease	Oil
220	340	164	72	130	4	1.1	1490	2730	650	830
	340	165	72	130	4	1.5	1490	2730	650	830
	340	165	72	130	4	1.5	1490	2730	650	830
	340	165	72	130	4	1.5	1490	2730	650	830
	340	165	76	127	4	1.5	1600	3050	650	830
	340	166	76	128	4	1	1600	3050	650	830
	340	168	76	130	4	1	1600	3050	650	830
	370	120	50	107	5	1.5	1230	1890	610	770
	370	195	88	150	4	1.3	1870	3240	610	770
225	360	146.5	73.25	111	3	1.1	1300	2310	610	780
228.6	488.95	345	150	220	5	1.5	3740	6070	470	600
230	355	145	72.5	110	4.7	2.3	1300	2310	610	780
240	320	104	48	82	3	1	755	1590	650	830
	320	105	48.5	82	3	1	755	1590	650	830
	320	109	48	87	3	1	755	1590	650	830
	320	109	48	87	3	1	755	1590	650	830
	320	109	48	90	3	1	755	1590	650	830
	320	110	48.5	87	3	1	755	1590	650	830
	320	116	51	92	3	1	980	2130	650	830
	320	119	51	95	3	0.8	980	2130	650	830
	320	120	48	100	3	0.8	755	1590	650	830
	360	92	39	82	4	1.5	854	1530	590	750
	360	115	50	92	4	1.5	1160	2090	590	750
	360	165	72	130	4	1.1	1490	2940	590	750
	360	165	72	130	4	1.1	1490	2940	590	750
	360	165	72	130	4	1.1	1490	2940	590	750
	360	165	72	130	4	1.1	1490	2940	590	750
	360	165	72	130	4	1.1	1490	2940	590	750
	360	170	72	143	4	1.1	1490	2940	590	750
	360	171	72	142	4	1.1	1490	2940	590	750
	360	172	76	134	4	1	1620	3160	590	750
	360	172	76	134	4	1	1620	3160	590	750
	400	128	59	114	5	1.5	1350	2250	550	690
	400	160	71	128	5	1.5	1840	3190	550	690
	400	160	71	128	5	1.5	1840	3190	550	690
	400	210	95	163	4	1.1	2260	4050	550	690
	400	210	95	168	4	1.1	2260	4050	550	690
	422.27	180	90	140	4	3	2060	3720	520	660
	440	294	120	240	5	1.3	3530	6310	500	640
	440	294	120	240	5	1.5	3530	6310	500	640

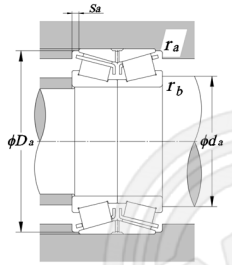
Designations	Factor e	Y_1	Y_2	Y_o	Abutment and fillet dimensions(mm) d_{amin}	D_{amin}	S_{amin}	r_{amax}	r_{bmax}	Mass(kg) (approx.)
352044X2	0.35	1.95	2.90	1.91	237	321	17	3	1.1	47.7
352044X2-1	0.35	1.95	2.90	1.91	237	321	17.5	3	1.5	47.9
352044X2-1/HCE	0.35	1.95	2.90	1.91	237	321	17.5	3	1.5	47.9
352044X2-1/HG2	0.35	1.95	2.90	1.91	237	321	17.5	3	1.5	49.7
352044X2A/HC	0.43	1.57	2.34	1.53	237	325	19	3	1.5	50.8
32044T166/DB	0.43	1.57	2.34	1.53	237	325	19	3	1	50.6
32044T168/DB	0.43	1.57	2.34	1.53	237	325	19	3	1	50.8
350644	0.37	1.83	2.72	1.79	241	346	6.5	4	1.5	46.9
352144	0.37	1.83	2.72	1.79	237	344	22.5	3	1.3	76.3
350645D1	0.36	1.87	2.79	1.83	241.4	333	17.8	2.5	1.1	48.2
3506/228X4	0.87	0.78	1.16	0.76	249.6	461	62.5	4	1.5	286
350646D1	0.36	1.87	2.79	1.83	251	333	17.5	4.7	2.3	43.6
352948X2	0.32	2.12	3.15	2.07	255	306	11	2.5	1	23.6
352948X2-3	0.32	2.12	3.15	2.07	255	306	11.5	2.5	1	22.4
352948X2-1	0.32	2.12	3.15	2.07	255	306	11	2.5	1	23.2
352948X2-1/YA1W	0.32	2.12	3.15	2.07	255	306	11	2.5	1	23.0
352948X2-2	0.32	2.12	3.15	2.07	255	306	9.5	2.5	1	23.5
352948X21	0.32	2.12	3.15	2.07	255	306	11.5	2.5	1	22.1
352948	0.46	1.47	2.19	1.44	255	311	12	2.5	1	23.6
32948T119/DBY	0.46	1.47	2.19	1.44	255	311	12	2.5	0.8	15.2
32948X2AT120/DB	0.32	2.12	3.15	2.07	255	306	10	2.5	0.8	24.5
352048X22	0.39	1.74	2.59	1.70	257	336	5	3	1.5	31.0
352048X21	0.35	1.95	2.90	1.91	257	338	11.5	3	1.5	37.5
352048X2	0.31	2.15	3.20	2.10	257	336	17.5	3	1.1	52.8
352048X2/HC	0.31	2.15	3.20	2.10	257	336	17.5	3	1.1	52.8
352048X2/HC-XRBL	0.31	2.15	3.20	2.10	257	336	17.5	3	1.1	53.2
352048X2/HG2YA10	0.31	2.15	3.20	2.10	257	336	17.5	3	1.1	52.8
352048X2/YA1	0.31	2.15	3.20	2.10	257	336	17.5	3	1.1	53.1
32048X2T170/DB	0.31	2.15	3.20	2.10	257	338	13.5	3	1.1	55.5
32048X2AT171/DB	0.31	2.15	3.20	2.10	257	338	14.5	3	1.1	52.7
32048T172/DB	0.46	1.47	2.19	1.44	257	345	19	3	1	56.9
352048X2-1	0.46	1.47	2.19	1.44	257	345	19	3	1	56.9
350648	0.43	1.57	2.34	1.53	261	376	7	4	1.5	60.0
350648/HC-1	0.39	1.74	2.59	1.70	261	373	16	4	1.5	81.2
350648-1	0.39	1.74	2.59	1.70	261	373	16	4	1.5	81.2
352148	0.31	2.18	3.24	2.13	257	371	23.5	3	1.1	98.1
352148X2	0.31	2.18	3.24	2.13	257	372	21	3	1.1	98.5
350648/HCYAB	0.42	1.60	2.38	1.57	259	394	20	3	2.5	101
32248/HCDB	0.44	1.55	2.31	1.52	261	414	27	4	1.3	184
350648X3	0.44	1.55	2.31	1.52	261	414	27	4	1.5	185

ZWZ

d 242～280mm

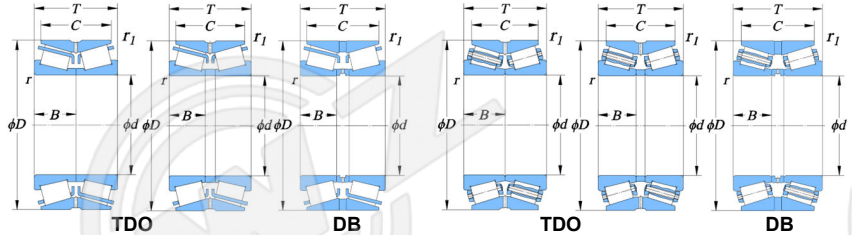


Pressed cage　　Machined cage

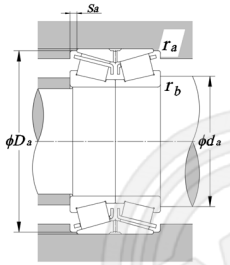


Principal dimensions(mm)							Basic load ratings(kN)		Limiting speeds (r/min)		Designations	Factor				Abutment and fillet dimensions(mm)					Mass(kg) (approx.)
d	*D*	*T*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}	Grease	Oil		*e*	Y_1	Y_2	Y_o	d_{amin}	D_{amin}	S_{amin}	r_{amax}	r_{bmax}	
242	406	206	92	162	4	1	2710	5030	540	680	**306/242/HC/DB**	0.43	1.57	2.34	1.53	259	384	22	3	1	101
	406	206	97	160	6.4	1	2700	4940	540	680	**3506/242/HC**	0.33	2.03	3.02	1.98	262.1	380	23	6.4	1	101
	406	206	97	162	6.4	1.5	2700	4940	540	680	**306/242/HCEDBYB2**	0.33	2.03	3.02	1.98	262.1	380	22	6.4	1.5	98.0
255	500	350	175	285	6.4	1.6	5110	9160	440	560	**30651-1/HCYAD/DB**	0.40	1.69	2.51	1.65	275.1	467	32.5	6.4	1.6	303
260	360	92	40	62	3	1	710	1420	570	720	**352952X2-3**	0.70	0.97	1.44	0.94	276	343	15	2.5	1	25.5
	360	133	60	108	3	1	1120	2430	570	720	**352952X2**	0.30	2.23	3.32	2.18	276	341	12.5	2.5	1	39.4
	360	133	60	109	3	1	1120	2430	570	720	**352952X2-1**	0.30	2.23	3.32	2.18	276	341	12	2.5	1	39.5
	360	134	60	108	3	1	1220	2520	570	720	**352952X2-2/HC**	0.41	1.66	2.47	1.62	276	348	13	2.5	1	37.5
	360	134	60	108	3	1	1200	2480	570	720	**352952X2-2/YB2**	0.41	1.66	2.47	1.62	276	348	13	2.5	1	37.5
	360	134	60.5	108	3	1	1140	2550	570	720	**352952X2-3/YB2**	0.29	2.32	3.45	2.26	276	339	13	2.5	1	38.3
	360	141	63.5	110	3	1	1200	2480	570	720	**352952**	0.41	1.66	2.47	1.62	276	347	15.5	2.5	1	39.0
	360	147	60	124	3	0.9	1120	2430	570	720	**32952X2AT147/DB**	0.30	2.23	3.32	2.18	276	342	11.5	2.5	0.9	42.8
	400	130	57	104	5	1.5	1390	2390	520	670	**352052X2-2**	0.40	1.68	2.50	1.64	281	377	13	4	1.5	53.9
	400	150	75	110	4.7	1.1	1530	2630	520	670	**37852**	0.35	1.95	2.90	1.91	281	375	20	4.7	1.1	60.3
	400	150	75	110	4.7	1.1	1530	2630	520	670	**352052X2-1**	0.35	1.95	2.90	1.91	281	375	20	4.7	1.1	60.3
	400	155	72	108	9.5	1.6	1530	2630	520	670	**352052X2-3**	0.35	1.95	2.90	1.91	296	375	23.5	8	1.6	62.2
	400	186	82	146	5	1.3	1920	3740	520	670	**352052X2**	0.30	2.28	3.39	2.23	281	373	20	4	1.3	79.3
	400	186	82	146	5	1.5	1960	3920	520	670	**352052X2/HCYAD-XRBL**	0.43	1.57	2.34	1.53	281	379	20	4	1.5	80.7
	400	194	87	150	5	1.1	2090	4060	520	670	**32052T194/DB**	0.43	1.55	2.31	1.52	281	382	22	4	1.1	81.3
	400	194	87	150	5	1.3	2090	4060	520	670	**352052X2A/HC**	0.43	1.55	2.31	1.52	281	382	22	4	1.3	81.4
	430	180	90	130	7.5	2.3	1710	2990	500	630	**350652D1**	0.35	1.95	2.90	1.91	291	393	25	6	2.3	87.9
	440	144	63.5	128	5	1.5	1840	3130	490	620	**352152X2/YA6-1**	0.37	1.83	2.72	1.78	281	407	8	4	1.5	84.5
	440	225	100	180	4	1.3	2680	4730	490	620	**352152X2/YA6**	0.24	2.84	4.23	2.78	278	404	22.5	3	1.3	124
	440	225	100	180	4	1.3	2680	4730	490	620	**352152X2/YAD**	0.24	2.84	4.23	2.78	278	404	22.5	3	1.3	124
	480	282	141	220	6.4	1.6	4110	7360	450	570	**32252X2/DBYB2**	0.43	1.57	2.34	1.53	282.2	450	31	6.4	1.6	210
	480	282	141	220	6.4	1.6	4090	7480	450	570	**32252X2/HCDBYB2**	0.33	2.03	3.02	1.98	282.2	449	31	6.4	1.6	208
	480	284	130	220	6	1.5	4110	7360	450	570	**352252**	0.43	1.57	2.34	1.53	284	449	32	5	1.5	216
280	380	134	60	108	3	0.9	1170	2650	520	670	**352956X2**	0.32	2.10	3.13	2.05	296	361	13	2.5	0.9	44.0
	380	134	60	108	3	0.9	1170	2650	520	670	**352956X2/HC**	0.32	2.10	3.13	2.05	296	361	13	2.5	0.9	44.0
	380	140	60	115	3	0.9	1170	2650	520	670	**32956X2A/DB**	0.32	2.10	3.13	2.05	296	361	12.5	2.5	0.9	46.3
	380	141	63.5	110	3	1	1350	2980	520	670	**352956/YA10**	0.43	1.56	2.32	1.53	296	367	15.5	2.5	1	43.2
	420	186	82	146	5	1.3	2080	4020	490	620	**352056X2**	0.37	1.83	2.72	1.79	301	399	20	4	1.3	81.5
	420	186	82	146	5	1.3	2080	4020	490	620	**352056X2/HG2**	0.37	1.83	2.72	1.79	301	399	20	4	1.3	81.5
	420	186	82	146	5	1.3	2080	4020	490	620	**352056X2/YA1**	0.37	1.83	2.72	1.79	306	399	20	4	1.3	81.5
	420	188	83	154	5	1.3	2080	4020	490	620	**352056X2-1**	0.37	1.83	2.72	1.79	301	401	17	4	1.3	82.7
	420	189	83.5	154	5	1.3	2080	4020	490	620	**352056X2-2**	0.37	1.83	2.72	1.79	301	401	17.5	4	1.3	82.9
	420	190	87	146	5	1.1	2180	4380	490	620	**352056**	0.46	1.47	2.19	1.44	301	402	22	4	1.1	85.9
	420	196	87	152	4	1.1	2180	4380	490	620	**32056/DB**	0.46	1.47	2.19	1.44	301	402	22	3	1.1	88.8
	460	146	65	130	6	2	1880	3080	450	570	**351156X2/YA6**	0.40	1.68	2.50	1.64	304	432	8	5	2	88.8
	460	185	82	140	5	1.5	2250	3870	450	570	**351156**	0.33	2.03	3.02	1.98	301	427	22.5	4	1.5	114

d 280～320mm



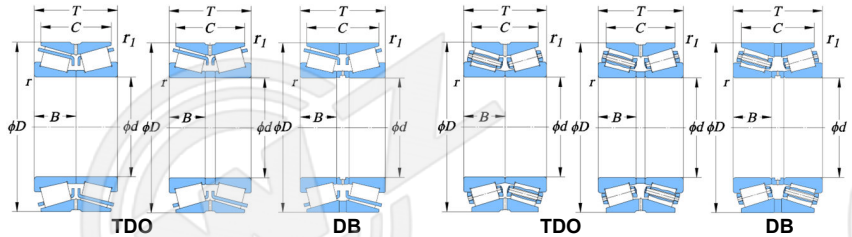
Pressed cage　　Machined cage

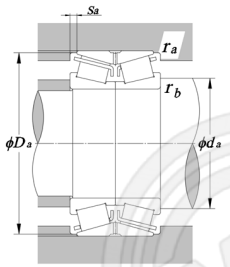


Principal dimensions(mm)							Basic load ratings(kN)		Limiting speeds(r/min)		Designations	Factor				Abutment and fillet dimensions(mm)					Mass(kg)
d	*D*	*T*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}	Grease	Oil		*e*	Y_1	Y_2	Y_o	d_{amin}	D_{amin}	S_{amin}	r_{amax}	r_{bmax}	(approx.)
280	470	250	115	180	6.4	1.5	3290	6410	440	560	**350656**	0.46	1.47	2.19	1.44	304	440	35	6.4	1.5	163
	500	195	86	145	6	1.5	2780	4580	420	530	**351156X3**	0.46	1.46	2.18	1.43	304	461	25	5	1.5	150
300	420	159	71.5	128	4	1.1	1640	3580	470	590	**352960X2A-1/HCE**	0.28	2.39	3.56	2.34	319	397	15.5	3	1.1	63.6
	420	159	71.5	128	4	1.1	1640	3580	470	590	**352960X2A-1/HCYA10**	0.28	2.39	3.56	2.34	319	397	15.5	3	1.1	63.5
	420	159	71.5	128	4	1.1	1650	3610	470	590	**352960X2A-2**	0.28	2.39	3.56	2.34	319	397	15.5	3	1.1	61.3
	420	160	72	128	4	1.1	1780	3780	470	590	**352960X2/HCR-1**	0.28	2.39	3.56	2.34	319	400	16	3	1.1	63.9
	420	160	72	128	4	1.1	1650	3610	470	590	**352960X2**	0.28	2.39	3.56	2.34	319	397	16	3	1.1	60.8
	420	160	72	128	4	1	1650	3610	470	590	**352960X2A**	0.28	2.39	3.56	2.34	319	397	16	3	1	60.8
	420	161	72.5	128	4	1.1	1650	3610	470	590	**352960X2A-1**	0.28	2.39	3.56	2.34	319	397	16.5	3	1.1	61.0
	420	166	76	128	4	1	1680	3530	470	590	**352960**	0.39	1.71	2.54	1.67	319	405	19	3	1	64.3
	420	175	72	147	4	1.1	1650	3610	470	590	**32960X2AT175/DB**	0.28	2.39	3.56	2.34	319	397	14	3	1.1	67.6
	440	140	62	100	5	1.5	1600	3010	450	570	**350660**	0.41	1.66	2.47	1.62	322	416	20	4	1.5	63.2
	440	140	62	100	5	1.5	1600	3010	450	570	**350660/HC**	0.41	1.66	2.47	1.62	322	416	20	4	1.5	63.2
	460	148	63	118	5	1.5	1840	3290	440	550	**351060X2/YB2**	0.42	1.60	2.39	1.57	322	433	15	4	1.5	80.5
	460	210	95	165	5	1.3	2500	4890	440	550	**352060X2**	0.36	1.85	2.76	1.81	322	435	22.5	4	1.3	118
	460	210	95	165	5	1.3	2500	4890	440	550	**352060X2/HC**	0.36	1.85	2.76	1.81	322	435	22.5	4	1.3	118
	460	210	95	165	5	1.3	2650	5280	440	550	**352060X2/HC-XRBL**	0.36	1.85	2.76	1.81	322	435	22.5	4	1.3	117
	460	220	100	168	5	1.3	2500	4890	440	550	**352060**	0.36	1.85	2.76	1.81	322	436	26	4	1.3	122
	500	160	72	142	6	2	2220	3750	410	520	**351160X21**	0.39	1.73	2.58	1.69	325	465	9	5	2	118
	500	200	90	160	6	3	2560	4460	410	520	**351160X2**	0.32	2.12	3.15	2.07	325	461	20	5	2.5	142
	500	203	91	152	5	1.5	2790	4970	410	520	**351160X2-1/HCE**	0.40	1.68	2.50	1.64	322	464	25.5	4	1.5	148
	500	203	91	152	5	1.5	2790	4970	410	520	**351160X2-1/HC-XRBL**	0.40	1.68	2.50	1.64	322	464	25.5	4	1.5	146
	500	203	91	152	5	1.5	2650	5060	410	520	**351160X2-1/HC-XRBL-1**	0.40	1.68	2.50	1.64	322	456	25.5	4	1.5	140
	500	205	90	152	5	1.5	2560	4460	410	520	**351160**	0.32	2.12	3.15	2.07	322	458	26.5	4	1.5	141
	500	205	90	152	5	1.5	2560	4460	410	520	**351160/HA**	0.32	2.12	3.15	2.07	322	458	26.5	4	1.5	141
	500	205	90	152	6	2.5	2560	4460	410	520	**351160/HCYAD**	0.32	2.12	3.15	2.07	325	458	26.5	5	2.5	141
	500	205	90	152	6	2.5	2560	4460	410	520	**351160/YA6**	0.32	2.12	3.15	2.07	325	458	26.5	5	2.5	141
320	440	160	72	128	4	1	1810	3900	440	550	**352964X2**	0.31	2.15	3.21	2.11	339	421	16	3	1	67.4
	440	160	72	128	4	1	1810	3900	440	550	**352964X2-1**	0.31	2.15	3.21	2.11	339	421	16	3	1	67.4
	440	195	72	167	4	1	1810	3900	440	550	**32964X2AT195/DB**	0.31	2.15	3.21	2.11	339	422	14	3	1	77.5
	440	195	195	168	4	1	1810	3900	440	550	**32964X2T195/DB**	0.31	2.15	3.21	2.11	339	422	13.5	3	1	77.7
	480	151	66.5	121	5	1.5	1950	3520	410	520	**350664**	0.32	2.08	3.10	2.04	342	452	15	4	1.5	88.9
	480	151	66.5	121	5	1.5	1950	3520	410	520	**350664/HCE**	0.32	2.08	3.10	2.04	342	452	15	4	1.5	88.9
	480	210	95	160	5	1.1	2700	5470	410	520	**352064X2**	0.46	1.47	2.19	1.44	342	458	25	4	1.1	124
	480	210	95	160	5	1.1	2700	5470	410	520	**352064X2/HG2**	0.46	1.47	2.19	1.44	342	458	25	4	1.1	124
	480	215	100	163	5	1.1	2800	5730	410	520	**352064X2-1**	0.46	1.47	2.19	1.44	342	461	26	4	1.1	129
	480	220	100	168	5	1.1	2800	5730	410	520	**352064**	0.46	1.47	2.19	1.44	342	461	26	4	1.1	134
	480	220	100	186	5	1.1	3000	6330	410	520	**352064X2A**	0.33	2.03	3.02	1.98	342	459	17	4	1.1	135
	540	218	96.5	160	5	1.5	3330	5720	370	470	**351164X2/HC**	0.40	1.68	2.50	1.64	342	502	29	4	1.5	179
	540	225	100	160	5	1.5	3330	5720	370	470	**351164**	0.40	1.68	2.50	1.64	342	502	32.5	4	1.5	181

ZWZ

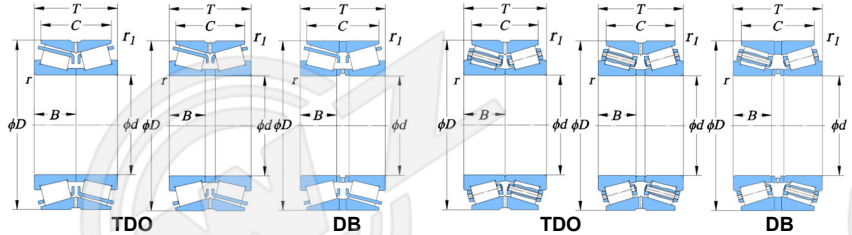
d 320～400mm



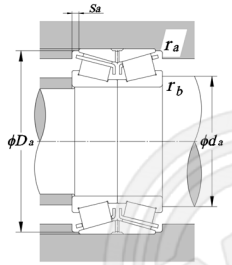


Principal dimensions(mm)							Basic load ratings(kN)		Limiting speeds (r/min)		Designations	Factor				Abutment and fillet dimensions(mm)					Mass(kg) (approx.)
d	*D*	*T*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}	Grease	Oil		*e*	Y_1	Y_2	Y_0	d_{amin}	D_{amin}	S_{amin}	r_{amax}	r_{bmax}	
320	580	340	155	260	6	3	5730	10500	340	440	**350664X3/HC**	0.43	1.57	2.34	1.53	345	543	40	5	2.5	369
340	460	160	72	128	4	1.1	1750	4060	410	520	**352968X2**	0.31	2.15	3.20	2.10	359	440	16	3	1.1	71.2
	460	160	72	128	4	1.1	1750	4060	410	520	**352968X2/YB2**	0.31	2.15	3.20	2.10	359	440	16	3	1.1	71.2
	460	160	72	128	4	1.5	1740	3950	410	520	**352968X2A/HG2**	0.40	1.68	2.50	1.64	359	444	16	3	1.5	70.5
	460	164	72	138	4	1	1710	3860	410	520	**32968X2A/DB**	0.41	1.63	2.43	1.60	359	446	13	3	1	70.1
	460	166	75	128	4	1.1	1750	4060	410	520	**352968**	0.31	2.15	3.20	2.10	359	440	19	3	1.1	72.3
	500	155	77.5	110	5	1.5	1810	3590	380	480	**350668D1**	0.44	1.54	2.29	1.50	362	468	22.5	4	1.5	91.3
	500	155	77.5	110	5	1.5	1810	3590	380	480	**350668D1/HC**	0.44	1.54	2.29	1.50	362	468	22.5	4	1.5	91.3
	500	156	70	130	5	1.5	2040	3940	380	480	**350668X2**	0.44	1.54	2.29	1.50	362	475	13	4	1.5	95.7
	500	249.225	111.125	203.2	6	1.5	3150	6780	380	480	**352068X2/HCE**	0.33	2.03	3.02	1.98	364	477	23.1	5	1.5	154
	520	165	82.5	133	6	2	2370	4600	370	470	**351068X2D1/HC**	0.39	1.73	2.58	1.69	367	488	16	5	2	117
	520	180	82	135	5	1.5	2270	4100	370	470	**351068**	0.29	2.35	3.50	2.30	362	482	22.5	4	1.5	127
	520	180	82	140	5	1.5	2550	4780	370	470	**351068/HCYAB**	0.29	2.35	3.50	2.30	362	483	20	4	1.5	125
	580	238	107	190	6	2	3550	6310	330	420	**351168X2**	0.40	1.68	2.50	1.64	365	539	24	5	2	234
	580	242	106	170	5	1.5	3470	5970	330	420	**351168**	0.42	1.60	2.38	1.56	362	535	36	4	1.5	231
	600	300	135	230	6	3	5020	9230	320	410	**350668/HCR**	0.35	1.95	2.90	1.91	365	553	35	5	2.5	333
360	480	160	72	128	4	1	1800	4280	380	480	**352972X2**	0.33	2.05	3.05	2.00	379	461	16	3	1	74.7
	540	169	70	134	6	2	2390	4400	340	440	**351072X2**	0.37	1.82	2.70	1.78	385	509	17.5	5	2	122
	540	185	82	140	5	1.5	2390	4400	340	440	**351072**	0.37	1.82	2.70	1.78	382	509	22.5	4	1.5	120
	540	185	82	140	5	1.5	2390	4400	340	440	**351072/HCE**	0.37	1.82	2.70	1.78	382	509	22.5	4	1.5	120
	560	300	136	240	6	2	4580	9640	330	420	**351072X3/HCRYA6**	0.28	2.43	3.61	2.37	385	526	30	5	2	252
	600	242	106	170	5	1.5	3770	6750	310	400	**351172**	0.44	1.53	2.27	1.49	382	556	36	4	1.5	221
	600	242	106	170	5	1.5	3770	6750	310	400	**351172/HC**	0.44	1.53	2.27	1.49	382	556	36	4	1.5	221
	600	242	106	170	5	1.5	3890	7040	310	400	**351172/HCYAD**	0.44	1.53	2.27	1.49	382	556	36	4	1.5	247
	600	242	106	170	5	1.5	3770	6750	310	400	**351172/HG2**	0.44	1.53	2.27	1.49	382	556	36	4	1.5	221
380	520	145	65	105	4	1.1	1830	3800	340	440	**351976**	0.38	1.77	2.64	1.73	399	495	20	3	1.1	78.8
	520	149	65	112	4	1.1	1830	3800	340	440	**351976X2**	0.38	1.77	2.64	1.73	399	495	18.5	3	1.1	82.4
	560	190	82	140	5	1.5	2370	4410	320	410	**351076**	0.39	1.75	2.61	1.71	402	527	25	4	1.5	137
	560	190	82	140	5	1.5	2370	4410	320	410	**351076/HCE-1**	0.39	1.75	2.61	1.71	402	527	25	4	1.5	136
	560	190	82	140	5	1.5	2370	4410	320	410	**351076/HCER**	0.39	1.75	2.61	1.71	402	527	25	4	1.5	137
	620	242	106	170	5	1.5	3770	6860	290	370	**351176**	0.46	1.47	2.18	1.43	402	578	36	4	1.5	250
400	500	108	45.5	82.5	6	1.5	1230	2890	340	440	**350680/YB2**	0.36	1.89	2.81	1.85	426	483	12.8	5	1.5	42.9
	540	145	65	100	4	1.1	1820	3860	320	410	**351980X2**	0.45	1.50	2.23	1.47	420	515	22.5	3	1.1	82.5
	540	150	65	105	4	1.1	1820	3860	320	410	**351980/HC**	0.45	1.50	2.23	1.47	420	515	22.5	3	1.1	84.5
	540	150	65	105	4	1.1	1820	3860	320	410	**351980**	0.45	1.50	2.23	1.47	420	515	22.5	3	1.1	84.6
	540	150	65	112	4	1.1	1820	3860	320	410	**351980X21**	0.45	1.50	2.23	1.47	420	517	19	3	1.1	85.7
	600	185	80	148	6	2	2950	5840	290	370	**351080X2-1**	0.37	1.83	2.72	1.78	426	562	18.5	5	2	168
	600	185	80	148	6	2.5	2950	5840	290	370	**351080X2-2**	0.37	1.83	2.72	1.78	426	562	18.5	5	2.5	168
	600	206	90	150	5	1.5	3180	6210	290	370	**351080**	0.38	1.78	2.65	1.74	423	564	28	4	1.5	179
	600	206	90	150	5	1.5	3180	6210	290	370	**351080/HAC3**	0.38	1.78	2.65	1.74	423	564	28	4	1.5	179

d 400～480mm

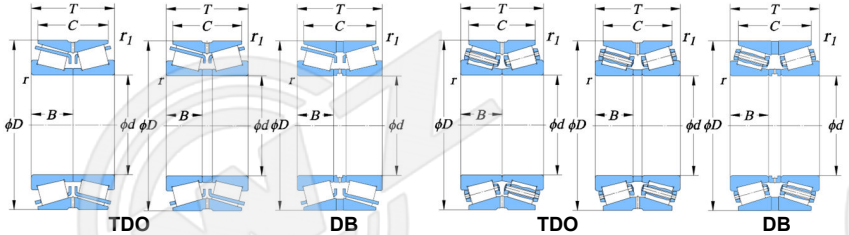


Pressed cage　　Machined cage

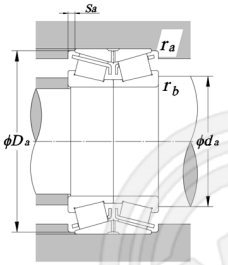


Principal dimensions(mm)							Basic load ratings(kN)		Limiting speeds (r/min)		Designations	Factor				Abutment and fillet dimensions(mm)					Mass(kg) (approx.)
d	*D*	*T*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}	Grease	Oil		*e*	Y_1	Y_2	Y_o	d_{amin}	D_{amin}	S_{amin}	r_{amax}	r_{bmax}	
400	600	206	90	150	5	1.5	3180	6210	290	370	**351080/HC**	0.38	1.78	2.65	1.74	423	564	28	4	1.5	179
	600	206	90	150	6	2	3180	6210	290	370	**351080/HCYAD**	0.38	1.78	2.65	1.74	426	564	28	5	2	179
	600	206	90	150	5	1.5	3180	6210	290	370	**351080/HG2YA10**	0.38	1.78	2.65	1.74	423	564	28	4	1.5	179
	600	230	100	178	5	1.5	3690	7550	290	370	**351080X2**	0.38	1.77	2.64	1.73	423	566	26	4	1.5	203
	650	255	112	180	6	2.5	3980	7400	280	350	**351180**	0.41	1.66	2.47	1.63	428	600	37.5	5	2.5	279
420	560	145	65	105	4	1.1	1920	4150	300	380	**351984**	0.38	1.77	2.64	1.73	440	535	20	3	1.1	87.0
	620	188	86	150	6	2	3240	6260	280	350	**351084X2-1/HC**	0.39	1.74	2.59	1.70	448	588	19	5	2	178
	620	190	95	125	5	1	2870	5390	280	350	**351084X2D1**	0.41	1.63	2.43	1.60	443	585	32.5	4	1	166
	620	206	90	150	5	1.5	2990	5980	280	350	**351084**	0.41	1.64	2.44	1.60	443	584	28	4	1.5	191
	620	206	90	150	5	1.5	2990	5980	280	350	**351084/HC**	0.41	1.64	2.44	1.60	443	584	28	4	1.5	191
	700	275	122	200	6	2.5	4920	9100	250	320	**351184J**	0.32	2.12	3.15	2.07	446	642	37.5	5	2.5	370
440	600	170	74	125	4	1.1	2310	4990	280	350	**351988**	0.39	1.73	2.58	1.69	460	572	22.5	3	1.1	123
	600	170	74	125	4	1.1	2310	4990	280	350	**351988/HG2**	0.39	1.73	2.58	1.69	460	572	22.5	3	1.1	123
	650	196	88	157	6	3	3650	7330	260	330	**350688/HC**	0.37	1.84	2.74	1.80	466	617	19.5	5	2.5	207
	650	197	88.5	157	6	3	3650	7330	260	330	**350688X2/HG2**	0.37	1.84	2.74	1.80	466	617	20	5	2.5	209
	650	212	94	152	6	2.5	3420	6810	260	330	**351088**	0.44	1.52	2.26	1.49	466	612	30	5	2.5	212
	650	212	94	152	6	2.5	3420	6810	260	330	**351088/HCE**	0.44	1.52	2.26	1.49	466	612	30	5	2.5	212
	720	275	122	190	6	2.5	5490	10500	240	310	**351188**	0.46	1.48	2.20	1.44	466	670	42.5	5	2.5	405
	720	283	131.5	226	6	2.5	5580	10700	240	310	**351188X2**	0.39	1.74	2.59	1.70	466	675	28.5	5	2.5	426
	720	283	131.5	226	6	2.5	5580	10700	240	310	**351188X2/HCYB2**	0.39	1.74	2.59	1.70	466	675	28.5	5	2.5	426
460	620	174	74	130	4	1.1	2370	5130	270	340	**351992**	0.40	1.68	2.50	1.64	481	595	22	3	1.1	134
	620	174	74	130	4	1.1	2370	5130	270	340	**351992/HC**	0.40	1.68	2.50	1.64	481	595	22	3	1.1	134
	620	190	85	146	9.5	1.5	2460	6210	270	340	**350692/HG2**	0.55	1.24	1.84	1.21	496	594	22	8	1.5	154
	680	204	94	163	3	3	3620	7220	250	310	**351092X2/HCYA6**	0.40	1.68	2.50	1.64	478	644	20.5	2.5	2.5	236
	680	230	100	175	6	2.5	3790	7550	250	310	**351092**	0.31	2.18	3.24	2.13	486	639	27.5	5	2.5	253
	680	230	100	175	6	2.5	3790	7550	250	310	**351092/HCE**	0.31	2.18	3.24	2.13	486	639	27.5	5	2.5	253
	680	230	100	175	7.5	3	3790	7550	250	310	**351092/YAD**	0.31	2.18	3.24	2.13	493	639	27.5	6	2.5	253
	760	300	135	240	7.5	4	5530	11500	220	280	**350692**	0.45	1.50	2.23	1.47	490	703	30	6	3	516
	760	300	135	240	7.5	4	5830	12400	220	280	**350692/HCYA8**	0.45	1.50	2.23	1.47	490	703	30	6	3	539
	760	300	143	240	7.5	4	5830	12400	220	280	**350692/HCYA8-1**	0.45	1.50	2.23	1.47	490	703	30	6	3	536
480	650	180	78	130	5	1.5	2390	5270	250	320	**351996**	0.42	1.61	2.40	1.58	506	618	25	4	1.5	159
	650	180	78	130	5	1.5	2390	5270	250	320	**351996/HC**	0.42	1.61	2.40	1.58	506	618	25	4	1.5	159
	700	206	93	165	6	3	3470	6810	240	300	**351096X2-1**	0.37	1.83	2.72	1.78	506	662	20.5	5	2.5	232
	700	206	93	165	6	3	3470	6810	240	300	**351096X2-1/HC**	0.37	1.83	2.72	1.78	506	662	20.5	5	2.5	232
	700	240	100	180	6	2.5	3780	7680	240	300	**351096**	0.41	1.66	2.47	1.62	506	660	30	5	2.5	272
	700	275	122	200	6	3	4360	9050	240	300	**351096X2/HC**	0.36	1.87	2.79	1.83	506	665	37.5	5	2.5	309
	720	236	100	180	6	2.5	3990	8130	230	290	**351096X3/HC**	0.32	2.08	3.10	2.04	506	680	28	5	2.5	303
	790	248	112	221	7.5	4	5220	9440	210	270	**351196X2/HC**	0.39	1.74	2.59	1.70	510	738	13.5	6	3	445
	790	310	136	224	7.5	3	6610	12800	210	270	**351196**	0.39	1.73	2.58	1.69	510	740	43	6	2.5	537
	790	310	136	224	7.5	3	6610	12800	210	270	**351196-1**	0.39	1.73	2.58	1.69	510	740	43	6	2.5	537

d 490～670mm



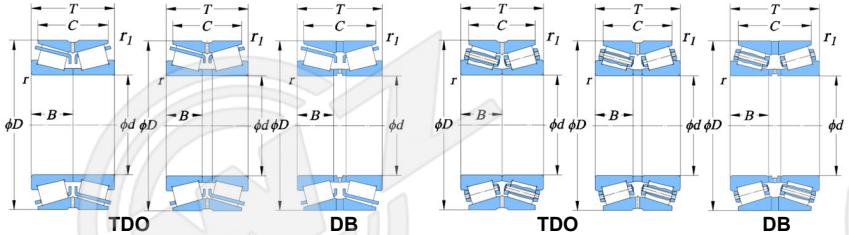
Pressed cage　　Machined cage



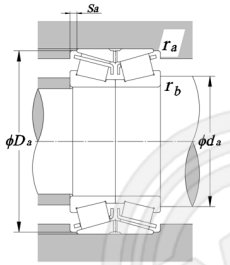
Principal dimensions(mm)							Basic load ratings(kN)		Limiting speeds (r/min)	
d	*D*	*T*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}	Grease	Oil
490	640	180	80	144	5	1.1	2720	6480	250	320
500	670	180	78	130	5	1.5	2510	5700	240	300
	670	180	78	130	5	1.5	2510	5700	240	300
	670	180	78	130	5	1.5	2510	5700	240	300
	670	180	78	130	5	1.5	2650	6120	240	300
	720	209	94	167	6	3	3620	7730	220	280
	720	236	100	180	6	2.5	3990	8130	220	280
	720	236	100	180	6	2.5	3990	8130	220	280
	720	236	100	180	6	2.5	3990	8130	220	280
	720	236	118	180	6	2.5	3990	8130	220	280
530	710	190	82	136	5	1.5	2940	6300	220	280
	710	190	82	136	6	2.5	2940	6300	220	280
	760	255	115	180	6	2.5	4940	10600	210	260
	780	231	106.5	185	6	3	4930	10300	200	260
	780	231	106.5	185	3	3	4930	10300	200	260
	780	255	112	180	6	2.5	4800	9830	200	260
	780	255	112	180	6	2.5	4800	9830	200	260
539.75	635	120.65	50.8	95.25	6.4	1.5	1310	4020	240	300
560	735	225	100	180	6.4	1.5	3850	9660	210	260
	750	213	85	156	5	1.5	3520	8070	200	260
	750	213	85	156	5	1.5	3520	8070	200	260
	750	213	85	156	5	1.5	3520	8070	200	260
	750	213	85	156	5	1.5	3390	7670	200	260
	820	260	115	185	6	2.5	5500	11500	190	240
	820	260	115	185	6	2.5	5500	11500	190	240
	820	270	120	190	9.5	3	5480	11700	190	240
	820	340	155	270	8	2.5	7450	17000	190	240
600	800	205	90	156	5	1.5	3750	9050	180	230
	800	205	90	156	5	1.5	3810	9570	180	230
	800	208	90	160	6	2.5	3750	9050	180	230
	870	250	110	200	3	3	5540	11700	170	210
	870	270	118	198	6	2.5	5910	12700	170	210
	870	270	118	198	6	2.5	5910	12700	170	210
630	850	242	100	182	6	2.5	4730	11100	170	210
	920	265	114.5	212	7.5	4	6340	13400	150	200
	920	265	114.5	212	7.5	4	6340	13400	150	200
640	900	350	165	280	6	2.5	7810	19200	160	200
650	920	210	95	185	5	2	5000	10500	150	190
670	880	185	80	130	5	2	3860	8590	150	200
	900	240	103	180	6	2.5	4620	11200	150	190

Designations	Factor				Abutment and fillet dimensions(mm)					Mass(kg) (approx.)
	e	Y_1	Y_2	Y_o	d_{amin}	D_{amin}	S_{amin}	r_{amax}	r_{bmax}	
350698	0.39	1.74	2.59	1.70	513	620	18	4	1.1	139
3519/500	0.43	1.55	2.31	1.52	524	639	25	4	1.5	158
3519/500/HC	0.43	1.55	2.31	1.52	524	639	25	4	1.5	158
3519/500/HCYA3	0.43	1.55	2.31	1.52	524	639	25	4	1.5	157
3519/500/HCYA5	0.43	1.55	2.31	1.52	524	639	25	4	1.5	157
3510/500X2	0.37	1.83	2.72	1.78	527	677	21	5	2.5	256
3510/500	0.32	2.08	3.10	2.04	527	680	28	5	2.5	274
3510/500/HCE	0.32	2.08	3.10	2.04	527	680	28	5	2.5	274
3510/500/HCR	0.32	2.08	3.10	2.04	527	680	28	5	2.5	274
3510/500D	0.32	2.08	3.10	2.04	527	680	28	5	2.5	274
3519/530	0.39	1.73	2.57	1.69	554	681	27	4	1.5	176
3519/530/YA6	0.39	1.73	2.57	1.69	557	681	27	5	2.5	176
3506/530/HCYB2	0.38	1.78	2.65	1.74	557	721	37.5	5	2.5	340
3510/530X2	0.37	1.82	2.71	1.78	557	737	23	5	2.5	356
3510/530X2/HCYA6	0.37	1.82	2.71	1.78	550	737	23	2.5	2.5	356
3510/530	0.38	1.78	2.65	1.74	557	733	37.5	5	2.5	371
3510/530/HCR	0.38	1.78	2.65	1.74	557	733	37.5	5	2.5	371
3506/539X4/HC	0.41	1.64	2.45	1.61	565.6	617	12.7	6.4	1.5	62.2
3506/560/HC	0.35	1.95	2.90	1.91	587	708	22.5	6.4	1.5	235
3519/560	0.43	1.57	2.34	1.53	584	718	28.5	4	1.5	232
3519/560/HC	0.43	1.57	2.34	1.53	584	718	28.5	4	1.5	232
3519/560/HCR	0.43	1.57	2.34	1.53	584	718	28.5	4	1.5	232
3519/560/YAD	0.43	1.57	2.34	1.53	584	718	28.5	4	1.5	228
3510/560	0.40	1.70	2.54	1.67	587	774	37.5	5	2.5	449
3510/560/HC	0.40	1.70	2.54	1.67	587	774	37.5	5	2.5	449
3510/560X2/YA6-1	0.49	1.38	2.06	1.35	599	778	40	8	2.5	440
3510/560X2/YA6	0.32	2.14	3.18	2.09	595	781	35	8	2.5	741
3519/600	0.33	2.05	3.05	2.00	625	763	24.5	4	1.5	247
3519/600/YAD	0.55	1.24	1.84	1.21	625	768	24.5	4	1.5	264
3519/600X2	0.33	2.05	3.05	2.00	630	764	24	5	2.5	252
3510/600X2/HC	0.39	1.73	2.57	1.69	621	823	25	2.5	2.5	454
3510/600	0.41	1.63	2.43	1.60	628	822	36	5	2.5	517
3510/600/HCR	0.41	1.63	2.43	1.60	628	822	36	5	2.5	517
3519/630	0.40	1.69	2.52	1.65	658	813	30	5	2.5	359
3510/630X2/HC	0.36	1.87	2.79	1.83	665	869	26.5	6	3	570
3510/630X2/HCR	0.36	1.87	2.79	1.83	665	869	26.5	6	3	570
3506/640/HC	0.36	1.87	2.79	1.83	668	861	35	5	2.5	651
3506/650/HCR	0.36	1.87	2.79	1.83	675	873	12.5	4	2	418
3506/670/HCR	0.45	1.50	2.23	1.47	695	845	27.5	4	2	264
3519/670	0.44	1.55	2.30	1.51	698	859	30	5	2.5	378

d 670～1600mm



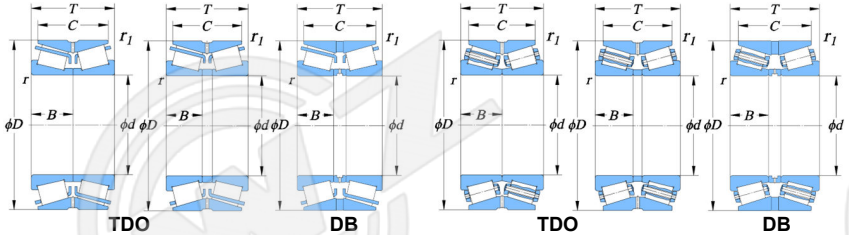
Pressed cage　　Machined cage

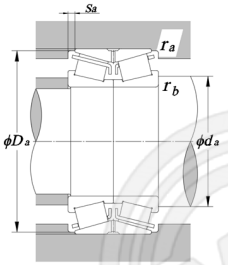


Principal dimensions(mm)							Basic load ratings(kN)		Limiting speeds (r/min)		Designations	Factor				Abutment and fillet dimensions(mm)					Mass(kg) (approx.)
d	*D*	*T*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}	Grease	Oil		*e*	Y_1	Y_2	Y_o	d_{amin}	D_{amin}	S_{amin}	r_{amax}	r_{bmax}	
670	980	310	136	215	7.5	3	6940	15100	140	170	**3510/670**	0.37	1.83	2.73	1.79	705	921	47.5	6	2.5	714
698.5	919.15	137.2	63.5	111.8	3.3	1	2340	6970	140	180	**306/698.5T137.2/DB**	0.35	1.93	2.88	1.89	718.7	800	12.7	3.3	1	117
710	950	240	106	175	6	2.5	5190	13200	140	170	**3519/710**	0.46	1.47	2.19	1.44	739	906	32.5	5	2.5	445
	950	240	106	175	6	2.5	5190	13200	140	170	**3519/710/HC**	0.46	1.47	2.19	1.44	739	906	32.5	5	2.5	445
	950	248	112	180	6	2.5	5520	14400	140	170	**3519/710X2**	0.54	1.24	1.85	1.21	739	911	34	5	2.5	471
720	915	190	83	140	6	2.5	3510	9110	140	180	**3506/720**	0.38	1.75	2.61	1.72	749	876	25	5	2.5	284
750	1000	255	112	190	6	2.5	6040	15500	120	160	**3519/750X2**	0.45	1.50	2.24	1.47	779	953	32.5	5	2.5	530
	1000	255	112	190	6	2.5	6040	15500	120	160	**3519/750X2/HC**	0.45	1.50	2.24	1.47	779	953	32.5	5	2.5	530
	1000	255	112	190	6	2.5	6040	15500	120	160	**3519/750X2/HCYA10**	0.45	1.50	2.24	1.47	779	953	32.5	5	2.5	531
	1000	264	112	194	6	2.5	6040	15500	120	160	**3519/750**	0.45	1.50	2.24	1.47	779	954	35	5	2.5	542
	1000	264	112	194	6	2.5	6040	15500	120	160	**3519/750/HC**	0.45	1.50	2.24	1.47	779	954	35	5	2.5	546
800	1060	268.5	115	204	6	2.5	6830	16500	110	140	**3519/800X2/HCE**	0.35	1.93	2.87	1.88	830	1015	32.3	5	2.5	607
	1060	270	115	204	6	2.5	6830	16500	110	140	**3519/800**	0.35	1.93	2.87	1.88	830	1015	33	5	2.5	607
	1060	270	115	204	6	2.5	6830	16500	110	140	**3519/800/HC**	0.35	1.93	2.87	1.88	830	1015	33	5	2.5	607
	1060	270	115	204	6	2.5	6830	16500	110	140	**3519/800/HCR**	0.35	1.93	2.87	1.88	830	1015	33	5	2.5	607
	1060	285	130	216	6	2.5	7390	19800	110	140	**3519/800X2**	0.45	1.49	2.21	1.45	830	1017	34.5	5	2.5	664
850	1120	268	118	188	6	2.5	7520	18700	101	120	**3519/850**	0.46	1.46	2.18	1.43	880	1076	40	5	2.5	646
	1120	268	118	190	6	2.5	7520	18700	101	120	**3519/850X2**	0.46	1.46	2.18	1.43	880	1077	39	5	2.5	647
	1220	272	116	239	7.5	4	8030	16800	-	-	**3510/850X2/HCYA6**	0.37	1.83	2.72	1.79	887	1156	16.5	6	3	1000
900	1180	269	122	199	6	4	7290	17600	-	-	**T3GB900/DB-2**	0.40	1.68	2.50	1.64	933	1137	35	5	3	691
	1180	270	122	199	6	3.5	7290	17600	-	-	**T3GB900/DB**	0.40	1.68	2.50	1.64	933	1142	35.5	5	3	723
	1180	270	122	199	6	3.5	7290	17600	-	-	**T3GB900/DB-1**	0.40	1.68	2.50	1.64	933	1137	35.5	5	3	723
	1180	275	122	205	6	2.5	8210	20600	-	-	**3519/900**	0.37	1.80	2.69	1.76	931	1134	35	5	2.5	764
938.212	1270	406.2	169.1	266.5	12	1.5	9940	29000	-	-	**3506/938X4**	0.87	0.78	1.16	0.76	983.3	1237	69.9	10	1.5	1440
950	1250	300	132	220	7.5	3	8880	22000	-	-	**3519/950**	0.33	2.05	3.05	2.00	988	1194	40	6	2.5	898
	1250	300	132	220	7.5	3	8930	22200	-	-	**3519/950/HC**	0.33	2.05	3.05	2.00	988	1194	40	6	2.5	898
	1280	280	120	246	7.5	4	8720	20900	-	-	**3506/950**	0.40	1.68	2.50	1.64	988	1231	17	6	3	974
980	1300	340	155	250	7.5	3	10100	26500	-	-	**3506/980/HCR**	0.43	1.57	2.34	1.53	1015	250	45	6	2.5	1160
1030	1310	300	132	220	7.5	3	8790	24800	-	-	**3506/1030/HCR**	0.43	1.57	2.34	1.53	1069	1264	40	6	2.5	908
1092.2	1320.8	200	87.5	145	6.4	3.5	4890	14300	-	-	**3506/1092X4/HC**	0.57	1.18	1.76	1.16	1131.2	1284	27.5	6.4	3	514
1120	1460	335	158	250	7.5	3	10900	29500	-	-	**3519/1120**	0.35	1.93	2.87	1.88	1160	1394	42.5	6	2.5	1350
1160	1540	400	180	290	12	4	14500	38500	-	-	**3519/1160/HCR**	0.44	1.53	2.28	1.50	1211	1481	55	10	3	1900
1180	1600	390	170	250	7.5	4	12200	32100	-	-	**3506/1180**	0.70	0.97	1.44	0.94	1220	1532	70	6	3	2100
1250	1500	250	112	190	6	1.5	7880	24300	-	-	**3506/1250/YA1**	0.35	1.93	2.87	1.88	1284	1456	30	5	1.5	795
1370	1605	210	96	150	7.5	4	6220	20600	-	-	**3506/1370**	0.40	1.68	2.50	1.64	1412	1558	30	6	3	673
	1605	210	96	150	7.5	4	6220	20600	-	-	**3506/1370/HC**	0.40	1.68	2.50	1.64	1412	1558	30	6	3	673
1450	1770	290	115	170	9.5	5	8550	25800	-	-	**3506/1450/HC**	0.87	0.78	1.16	0.76	1498	1722	60	8	4	1320
	1770	290	115	170	9.5	5	8550	25800	-	-	**3506/1450/HCR**	0.87	0.78	1.16	0.76	1498	1722	60	8	4	1320
	1770	290	115	170	9.5	5	8550	25800	-	-	**3506/1450/HCYA3**	0.87	0.78	1.16	0.76	1498	1722	60	8	4	1320
1600	1850	200	90	150	6	6	6180	20700	-	-	**3506/1600**	0.32	2.12	3.15	2.07	1638	1791	25	5	5	800

ZWZ

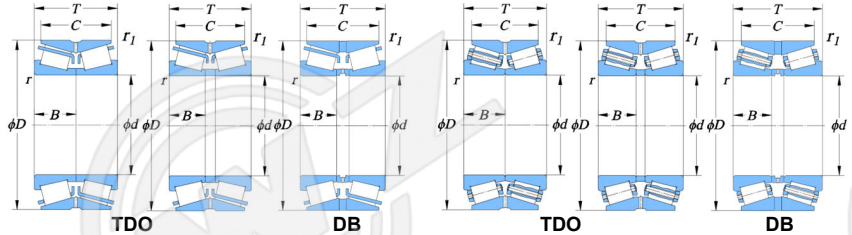
d 34.925～124.943mm



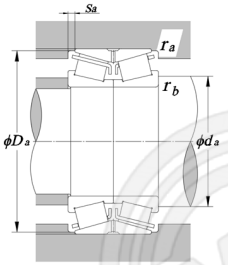


Principal dimensions(mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations	Factor				Abutment and fillet dimensions(mm)					Mass(kg) (approx.)
d	*D*	*T*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}	Grease	Oil		*e*	Y_1	Y_2	Y_0	d_{amin}	D_{amin}	S_{amin}	r_{amax}	r_{bmax}	
34.925	65.088	39.624	18.288	31.496	4.7	0.3	92.0	120	4400	5600	KLM48548/KLM48510/DB	0.38	1.79	2.67	1.75	45.90	60	4.1	4.7	0.3	0.562
38.1	80.035	57.15	23.698	44.958	0.8	0.8	133	174	3800	4800	K27880/K27820D	0.56	1.20	1.79	1.18	43.50	74	6.1	0.8	0.8	1.33
40	80.035	46.04	20.94	34.925	1.5	0.8	108	134	3700	4700	K28158/K28318D	0.4	1.68	2.50	1.64	46.80	73	5.6	1.5	0.8	0.931
49	84	48	24	48	2.8	0.5	115	163	3400	4300	JXC25469CA/JXC25469DB	0.46	1.47	2.19	1.44	58.60	77	1	2.8	0.5	1.04
50.8	82.55	51.766	25.883	41.606	3.5	0.5	116	169	3400	4300	KLM104949E/KLM104911/DB	0.31	2.21	3.29	2.16	62.60	78	5.1	3	0.5	0.956
52.388	112.712	65.088	26.909	46.038	3.5	1.5	187	242	2700	3400	K55206/K55444D	0.88	0.76	1.14	0.75	64.50	103	9.6	3	1.5	2.87
55	90	52	26	43	3.5	0.3	165	251	3100	3900	KJLM506848E/KJLM506810/DB	0.41	1.66	2.47	1.62	67.10	87	4.5	3	0.3	1.24
57.15	107.95	65.09	29.317	53.975	2.3	0.8	209	293	2700	3400	K462/K452D	0.34	2.01	3.00	1.97	66.80	97	5.6	2.3	0.8	2.27
63.5	110(114.673)	68.255	21.996	61.903	1.5	0.5	165	234	2600	3300	K390A/K394A+K390A/K394AB/DB	0.4	1.68	2.50	1.64	71.60	104	3.2	1.5	0.5	2.22
	110(114.673)	68.255	21.996	61.903	1.5	0.5	165	234	2600	3300	K390A/K394A+K390A/K394AB/HA1DB	0.4	1.68	2.50	1.64	71.60	104	3.2	1.5	0.5	2.22
	110(114.673)	68.255	21.996	61.903	1.5	0.5	165	234	2600	3300	K390A/K394ABD/HA1	0.4	1.68	2.50	1.64	71.60	104	3.2	1.5	0.5	2.44
65	110	65	28	54	3	0.6	249	367	2600	3200	KJM511946/KJM511910/DB-1	0.4	1.68	2.50	1.64	76.00	104	5.5	2.5	0.6	2.25
69.85	112.712(116.586)	76.327	25.4	63.627	1.5	0.3	185	312	2500	3100	K29675/K29620+K29675/K29620B/DB	0.49	1.38	2.06	1.35	77.90	108	6.4	1.5	0.3	2.63
	146.05	91.516	39.688	59.766	3.5	1	382	476	2100	2600	KH913849/KH913810/DB	0.78	0.86	1.28	0.84	81.90	138	15.9	3	1	4.86
	146.05	91.516	39.688	59.766	3.5	1	382	476	2100	2600	KH913849/KH913810D	0.78	0.86	1.28	0.84	81.90	138	15.9	3	1	4.93
76.2	155.575	101.6	46.672	85.725	3.5	1.5	497	733	1900	2400	K748S/K742D	0.33	2.08	3.09	2.03	88.30	141	8	3	1.5	8.00
	161.925	105.562	46.038	70.637	3.5	0.8	465	575	1900	2400	K9285/K9220D	0.71	0.95	1.42	0.93	88.30	153	17.5	3	0.8	9.22
92.075	152.4	82.55	36.322	63.5	3.5	0.8	352	584	1800	2300	598/592D	0.44	1.53	2.27	1.49	104.10	141	9.6	3	0.8	5.59
95.25	149.225	66.672	28.971	52.388	3.5	0.8	280	470	1800	2300	42376/42587D	0.49	1.37	2.04	1.34	107.30	138	7.2	3	0.8	4.05
	188.912	107.95	46.038	69.85	3.5	1	505	686	1500	2000	K90381/K90744/DB	0.87	0.78	1.16	0.76	107.30	179	19.1	3	1	12.2
96.838	188.912	107.95	46.038	69.85	3.5	1	505	686	1500	1900	K90381/K90744D	0.87	0.78	1.16	0.76	108.90	179	19.1	3	1	12.2
98.425	161.925	82.547	36.116	61.912	3.5	0.8	364	627	1700	2200	K52387/K52637D	0.47	1.42	2.12	1.39	110.50	151	10.4	3	0.8	6.35
101.6	168.275	92.075	41.275	69.85	3.5	0.8	430	706	1600	2100	K687/K672D	0.47	1.43	2.14	1.40	114.70	156	11.2	3	0.8	7.43
	168.275	92.075	41.275	69.85	3.5	0.8	430	706	1600	2100	K687/K672D/YB2	0.47	1.43	2.14	1.40	114.70	156	11.2	3	0.8	7.43
	200.025	115.888	49.212	80.216	3.5	2.3	654	943	1400	1800	K98400/K98789D	0.63	1.07	1.59	1.04	114.70	185	17.9	3	2.3	13.0
110	180	103	46	85	3	0.6	600	1020	1500	1900	KJHM522649/KJHM522610T103/DB	0.41	1.66	2.48	1.63	122.30	171	9	2.5	0.6	9.81
111.125	214.312	115.888	52.388	84.138	3.5	1.5	735	1100	1300	1700	KH924045/KH924010D	0.67	1.00	1.49	0.98	124.50	203	15.9	3	1.5	17.7
114.3	177.8	92.075	41.275	69.85	3.5	0.8	442	758	1500	1900	64450/64700D	0.52	1.31	1.95	1.28	127.60	170	11.2	3	0.8	8.01
	177.8	92.075	41.275	69.85	3.5	0.8	442	758	1500	1900	K64450/K64700D	0.52	1.31	1.95	1.28	127.60	170	11.2	3	0.8	8.01
	190.5	106.362	49.212	80.962	3.5	1.5	574	962	1400	1800	K71450/K71751DC	0.42	1.62	2.42	1.59	127.60	177	12.7	3	1.5	11.3
	190.5	106.365	49.212	80.962	3.5	1.5	574	962	1400	1800	K71450/K71751D	0.42	1.62	2.42	1.59	127.60	177	12.8	3	1.5	11.3
	212.725	142.875	66.675	117.475	7	1.5	848	1340	1300	1700	938/932CD	0.33	2.07	3.09	2.03	134.60	193	12.7	5.5	1.5	20.8
	212.725	142.875	66.675	117.475	7	1.5	848	1340	1300	1700	K938/K932CD	0.33	2.07	3.09	2.03	134.60	193	12.7	5.5	1.5	20.8
	279.4	185.24	82.55	128.09	6.4	1.5	1400	1910	1100	1300	KHH926744/KHH926716/DB	0.63	1.07	1.60	1.05	133.40	253	28.6	6.4	1.5	51.9
119.062	195.262	136.525	57.15	142.875	1.5	0.6	684	1210	1400	1700	HM124646/HM124618XD	0.26	2.55	3.80	2.50	128.40	185	1	1.5	0.6	19.9
120.65	174.625	77.787	36.512	61.912	3.5	0.8	395	728	1500	1900	KM224749/KM224710D	0.33	2.03	3.02	1.98	134.00	166	8	3	0.8	5.70
	234.95	142.875	63.5	114.3	6.4	1.5	989	1650	1200	1500	K95475/K95927CD/YA10	0.37	1.83	2.72	1.79	139.90	216	14.3	6.4	1.5	26.5
124.943	234.95	142.875	63.5	114.3	6.4	1.5	989	1650	1200	1500	K95491/K95927D	0.37	1.83	2.72	1.79	144.20	217	14.3	6.4	1.5	27.5

d 127～177.8mm



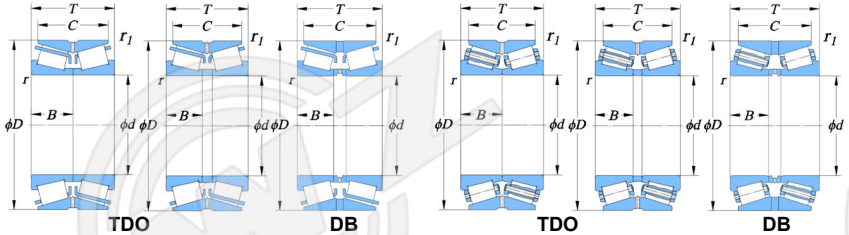
Pressed cage　　Machined cage



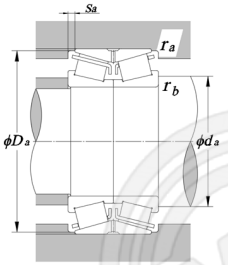
Principal dimensions(mm)							Basic load ratings (kN)		Limiting speeds (r/min)	
d	*D*	*T*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}	Grease	Oil
127	182.562	93.66	46.896	73.025	3.5	0.8	430	862	1400	1800
	182.562	93.66	46.896	73.025	3.5	0.8	433	895	1400	1800
	182.562	93.66	46.896	73.025	3.5	0.8	433	895	1400	1800
	228.6	115.888	49.428	84.138	3.5	2.3	755	1180	1200	1500
	228.6	115.888	49.428	84.138	3.5	2.3	755	1180	1200	1500
127.792	228.6	115.888	49.428	84.138	3.5	2.3	755	1180	1200	1500
133.35	215.9	106.362	47.625	80.962	3.5	1.5	610	1020	1200	1600
	234.95	142.875	63.5	114.3	9.7	1.5	989	1650	1200	1500
136.525	228.6	123.825	57.15	98.425	3.5	1.5	764	1360	1200	1500
139.7	215.9	106.362	47.625	80.962	3.5	1.5	610	1020	1200	1500
	215.9	106.362	47.625	80.962	3.5	1.5	610	1020	1200	1500
	215.9	106.362	47.625	80.962	3.5	1.5	610	1020	1200	1500
	236.538	131.763	56.642	106.363	3.6	1.6	766	1390	1100	1400
	244.475	107.95	53.975	79.375	3.5	1.5	630	1030	1100	1400
142.875	200.025	87.315	39.688	73.025	3.5	0.8	473	1020	1300	1600
	236.538	131.763	56.642	106.363	3.6	1.6	766	1390	1100	1400
149.225	236.538	131.762	56.642	106.362	3.5	1.5	915	1570	1100	1400
	236.538	131.762	56.642	106.362	3.5	1.5	915	1570	1100	1400
152.4	254	149.225	66.675	111.125	7	1.5	1110	1850	980	1300
	268.288	160.338	74.612	125.412	6.4	1.5	1280	2180	940	1200
158.75	225.425	85.725	39.688	69.85	3.5	0.8	503	1170	1100	1400
160.325	288.925	142.875	63.5	111.125	7	1.5	1190	1940	860	1100
165.1	225.425	104.78	39.688	88.906	3.5	0.8	503	1170	1100	1400
	247.65	103.188	47.625	84.138	3.5	0.8	661	1520	960	1300
	254	101.6	46.038	76.2	4.8	1.5	747	1300	940	1200
	288.925	142.875	63.5	111.125	7	1.5	1190	1940	850	1100
	288.925	142.875	71.438	111.125	3.5	1.5	1190	1940	850	1100
168.275	330.2	184.15	79.375	120.65	6.4	1.5	1550	2270	760	970
170	240	101	44.5	83	3	0.8	682	1370	970	1300
171.45	288.925	142.875	63.5	111.125	7	1.5	1040	1920	840	1100
174.625	247.65	103.188	47.625	84.138	3.5	0.8	661	1520	930	1200
	247.65	103.188	47.625	84.138	3.5	0.8	661	1520	930	1200
	247.65	103.188	47.625	84.138	3.5	0.8	661	1520	930	1200
177.8	269.875	119.062	55.562	93.662	3.5	1.5	879	1720	870	1100
	269.875	119.062	55.562	93.662	3.5	1.5	879	1720	870	1100
	269.875	119.062	55.562	93.662	3.5	1.5	879	1720	870	1100
	279.4	133.353	61.912	96.838	3.3	1.5	968	1770	850	1100
	282.575	107.95	54.166	79.375	3.5	1.5	772	1450	840	1100

Designations	Factor				Abutment and fillet dimensions(mm)					Mass(kg) (approx.)
	e	Y_1	Y_2	Y_o	d_{amin}	D_{amin}	S_{amin}	r_{amax}	r_{bmax}	
NA48290SW/48220D	0.31	2.21	3.29	2.16	140.30	173	10.4	3	0.8	7.26
NA48290SWSH/48220D	0.31	2.21	3.29	2.16	140.30	173	10.4	3	0.8	7.34
NA48290SWSH/48220D/YB3	0.31	2.21	3.29	2.16	140.30	173	10.4	3	0.8	7.34
HM926747/HM926710D	0.74	0.92	1.36	0.90	140.30	219	15.9	3	2.3	19.1
KHM926747/KHM926710D	0.74	0.92	1.36	0.90	140.30	219	15.9	3	2.3	19.1
KHM926749/KHM926710D	0.74	0.92	1.36	0.90	141.10	219	15.9	3	2.3	18.8
74525/74851CD	0.32	2.12	3.15	2.07	146.70	204	12.7	3	1.5	13.7
K95525/K95927CD	0.37	1.83	2.72	1.79	159.10	216	14.3	9.7	1.5	24.3
K896/K892D	0.42	1.61	2.39	1.57	149.90	214	12.7	3	1.5	19.9
K74550/K74851CD	0.32	2.12	3.15	2.07	153.00	204	12.7	3	1.5	9.91
K74550/K74851D	0.32	2.12	3.15	2.07	153.00	204	12.7	3	1.5	9.91
K74550/K74851D/YB2	0.32	2.12	3.15	2.07	153.00	204	12.7	3	1.5	9.91
K82550/K82932D	0.44	1.52	2.27	1.49	153.20	224	12.7	3.6	1.6	23.4
NA81550/81963D	0.35	1.93	2.88	1.89	153.00	227	14.3	3	1.5	19.3
K48685/K48620D	0.34	2.01	2.99	1.96	156.20	190	7.2	3	0.8	8.15
K82562/K82932D	0.44	1.52	2.27	1.49	156.40	224	12.7	3.6	1.6	23.3
HM231149/HM231111CD	0.32	2.12	3.15	2.07	162.60	223	12.7	3	1.5	20.1
HM231149/HM231111CD/YAD	0.32	2.12	3.15	2.07	162.60	223	12.7	3	1.5	20.1
K99600/K99102CD	0.41	1.66	2.47	1.62	172.70	236	19.1	5.5	1.5	26.9
KEE107060/K107105D	0.39	1.74	2.59	1.70	171.50	248	17.5	6.4	1.5	36.0
K46780/K46720CD	0.38	1.76	2.62	1.72	172.10	215	8	3	0.8	10.9
KHM237532/KHM237510CD	0.32	2.12	3.15	2.07	180.70	271	15.9	5.5	1.5	37.2
K46790/K46720/DB	0.38	1.76	2.62	1.72	178.40	115	8	3	0.8	10.8
K67780/K67720D	0.44	1.54	2.29	1.50	178.40	238	9.6	3	0.8	17.5
M235145/M235113D	0.32	2.12	3.15	2.07	181.00	239	12.7	4.8	1.5	16.9
KHM237535/KHM237510CD	0.32	2.12	3.15	2.07	185.40	271	15.9	5.5	1.5	36.5
KHM237536NA/KHM237510CD	0.32	2.12	3.15	2.07	178.40	271	15.9	3	1.5	36.5
KH936349/KH936310D	0.81	0.83	1.24	0.82	187.40	311	31.8	6.4	1.5	63.4
KJM734449/KJM734410/DB	0.44	1.54	2.30	1.51	182.30	231	9	2.5	0.8	13.2
K94675/K94114D	0.47	1.44	2.15	1.41	191.80	270	15.9	5.5	1.5	36.1
67787/67720CD	0.44	1.54	2.29	1.50	188.00	238	9.6	3	0.8	15.5
K67787/K67720CD	0.44	1.54	2.29	1.50	188.00	238	9.6	3	0.8	15.5
K67787/K67720D	0.44	1.54	2.29	1.50	188.00	238	9.6	3	0.8	15.5
KM238840/KM238810CD/YA10	0.33	2.04	3.03	1.99	191.10	258	12.7	3	1.5	21.4
KM238840/KM238810D	0.33	2.04	3.03	1.99	191.10	258	12.7	3	1.5	22.0
M238840/M238810CD/YA10	0.33	2.04	3.03	1.99	191.10	258	12.7	3	1.5	21.4
82680X/82620D	0.52	1.29	1.92	1.26	190.70	267	18.3	3.3	1.5	28.3
KNA87700SW/K87112D	0.42	1.62	2.42	1.59	191.10	266	14.3	3	1.5	24.0

d 177.8～212.725mm



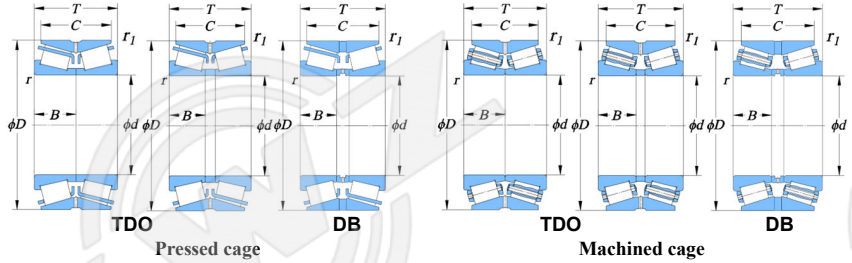
Pressed cage　　Machined cage

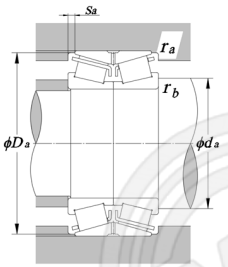


Principal dimensions(mm)							Basic load ratings (kN)		Limiting speeds (r/min)	
d	*D*	*T*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}	Grease	Oil
177.8	288.925	142.875	63.5	111.125	7	1.5	1190	1940	820	1100
	288.925	142.875	63.5	111.125	7	1.5	1190	1940	820	1100
	288.925	142.875	63.5	111.125	7	1.5	1040	1920	820	1100
	288.925	142.875	63.5	111.125	7	1.5	1190	1940	820	1100
	288.925	142.875	63.5	111.125	7	1.5	1190	1940	820	1100
	320.675	185.738	85.725	138.112	3.5	1.5	1750	2820	760	970
	320.675	185.738	85.725	138.112	3.5	1.5	1570	2810	760	970
	320.675	185.738	85.725	138.112	3.5	1.5	1570	2810	760	970
	320.675	185.738	85.725	138.112	3.5	1.5	1750	2820	760	970
180	250	103	45	83	3	1	696	1420	910	1200
187.325	269.875	119.062	55.562	93.662	3.5	1.5	879	1720	850	1100
	269.875	119.062	55.562	93.662	3.5	1.5	879	1720	850	1100
	269.875	119.062	55.562	93.662	3.5	1.5	879	1720	850	1100
	320.675	185.738	85.725	138.112	5.5	1.5	1750	2820	740	940
	320.675	185.738	85.725	138.112	5.5	1.5	1750	2820	740	940
190	260	102	44	83	8	1	693	1440	860	1100
190.5	266.7	103.188	46.833	84.138	3.5	0.8	678	1520	850	1100
	266.7	109.538	54.961	84.138	3.5	0.8	678	1520	850	1100
	368.3	193.675	88.897	136.525	6.4	1.5	1780	2920	650	830
200.025	317.5	146.05	63.5	111.125	4.3	1.5	1140	2270	720	920
	317.5	146.05	63.5	111.125	4.3	1.5	1140	2270	720	920
	317.5	146.05	63.5	111.125	4.3	1.5	1140	2270	720	920
	384.175	238.125	112.712	193.675	6.4	1.5	2550	5060	620	780
203.2	276.225	95.25	47.625	73.025	3.5	0.8	702	1440	800	1100
	276.225	95.25	47.625	73.025	3.5	0.8	702	1440	800	1100
	276.225	95.25	47.816	73.025	3.5	0.8	704	1350	800	1100
	276.225	95.25	47.816	73.025	3.5	0.8	704	1420	800	1100
	292.1	125.415	57.945	101.6	3.5	1.5	990	2110	770	970
	292.1	125.415	57.945	101.6	3.5	1.5	990	2110	770	970
	317.5	146.05	63.5	111.125	4.3	1.5	1140	2270	720	910
	317.5	146.05	63.5	111.125	4.3	1.5	1140	2270	720	910
	317.5	146.05	63.5	111.125	4.3	1.5	1140	2270	720	910
	317.5	146.05	73.216	111.125	5.5	1.5	1140	2270	720	910
	368.3	193.675	88.897	136.525	3.3	1.5	1780	2920	640	810
	368.3	193.675	88.897	136.525	3.3	1.5	1780	2920	640	810
206.375	282.575	101.6	46.038	82.55	3.5	0.8	656	1410	780	990
	336.55	211.138	100.012	169.862	3.3	1.5	2110	4000	680	860
212.725	285.75	98.425	46.038	76.2	3.5	0.8	672	1560	760	970

Designations	Factor				Abutment and fillet dimensions(mm)					Mass(kg) (approx.)
	e	Y_1	Y_2	Y_o	d_{amin}	D_{amin}	S_{amin}	r_{amax}	r_{bmax}	
HM237545/HM237510CD	0.32	2.12	3.15	2.07	198.10	271	15.9	5.5	1.5	32.7
HM237545X2/HM237510CDX2	0.32	2.12	3.15	2.07	198.10	271	15.9	5.5	1.5	32.7
K94700/K94114CD	0.47	1.44	2.15	1.41	198.10	270	15.9	5.5	1.5	34.0
KHM237545/KHM237510CD/YA1	0.32	2.12	3.15	2.07	198.10	271	15.9	5.5	1.5	32.9
KHM237545/KHM237510D	0.32	2.12	3.15	2.07	198.10	271	15.9	5.5	1.5	32.7
H239640/H239612D	0.32	2.12	3.15	2.07	191.10	300	23.9	3	1.5	58.9
KEE222070/K222127CD	0.4	1.68	2.50	1.64	191.10	298	23.9	3	1.5	61.5
KEE222070/K222127D	0.4	1.68	2.50	1.64	191.10	298	23.9	3	1.5	61.5
KH239640/KH239612D	0.32	2.12	3.15	2.07	191.10	300	23.9	3	1.5	58.9
KJM736149/KJM736110/DB	0.48	1.41	2.09	1.37	192.30	242	10	2.5	1	14.3
KM238849/KM238810DC	0.33	2.04	3.03	1.99	200.70	258	12.7	3	1.5	19.3
M238849/M238810CD	0.33	2.04	3.03	1.99	200.70	258	12.7	3	1.5	19.3
M238849/M238810DC	0.33	2.04	3.03	1.99	200.70	258	12.7	3	1.5	19.3
H239649/H239612CD	0.32	2.12	3.15	2.07	204.70	300	23.9	4.5	1.5	55.4
KH239649/KH239612CD	0.32	2.12	3.15	2.07	204.70	300	23.9	4.5	1.5	55.4
KJM738249A/KJM738210/DB	0.48	1.41	2.11	1.38	212.30	252	9.5	8	1	14.1
K67885/K67820CD	0.48	1.41	2.11	1.38	203.80	256	9.6	3	0.8	17.0
KNA67885SW/K67820D	0.48	1.41	2.11	1.38	203.80	256	12.7	3	0.8	17.6
KEE420751/K421451CD	0.4	1.69	2.52	1.65	209.60	330	28.6	6.4	1.5	84.0
93787/93127D	0.52	1.29	1.92	1.26	216.00	294	17.5	4.3	1.5	40.8
K93787/K93127CD	0.52	1.29	1.92	1.26	216.00	294	17.5	4.3	1.5	40.6
K93787/K93127D	0.52	1.29	1.92	1.26	216.00	294	17.5	4.3	1.5	40.8
KH247535/KH247510CD	0.33	2.03	3.02	1.98	220.20	362	22.3	6.4	1.5	112
KLM241149NW/KLM241110D	0.32	2.12	3.15	2.07	217.50	264	11.2	3	0.8	15.4
LM241149NW/LM241110D	0.32	2.12	3.15	2.07	217.50	264	11.2	3	0.8	15.4
KLM241149NWSH/KLM241110DSH	0.32	2.10	3.12	2.05	217.50	266	11.2	3	0.8	15.0
LM241149NW/LM241110D/YAB	0.32	2.12	3.15	2.07	217.50	264	11.2	3	0.8	15.0
M241547/M241510CD	0.33	2.03	3.02	1.98	217.50	278	12	3	1.5	26.6
M241547/M241510CD/YAD	0.33	2.03	3.02	1.98	217.50	278	12	3	1.5	26.5
93800/93127D/YB2	0.52	1.29	1.92	1.26	219.10	294	17.5	4.3	1.5	39.8
K93800/K93127CD	0.52	1.29	1.92	1.26	219.10	294	17.5	4.3	1.5	39.6
K93800/K93127D	0.52	1.29	1.92	1.26	219.10	294	17.5	4.3	1.5	39.8
KNA93800SW/K93127D	0.52	1.29	1.92	1.26	220.20	294	17.5	4.5	1.5	39.6
EE420801/421451CD	0.4	1.69	2.52	1.65	217.10	330	28.6	3.3	1.5	78.8
KEE420801/K421451CD	0.4	1.69	2.52	1.65	217.10	330	28.6	3.3	1.5	78.8
K67985/K67920CD	0.51	1.33	1.97	1.30	220.40	272	9.6	3	0.8	17.7
H242649/H242610CD	0.34	2.00	2.98	1.96	220.30	321	20.7	3.3	1.5	67.9
KLM742745/KLM742710CD	0.48	1.40	2.09	1.37	227.10	276	11.2	3	0.8	16.9

d 220.662～254mm

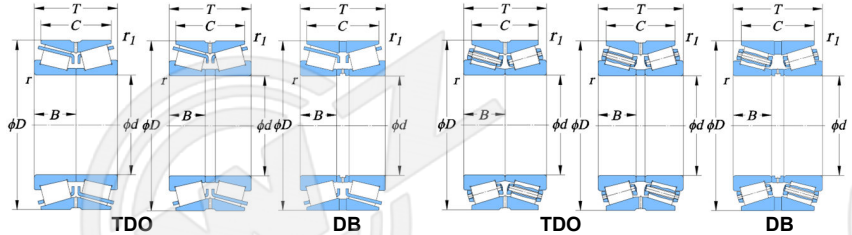




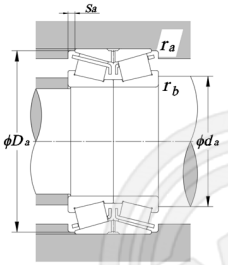
Principal dimensions(mm)							Basic load ratings(kN)		Limiting speeds (r/min)	
d	*D*	*T*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}	Grease	Oil
220.662	314.325	131.762	61.912	106.362	6.4	1.5	1100	2320	690	880
	314.325	131.762	61.912	106.362	6.4	1.5	1100	2320	690	880
	314.325	131.762	61.912	106.362	6.4	1.5	1100	2320	690	880
228.46	431.8	196.85	85.725	111.125	6.4	3.3	1950	3030	520	670
228.6	327.025	114.3	52.388	82.55	6.4	1.5	897	1910	660	840
	327.025	114.3	52.388	82.55	6.4	1.5	897	1910	660	840
	355.6	152.4	69.85	111.125	6.8	1.5	1340	2560	620	780
	355.6	152.4	69.85	114.3	6.4	1.5	1460	2730	620	780
	355.6	152.4	69.85	114.3	6.4	1.5	1460	2730	620	780
	488.95	254	111.125	152.4	6.4	2	3200	4740	470	600
	488.95	254	111.125	152.4	6.4	1.5	3200	4740	470	600
234.95	327.025	114.3	52.388	82.55	6.4	1.5	897	1910	650	830
	327.025	114.3	52.388	82.55	6.4	1.5	897	1910	650	830
	327.025	114.3	52.388	82.55	6.4	1.5	897	1910	650	830
	327.025	117.475	58.7375	82.55	6.4	1.5	897	1910	650	830
	327.025	117.475	58.7375	82.55	6.4	1.5	897	1910	650	830
	384.175	238.125	112.712	193.675	6.4	1.5	2550	5060	570	720
237.33	358.775	152.4	71.438	117.475	6.4	1.5	1430	3080	600	760
	327.025	114.3	52.388	82.55	6.4	1.5	897	1910	650	820
241.3	327.025	114.3	52.388	82.55	6.4	1.5	897	1910	640	810
	327.025	114.3	52.388	82.55	6.4	1.5	897	1910	640	810
	406.4	215.9	100.012	184.15	6.4	1.5	2540	4730	540	680
	444.5	209.55	100.012	158.75	6.4	1.5	2650	4450	500	630
	444.5	209.55	100.012	158.75	6.4	1.5	2650	4450	500	630
	444.5	209.55	100.012	158.75	6.4	1.5	2650	4450	500	630
	444.5	209.55	100.012	158.75	6.4	1.5	2650	4450	500	630
	488.95	254	120.65	196.85	6.4	1.5	3230	5710	460	580
247.65	406.4	247.65	115.825	203.2	6.4	1.6	2760	5490	530	670
	406.4	247.65	117.475	203.2	6.4	1.6	2840	5720	530	670
	406.4	247.65	117.475	203.2	6.4	1.5	2870	5600	530	670
249.25	381	171.45	76.2	127	6.4	1.5	1500	2960	560	710
253.975	347.662	101.6	50.99	69.85	3.5	1.5	887	1690	590	750
254	347.662	101.6	50.99	69.85	3.5	1.5	887	1690	590	750
	347.662	101.6	50.99	69.85	3.5	1.5	887	1690	590	750
	358.775	152.4	71.438	117.474	3.5	1.5	1430	3080	580	730
	358.775	152.4	71.438	117.475	3.5	1.5	1430	3080	580	730
	358.775	152.4	71.438	117.475	3.5	1.5	1430	3080	580	730
	358.775	152.4	71.438	117.475	3.5	1.5	1430	3080	580	730

Designations	Factor				Abutment and fillet dimensions(mm)					Mass(kg) (approx.)
	e	Y_1	Y_2	Y_o	d_{amin}	D_{amin}	S_{amin}	r_{amax}	r_{bmax}	
KM244249/KM244210CD	0.33	2.03	3.02	1.98	240.80	300	12.7	6.4	1.5	30.5
KM244249/KM244210D	0.33	2.03	3.02	1.98	240.80	300	12.7	6.4	1.5	30.5
M244249/M244210CD	0.33	2.03	3.02	1.98	240.80	300	12.7	6.4	1.5	30.5
KEE113091/K113171D	0.88	0.76	1.14	0.75	248.60	397	42.9	6.4	3.3	111
8573/8520CD/YA10	0.41	1.66	2.47	1.62	248.70	310	15.9	6.4	1.5	27.4
K8573/K8520CD	0.41	1.66	2.47	1.62	248.70	310	15.9	6.4	1.5	28.1
KEE130902/K131401CD	0.33	2.04	3.04	2.00	249.50	330	20.7	6.8	1.5	50.2
HM746646SH/HM746610CD/HE	0.47	1.43	2.12	1.40	248.70	338	19.1	6.4	1.5	51.3
KHM746646/KHM746610CD	0.47	1.43	2.12	1.40	248.70	338	19.1	6.4	1.5	52.4
HH949549/HH949510/DB	0.94	0.72	1.07	0.70	248.70	456	50.8	6.4	2	210
HH949549/HH949510D	0.94	0.72	1.07	0.70	248.70	456	50.8	6.4	1.5	210
8575/8520D	0.41	1.66	2.47	1.62	255.10	310	15.9	6.4	1.5	26.1
K8575/K8520CD	0.41	1.66	2.47	1.62	255.10	310	15.9	6.4	1.5	26.1
K8575/K8520D	0.41	1.66	2.47	1.62	255.10	310	15.9	6.4	1.5	26.1
KNA8575SW/K8520CD-1	0.41	1.66	2.47	1.62	255.10	310	17.5	6.4	1.5	26.5
NA8575SW/8520CD	0.41	1.66	2.47	1.62	255.10	310	17.5	6.4	1.5	26.5
KH247549/KH247510D	0.33	2.03	3.02	1.98	255.10	362	22.3	6.4	1.5	111
KRM249736/M249710CD	0.33	2.03	3.02	1.98	257.50	343	17.5	6.4	1.5	53.2
8578/8520CD/YA1	0.41	1.66	2.47	1.62	257.50	310	15.9	6.4	1.5	24.2
K8578/K8520CD	0.41	1.66	2.47	1.62	261.40	310	15.9	6.4	1.5	24.2
K8578/K8520DC	0.41	1.66	2.47	1.62	261.40	310	15.9	6.4	1.5	24.2
KH249148/KH249111CD	0.33	2.03	3.02	1.98	261.40	383	15.9	6.4	1.5	110
EE923095/923176D	0.34	2.01	2.99	1.96	261.40	406	25.4	6.4	1.5	135
EE923095/923176D/HE	0.34	2.01	2.99	1.96	261.40	406	25.4	6.4	1.5	135
EE923095/923176D/YA1	0.34	2.01	2.99	1.96	261.40	406	25.4	6.4	1.5	135
KEE923095/K923176D	0.34	2.01	2.99	1.96	261.40	406	25.4	6.4	1.5	135
KEE295950/K295192D	0.31	2.18	3.24	2.13	261.40	446	28.6	6.4	1.5	217
HH249949/HH249910CD/YAD	0.33	2.03	3.02	1.98	275.70	382	22.3	6.4	1.6	121
HH249949/HH249910D/YA8	0.33	2.03	3.02	1.98	275.70	382	22.3	6.4	1.6	122
KHH249949/KHH249910CD/YA10	0.33	2.03	3.02	1.98	267.80	385	22.3	6.4	1.5	122
KEE126098/K126151CD	0.52	1.31	1.95	1.28	269.40	356	22.3	6.4	1.5	63.4
LM249747NW/LM249710CD/YAB	0.33	2.03	3.02	1.98	268.30	332	15.9	3	1.5	25.3
KLM249747NW/KLM249710D	0.33	2.03	3.02	1.98	268.30	332	15.9	3	1.5	25.3
KLM249747NWSH/KLM249710D	0.33	2.03	3.02	1.98	268.30	332	15.9	3	1.5	24.2
M249749/M249710/DB	0.33	2.03	3.02	1.98	268.30	343	17.5	3	1.5	46.6
KRM249749/M249710CD	0.33	2.03	3.02	1.98	268.30	343	17.5	3	1.5	46.9
M249749/M249710CD	0.33	2.03	3.02	1.98	268.30	343	17.5	3	1.5	46.9
M249749/M249710CD/YAD	0.33	2.03	3.02	1.98	268.30	343	17.5	3	1.5	44.7

d 254～304.8mm

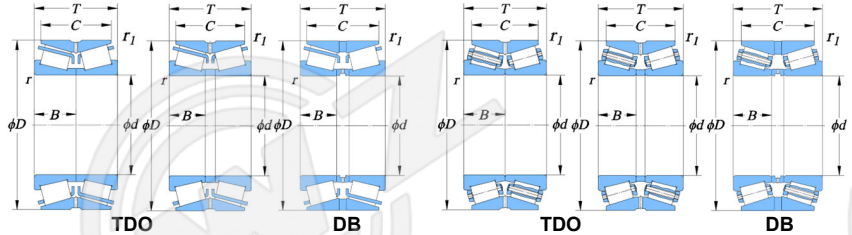


Pressed cage　　Machined cage

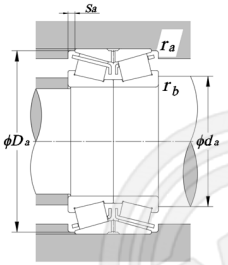


Principal dimensions(mm)							Basic load ratings(kN)		Limiting speeds (r/min)		Designations	Factor				Abutment and fillet dimensions(mm)					Mass(kg) (approx.)
d	*D*	*T*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}	Grease	Oil		*e*	Y_1	Y_2	Y_o	d_{amin}	D_{amin}	S_{amin}	r_{amax}	r_{bmax}	
254	393.7	157.162	69.85	109.538	6.4	1.5	1440	2900	540	680	KEE275100/K275156D	0.4	1.68	2.50	1.64	274.10	378	23.9	6.4	1.5	66.4
	431.724	173.038	86.519	128.588	6.4	1.6	2160	3580	500	630	KHM252343NA/KHM252315CD	0.33	2.05	3.05	2.00	274.10	400	22.3	6.4	1.6	93.1
260.35	365.125	130.175	58.738	98.425	6.4	1.5	1070	2140	560	710	EE134102/134144CD	0.37	1.80	2.69	1.76	280.50	345	15.9	6.4	1.5	37.3
	365.125	130.175	58.738	98.425	6.4	1.5	1070	2140	560	710	EE134102/134144D	0.37	1.80	2.69	1.76	280.50	345	15.9	6.4	1.5	37.3
	365.125	130.175	58.738	98.425	6.4	1.5	1070	2140	560	710	EE134102/134144D/HE	0.37	1.80	2.69	1.76	280.50	345	15.9	6.4	1.5	37.3
	400.05	155.58	67.47	107.95	9.7	1.5	1430	2560	520	670	KEE221026/K221576CD	0.39	1.71	2.54	1.67	287.10	375	23.9	9.7	1.5	61.7
	419.1	184.15	84.138	136.525	6.4	1.5	1970	3930	510	640	EE435102/435165CD	0.6	1.13	1.68	1.10	280.50	397	23.9	6.4	1.5	92.1
	419.1	184.15	84.138	136.525	6.4	1.5	1970	3930	510	640	EE435102/435165CD/YA1	0.6	1.13	1.68	1.10	280.50	397	23.9	6.4	1.5	92.1
	422.275	178.592	79.771	139.7	6.8	1.5	2040	3620	500	640	HM252348/HM252310CD	0.36	1.90	2.83	1.86	291.40	399	19.5	6.8	1.5	89.1
	422.275	178.592	79.771	139.7	6.8	1.5	2040	3620	500	640	KHM252348/KHM252310CD	0.36	1.90	2.83	1.86	291.40	399	19.5	6.8	1.5	89.1
263.525	355.6	127	57.15	101.6	3.5	1.5	1190	2700	570	720	KLM451345/KLM451310CD	0.36	1.87	2.79	1.83	277.90	343	12.7	3	1.5	34.0
266.7	355.6	127	57.15	101.6	3.5	1.5	1190	2700	570	720	KLM451349/KLM451310CD	0.36	1.87	2.79	1.83	281.00	343	12.7	3	1.5	32.8
	355.6	127	57.15	101.6	3.5	1.5	1190	2700	570	720	LM451349/LM451310CD	0.36	1.87	2.79	1.83	281.00	343	12.7	3	1.5	32.8
269.875	381	158.75	74.612	123.825	6.4	1.5	1610	3340	530	680	M252349/M252310CD	0.33	2.03	3.02	1.98	290.00	363	17.5	6.4	1.5	51.8
273.05	393.7	157.162	69.85	109.538	6.4	1.5	1460	2940	520	660	KEE275108/K275156CD	0.4	1.68	2.50	1.64	293.20	378	23.9	6.4	1.5	56.3
279.4	469.9	200.025	93.662	149.225	9.7	1.5	2510	4840	440	560	EE722110/722186D	0.38	1.79	2.67	1.75	315.40	432	25.4	9.7	1.5	132
	469.9	200.025	93.662	149.225	9.7	1.5	2510	4840	440	560	KEE722110/K722186D	0.38	1.79	2.67	1.75	315.40	432	25.4	9.7	1.5	132
	488.95	254	120.65	192.85	1.3	1.5	3470	6280	430	550	EE295110/295192CD/YAD	0.31	2.18	3.24	2.13	289.30	446	30.6	1.3	1.5	188
	488.95	254	120.65	196.85	1.3	1.5	3230	5710	430	550	EE295110/295192D	0.31	2.18	3.24	2.13	289.30	446	28.6	1.3	1.5	188
279.982	380.898	139.7	65.088	107.95	3.5	1.5	1250	2820	520	670	KLM654642/KLM654610CD	0.43	1.57	2.34	1.53	299.00	370	15.9	3	1.5	41.6
	380.898	139.7	65.088	107.95	3.5	1.5	1250	2820	520	670	KLM654642/KLM654610CD/YA1	0.43	1.57	2.34	1.53	299.00	370	15.9	3	1.5	41.6
280.192	406.4	149.226	67.673	117.475	6.8	1.5	1450	2940	500	630	KEE128111/K128160CD	0.39	1.75	2.60	1.71	301.10	383	15.9	6.8	1.5	56.7
285.75	380.898	139.7	65.088	107.95	3.5	1.5	1270	2810	520	660	LM654649/LM654610CD	0.4	1.68	2.50	1.64	304.80	370	15.9	3	1.5	39.2
288.925	406.4	165.1	77.788	130.175	6.4	1	1890	4150	490	620	KM255449/KM255410CD	0.34	2.00	2.97	1.95	309.10	387	17.5	6.4	1	64.1
	406.4	165.1	77.788	130.175	6.4	1	1890	4150	490	620	M255449/M255410CD	0.34	2.00	2.97	1.95	309.10	387	17.5	6.4	1	64.1
	406.4	165.1	77.788	130.175	6.4	1	1890	4150	490	620	M255449/M255410CD/HE	0.34	2.00	2.97	1.95	309.10	387	17.5	6.4	1	64.1
	406.4	165.1	77.788	130.175	6.4	1	1890	4150	490	620	M255449/M255410CD-1	0.34	2.00	2.97	1.95	309.10	387	17.5	6.4	1	64.1
299.975	495.3	301.625	141.288	247.65	6.4	1.5	4270	8840	410	520	HH258248/HH258210CD	0.33	2.03	3.02	1.98	320.10	467	27	6.4	1.5	222
300.038	422.275	174.625	82.55	136.525	6.4	1.5	1880	4060	470	590	HM256849/HM256810CD	0.34	2.00	2.98	1.96	332.10	403	19.1	6.4	1.5	69.7
	422.275	174.625	82.55	136.525	6.4	1.5	1880	4060	470	590	HM256849/HM256810CD/YA1	0.34	2.00	2.98	1.96	332.10	403	19.1	6.4	1.5	69.7
	422.275	174.625	82.55	136.525	6.4	1.5	1880	4060	470	590	HM256849/HM256810D	0.34	2.00	2.98	1.96	332.10	403	19.1	6.4	1.5	69.7
	422.275	174.625	82.55	136.525	6.4	1.5	1880	4060	470	590	KHM256849/KHM256810CD	0.34	2.00	2.98	1.96	332.10	403	19.1	6.4	1.5	69.7
304.8	393.7	107.95	50.8	82.55	6.4	1.5	1070	2330	490	620	L357049/L357010CD	0.36	1.89	2.81	1.84	325.90	381	12.7	6.4	1.5	30.5
	393.7	107.95	50.8	82.55	6.4	1.5	1070	2330	490	620	L357049/L357010D	0.36	1.89	2.81	1.84	325.90	381	12.7	6.4	1.5	30.5
	393.7	107.95	53.975	82.55	6.4	1.5	1070	2330	490	620	L357049NW/YA3/L357010CD	0.36	1.89	2.81	1.84	325.90	381	12.7	6.4	1.5	30.1
	393.7	107.95	54.166	82.55	6.4	1.5	1070	2330	490	620	KL357049NW/KL357010D	0.36	1.89	2.81	1.84	325.90	381	12.7	6.4	1.5	30.1
	393.7	107.95	54.166	82.55	6.4	1.5	1070	2330	490	620	L357049NW/L357010CD/YAB	0.36	1.89	2.81	1.84	325.90	381	12.7	6.4	1.5	30.1
	412.75	123.825	53.975	92.075	6.4	1.5	1140	2400	470	600	EE109120/109163D	0.43	1.57	2.34	1.53	333.60	395	15.9	6.4	1.5	42.4

d 304.8～384.175mm

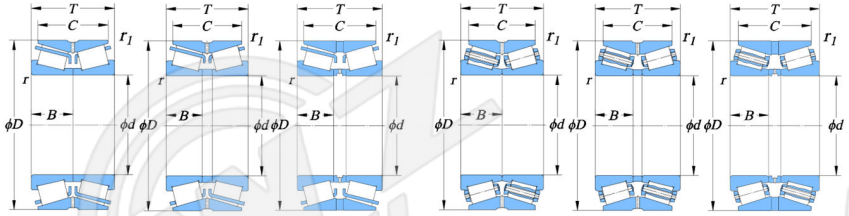


Pressed cage　　Machined cage

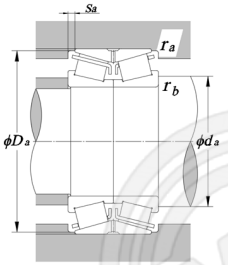


Principal dimensions(mm)							Basic load ratings(kN)		Limiting speeds (r/min)		Designations	Factor				Abutment and fillet dimensions(mm)					Mass(kg) (approx.)
d	*D*	*T*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}	Grease	Oil		*e*	Y_1	Y_2	Y_o	d_{amin}	D_{amin}	S_{amin}	r_{amax}	r_{bmax}	
304.8	444.5	146.05	61.912	98.425	8	1.5	1360	2760	440	560	EE291201/291751D	0.38	1.79	2.66	1.75	336.80	414	23.9	8	1.5	64.9
	495.3	196.85	92.075	146.05	16	1.5	2430	4740	410	520	EE724120/724196CD	0.4	1.68	2.50	1.64	345.10	459	25.4	16	1.5	139
311.15	558.8	190.5	82.55	111.125	9.7	3.3	2350	4140	360	460	EE148122/148220D	0.88	0.77	1.14	0.75	338.90	513	39.7	9.7	3.3	184
317.5	444.5	146.05	61.912	98.425	8	1.5	1360	2760	430	550	KEE291250/K291751CD	0.38	1.79	2.66	1.75	341.80	414	23.9	8	1.5	59.0
	447.675	180.975	85.725	146.05	3.5	1.5	1980	4650	430	550	HM259049/HM259010CD	0.33	2.03	3.02	1.98	332.80	426	17.5	3	1.5	85.4
	447.675	180.975	85.725	146.05	3.5	1.5	1980	4650	430	550	KHM259049/KHM259010CD	0.33	2.03	3.02	1.98	332.80	426	17.5	3	1.5	85.4
330.2	482.6	177.8	80.167	127	6.4	1.5	2380	4730	400	500	EE526130/526191CD/YAD	0.47	1.44	2.14	1.40	352.50	460	25.4	6.4	1.5	100
333.375	469.9	190.5	90.488	152.4	6.4	1.5	2300	5150	400	510	HM261049/HM261010CD/YA1	0.33	2.02	3.00	1.97	354.50	449	19.1	6.4	1.5	97.7
	469.9	190.5	90.488	152.4	6.4	1.5	2300	5150	400	510	HM261049/HM261010D	0.33	2.02	3.00	1.97	354.50	449	19.1	6.4	1.5	97.7
	469.9	190.5	90.488	152.4	6.4	1.5	2300	5150	400	510	KHM261049/KHM261010CD/YAB	0.33	2.02	3.00	1.97	354.50	449	19.1	6.4	1.5	97.7
339.949	589.948	340.002	160	278	14	3.5	5980	11900	330	420	HH264149/HH264110CD	0.33	2.03	3.02	1.98	385.00	552	31.1	14	3	381
342.9	450.85	190.346	66.675	161.776	8.5	1	1460	3530	410	520	LM361649/LM361610/DB	0.35	1.92	2.85	1.87	375.90	433	14.3	8.5	1	57.0
	457.098	142.875	63.5	101.6	3.3	1.5	1430	3540	410	520	KLM961548/KLM961511D	0.7	0.97	1.44	0.94	363.50	444	20.7	3.3	1.5	44.8
	457.098	142.875	63.5	104.775	3.6	1.6	1430	3540	410	520	KLM961548A6/KLM961511DX2A6	0.7	0.97	1.44	0.94	363.50	446	19.1	3.6	1.6	45.0
	533.4	165.1	76.2	114.3	4.8	1.5	2350	4230	360	450	KEE971354/K972102D	0.33	2.03	3.02	1.98	360.20	494	25.4	4.8	1.5	120
343.154	450.85	189.35	66.675	160.776	8.5	1	1460	3530	410	520	KLM361649A/KLM361610/DB	0.35	1.92	2.85	1.87	376.20	433	14.3	8.5	1	59.2
346.075	488.95	200.025	95.25	158.75	6.4	1.5	2650	5760	380	490	HM262749/HM262710CD/YA1	0.34	1.99	2.96	1.95	367.20	469	20.7	6.4	1.5	108
	488.95	200.025	95.25	158.75	6.4	1.5	2650	5760	380	490	HM262749/HM262710D	0.34	1.99	2.96	1.95	367.20	469	20.7	6.4	1.5	108
	488.95	200.025	95.25	158.75	6.4	1.5	2820	6440	380	490	HM262749SH/HM262710CDSH	0.33	2.05	3.05	2.00	367.20	466	20.7	6.4	1.5	114
	488.952	200.025	95.25	158.75	6.4	1.5	2650	5760	380	490	KHM262749/KHM262710D/YB4	0.34	1.99	2.96	1.95	367.20	469	20.7	6.4	1.5	108
355.6	444.5	136.524	60.325	111.125	3.5	1.5	1220	3430	410	520	L163149/L163110CD	0.31	2.20	3.27	2.15	375.60	427	12.7	3	1.5	46.1
	444.5	136.525	60.325	111.125	3.5	1.5	1220	3430	410	520	KL163149/KL163110CD	0.31	2.20	3.27	2.15	375.60	427	12.7	3	1.5	46.1
	444.5	136.525	68.236	111.125	3.5	1.5	1220	3430	410	520	KL163149NW/KL163110CD	0.31	2.20	3.27	2.15	375.60	427	12.7	3	1.5	46.1
	501.65	145.05	61.413	107.95	6.4	1.5	1560	3490	370	470	KEE231400/K231976CDX2	0.44	1.53	2.28	1.50	376.70	481	18.6	6.4	1.5	83.4
	501.65	155.575	66.675	107.95	6.4	1.5	1560	3490	370	470	EE231400/231976CD/YAD	0.44	1.53	2.28	1.50	376.70	481	23.9	6.4	1.5	88.1
	501.65	191.977	66.675	144.353	6.4	3.3	1560	3490	370	470	EE231400/231975/YAD/DB	0.44	1.53	2.28	1.50	376.70	481	23.9	6.4	3.3	98.9
	514.35	193.675	84.138	152.4	6.4	1.5	2360	4930	360	460	EE333140/333203CD	0.37	1.80	2.69	1.76	378.80	480	20.7	6.4	1.5	120
	523.875	214.312	101.6	169.862	6.4	1.5	2810	6180	360	450	HM265049/HM265010CD	0.33	2.03	3.02	1.98	376.70	498	22.3	6.4	1.5	136
368.249	523.875	214.312	101.6	169.862	6.4	1.5	2810	6180	350	440	HM265049/HM265010D	0.33	2.03	3.02	1.98	389.40	498	22.3	6.4	1.5	136
368.3	596.9	203.2	92.075	133.35	9.7	2.3	2920	5240	310	390	EE181453/182351D	0.42	1.62	2.42	1.59	405.30	548	35	9.7	2.3	191
371.475	501.65	155.575	66.675	107.95	6.4	1.5	1560	3490	360	460	KEE231462/K231976CD	0.44	1.53	2.28	1.50	392.60	481	23.9	6.4	1.5	76.9
381	546.1	222.25	104.775	177.8	6.4	1.5	3440	7940	330	420	KHM266446/KHM266410CD	0.33	2.03	3.02	1.98	406.80	520	22.3	6.4	1.5	159
	546.1	222.25	104.775	177.8	6.4	1.5	3440	7940	330	420	KHM266447/KHM266410CD	0.33	2.03	3.02	1.98	406.80	520	22.3	6.4	1.5	163
	590.55	244.475	114.3	193.675	6.4	1.5	3480	8260	310	390	M268730/M268710CD/HE	0.33	2.03	3.02	1.98	404.20	562	25.4	6.4	1.5	245
	590.55	244.475	114.3	193.675	6.4	1.5	3700	8970	310	390	M268730/M268710D	0.33	2.03	3.02	1.98	404.20	562	25.4	6.4	1.5	247
	590.55	244.475	114.3	193.675	6.4	1.5	3480	8260	310	390	M268730/M268710DC	0.33	2.03	3.02	1.98	404.20	562	25.4	6.4	1.5	245
384.175	546.1	222.25	104.775	177.8	6.4	1.5	3440	7940	330	420	HM266448/HM266410CD	0.33	2.03	3.02	1.98	410.00	520	22.3	6.4	1.5	160
	546.1	222.25	104.775	177.8	6.4	1.5	3440	7940	330	420	HM266449/HM266410CD/YA10	0.33	2.03	3.02	1.98	410.00	520	22.3	6.4	1.5	159

d 384.175～536.575mm



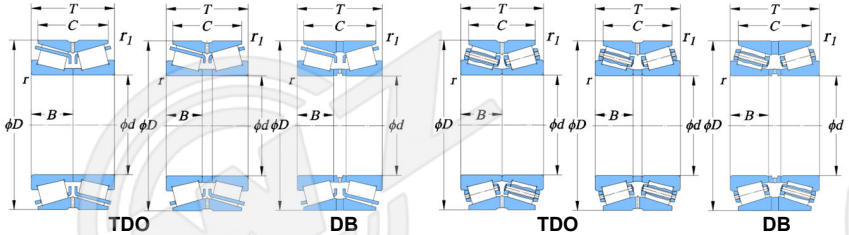
Pressed cage　　Machined cage



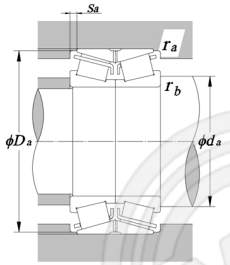
Principal dimensions(mm)							Basic load ratings(kN)		Limiting speeds (r/min)	
d	*D*	*T*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}	Grease	Oil
384.175	546.1	222.25	104.775	177.8	6.4	1.5	3440	7940	330	420
385.762	514.35	177.8	82.55	139.7	6.4	1.5	2250	5550	340	440
	514.35	177.8	82.55	139.7	6.4	1.5	2250	5550	340	440
	514.35	195.1	82.55	157	6.4	0.8	2250	5550	340	440
393.7	546.1	158.75	61.12	117.475	6.4	1.5	1590	3660	320	410
406.4	609.6	187.325	84.138	123.825	6.8	1.5	2790	5530	290	360
409.575	635	257.175	120.65	206.375	6.4	1.5	4150	9930	280	350
	590.55	244.475	114.3	193.675	6.4	1.5	3480	8260	290	370
415.925	590.55	244.475	114.3	193.675	6.4	1.5	3480	8260	290	370
	590.55	244.475	114.3	193.675	6.4	1.5	3480	8260	290	370
	590.55	244.475	114.3	193.675	6.4	1.5	3480	8260	290	370
	590.55	244.475	114.3	193.675	6.4	1.5	3480	8260	290	370
	590.55	250	114.3	199.2	6.4	1.6	3480	8260	290	370
	590.55	250	114.3	199.2	6.4	1.6	3480	8260	290	370
431.8	565.15	100.22	44.45	74.82	3.3	1.5	1110	2800	290	370
	571.5	155.575	74.612	111.125	3.3	1.5	1880	4290	290	370
	571.5	155.575	74.612	111.125	3.3	1.5	1880	4290	290	370
	571.5	155.575	74.612	111.125	3.3	1.5	1820	4160	290	370
	673.1	192.639	87.833	127	6.4	1.5	3000	5790	260	330
447.675	635	257.175	120.65	206.375	6.4	1.5	4150	9930	260	340
	635	257.175	120.65	206.375	6.4	1.5	4150	9930	260	340
	635	257.175	120.65	206.375	6.4	1.5	4150	9930	260	340
457.2	596.9	165.1	73.025	120.65	9.7	1.5	2050	4980	270	350
	679.45	276.225	128.588	222.25	6.4	1.5	4800	11500	250	310
	679.45	276.225	128.588	222.25	6.4	1.5	4800	11500	250	310
479.425	679.45	276.225	128.588	222.25	6.4	1.5	4800	11500	240	310
	679.45	276.225	128.588	222.25	6.4	1.5	4800	11500	240	310
	679.45	276.225	128.588	222.25	6.4	1.5	4800	11500	240	310
	615.95	184.15	85.725	146.05	6.4	1.5	2820	7610	260	330
482.6	615.95	184.15	85.725	146.05	6.4	1.5	2820	7610	260	330
488.671	660.4	206.375	94.458	158.75	6.4	1.5	3210	7300	240	310
488.95	660.4	206.375	94.458	158.75	6.4	1.5	3210	7300	240	310
498.475	634.873	177.8	80.962	142.875	6.4	1.5	2320	5940	250	320
501.65	711.2	292.1	136.525	231.775	6.4	1.5	5570	13400	230	290
	711.2	292.1	136.525	231.775	6.4	1.5	5570	13400	230	290
533.4	812.8	269.875	123.825	187.325	9.7	3.3	5090	11300	190	250
	812.8	269.875	123.825	187.325	9.7	3.3	5090	11300	190	250
536.575	761.873	311.15	146.05	247.65	6.4	1.5	6080	14500	200	260

Designations	Factor				Abutment and fillet dimensions(mm)					Mass(kg) (approx.)
	e	Y_1	Y_2	Y_0	d_{amin}	D_{amin}	S_{amin}	r_{amax}	r_{bmax}	
HM266449/HM266410D/YA10	0.33	2.03	3.02	1.98	410.00	520	22.3	6.4	1.5	158
LM665949/LM665910CD	0.42	1.61	2.40	1.58	406.90	495	19.1	6.4	1.5	100
LM665949/LM665910DC	0.42	1.61	2.40	1.58	406.90	495	19.1	6.4	1.5	100
LM665949/LM665910/DB	0.42	1.61	2.40	1.58	406.90	495	19.1	6.4	0.8	97.6
KEE234154/K234216D	0.48	1.42	2.11	1.39	425.70	515	20.7	6.4	1.5	103
EE911600/912401D	0.38	1.76	2.62	1.72	429.30	569	31.8	6.8	1.5	169
M270730/M270710CD	0.33	2.03	3.02	1.98	442.60	605	25.4	6.4	1.5	300
KM268749/KM268710DC	0.33	2.03	3.02	1.98	433.80	562	25.4	6.4	1.5	205
M268749/M268710CD/YA1	0.33	2.03	3.02	1.98	440.20	562	25.4	6.4	1.5	203
M268749/M268710D	0.33	2.03	3.02	1.98	440.20	562	25.4	6.4	1.5	205
M268749/M268710DC	0.33	2.03	3.02	1.98	440.20	562	25.4	6.4	1.5	205
M268749/M268710DC/HE	0.33	2.03	3.02	1.98	440.20	562	25.4	6.4	1.5	205
M268749/M268710DX2	0.33	2.03	3.02	1.98	440.20	562	25.4	6.4	1.6	206
M268749/M268710DX2/HEYB2	0.33	2.03	3.02	1.98	440.20	562	25.4	6.4	1.6	206
K80170/K80222/DB	0.32	2.12	3.15	2.07	449.80	528	12.7	3.3	1.5	61.2
KLM869448/KLM869410CD	0.55	1.24	1.84	1.21	452.80	548	22.3	3.3	1.5	102
LM869448/LM869410CD	0.55	1.24	1.84	1.21	452.80	548	22.3	3.3	1.5	102
LM869448SH/LM869410CDSH	0.55	1.24	1.84	1.21	452.80	548	22.3	3.3	1.5	102
KEE571703/K572651D	0.4	1.68	2.50	1.64	456.00	618	32.9	6.4	1.5	220
KM270749/KM270710CD	0.33	2.03	3.02	1.98	480.70	605	25.4	6.4	1.5	247
M270749/M270710CD	0.33	2.03	3.02	1.98	480.70	605	25.4	6.4	1.5	247
M270749/M270710CD/YB2	0.33	2.03	3.02	1.98	480.70	605	25.4	6.4	1.5	247
EE244180/244236CD	0.4	1.67	2.48	1.63	495.20	570	22.3	9.7	1.5	109
KM272749/KM272710DC	0.33	2.03	3.02	1.98	490.20	649	27	6.4	1.5	307
M272749/M272710CD/YB2	0.33	2.03	3.02	1.98	490.20	649	27	6.4	1.5	307
M272749/M272710D	0.33	2.03	3.02	1.98	512.50	649	27	6.4	1.5	307
M272749/M272710DC	0.33	2.03	3.02	1.98	512.50	649	27	6.4	1.5	307
M272749/M272710DC/HE	0.33	2.03	3.02	1.98	512.50	649	27	6.4	1.5	307
LM272249/LM272210CD	0.33	2.03	3.02	1.98	509.30	596	19.1	6.4	1.5	130
LM272249/LM272210D	0.33	2.03	3.02	1.98	512.40	596	19.1	6.4	1.5	130
EE640191/640261CD	0.31	2.21	3.28	2.16	521.70	632	23.9	6.4	1.5	180
EE640192/640261CD	0.31	2.21	3.28	2.16	522.00	632	23.9	6.4	1.5	181
EE243196/243251CD/YA1	0.34	1.98	2.95	1.94	528.30	609	17.5	6.4	1.5	125
M274149/M274110CD	0.35	1.92	2.86	1.88	535.70	678	30.2	6.4	1.5	355
M274149/M274110DC	0.35	1.92	2.86	1.88	535.70	678	30.2	6.4	1.5	355
EE626210/626321CD	0.44	1.54	2.29	1.50	572.40	763	41.3	9.7	3.3	470
EE626210/626321D	0.44	1.54	2.29	1.50	572.40	763	41.3	9.7	3.3	470
KM276449/KM276410CD/HCR	0.33	2.03	3.02	1.98	564.50	726	31.8	6.4	1.5	426

d 536.575～914.4mm



Pressed cage　　Machined cage

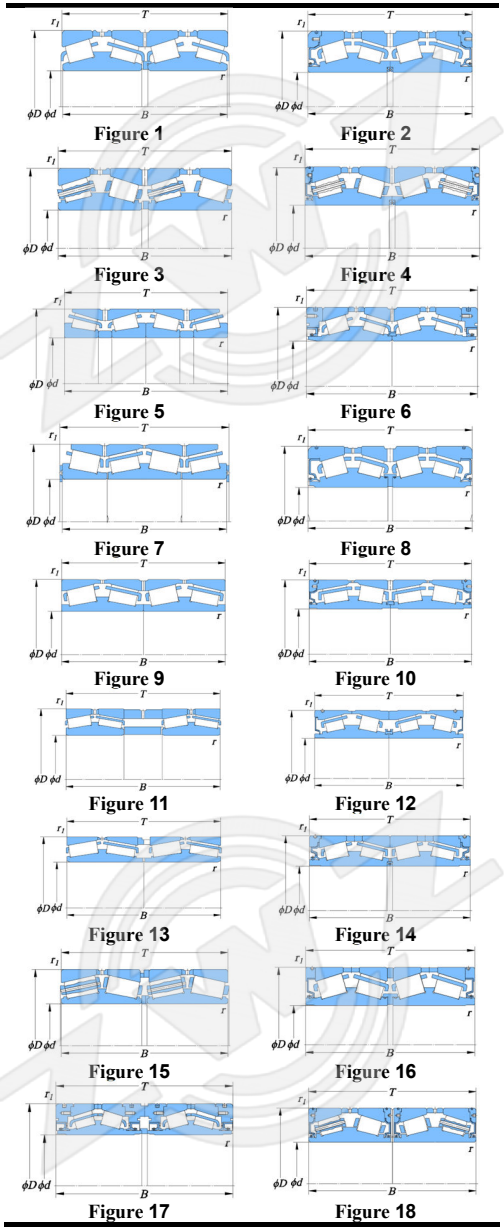


Principal dimensions(mm)							Basic load ratings (kN)		Limiting speeds (r/min)	
d	*D*	*T*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}	Grease	Oil
536.575	761.873	311.15	146.05	247.65	6.4	1.5	6080	14500	200	260
	761.873	311.15	146.05	247.65	6.4	1.5	6080	14500	200	260
	761.873	311.15	146.05	247.65	6.4	1.5	6080	14500	200	260
546.1	736.6	165.1	76.2	114.3	6.4	3.3	2560	5760	210	260
	736.6	165.1	82.741	114.3	6.4	3.3	2560	5760	210	260
558.5	736.6	225.425	104.775	177.8	6.4	1.5	3990	9960	210	260
	736.6	225.425	104.775	177.8	6.4	1.5	3990	9960	210	260
558.8	736.6	187.328	88.108	138.112	6.4	1.5	3350	7900	210	260
	812.8	333.375	155.575	263.525	6.4	1.5	7210	17600	190	240
571.5	812.8	333.375	155.575	263.525	6.4	1.5	7210	17600	190	240
609.6	787.4	206.375	93.662	158.75	6.4	1.5	3780	10000	180	230
	820	206.375	93.662	158.75	6.4	1.5	3780	10000	180	220
646.112	857.25	304.8	141.288	241.3	6.4	1.5	6020	16200	160	210
660.4	812.8	203.2	95.25	158.75	6.4	1.5	3400	9930	170	210
	812.8	203.2	95.25	158.75	6.4	1.5	3400	9930	170	210
679.45	901.7	307.975	142.875	244.475	9.7	1.5	7020	18500	150	190
682.625	965.2	396.875	185.738	311.15	9.7	1.5	10100	25100	140	170
685.8	876.3	200.024	92.075	152.4	6.4	1.5	3900	10900	150	190
711.2	914.4	190.5	82.55	139.7	6.4	3.3	3480	9470	140	180
	914.4	190.5	82.55	139.7	6.4	3.3	3480	9470	140	180
	914.4	190.5	82.55	139.7	6.4	3.3	3480	9470	140	180
723.9	914.4	187.325	80.962	139.7	5.5	3.5	3480	9470	140	180
	914.4	187.325	80.962	139.7	5.5	3.3	3480	9470	140	180
	914.4	187.325	80.962	139.7	5.5	3.3	3480	9470	140	180
	914.4	187.325	80.962	139.7	5.5	3.3	3480	9470	140	180
749.3	990.6	338	160.338	265	6.4	3.3	8540	23500	120	160
762	965.2	187.325	80.962	133.35	6.4	1.5	3730	10000	130	160
774.7	965.2	187.325	80.962	133.35	6.4	1.5	3730	10000	120	160
812.8	1016	190.5	88.9	146.05	6.4	1.5	4160	10600	110	140
914.4	1066.8	139.7	63.5	101.6	6.4	3.3	2560	7750	90	120
	1066.8	139.7	63.5	101.6	6.4	3.3	2560	7750	90	120

Designations	Factor				Abutment and fillet dimensions(mm)					Mass(kg) (approx.)
	e	Y_1	Y_2	Y_o	d_{amin}	D_{amin}	S_{amin}	r_{amax}	r_{bmax}	
M276449/M276410CD	0.33	2.03	3.02	1.98	564.50	726	31.8	6.4	1.5	426
M276449/M276410CD/YB2	0.33	2.03	3.02	1.98	564.50	726	31.8	6.4	1.5	426
M276449/M276410CD/YA1	0.33	2.03	3.02	1.98	564.50	726	31.8	6.4	1.5	427
KEE542215/K542291CD	0.51	1.33	1.97	1.30	569.20	703	25.4	6.4	3.3	179
KNAEE542215SW/K542291D	0.51	1.33	1.97	1.30	569.20	703	25.4	6.4	3.3	179
LM377449/LM377410CD	0.35	1.95	2.90	1.91	592.50	707	23.9	6.4	1.5	256
LM377449/LM377410CD/HE	0.35	1.95	2.90	1.91	592.50	707	23.9	6.4	1.5	256
EE843220/843291CD	0.34	1.97	2.93	1.93	592.80	707	24.7	6.4	1.5	185
M278749/M278710CD	0.33	2.03	3.02	1.98	586.80	777	35	6.4	1.5	529
M278749/M278710D	0.33	2.03	3.02	1.98	599.50	777	35	6.4	1.5	529
EE649240/649311CD	0.37	1.82	2.70	1.78	644.60	756	23.9	6.4	1.5	240
EE649240/649311CD/X1	0.37	1.82	2.70	1.78	644.60	756	23.9	6.4	1.5	292
LM281049/LM281010CD	0.33	2.05	3.05	2.00	675.20	824	31.8	6.4	1.5	450
KL281148/KL281110CD	0.33	2.05	3.05	2.00	686.60	787	22.3	6.4	1.5	212
L281148/L281110CD	0.33	2.05	3.05	2.00	686.60	787	22.3	6.4	1.5	212
LM281849/LM281810CD	0.33	2.05	3.05	2.00	719.50	868	31.8	9.7	1.5	515
M282249/M282210CD	0.34	1.96	2.93	1.92	718.30	924	42.9	9.7	1.5	896
EE655270/655346CD	0.42	1.61	2.39	1.57	720.80	843	23.9	6.4	1.5	279
EE755280/755361CD	0.38	1.77	2.64	1.73	741.00	877	25.4	6.4	3.3	282
EE755280/755361D	0.38	1.77	2.64	1.73	741.00	877	25.4	6.4	3.3	282
KEE755280/K755361D	0.38	1.77	2.64	1.73	741.00	877	25.4	6.4	3.3	282
EE755285/755361D	0.38	1.77	2.64	1.73	751.90	877	23.9	4.5	3	255
KEE755285/K755361CD	0.38	1.77	2.64	1.73	751.90	877	23.9	4.5	3.3	255
KEE755285/K755361D	0.38	1.77	2.64	1.73	751.90	877	23.9	4.5	3.3	255
KEE755285/K755361D	0.38	1.77	2.64	1.73	751.90	877	23.9	4.5	3.3	255
LM283649/LM283610CD	0.32	2.12	3.15	2.07	779.10	954	36.5	6.4	3.3	688
KEE752300/K752381D	0.4	1.68	2.50	1.64	787.10	922	27	6.4	1.5	290
KEE752305/K752381D	0.4	1.68	2.50	1.64	801.90	922	27	6.4	1.5	266
KEE762320/K762401D	0.43	1.59	2.36	1.55	840.60	977	22.3	6.4	1.5	316
KLL686947/KLL686910D	0.41	1.64	2.44	1.60	941.50	1036	19.1	6.4	3.3	180
LL686947/LL686910D	0.41	1.64	2.44	1.60	941.50	1036	19.1	6.4	3.3	180

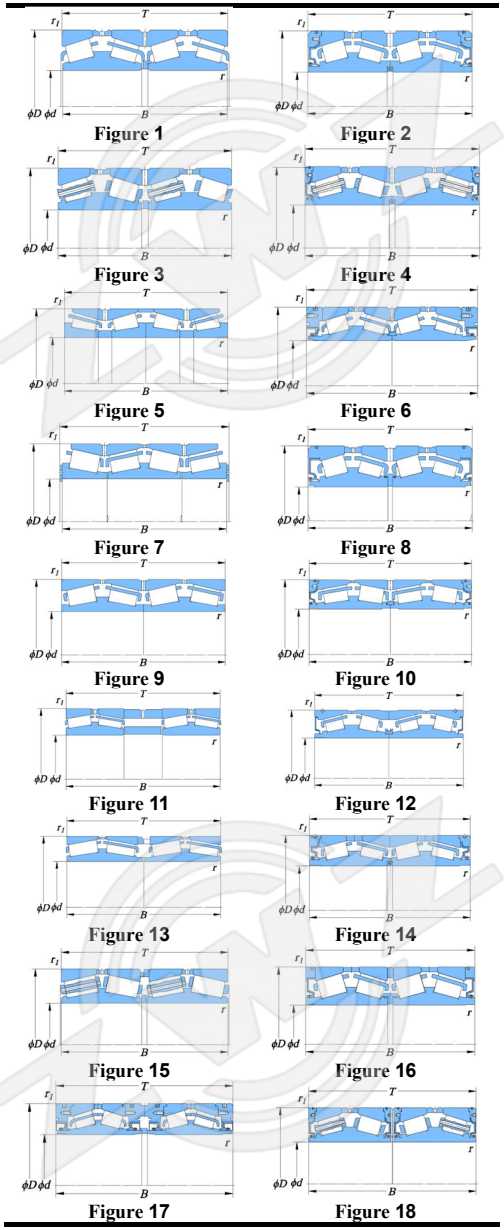
d 110.2～210mm

Principal dimensions(mm)						Designations	Basic load ratings (kN)		Mass (kg)	Figures
d	*D*	*B*	*T*	r_{min}	r_{1min}		C_r	C_{or}	(approx.)	
110.2	170	176	176	2.5	2	**382022X4**	739	1460	14.6	1
120.65	166.88	152.413	152.413	0.8	3.3	**380624X4**	651	1590	9.92	1
139.7	200.025	157.162	160.338	1.1	1.8	**3806/139.7/HC**	783	1870	16.2	1
	200.025	157.162	160.338	1.1	1.8	**3806/139.7**	783	1870	16.2	1
150	210	165	165	0.7	2.3	**382930X2**	728	1590	21.2	1
	210	190	186	SP	2	**372930X2/HCDB/W281**	767	1960	19.1	11
	225	136	136	3	2.5	**382030X2**	825	1480	17.7	1
160.2	240	210	210	3	2.5	**382032X4**	1340	2900	32.9	1
170	230	175	175	3	2.5	**380634/HC**	1010	2630	20.6	1
	260	230	230	3	2.5	**382034X2**	1420	3090	43.0	1
177.8	273.05	234.95	234.947	1.5	3.3	**3806/177X4/HCYAD**	1680	3730	49.7	1
180	250	169	190	2.5	0.7	**352936X2A1/DF**	960	2290	26.7	5
	250	169	190	2.5	0.7	**352936X2/DF**	960	2120	27.3	5
	250	185	185	SP	2.5	**382936/HCYAD**	1130	2570	26.5	1
	260	200	200	2.5	2	**382936X3**	1220	2690	33.2	1
	260	200	200	2.5	2	**382936X3/HC**	1220	2690	33.7	1
	280	180	180	3	2.5	**380636**	1280	2540	39.6	1
190	260	170	190	2.5	0.7	**382938X2/HC**	1090	2540	27.3	5
	260	170	190	2.5	0.7	**382938X2/HG2**	1090	2540	27.3	5
	268	196	196	2.5	3	**380638/W283**	1220	2860	34.1	1
	260	200	200	2.5	2	**382938X2-2/HC**	1160	2800	29.6	1
	270	190	190	1.5	2.5	**380638X2/HC**	1210	2740	33.9	1
198.438	284.162	225.425	225.425	1.5	3.3	**3806/198X4/HCEOIYAD**	1750	4200	46.8	1
200	280	206	206	1.5	3	**380640/HC/W283**	1370	3360	38.9	1
	280	206	206	3	2.5	**380640/HCYAD/W283**	1410	3590	38.8	1
	280	206	206	3	2.5	**380640/YAD**	1410	3590	38.8	1
	282	206	206	1.5	2.5	**380640-2RS/HCE**	1130	2510	37.6	2
	282	206	206	3	2.5	**380640X1/HCYAD/W283**	1410	3590	39.5	1
	310	200	200	3	2.5	**382040X2**	1750	3410	55.6	1
	310	275	275	3	2.5	**382040**	1870	4130	75.1	1
	360	210	210	4	4	**382140X2/YB2**	1970	3250	90.2	1
	290	192	192	2.5	3	**380640X3**	1410	3010	40.7	1
	310	200	200	3	2.5	**382040X2/HC**	2090	4010	55.6	1
	310	200	200	3	2.5	**382040X2/HCYAB**	1750	3410	55.0	1
200.2	290	192	192	2.5	3	**3806/200.2**	1410	3010	40.7	1
	290	192	192	2.5	3	**3806/200.2/YA2**	1410	3010	40.7	1
205	320	205	205	4	3	**380641**	1560	2820	55.4	1
206.375	282.575	190.5	190.5	SP	3.3	**3806/206X4-XRS/HC**	1090	2640	32.7	2
	282.575	190.5	190.5	0.6	3.3	**3806/206X4-XRS1/HCEYAD**	1090	2640	33.9	6
210	288.925	262	262	SP	3	**380642-XRS/HC**	1590	4050	49.3	6



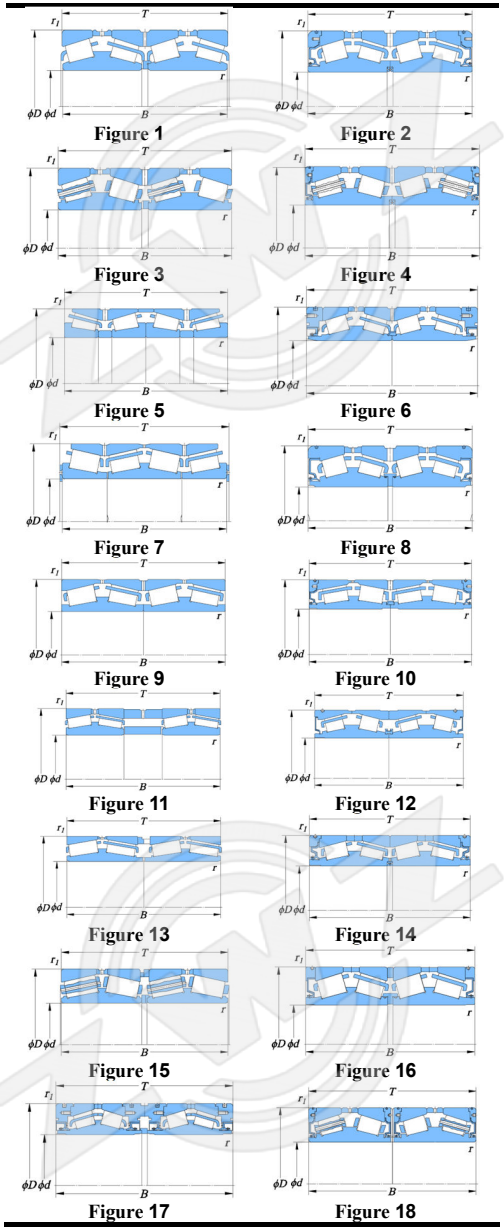
d 215.9～240mm

Principal dimensions(mm)						Designations	Basic load ratings (kN)		Mass (kg)	Figures
d	*D*	*B*	*T*	r_{min}	r_{1min}		C_r	C_{or}	(approx.)	
215.9	288.925	177.8	177.8	SP	3.3	**3806/215.9-XRS/HC**	978	2440	30.7	2
	288.925	177.8	177.8	SP	3.3	**3806/215.9-XRS/HC/W281**	978	2440	30.7	2
220	295	315	315	SP	SP	**380644-2RS/HCE**	1460	3930	56.4	2
	295	315	315	1.5	3	**380644/W283**	1570	4190	57.2	1
	295	315	315	SP	SP	**380644-XRS/HC**	1410	3840	56.6	17
	295	315	315	SP	SP	**380644-XRS/HCYAB**	1410	3840	56.6	17
	295	315	315	SP	SP	**380644-XRS/HCR**	1410	3840	56.6	17
	300	230	230	3	2.5	**382944X2/HCE/W283**	1390	3870	47.9	1
	300	230	230	3	2.5	**382944X2/HCR**	1390	3870	47.9	1
	300	230	230	3	2.5	**382944X2/HCYA3**	1390	3870	47.9	1
	310	226	226	3	2.5	**380644X2/HC/W283**	1800	4420	53.1	1
	320	201	201	3	3	**380644X3/HC**	1670	3680	53.0	1
	330	260	260	3	3	**380644/HC/W283**	2150	5100	77.9	1
	340	305	305	4	3	**382044**	2560	5450	99.5	1
	340	305	305	4	3	**382044/HC**	2560	5450	99.5	1
	320	250	250	3	3	**380644X31/HCYAD**	2090	4900	67.5	1
	295	315	315	1	2.5	**380644-XRS/HCEYAD2**	1460	3930	56.5	6
	295	315	315	4	2.5	**380644-XRS/HCEYAD1**	1510	4170	57.1	6
	295	315	315	1	2.5	**380644-XRS/HCEYAB1**	1410	3840	56.1	17
	300	230	230	3	2.5	**382944X2/HCYA2**	1390	3870	47.9	1
220.662	314.325	290	290	1.5	3.3	**3806/220X4/HC**	2350	6170	73.2	1
220.663	314.325	330	330	2.6	3.2	**380644X4-XRS/HC**	2140	5590	80.4	6
228	338	340	340	SP	3.3	**3806/228-XRS/HCYAD**	2910	7140	105	2
240	320	250	250	1.5	2.5	**382948X2/HC/W283**	1990	5330	56.5	1
	320	294	294	SP	4	**382948X2-XRS/HC**	1810	4770	61.6	6
	338	248	248	3	2.5	**380648**	2230	5360	69.2	1
	338	248	248	6.4	6.4	**380648/HCYAB**	2230	5360	69.0	1
	338	248	248	4	4	**380648/HCE**	2230	5360	69.0	1
	338	248	248	4	4	**380648/HCE/W283**	2230	5360	69.0	1
	338	248	248	3	2.5	**380648/YAD**	2110	5370	70.1	1
	338	340	340	SP	3	**380648X2-XRS/HCYAB**	2090	5400	78.8	17
	338	340	340	SP	4	**380648-XRS/HC**	2090	5400	78.8	17
	338	340	340	SP	3	**380648X2-XRS/HCRG2YAB**	2090	5400	78.8	17
	338	340	340	SP	4	**380648-XRS/HCR**	2090	5400	78.8	17
	350	230	230	1.5	2	**380648/HC**	1970	4420	72.2	1
	360	310	310	4	3	**382048X2**	2560	5890	90.5	1
	360	310	310	4	3	**382048X2/HC**	2560	5890	90.5	1
	338	248	248	3	2.5	**380648/HCEYAD1**	2110	5370	70.2	1
	338	248	248	4	4	**380648/HCYAB1**	2230	5360	69.0	1
	338	248	248	3	3.5	**380648/YAD2**	2110	5370	70.1	1



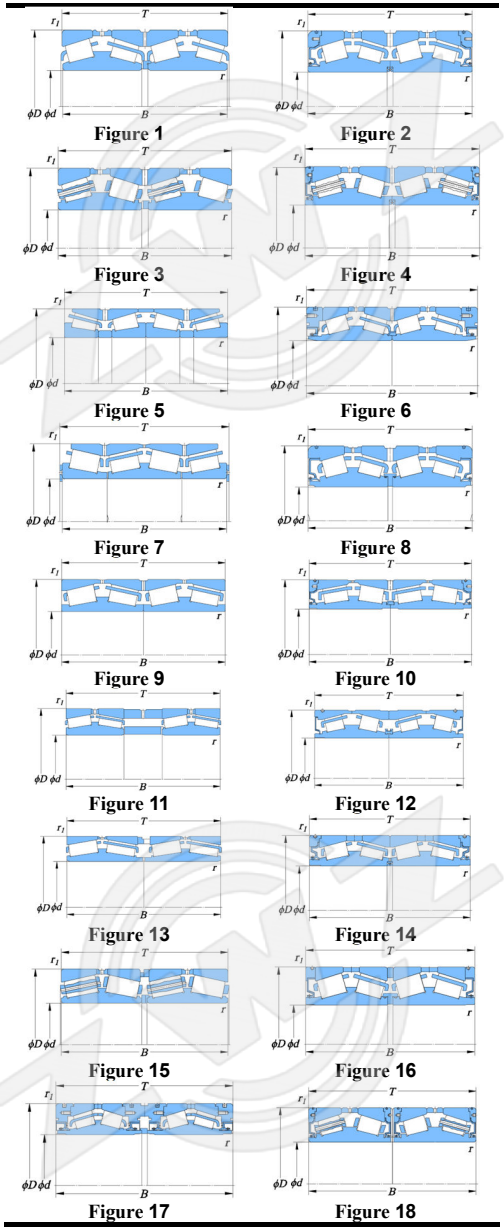
d 240～279.4mm

Principal dimensions(mm)						Designations	Basic load ratings (kN)		Mass (kg)	Figures
d	*D*	*B*	*T*	r_{min}	r_{1min}		C_r	C_{or}	(approx.)	
240	338	340	340	2	3	**380648X2-XRS/HCEYAB**	2190	5230	89.6	17
	410	270	270	3.7	3.7	**380648X3/HCYA6**	2990	5540	146	1
	338	340	340	1	4	**380648-XRS/HCEYAD**	2250	5960	94.8	6
	320	250	250	1.5	2.5	**382948X2/W283**	1830	5330	56.5	1
	320	294	294	7	4	**382948X2-XRS/HCYAB**	1810	4770	61.6	6
	320	294	294	7	4	**382948X2-XRS/HCYAD**	1810	4770	61.6	6
244.975	344.949	310	57.75	1.5	3.3	**3806/244X4-XRS/HCE/W283**	2240	6040	91.3	14
245	345	310	310	1.5	3	**380649-XRS1/HCEYAD1**	2190	5630	86.2	12
	345	310	310	2.8	3	**380649-XRS/HCEYAD**	2260	5790	89.3	6
250	385	255	255	5	5	**380650**	2520	5310	107	1
	460	270	270	5	4	**380650/HC**	3580	6230	192	1
	365	270	270	SP	3	**380650X1-XRS/HC**	2050	4610	90.4	6
254	358.775	269.875	269.875	1.5	3.3	**3806/254-XRS/HC**	2080	4960	80.5	2
	358.775	269.875	269.875	1.5	3.3	**3806/254-XRS/HCEYAD**	2090	4960	83.2	6
260	360	265	265	3	2.5	**382952/HC**	2090	5040	77.8	1
	360	272	272	3	2.5	**382952X2/HC/W283**	2290	6180	83.1	1
	360	272	272	3	2.5	**382952X2/HCYB2**	2290	6180	83.1	1
	360	272	272	3	2.5	**382952X2/HCR**	2290	6180	83.1	1
	360	272	272	3	2.5	**382952X2/HCYA3/W283**	2290	6180	83.1	1
	365	340	340	SP	3.5	**380652-XRS/HCYB2/W281**	2450	6330	107	6
	365	340	340	SP	4	**380652-XRS/HCE/W281**	2800	7370	116	2
	365	340	340	SP	3.5	**380652-XRS/HCYAB**	2450	6330	107	6
	380	200	200	2	5	**380652**	1950	4310	76.9	1
	380	280	280	4	7.5	**380652X3/HC**	2630	6400	108	1
	400	255	255	4	7.5	**380652/HC**	2310	4940	117	1
	400	255	255	5	4	**380652/HG2**	2310	4940	117	1
	400	345	345	5	4	**382052**	3480	7810	161	1
	400	345	345	5	4	**382052/HC**	3480	7810	161	1
	440	300	300	2	5	**382152X2/HCYA6**	2990	5970	182	1
	400	253.5	253.5	3.7	6.3	**380652X2/HCEYAD1/W283**	2310	4940	114	1
	400	253.5	253.5	5	4	**380652X2/HG2YAD**	2310	4940	114	1
	365	340	340	5	4	**380652-XRS1/HCE/W283**	2800	7370	117	2
	360	265	265	3	2.5	**382952/HG2**	2090	5040	77.8	1
266.7	355.6	230.184	228.6	SP	3.3	**3806/266.7-XRS/HC**	1680	4190	58.9	2
	355.6	230.184	228.6	SP	3.3	**3806/266.7-XRS/HC/W281**	1680	4190	58.9	2
276.325	393.7	269.875	269.875	1	6.4	**380655X4-XRS/HCE/W283**	2270	5400	102	8
279.4	393.7	320	320	SP	3.2	**3806/279.4-XRS/HC**	2780	7000	120	6
	393.7	269.875	269.875	1	6.4	**3806/279.4-XRS/HCYB2**	2270	5400	98.3	2
	393.7	320	320	1.5	6.4	**3806/279.4-XRS1/HCEYAD1**	2870	7250	117	12
	393.7	320	320	15	6.4	**3806/279.4-XRS/HCEYAD**	2580	6280	119	6



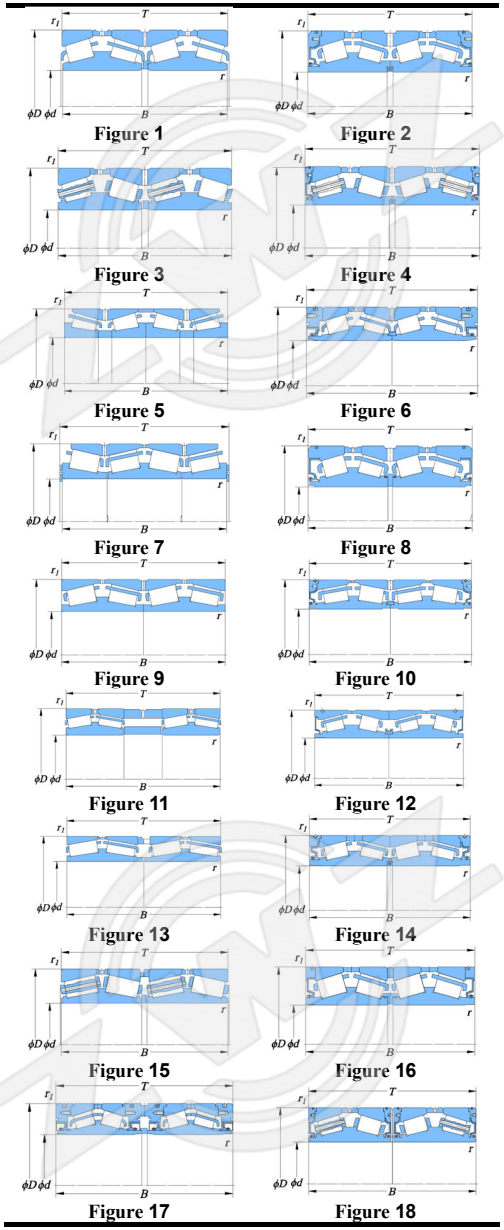
d 280～340mm

Principal dimensions(mm)						Designations	Basic load ratings (kN)		Mass (kg)	Figures
d	*D*	*B*	*T*	r_{min}	r_{1min}		C_r	C_{or}	(approx.)	
280	395	288	288	4	7	**382956X3/HCYAD**	2780	7090	110	1
	395	288	288	4	7	**382956X3/YAD**	3240	7930	109	1
	395	340	340	SP	3.5	**380656-XRS/HC**	3120	7740	125	2
	420	250	250	5	5	**380656**	2410	5320	119	1
	460	324	324	5	4	**381156**	3850	7740	219	1
	380	340	340	5	4	**380656-XRS1/HCEYAD1**	2670	7720	111	14
	395	288	288	4	7	**382956X3/HCEYAD1**	3240	7930	109	1
	395	288	288	4	7	**382956X3/HCPGYAB**	2780	7090	110	1
285.75	380.898	244.475	244.475	1.5	3.3	**3806/285.8-XRS/HCEYAD**	1920	4980	74.1	8
295	390	220	260	3.3	3.3	**370659/DBYAD**	2040	5430	72.7	11
300	420	300	300	4	3	**382960**	2890	7060	125	1
	420	300	300	4	3	**382960/HC**	2890	7060	125	1
	420	310	310	4	3	**382960X2/HCYA3**	3130	8110	134	1
	424	310	310	4	3	**382960X3/HC**	3320	8480	140	1
	460	360	360	5	4	**382060X2/HCYB2**	4160	9440	217	1
	460	390	390	5	4	**382060/HC**	4280	9780	222	1
	460	390	390	5	4	**382160/HC**	4280	9780	222	1
	500	350	350	5	4	**380660/HC**	4390	8930	280	1
	500	370	370	5	4	**381160/HC**	4390	8930	282	1
	460	248	248	3	4	**381060X2**	2930	6060	146	1
305	438.048	280.99	279.4	2	4.8	**3806/305-XRS/HC**	2570	5910	130	2
310	430	310	310	4	4	**380662/HC**	3150	7980	135	1
	430	310	310	1	4	**380662-XRS/HC**	2780	7070	131	2
	430	350	350	1	4	**380662-XRS/HCE/W281**	3470	9500	154	2
	430	350	350	SP	4	**380662-XRS1/HCE/W283**	3470	9500	154	2
	430	310	310	3	3	**380662-XRS/HC/YAD**	3020	7920	133	2
	430	310	310	3	3	**380662-XRS/HCOI/YAD**	3020	7920	133	2
317.5	422.275	269.875	269.875	1.5	3.3	**3806/317.5-XRS/HCYAB**	2370	6090	99.1	2
	422.275	269.875	269.875	1.5	3.3	**3806/317.5-XRS/HCYAB2**	2390	6160	99.1	2
320	480	380	380	5	4	**382064X2/HC**	4800	11500	252	1
	480	390	390	5	4	**382064**	4800	11500	248	1
330.2	444.5	301.625	301.625	3.3	3.3	**3806/330.2-XRS/HC**	2890	7450	126	2
330.302	438.023	247.65	254	5.7	3.3	**3806/330X4-XRS/HCE/W283**	2210	5910	101	2
335	460	342.9	342.9	3.3	3.3	**3806/335/HCZP**	3720	10500	166	1
340	460	310	310	4	4	**382968X2/HC**	3310	8980	147	1
	460	310	310	4	4	**382968X2/HCE**	3120	8510	141	1
	520	323	323	6.7	6.6	**381068X2/HCYA6**	4230	9060	243	1
	520	325	325	5	4	**381068**	3890	8190	247	1
	580	425	425	5	4	**381168**	5960	11900	459	1
	460	310	310	4	4	**382968X2**	3310	8980	147	1



d 343.052～400mm

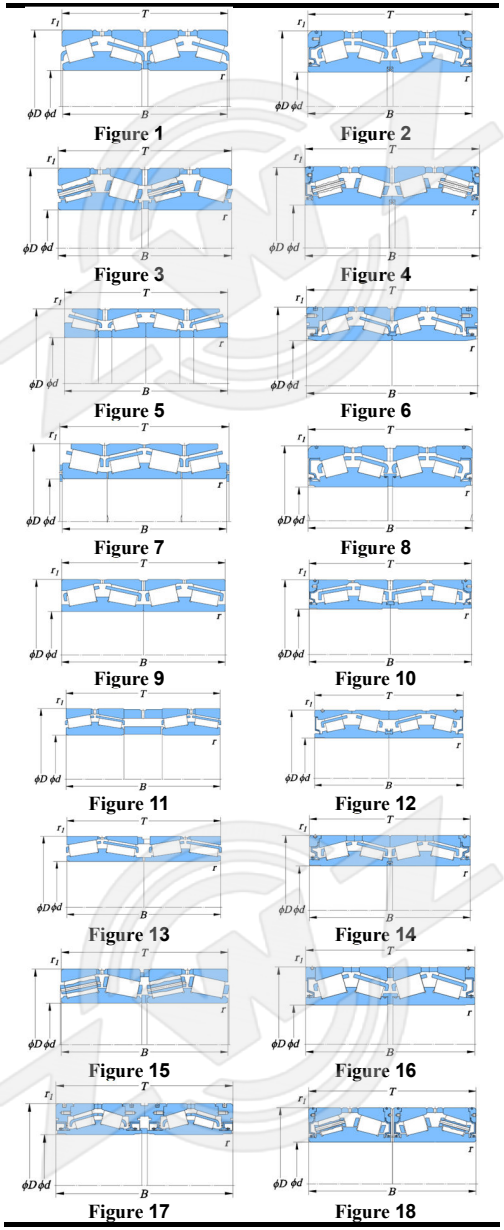
Principal dimensions(mm)						Designations	Basic load ratings (kN)		Mass (kg)	Figures
d	*D*	*B*	*T*	r_{min}	r_{1min}		C_r	C_{or}	(approx.)	
343.052	457.098	254	254	1	3.3	**3806/343X4-XRS/HC**	2330	6010	108	2
	457.098	254	254	1.5	3.3	**3806/343X4-XRS/HCEYAD**	2540	6320	109	16
355	490	316	316	1.5	3.3	**380671/HC**	3680	9270	175	1
	490	316	316	3	3	**380671-XRS/HCYAD**	3480	9060	176	2
355.6	482.6	265.114	269.875	1.5	3.3	**3806/355.6/HC**	2850	7490	139	1
	488.95	317.5	317.5	1.5	3.3	**3806/355X4-2RS/HC**	3330	7800	165	2
	482.6	265.114	269.875	1.5	3.3	**3806/355.6/HCYA1**	2850	7490	139	1
	482.6	265.114	269.875	1.5	3.3	**3806/355.6/HCYAD2**	2850	7490	140	1
	482.6	265.113	269.875	1.5	3.3	**3806/355.6/HCYAD**	2850	7490	139	9
	482.6	265.113	269.875	6	6	**3806/355.6/HCOIYAD1**	2850	7490	139	9
360	480	310	310	4	3	**382972/HC**	3200	9170	155	1
	480	370	370	SP	SP	**370672/HCDBYAD**	3920	11000	177	11
	480	370	370	SP	SP	**370672/HCEDBYAD**	3920	11000	177	11
	480	375	375	4	4	**382972X2/HCYA3**	3940	11800	197	1
	600	420	420	4.7	4.7	**381172/HCYA6**	6460	13500	423	1
	510	380	380	1.5	5	**380672/HC**	4770	12400	247	1
374.65	501.65	250.825	260.35	3.3	3.3	**3806/374-2RS/HC**	2380	5650	127	2
380	536	390	390	SP	SP	**380676/HC**	5090	13200	270	1
	560	325	325	5	4	**381076**	4070	8810	263	1
	620	420	420	5	4	**381176/HCYA2**	6070	12600	485	1
	620	420	420	5	4	**381176/HC**	6070	12600	485	1
	620	420	420	5	4	**381176/HCW33**	6070	12600	485	1
	560	325	325	5	4	**381076/HCYAB**	4070	8810	263	1
	560	360	360	1.5	5	**381076X2/HCE**	5100	12100	301	1
384.175	546.1	400.05	400.05	SP	6.4	**HM266449DW/HM266410-HM266410D-XRS/YB2**	4860	12100	293	2
385.762	514.35	317.5	317.5	SP	5	**3806/385X4-XRS/HCE**	3470	9900	177	2
	514.35	317.5	317.5	3.2	3.2	**3806/385X4/HCYAD**	3750	10400	180	9
	514.35	317.5	317.5	3.3	3.3	**3806/385X4/HCYAB**	3760	10600	183	1
	514.35	317.5	317.5	5	5	**3806/385X4-XRS/HC**	3470	9900	177	2
	514.35	317.5	317.5	0.7	3.3	**3806/385X4-XRS/HCYAB**	3470	9900	177	2
390	510	350	350	1.5	3	**380678/HCE-HBIS**	4030	11800	184	1
	510	350	350	1.5	3	**380678-2RS/HC**	3680	10800	190	2
395	545	268	288.9	5	10	**380679/HCYA3**	2580	6500	194	1
	545	268.7	288.7	4	7.5	**380679X2/HC**	2580	6500	194	1
	545	268.7	288.7	4	7.5	**380679X2/HCYA7**	2580	6500	194	1
400	540	280	280	4	7.5	**380680/HCEYA6**	2580	6500	187	1
	540	280	280	3.7	7.5	**380680X2-XRS/HC**	2580	6500	179	2
	540	339.96	339.96	SP	1.5	**380680/HCEYAD**	4520	12300	214	7
	540	400	400	5	5	**380680/HC**	4860	13600	262	1
	540	400	400	5	5	**380680/HG2**	4860	13600	262	1



ZWZ

d 400～440mm

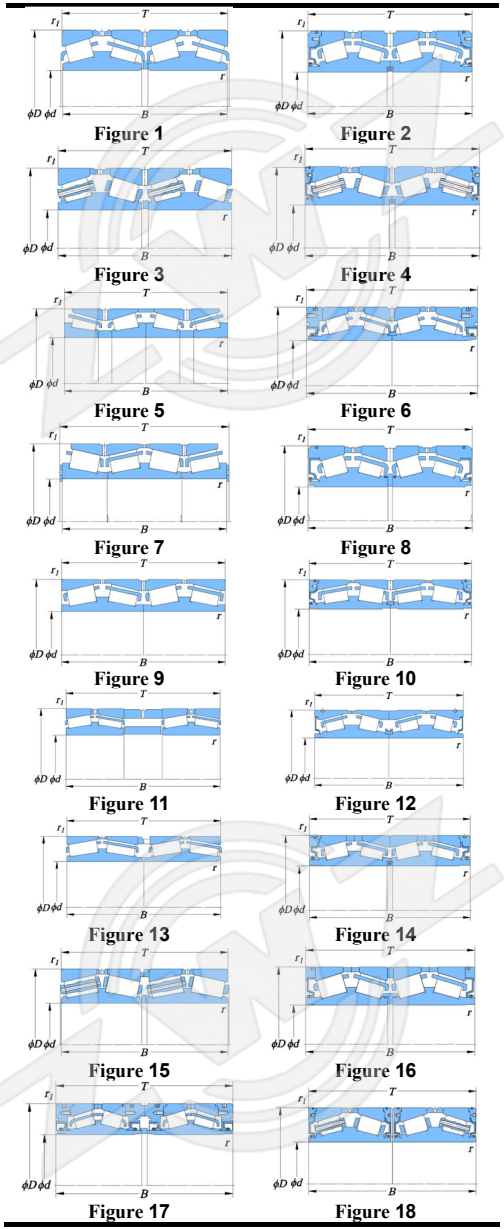
Principal dimensions(mm)						Designations	Basic load ratings (kN)		Mass (kg)	Figures
d	*D*	*B*	*T*	r_{min}	r_{1min}		C_r	C_{or}	(approx.)	
400	540	400	400	SP	5	**380680-XRS/HC**	4540	12300	248	6
	600	356	356	5	4	**381080/HC**	5450	12400	345	1
	600	356	356	5	4	**381080/HCRG2**	5450	12400	345	1
	540	400	400	3.5	7.5	**380680-XRS1/HC**	4540	12300	248	2
406.4	546.1	288.925	288.925	1.5	6.4	**3806/406X4/HC/W281**	3730	9860	191	9
	546.1	288.925	288.925	1.5	6.4	**3806/406X4/HCE**	3780	10000	188	9
	562	381	381	3.3	6.4	**3806/406.4/HCYB2**	5080	13800	283	1
	562	381	381	1.5	SP	**3806/406X4-XRS/HC**	4590	12900	229	2
	562	381	381	4	SP	**3806/406X4-XRS/HCYAD**	4570	12900	229	2
	565.15	381	381	4	5	**3806/406X41-2RS/HCYAD**	4510	12000	286	2
	565.15	381	381	4	5	**3806/406X41/HC**	5130	14000	295	1
	562	381	381	4	5	**3806/406X42-2RS/HCYAD**	4450	12400	281	2
	562	381	381	4	6.4	**3806/406X4-XRS/HCEYB2**	4220	12400	280	10
	562	381	381	1	3.3	**3806/406X4-XRS/HCOIYAD1**	4570	12900	283	2
409.575	546.1	334.962	334.962	1.5	6.4	**3806/409X4/HCE**	4370	12100	214	9
	546.1	334.962	334.962	3	6.4	**3806/409X4-XRS/HC**	4110	11200	208	2
	546.1	334.962	334.962	1.5	6.4	**3806/409X4-XRS/HCYA6**	4110	11200	208	2
	546.1	334.962	334.962	1.5	6.4	**3806/409X4-XRS/HCE**	4000	10800	209	2
410	546.1	334.962	334.962	3	6.4	**380682-XRS/HC**	4110	11200	208	2
	546	400	400	1.5	5	**380682-XRS/HCEYAD**	4230	11600	249	2
420	560	437	437	5	5	**380684/HC**	5530	16300	298	1
	560	437	437	SP	6	**380684-XRS/HC**	5230	15200	292	6
	592	432	432	5	5	**380684/HCE**	6230	16500	375	1
	620	356	356	5	4	**381084**	5120	12000	369	1
	700	480	480	6	5	**381184X2J/HC**	8430	18200	737	1
	560	437	437	5	5	**380684**	5530	16300	298	1
	760	500	500	7.5	7.5	**380684X3/HC**	10670	21200	1010	1
	760	500	500	7.5	7.5	**380684X3/HCR**	10670	21200	1010	1
	560	437	437	3.5	6	**380684-XRS1/HC**	5230	15200	285	2
431.8	571.5	400	400	15	6.4	**3806/431.8-XRS/HCEYAD**	4890	14000	273	12
440	590	480	480	3	5	**381188X1-2RS/HC**	5740	16300	359	2
	590	480	480	3	5	**381188X1-XRS/HC**	5740	16300	359	2
	620	454	454	SP	7.5	**380688-XRS/HC**	6270	16800	408	4
	650	355	355	6	5	**380688**	5430	12100	385	1
	650	355	355	SP	SP	**380688/HC**	5430	12100	385	1
	650	355	355	4	5	**380688/HCYA7**	5430	12100	385	1
	650	376	376	6	5	**381088/HC**	5870	13600	420	1
	650	355	353.5	4.7	6	**380688X2/HCEYAB**	5660	13100	394	3
	590	480	480	1	5	**381188X1-2RS/HCYAB-W281**	5740	16300	354	12
	590	480	480	3	5	**381188X1/HCYAD**	6190	18800	368	9



ZWZ

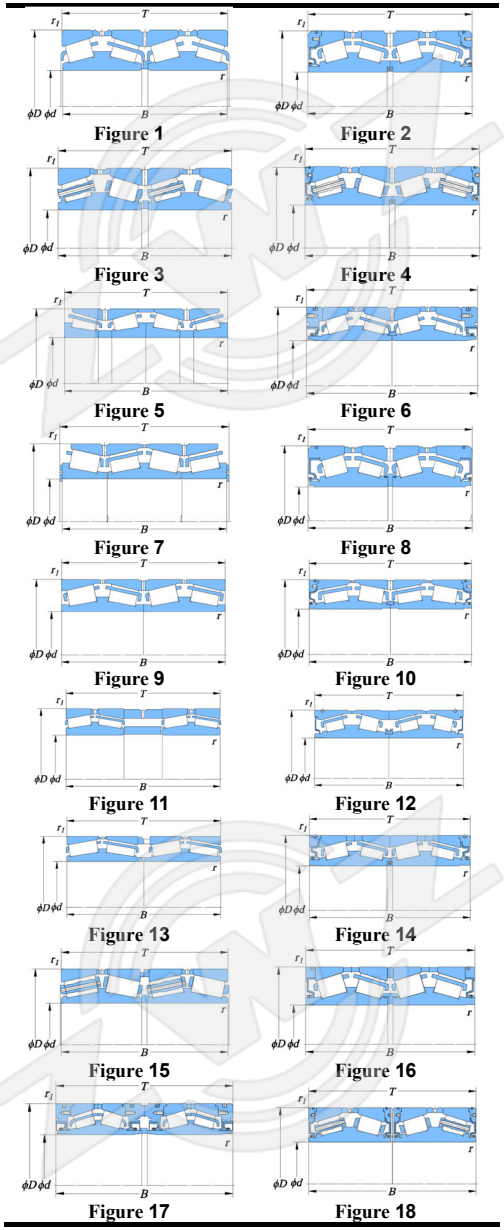
d 450～501.65mm

Principal dimensions(mm)						Designations	Basic load ratings (kN)		Mass (kg)	Figures
d	*D*	*B*	*T*	r_{min}	r_{1min}		C_r	C_{or}	(approx.)	
450	595	368	368	3	6	**380690/HCE**	5140	15300	281	5
	595	368	368	SP	5	**380690-XRS/HC**	4570	12600	268	2
	595	390	390	6	1.5	**380690/HC**	5030	14600	287	5
	595	415	415	SP	6	**370690X2/HCDB**	5250	16000	305	11
	595	415	415	SP	6	**370690X2/HCDB/W281**	5250	16000	305	11
	595	390	390	6	1.5	**380690/HCE/W281**	5030	14600	287	5
	595	368	368	3	4	**380690/HCOIYAD**	5140	15300	282	1
	595	350	350	6.4	1.6	**380690X2/HC**	4120	11100	241	5
460	590	360	360	SP	SP	**380692/HCEYAD**	4750	14400	241	1
	610	360	360	3	6	**381992X3/HC**	5690	16500	291	1
	610	360	360	3	6	**381992X3/YA**	5690	16500	291	1
	620	310	310	5	4	**381992/HC**	4060	10300	260	1
	650	474	474	6	6	**380692/HC**	7220	20000	506	1
	730	440	440	4	7.5	**381192X3/HC**	6920	15100	663	1
	650	474	474	6	6	**380692/HCYA2**	7220	20000	506	1
	730	440	440	4	7.5	**381192X3/HCYA8**	7120	15700	687	3
	610	360	360	3	3.5	**381992X3-2RS/HC**	4770	13100	278	2
462	615.95	386	386	2	4	**3806/462/HC**	4000	11800	312	1
475	600	368	368	2	6	**3806/475/HCYB2**	4750	15600	243	1
	620	380	380	2	6	**380695/HCYB2**	5580	16500	298	1
480	678	494	494	6	6	**380696/HC**	8490	23800	571	1
	700	420	420	6	5	**381096/HCYA2**	6470	15400	535	1
	700	342	342	6	6	**380696X3/HCYB2**	5820	13600	436	1
	700	420	420	6	6	**381096/HCYAD1**	7910	18300	544	1
	700	420	418.5	6	6	**381096X2/HCE**	7180	17500	539	3
	700	420	418.5	8	8	**381096X2/HCYAD**	7180	17500	539	3
	650	338	338	5	4	**381996/HC**	4820	12500	310	1
482.6	615.95	400	400	SP	6.4	**3806/482.6-XRS/HCEYAB**	5110	16000	299	2
	615.95	330.2	330.2	1	6.4	**3806/482.6-XRS/HCEYAD**	4280	13000	240	10
488.95	622.3	365.125	365.125	3.8	6.4	**3806/488X4/HC**	5050	16100	267	1
490	625	385	385	SP	4	**380698/HC**	5380	16500	278	1
	625	385	385	SP	4	**380698/HCYA2**	5380	16500	278	1
	625	385	385	SP	6	**380698-XRS/HCEYAD**	4880	14500	275	2
	625	385	385	SP	4	**380698-XRS/HCEYB2**	4880	14500	275	2
	625	385	385	SP	4	**380698/HCEYA2**	5380	16500	278	1
	625	385	385	1	4	**380698-XRS/HCYAB1**	4880	14500	267	2
	625	385	385	0.7	3	**380698-XRS/HCYAB**	4880	14500	277	2
500	720	400	400	5	5	**3810/500X2/HC**	6980	17800	542	3
	720	420	420	5	5	**3810/500/HC**	6980	17800	567	3
501.65	673.1	400.05	387.35	3.3	6.4	**3806/501X4/HC**	5800	16400	381	1



d 507～600mm

Principal dimensions(mm)						Designations	Basic load ratings (kN)		Mass (kg)	Figures
d	*D*	*B*	*T*	r_{min}	r_{1min}		C_r	C_{or}	(approx.)	
507	655	377	379	1.5	6.4	**3806/510X4/HCYAD**	5950	17600	321	9
509.948	654.924	377	379	1.66	6.9	**3806/509X4/HCE**	5700	17500	318	1
	654.924	377	379	1.66	6.9	**3806/509X4/HG2CR**	5700	17500	318	1
510	655	377	379	1.5	6.4	**3806/510/HC**	5200	16300	316	1
	655	377	379	1.5	6.4	**3806/510/HCYAD**	5950	17600	309	13
	655	377	379	1.5	6.4	**3806/510-XRS/HCYAD**	4830	14900	305	2
	655	377	379	4	6.4	**3806/510-2RS/HCYAB1**	4830	14900	307	2
	655	377	379	SP	6.4	**3806/510/HCYA6**	5200	16300	316	1
	655	377	379	1.5	6.4	**3806/510/HCYAD2**	5950	17600	304	13
	655	377	379	1.5	6.4	**3806/510/HCYAD1**	5950	17600	307	13
	655	377	379	4	6.4	**3806/510-XRS/HCYAD1**	4590	13900	300	2
	655	377	379	4	6.4	**3806/510-XRS/HCEYAB**	4790	14700	305	2
	655	377	379	1.5	6.4	**3806/510-XRS/HCOIYAD2**	4830	14900	305	2
514.35	673.1	422.275	422.275	SP	6.4	**3806/514X4-XRS/HC**	5840	17000	379	2
	673.1	422.275	422.275	3.3	6.4	**3806/514X4/HCE**	6680	20800	406	1
520	720	520	520	6.4	6.4	**3806/520/HG2CRYB2**	8500	26200	654	1
	740	540	540	5	6	**3806/520/HC**	9180	24500	728	1
530	730	515	535	5	5	**3806/530/HCYAB**	9240	26600	666	1
	780	450	450	6	5	**3810/530/HC**	8390	20200	742	3
540	690	400	400	2	5	**3806/540J/HC**	6640	21100	375	1
	690	400	400	3	5	**3806/540J/HCYAB**	6640	21100	375	1
558.8	736.6	409.575	409.575	SP	6.4	**3806/558X4-2RS/HC**	6460	18500	456	4
	736.6	450	450	5	5	**3806/558X4/HC**	8040	23900	534	3
	736.6	455.612	457.2	SP	6.4	**3806/558X4-XRS/HCE/W281**	7570	23200	517	2
	736.6	455.612	457.2	5	5	**3806/558X42/HC**	8040	23900	536	3
560	750	368	368	5	4	**3819/560/HC**	6040	16100	447	3
	750	368	368	5	4	**3819/560/HCYA10**	6040	16100	447	3
	920	620	620	7.5	6	**3811/560**	14100	32200	1690	3
	750	368	368	5	4	**3819/560/HCYAD**	6040	16100	447	3
570	780	515	515	SP	6	**3806/570/HCYAB**	9490	27200	730	3
	780	515	515	6	6	**3806/570/HCYAB1**	9490	27200	730	3
584.2	762	396.875	401.638	3.3	6.4	**3806/584.2/HCYB2**	6960	21900	486	1
	762	396.875	401.638	3	6.9	**3806/584.2/HCYA6**	6960	21900	486	1
	730.25	342.9	349.25	1.5	3.3	**3806/584.2X3/HCYAD**	5240	16600	326	15
595.312	844.55	615.95	615.95	3.3	6.4	**3806/595X4/HCYAB**	12700	36900	1130	1
	844.55	615.95	615.95	3.3	6.4	**3806/595X4/HCOIYAB**	12700	36900	1130	1
596.9	980	604.838	609.6	6.4	12.7	**3806/596.9/HC**	14500	32300	1760	3
600	800	365	365	5	5	**3806/600/HC**	6420	18100	489	1
	800	365	365	5	5	**3806/600/HCYA8**	6270	17600	522	3
	800	380	380	5	4	**3819/600/HC**	6420	18100	497	1



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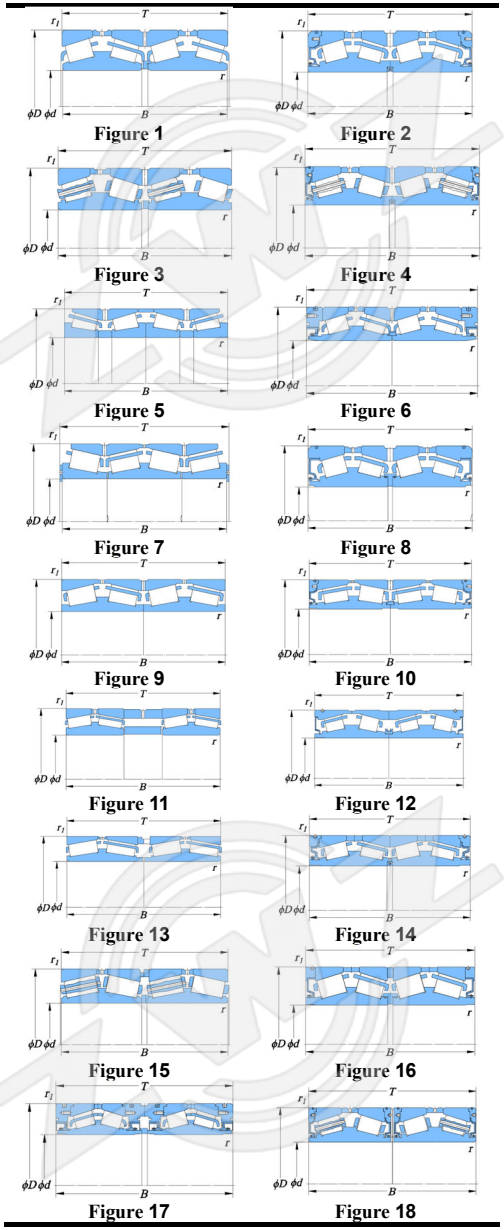
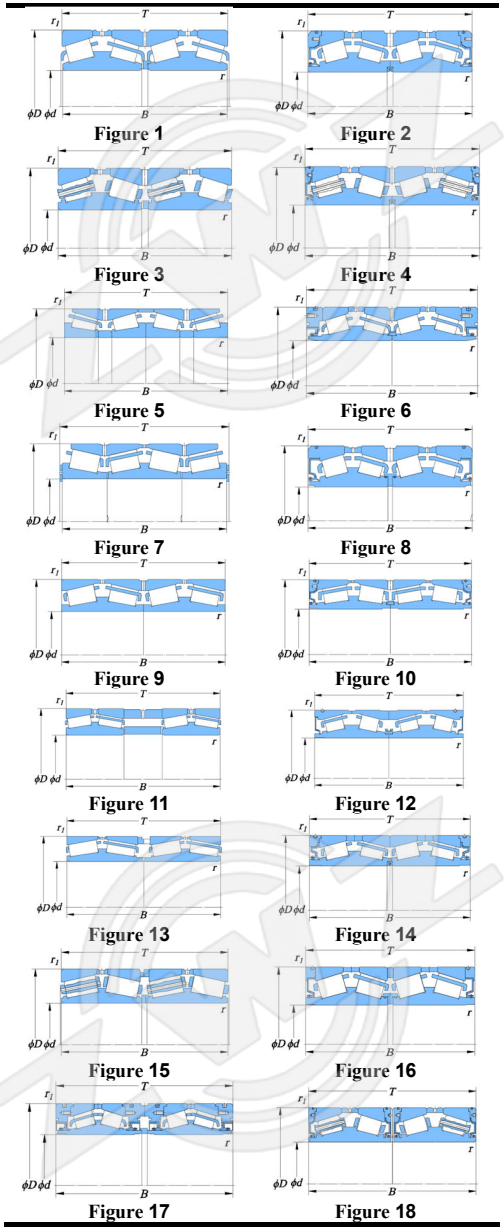
d 600～710mm

Principal dimensions(mm)						Designations	Basic load ratings (kN)		Mass (kg)	Figures
d	*D*	*B*	*T*	r_{min}	r_{1min}		C_r	C_{or}	(approx.)	
600	800	380	380	5	4	3819/600/HCRG2	6420	18100	497	1
	980	650	650	7.5	7.5	3811/600/HC	16300	37400	1950	3
	800	365	363	5	5	3806/600X2/HCYAD	6270	17600	518	3
	870	480	480	6	6	3810/600/HCR	10100	25500	983	3
	800	380	380	5	4	3819/600/HCYB2	6420	18100	497	1
603.25	857.25	622.3	622.3	3.3	6.4	3806/603X4/HCE	13800	39500	1170	3
609.6	787.4	361.95	361.95	3.3	6.4	EE649241D/649310-649311D-XRS	5520	15000	411	2
	813.562	479.425	479.425	3.3	6.4	3806/609.6/HCE	9210	27300	691	3
620	800	365	363	5	2.5	3806/620/HC	6530	19200	454	1
625	815	480	480	3.5	6.5	3806/625/GW/HC	8810	28000	658	1
	815	480	480	3.5	6.5	3806/625GW/HC/W281	8810	28000	658	1
	815	480	480	3.5	6.5	3806/625/HC	8810	28000	658	1
	815	480	480	3.5	6.5	3806/625GW/HCYAD	8810	28000	658	9
	815	480	480	3.3	6.4	3706/625/HCDB	9350	29300	660	15
630	850	418	418	6	6	3819/630/HC	8100	22100	683	3
	850	418	418	6	6	3819/630/HCYAD	7490	21600	668	1
	860	615	615	6.5	6.5	3806/630/HC	9950	29500	1020	1
	860	615	615	5	5	3806/630-XRS/HC	12100	35900	1030	2
	920	515	515	7.5	7.5	3810/630/HC	10800	27600	1190	3
	1030	670	670	7.5	6	3811/630/HC	17600	40600	2200	3
	920	513.5	513.5	10	10	3810/630X2/HCYAD	11900	30100	1170	3
646.112	857.25	542.925	542.925	3.3	6.4	3806/646X4-XRS/HC	9230	28100	837	2
647.7	1028.7	558.8	565.15	7.5	12	EE424257X2D/424405X2-424406X2D	13600	29600	1730	3
	1028.7	558.8	565.15	7.5	12	EE424257X2D/424405X2-424406X2D/W283	13600	29600	1730	3
650	1030	560	560	7.5	12	3806/650/HC	16100	35500	1720	3
	1030	560	560	7.5	12	3806/650/HCYA7	16100	35500	1770	3
	1030	560	560	7.5	12	3806/650/HCYAD	15300	35000	1740	3
659.925	854.924	320	320	4.8	9.7	3806/659X4/HC	6300	17400	464	1
660	855	320	318	3.7	7.5	3806/660/HC	6270	17600	470	3
660.011	855.015	319.99	319.99	SP	5.2	3806/660X4/HC	5950	17800	495	3
670	900	412	412	6	6	3819/670/HC	8490	24600	773	3
	900	412	412	6	6	3819/670/HCR	8490	24600	773	3
676	910	620	620	4	8	3806/676/HCYA3	12200	37500	1160	3
685.8	876.3	352.425	355.6	6.4	6.4	3806/685.8-XRS/HC	5360	14600	490	6
	876.3	352.425	355.6	3.3	6.4	3806/685.8/HC	6700	20400	518	1
	876.3	352.425	355.6	3.3	6.4	3806/685.8-XRS1/HCEYAD	5360	14600	487	6
704.85	914.4	552.45	552.45	3	SP	3806/704.85-XRS/HC	9910	31100	900	2
	914.45	552.45	552.45	3	6	3806/704.85/HCYAD	11600	36900	940	3
710	900	410	410	3	7.5	3806/710-2RS/HC	7520	23000	619	4
	900	410	410	3	7.5	3806/710-2RS/HC/W281	7520	23000	619	4



d 710～1006.475mm

Principal dimensions(mm)						Designations	Basic load ratings (kN)		Mass (kg)	Figures
d	*D*	*B*	*T*	r_{min}	r_{1min}		C_r	C_{or}	(approx.)	
710	900	410	410	3	6	**3806/710/HCEYB2**	8620	27400	643	3
	900	410	410	3	6	**3806/710/HCYA2**	8620	27400	643	3
	900	410	410	4	7.5	**3806/710-XRS/HC**	7520	23000	620	4
	900	410	410	6	3	**3806/710/HCYAD**	8340	25400	601	9
	900	410	410	6	3	**3806/710/HC**	8620	27400	643	3
	900	410	410	6	3	**3806/710/HCYB2**	8620	27400	643	3
	900	410	410	4	7.5	**3806/710-2RS1/HC**	7520	23000	620	4
	900	410	410	3	6	**3806/710/HCYAD1**	8340	25400	601	9
	900	410	410	3	6	**3806/710/HCRG2**	8620	27400	643	3
	900	410	410	3.3	6.4	**3806/710-XRS/HCIR**	7520	23000	615	4
711.2	914.4	387.35	387.35	SP	6.4	**3806/711X4-XRS/HCYAD**	6780	19400	614	4
	914.4	390	390	SP	7.5	**3806/711X4-XRS/HCE**	6780	19400	620	4
	914.4	390	390	SP	7.5	**3806/711X4-XRS/HCEYB2**	6780	19400	622	4
	914.4	390	420	SP	6.4	**3806/711.2-XRS/HCE**	6780	19400	671	6
	914.4	390	390	3	5	**3806/711X4-XRS/HCYAB**	6780	19400	620	4
	914.4	390	390	7.5	7.5	**3806/711X4-XRS/HCEYA6**	6780	19400	620	4
730	940	500	500	3.5	8	**3806/730/HCEYB2**	10200	31800	868	3
	1035	755	755	3.3	6.4	**3806/730/HCYB2**	18700	57200	2120	3
	940	500	500	9	8	**3806/730/HCEYAD**	10900	34000	883	3
	940	500	500	3.5	8	**3806/730/HCEYAD1**	10900	34000	883	3
749.3	990.6	605	605	4	8	**3806/749.3/HC**	14000	44100	1280	3
750	950	410	410	6	6	**3806/750/HCE**	8990	28200	703	3
	1130	690	690	7.5	9.5	**3810/750X3/HC**	17800	47000	2490	3
	1220	840	840	9.5	8	**3711/750X2-2RS/HCDB**	25500	60400	3920	18
	1220	840	840	9.5	9.5	**3811/750/HCE**	27700	68500	3980	3
	1220	840	840	9.5	9.5	**3811/750-RS/HC**	26300	62100	3880	4
780	1220	840	840	6	13	**3806/780/HC**	24900	68000	3810	3
950	1360	880	880	7.5	7.5	**3820/950/HC**	27800	80600	4230	3
1001	1360	800	800	12	12.7	**3806/1001/HC**	25500	79200	3490	3
1006.475	1295.4	764	764	4.8	12.7	**3806/1006X4/HC**	21900	76200	2590	3



ZWZ

d 120.65～228.6mm

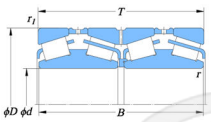


Figure 1

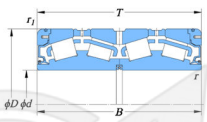


Figure 2

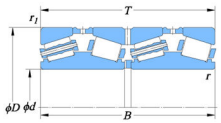


Figure 3

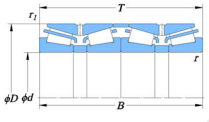


Figure 5

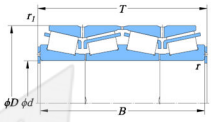


Figure 7

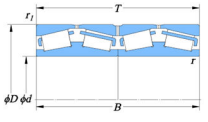


Figure 9

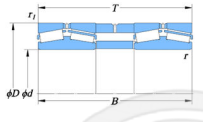


Figure 11

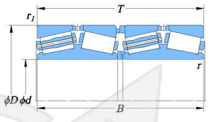


Figure 15

Principal dimensions(mm)				Chamfer dimensions (mm)				Basic load ratings (kN)		Designations	Mass(kg) (approx.)	Figures
d	*D*	*T*	*B*	r_{min}(Z)	r_{min}(J)	r_{1min}(Z)	r_{1min}(J)	C_r	C_{or}			
120.65	174.625	139.703	141.288	0.8	0.8	1.5	1.5	677	1460	KM224749D/KM224710-KM224710D	11.1	1
127	182.562	158.75	158.75	1.5	1.5	3.3	3.3	738	1720	48290DW/48220-48220D/W283	13.2	1
133.35	196.85	193.675	193.675	1.5	1.5	3.3	3.3	1020	2270	K67390D/K67322-K67322D	20.2	1
	196.85	193.675	193.675	1.5	1.5	3.3	3.3	1020	2270	67390D/67322-67322D/HEYA10	20.2	1
136.525	190.5	161.925	161.925	1.5	1.5	3.3	3.3	775	1750	48393DW/48320-48320D/W283	13.8	1
139.7	200.025	160.34	157.165	0.8	0.8	3.3	3.3	787	1970	KNA48680DGWSH/K48620-K48620D	16.6	1
152.4	222.25	174.625	174.625	1.5	1.5	3.3	3.3	936	2150	M231649DW/M231610-M231610D/YA6/W283	22.6	1
177.8	247.65	192.088	192.088	1.5	1.5	3.3	3.3	1130	3030	K67791DGW/K67720-K67721D	28.6	1
	247.65	192.088	192.088	1.5	1.5	3.3	3.3	1160	2950	67791DGWSH/67720SH-67721DSH/HE	29.0	1
187.325	269.875	211.138	211.138	1.5	1.5	3.3	3.3	1510	3440	KM238849D/KM238810-KM238810D	41.5	1
	269.875	211.138	211.138	1.5	1.5	3.3	3.3	1510	3440	M238849DGW/M238810-M238810CD/HCOC2H/W283	41.5	1
	269.875	211.138	211.138	1.5	1.5	3.3	3.3	1510	3440	M238849D/M238810-M238810D	41.5	1
	269.875	211.138	211.138	1.5	1.5	3.3	3.3	1500	3610	M238849DSH/M238810SH-M238810DSH/W283	39.8	1
190.5	266.7	188.912	187.325	1.5	1.5	3.3	3.3	1160	3030	K67885D/K67820-K67820D/YB2	32.8	1
	266.7	188.912	187.325	1.5	1.5	3.3	3.3	1160	3030	67885DW/67820-67820D/W283	32.8	1
	266.7	188.912	187.325	1.5	1.5	3.3	3.3	1160	3030	67885DGW/67820-67820D/HE/W283	32.8	1
198.438	284.162	225.425	225.425	1.5	1.5	3.3	3.3	1750	4200	M240648DW/M240611-M240611D	46.8	1
	284.162	225.425	225.425	1.5	1.5	3.3	3.3	1750	4200	KM240648DW/KM240611-KM240611D	46.8	1
	284.162	225.425	225.425	1.5	1.5	3.3	3.3	1750	4200	M240648DW/M240611-M240611D/W283	46.8	1
204.127	314.325	230.188	255.588	3.3	3.3	1.5	1.5	1910	4720	M244230T-M244247TD-M244249T/M244210DX2	65.1	7
206.375	282.575	190.5	190.5	0.8	0.8	3.3	3.3	1130	2820	K67986DGW/K67920-K67921D	34.4	1
	282.575	190.5	190.5	0.8	0.8	3.3	3.3	1130	2820	67986D/67920-67921D	34.4	1
	282.575	190.5	190.5	0.8	0.8	3.3	3.3	1130	2820	67986D/67920-67921D/W283	34.4	1
	282.575	190.5	190.5	0.8	0.8	3.3	3.3	1130	2820	K67986D/K67920-K67921D	34.4	1
	282.575	190.5	190.5	0.8	0.8	3.3	3.3	1130	2820	67986DGW/67920-67921D/HE	34.4	1
	282.575	190.5	190.5	0.8	0.8	3.3	3.3	1130	2820	67986DGW/67920-67921D	34.4	1
220.662	314.325	239.712	239.712	1.5	1.5	3.3	3.3	1890	4630	KM244249D/KM244210-KM244210D	58.8	1
	314.325	239.712	239.712	1.5	1.5	3.3	3.3	1890	4630	M244249DGW/M244210-M244210CD	58.8	1
	314.325	239.712	239.712	1.5	1.5	3.3	3.3	1890	4630	M244249D/M244210-M244210D	58.8	1
	314.325	239.712	239.712	1.5	1.5	3.3	3.3	1890	4630	M244249D/M244210-M244210D/W283	58.8	1
	314.325	239.712	239.712	1.5	1.5	3.3	3.3	1890	4630	M244249DW/M244210-M244210D/HE	58.8	1
	314.325	239.712	239.712	1.5	1.5	3.3	3.3	1890	4630	KM244249D/KM244210-KM244210CD	58.7	1
	314.325	239.712	239.712	1.5	1.5	3.3	3.3	1890	4630	M244249DW/M244210-M244210D/W283	58.8	1
	314.325	239.712	239.712	1.5	1.5	3.3	3.3	1900	4670	M244249DGW/M244210-M244210D	58.8	1
	314.325	239.712	239.712	3.5	3.5	2	2	1890	4630	KM244249D/KM244210-KM244210CD/S1YAD	58.7	1
	314.325	239.712	239.712	1.5	1.5	3.3	3.3	1890	4630	M244249DGW/M244210-M244210D/HEYA10	58.8	1
228.6	311.15	200.025	200.025	1.5	1.5	3.3	3.3	1450	3650	LM245149DGW/LM245110-LM245110D	43.9	1
	311.15	200.025	200.025	1.5	1.5	3.3	3.3	1450	3650	LM245149D/LM245110-LM245110D	43.9	1

d 228.6～288.925mm

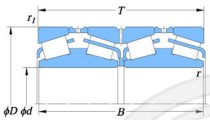
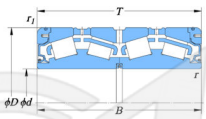


Figure 1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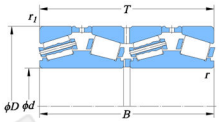


Figure 3

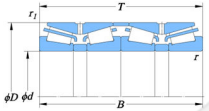


Figure 5

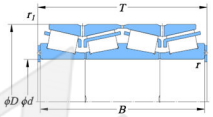
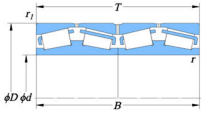


Figure 7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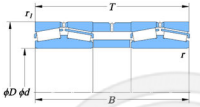


Figure 11

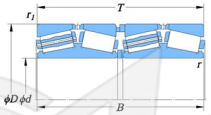


Figure 15

Principal dimensions(mm)				Chamfer dimensions (mm)				Basic load ratings (kN)		Designations	Mass(kg) (approx.)	Figures
d	*D*	*T*	*B*	r_{min}(Z)	r_{min}(J)	r_{1min}(Z)	r_{1min}(J)	C_r	C_{or}			
228.6	311.15	200.025	200.025	1.5	1.5	3.3	3.3	1450	3650	LM245149DW/LM245110-LM245110D/HE/W283	43.9	1
241.478	349.148	228.6	228.6	1.5	1.5	3.3	3.3	1880	4360	EE127097DW/127135-127136CD/YA10	71.9	1
244.475	327.025	193.675	193.675	1.5	1.5	3.3	3.3	1580	3930	KLM247748DGW/KLM247710-KLM247710D/HG2	44.0	1
	327.025	193.675	193.675	3.3	1.5	3.3	3.3	1580	3930	KLM247748DW/KLM247710-KLM247710D	44.0	1
	327.025	193.675	193.675	3.3	1.5	3.3	3.3	1580	3930	LM247748DW/LM247710-LM247710D	44.0	1
	327.025	193.675	193.675	1.5	1.5	3.3	3.3	1580	3930	LM247748DW/LM247710-LM247710D/YB2	44.0	1
	381	304.8	304.8	7.5	3.3	8.5	4.8	2570	5930	EE126096DGWA6/126150A6-126151D	124	1
254	358.775	269.875	269.875	3.3	3.3	3.3	3.3	2460	6170	K3M249748DW/K3M249710-K3M249710D	86.8	1
	358.775	269.875	269.875	3.3	3.3	3.3	3.3	2460	6170	KRM249748D/M249710-M249710D	86.8	1
	358.775	269.875	269.875	3.3	3.3	3.3	3.3	2460	6170	KRM249748DW/M249710-M249710D	86.8	1
	358.775	269.875	269.875	3.3	3.3	3.3	3.3	2460	6170	M249748D/KM249710-KM249710D	86.8	1
	358.775	269.875	269.875	3.3	3.3	3.3	3.3	2460	6170	M249748D/M249710-M249710D	88.9	1
	358.775	269.875	269.875	3.3	3.3	3.3	3.3	2460	6170	M249748DW/M249710-M249710D/W283	86.8	1
	358.775	269.875	269.875	1.5	1.5	3.3	3.3	2460	6170	M249749D/M249710-M249710CD	86.8	1
	358.775	269.875	269.875	1.5	1.5	3.3	3.3	2460	6170	M249749DW/M249710-M249710D/YAD	86.8	1
260.35	365.125	228.6	228.6	3.3	3.3	6.4	6.4	1830	4290	EE134102D/134143-134144CD	71.8	1
266.7	355.6	228.6	230.188	1.6	1.6	3.2	3.2	1870	4810	K76589D/K76520-K76520D	59.6	1
	355.6	228.6	230.188	3.3	1.5	3.3	3.3	2040	5390	KLM451349DW/KLM451310-KLM451310D	63.9	1
	355.6	228.6	230.188	3.3	1.5	3.3	3.3	2040	5390	LM451349DW/LM451310-LM451310D	63.9	1
	355.6	228.6	230.188	3.3	1.5	3.3	3.3	2040	5390	LM451349DGW/LM451310-LM451310CD	63.9	1
	355.6	228.6	230.188	3.3	1.5	3.3	3.3	2040	5390	LM451349DGW/LM451310-LM451310D/HEYB2/W283	63.9	1
	355.6	228.6	230.188	3.3	1.5	3.3	3.3	2040	5390	LM451349DW/LM451310-LM451310D/HE	63.9	1
	355.6	228.6	230.188	3.3	1.5	3.3	3.3	2040	5390	LM451349DGW/LM451310-LM451310D	63.9	1
269.875	381	282.575	282.575	3.3	3.3	3.3	3.3	2740	7110	M252349DW/M252310-M252310D	105	1
	381	282.575	282.575	3.3	3.3	3.3	3.3	2740	7110	M252349DW/M252310-M252310CD/YAB	105	1
	381	282.575	282.575	3.3	3.3	3.3	3.3	2740	7110	KM252349DW/KM252310-KM252310D	103	1
279.4	393.7	269.875	269.875	1.5	1.5	6.4	6.4	2480	6270	EE135111D/135155-135156D	103	1
	393.7	269.875	269.875	1.5	1.5	6.4	6.4	2480	6270	EE135111DW/135155-135156DW	103	1
	393.7	269.875	269.875	1.5	1.5	6.4	6.4	2480	6270	EE135111DW/135155-135156DW/HE	103	1
	393.7	269.875	269.875	1.5	1.5	6.4	6.4	2480	6270	EE135111DW/135155-135156DW/W281	103	1
	393.7	269.875	269.875	1.5	1.5	6.4	6.4	2480	6270	KEE135111DW/K135155-K135156D	103	1
	393.7	269.875	269.875	1.5	1.5	6.4	6.4	2400	5990	EE135111DW/135155/DBYB2/W283	101	9
	393.7	269.875	269.875	3.5	3.5	2	2	2480	6270	KEE135111DW/K135155-K135156DW/S0YAD	103	1
279.578	380.898	244.475	244.475	3.8	1.5	5.5	3.3	2140	5630	LM654644DW/LM654610-LM654610D	79.6	1
285.75	380.898	244.475	244.475	3.8	1.5	5.5	3.3	2140	5630	LM654648DGW/LM654610-LM654610D	74.4	1
288.925	406.4	298.45	298.45	3.3	3.3	3.3	3.3	3240	8290	M255449DGW/M255410-M255410D	125	1
	406.4	298.45	298.45	3.3	3.3	3.3	3.3	3240	8290	M255449DGW/M255410-M255410D/HE	125	1
	406.4	298.45	298.45	3.3	3.3	3.3	3.3	3240	8290	M255449DGW/M255410-M255410D/W283	125	1

d 288.925～355.6mm

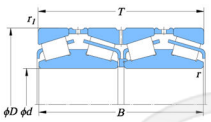


Figure 1

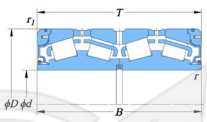


Figure 2

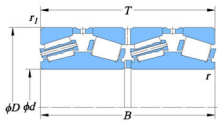


Figure 3

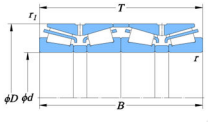


Figure 5

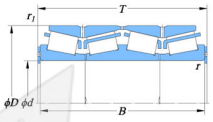


Figure 7

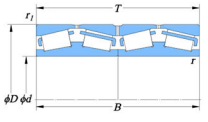


Figure 9

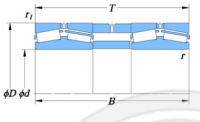


Figure 11

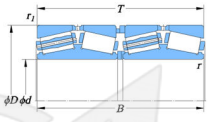


Figure 15

Principal dimensions(mm)				Chamfer dimensions (mm)				Basic load ratings (kN)		Designations	Mass(kg) (approx.)	Figures
d	*D*	*T*	*B*	r_{min}(Z)	r_{min}(J)	r_{1min}(Z)	r_{1min}(J)	C_r	C_{or}			
288.925	406.4	298.45	298.45	3.3	3.3	3.3	3.3	3240	8290	M255449D/M255410-M255410D	125	1
	406.4	298.45	298.45	3.3	3.3	3.3	3.3	3240	8290	M255449DW/M255410-M255410D	125	1
	406.4	298.45	298.45	3.3	3.3	3.3	3.3	3240	8290	M255449DW/M255410-M255410D/HE	125	1
300.038	422.275	311.15	311.15	3.3	3.3	3.3	3.3	3230	8120	HM256849D/HM256810-HM256810D	135	1
	422.275	311.15	311.15	3.3	3.3	3.3	3.3	3230	8120	HM256849D/HM256810-HM256810D/W283	135	1
	422.275	311.15	349.25	6.4	6.4	1.5	1.5	3230	8120	KHM256849/KHM256810XD/DF	144	5
304.648	438.048	279.4	280.99	3.3	3.3	4.8	4.8	2840	7010	M757448D/M757410-M757410D	134	1
	438.048	279.4	280.99	7.5	3.3	8.5	4.8	2840	7010	M757448DWX2A6/M757410A6-M757410D/YA11	134	1
304.8	419.1	269.875	269.875	1.5	1.5	6.4	6.4	2830	7530	M257149DW/M257110-M257110D	112	1
	419.1	269.875	269.875	1.5	1.5	6.4	6.4	2830	7530	M257149DGW/M257110-M257110D	112	1
	438.048	279.4	280.99	3.3	3.3	4.8	4.8	2840	7010	M757448DX5/M757410-M757410D	134	1
304.902	412.648	266.7	266.7	3.3	3.3	3.3	3.3	2660	6960	KM257248DW/KM257210-KM257210D	102	1
	412.648	266.7	266.7	3.3	3.3	3.3	3.3	2660	6960	M257248D/M257210-M257210D/HE	102	1
317.5	422.275	269.875	269.875	4.32	1.57	3.3	3.3	2680	7280	LM258648DGW/LM258610/HEDB	103	11
	422.275	269.875	269.875	3.8	1.5	5.5	3.3	2680	7280	LM258648DWA6/LM258610A6-LM258610D	103	1
	422.275	269.875	269.875	4.32	1.57	3.3	3.3	2680	7280	LM258648DGW/LM258610/HEDBYA10	103	11
330.2	444.5	301.625	301.625	3.3	3.3	3.3	3.3	3200	8570	M260149DGW/M260110-M260110D	129	1
333.375	469.9	342.9	342.9	8	2	5	4	3940	10300	HM261049DWYAD/HM261010A6-HM261010D	188	1
341.312	457.098	254	254	2	1.5	3.3	3.3	2740	7010	LM761648D/LM761610-LM761610D	112	1
	457.098	254	254	1.5	1.5	3.3	3.3	2600	6880	LM761648DWSH/LM761610SH-LM761610DSH/YB2	114	1
342.9	533.4	301.625	307.975	3.3	3.3	3.3	3.3	4030	8470	KEE971355DW/K972100-K972103D	246	1
	533.4	301.625	307.975	3.3	3.3	3.3	3.3	4030	8470	KEE971355DW/K972100-K972103D/HG2	246	1
	533.4	301.625	307.975	3.3	3.3	3.3	3.3	4030	8470	EE971355DW/972100-972103D/HE	246	1
	533.4	301.675	307.975	3.3	3.3	3.3	3.3	4030	8470	EE971355DW/972100-972103D	246	1
343.052	457.098	254	254	1.5	1.5	3.3	3.3	2600	6880	LM761649DWSH/LM761610SH-LM761610DSH	113	1
	457.098	254	254	2	1.5	3.3	3.3	2860	7430	LM761649DW/LM761610-LM761610D	110	1
347.662	469.9	292.1	292.1	3.3	3.3	3.3	3.3	3070	7920	M262449D/M262410-M262410D	142	1
355.6	457.2	252.412	252.412	1.5	1.5	3.3	3.3	2510	6820	LM263149D/LM263110-LM263110D	97.4	1
	488.95	317.5	317.5	1.5	1.5	3.3	3.3	4010	11000	M263349DGWSH/M263310SH-M263310DSH	180	1
	488.95	317.5	317.5	1.5	1.5	3.3	3.3	3810	10100	KM263349D/KM263310-KM263310D	177	1
	488.95	317.5	317.5	1.5	1.5	3.3	3.3	3810	10100	M263349DGW/M263310-M263310D	177	1
	488.95	317.5	317.5	1.5	1.5	3.3	3.3	3810	10100	M263349D/M263310-M263310D	177	1
	488.95	317.5	317.5	1.5	1.5	3.3	3.3	3330	7800	M263349D/M263310-M263310D-XRS	165	2
	488.95	317.5	317.5	1.5	1.5	3.3	3.3	3330	7800	M263349D/M263310-M263310D-XRS/HCE	165	2
	488.95	317.5	317.5	1.5	1.5	3.3	3.3	3810	10100	M263349DW/M263310-M263310D	177	1
	488.95	317.5	317.5	2	2	3.3	3.3	3810	10100	M263349DGWA6/M263310-M263310D	177	1
	488.95	317.5	317.5	1.5	1.5	3.3	3.3	3810	10100	M263349DGW/M263310-M263310D/HE	177	1
	488.95	317.5	317.5	1.5	1.5	3.3	3.3	4010	11000	M263349DGWSH/M263310SH-M263310DSH/HE	180	1

d 368.3～508mm

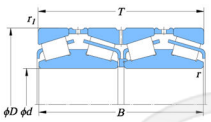


Figure 1

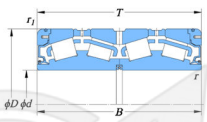


Figure 2

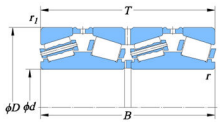
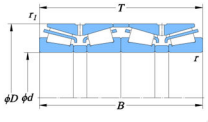


Figure 3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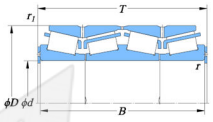
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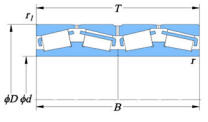
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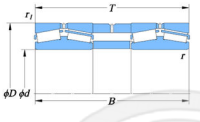
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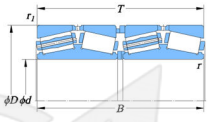


Figure 15

Principal dimensions(mm)				Chamfer dimensions(mm)				Basic load ratings (kN)		Designations	Mass(kg) (approx.)	Figures
d	*D*	*T*	*B*	r_{min}(Z)	r_{min}(J)	r_{1min}(Z)	r_{1min}(J)	C_r	C_{or}			
368.3	523.875	382.588	382.588	3.3	3.3	6.4	6.4	4820	12400	HM265049DW/HM265010-HM265010D	262	1
384.175	546.1	400.05	400.05	3.3	3.3	6.4	6.4	5900	15900	HM266449DW/HM266410-HM266410CD	308	1
	546.1	400.05	400.05	1.5	1.5	6.4	6.4	4860	12100	HM266449DW/HM266410-HM266410D-XRS/YB2	291	2
409.575	546.1	334.962	334.962	1.5	1.5	6.4	6.4	4040	10900	M667947ADW/M667910-M667910D	213	1
	546.1	334.962	334.962	1.5	1.5	6.4	6.4	4040	10900	M667947DGW/M667911-M667911D/ZP	213	1
	546.1	334.962	334.962	1.5	1.5	6.4	6.4	4040	10900	M667947D/M667910-M667910D	213	1
	546.1	334.962	334.962	1.5	1.5	6.4	6.4	4040	10900	M667947DGW/M667911-M667911D/HEZP	213	1
	546.1	334.962	334.962	1.5	1.5	6.4	6.4	4110	11200	M667947DW/M667910-M667910D-XRS/HEYB2	208	2
	546.1	334.962	334.962	1.5	1.5	6.4	6.4	4040	10900	M667947DW/M667910-M667910D/HCOIYAD1	212	1
	546.1	334.962	334.962	1.5	1.5	6.4	6.4	4040	10900	M667947DGW/M667910-M667910D/HEYAD	213	1
	546.1	334.962	334.962	1.5	1.5	6.4	6.4	4040	10900	M667947D/M667910-M667910D/HE	213	1
	546.1	334.962	334.962	1.5	1.5	6.4	6.4	4040	10900	M667947DGW/M667910-M667910D/HE	213	1
415.925	590.55	434.975	434.975	3.3	3.3	6.4	6.4	5960	16500	M268749D/M268710-M268710D	369	1
	590.55	434.975	434.975	3.3	3.3	6.4	6.4	6340	17900	M268749DWH/M268710-M268710D	375	3
	590.55	434.975	434.975	3.3	3.3	6.4	6.4	6490	17300	M268749DGWSH/M268710SH-M268710DSH/YB2	386	3
431.8	571.5	336.55	336.55	3	3	6.9	6.9	4180	11800	LM769349DSH/LM769310SH-LM769310DSH	233	1
447.675	635	463.55	463.55	3.3	3.3	6.4	6.4	7120	19900	M270749ADW/M270710-M270710D	485	1
	635	463.55	463.55	3.3	3.3	6.4	6.4	7120	19900	M270749DGW/M270710-M270710D	485	1
449.949	594.949	368	368	4	4	8	8	5210	15100	M270448DGW/M270410/DB	300	11
456.794	761.873	527.05	527.05	3.3	3.3	6.4	6.4	10200	21600	EE425176D/425299-425299D	973	3
457.2	596.9	279.4	276.225	3.8	1.5	5.5	3.3	3720	10300	L770847DGWA6/L770810A6-L770810D	198	1
460	625	421	421	3	3	9	9	6330	18100	M271149D/M271110-M271110D	375	1
	625	421	421	1.5	1.5	6.4	6.4	5980	16900	M271149DW/M271110-M271110D-XRS/YB2	366	2
	625	421	421	3	3	9	9	6330	18100	M271149DW/M271110-M271110D/YB2	375	1
479.425	679.45	495.3	495.3	7.5	3.3	6.4	6.4	8230	23000	M272749DGW/M272710-M272710D/YAB	582	1
	679.45	495.3	495.3	3.3	3.3	6.4	6.4	8230	23000	M272749DW/M272710-M272710CD/YAB1	582	1
	679.45	495.3	495.3	7.5	3.3	6.4	6.4	8230	23000	M272749DGW/M272710-M272710D/HCEYAB/W283	582	1
482.6	615.95	330.2	330.2	3.3	3.3	6.4	6.4	4840	15200	LM272249D/LM272210-LM272210D	252	1
	615.95	330.2	330.2	3.3	3.3	6.4	6.4	4840	15200	LM272249DW/LM272210-LM272210D/HEYAB	252	1
	615.95	330.2	330.2	3.3	3.3	6.4	6.4	4280	13000	LM272249DW/LM272210-LM272210D-XRS/YAB1	235	2
	615.95	330.2	330.2	3.3	3.3	6.4	6.4	4280	13000	LM272249DW/LM272210-LM272210D-XRS/YAB	235	2
	615.95	330.2	330.2	3.3	3.3	6.4	6.4	4280	13000	LM272249DW/LM272210-LM272210D-XRS	237	2
	635	421	421	3	3	6.4	6.4	6280	18800	M272449DW/M272410-M272410D	354	1
	635	421	421	3	3	6.4	6.4	6280	18800	M272449DGW/M272410-M272410D	354	1
	647.7	417.512	417.512	3.3	3.3	6.4	6.4	6440	18200	M272647D/M272610-M272610D	383	3
489.026	634.873	320.675	320.675	7.5	3.3	3.3	3.3	4240	12600	LM772749DGWA6/LM772710-LM772710D	258	1
501.65	711.2	520.7	520.7	3.3	3.3	6.4	6.4	9550	26800	M274149DW/M274110-M274110D	683	3
508	695.325	415.925	415.925	3.3	3.3	6.4	6.4	7010	19100	LM274049DW/LM274010-LM274010D	464	3

ZWZ

d 514.35～863.6mm

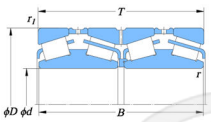
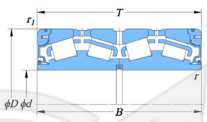


Figure 1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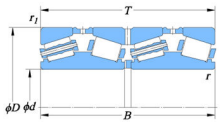
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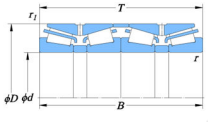


Figure 5

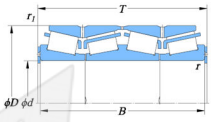
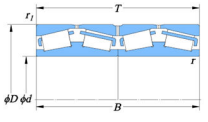


Figure 7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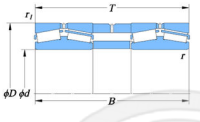


Figure 11

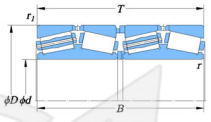
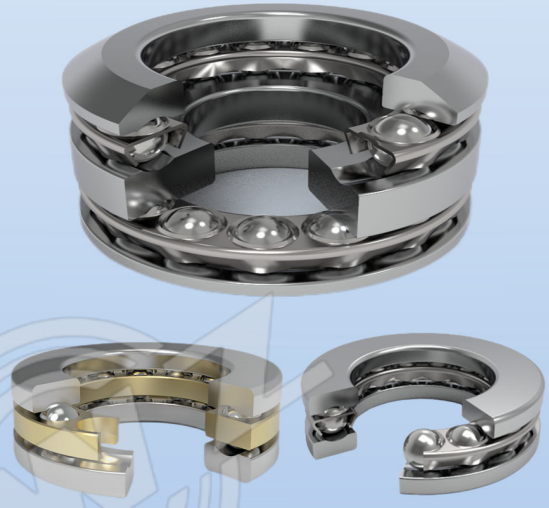


Figure 15

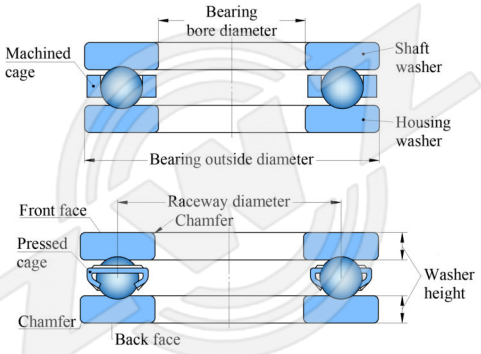
Principal dimensions(mm)				Chamfer dimensions(mm)				Basic load ratings (kN)		Designations	Mass(kg) (approx.)	Figures
d	*D*	*T*	*B*	r_{min}(Z)	r_{min}(J)	r_{1min}(Z)	r_{1min}(J)	C_r	C_{or}			
514.35	673.1	422.275	422.275	3.3	3.3	6.4	6.4	6330	18700	LM274449DW/LM274410-LM274410D	394	1
519.112	736.6	536.575	536.575	3.3	3.3	6.4	6.4	9860	26700	M275349DGW/M275310-M275310D	720	1
536.575	761.873	558.8	558.8	3.3	3.3	6.4	6.4	10400	29100	M276449DGW/M276410-M276410D	820	3
558.8	736.6	409.575	409.575	3.3	3.3	6.4	6.4	6830	19900	LM377449D/LM377410-LM377410D	460	3
	736.6	409.575	409.575	3.3	3.3	6.4	6.4	6830	19900	LM377449D/LM377410-LM377410D/HE	460	3
	736.6	409.575	409.575	3.3	3.3	6.4	6.4	6830	19900	LM377448DGW/LM377410-LM377410D/HE	460	3
	736.6	409.575	409.575	3.3	3.3	6.4	6.4	6830	19900	LM377449D/LM377410-LM377410CD/HEYAD	450	3
571.5	812.8	593.725	593.725	3.3	3.3	6.4	6.4	12400	35300	M278749DW/M278710-M278710D/YB2	1073	3
	812.8	593.725	593.725	3.3	3.3	6.4	6.4	12400	35300	M278749DGW/M278710-M278710CD/YAD	1012	3
	812.8	595.249	595.249	3.3	3.3	6.4	6.4	12400	35300	M278749DW/M278710-M278710CDX2-3/YAD1	1018	3
585.788	771.525	479.425	479.425	3.3	3.3	6.4	6.4	8670	25800	LM278849DGW/LM278810-LM278810D	595	1
	771.525	479.425	479.425	3.3	3.3	6.4	6.4	7280	21400	LM278849D/LM278810-LM278810D-XRS	600	2
	771.525	479.425	479.425	3.3	3.3	6.4	6.4	8670	25800	LM278849DW/LM278810-LM278810D	595	1
	771.525	479.425	479.425	3.3	3.3	6.4	6.4	8670	25800	LM278849DGW/LM278810-LM278810D/YAD	595	1
	771.525	567	567	SP	SP	6.4	6.4	8670	25800	LM278849DGWX2/LM278810-LM278810D-XRS	676	2
603.25	857.25	622.3	622.3	3.3	3.3	6.4	6.4	13300	37600	M280249DGWA/M280210/DBYB2	1163	15
	857.25	622.3	622.3	8.7	2.7	8.3	6.5	13300	37600	M280249DWA6/M280210A6-M280210D	1168	3
	857.25	622.3	622.3	3.3	3.3	6.4	6.4	13300	37600	M280249DW/M280210-M280210D/YB2	1168	3
	857.25	622.3	622.3	3.3	3.3	6.4	6.4	13300	37600	M280249DW/M280210-M280210D	1168	3
	857.25	622.3	622.3	3.3	3.3	6.4	6.4	13300	37600	M280249DW/M280210-M280210D/HE	1168	3
	857.25	622.3	622.3	8.7	2.7	8.3	6.5	13300	37600	M280249DWA6/M280210A6-M280210D/HE	1168	3
609.6	787.4	361.95	361.95	3.3	3.3	6.4	6.4	6480	20100	EE649241D/649310-649311D	460	1
	787.4	361.95	361.95	3.3	3.3	6.4	6.4	6380	19700	EE649241DGW/649310-649311D/YAD	454	3
646.112	857.25	542.925	542.925	3.3	3.3	6.4	6.4	10300	32400	LM281049DW/LM281010-LM281010D	859	1
	857.25	542.925	542.925	3.3	3.3	6.4	6.4	10300	32400	LM281049DW/LM281010-LM281010D/HE/W281	859	1
	857.25	542.925	542.925	3.3	3.3	6.4	6.4	10300	32400	LM281049DW/LM281010-LM281010D/HEYB2/W281	859	1
660.4	812.8	365.125	365.125	3.3	3.3	6.4	6.4	5820	19900	L281149DW/L281110-L281110D	403	1
	812.8	365.125	365.125	3.3	3.3	6.4	6.4	5820	19900	L281149DGW/L281110-L281110CD/YA1	403	1
682.625	965.2	701.675	701.675	3.3	3.3	6.4	6.4	17300	50300	M282249D/M282210-M282210D	1720	3
704.85	914.4	552.45	552.45	3.3	3.3	6.4	6.4	11100	36900	LM682342DGW/LM682315-LM682315D	950	3
708.025	930.275	565.15	565.15	3.5	3.5	8	8	12600	39600	LM282549DGW/LM282510-LM282510D/YAB	1047	3
717.55	946.15	565.15	565.15	3.3	3.3	6.4	6.4	13300	40800	LM282847DGW/LM282810-LM282810D	1095	3
	946.15	565.15	565.15	3.3	3.3	6.4	6.4	12700	39900	LM282847D/LM282810-LM282810D	1085	3
730.25	1035.05	755.65	755.65	3.3	3.3	6.4	6.4	19200	57900	M283449DGW/M283410-M283410D	2101	3
762	1079.5	787.4	787.4	4.8	4.8	12.7	12.7	20500	61900	M284249DGW/M284210-M284210D/CNH	2340	3
	1079.5	787.4	787.4	4.8	4.8	12.7	12.7	20500	61900	M284249DW/M284210-M284210D	2340	3
863.6	1130.3	669.925	669.925	11	4.8	12.7	12.7	17900	60600	LM286249DGW/LM286210-LM286210D	1885	3

Thrust Ball Bearings

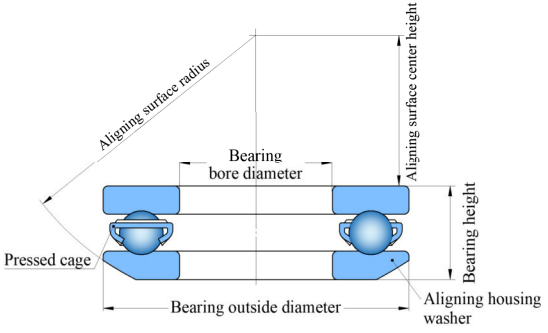


●Thrust ball bearings

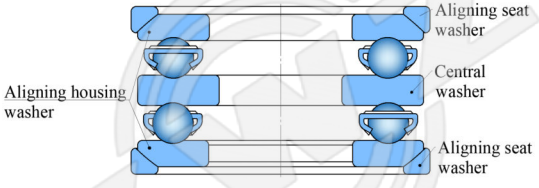
■ Product characteristics



Thrust ball bearings consist of shaft washers, housing washers, steel balls, and cages. The washer that mates with the shaft is called the shaft washer, and the washer that mates with the housing is called the housing washer. Bearings with a spherical housing washer (aligning seat washer type or with a aligning washer) have self-aligning capabilities, which can mitigate the effects of installation errors.



Thrust ball bearings are primarily available in two types: single-direction and double-direction. The former includes one shaft washer, one housing washer, and a steel ball-cage assembly, while the latter includes one shaft washer, two housing washers, one intermediate shaft washer, and a steel ball-cage assembly.

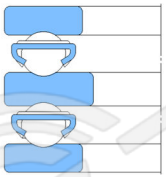
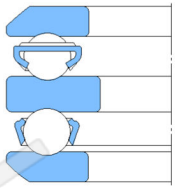
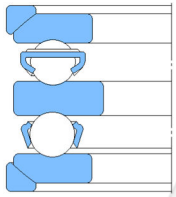


Single-direction bearings can bear axial loads in one direction and provide single-direction axial positioning. Double-direction bearings can handle axial loads in both directions and provide double-direction positioning. These bearings are capable of transmitting large axial loads but are not suitable for radial loads or high-speed rotation. They are primarily used in automotive steering mechanisms and machine tool spindles.

Thrust ball bearings are separable, allowing the shaft washer, housing washer, and ball-cage assembly to be installed separately.

■ Product structural types

Main structural types of the single-direction thrust ball bearings					
Structure	Plane housing washer type	Plane housing washer type	Self-aligning housing washer type	Self-aligning housing washer and washer type	With shield
Figure					
Inner diameter (mm)	20～2368	20～2368	30～430	30～430	25.1～86.6
Outer diameter (mm)	35～2552	35～2552	52～580	52～580	49～145
Width (mm)	10～185	10～185	17.8～131.7	17.8～131.7	12～45
Load capacity	Single-direction Axial loads	Single-direction Axial loads	Single-direction Axial loads	Single-direction Axial loads	Single-direction Axial loads
Self-aligning capacity	No	No	Yes	Yes	Yes

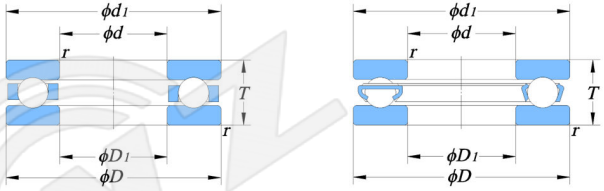
Main structural types of the double-direction thrust ball bearings			
Structure	Plane housing washer type	Self-aligning housing washer type	Self-aligning housing washer and washer type
Figure			
Inner diameter (mm)	25～1160	30～100	30～100
Outer diameter (mm)	52～1360	68～210	68～210
Width (mm)	29～209	47.2～131.2	47.2～131.2
Load capacity	Double-direction axial loads	Double-direction axial loads	Double-direction axial loads
Self-aligning capacity	No	Yes	Yes

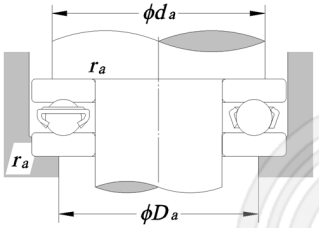
■ Basic information

Precision	**ZWZ** standard thrust ball bearings are available in standard, P6, P5, P4 precision grades, in line with national standards. Tolerance values can be found in the preface table.
Allowed angle error	In thrust ball bearings, the two supporting surfaces must be parallel, with no deviation allowed (plane housing washer type). Thrust ball bearings with spherical housing washers and spherical seat washers have self-aligning capabilities, which can reduce the impact of angular misalignment during installation.
Cage type	The cage generally adopts two structures, namely stamped frame and solid frame, and other cages can be used if there are special requirements. When the bearing outer diameter D≤250mm, a steel (with) pressed cage is used, no mark is added to the cage suffix. When the bearing outer diameter D>250mm, a solid bronze cage is used, no mark is added to the cage suffix, with suffix onto the rest of the mark.
Minimum axial loads	During the operation of thrust ball bearings, if the external axial load is too small and the bearing is not adequately compressed axially, the centrifugal force will cause the balls to skid, disrupting the normal operation of the bearing. In order to prevent this from happening, the minimum axial load must be applied to the thrust ball bearing during operation, namely F_{amin}. $F_{a\,min}=5.1\frac{n\cdot C_{oa}}{1000}\times10^{-6}$ In which: F_{amin}: minimum required load [kN] n: speed r/min C_{oa}: basic static load rating [kN]
Equivalent axial load	Dynamic equivalent axial load $P=F_a$ [kN] Static equivalent axial load $P_0=F_a$ [kN]

ZWZ

d 20～55mm

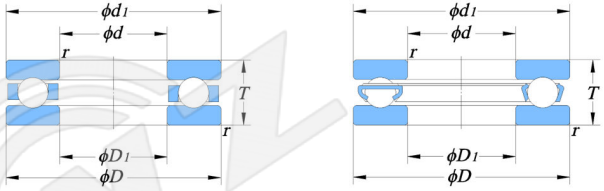


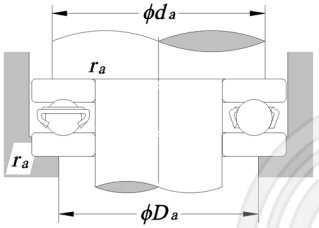


Principal dimensions(mm)				Basic load ratings(kN)		Limiting speeds(r/min)		Designations	Other dimensions(mm)		Abutment and fillet dimensions(mm)			Mass(kg)
d	*D*	*T*	r_{min}	C_a	C_{oa}	Grease	Oil		d_1	D_1	d_{amin}	D_{amax}	r_{amax}	(approx.)
20	35	10	0.3	14.2	18.3	4900	6800	**51104**	35	21	29	26	0.3	0.0372
25	42	11	0.6	18.7	26.3	4800	6300	**51105**	42	26	35.2	31.8	0.6	0.0589
	47	15	0.6	24.8	30.7	4000	5300	**51205**	47	27	38.2	33.8	0.6	0.117
	52	18	1	35.7	42	3400	4500	**51305**	52	27	41.2	35.8	1	0.165
30	47	11	0.6	19.6	31.2	4500	6000	**51106**	47	32	40.2	36.8	0.6	0.0642
	52	16	0.6	26.7	37.9	3600	4800	**51206**	52	32	43.2	38.8	0.6	0.138
	52	16	0.6	25.3	35	3600	4800	**51206/HV**	52	32	43.2	38.8	0.6	0.147
	60	21	1	42.8	55.6	2800	3800	**51306**	60	32	48	42	1	0.266
	70	28	1	64.1	74.4	2000	3000	**51406**	70	32	54	46	1	0.498
35	52	12	0.6	20.4	36.2	4300	5600	**51107**	52	37	45.2	41.8	0.6	0.0779
	52	12	0.6	15.4	28.5	4300	5600	**51107H**	52	37	45.2	41.8	0.6	0.0817
	52	12	0.6	20.8	50	4300	5600	**51107M**	52	37	45.2	41.8	0.6	0.0817
	55	16	0.6	24.9	42.4	4300	5600	**51107X3**	55	37	47	43	0.6	0.141
	62	18	1	37.3	54.2	3000	4000	**51207**	62	37	51.2	45.8	1	0.193
	68	24	1	55.5	73.8	2400	3400	**51307**	68	37	54.8	48.2	1	0.361
	68	24	1	55.5	73.8	2400	3400	**51307/YA6**	68	37	54.8	48.2	1	0.301
40	60	13	0.6	26.9	51.2	3800	5000	**51108**	60	42	52	48	0.6	0.118
	60	16	0.6	26.9	51.2	3800	5000	**51108/YAD**	60	37	52	48	0.6	0.172
	60	13	0.6	25.1	46.1	3800	5000	**51108H**	60	42	52	48	0.6	0.126
	68	19	1	47	74.1	2800	3800	**51208**	68	42	56.8	51.2	1	0.273
	68	19	1	44.8	69.2	2800	3800	**51208M**	68	42	56.8	51.2	1	0.324
	78	26	1	69.3	95.2	2000	2400	**51308**	78	42	62.8	55.2	1	0.521
	100	28	1.1	74.9	151	1700	2400	**51708**	100	58	76	64	1.1	0.970
45	65	14	0.6	25.3	49.7	3400	4500	**51109**	65	47	57	53	0.6	0.139
	65	14	0.6	26.2	52.3	3400	4500	**51109M**	65	47	57	53	0.6	0.162
	73	20	1	47.7	81.3	2600	3600	**51209**	73	47	61.8	56.2	1	0.332
	85	28	1	75.8	108	1900	2800	**51309**	85	47	69	61	1	0.656
	85	28	1	75.8	108	1900	2800	**51309M**	85	47	69	61	1	0.751
50	70	14	0.6	27.1	58.4	3200	4300	**51110**	70	52	62	58	0.6	0.155
	70	14	0.6	27.1	58.4	3200	4300	**51110M**	70	52	62	58	0.6	0.186
	78	22	1	54.4	94.3	2400	3400	**51210**	78	52	66.8	61.2	1	0.374
	95	31	1.1	96.6	145	1800	2600	**51310**	95	52	77	68	1.1	0.942
	95	31	1.1	91.5	134	1800	2600	**51310/HV**	95	52	77	68	1.1	1.04
	110	43	1.5	160	197	1500	2000	**51410M**	110	52	86	74	1.5	1.86
55	78	16	0.6	32.8	72	2800	3800	**51111**	78	57	68.8	64.2	0.6	0.226
	78	16	0.6	32.8	72	2800	3800	**51111M**	78	57	68.8	64.2	0.6	0.242
	90	25	1	69.4	123	1900	2800	**51211**	90	57	76	69	1	0.571
	105	35	1.1	119	220	1600	2200	**51311**	105	57	85	75	1.1	1.35

ZWZ

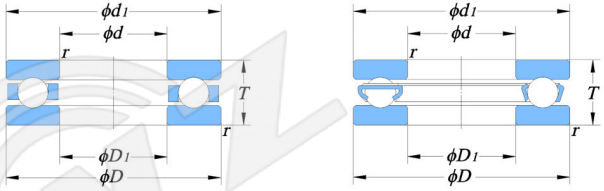
d 55～90mm

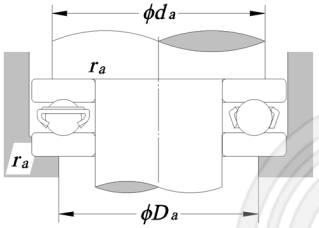




Principal dimensions(mm)				Basic load ratings(kN)		Limiting speeds(r/min)		Designations	Other dimensions(mm)		Abutment and fillet dimensions(mm)			Mass(kg)
d	*D*	*T*	r_{min}	C_a	C_{oa}	Grease	Oil		d_1	D_1	d_{amin}	D_{amax}	r_{amax}	(approx.)
55	120	48	1.5	192	226	1300	1800	**51411M**	120	57	94	81	1.5	2.61
60	85	17	1	39.1	87	2600	3600	**51112**	85	62	75	70	1	0.263
	85	17	1	32	73.1	2600	3600	**51112M**	85	62	75	70	1	0.294
	95	26	1	73.5	141	1900	2800	**51212**	95	62	81	74	1	0.695
	95	26	1	67.9	125	1900	2800	**51212M**	95	62	81	74	1	0.752
	110	35	1.1	130	208	1600	2200	**51312**	110	62	90	80	1.1	1.39
	130	51	1.5	201	263	1100	1600	**51412M**	130	62	102	88	1.5	3.48
65	90	18	1	45.9	103	2400	3400	**51113**	90	67	80	75	1	0.315
	90	18	1	43.1	93.9	2400	3400	**51113M**	90	67	80	75	1	0.363
	100	27	1	74.9	151	1800	2600	**51213**	100	67	86	79	1	0.733
	115	36	1.1	139	228	1500	2000	**51313**	115	67	95	85	1.1	1.54
	140	56	2	184	325	1000	1500	**51413J**	140	68	110	95	2	4.16
	140	56	2	184	325	1000	1500	**51413M**	140	68	110	95	2	4.71
70	95	18	1	49.1	119	2400	3400	**51114**	95	72	85	80	1	0.351
	95	18	1	47.8	114	2400	3400	**51114/YA8**	95	72	85	80	1	0.348
	95	18	1	45.1	104	2400	3400	**51114M**	95	72	85	80	1	0.377
	105	27	1	73.6	153	1800	2600	**51214**	105	72	91	84	1	0.756
	105	27	1	76.1	161	1800	2600	**51214/YA8**	105	72	91	84	1	0.764
	125	40	1.1	148	251	1400	1900	**51314**	125	72	103	92	1.1	2.00
	125	40	1.1	141	233	1400	1900	**51314M**	125	72	103	92	1.1	2.21
	150	60	2	198	365	950	1400	**51414M**	150	73	116	104	2	5.06
75	100	19	1	48.3	120	2200	3200	**51115**	100	77	90	85	1	0.382
	100	19	1	44.3	105	2200	3200	**51115M**	100	77	90	85	1	0.429
	110	27	1	82.2	173	1200	2400	**51215**	110	77	96	89	1	0.830
	135	44	1.5	175	288	1900	1700	**51315**	135	77	111	99	1.5	2.61
	160	65	2	230	438	1300	2000	**51415M**	160	78	124	111	2	6.61
80	105	19	1	50	131	2000	3000	**51116**	105	82	95	90	1	0.399
	115	28	1	86.5	193	1700	2400	**51216**	115	82	101	94	1	0.920
	140	44	1.5	182	315	1200	1700	**51316**	140	82	116	104	1.5	2.63
	140	44	1.5	173	293	1200	1700	**51316M**	140	82	116	104	1.5	2.92
	170	68	2.1	244	485	850	1200	**51416M**	170	83	132	118	2	7.89
85	110	19	1	49.2	132	1600	3000	**51117**	110	87	100	95	1	0.419
	125	31	1	111	237	1100	2200	**51217**	125	88	109	101	1	1.21
	150	49	1.5	224	373	850	1600	**51317**	150	88	124	111	1.5	3.49
	150	49	1.5	213	345	850	1600	**51317M**	150	88	124	111	1.5	3.97
	180	72	2.1	259	534	1200	1800	**51417**	177	88	140	125	2	8.35
	180	72	2.1	259	534	850	1200	**51417M**	177	88	140	125	2	8.60
90	120	22	1	64.9	170	1500	2600	**51118**	120	92	108	102	1	0.632

d 90～130mm

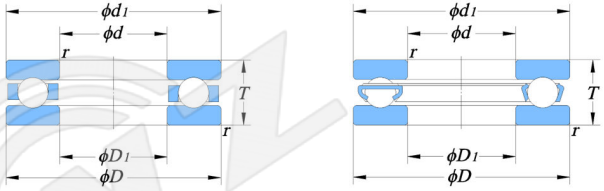


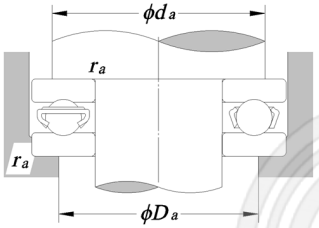


Principal dimensions(mm)				Basic load ratings(kN)		Limiting speeds(r/min)		Designations	Other dimensions(mm)		Abutment and fillet dimensions(mm)			Mass(kg)
d	D	T	r_{min}	C_a	C_{oa}	Grease	Oil		d_1	D_1	d_{amin}	D_{amax}	r_{amax}	(approx.)
90	120	22	1	54.1	143	3750	6500	**51118M**	120	92	108	102	1	0.721
	135	35	1.1	133	284	1000	2000	**51218**	135	93	117	108	1.1	1.67
	155	50	1.5	233	408	800	1500	**51318**	155	93	129	116	1.5	4.02
	155	50	1.5	221	379	800	1500	**51318M**	155	93	129	116	1.5	4.44
	190	77	2.1	293	622	1100	1700	**51418M**	187	93	148	132	2	9.91
	190	77	2.1	253	497	1100	1700	**51418M/YA8**	187	93	148	132	2	9.83
100	135	25	1	80.9	213	1700	2400	**51120**	135	102	121	114	1	0.937
	135	25	1	78.7	205	1300	2400	**51120M**	135	102	121	114	1	1.05
	150	38	1.1	163	347	950	1800	**51220**	150	103	130	120	1.1	2.12
	150	38	1.1	151	308	950	1800	**51220M**	150	103	130	120	1.1	2.33
	170	55	1.5	212	513	950	1400	**51320**	170	103	142	128	1.5	4.85
	170	55	1.5	192	440	700	1400	**51320M**	170	103	142	128	1.5	5.42
	172	57	1.8	212	513	1300	1400	**51720**	172	100.2	143.2	128.8	1.8	5.36
	210	85	3	324	735	700	950	**51420**	205	103	164	146	2.5	13.5
	210	85	3	345	775	950	1300	**51420M**	205	103	164	146	2.5	13.6
100.2	150	38	1.1	163	347	1600	1800	**517/100.2**	150	100.2	130.08	120.12	1.1	2.20
110	145	25	1	83.1	233	1200	2200	**51122**	145	112	131	124	1	1.12
	145	25	1	81	225	1200	2200	**51122M**	145	112	131	124	1	1.21
	160	38	1.1	171	393	850	1700	**51222**	160	113	140	130	1.1	2.43
	160	38	1.1	159	353	850	1700	**51222M**	160	113	140	130	1.1	2.67
	190	63	2	234	588	630	1200	**51322**	187	113	156	144	2	7.08
	190	63	2	234	588	850	1200	**51322M**	187	113	156	144	2	7.36
	230	95	3	377	900	850	1600	**51422M**	225	113	180	160	2.5	18.6
120	155	25	1	81.2	236	1600	2200	**51124**	155	122	141	134	1	1.13
	155	25	1	83.2	244	1600	2200	**51124M**	155	122	141	134	1	1.25
	170	39	1.1	167	399	1100	2200	**51224**	170	123	150	140	1.1	2.43
	170	39	1.1	167	399	800	1600	**51224M**	170	123	150	140	1.1	2.43
	210	70	2.1	268	711	1100	1400	**51324**	205	123	172	158	2	9.43
	210	70	2.1	268	711	800	1100	**51324M**	205	123	172	158	2	9.85
	250	102	4	411	1040	600	800	**51424M**	245	123	196	174	3	23.9
130	170	30	1	114	328	950	1900	**51126**	170	132	154	146	1	1.67
	170	30	1	111	316	1400	1900	**51126M**	170	132	154	146	1	1.86
	170	27	0.7	114	328	1300	1900	**51726M**	170	130.2	154	146	0.7	1.65
	190	45	1.5	230	535	750	1400	**51226**	187	133	166	154	1.5	4.17
	190	45	1.5	222	507	750	1400	**51226M**	187	133	166	154	1.5	4.64
	225	75	2.1	303	843	560	1000	**51326**	220	134	185	170	2	11.6
	225	75	2.1	303	843	750	1000	**51326M**	220	134	185	170	2	12.5
	270	110	4	490	1280	750	1400	**51426**	265	134	212	188	3	29.0

ZWZ

d 130～190mm

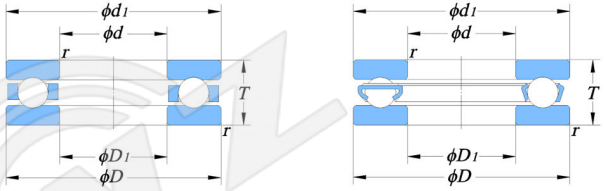


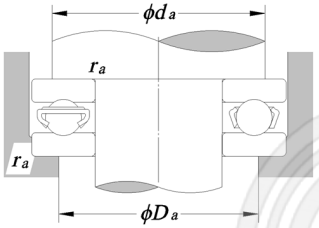


Principal dimensions(mm)				Basic load ratings(kN)		Limiting speeds(r/min)		Designations	Other dimensions(mm)		Abutment and fillet dimensions(mm)			Mass(kg)
d	*D*	*T*	r_{min}	C_a	C_{oa}	Grease	Oil		d_1	D_1	d_{amin}	D_{amax}	r_{amax}	(approx.)
130	270	110	4	490	1280	560	750	**51426J**	265	134	212	188	3	28.8
140	180	31	1	114	344	1300	1800	**51128**	178	142	164	156	1	1.80
	180	31	1	114	344	950	1800	**51128M**	178	142	164	156	1	2.00
	200	46	1.5	234	572	950	1400	**51228**	197	143	176	164	1.5	4.33
	200	46	1.5	226	543	700	1400	**51228M**	197	143	176	164	1.5	4.49
	240	80	2.1	319	923	530	950	**51328**	235	144	198	182	2	14.2
	240	80	2.1	319	923	530	950	**51328M-DZJ**	235	144	198	182	2	14.6
	280	112	4	483	1320	700	1200	**51428**	275	144	222	198	3	31.6
150	190	31	1	115	359	900	1700	**51130**	188	152	174	166	1	1.96
	190	31	1	117	371	1200	1700	**51130M**	188	152	174	166	1	2.19
	200	35	2.3	164	460	1100	1600	**51730M**	200	150.3	180	170	2	3.15
	215	50	1.5	262	651	900	1300	**51230**	212	153	189	176	1.5	5.61
	215	50	1.5	262	651	900	1300	**51230M**	212	153	189	176	1.5	5.80
	250	80	2.1	330	1010	670	900	**51330**	245	154	208	192	2	17.0
	250	80	2.1	330	1010	670	900	**51330M**	245	154	208	192	2	17.0
	300	120	4	518	1480	500	670	**51430**	295	154	238	212	3	38.7
160	200	31	1	118	386	1200	1700	**51132**	198	162	184	176	1	2.04
	200	31	1	120	399	1200	1700	**51132M**	198	162	184	176	1	2.38
	225	51	1.5	266	692	850	1200	**51232**	222	163	199	186	1.5	6.08
	225	51	1.5	266	692	850	1200	**51232M**	222	163	199	186	1.5	6.19
	270	87	3	350	1090	630	850	**51332M**	265	164	224	206	2.5	18.8
	270	87	3	350	1090	630	850	**51332M-DZJ**	265	164	224	206	2.5	18.8
170	215	34	1.1	131	443	1100	1600	**51134**	213	172	197	188	1.1	2.64
	215	34	1.1	131	443	1100	1600	**51134M**	213	172	197	188	1.1	2.99
	215	34	1.1	110	386	1100	1600	**51134M-1**	213	172	197	188	1.1	2.94
	240	55	1.5	216	744	800	1100	**51234**	237	173	212	198	1.5	7.33
	240	55	1.5	216	744	800	1100	**51234M**	237	173	212	198	1.5	7.65
	280	87	3	363	1200	600	800	**51334**	275	174	234	216	2.5	19.9
	280	87	3	363	1200	600	800	**51334M-DZJ**	275	174	234	216	2.5	19.9
180	225	34	1.1	151	500	1000	1500	**51136**	222	183	207	198	1.1	2.80
	225	34	1.1	151	500	1000	1500	**51136M**	222	183	207	198	1.1	3.08
	250	56	1.5	227	825	800	1100	**51236**	247	183	222	208	1.5	8.02
	250	56	1.5	227	825	800	1100	**51236M**	247	183	222	208	1.5	8.15
	300	95	3	396	1390	560	750	**51336**	295	184	250	230	2.5	26.7
	300	95	3	396	1390	560	750	**51336M-DZJ**	295	184	250	230	2.5	26.7
190	240	37	1.1	179	592	950	1400	**51138**	237	193	220	210	1.1	3.62
	240	37	1.1	179	592	950	1400	**51138M**	237	193	220	210	1.1	4.02
	270	62	2	275	1020	750	1000	**51238**	267	194	236	224	2	11.7

ZWZ

d 190～340mm





Principal dimensions(mm)				Basic load ratings(kN)		Limiting speeds(r/min)		Designations	Other dimensions(mm)		Abutment and fillet dimensions(mm)			Mass(kg)
d	*D*	*T*	r_{min}	C_a	C_{oa}	Grease	Oil		d_1	D_1	d_{amin}	D_{amax}	r_{amax}	(approx.)
190	270	62	2	275	1020	750	1000	**51238J**	267	194	236	224	2	11.0
	320	105	4	467	1650	700	800	**51338**	315	195	266	244	3	33.5
190.5	266.7	57.1	4	276	815	710	1030	**517/190.5**	266.7	190.5	236.22	220.98	3	14.3
200	250	37	1.1	184	636	950	1400	**51140M**	247	203	230	220	1.1	3.60
	280	62	2	271	1030	750	1000	**51240**	277	204	246	234	2	11.5
	280	62	2	271	1030	750	1000	**51240J**	277	204	246	234	2	10.9
	340	110	4	508	1860	480	630	**51340**	335	205	282	258	3	30.8
	340	110	4	508	1860	480	630	**51340M-DZJ**	335	205	282	258	3	30.8
220	270	37	1.1	187	682	900	1300	**51144**	267	223	250	240	1.1	4.45
	300	63	2	282	1150	700	950	**51244**	297	224	266	254	2	12.9
	300	63	2	282	1150	700	950	**51244J**	297	224	266	254	2	12.2
	300	93.75	2	307	1300	650	900	**51244X2V**	300	220.5	266	254	2	19.8
	360	112	4	521	2050	650	900	**51344**	355	225	302	278	3	44.1
230	300	53.4	2.3	264	834	650	900	**51746**	300	230.3	272	258	2	9.47
240	300	45	1.5	259	927	800	1100	**51148**	297	243	276	264	1.5	7.28
	340	78	2.1	349	1480	630	860	**51248**	335	244	298	282	2	21.1
	340	70	2.5	321	1390	600	800	**51748**	340	240	298	282	2	19.4
	340	70	2.5	321	1390	600	800	**51748J**	340	240	298	282	2	18.8
	380	112	4	534	2230	500	700	**51348**	375	245	322	298	3	49.6
	380	112	4	534	2230	500	700	**51348M-DZJ**	375	245	322	298	3	49.6
260	320	45	1.5	264	994	800	1100	**51152**	317	263	296	284	1.5	7.56
	360	79	2.1	365	1650	560	750	**51252**	355	264	318	302	2	23.3
	360	79	2.1	365	1650	560	750	**51252J**	355	264	318	302	2	22.0
280	350	53	1.5	259	1270	640	900	**51156**	347	283	322	308	1.5	11.4
	380	80	2.1	379	1820	560	750	**51256**	375	284	338	322	2	25.1
300	380	62	2	320	1630	630	850	**51160**	376	304	346	334	2	17.4
	380	48	2	301	1210	630	850	**59160/YB5**	377	303	346	334	2	12.9
	420	95	3	453	2250	480	630	**51260**	415	304	370	350	2.5	40.0
	432	104.8	3.7	354	1980	450	600	**51760V**	432	300.3	377.2	354.8	3	49.7
	435	104	3.7	568	2760	450	600	**51760**	435	300.3	379	356	3	50.7
302	342.4	28	1.5	122	635	670	980	**517/302/F1S2**	342	302.4	326.24	318.16	1.5	3.70
320	399.5	63	2	328	1760	600	800	**51164X1**	396	324	367.7	351.8	2	18.0
	400	63	2	328	1760	600	800	**51164**	396	324	366	354	2	18.0
	440	95	3	473	2470	500	700	**51264**	435	325	390	370	2.5	44.5
340	420	64	2	323	1770	600	800	**51168**	416	344	386	374	2	19.9
	460	96	3	465	2490	450	600	**51268**	455	345	410	390	2.5	44.6
	460	96	3	465	2490	450	600	**51268/YB5**	455	345	410	390	2.5	44.6
	540	160	5	863	4440	400	530	**51368**	535	345	458	422	4	137

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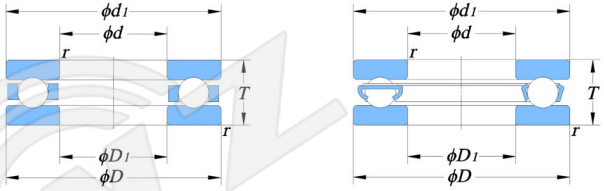
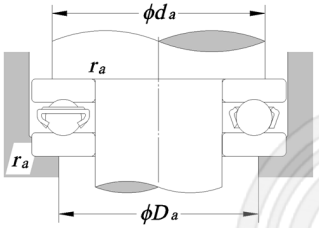
d 350～750mm





Principal dimensions(mm)				Basic load ratings(kN)		Limiting speeds(r/min)		Designations	Other dimensions(mm)		Abutment and fillet dimensions(mm)			Mass(kg)
d	*D*	*T*	r_{min}	C_a	C_{oa}	Grease	Oil		d_1	D_1	d_{amin}	D_{amax}	r_{amax}	(approx.)
350	476	85	3.7	486	2720	400	530	**51770**	476	350.4	423.6	402.4	3	43.3
360	440	65	2	331	1890	560	750	**51172**	436	364	406	394	2	23.9
	500	110	4	639	3500	400	530	**51272**	495	365	442	418	3	64.7
380	460	65	2	326	1900	550	700	**51176**	456	384	426	414	2	22.5
	520	112	4	630	3530	520	680	**51276**	515	385	462	438	3	67.7
400	480	65	2	334	2020	1000	1260	**51180**	476	404	446	434	2	23.0
	480	48	2	328	1590	1000	1260	**59180/YB5**	477	403	446	434	2	16.6
	540	112	4	641	3720	500	600	**51280**	535	405	482	458	3	71.8
420	500	65	2	342	2140	530	700	**51184**	496	424	466	454	2	24.5
	550	80	2.1	439	2770	1250	1500	**51784**	545	425	496	474	2	50.3
	580	130	5	784	4760	500	650	**51284**	575	425	514	486	4	104
440	540	80	2.1	437	2770	450	600	**51188**	535	444	498	482	2	40.6
	540	60	2.1	329	2160	450	600	**59188**	535	444	498	482	2	29.7
	600	130	5	659	4130	440	580	**51288**	595	445	534	506	4	106
460	560	80	2.1	450	2960	450	600	**51192**	555	464	518	502	2	42.2
	620	130	5	688	4500	430	560	**51292**	615	465	554	526	4	114
	620	130	5	688	4500	430	560	**51292F1**	615	465	554	526	4	113
480	580	80	2.1	462	3150	400	500	**51196**	575	484	538	522	2	43.7
	580	60	2.1	341	2380	400	500	**59196**	575	484	538	522	2	32.4
500	600	80	2.1	474	3340	430	560	**511/500**	595	505	558	542	2	45.3
	600	80	2.1	474	3340	770	1000	**511/500/YB5**	595	505	558	542	2	45.3
	600	80	2.1	474	3340	430	560	**511/500F3**	595	505	558	542	2	44.7
	670	135	5	736	5040	420	540	**512/500**	665	505	600	570	4	133
530	640	85	3	530	3880	400	530	**511/530**	635	534	594	576	2.5	57.1
	640	85	3	481	3530	720	950	**511/530/YB5**	635	534	594	576	2.5	56.8
560	670	85	3	490	3730	380	500	**511/560**	666	564	624	606	2.5	58.7
600	710	85	3	556	4440	380	500	**511/600**	705	604	664	646	2.5	64.9
	710	85	3	556	4440	950	1250	**511/600/YB5**	705	604	664	646	2.5	64.9
	710	85	3	556	4440	380	500	**511/600F3**	705	604	664	646	2.5	64.3
	710	67	3	401	3190	450	600	**591/600**	705	604	664	646	2.5	49.2
	710	67	3	401	3190	450	600	**591/600F3**	705	604	664	646	2.5	48.3
630	750	95	3	624	5080	400	580	**511/630**	745	630	700	680	2.5	81.7
	780	112	4	697	5520	320	430	**517/630**	760	650	718	692	3	118
	850	175	6	1090	8670	580	700	**512/630**	845	635	760	720	5	286
670	800	105	4	684	5780	540	720	**511/670**	795	674	746	724	3	104
	800	105	4	684	5780	300	400	**511/670F3**	795	674	746	724	3	109
710	950	185	8	1040	8800	260	300	**512/710X1**	950	711	852	808	6	382
750	900	120	4	756	6880	430	610	**511/750**	895	755	838	812	3	158

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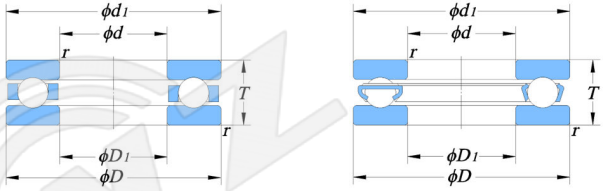
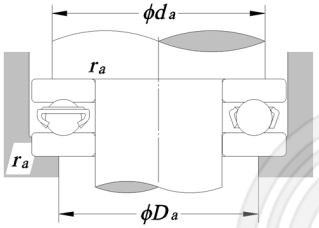
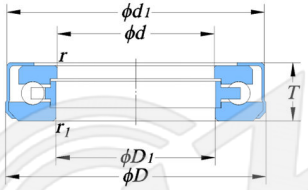
d 750～2368mm

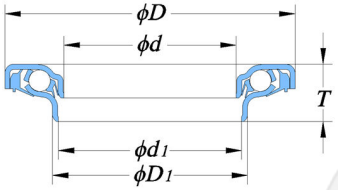




Principal dimensions(mm)				Basic load ratings(kN)		Limiting speeds(r/min)		Designations	Other dimensions(mm)		Abutment and fillet dimensions(mm)			Mass(kg)
d	*D*	*T*	r_{min}	C_a	C_{oa}	Grease	Oil		d_1	D_1	d_{amin}	D_{amax}	r_{amax}	(approx.)
750	900	90	4	627	5880	300	400	**591/750**	895	755	838	812	3	108
780	930	100	4	697	6440	230	300	**517/780F3**	930	782	868	842	3	128
800	950	120	4	767	7250	210	280	**511/800**	945	805	888	862	3	155
	950	90	4	557	5310	220	300	**591/800**	945	805	888	862	3	113
	950	90	4	557	5310	220	300	**591/800/YAB**	945	805	888	862	3	113
880	1020	86	5	646	6620	220	290	**517/880**	1020	880	962	938	4	116
900	1060	130	5	841	8540	210	280	**511/900**	1055	905	994	966	4	201
	1060	95	5	642	6820	210	280	**591/900**	1054	906	994	966	4	143
950	1110	110	5	773	8320	200	280	**591/950X3/YB2**	1105	955	1044	1016	4	183
980	1120	120	5	832	9030	340	460	**517/980**	1115	985	1062	1038	4	183
1000	1180	109	5	785	8340	320	430	**5691/1000M**	1150	1030	1106	1074	4	207
1060	1250	150	5	1070	12100	180	250	**511/1060**	1244	1066	1172	1138	4	343
	1250	150	5	1070	12100	450	620	**511/1060/YB5**	1244	1066	1172	1138	4	343
	1280	150	5	1180	13100	170	240	**5611/1060X1**	1235	1106	1190	1150	4	321
1120	1320	160	5	1200	13900	170	240	**511/1120**	1314	1126	1238	1202	4	405
1160	1280	145	5	662	7980	170	240	**517/1160/YB5**	1280	1160	1230	1210	4	240
1250	1480	140	7.5	1070	12900	170	240	**5691/1250F3**	1450	1280	1386	1344	6	404
	1490	150	5	1190	15100	170	240	**517/1250**	1490	1255	1392	1348	4	485
1380	1540	130	5	988	13300	170	240	**517/1380**	1535	1385	1474	1446	4	319
	1540	130	5	988	13300	300	430	**517/1380/YB5**	1535	1385	1474	1446	4	319
1700	1960	170	7.5	1160	18000	375	540	**511/1700X3/YB5**	1955	1705	1854	1806	6	824
1720	1880	130	5	1110	17100	140	210	**517/1720**	1880	1721.2	1814	1786	4	401
	1880	80	2.5	831	13900	140	210	**517/1720X2V**	1880	1721.2	1814	1786	2	199
1800	2000	140	5	1330	21100	200	370	**517/1800**	1990	1810	1918	1882	4	545
2368	2552	125.3	5	1180	22600	130	180	**517/2368F3**	2544	2376	2476.4	2443.6	4	588

d 25.1～86.6mm

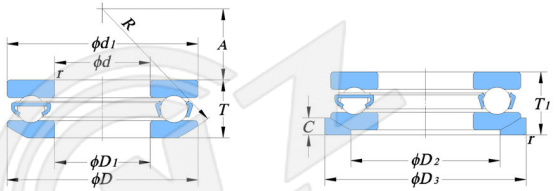


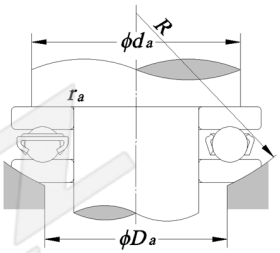


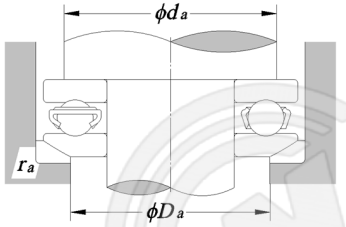
d	Principal dimensions(mm) *D*	*T*	r_{min}	r_{1min}	Basic load ratings(kN) C_a	C_{oa}
25.1	49	16	0.6	0.6	20.8	32.6
30	53	15.8	0.6	0.6	21.6	37.6
32.1	60.5	18	0.6	0.6	31.8	51.4
35.1	65.9	19.7	0.6	0.6	42.5	67.2
40	74.3	20.5	-	0.6	47	98
50	81	23	-	1	56.9	99.8
52.388	84.5	20.7	1.1	1.1	21.9	39.4
	84.5	20.7	1.1	-	21.9	39.4
	84.5	20.7	1.1	-	21.9	39.4
54.23	90.2	20.2	1	1.5	30.2	66.2
59.8	102	36.5	-	-	14.5	46.5
60.5	103.5	30.1	6	-	15	49.1
68.9	109	44	11	-	14.5	46.5
	114.6	33.7	4	-	12	36.4
69.84	114.3	22.1	1	1.5	41.3	96.2
80	145	45	1.5	1.5	191	335.6
86.6	137	12	1	3.5	20.7	89.3
	139.1	31.5	1	3.5	20.7	89.3

Designations	Limiting speeds(r/min) Grease	Oil	Other dimensions(mm) d_1	D_1	Mass(kg) (approx.)
51205ZSV	3300	4700	-	25.3	0.13
51206ZSV	3200	4600	-	30.4	0.139
517/32-2ZSV	2800	4000	58	32.5	0.211
51207-2ZSV	2600	3700	64	35.1	0.206
688908K	2400	3400	71	40.5	0.354
51710ZSV/YA	2100	3100	-	50.2	0.415
517/52X4ZS	2200	3200	83.5	52.8	0.366
517/52X4ZS/YA8	2200	3200	83.5	52.8	0.372
517/52X4ZSD	2200	3200	83.5	52.6	0.372
517/54X4ZSTN1	2200	3100	88.9	54.8	0.402
5617/33ZS	1500	2100	70	80	0.190
5617/60.5ZS	1600	2400	64	68.8	0.164
5617/39ZS	1300	1900	62.4	75.9	0.323
5617/68.9ZS	1500	2100	71.5	77.5	0.161
517/69X4ZSTN1	1800	2600	112.8	70.6	0.642
51316ZSV	1100	1600	82	-	2.83
517/86.6ZSV/RT6	2300	3300	86.6	137	0.151
517/86.6ZSV/RT6ZC	1400	2000	90	94	0.229

d 30～430mm





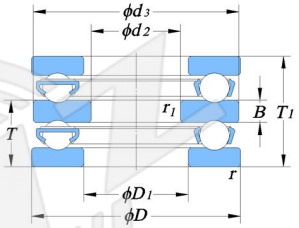


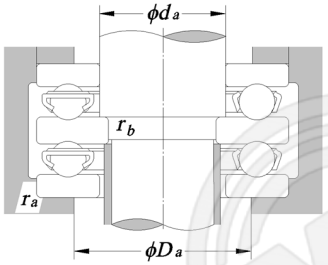
Principal dimensions(mm)					Basic load ratings (kN)		Limiting speeds (r/min)		Designations
d	*D*	*T*	T_1	r_{min}	C_a	C_{oa}	Grease	Oil	
30	52	17.8	20	0.6	26.7	37.9	3600	4800	**53206+U206**
35	62	19.9	22	1	37.3	54.2	3000	4000	**53207+U207**
40	68	20.3	23	1	47	74.1	2800	3800	**53208+U208**
45	73	21.3	-	1	47.7	81.3	2600	3600	**53209**
	73	21.3	24	1	47.7	81.3	2600	3600	**53209+U209**
50	110	45.6	-	1.5	159.6	197	2300	3200	**53410M**
55	90	27.3	30	1	69.4	122.9	1900	2800	**53211+U211**
60	110	38.3	-	1.1	129.7	208.2	1850	2700	**53312**
65	100	28.7	32	1	74.9	151	1800	2600	**53213+U213**
70	105	28.8	32	1	76.1	161.3	1800	2600	**53214+U214**
	125	44.2	48	1.1	148.3	250.6	1400	1900	**53314+U314**
	125	44.2	-	1.1	148.3	250.6	1400	1900	**53314**
75	110	28.3	32	1	82.2	172.7	1700	2400	**53215+U215**
80	115	29.5	33	1	86.5	193.2	1700	2400	**53216+U216**
	140	47.6	52	1.5	181.5	315	1200	1700	**53316+U316**
85	180	77	-	2.1	258.8	534	1300	1900	**53417M**
90	135	38.5	42	1.1	133.2	285	1500	2000	**53218+U218**
100	170	59.2	64	1.5	212.3	512.9	950	1400	**53320+U320**
	170	59.2	-	1.5	212.3	512.9	950	1400	**53320**
	210	90	98	3	344.9	775	700	950	**53420M+U420**
	210	90	98	3	324.3	734.5	700	950	**53420+U420**
110	160	40.2	45	1.1	170.6	392.5	1200	1700	**53222+U222**
	190	67.2	72	2	234.1	588	850	1200	**53322M+U322**
	190	67.2	72	2	234.1	588	850	1200	**53322+U322**
120	170	40.8	46	1.1	167.1	398.9	1100	1600	**53224+U224**
	210	74.1	80	2.1	267.5	711.4	800	1100	**53324M+U324**
	210	74.1	80	2.1	267.5	711.4	800	1100	**53324+U324**
	210	74.1	80	2.1	267.5	711.4	800	1100	**53324/YB2+U324**
	210	74.1	80	2.1	267.5	711.4	800	1100	**53324U/YB2+U324-1**
130	270	115.2	128	4	489.8	1283.5	700	1000	**53426J+U426**
	270	115.2	128	4	489.8	1283.5	700	1000	**53426+U426**
150	250	83.7	92	2.1	329.8	1010.5	600	900	**53330M+U330**
	250	83.7	92	2.1	329.8	1010.5	600	900	**53330+U330**
	250	83.7	92	2.1	329.8	1010.5	600	900	**53330/YB2+U330**
	250	83.7	-	2.1	329.8	1010.5	600	900	**53330**
	295	125.9	140	4	518.4	1478.6	580	880	**53430+U430**
180	250	58.2	66	1.5	226.5	825.4	550	850	**53236M/YB5+U237**
220	300	65.6	75	2	282	1147.7	500	800	**53244+U224**
300	375	70	75	2.5	293.9	1483.4	400	700	**51760+U760**
430	580	131.7	150	3.7	708.9	4347.6	300	550	**51786+U786**

Other dimensions(mm)							Abutment and fillet dimensions (mm)			Mass(kg) (approx.)
d_1	D_1	D_2	D_3	*C*	*R*	*A*	d_{amin}	D_{amax}	fr_{amax}	
52	32	42	55	5.5	45	22	43.2	41	0.6	0.180
62	37	48	65	7	50	24	51.2	48.5	1	0.263
68	42	55	72	7	56	28.5	56.8	54	1	0.395
73	47	-	-	-	56	26	61.8	59	1	0.321
73	47	60	78	7.5	56	26	61.8	59	1	0.400
110	52	-	-	-	90	35	86	80	1.5	1.92
90	57	72	95	9	72	35	76	72.5	1	0.747
110	62	-	-	-	90	41	90	85	1.1	1.44
100	67	82	105	9	80	40	86	82.5	1	0.898
105	72	88	110	9	80	38	91	87.5	1	0.961
125	72	98	130	13	100	43	103	97.5	1.1	2.51
125	72	-	-	-	100	43	103	97.5	1.1	2.10
110	77	92	115	9.5	90	49	96	92.5	1	1.15
115	82	98	120	10	90	46	101	97.5	1	1.18
140	82	110	145	15	112	50	116	110	1.5	3.17
177	88	-	-	-	140	47	140	132.5	2	8.95
135	93	110	140	13.5	100	45	117	112.5	1.1	2.33
170	103	135	175	18	125	46	142	135	1.5	5.83
170	103	-	-	-	125	46	142	135	1.5	4.90
205	103	155	220	27	160	50	164	155	2.5	16.5
205	103	155	220	27	160	50	164	155	2.5	16.2
160	113	135	165	14	125	65	140	135	1.1	2.87
187	113	150	195	20.5	140	51	156	150	2	9.05
187	113	150	195	20.5	140	51	156	150	2	8.78
170	123	145	175	15	125	61	150	145	1.1	3.07
205	123	165	220	22	160	63	172	165	2	12.3
205	123	165	220	22	160	63	172	165	2	11.9
205	123	165	220	22	160	63	172	165	2	11.9
205	123	165	220	22	160	63	172	165	2	11.9
265	134	200	280	38	200	58	212	200	3	34.6
265	134	200	280	38	200	58	212	200	3	34.8
245	154	200	260	26	200	89.5	208	200	2	19.5
245	154	200	260	26	200	89.5	208	200	2	18.6
245	154	200	260	26	200	89.5	208	200	2	18.6
245	154	-	-	-	200	89.5	208	200	2	15.1
295	154	225	310	41	225	69	235	222.5	3	44.1
247	183	210	260	21.5	200	112	222	215	1.5	10.1
297	224	260	310	25	225	118	266	260	2	15.6
375	300.3	340	385	17	320	202	345	337.5	2	17.2
580	430.5	500	610	45	500	301.3	518	505	3	129

ZWZ

d 25～130mm

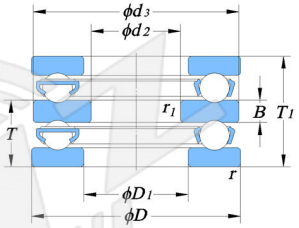


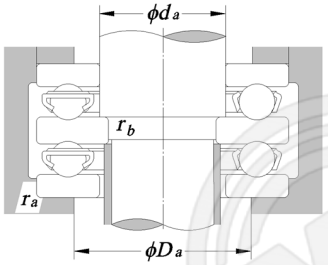


Principal dimensions(mm)					Basic load ratings (kN)		Limiting speeds (r/min)		Designations
d_2	D	T_1	r_{min}	r_{1min}	C_a	C_{oa}	Grease	Oil	
25	52	29	0.6	0.3	26.7	37.9	3500	4600	**52206**
30	62	34	1	0.3	37.3	54.2	3400	4200	**52207**
	68	44	1	0.3	55.5	73.8	3400	4200	**52307**
	68	36	1	0.6	47	74.1	3400	4200	**52208**
35	73	37	1	0.6	47.7	81.3	2800	3800	**52209**
40	78	39	1	0.6	54.4	94.3	2800	3800	**52210**
45	90	45	1	0.6	69.4	122.9	2700	3500	**52211**
	120	87	1.5	0.6	191.6	226.3	2700	3500	**52411M**
50	95	46	1	0.6	73.5	141	2700	3500	**52212**
55	100	47	1	0.6	74.9	151	2700	3400	**52213**
	105	47	1	1	76.1	161.3	2700	3400	**52214**
	125	72	1.1	1	148.3	250.6	2500	3200	**52314**
	150	107	2	1	197.8	365.4	2500	3200	**52414M**
60	110	47	1	1	82.2	172.7	2400	3300	**52215/HCl**
65	115	48	1	1	86.5	193.2	2300	3100	**52216**
	180	128	2.1	1.1	258.8	534	2300	3100	**52417M**
70	125	55	1	1	111.2	237	2300	3100	**52217**
75	135	62	1.1	1	133.2	285	2200	3000	**52218**
80	210	150	3	1.1	344.9	775	2200	2900	**52420M**
	210	150	3	1.1	324.3	734.5	2200	2900	**52420**
85	150	67	1.1	1	162.8	346.6	2100	2800	**52220**
	170	97	1.5	1	212.3	512.9	2100	2800	**52320**
90	230	166	3	1.1	377.4	900.2	2100	2800	**52422M**
95	160	67	1.1	1	170.6	392.5	2000	2600	**52222**
	190	110	2	1	234.1	588	1900	2500	**52322M**
	190	110	2	1	234.1	588	1900	2500	**52322**
	190	110	2	1	234.1	588	1900	2500	**52322U**
	250	177	4	1.5	651.7	2071.3	1900	2400	**52424M**
100	170	68	1.1	1.1	167.1	398.9	1700	2100	**52224**
	210	123	2.1	1.1	267.5	711.4	1700	2000	**52324**
110	190	80	1.5	1.1	221.6	507.2	1400	1800	**52226M**
	280	196	4	2	482.8	1317.2	1200	1600	**52428**
120	200	81	1.5	1.1	225.8	542.9	910	1300	**52228M**
	200	81	1.5	1.1	233.7	571.5	910	1300	**52228**
	300	209	4	2	518.4	1478.6	700	1200	**52430**
130	215	89	1.5	1.1	262	651.2	630	980	**52230**
	250	140	2.1	1.1	329.8	1010.5	560	840	**52330M**
	250	140	2.1	1.1	329.8	1010.5	560	840	**52330**

Other dimensions(mm)				Abutment and fillet dimensions (mm)				Mass(kg) (approx.)
D_1	d_3	T	B	d_{amin}	D_{amax}	r_{amax}	r_{bmax}	
32	52	18	7	30	39	0.3	0.6	0.261
37	62	21	8	35	46	0.3	1	0.354
37	68	27	10	35	49	0.3	1	0.647
42	68	22.5	9	40	49	0.6	1	0.496
47	73	23	9	45	54	0.6	1	0.623
52	78	24	9	50	59	0.6	1	0.722
57	90	27.5	10	55	68	0.6	1	1.06
57	120	53.5	20	55	83	0.6	1.5	4.81
62	95	28	10	60	73	0.6	1	1.25
67	100	28.5	10	65	78	0.6	1	1.29
72	105	28.5	10	70	80	1	1	1.37
72	125	44	16	70	90	1	1.1	3.65
73	150	65.5	24	71	103	1	2	9.15
77	109	28.5	10	75	85	1	1	1.51
82	115	29	10	80	90	1	1	1.73
88	179.5	78.5	29	86	123	1.1	2	16.0
88	125	33.5	12	85	98	1	1	2.19
93	135	38	14	90	105	1	1.1	3.11
103	209.5	91.5	33	100	145	1.1	2.5	25.3
103	209.5	91.5	33	100	145	1.1	2.5	24.4
103	150	41	15	100	118	1	1.1	4.05
103	170	59	21	100	128	1	1.5	8.80
113	229	101.5	37	110	160	1.1	2.5	33.4
113	160	41	15	110	128	1	1.1	4.51
113	189.5	67	24	110	143	1	2	13.2
113	189.5	67	24	110	143	1	2	12.68
113	189.5	67	24	110	143	1	2	13.22
123	249	108.5	40	120	173	1.5	3	42.1
123	170	41.5	15	120	135	1.1	1.1	4.94
123	209.5	72	21	120	155	1.1	2	17.3
133	189.5	49	18	130	150	1.1	1.5	8.60
144	279	120	44	141	195	2	3	56.8
143	199.5	49.5	18	140	160	1.1	1.5	8.67
143	199.5	49.5	18	140	160	1.1	1.5	8.37
154	299	127.5	46	151	210	2	3	70.3
153	214	54.5	20	150	173	1.1	1.5	10.3
154	249	85.5	31	151	190	1.1	2	31.2
154	249	85.5	31	151	190	1.1	2	29.4

d 140～1160mm

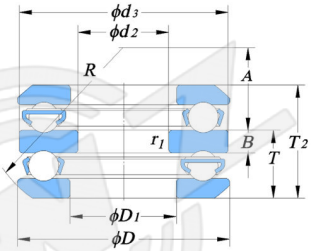


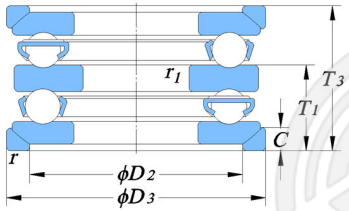


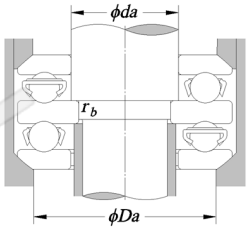
Principal dimensions(mm)					Basic load ratings (kN)		Limiting speeds (r/min)		Designations
d_2	D	T_1	r_{min}	r_{1min}	C_a	C_{oa}	Grease	Oil	
140	225	90	1.5	1.1	266.3	691.6	490	700	**52232M**
	225	90	1.5	1.1	266.3	691.6	420	600	**52232**
150	240	97	1.5	1.5	215.7	743.9	470	680	**52234**
	250	98	1.5	2	359.6	1650.9	420	580	**52236M**
	250	98	1.5	2	359.6	1650.9	370	560	**52236**
	300	165	3	2	396.4	1389.5	370	560	**52336**
160	260	105	2	2	226.5	825.4	370	550	**52238X3**
	270	109	2	2	274.7	1019.3	350	540	**52238**
	270	109	2	2	274.7	1019.3	350	540	**52238J**
160.25	259.85	105	2	1.5	226.5	825.4	430	620	**527/183/YAD**
170	280	109	2	2	271.2	1028.6	330	510	**52240**
	340	192	4	2	508.4	1864.2	310	480	**52340**
300	400	80	1.8	1.3	167.8	809.7	250	390	**52768**
469.5	570	84	2	2	225.3	1361.7	170	260	**52794X**
570	700	90	3	1.3	180.2	1073.3	140	230	**527/615F1**
1160	1360	200	6	6	706.9	8499.7	70	100	**527/1160F3**

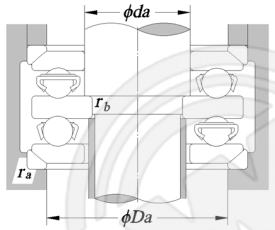
Other dimensions(mm)				Abutment and fillet dimensions (mm)				Mass (kg)
D_1	d_3	T	B	d_{amin}	D_{amax}	r_{amax}	r_{bmax}	(approx.)
163	224.5	55	20	160	183	1.1	1.5	11.8
163	224.5	55	20	160	183	1.1	1.5	11.7
173	237	59	21	170	195	1.5	1.5	13.3
183	249	59.5	21	180	200	2	1.5	15.6
183	249	59.5	21	180	200	2	1.5	14.3
184	299	101	37	181	225	2	2.5	48.8
183	259	67	29	180	210	2	2	19.5
194	269	66.5	24	191	215	2	2	21.4
194	269	66.5	24	191	215	2	2	20.9
183	259	65.5	26	180	210	1.5	2	19.3
204	279	66.5	24	201	225	2	2	22.1
205	339	117	42	202	255	2	3	59.3
340	400	49	18	337	350	1.1	1.5	21.2
499	570	56.5	29	496	520	2	2	39.9
615	682	55	20	612	635	1.1	2.5	53.7
1226	1355	125	50	1223	1260	5	5	409

d 30～100mm







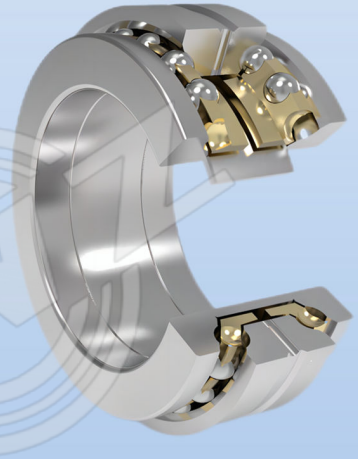


Principal dimensions(mm)					Basic load ratings (kN)		Abutment and fillet dimensions (mm)				Designations
d_2	D	T_2	r_{min}	r_{1min}	C_a	C_{oa}	d_{amin}	D_{amax}	r_{amax}	r_{bmax}	
30	68	47.2	1	0.3	55.5	73.8	35	51.5	0.3	1	**54307+U307**
30	64	35.4	0.6	0.6	25.3	49.7	40	55	0.6	0.6	**54208+U208**
85	170	105.4	1.5	1	212.3	512.9	100	135	1	1.5	**54320+U320**
100	210	131.2	2.1	1.1	267.5	711.4	120	165	1.1	2	**54324M+U324**
	210	131.2	2.1	1.1	267.5	711.4	120	165	1.1	2	**54324+U324**

Other dimensions(mm)											Mass (kg)
d_3	D_1	D_2	D_3	B	C	T	T_1	T_3	R	A	(approx.)
68	37	52	72	10	7.5	28.6	31	52	56	21	0.909
64	42	48	69	7	7	21.2	24.5	42	50	20.9	0.563
170	103	135	175	21	18	63.2	68	115	125	42	10.8
209.5	123	165	220	27	22	79.1	85	143	160	58	23.0
209.5	123	165	220	27	22	79.1	85	143	160	58	22.2

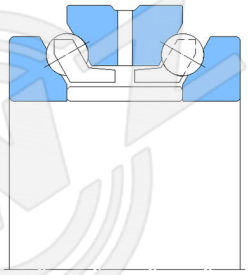
ZWZ

Double-direction Thrust Angular Contact Ball Bearings



●Double-direction thrust angular contact ball bearings

■ Product characteristics



Double-direction thrust angular contact ball bearings consist of two shaft washers, a housing washer with lubrication grooves and oil holes, a spacer, two rows of rolling elements, and cages. The bearing clearance and preload can be adjusted by grinding the spacer thickness. With a contact angle of 60°, these bearings are designed to handle primarily axial loads in both directions as well as combined axial and radial loads. This type of bearing is widely used in the spindles of grinding machines, boring machines, lathes, milling machines, and drilling machines, specifically designed to meet the requirements of these high-precision applications. These bearings offer high precision, good rigidity, low temperature rise, high speed, and ease of installation and removal.

■ Basic information

Precision

ZWZ double-direction thrust angular contact ball bearings offer the SP, P5, and P4 class tolerances, also available to provide products with UP class tolerance, if needed. Among them, see the P5, P4 class tolerances in the preface.

SP, UP class tolerances of bearing and shaft washer Unit: μm

d (mm)		Class SP					Class UP			Class SP,UP	
		Δ_{dmp}		Δ_{ds}		S_i S_e	Δ_{ds} Δ_{dmp}		S_i S_e	Δ_{Ts}	
Over	Incl.	Upper limit	Lower limit	Upper limit	Lower limit	max	Upper limit	Lower limit	max	Upper limit	Lower limit
-	30	0	-8	+1	-9	3	0	-6	1.5	+50	-30
30	50		-10	+1	-11	3		-8	1.5	+60	-100
50	80		-12	+2	-14	4		-9	2	+70	-120
80	120		-15	+3	-18	4		-10	2	+85	-140
120	180		-18	+3	-21	5		-13	3	+95	-160
180	250		-22	+4	-26	5		-15	3	+120	-200
250	315		-25	+5	-30	7		-18	4	+150	-250
315	400		-30	+5	-35	7		-23	4	+200	-300

Precision (continued)

SP, UP class tolerances of housing washer Unit:μm

D(mm)		Δ_{Dmp}		Δ_{Cs}	
Over	Incl.	Upper limit	Lower limit	Upper limit	Lower limit
30	50	-20	-27	0	-30
50	80	-24	-33		
80	120	-28	-38		
120	150	-33	-44		
150	180	-33	-46		
180	250	-37	-52		
250	315	-41	-59		
315	400	-46	-64		
400	500	-50	-70		
500	630	-55	-77		

Cage

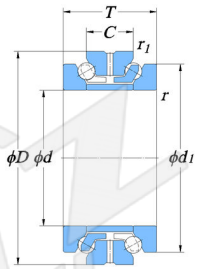
Double-direction thrust angular contact ball bearings has a machined bronze cage, without the suffix.

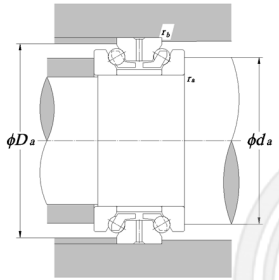
Preload

The preload of the double-direction thrust angular contact ball bearings is determined by the spacer. The preload value is shown as follows.

Bearing inner diameter code		Preload						
Over	Incl.	1	2	0	3	4	5	6
-	05	-	196	295	390	490	590	785
05	09	195	295	490	590	680	835	980
09	13	490	685	980	1175	1375	1670	1960
13	16	490	980	1470	1765	2060	2450	2945
16	19	490	980	1470	1765	2160	2550	2945
19	24	785	1175	1960	2450	2945	3435	4415
24	26	785	1470	1960	2450	2945	3925	4415
26	34	980	1470	1960	2450	2945	3925	4905
34	40	1470	1960	2450	2945	3925	4905	5885
40	56	1470	1960	2945	3925	4905	5885	6865
56	68	1960	2450	3435	4905	5885	6865	7850
68	80	1960	2450	3925	5885	6865	7850	8830

d 70～1374.775mm

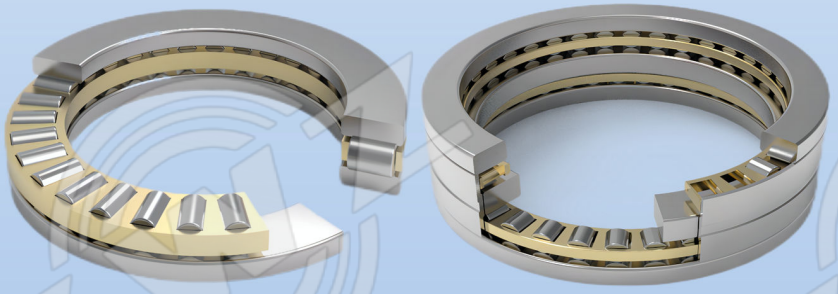




Principal dimensions(mm)						Basic load ratings(kN)		Limiting speeds(r/min)	
d	*D*	*T*	*C*	*r*min	*r*1min	Cr	Cor	Grease	Oil
70	110	48	24	1.1	0.3	36.5	95.	5300	7000
80	110	54	27	1.1	0.3	50.2	132	4500	6000
90	140	60	30	1.5	0.3	57.8	160	4000	5300
	140	60	30	1.5	0.3	57.8	160	4000	5300
100	140	48	24	1.1	0.6	40.7	156	3200	3800
	150	60	30	1.5	0.3	60.9	180	2900	3800
	150	60	30	1.5	0.3	58.	167	2900	3800
105	160	66	33	2.3	1.1	67.3	199	2600	3500
110	170	72	30	2	0.6	79.5	227	2500	3300
120	180	72	36	2	0.6	86.4	265	2400	3200
130	200	84	42	2	0.6	109	327	2200	3000
140	210	84	42	2.1	0.6	114	353	1800	2600
150	210	72	36	2	1	93.	389	1800	2600
	225	90	45	2.1	0.6	129	418	1700	2500
160	240	84	36	2.1	1.1	133	448	1700	2300
	240	96	48	2.1	0.6	140	459	1700	2300
	240	96	48	2.1	1.1	140	459	1700	2300
	240	96	48	2.1	1.1	140	459	3000	4000
	240	96	48	2.1	1.1	140	459	1800	2500
170	260	108	54	2.5	1.3	315	592	1600	2100
180	280	120	60	2.1	1.1	205	666	2000	3000
	280	120	60	2.1	0.6	205	666	1500	2000
190	260	84	42	2	1	125	579	2300	3300
	290	120	60	2.1	0.6	208	693	1900	2800
200	310	132	66	2.1	0.6	231	766	1300	1700
220	300	96	48	2	1	155	770	1200	1700
	340	144	72	3	1	277	946	1200	1600
240	320	96	48	2	1	158	845	900	1300
	360	144	72	3	1	300	1096	800	1100
260	360	120	60	2	1	231	1118	1500	2100
280	380	120	60	2	1	236	1216	800	1200
	420	164	82	3	1.5	347	1372	700	1100
300	420	144	72	3	1	317	1556	670	1100
340	460	144	72	4	1.5	311	1763	650	1000
	520	212	106	4	1.5	462	2041	650	1000
420	620	236	118	5	2	597	2980	600	1000
460	680	256	128	6	2	669	3540	550	900
500	720	256	128	6	2	680	4497	540	980
1049.5	1270	220	65	3	5	1223	9989	520	850
1374.775	1597.025	247.65	78.59	3	3	1367	16871	500	800

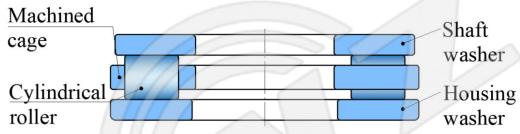
Designations	Other dimensions (mm)	Abutment and fillet dimensions(mm)				Mass(kg)
	*d*1 max	*d*amin	*D*amax	*r*amax	*r*bmax	(approx.)
234414	97	85.5	103.5	1.1	0.3	1.52
234416	110	97	103.5	1.1	0.3	2.19
234418/P5	123	110	133.5	1.5	0.3	2.99
234418/SP5	123	110	133.5	1.5	0.3	2.99
234920/P4YAB	126	115	132	1.1	0.6	2.04
234420	133	120	143.5	1.5	0.3	3.19
234420TN1	133	120	143.5	1.5	0.3	2.67
234421/YA6	142	127.5	150.5	2.3	1.1	4.15
234422/P5	150	134	162	2	0.6	5.39
234424	160	144	172	2	0.6	5.33
234426	177	157.5	192	2	0.6	8.57
234428	187	167.5	202	2.1	0.6	8.97
234930	190	174	200.5	2	1	7.14
234430/P4YAB	200	179	217	2.1	0.6	12.5
234432X2	210.6	190	232	2.1	1.1	11.6
234432	212	190	232	2.1	0.6	14
234432/P4G4802YAB	212	190	232	2.1	1.1	14
234432/P4YAB	212	190	232	2.1	1.1	14
234432/YA6	212	190	229.5	2.1	1.1	11.6
234434/YA6	230	204.5	249.5	2.5	1.3	18.5
234436/P4YAB	246	217	270	2.1	1.1	24.8
234436/SP3	246	217	272	2.1	0.6	24.8
234938/P5	237	217.5	250.5	2	1	12
234438/P4YAB	258	228	280.5	2.1	0.6	26.3
234440	274	241	302	2.1	0.6	33.6
234944/P5W33	272	250	290.5	2	1	18.1
234444	300	265.5	330.5	3	1	43.9
234948	292	270	310.5	2	1	19.7
234448	320	285.5	350.5	3	1	46.7
234952/P4	328	298	350.5	2	1	33.7
234956	348	662	370.5	2	1	44.9
234456	374	332.5	408	3	1.5	71.2
234960	380	345.5	410.5	3	1	55.5
230668/P4	428	390.5	448	4	1.5	64.4
234468/P4	459	406	508	4	1.5	146
234484/P4	552	494	607	5	2	222
234492/SP	608	544	667	6	2	291
2344/500M/SP	648	584	707	6	2	314
2327/1049.5	1156	1108.5	1249	3	5	392
2327/1374X4/HCEP5	1489.08	1437.5	1581	3	3	648

Thrust Cylindrical Roller Bearings



●Thrust cylindrical roller bearings

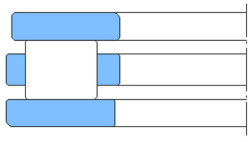
■ Product characteristics



This type of bearing features a separated structure consisting of washer-shaped raceway rings (shaft washer and housing washer) and cylindrical rollers with a cage assembly. The cylindrical rollers are crown machined, ensuring an even pressure distribution between the rollers and raceway surfaces.

- The separated structure allows the shaft washer, housing washer, and roller-cage assembly to be installed independently. During installation, no misalignment is allowed between the shaft and housing axes. These bearings require minimal axial space and offer high axial stiffness, making them suitable for low-speed, heavy-load conditions.
- They can support heavy axial loads and shock loads.
- But they are not designed to handle radial loads or limit radial displacement.

■ Product structural types

Structure	Single-direction thrust cylindrical roller bearings	Double-direction thrust cylindrical roller bearings
Figure		
Inner diameter (mm)	30～2600	20～710
Outer diameter (mm)	47～2800	240～950
Width (mm)	11～150	100～290
Load capacity	Single-direction axial loads	Single-direction axial loads
Self-aligning capacity	No	No

■ Basic information

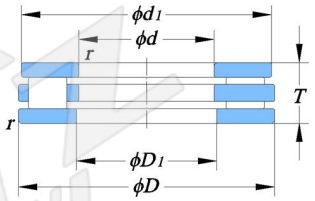
Precision	**ZWZ** standard thrust ball bearings are available in normal, P6, P5, P4 precision classes, in line with national standards.
Allowed angle error	In thrust cylindrical roller bearings, the two supporting surfaces must be parallel, with no deviation allowed.

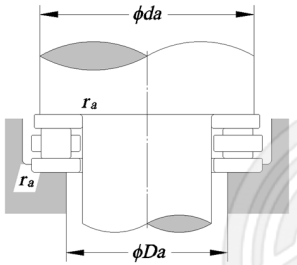
Cage type	**ZWZ** thrust cylindrical roller bearings are mostly made of bronze solid cages. When the bearing outer diameter D≤500mm, a bronze solid cage is used, and no suffix is added to the cage. When the bearing outer diameter D>500mm, a steel solid cage is used, and no suffix is added to the cage, with related suffix added to the rest.
Minimum axial loads	To prevent slippage of the rings and rolling elements in thrust cylindrical roller bearings, it is essential for the bearing to sustain a certain axial load. To ensure the reliability of thrust cylindrical roller bearings in operation, a minimum axial load of at least 0.02C must always be applied. Applying this minimum axial load is particularly important during rapid starts, rapid stops, and sudden accelerations. If the minimum axial load cannot be consistently maintained, the following measures should be taken to achieve the required minimum axial load: Select a smaller size series for the bearing; Use a specialized lubrication method; Apply a special wear-resistant treatment to the surfaces of the raceways and rolling elements; Apply axial preloading; Thrust cylindrical roller bearings lack self-aligning capability and do not tolerate misalignment errors.
Equivalent axial load	Dynamic equivalent axial load $P=F_a$ [kN] Static equivalent static axial load $P_0=F_a$ [kN]

■Supplementary code

Code name	Code description
F1	Carbon steel;
F3	Ductile cast iron;
HC	The bearing rings, rolling elements, or just the bearing rings or just the rolling elements are manufactured from carburized steel (/HC—G20Cr2Ni4;/HC1—20Cr2Mn2MoA;/HC2—15Mn).
TN1	Nylon cage;
/Y	The combination of "Y" and another letter (e.g. YA, YB) is used to identify non-serial changes that cannot be expressed by the existing suffix. Wherever Y is included in the suffix of the bearing code, **ZWZ** should be contacted for details of the change: YA—structural changes (comprehensive expression); YB—technical condition changes (comprehensive expression)
/YAB	Structural and technical requirements are changing simultaneously;
ZW	Assembling unit of double-row roller needles and cages.

d 30～200mm

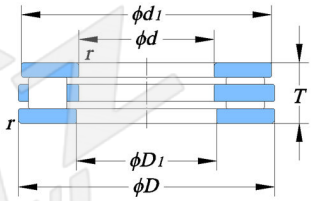


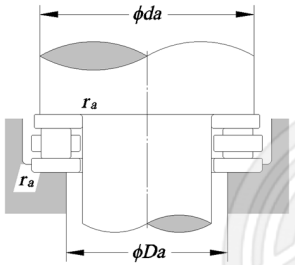


Principal dimensions(mm)				Basic load ratings(kN)		Limiting speeds(r/min)		Designations	Other dimensions(mm)		Abutment and fillet dimensions(mm)			Mass(kg)
d	*D*	*T*	r_{min}	C_a	C_{oa}	Grease	Oil		D_1	d_1	d_{amin}	D_{amax}	r_{amax}	(approx.)
30	52	16	0.6	51.8	141	2400	3200	**81206TN1**	32	52	48.5	35	0.6	0.127
	47	11	0.6	26.2	76.0	3000	4000	**81106TN1**	32	47	44	34	0.6	0.0593
30.2	54	13.8	1.5	35.2	105	2500	3300	**81206X2ZRS**	30.05	49.4	45.9	33.05	1.5	0.113
38.5	66.7	18	2	58.1	168	2000	2700	**817/38.5-ZS**	38.5	66.7	62.7	42.5	2	0.232
40	78	22	1	95.8	366	1700	2200	**89305ZW/TN1HCOI-TG**	42	77.8	73.6	46.4	1	0.488
42	65	14	0.6	41.0	133	2300	3000	**811/42TN1**	44	65	61.5	47	0.6	0.147
45	73	20	0.6	81.6	249	1800	2400	**81209X2J/P6S0**	47	73	69.5	50	0.6	0.36
50	82	22	0.5	64.7	227	1600	2200	**81210X1ZRS**	50.3	82	79.5	51.3	0.3	0.439
	78.6	22	0.6	88.7	283	1700	2200	**81210X1ZSTN1**	50.5	78.6	75.6	52.5	0.6	0.381
	80	18.89	2	67.0	226	1800	2400	**81210X2ZRS**	50.1	80	76	54.1	2	0.333
75	135	36	1.5	228	828	940	1300	**89315**	77	135	129	85	1.5	2.42
	160	51	2	392	1500	690	930	**89415ZW**	78	160	154	86	2	5.92
80	115	28	1	134	478	1200	1600	**81216**	82	115	110.8	86.4	1	1.03
85	150	39	1.5	289	1060	840	1200	**89317/P4**	88	150	145.7	92.6	1.5	3.12
	125	31	0.5	158	572	1100	1500	**81217**	88	125	121.9	90.2	0.3	1.41
90	120	22	1	105	416	1300	1800	**81118/P4**	92	120	116.4	95.2	1	0.731
100	150	38	1.1	231	843	850	1200	**81220**	103	150	145.3	108.4	1.1	2.61
110	160	38	1.1	246	937	820	1100	**81222**	113	160	155.3	118.4	1.1	2.8
	160	38	1.1	240	911	820	1100	**81222/P5**	113	160	155.3	118.4	1.1	2.8
120	155	25	1.1	120	496	1100	1500	**81124**	120.2	155	150.9	124.4	1.1	1.24
130	190	45	0.7	360	1370	670	900	**81226/P5**	133	187	183.5	136	0.6	4.46
130.2	225	30	1.5	507	2280	780	1100	**KOW87326ZT**	130.2	225	219.5	137.2	1.5	5.09
140	180	31	1	192	843	870	1200	**81128**	142	178	173.8	146.4	1	2.07
150	215	50	1.5	446	1760	580	780	**81230**	153	212	206.5	160	1.5	6.22
	215	50	1.5	436	1700	580	780	**81230/P5**	153	212	206.5	160	1.5	6.22
	230	50	3	524	2120	560	750	**81730/P5**	153	227	219.5	164	2.5	7.76
160	200	31	1	217	1020	820	1100	**81132**	162	198	193.8	166.4	1	2.33
170	215	34	1.1	282	1320	740	990	**81134**	172	213	208.3	177.4	1.1	3.09
	340	103	5	1620	6320	270	360	**89434**	174	340	330	190	4	47.5
180	250	56	1.5	530	2240	500	660	**81236**	183	247	241.5	190	1.5	9.37
	360	82	5	1610	7360	310	410	**87436ZW**	184	358	348	200	4	41.7
	360	109	5	1920	7600	250	340	**89436ZW**	184	355	345	200	4	59.3
	360	109	5	1920	7600	250	340	**89436ZW-1/HC**	184	360	350	200	4	60
	360	109	5	1890	7480	250	340	**89436ZW-1**	184	360	350	200	4	60.3
181	360	109	5	1920	7600	250	340	**89436ZW-1/HCYAB**	184	360	350	200	4	59.5
190	380	115	5	2090	8240	240	310	**89438**	195	380	370	211	4	66.2
200	280	62	2	677	2900	430	580	**81240**	204	277	271	212	2	13
	250	37	1.1	297	1410	640	860	**81140**	203	247	242.3	208.4	1.1	4.36

ZWZ

d 200～400mm

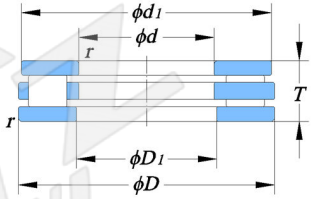


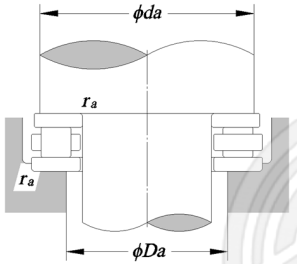


Principal dimensions(mm)				Basic load ratings(kN)		Limiting speeds(r/min)		Designations	Other dimensions(mm)		Abutment and fillet dimensions(mm)			Mass(kg)
d	*D*	*T*	r_{min}	C_a	C_{oa}	Grease	Oil		D_1	d_1	d_{amin}	D_{amax}	r_{amax}	(approx.)
200	250	37	1.1	297	1410	640	860	**81140/YA8**	203	247	242.3	208.4	1.1	4.36
	340	85	4	1390	5910	310	410	**89340**	205	340	331.5	218	3	35.1
	340	85	4	1370	5780	310	410	**89340/P5YB5**	205	340	331.5	218	3	35.1
200.406	314.325	76.2	0.3	794	3520	350	470	**81740X4ZW**	200.406	314.325	311.525	202.006	0.3	25.1
220	270	37	1.1	306	1500	620	830	**81144**	223	267	261.5	230	1.1	4.83
	300	63	2	710	3170	410	550	**81244**	224	297	291	232	2	13.6
240	300	45	1.5	441	2180	510	680	**81148**	243	297	291.5	250	1.5	7.48
	340	78	2.1	1050	4550	330	440	**81248**	244	335	328.5	253	2	24
260	320	45	1.5	453	2320	490	650	**81152**	263	317	311.5	270	1.5	8.84
	360	79	2.1	1070	4770	310	420	**81252**	264	355	348.5	273	2	25.4
	360	79	2.1	1070	4770	310	420	**81252/P4**	264	355	348.5	273	2	25.4
	360	79	2.1	1070	4770	310	420	**81252/HC**	264	355	348.5	273	2	25.4
	420	100	6	1920	9230	240	320	**87452X1ZW**	264	419.5	407.5	284	5	59.7
	480	132	6	2760	11600	180	240	**89452ZW/P5YB5**	265	480	468	285	5	117
	480	132	6	2760	11600	180	240	**89452ZW/YB5**	265	480	468	285	5	117
280	350	53	1.5	584	2960	410	560	**81156**	283	347	341.5	290	1.5	12.4
	380	80	2.1	1090	4990	300	400	**81256**	284	375	368.5	293	2	29.4
	380	80	2.1	1090	4990	300	400	**81256F1**	284	375	368.5	293	2	29
	380	80	2.1	1060	4790	300	400	**81256/P5YB5**	284	375	368.5	293	2	29.4
300	420	95	3	1420	6430	250	330	**81260**	304	415	407.5	315	2.5	41.8
	420	95	3	1420	6430	250	330	**81260F1**	304	415	407.5	315	2.5	41.3
	420	95	3	1420	6430	250	330	**81260/YB5**	304	415	407.5	315	2.5	41.6
	540	145	6	3290	14700	160	210	**89460ZW/P4YB5**	305	540	528	325	5	152
320	400	63	2	781	3960	340	450	**81164**	324	396	390	332	2	19.8
340	460	96	3	1590	7650	230	310	**81268**	345	455	447.5	356	2.5	48.2
	460	96	3	1560	7440	230	310	**81268/P5YB5**	345	455	447.5	356	2.5	48.2
	620	170	10	4080	18600	130	170	**89468ZT**	342	615	597.5	373	8	241
355	600	267	3	3630	18700	80	110	**81771ZW/P4YAB**	300	600	591	314	2.5	472
	600	267	3	3630	18700	80	110	**81771ZW/P5YAB**	300	600	591	314	2.5	472
360	440	65	2	838	4490	310	420	**81172/P5**	364	436	430	372	2	22.7
	500	110	4	2070	9790	200	270	**81272**	365	495	486.5	378	3	69.9
	520	82	4	2080	12100	240	320	**81272X3M/YB2**	365	515	506.5	378	3	61.5
380	460	65	2	901	5020	300	400	**81176**	384	456	450	392	2	22.5
	520	112	4	2270	10700	190	250	**81276M**	385	515	506.5	398	3	74.4
	560	112	4	2680	13000	180	240	**81276X1M**	385	555	546.5	398	3	99.5
	560	112	4	2680	13000	180	240	**81276X1M/YB2**	385	555	546.5	398	3	99.5
	600	132	6	3580	17900	150	210	**89376**	384	600	588	404	5	152
400	480	65	2	855	4750	290	390	**81180**	404	476	470	412	2	25.8

ZWZ

d 400～710mm

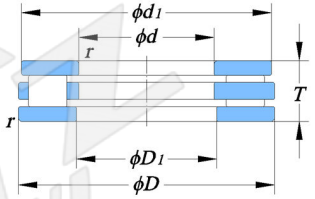


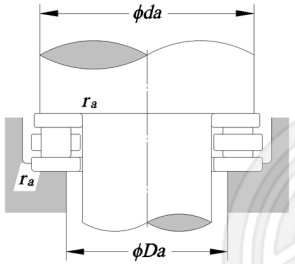


Principal dimensions(mm)				Basic load ratings(kN)		Limiting speeds(r/min)		Designations	Other dimensions(mm)		Abutment and fillet dimensions(mm)			Mass(kg)
d	*D*	*T*	r_{min}	C_a	C_{oa}	Grease	Oil		D_1	d_1	d_{amin}	D_{amax}	r_{amax}	(approx.)
400	540	112	4	2400	11700	190	250	**81280**	405	535	526.5	418	3	77.6
420	500	65	2	882	5020	290	380	**81184**	424	495	489	432	2	27.2
	500	65	2	882	5020	290	380	**81184/P4**	424	495	489	432	2	27.2
440	540	80	2.1	1340	7370	240	320	**81188**	444	535	528.5	453	2	41.5
	600	130	5	2690	13200	160	210	**81288**	445	595	585	461	4	114
460	560	80	2.1	1380	7810	230	310	**81192/P5**	464	555	548.5	473	2	43.7
	560	80	2.1	1320	7350	230	310	**81192/P4**	464	555	548.5	473	2	43.7
	800	206	9.5	6010	28800	84	120	**89492ZT**	462	795	778	492	8	464
480	580	80	2.1	1370	7810	230	300	**81196F1**	484	575	568.5	493	2	44.1
	580	80	2.1	1370	7810	230	300	**81196F3**	484	575	568.5	493	2	44.1
	580	80	2.1	1370	7810	230	300	**81196M**	484	575	568.5	493	2	44.6
	650	135	5	3140	15700	140	190	**81296M**	485	645	635	501	4	135
500	600	80	2.1	1470	8670	220	290	**811/500**	505	595	588.5	514	2	45.3
	670	135	5	3120	15700	140	190	**812/500**	505	665	655	521	4	138
	670	135	5	3120	15700	140	190	**812/500F3**	505	665	655	521	4	137
	670	135	5	3120	15700	140	190	**812/500/YB5**	505	665	655	521	4	138
508	762	139.7	6.4	4770	25300	130	170	**817/508/P5YB5**	511.18	758.83	744.03	536.78	5	238
	762	139.7	6.4	4770	25300	130	170	**817/508/P4YB5**	511.18	758.83	744.03	536.78	5	238
530	640	85	3	1590	9320	200	270	**811/530**	534	635	627.5	545	2.5	56.7
	640	85	3	1590	9320	200	270	**811/530/P4**	534	635	627.5	545	2.5	60.9
	640	85	3	1540	8980	200	270	**811/530/SPYB5**	534	635	627.5	545	2.5	56.7
	710	140	5	3220	16700	130	180	**812/530/P5YB5**	535	705	695	551	4	162
560	670	85	3	1630	9810	190	260	**811/560**	565	665	657.5	576	2.5	60
	750	150	5	3800	20000	120	160	**812/560**	565	745	735	581	4	203
	750	150	5	3800	20000	120	160	**812/560/YB5**	565	745	735	581	4	203
	820	200	7.5	5740	27400	84	120	**817/560/YB5**	565	815	800.5	590	6	379
	820	200	7.5	5740	27400	84	120	**817/560/P4YB5**	565	815	800.5	590	6	379
572	763	115	5	3160	19300	140	190	**817/572ZW/P4YB5**	574	760	751	588	4	147
600	710	85	3	1670	10300	190	250	**811/600**	604	705	697.5	615	2.5	63.4
	710	85	3	1670	10300	190	250	**811/600/P5YA8**	604	705	697.5	615	2.5	62.7
	800	160	5	4750	24400	110	150	**812/600**	605	795	785	621	4	237
	800	160	5	4750	24400	110	150	**812/600/P4YB5**	605	795	785	621	4	237
606	696	55	2	888	7160	260	340	**817/606L3/P5YB5**	606	696	690	614	2	34.1
610	710	65	2	1170	8110	230	300	**817/610/P4YB5**	610	710	704	618	2	50.7
640	830	150	6	4540	25800	110	150	**817/640M**	644	830	818	664	5	227
650	930	130	4	5200	35900	110	150	**817/650ZW**	650	930	921.5	663	3	318
710	950	190	6	5620	30500	77	110	**812/710/P4YB5**	718	942	930	738	5	387
	850	85	1.8	2010	14400	160	220	**891/710/P4YB5**	715	850	844.7	721.6	1.5	99.9

ZWZ

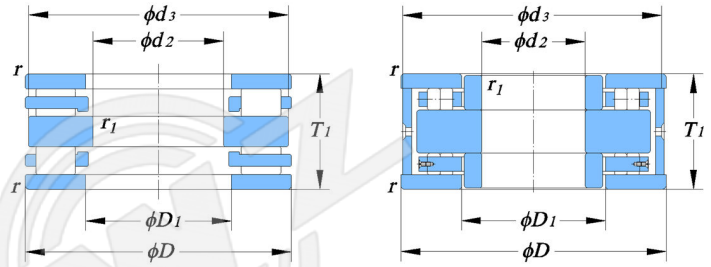
d 711.45～2600mm

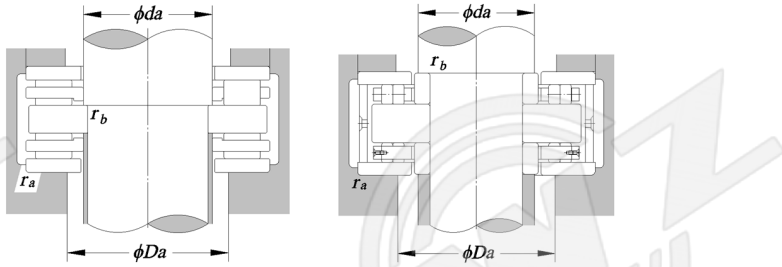




Principal dimensions(mm)				Basic load ratings(kN)		Limiting speeds(r/min)		Designations	Other dimensions(mm)		Abutment and fillet dimensions(mm)			Mass(kg)
d	*D*	*T*	r_{min}	C_a	C_{oa}	Grease	Oil		D_1	d_1	d_{amin}	D_{amax}	r_{amax}	(approx.)
711.45	846.4	95.25	6.4	2260	16800	150	200	**817/711X4ZW**	672.84	831.8	819.8	692.84	5	113
750	900	120	4	3230	20400	120	170	**811/750/SPYB5**	755	895	886.5	768	3	160
	1000	195	6	6370	34800	71	96	**812/750/YB5**	755	995	983	775	5	468
	1000	195	6	6370	34800	71	96	**812/750/P4YB5**	755	995	983	775	5	468
765	1360	220	15	13400	85600	49	66	**817/765ZWF1**	820.4	1340	1321	854.4	12	1288
	1360	220	15	13400	85600	49	66	**817/765ZWF3**	820.4	1340	1321	854.4	12	1288
800	950	120	4	3300	21400	120	160	**811/800**	805	945	936.5	818	3	169
812.8	1016	127.127	2.3	4710	33400	110	140	**817/812.8/P5YB5**	815.8	1016	1009.2	825.4	2	260
850	1000	120	4	3370	22300	120	150	**811/850**	855	995	986.5	868	3	171
	1120	212	7.5	8020	45500	58	77	**812/850/YB5**	855	1115	1100.5	880	6	622
	1120	212	7.5	8020	45500	58	77	**812/850/P4YB5**	855	1115	1100.5	880	6	622
860	1000	96	3	2210	16300	140	180	**817/860/P4YB5**	860	1000	992.5	871	2.5	148
870	980	64	4	1380	13100	180	240	**817/870F3/P5YB5-SY**	870	980	971.5	883	3	72.7
900	1180	125	7.5	5730	52200	93	130	**872/900ZWF1/HC**	905	1175	1160.5	930	6	393
	1270	270	10	14400	73400	46	62	**812/900X3/HCR**	905	1265	1249	933	8	1147
1050	1560	192.2	9.5	12800	102000	49	66	**817/1050ZWQ1/HC**	1050	1560	1543	1080	8	1386
1060	1250	150	5	4990	34000	74	100	**811/1060/HCR**	1066	1244	1234	1082	4	340
1180	1400	100	6	4330	47900	97	130	**871/1180ZW/HC**	1185	1395	1383	1205	5	308
1240	1380	97	3	2320	19300	110	140	**817/1240/P4YB5**	1240	1380	1372.5	1251	2.5	204
1320	1540	100	6	4830	56900	90	120	**871/1320ZW**	1325	1535	1523	1345	5	348
	1540	100	6	4550	52700	90	120	**871/1320ZW/P4YB5**	1325	1535	1523	1345	5	348
1470.5	1630	40	1	513	6020	180	230	**817/1470.5/P4YB5**	1470.5	1630	1625.8	1474.9	1	111
1800	2080	150	7.5	8980	85500	48	65	**871/1800/P4YB5**	1810	2070	2055.5	1835	6	858
2100	2280	120	4	4210	40900	52	69	**817/2100/P4YB5**	2100	2280	2272	2112	3	545
2600	2800	120	4	7930	84300	47	63	**817/2600/P5YB2**	2600	2800	2789	2618	3	692

d 140～710mm

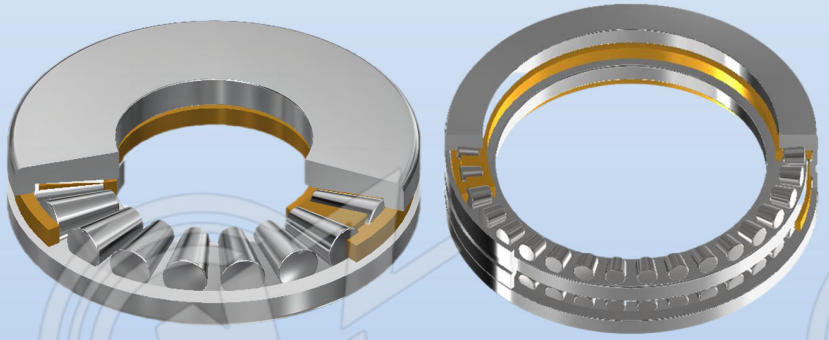




Principal dimensions(mm)						Basic load ratings(kN)		Limiting speeds (r/min)	
d_2	D_1	D	T_1	r_{min}	r_{1min}	C_a	C_{oa}	Grease	Oil
140	166	240	100	5	1.5	504	2030	350	470
	174	240	100	5	3	394	1490	350	470
	166	240	100	5	1.5	504	2030	350	470
	180	290	120	3	1.5	806	3640	270	370
	166	230	100	5	3	398	1490	360	480
130	152	190	68	1	1	210	963	520	700
175	203	250	82	2	2	312	1500	390	520
279.56	316	409.575	120.65	9.5	7.5	844	4360	220	290
300	345	460	80	3	3	754	5560	260	350
360	425	580	227	5	5	2720	13200	110	140
488.95	548	660.4	168.275	5	5	1320	7690	120	160
630	685	850	264	8	6	3290	19200	61	82
710	750	950	290	6	6	4840	29600	52	69

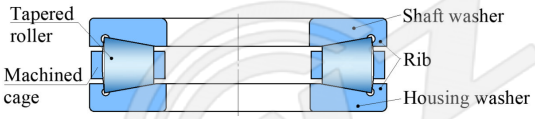
Designations	Other dimensions (mm)		Abutment and fillet dimensions(mm)				Mass(kg) (approx.)
	d_2	d_3	d_a	D_{amax}	r_{amax}	r_{bmax}	
82728X3F1	140	238.5	143	156	4	2.5	20.1
82728X3/YAB	140	238.5	146	156	4	2.5	19.6
82728X3/YB2	140	238.5	143	156	4	2.5	20.2
82728X3ZW/YAD	140	290	143	151	2.5	2.5	41.2
82728X31/YB2	140	228.5	146	156	4	2.5	17.1
82730	130	188	150.6	156.4	1	1	5.69
82635	175	247	200	211	2	2	11.9
827/279X4/HC	279.56	409.575	294.56	302.56	8	6	56.7
82760ZW	300	459.4	306	311	2.5	2.5	54.7
82784	360	580	421	441	4	4	205
827/488X4	488.95	660.4	498.95	504.95	4	4	181
827/630/HC	630	850	675	709	6	5	388
822/710	710	945	744	770	5	5	564

Thrust Tapered Roller Bearings



●Thrust tapered roller bearings

■ Product characteristics



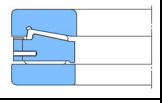
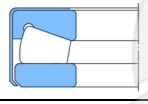
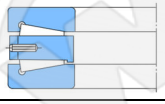
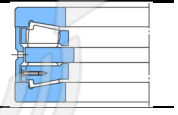
This type of bearing is equipped with tapered rollers (with a spherical large end). The rollers are accurately guided by the ribs of the raceway rings (shaft washers and housing washers). The design ensures that the apexes of the conical surfaces of the shaft washer, housing washer, raceway surface, and roller rolling surface intersect at a single point on the bearing centerline.

Single-direction bearings can withstand single-direction axial loads. Among them, the thrust tapered roller bearings with shields can prevent contamination and prevent rollers from falling out. Due to the absence of a cage, a larger number of rollers can be accommodated, resulting in higher axial load capacity, although the maximum speed is relatively low.

Double-direction bearings can withstand double-direction axial loads and outer spacers can be used to adjust axial clearance. The inner ring fits the shaft, but due to the clearance fit, the inner ring must be axially positioned using sleeves or similar methods. Misalignment between the shaft and housing axes is not permitted. Significant alignment errors will generate additional stress and reduce the bearing's service life.

■ Product structural types

Main structural types of the thrust tapered roller bearings

Type	Single-direction			Double-direction
Structure	Plane housing washer type	With shield, full complement	Shaft washer and housing washer all owned ribs	Double-row
Figure				
Inner diameter (mm)	38.4～500	38.4～500	60～2620	160～670
Outer diameter (mm)	66～850	66～850	130～2800	240～900
Width (mm)	18～224	18～224	42～224	66～319
Load capacity	Single-direction axial loads	Single-direction axial loads	Single-direction axial loads	Double-direction axial loads
Self-aligning capacity	No	No	No	No

■ Basic information

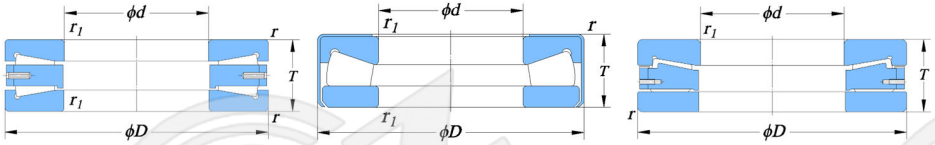
Tolerances and precision		**ZWZ** thrust tapered roller bearings can offer P0, P6, P5 and P4 class products. Bearing tolerances conform to the GB/T307.4 standard, which can be found in the preface table.
Cage type		The cage mostly adopts bronze solid cage or other automobile solid cage. When a solid bronze cage is used, no cage suffix is added, with suffix onto the rest of them.
Equivalent axial load		Dynamic equivalent axial load $P_a = F_a$ [kN] Static equivalent axial load $P_{oa} = F_a$ [kN]
Main Purpose	**Single-direction**	● Bearings with both the shaft washer and the housing washer having guiding ribs are suitable for radial positioning, primarily used in crane hooks and rotary tables of oil drilling rigs. ● When subjected to significant axial loads, fully assembled roller bearings are used. Bearings with flat raceways on the housing washer allow for slight axial eccentricity during rotation (relative to the housing bore).
	Double-direction	Rolling mill roll necks

■Supplementary code

Code name	Code description
X1	Non-standard outer diameter
X2	Non-standard width (height)
X3	Non-standard outer diameter, width (height) (standard inner diameter)
X4	For non-standard bearings, the inner diameter should be rounded. When the inner diameter size is a non-integer while it has two or more decimals, X4 is used to represent rounding.
V	Fully complement(no cage)
/HG	The bearing rings and rolling elements or just the bearing rings are made of other bearing steel (/HG—5GrMnMo;/HG1—55SiMoVA;/HG2—GCr18Mo;/HG3—42CrMo).
/W281	Indicating the bearings exclusive for the rolling mill (Q/WZ.J14281 standard)
Q1	Aluminum iron manganese bronze
F1	Carbon steel
F3	Ductile cast iron
/HA	The raceways, rolling elements, and cage (or just the raceways and rolling elements) are manufactured from vacuum-melted bearing steel.
/HC	The bearing rings, rolling elements, or just the bearing rings or just the rolling elements are manufactured from carburized steel (/HC—G20Cr2Ni4;/HC1—20Cr2Mn2MoA;/HC2—15Mn;/HC3—G20CrMo).
/HCE	If the bearing is metric, it means that the bearing rings and rolling elements are high-quality carburized steel.
/Y	The combination of "Y" Contact another letter (e.g. YA, YB) is used to identify non-serial changes that cannot be expressed by the existing suffix. Wherever Y is included in the suffix of the bearing code, ZWZ should be contacted for details of the change: YA—structural changes (comprehensive expression) YB—technical condition changes (comprehensive expression)
/YAB	Structural and technical requirements are changing simultaneously
/YAD	The same type bearing whose structure has two changes and above

ZWZ

d 38.4～2620mm

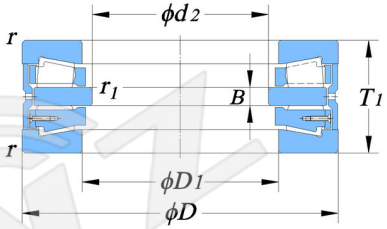


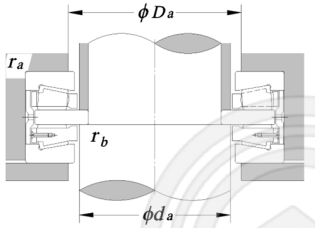
d	Principal dimensions(mm) D	T	r_{min}	r_{1min}	Basic load ratings (kN) C_a	C_{oa}	Designations	Mass(kg) (approx.)
38.4	66	18	2.5	0.6	88	262	**917/38.4PZSV**	0.250
42.1	70	18	2.5	1	92	269	**917/42.1PZSV**	0.272
45.1	73	18	2.5	1	92	295	**917/45.1PZSV**	0.297
47	78	22	2.5	1	118	369	**917/47ZSV/YA**	0.409
48	80	22	2.5	0.6	109	320	**912/48PZSVX3**	0.461
50	78	22	2.5	1	106	318	**91710ZSV/YA**	0.371
	80	19	2	0.6	110	344	**91210X2PZSV**	0.366
50.1	78	22	2	0.8	114	286	**91210X3PZSV**	0.385
	83	22	2	0.8	114	286	**917/50.1PZSV**	0.446
52.4	85	22	1	1	143	443	**917/52.4ZSV**	0.505
	90	22	1	1	143	443	**917/52.4ZSV-1**	0.606
60	130	42	1.5	1.5	293	773	**99412**	2.88
75	160	51	2	1.1	438	1200	**99415**	5.30
111.76	223.52	55.88	3.3	3.3	861	2880	**917/111X4**	11.8
140	280	85	4	4	1490	4670	**99428**	26.1
150	306	90	5	5	1380	4610	**99430**	34.8
160	270	67	3	3	938	3100	**99332**	17.6
170	340	103	5	5	1920	6100	**99434/HCE**	48.5
177.8	368.3	82.55	8	8	1880	7440	**917/177.8**	47.8
	368.3	82.55	8	8	1830	7300	**91736**	46.0
	431.8	101.6	3.3	6.4	3370	12700	**917/177.8-1**	87.6
180	300	73	3	3	1190	4140	**99336**	22.9
	360	109	5	5	2560	8500	**99436**	56.0
	360	109	5	5	2560	8500	**99436/HCE**	56.0
190	320	78	4	4	1370	4790	**99338**	28.0
	380	115	5	5	2460	7910	**99438**	68.2
200	400	122	5	5	2640	8590	**99440**	80.0
	405.638	111.506	4	4	2410	8440	**91740/YA3**	75.4
203.2	419.1	92.075	9.7	9.7	2660	10800	**KT811**	70.6
	419.1	92.075	9.7	9.7	2660	10800	**T811/HC**	70.6
210	460	150	2.3	8	3340	12200	**91742**	143
	460	150	2.3	8	3340	12200	**91742F1**	135
215	480	156	4	2.5	3750	14400	**91743**	157
220	330	65	2	2	960	3710	**1-9017M/HG2**	20.7
	330	65	2.1	3	990	3990	**91744/HG2**	21.0
	420	122	6	6	2660	8800	**99444**	86.4
228.6	482.6	104.775	11.2	11.2	3590	15000	**917/228.6**	101
	482.6	104.775	11.2	11.2	3590	15000	**917/228.6/HCYAD**	99.6
234.95	482.6	104.775	11.2	11.2	3590	15000	**917/234X4**	99.2
	546.1	127	16	16	4530	19400	**917/234X4-1**	174

d	Principal dimensions(mm) D	T	r_{min}	r_{1min}	Basic load ratings (kN) C_a	C_{oa}	Designations	Mass(kg) (approx.)
234.95	546.1	127	16	16	4710	20500	**917/234X4/HCEYA8**	166
240	350	65	2.1	2.1	1140	4620	**99248X3M/HG2**	22.2
	350	65	2.1	2.1	1140	4620	**99248X3/HG2**	22.2
	440	122	6	6	2970	10300	**99448**	93.8
254	539.75	117.48	11.2	11.2	4270	17800	**917/254/HCE**	139
260	480	132	6	6	3350	11800	**99452**	115
270	550	130	6	6	4580	18200	**91754**	165
	550	130	6	6	4880	20800	**91754Q1**	164
	550	130	7.5	7.5	4880	20800	**91754Q1/HCYAD**	161
279.4	603.25	136.525	11.2	11.2	5040	21700	**917/279.4**	217
	603.25	136.525	11.2	11.2	5160	22100	**917/279.4/HCYAD**	212
	603.25	136.525	11.2	11.2	5240	22800	**917/279.4/HCEYA8**	208
280	520	145	6	6	4660	16500	**99456**	157
	520.4	145	6	6	4660	16500	**99456X1**	158
320	440	95	3	3	1680	5770	**91264**	43.4
	580	155	7.5	7.5	4700	16600	**99464**	193
340	620	170	7.5	7.5	5820	21900	**99468**	252
	710	160	4	4	7480	30700	**91768**	339
	710	160	6	4	7040	30400	**91768/YAD**	333
	710	160	4	4	7480	30700	**91768/HCE**	339
355.6	533.4	101.6	6	11.2	2870	11700	**T1421**	85.4
360	500	110	4	4	2070	7090	**91272**	69.5
365	710	160	5	5	7310	29600	**1-9011**	328
380	560	112	3	8	4080	17600	**91276X1V/HCEYAB**	95.9
	560	112	3	8	3700	15600	**91276X1/HCEYAB1**	99.5
	670	175	7.5	7.5	6370	23800	**99476**	290
400	540	112	4	4	2290	8030	**91280**	77.8
420	620	112	10	9.5	4920	22700	**91784V/HCYB2**	113
	740	95	5	5	2900	28300	**99284X1/HC**	198
460	800	206	9.5	9.5	7990	31600	**99492**	487
480	680	120	5	5	4020	18100	**1-9012**	179
	850	224	9.5	9.5	9940	40100	**99496**	613
	850	224	9.5	9.5	9650	38200	**99496/YAD**	608
500	745	190	6	6	5990	22800	**913/500X2**	325
520	695	224	9.5	9.5	9710	40100	**917/520**	661
560	728	115	5	5	3620	14300	**917/560F1/HC**	126
600	860	125	6	6	6820	31200	**917/600/HC**	269
880	1000	70	6	6	4250	17400	**917/880**	96.3
1780	1930	90	6	6	9380	39200	**917/1780**	281
2620	2800	110	6	6	16200	69500	**917/2620**	602

ZWZ

d 160～300mm

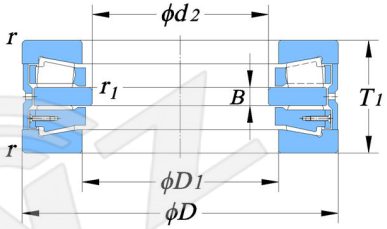


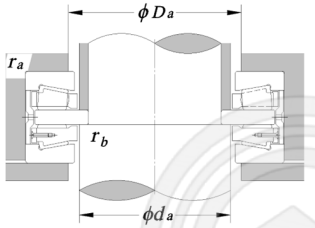


Principal dimensions(mm)					Basic load ratings(kN)		Designations	Other dimensions(mm)		Abutment and fillet dimensions(mm)				Mass(kg)
d_2	D	T_1	r_{min}	r_{1min}	C_a	C_{oa}		D_1	B	d_{amax}	D_{amin}	r_{amax}	r_{bmax}	(approx.)
160	260	66	1.5	1	319	1550	**92232X3**	195	18	190	201	1	1.5	12.3
	240	84	2	0.6	418	1460	**92732X3**	184	20	182.5	190	0.6	2	12.0
170	240	84	2	0.6	337	1190	**92734**	184	20	182.5	190	0.6	2	12.9
	240	101	2	0.6	337	1190	**92734X2**	184	37	182.5	190	0.6	2	15.5
	260	85	2	0.6	483	1940	**92734X31**	184	20	182	190	0.6	2	16.9
180	280	90	2	1	571	2240	**92736**	196	20	192	202	1	2	20.9
	280	90	2	1	571	2240	**92736/W281**	196	20	192	202	1	2	20.9
200	340	100	3	3	1090	4830	**92740/HG2IYAD**	220	35	217	226	2.5	2.5	36.9
220	300	96	2	0.6	506	1850	**92744**	236	22	231	242	0.6	2	19.7
	300	96	2	0.6	506	1850	**92744/HC**	236	22	231	242	0.6	2	19.7
	300	96	2	0.6	506	1850	**92744/HCYA2**	236	22	231	242	0.6	2	19.7
	340	130	2	1	1020	3830	**92744X3**	250	39	245.6	256	1	2	43.1
	372	195	2	0.6	1370	5000	**92744/HCYA2-1**	254	75	254	260	0.6	2	86.9
230	400	180	3	1	1500	5790	**92746**	260	42	260	266	1	2.5	97.4
	475	300	12	3	2220	10700	**92746/HCEYAD**	296	110	285	302	2.5	10	256
240	320	96	2	0.6	531	1910	**92748**	256	22	253	262	0.6	2	21.7
	320	96	2	0.6	531	1910	**92748/HG2**	256	22	253	262	0.6	2	21.7
250	360	96	2.1	1.1	503	2690	**92750X3/HG2YB2**	285	24	278	291	1.1	2	29.2
	380	100	2	0.6	1030	4710	**92750/HG2YB2**	275	22	268	281	0.6	2	40.8
	380	100	2	0.6	1030	4710	**92750/YA21**	275	22	268	281	0.6	2	37.5
	380	100	2	0.6	1030	4710	**92750**	275	22	268	281	0.6	2	40.8
	380	100	2	0.6	1030	4710	**92750/YA2**	275	22	268	281	0.6	2	37.6
	380	100	2	0.6	1030	4710	**92750/YA2/W281**	275	22	268	281	0.6	2	37.6
	380	100	2	0.6	1030	4710	**92750/HCYA2**	275	22	268	281	0.6	2	37.6
	380	100	3	3	1180	5180	**92750/HG2IYAD**	275	36.576	275	281	2.5	2.5	38.7
254	372	195	2	0.6	1370	5000	**92744/HG2YA2-1**	254	75	254	260	0.6	2	86.9
260	360	92	2	1	503	2690	**92752**	285	20	278	291	1	2	27.1
	360	92	2	1	503	2690	**92752F1/HC**	285	20	278	291	1	2	26.8
	360	92	2	1	503	2690	**92752F3**	285	20	278	291	1	2	27.1
	360	92	2	1	503	2690	**92752/HG2**	285	20	278	291	1	2	27.1
270	450	180	5	2	1710	7350	**92754**	310	45	305	316	2	4	115
291	520	266	12	2	2300	10600	**1-9014**	349	118	349	355	2	10	239
300	420	100	2.5	1.5	806	4120	**92760**	330	23	324	336	1.5	2	39.8
	420	100	2.5	1.5	765	4080	**92760/YAD**	330	23	328	336	1.5	2	39.0

ZWZ

d 310～670mm

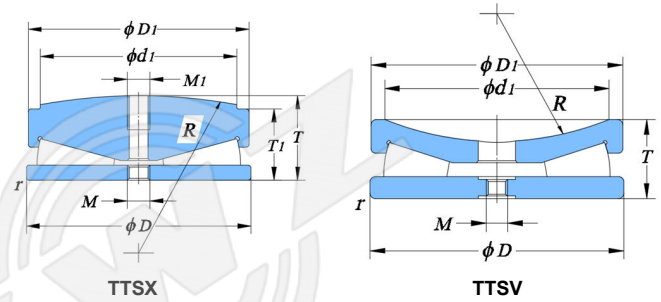




Principal dimensions(mm)					Basic load ratings(kN)		Designations	Other dimensions(mm)		Abutment and fillet dimensions(mm)				Mass(kg)
d_2	D	T_1	r_{min}	r_{1min}	C_a	C_{oa}		D_1	B	d_{amax}	D_{amin}	r_{amax}	r_{bmax}	(approx.)
310	490	130	3	2.5	1290	6700	**92770B**	390	30	380	396	2	2.5	99.5
	490	136	3	2.5	1290	6700	**92770B-1**	390	30	380	396	2	2.5	104
320	440	108	3	1.1	741	4360	**92764-1**	355	26	348	361	1.1	2.5	45.6
	440	108	3	1.1	741	4360	**92764/HC-1/YB2**	355	26	348	361	1.1	2.5	45.6
	440	108	3	1.1	741	4360	**92764/HG2-1**	355	26	348	361	1.1	2.5	45.6
	440	108	3	1.1	741	4360	**92764/HC-1**	355	26	348	361	1.1	2.5	45.6
	470	130	3	1.1	1480	6870	**92764**	350	30	341	356	1.1	2.5	77.6
	470	130	3	1.1	1480	6870	**92764/HC**	350	30	341	356	1.1	2.5	77.6
336	630	319	13	3	3010	15700	**1-9013**	415	130	412	421	2.5	13	425
340	460	100	3	1.1	985	5650	**92768**	368	18	358	374	1.1	2.5	43.6
350	490	130	3	1.1	1290	6700	**92770**	390	30	380	396	1.1	2.5	70.1
	490	130	3	1.1	1290	6700	**92770/YAB**	390	30	380	396	1.1	2.5	70.0
	490	131	3	1.1	1290	6700	**92770X2**	390	30	380	396	1.1	2.5	70.7
	540	135	4	1.1	1890	10600	**92770X3/HG2**	400	30	388	406	1.1	3	109
	540	135	4	1.1	1890	10600	**92770X3**	400	30	388	406	1.1	3	107
	540	199	3	3	1450	8520	**92770X3/HC-1**	410	100	402	416	2.5	2.5	161
360	530	145	4	2	1240	7390	**92772**	410	45	400	416	2	3	105
	530	145	4	2	1240	7390	**92772/HG2**	410	45	400	416	2	3	106
	530	145	4	2	1240	7390	**92772/YB2**	410	45	400	416	2	3	105
380	530	130	5	3	1350	8310	**92776-1/YA2**	410	30	398	416	2.5	4	90.1
	530	130	5	3	1350	8310	**92776-1**	410	30	398	416	2.5	4	90.1
	560	130	3	1.5	1310	9140	**92776**	430	32	418	436	1.5	2.5	106
	560	130	3	1.5	1310	9140	**92776/YA2**	430	32	418	436	1.5	2.5	106
	560	130	3	1.5	1310	9140	**92776/HCYA2**	430	32	418	436	1.5	2.5	106
420	620	170	3	1.5	2560	11600	**92784-1**	470	35	463	476	1.5	2.5	169
	620	170	3	1.5	2560	11600	**92784-1/HCYA2**	470	35	463	476	1.5	2.5	167
	620	170	3	1.5	2560	11600	**92784/HG2-1**	470	35	463	476	1.5	2.5	169
	620	185	3	1.5	2620	12000	**92784/HC**	470	50	450	476	1.5	2.5	189
	620	185	3	1.5	2500	11200	**92784/YA2**	470	50	463	476	1.5	2.5	187
	620	185	5	1.5	2620	12000	**92784/HCYA6**	470	50	450	476	1.5	4	189
440	650	240	6	2	3340	15600	**92788/YA2**	493	90	485	499	2	5	270
	650	240	6	2	3340	15600	**92788**	493	90	485	499	2	5	271
460	680	215	4	2	2350	15400	**92792/HC**	510	90	504	516	2	3	271
670	900	230	5	2	3140	19900	**927/670/HC**	725	50	714	731	2	4	396

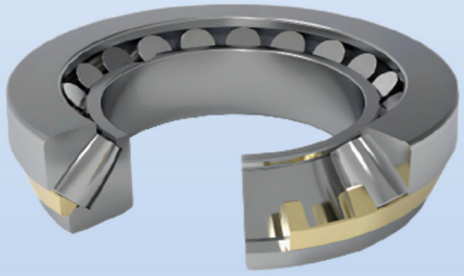
ZWZ

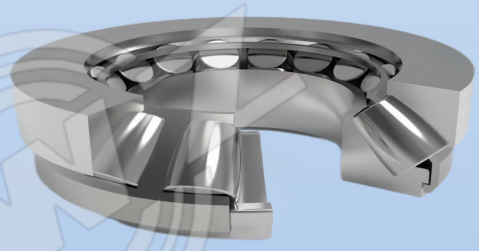
d 120～870mm



outside diameter (mm)	Principal dimensions(mm)								Designations	Basic static load ratings (kN)	Mass(kg)
D	D_1	*T*	T_1	d_1	*R*	*M*	M_1	r_{min}		C_{oa}	(approx.)
120	118	45	38	105	300	M10	M12	1.5	**TTSX120**	1540	3.16
205	203	75.6	65	178	508	M12	M16	1.6	**TTSX205**	4510	15.8
235	233	73		208	280	M20	-	1.5	**TTSV235/HG2I**	5130	18.3
380	378	129	112	330	914.4	M24	M30	2	**TTSX380/HC**	14900	91.4
410	408	142	122	355	1016	M24	M30	3	**TTSX410/HC**	17700	115
440	438	152	130	380	1016	M24	M36	3	**TTSX440/HC**	22500	146
495	492	172	146	432	1066.8	M24	M36	3	**TTSX495/HC**	26700	210
495.3	492.94	170.61	146.05	431.8	1066.8	M24	M36	3.2	**TTSX495X4/HC**	27600	206
508	505	180	155	440	1143	M24	M36	3	**TTSX508/HC**	29200	231
525	522	180	155	460	1270	M24	M36	3	**TTSX525/HC**	30500	245
533.4	533.4	177.8	144	457.2	1981.2	M24	M36	3.2	**TTSX533.4/HC**	30500	251
555	553.26	190.86	165.1	482.6	1270	M24	M42	3.2	**TTSX555/HC**	35700	301
	553.26	192	165	482.6	1270	M24	M42	3.2	**TTSX555X2/HCYA5**	32900	289
555.63	553.26	190.86	165.1	482.6	1270	M24	M42	3.2	**TTSX555X4/HC**	35700	301
609.6	607.24	204.01	177.8	533.4	1524	M30	M42	3.3	**TTSX609.6/HC**	45700	383
640	637	214.5	185	550	1520	M30	M42	3	**TTSX640/HC**	49000	439
	637	214.8	185	550	1524	M30	M42	6	**TTSX640X2/HCYAD**	48200	449
641.35	638.99	212.67	184.15	558.8	1524	M24	Φ57.2	3.2	**TTSX641X4/HC**	44500	426
710	610	250	210	610	1600	M30	M42	4	**TTSX710/HC**	59500	633
750	745	260	220	650	1600	M30	M48	4	**TTSX750/HC**	61900	718
840	838	282	240.63	725	1524	M42	M42	4	**TTSX840/HC**	79900	975
870	865	295.275	245	753	1600	M48	M36	35	**TTSX870/HC**	87000	1090

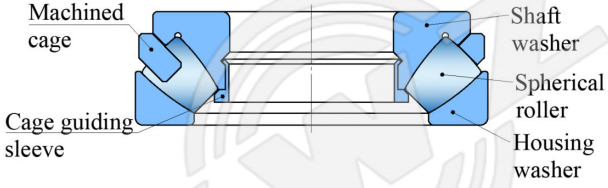
Thrust Spherical Roller Bearings





●Thrust spherical roller bearings

■Product characteristics



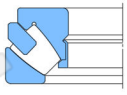
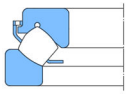
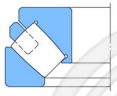
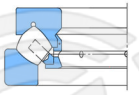
Thrust spherical roller bearings, like spherical roller bearings, have raceway surfaces on the housing washer that are spherical, centered on a point along the central axis of the bearing. These bearings have spherical rollers, providing automatic self-aligning capability, and are less sensitive to coaxiality and shaft deflection.

Unlike other thrust bearings in the sample, these bearings have exceptionally high axial load capacity and can also withstand several radial loads while bearing axial loads, provided that the radial load does not exceed 55% of the axial load.

These bearings are typically lubricated with oil and are primarily used in hydraulic turbines, vertical electric motors, ship propeller shafts, tower cranes, and extruders.

■ Product structural types

Main structural types of the thrust spherical roller bearings

Type	Asymmetric rollers				Symmetrical rollers
Structure	Basic structure	J structure	YA7 structure	YA8 structure	Basic structure
Figure					
Inner diameter (mm)	60～1620	60～1620	60～1620	60～1620	70～1320
Outer diameter (mm)	130～1860	130～1860	130～1860	130～1860	150～1540
Width (mm)	39～426	39～426	39～426	39～426	48～315
Load capacity	Single-directionl axial loads, partially radial loads	Single-directionl axial loads, partially radial loads	Single-directionl axial loads, partially radial loads	Single-directionl axial loads, partially radial loads	Single-directionl axial loads, partially radial loads

■ Basic information

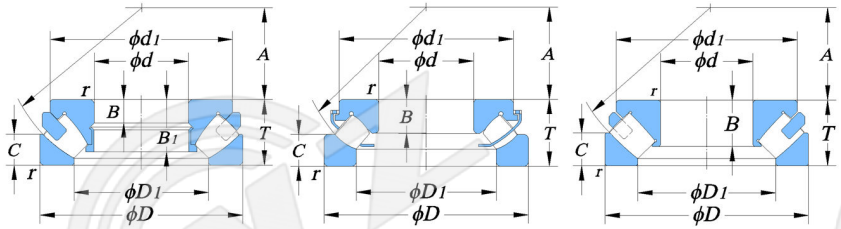
<table>
<tr><td>Tolerances and precision</td><td>ZWZ thrust spherical roller bearings can offer P0, P6, P5 and P4 class products. Bearing tolerances conform to the GB/T307.4 standard, which can be found in the preface table.</td></tr>
<tr><td>Cage type</td><td>The cage is generally solid bronze cage and stamped frame. When a solid bronze cage is used, no cage suffix is added, with suffix onto the rest of them.</td></tr>
<tr><td>Allowed aligning angle</td><td>● As long the load P_a and P_{oa} do not exceed $0.05C_{oa}$, and the bearing ring is rotating, then the bearing allows the aligning angle as shown in the right table.
● Smaller aligning angle values are suitable for larger bearings, and the allowed aligning angle will be reduced when the load is increased.
<table>
<tr><th>Bearing diameter series</th><th>Aligning angle</th></tr>
<tr><td>Series 200</td><td>1°~1.5°</td></tr>
<tr><td>Series 300</td><td>1.5°~2°</td></tr>
<tr><td>Series 400</td><td>1.2°~3°</td></tr>
</table></td></tr>
<tr><td>Minimum axial loads</td><td>The minimum axial load required by the thrust spherical roller bearings during operation, F_{amin} (take the larger value of the following two formulas upon calculation)
$F_{amin} = C_{oa}/2000$
$F_{amin} = 1.8F_r + 1.33(n \cdot C_{oa}/1000)^2 \times 10^{-7}$
Among them,
F_{amin} - minimum required load [kN]
n - speed r/min
C_{oa} - basic static load rating [kN]
F_r - radial load [kN]</td></tr>
<tr><td>Equivalent axial load</td><td>Dynamic equivalent axial load $P_a = F_a + 1.2F_r$ [kN]
Static equivalent axial load $P_{oa} = F_a + 2.7F_r$ [kN]
$F_r \le 0.55F_a$</td></tr>
</table>

■Supplementary code

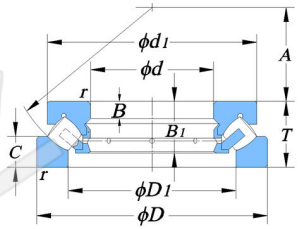
Code name	Code description
F1	Carbon steel
F2	Graphitic steel
F3	Ductile cast iron
/HCOR	The outer rings and rolling elements are manufactured from carburized steel
/HCI	The inner rings are manufactured from carburized steel
/HCE	If the bearing is metric, it means that the bearing rings and rolling elements are high-quality carburized steel
/HG2OI	The outer rings and inner rings are manufactured from GCr18Mo
/Y	The combination of "Y" and another letter (e.g. YA, YB) is used to identify non-serial changes that cannot be expressed by the existing suffix. Wherever Y is included in the suffix of the bearing code, **ZWZ** should be contacted for details of the change: YA—structural changes (comprehensive expression) YB—technical condition changes (comprehensive expression)

ZWZ

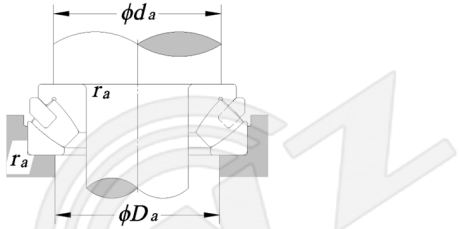
d 60～110mm



Basic structure J YA7

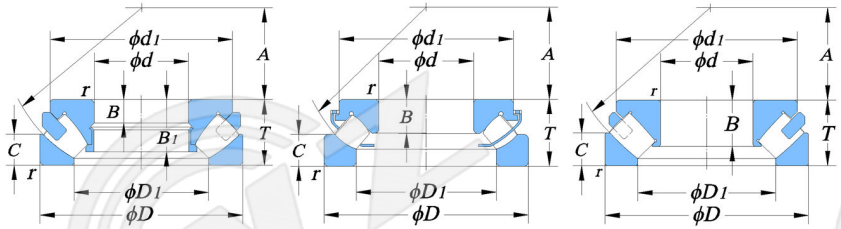


YA8

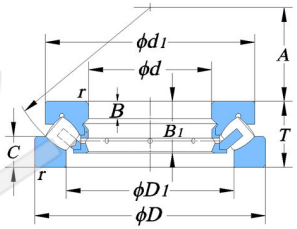


Principal dimensions(mm)				Basic load ratings(kN)		Limiting speeds(r/min)	Designations	Other dimensions(mm)						Abutment and fillet dimensions(mm)			Mass(kg)
d	*D*	*T*	r_{min}	C_a	C_{oa}	Oil		d_1	D_1	*B*	B_1	*C*	*A*	d_{amax}	D_{amax}	r_{amax}	(approx.)
60	130	42	1.5	362	1020	2600	**29412**	117.6	86	15	33.3	20.1	38	90	107	1.5	2.72
	130	42	1.5	356	996	2600	**29412/YA7**	117.6	86	33.3	-	20.1	38	90	107	1.5	2.72
	130	42	1.5	319	899	2600	**29412J**	117	89	27	-	20	38	90	107	1.5	2.60
65	140	45	2	418	1160	2400	**29413J**	120	91	29.5	-	22	42	100	115	2	3.14
	140	45	2	412	1160	2400	**29413**	126	93	16	35.8	21.3	42	100	115	2	3.30
	140	45	2	412	1160	2400	**29413/YA7**	126	93	35.8	-	21.3	42	100	115	2	3.32
	140	45	2	365	1040	2400	**29413J1**	125	95	29.5	-	21.5	42	100	115	2	3.34
70	150	48	2	341	898	2200	**29414**	135	99.5	17	38.5	22.7	44	105	124	2	4.24
	150	48	2	341	898	2200	**29414/YA7**	135	99.5	38.5	-	22.7	44	105	124	2	4.05
75	160	51	2	489	1350	2200	**29415**	140	108	18	38.5	24	47	115	132	2	4.35
	160	51	2	489	1350	2200	**29415/YA7**	140	108	40	-	24	47	115	132	2	4.49
80	170	54	2.1	580	1690	2000	**29416**	153.7	113	19	42.6	26.8	50	120	141	2	6.06
	170	54	2.1	580	1690	2000	**29416Q1**	153.7	113	19	42.6	26.8	50	120	141	2	6.06
	170	54	2.1	580	1690	2000	**29416/YA7**	153.7	113	42.6	-	26.8	50	120	141	2	5.88
	170	54	2.1	571	1670	2000	**29416Q1/YA7**	151	114	43	-	25.2	50	120	141	2	9.65
85	150	39	1.5	344	1070	2200	**29317**	138	111	13	31.6	18.7	50	115	129	1.5	2.80
	150	39	1.5	344	1070	2200	**29317/YA7**	138	111	31.6	-	18.7	50	115	129	1.5	2.84
	180	58	2.1	609	1750	1800	**29417**	160	120	21	44.5	27.8	54	130	150	2	6.76
	180	58	2.1	609	1750	1800	**29417/YA7**	160	120	44.5	-	27.8	54	130	150	2	6.67
90	155	39	1.5	354	1130	2200	**29318**	143.2	115.5	13	31.3	18.8	52	118	135	1.5	2.93
	155	39	1.5	354	1130	2200	**29318/YA7**	143.2	115.5	31.3	-	18.8	52	118	135	1.5	2.99
	190	60	2.1	700	2080	1800	**29418**	170	126	22	48.6	28.5	56	135	158	2	7.85
	190	60	2.1	700	2080	1800	**29418Q1**	170	126	22	48.6	28.5	56	135	158	2	7.85
	190	60	2.1	700	2080	1800	**29418/YA7**	170	126	48.6	-	28.5	56	135	158	2	7.85
	190	60	2.1	700	2080	1800	**29418Q1/HAYA7**	170	126	49.6	-	28.5	56	135	158	2	7.85
	190	60	2.1	697	2020	1800	**29418J**	164.6	127.5	39	-	28.5	56	135	158	2	7.51
100	170	42	1.5	421	1370	2000	**29320**	158.9	127.5	14	32.7	20.6	58	132	148	1.5	3.80
	170	42	1.5	421	1370	2000	**29320/YA7**	158.9	127.5	32.7	-	20.6	58	132	148	1.5	3.81
	210	67	3	853	2490	1600	**29420J**	182.2	141.5	43	-	32	62	150	175	2.5	10.3
	210	67	3	831	2480	1600	**29420**	185	142	24	52	31.5	62	150	175	2.5	9.53
	210	67	3	831	2480	1600	**29420/YA7**	185	142	52	-	31.5	62	150	175	2.5	10.7
110	190	48	2	513	1670	1800	**29322J**	169	143	32	-	23	64	145	165	2	6.54
	190	48	2	513	1670	1800	**29322**	175	143	16	36	23	64	145	165	2	6.43
	190	48	2	513	1670	1800	**29322/YA7**	175	143	37	-	23	64	145	165	2	6.73

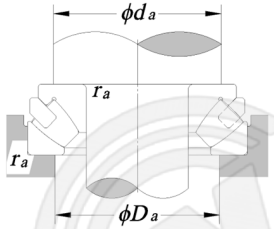
d 110～150mm



Basic structure J YA7

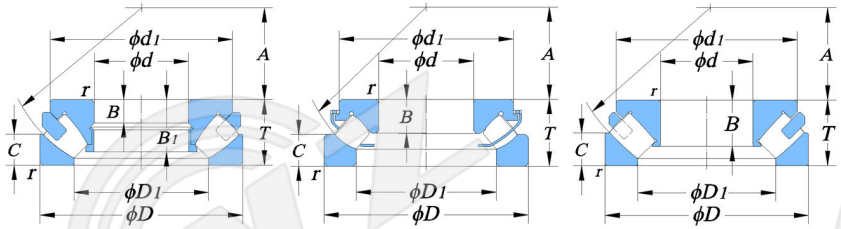


YA8

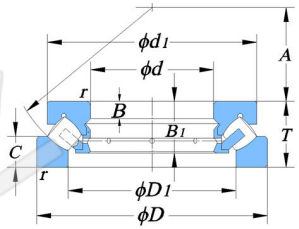


Principal dimensions(mm)				Basic load ratings(kN)		Limiting speeds(r/min)	Designations	Other dimensions(mm)						Abutment and fillet dimensions(mm)			Mass(kg)
d	D	T	r_{min}	C_a	C_{oa}	Oil		d_1	D_1	B	B_1	C	A	d_{amax}	D_{amax}	r_{amax}	(approx.)
110	230	73	3	985	3000	1400	**29422/YA7**	208	155.5	59	-	34.4	69	165	192	2.5	18.3
120	210	54	2.1	646	2300	1600	**29324/YA7-1**	198	153	46	-	25.9	70	160	182	2	7.74
	210	54	2.1	666	2190	1600	**29324J**	188.1	154	34.3	-	27	70	160	182	2	7.25
	210	54	2.1	653	2130	1600	**29324**	193.5	156	18	41.6	25.9	70	160	182	2	7.45
	210	54	2.1	653	2130	1600	**29324/YA7**	193.5	156	41.6	-	25.9	70	160	182	2	7.52
	250	78	4	1160	3540	1300	**29424**	224.8	170	29	59	36.6	74	180	210	3	18.3
	250	78	4	1160	3540	1300	**29424/YA7**	224.8	170	59	-	36.6	74	180	210	3	17.8
	250	78	4	1160	3540	1300	**29424/HCYA7**	224.8	170	59	-	36.6	74	180	210	3	17.8
	250	78	4	1130	3400	1300	**29424J**	216.8	171	50.5	-	36.5	74	180	210	3	16.6
	250	78	4	1070	3470	1300	**29424E**	222	172	50.5	-	37	74	180	210	3	17.1
126	250	78	4	1190	3690	1300	**217/126J**	226.7	172.8	50.8	-	37	74	176	200	3	17.2
130	225	58	2.1	733	2390	1500	**29326J**	200	166	36.5	-	28	76	170	195	2	8.48
	225	58	2.1	725	2420	1500	**29326**	206.7	168	19	43.6	27.8	76	170	195	2	9.08
	225	58	2.1	725	2420	1500	**29326/YA8**	206.7	168	19	54	27.8	76	170	195	2	9.11
	225	58	2.1	725	2420	1500	**29326/YA7**	206.7	168	45	-	27.8	76	170	195	2	8.99
	270	85	4	1310	4070	1200	**29426**	246	183	31	67.5	39.7	81	195	227	3	28.3
	270	85	4	1310	4070	1200	**29426/HG2OIYA7**	246	183	67.5	-	38.7	81	195	227	3	28.3
	270	85	4	1310	4070	1200	**29426/YA7**	246	183	67.5	-	39.7	81	195	227	3	28.3
	270	85	4	1340	4120	1200	**29426J**	234.4	184.5	54	-	40.9	81	195	227	3	20.5
140	240	60	2.1	784	2740	1400	**29328**	221	183	20	45.8	28	82	185	208	2	10.1
	240	60	2.1	784	2740	1400	**29328/YA7**	221	183	45.8	-	28	82	185	208	2	10.7
	280	85	4	1390	4400	1200	**29428**	254.2	194	31	63.7	40	86	205	237	3	24.8
	280	85	4	1390	4400	1200	**29428/YA7**	254.2	194	63.7	-	40	86	205	237	3	23.7
	280	85	4	1350	4240	1200	**29428J**	245.4	194.5	54	-	41	86	205	237	3	22.1
150	215	39	1.5	378	1430	1800	**29230/YA7**	201.5	179.5	28.5	-	19.1	82	176	189	1.5	4.21
	250	60	2.1	733	2670	1400	**29330J**	225.5	190	38	-	29	87	195	220	2	10.9
	250	60	2.1	821	2840	1400	**29330**	231.6	191.5	20	45.2	28.9	87	195	220	2	11.2
	250	60	2.1	821	2840	1400	**29330/YA7**	231.6	191.5	45.5	-	28.9	87	195	220	2	11.0
	250	60	2.1	729	2670	1400	**29330/YA8**	240	194	20	57	29	87	195	220	2	11.5
	300	90	4	1650	5200	1100	**29430J**	262.9	207.5	58	-	43.4	92	220	253	3	27.7
	300	90	4	1560	4960	1100	**29430**	270.6	209.5	32	68.4	42.1	92	220	253	3	28.4
	300	90	4	1560	4960	1100	**29430/HG2OIYA7**	270.6	209.5	68.4	-	42.1	92	220	253	3	28.5
	300	90	4	1560	4960	1100	**29430/YA8**	273	209.5	32	86	42.1	92	220	253	3	28.6
	300	90	4	1560	4960	1100	**29430/YA71**	285	209.5	68.4	-	42.1	92	220	253	3	29.2

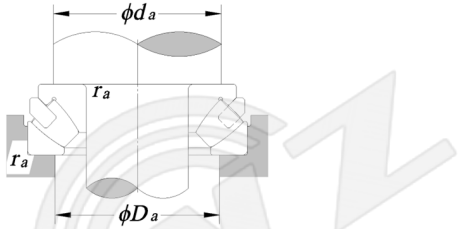
d 160～190mm



Basic structure J YA7

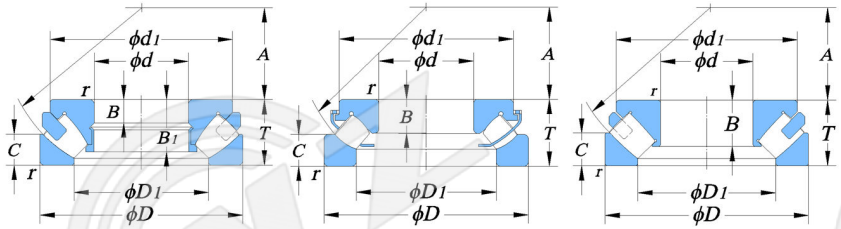


YA8

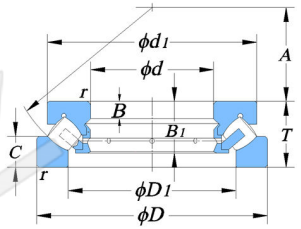


Principal dimensions(mm)				Basic load ratings(kN)		Limiting speeds(r/min)	Designations	Other dimensions(mm)						Abutment and fillet dimensions (mm)			Mass(kg) (approx.)
d	D	T	r_{min}	C_a	C_{oa}	Oil		d_1	D_1	B	B_1	C	A	d_{amax}	D_{amax}	r_{amax}	
160	225	39	1.5	419	1620	1800	**29232/YA7**	210.5	188	29	-	19.5	86	186	199	1.5	4.56
	270	67	3	897	3260	1200	**29332J**	244.5	203	43.5	-	32	92	210	236	2.5	14.3
	270	67	3	1020	3540	1200	**29332**	249.6	205	23	50	31.7	92	210	236	2.5	14.6
	270	67	3	1020	3540	1200	**29332F3**	249.6	205	23	50	31.7	92	210	236	2.5	14.5
	270	67	3	980	3370	1200	**29332/YA71**	246	209	51	-	31.7	92	210	236	2.5	14.3
	320	95	5	1740	5760	1000	**29432**	285	218.5	34	74.2	46.9	99	230	271	4	32.8
170	240	42	1.5	481	1880	1600	**29234/YA7**	224.5	199	33	-	21	92	198	212	1.5	5.62
	280	67	3	924	3440	1200	**29334J**	252.5	215	42.2	-	32	96	220	247	2.5	14.8
	280	67	3	1030	3640	1200	**29334**	260.3	216	23	49.6	31.7	96	220	247	2.5	15.7
	280	67	3	1030	3640	1200	**29334/YA7**	260.3	216	50	-	31.7	96	220	247	2.5	15.8
	340	103	5	2010	6590	950	**29434**	310	234	37.1	77.1	48.8	104	245	288	4	42.3
	340	103	5	2010	6590	950	**29434/YA7**	310	234	79	-	48.8	104	245	288	4	42.8
	340	103	5	1970	6320	950	**29434J**	313	235	65.5	-	50	104	245	288	4	39.7
180	250	42	1.5	476	1990	1600	**29236**	239	209	15	31.7	21.3	97	220	253	1.5	7.05
	250	42	1.5	476	1990	1600	**29236/YA7**	239	209		31.7	21.3	97	220	253	1.5	5.65
	300	73	3	1200	4330	1100	**29336**	275	229	25	56	34.4	103	235	263	2.5	19.9
	300	73	3	1200	4330	1100	**29336/YA8**	275	229	25	68.5	34.4	103	235	263	2.5	20.3
	300	73	3	1110	3930	1100	**29336A**	275	229	48.5	-	34.4	103	235	263	2.5	21.2
	300	73	3	1200	4330	1100	**29336/YA7**	275	229	56	-	34.4	103	235	263	2.5	19.5
	300	73	3	1200	4330	1100	**29336/YA7-1**	275	229	58	-	34.4	103	235	263	2.5	19.6
	360	109	5	2160	7160	900	**29436**	326	249.5	39	82.2	51.2	110	260	305	4	48.5
	360	109	5	2160	7160	900	**29436/YA8**	326	249.5	39	104	51.2	110	260	305	4	62.5
	360	109	5	2130	7050	900	**29436/YA7**	326	249.5	84	-	51.2	110	260	305	4	49.8
	360	109	5	2200	7150	900	**29436J**	315.9	250	69.5	-	53	110	260	305	4	47.3
	360	119	5	2130	7050	850	**29436X2/YA7**	336	249.5	96	-	51.2	100	260	305	4	55.7
190	270	48	2	683	2830	1400	**29238**	257	222.5	15.5	36.2	24.1	104	222	238	2	8.44
	270	48	2	683	2830	1400	**29238F3**	257	222.5	15.5	36.2	24.1	104	222	238	2	8.37
	270	48	2	683	2830	1400	**29238/YA7**	257	222.5	36.2	-	24.1	104	222	238	2	8.59
	320	78	4	1410	5190	1000	**29338**	298.3	240.5	27	58.5	38.6	110	250	281	3	25.0
	320	78	4	1410	5190	1000	**29338/YA37**	298.3	240.5	58	-	38.6	110	250	281	3	25.1
	320	78	4	1410	5190	1000	**29338/YA7**	298.3	240.5	58.5	-	38.6	110	250	281	3	25.2
	320	78	4	1410	5190	1000	**29338/YA8**	308	240.5	27	74	38.6	110	250	281	3	25.7
	380	115	5	2390	7990	850	**29438**	345	263	41	89.5	53.7	117	275	322	4	75.6
	380	115	5	2390	7990	850	**29438/YA7**	345	263	89.5	-	53.7	117	275	322	4	58.0

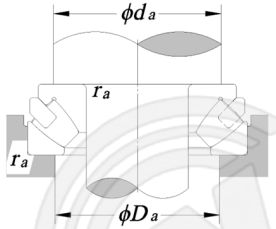
d 200～240mm



Basic structure J YA7

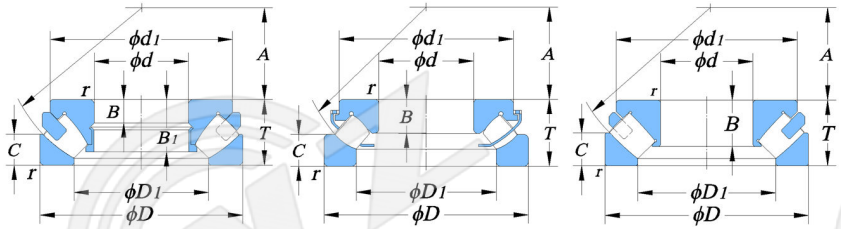


YA8

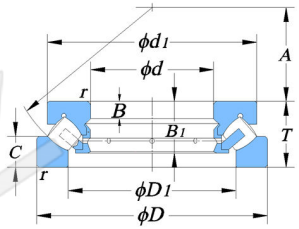


Principal dimensions(mm)				Basic load ratings(kN)		Limiting speeds(r/min)	Designations	Other dimensions(mm)						Abutment and fillet dimensions (mm)			Mass(kg) (approx.)
d	D	T	r_{min}	C_a	C_{oa}	Oil		d_1	D_1	B	B_1	C	A	d_{amax}	D_{amax}	r_{amax}	
200	280	48	2	675	2770	1400	**29240**	266	234.5	15	35.2	24	108	235	258	2	8.54
	280	48	2	675	2770	1400	**29240/YA7**	266	234.5	35.2	-	24	108	235	258	2	8.66
	320	71	2	1160	4380	1000	**29240X3/YA37**	299	253	57	-	33	111	248	272	2	20.5
	340	85	4	1490	5500	950	**29340J1**	304.3	257	56.5	-	40	116	265	298	3	28.8
	340	85	4	1600	5690	950	**29340**	314	259	29	63	39.1	116	265	298	3	29.5
	340	85	4	1600	5690	950	**29340/YA7**	314	259	63	-	39.1	116	265	298	3	29.8
	340	85	4	1440	5370	950	**29340/YA7-1**	320	259	69	-	39.1	116	265	298	3	31.5
	340	85	4	1360	5030	950	**29340J**	318	261	54.5	-	41	116	265	298	3	29.3
	340	85	4	1360	5030	950	**29340/YA8**	325	261	29	81	41	116	265	298	3	34.0
	340	85	4	1400	5100	950	**29340J2**	340.3	261	53.5	-	40	116	265	298	3	28.5
	400	122	5	2640	8900	800	**29440**	360	276.5	44	94	56.7	122	290	338	4	83.5
	400	122	5	2640	8900	800	**29440/YA7**	360	276.5	94	-	56.7	122	290	338	4	85.0
220	300	48	2	701	2980	1300	**29244**	284.4	254	15	34.7	24	117	260	277	2	9.20
	300	48	2	701	2980	1300	**29244/YA7**	284.4	254	37	-	24	117	260	277	2	9.35
	360	85	4	1550	5760	950	**29344J**	326.3	273.5	55	-	41	125	285	316	3	31.0
	360	85	4	1640	6200	950	**29344**	330	277.5	29	65.3	40.7	125	285	316	3	28.6
	360	85	4	1640	6200	950	**29344/YA8**	330	277.5	29	80	40.7	125	285	316	3	29.4
	360	85	4	1560	5810	950	**29344A**	330	277.5	55	-	40.7	125	285	316	3	32.3
	360	85	4	1640	6200	950	**29344/YA7**	330	277.5	65.8	-	40.7	125	285	316	3	29.5
	360	85	4	1640	6200	950	**29344N1/YA7**	330	277.5	65.8	-	40.7	125	285	316	3	29.5
	360	85	4	1640	6200	950	**29344/YA7-1**	330	277.5	67	-	40.7	125	285	316	3	29.6
	420	122	6	2770	9470	750	**29444**	381	300	43	91	56.9	132	310	360	5	73.2
	420	122	6	2770	9470	750	**29444/YA7**	381	300	92.5	-	56.9	132	310	360	5	73.9
	420	122	6	2770	9470	750	**29444/YA71**	400	300	92.5	-	56.9	132	310	360	5	75.6
240	340	60	2.1	1000	4230	1100	**29248**	316	281	19	44.1	30	130	285	311	2	15.7
	340	60	2.1	1000	4230	1100	**29248/YA7**	316	281	44	-	30	130	285	311	2	16.1
	380	85	4	1670	6490	900	**29348**	360	298.5	29	62.3	41.7	135	300	337	3	35.4
	380	85	4	1670	6490	900	**29348/HC**	360	298.5	29	62.3	41.7	135	300	337	3	35.4
	380	85	4	1670	6490	900	**29348/YA71**	360	298.5	62.3	-	41.7	135	300	337	3	35.2
	380	85	4	1670	6490	900	**29348/YA7**	360	298.5	63.5	-	41.7	135	300	337	3	35.6
	380	85	4	1670	6490	900	**29348/HCEYA7**	360	298.5	63.5	-	41.7	135	300	337	3	35.6
	380	85	4	1670	6490	900	**29348/HCEYAB**	360	298.5	63.5	-	41.7	135	300	337	3	35.6
	380	85	4	1670	6490	900	**29348/YA8**	365	298.5	29	81	41.7	135	300	337	3	20.3
	380	85	4	1600	5940	900	**29348A/YAD**	350	299	54.5	-	40.5	135	300	337	3	35.4

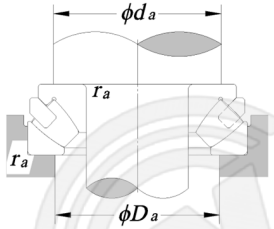
d 240～320mm



Basic structure J YA7

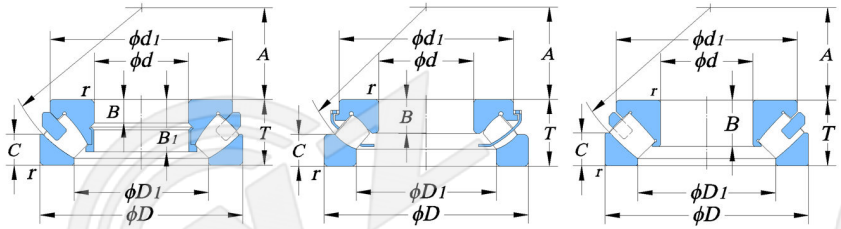


YA8

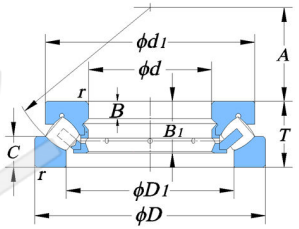


Principal dimensions(mm)				Basic load ratings(kN)		Limiting speeds(r/min)	Designations	Other dimensions(mm)						Abutment and fillet dimensions (mm)			Mass(kg) (approx.)
d	*D*	*T*	r_{min}	C_a	C_{oa}	Oil		d_1	D_1	*B*	B_1	*C*	*A*	d_{amax}	D_{amax}	r_{amax}	
240	380	85	4	1600	5940	900	**29348A/HCYAD**	350	299	54.5	-	40.5	135	300	337	3	35.4
	380	85	4	1660	6210	900	**29348/YAD**	350	299	64	-	40.5	135	300	337	3	33.4
	440	122	6	2850	10100	750	**29448**	400	316	43	91.2	60	142	330	381	5	96.1
	440	122	6	2730	9580	750	**29448/YA7**	400	316	91.2	-	60	142	330	381	5	77.0
	440	122	6	2730	9580	750	**29448/HCYA7**	400	316	91.2	-	60	142	330	381	5	77.0
260	360	60	2.1	973	4270	1100	**29252**	338	302	19	46.2	30	139	305	331	2	16.9
	420	95	5	2020	7820	800	**29352**	392.3	327.5	32	70.9	46	148	330	372	4	50.2
	420	95	5	2020	7820	800	**29352/YA7**	392.3	327.5	70.9	-	46	148	330	372	4	48.4
	480	132	6	3750	13900	670	**29452J/HC**	432	342	83	-	65	154	360	419	5	101
	480	132	6	3460	12500	670	**29452**	441	342	48	99.6	65	154	360	419	5	103
	480	132	6	3460	12500	670	**29452F1**	441	342	48	99.6	65	154	360	419	5	102
	480	132	6	3460	12500	670	**29452/YA71**	460	342	99.6	-	65	154	360	419	5	102
	480	132	6	3520	12800	670	**29452J**	432	353	83	-	65	154	360	419	5	98.6
	480	132	6	3520	12800	670	**29452J/HC-1**	432	353	83	-	65	154	360	419	5	98.6
	480	132	6	3520	12800	670	**29452J/HC-2**	432	353	83	-	65	154	360	419	5	98.8
280	380	60	2.1	1020	4580	1000	**29256**	364	322.5	19	45.3	29.5	150	325	351	2	21.7
	380	60	2.1	1020	4580	1000	**29256/YA7**	364	322.5	45.3	-	29.5	150	325	351	2	21.7
	380	60	2.1	958	4250	1000	**29256/YAD**	364	326	44	-	29.5	150	325	351	2	17.9
	440	95	5	2100	8330	800	**29356**	411	346	32	69.6	46.3	158	350	394	4	50.6
	440	95	5	2100	8330	800	**29356/YA7**	411	346	69.6	-	46.3	158	350	394	4	51.1
	520	145	6	3950	14400	630	**29456**	470	373.5	54	109.4	68.9	166	390	446	5	127
	520	145	6	3950	14400	630	**29456F1**	470	373.5	54	109.4	68.9	166	390	446	5	125
	520	145	6	3950	14400	630	**29456/YA7**	470	373.5	113	-	68.9	166	390	446	5	129
300	420	73	3	1430	6330	900	**29260**	398.9	350.5	21	54.3	35.8	162	355	386	2.5	29.5
	420	73	3	1320	5720	900	**29260/YAD**	398.9	350.5	54.3		35.8	162	355	386	2.5	29.5
	480	109	5	2720	10900	700	**29360**	448	371.5	37	82	53	168	380	429	4	72.7
	480	109	5	2720	10900	700	**29360/YA7**	448	371.5	85	-	53	168	380	429	4	73.7
	540	145	6	4140	15300	600	**29460**	494.4	395	52	111.4	68.3	175	410	471	5	138
	540	145	6	4140	15300	600	**29460/YA7**	494.4	395	111.4	-	68.3	175	410	471	5	138
320	440	73	3	1530	7060	850	**29264**	419.4	369.5	21	53.4	36	172	375	406	2.5	31.4
	440	73	3	1530	7060	850	**29264/HC**	419.4	369.5	21	53.4	36	172	375	406	2.5	31.4
	440	73	3	1390	6230	850	**29264/YAD**	419.4	377	51.5	-	36	172	375	406	2.5	30.8
	500	109	5	2730	11000	670	**29364**	466.5	394.5	37	80.4	53	180	400	449	4	75.8
	500	109	5	2730	11000	670	**29364/HC**	466.5	394.5	37	80.4	53	180	400	449	4	75.8

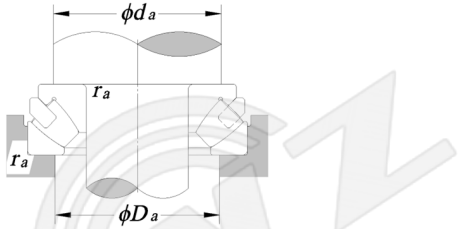
d 320～400mm



Basic structure J YA7

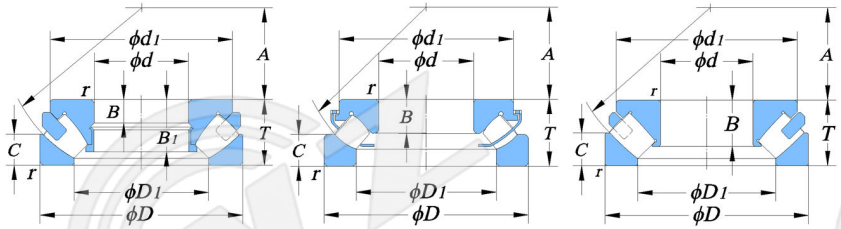


YA8

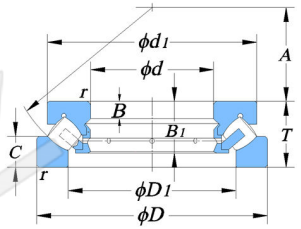


Principal dimensions(mm)				Basic load ratings(kN)		Limiting speeds (r/min)	Designations	Other dimensions(mm)						Abutment and fillet dimensions(mm)			Mass(kg) (approx.)
d	D	T	r_{min}	C_a	C_{oa}	Oil		d_1	D_1	B	B_1	C	A	d_{amax}	D_{amax}	r_{amax}	
320	580	155	7.5	4810	18100	560	**29464**	534	420	55	115.2	75	191	435	507	6	182
	580	155	7.5	4500	16600	560	**29464/YA8**	534	420	55	151	75	191	435	507	6	170
	580	155	7.5	4810	18100	560	**29464/YA7**	534	420	125	-	75	191	435	507	6	171
340	460	73	3	1360	6170	850	**29268/YA7**	435	393	50	-	37.5	183	395	427	2.5	32.0
	460	73	3	1440	6780	850	**29268**	445	395	21	69	37.5	183	395	427	2.5	34.7
	540	122	5	3180	12600	600	**29368**	503	421	41	90.8	59.5	192	430	484	4	101
	540	122	5	3040	11900	600	**29368/YAD**	503	421	91	-	59.5	192	430	484	4	102
	620	170	7.5	5270	19800	500	**29468/F3**	560	449.5	61	130	80.1	201	465	541	6	218
	620	170	7.5	5270	19800	500	**29468F3**	560	449.5	61	130	80.1	201	465	541	6	218
	620	170	7.5	5490	20900	500	**29468F1/YA57**	560	449.5	115	-	80.1	201	465	541	6	206
	620	170	7.5	5490	20900	500	**29468/YA57**	560	449.5	115	-	80.1	201	465	541	6	206
	620	170	7.5	5270	19800	500	**29468/YA7**	560	449.5	130.5	-	80.1	201	465	541	6	224
360	500	85	4	1770	7980	800	**29272**	470	420	25	64.2	41	194	420	461	3	45.9
	500	85	4	1770	7980	800	**29272/HC**	470	420	25	64.2	41	194	420	461	3	45.9
	500	85	4	1770	7980	800	**29272/YA7**	470	420	64.2	-	41	194	420	461	3	46.4
	500	85	4	1770	7980	800	**29272/YA7-1**	470	420	67	-	41	194	420	461	3	46.8
	560	122	5	3200	13000	600	**29372**	521	445	41	93	59.5	202	450	504	4	103
	560	122	5	3200	13000	600	**29372/YA7**	521	445	90	-	59.5	202	450	504	4	103
	640	170	7.5	5600	21300	500	**29472**	588	470	61	123.5	81	210	485	560	6	221
	640	170	7.5	5600	21300	500	**29472/HC**	588	470	61	123.5	81	210	485	560	6	221
	800	248	10	9910	37100	400	**29572X3/YA7**	714	519	200	-	123	244	536	624	10	603
380	520	85	4	1910	8910	700	**29276**	498	439	27	65	42	202	440	480	3	50.0
	520	85	4	1910	8910	700	**29276/YAD**	498	439	64	-	42	202	440	480	3	50.5
	600	132	6	3680	15200	650	**29376**	561	475	44	97.5	61.4	216	480	538	5	130
	600	132	6	3680	15200	650	**29376F1**	561	475	44	97.5	61.4	216	480	538	5	129
	600	132	6	3680	15200	650	**29376F1/HC**	561	475	44	97.5	61.4	216	480	538	5	129
	600	132	6	3680	15200	650	**29376/HC**	561	475	97.5	-	61.4	216	480	538	5	129
	600	132	6	3680	15200	650	**29376/YAD**	561	475	106.5	-	61.4	216	480	538	5	131
	670	175	7.5	5890	23000	450	**29476**	620	490	63	126.9	84.5	230	510	587	6	252
400	540	85	4	1980	9470	700	**29280**	510	460	27	62	42	212	460	500	3	63.4
	540	85	4	1980	9470	700	**29280F3**	510	460	27	62	42	212	460	500	3	63.1
	540	85	4	1910	9080	700	**29280/YA7-1**	510	460	62	-	42	212	460	500	3	62.7
	540	85	4	1980	9470	700	**29280F3/YA7**	510	460	64	-	42	212	460	500	3	62.9
	540	85	4	1980	9470	700	**29280/YA7**	510	460	64	-	42	212	460	500	3	63.2

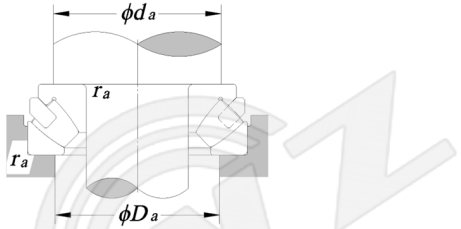
d 400～500mm



Basic structure J YA7

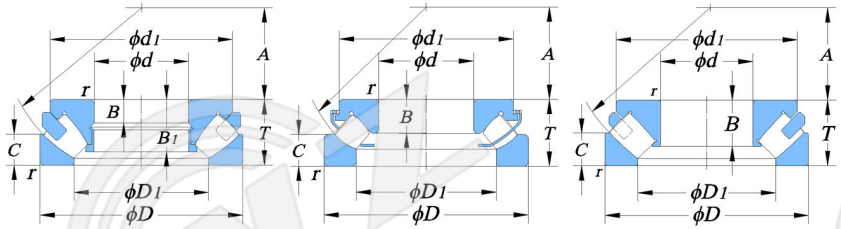


YA8

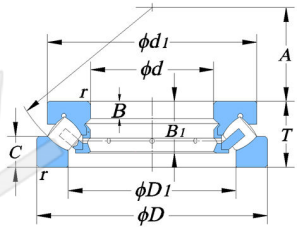


Principal dimensions(mm)				Basic load ratings(kN)		Limiting speeds(r/min)	Designations	Other dimensions(mm)						Abutment and fillet dimensions(mm)			Mass(kg)
d	*D*	*T*	r_{min}	C_a	C_{oa}	Oil		d_1	D_1	*B*	B_1	*C*	*A*	d_{amax}	D_{amax}	r_{amax}	(approx.)
400	620	132	6	3940	16800	620	**29380**	582	489	44	100.5	64.7	225	500	557	5	153
	620	132	6	3940	16800	620	**29380F1**	582	489	44	100.5	64.7	225	500	557	5	153
	620	132	6	3940	16800	620	**29380F3**	582	489	44	100.5	64.7	225	500	557	5	153
	620	132	6	3940	16800	620	**29380F1/HC**	582	489	44	100.5	64.7	225	500	557	5	153
	620	132	6	3940	16800	620	**29380/HC**	582	489	44	100.5	64.7	225	500	557	5	153
	620	132	6	3940	16800	620	**29380/YA7**	582	489	101	-	64.7	225	500	557	5	139
	710	185	7.5	6440	25400	450	**29480**	652	529.5	67	140.3	86	236	540	622	6	309
420	580	95	5	2100	9620	680	**29284/YA7**	553	489	70.5	-	46	225	490	534	4	70.2
	650	140	6	4160	17200	600	**29384**	610	514.5	48	105	68	235	525	585	5	159
	650	140	6	4140	17100	600	**29384/YAD**	610	514.5	105	-	68	235	525	585	5	160
	730	185	7.5	6710	26600	580	**29484**	673	545	67	139.3	89	244	560	643	6	311
	850	250	9.5	10500	40500	400	**29484X3**	770	560	92	190	120	320	592	678	8	646
	920	290	15	13100	49700	350	**29584X1**	800	566	100	222.5	132	300	620	720	12	884
440	600	95	5	2360	11100	580	**29288/YA8**	585	508	30	91	46.5	235	510	554	4	77.1
	680	145	6	4710	20100	480	**29388**	636	539	49	105.4	70.8	245	548	614	5	180
	680	145	6	4710	20100	480	**29388/YA8**	636	539	49	140	70.8	245	548	614	5	183
	780	206	9.5	7700	30000	380	**29488**	716	583	74	148	97	260	595	684	8	394
	780	206	9.5	7700	30000	380	**29488/HC**	716	583	74	148	97	260	595	684	8	394
460	620	95	5	2610	13100	580	**29292**	590	525.5	30	69.9	49.4	245	530	575	4	75.2
	620	95	5	2610	13100	580	**29292/HC**	590	525.5	30	69.9	49.4	245	530	575	4	75.2
	620	95	5	2610	13100	600	**29292/YA8**	590	525.5	30	89.9	49.4	245	530	575	4	76.6
	620	95	5	2610	13100	600	**29292/YAD**	590	525.5	70	-	49.4	245	530	575	4	76.5
	710	150	6	4690	20000	450	**29392**	668	567	51	113	72	257	575	638	5	207
	710	150	6	4690	20000	450	**29392/HC**	668	567	51	113	72	257	575	638	5	207
	710	150	6	4690	20000	450	**29392/YA8**	668	567	51	144	72	257	575	638	5	210
	710	155	6	4690	20000	450	**29392/YA8-1**	678	567	56	149	72	252	575	638	5	222
	800	206	9.5	7610	31000	380	**29492**	730	592.5	149	-	107	272	615	704	8	409
	800	206	9.5	7800	30700	380	**29492/YA8**	730	596	74	199	99.5	272	615	704	8	415
480	650	103	5	2560	12700	560	**29296**	635	554	33	98	51	259	555	603	4	99.3
	650	103	5	2560	12700	560	**29296/YA7**	635	554	79	-	51	259	555	603	4	93.4
	730	150	6	4900	21300	400	**29396**	685	588	51	110	72	270	593	660	5	211
	730	150	6	4900	21300	400	**29396/YA7**	685	588	113	-	72	270	593	660	5	217
	850	224	9.5	8660	33500	400	**29496**	774	635	81	168	102.8	280	645	744	8	509
500	670	103	5	2940	14800	500	**292/500/HEYA71**	640	572	33	73	50.5	268	575	622	4	94.8

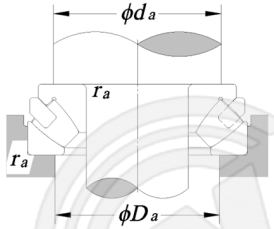
d 500～670mm



Basic structure J YA7

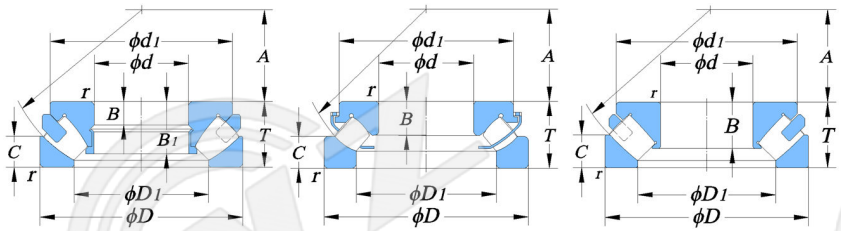


YA8

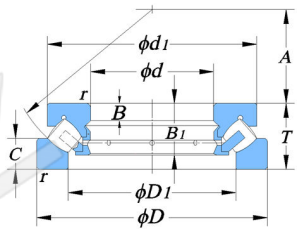


Principal dimensions(mm)				Basic load ratings(kN)		Limiting speeds(r/min)	Designations	Other dimensions(mm)						Abutment and fillet dimensions(mm)			Mass(kg)
d	*D*	*T*	r_{min}	C_a	C_{oa}	Oil		d_1	D_1	*B*	B_1	*C*	*A*	d_{amax}	D_{amax}	r_{amax}	(approx.)
500	670	103	5	2940	14800	500	**292/500**	640	572	33	75	50.5	268	575	622	4	117
	670	103	5	2940	14800	500	**292/500/HC**	640	572	33	75	50.5	268	575	622	4	117
	670	103	5	2780	13800	500	**292/500/HCYA7**	640	572	73	-	51.5	268	575	622	4	95.7
	670	103	5	2780	13800	500	**292/500/YA7**	640	572	73	-	51.5	268	575	622	4	95.7
	670	103	5	2780	13800	500	**292/500/HCEYA7**	640	572	73	-	51.5	268	575	622	4	95.7
	670	103	5	2350	11000	500	**292/500/YADT**	634	589	64	-	50	268	575	622	4	88.0
	670	135	5	3030	15000	600	**292/500X2/YA7**	640	562	94	-	67	252	575	622	4	126
	750	150	6	4430	20200	430	**293/500/YB2**	675	595	51	113	63	280	615	683	5	201
	750	150	6	5300	23900	430	**293/500**	709.4	601.5	51	106.5	75.5	280	615	683	5	221
	750	150	6	5300	23900	430	**293/500/YA3**	709.4	601.5	51	106.5	75.5	280	615	683	5	221
	870	224	9.5	9360	38200	400	**294/500**	790	648	81	166	106	290	670	765	8	589
	870	224	9.5	9360	38200	400	**294/500/HC**	790	648	81	166	106	290	670	765	8	589
	870	224	9.5	9360	38200	400	**294/500/HCYAB**	800	648	81	166	106	290	670	765	8	540
530	710	109	5	3360	17200	500	**292/530**	680	604	35	79.5	54	288	611	661	4	119
	710	109	5	3360	17200	500	**292/530F3**	680	604	35	79.5	54	288	611	661	4	118
	710	109	5	3350	17200	500	**292/530/YAB**	680	604	83	-	56	288	611	661	4	116
	800	160	7.5	5890	26200	340	**293/530**	750	640	54	116.7	78.6	295	650	724	6	269
	920	236	9.5	10400	42900	300	**294/530**	845	686	89	177.5	114	309	700	810	8	615
	920	236	9.5	10400	42900	300	**294/530E**	845	686	89	177.5	114	309	700	810	8	621
	920	236	9.5	10400	42900	300	**294/530/YA7**	845	686	182.5	-	114	309	700	810	8	620
560	750	115	5	3660	18800	480	**292/560F3**	715	640	40	84	56.8	302	645	697	4	131
	750	115	5	3660	18800	480	**292/560F3/YA7**	715	640	81	-	56.8	302	645	697	4	131
	980	250	12	11600	48300	310	**294/560**	890	727	92	191.7	120	328	750	860	10	741
	980	250	12	11600	48300	310	**294/560/HC**	890	727	92	191.7	120	328	750	860	10	741
600	800	122	5	4000	20700	480	**292/600**	765	685.5	39	86.5	59.4	321	690	744	4	159
	800	122	5	3650	18400	480	**292/600/YA7**	765	685.5	82	-	59.4	321	690	744	4	161
	800	122	5	3650	18400	480	**292/600/HCYA7**	765	685.5	82	-	59.4	321	690	744	4	161
	900	180	7.5	7230	33100	460	**293/600F3/HCORYA7S1**	841.5	726	132.5	-	87	335	735	815	6	373
	900	180	7.5	7230	33100	460	**293/600/HCYA7**	841.5	726	132.5	-	87	335	735	815	6	376
	1030	258	12	12200	51400	450	**294/600**	940	769	92	195.5	127	347	800	900	10	839
630	850	132	6	4790	25100	340	**292/630**	814.5	718	42	96	67.5	338	718	762	5	205
	1090	280	12	14300	59400	450	**294/630**	995	816	100	205	137.5	365	814	906	10	1010
	1090	280	12	14300	59400	450	**294/630/HC**	995	816	100	205	137.5	365	814	906	10	1010
670	900	140	6	4900	24900	340	**292/670/YA7**	855	773	93	-	74	364	762	808	5	227

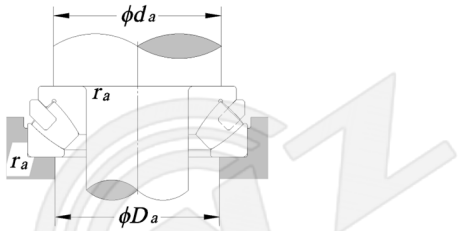
d 670～1060mm



Basic structure J YA7

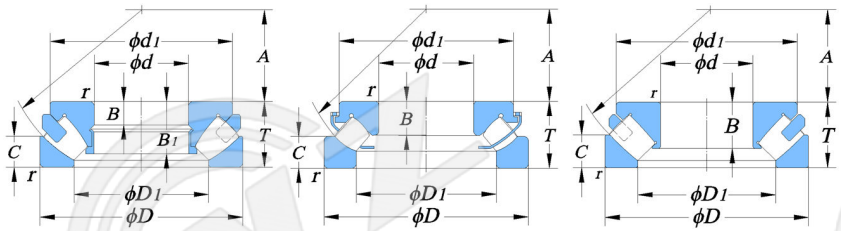


YA8

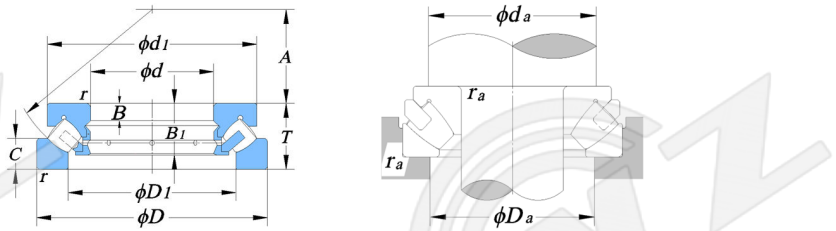


Principal dimensions(mm)				Basic load ratings(kN)		Limiting speeds(r/min)	Designations	Other dimensions(mm)						Abutment and fillet dimensions (mm)			Mass(kg) (approx.)
d	*D*	*T*	r_{min}	C_a	C_{oa}	Oil		d_1	D_1	*B*	B_1	*C*	*A*	d_{amax}	D_{amax}	r_{amax}	
670	1000	200	9.5	9000	43300	300	**293/670/YB2**	948	799	68	143	100	372	802	868	8	525
	1150	290	15	14800	61200	240	**294/670/HC**	1053.8	872	106	215	138	387	862	958	12	1170
710	1220	308	14	16600	72000	220	**294/710/HCIYA8**	1165	900	113	298	150	415	914	1016	14	1500
	1220	308	15	16500	72300	220	**294/710**	1130	910	113	239.5	148.5	415	914	1016	12	1410
	1220	308	15	16500	72300	220	**294/710/HC**	1130	910	113	239.5	148.5	415	914	1016	12	1410
	1220	308	15	16500	72300	220	**294/710/HCIYB2**	1131.8	915	113	239.5	150	415	914	1016	12	1410
750	1000	150	6	5890	31600	340	**292/750**	955	854	48	105.5	78	406	850	900	5	296
	1120	224	9.5	10400	49400	260	**293/750**	1055	910	76	161	108	415	898	972	8	703
	1120	224	9.5	10400	49400	260	**293/750/YAB**	1086	910	76	161	108	415	898	972	8	716
	1280	315	15	17700	77200	200	**294/750**	1164	972	116	221.7	158	436	962	1068	12	1530
	1280	315	15	17700	77200	200	**294/750F3**	1164	972	116	221.7	158	436	962	1068	12	1520
800	1060	155	7.5	6730	37500	340	**292/800**	1010	907.5	50	112.6	80	426	904	956	6	345
	1060	155	7.5	6730	37500	340	**292/800F1**	1010	907.5	50	112.6	80	426	904	956	6	343
	1060	155	7.5	6730	37500	340	**292/800F1/YA3**	1010	907.5	50	112.6	80	426	904	956	6	343
	1060	155	7.5	6730	37500	340	**292/800/YA3**	1010	907.5	50	112.6	80	426	904	956	6	345
	1180	230	9.5	11300	53500	340	**293/800**	1104	962	78	166.8	111	440	952	1028	8	794
	1360	335	15	19900	87900	310	**294/800**	1250	1034	120	236	165	462	1024	1136	12	1840
	1360	335	15	19900	87900	310	**294/800F3**	1250	1034	120	236	165	462	1024	1136	12	1830
	1360	335	15	19900	87900	310	**294/800/HC**	1250	1034	120	236	165	462	1024	1136	12	1840
	1360	335	15	19900	87900	310	**294/800N1F3/HCEYA7**	1250	1034	245	-	165	462	1024	1136	12	1850
850	1120	160	7.5	6930	37700	400	**292/850**	1065	963	58	114.6	81	453	958	1012	6	391
	1440	354	15	22100	96200	150	**294/850F1**	1330	1098	221	-	172	494	1086	1204	12	2090
	1440	354	15	22100	96200	150	**294/850F1/HC**	1330	1098	221	-	172	494	1086	1204	12	2090
900	1180	170	7.5	7540	41800	150	**292/900**	1125	1023	54	119.5	86	477	1012	1068	6	445
	1320	250	12	13500	66000	240	**293/900**	1232	1085	86	182.6	120	496	1068	1152	10	1090
	1520	372	15	25100	118000	150	**294/900F3/HCYA8**	1394	1137	147	360	186	518	1148	1272	12	2650
950	1250	180	7.5	8690	48300	240	**292/950**	1185	1081	58	132.2	88	507	1070	1130	6	537
	1250	180	7.5	8690	48300	240	**292/950/YA2**	1185	1081	58	174	88	507	1070	1130	6	567
	1600	390	15	27500	124000	220	**294/950F1/HC**	1470	1209	253	-	191	546	1210	1340	12	2920
1000	1320	190	9.5	8630	47700	260	**292/1000**	1255	1139	68	182	98	540	1128	1192	8	684
	1670	402	15	29300	129000	180	**294/1000F3/HCYA8**	1531	1270	154.9	389	190	599	1268	1402	12	3270
1060	1400	206	9.5	11000	62100	260	**292/1060**	1335	1208	66	148	100	566	1196	1264	8	767
	1400	206	9.5	11000	62100	260	**292/1060F3**	1335	1208	66	148	100	566	1196	1264	8	767
	1770	426	15	32000	146400	200	**294/1060F3/HCSYA8**	1640	1332	192	412	207	610	1344	1486	12	4040

d 1060～1620mm



Basic structure J YA7



YA8

Principal dimensions(mm)				Basic load ratings(kN)		Limiting speeds (r/min)	Designations	Other dimensions(mm)						Abutment and fillet dimensions (mm)			Mass(kg) (approx.)
d	*D*	*T*	r_{min}	C_a	C_{oa}	Oil		d_1	D_1	*B*	B_1	*C*	*A*	d_{amax}	D_{amax}	r_{amax}	
1060	1770	426	15	32000	146400	200	**294/1060F3/HCEYA8**	1640	1332	192	412	207	610	1344	1486	12	4070
1120	1460	206	9.5	11400	64700	220	**292/1120F1**	1385	1272	72	141.5	101	601	1256	1324	8	804
	1460	206	9.5	11400	64700	220	**292/1120F3**	1385	1272	72	141.5	101	601	1256	1324	8	804
1180	1520	206	9.5	11300	67100	220	**292/1180**	1450	1326	83	146.5	101	625	1316	1384	8	854
1250	1610	216	9.5	12100	68200	220	**292/1250**	1540	1411	78	154	113	650	1394	1466	8	1030
1620	1860	150	6	6870	51700	150	**292/1620/YAD**	1799	1722	103	-	78.5	850	1716	1764	5	548

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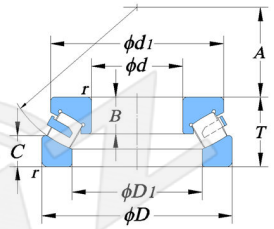
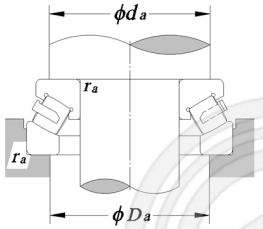
d 70～340mm





Principal dimensions(mm)				Basic load ratings(kN)		Limiting speeds (r/min)	Designations	Other dimensions(mm)					Abutment and fillet dimensions(mm)			Mass(kg) (approx.)
d	*D*	*T*	r_{min}	C_a	C_{0a}	Oil		d_1	D_1	*B*	*C*	*A*	d_{amax}	D_{amax}	r_{amax}	
70	150	48	2.3	347	961	2000	**29414/YAD**	135	103	31	23	44	105	124	2	3.87
80	170	54	2.5	406	1130	1800	**29416/YAD**	155	117	35	25	50	120	141	2	5.33
90	190	60	2.5	524	1510	1500	**29418/YAD**	170	132	39	29	56	135	158	2	7.13
100	210	67	3	638	1850	1400	**29420/YAD**	190	146	45	32	62	150	175	2.5	10.5
110	190	48	2	390	1220	1800	**29322/YAD**	175	140	31	24	64	145	165	2	5.08
120	210	54	2.5	478	1510	1600	**29324/YAD**	188	161	34	30	57	160	182	2	6.88
	250	78	3.7	861	2560	1100	**29424/YAD**	222	181	48	38	74	180	210	3	19.5
	250	78	3.7	861	2560	1100	**29424/YAD-1**	222	181	48	38	74	180	210	3	19.5
	250	78	2.7	861	2560	1100	**9069424**	222	181	48	38	74	180	210	2	19.5
130	225	58	2.5	545	1740	1400	**29326/YAD**	200	170	37	29	76	170	195	2	8.26
	270	85	3.7	1090	3360	960	**29426/YAD**	240	190	55	44	79	195	227	3	22.9
140	280	85	3.7	1000	3050	930	**29428/YAD**	247	203	55	47	64	205	237	3	22.7
150	250	60	2.1	732	2430	1300	**29330A**	215	190	34.6	29	87	195	220	2	10.5
	300	90	3.7	1170	3690	860	**29430/YAD**	270	220	60	48	69	220	253	3	27.3
160	270	67	3	726	2440	1200	**29332/YAD**	240	200	45	32	92	210	236	2.5	13.5
	320	95	4.7	1200	3710	800	**29432/YAD**	275	234	61	53	74	230	271	4	33.2
170	340	103	4.7	1590	5180	720	**29434/YAD**	310	243	71	48	104	245	288	4	40.7
180	300	73	3	944	3340	990	**29336/YAD**	276	230	50	35	103	235	263	2.5	19.4
	360	109	4.7	1450	4560	670	**29436/YAD**	308	265	67	58	82	260	305	4	42.3
	360	119	5	1450	4560	630	**29436X2/YAD**	308	265	72	63	77	260	305	4	46.0
220	300	48	2	541	2230	1300	**29244/YAD**	286	260	31	24	117	260	277	2	7.90
240	380	85	4	1430	5260	760	**29348A/HCE**	330	293.5	50	42	135	300	337	3	32.2
	380	85	4	1430	5260	760	**29348A**	330	293.5	50	42	135	300	337	3	32.2
	440	122	6	2230	7470	540	**29448A**	370	328	65	59	142	330	381	5	72.7
	440	122	6	2230	7470	540	**29448/YAD**	400	330	78	59	142	330	381	5	74.5
260	360	60	2.1	848	3480	1000	**29252A/HG2YAD**	322	302	34	30	139	305	331	2	15.4
	360	60	2.1	848	3480	1000	**29252/YAD**	335	302	38	30	139	305	331	2	15.7
	480	132	6	2610	9250	470	**29452/YAD**	415	335	80	66	154	360	419	5	91.2
	480	132	6	2990	10400	470	**29452A**	400	343	76	65	154	360	419	5	95.3
280	440	95	5	1680	6390	640	**29356/YAD**	413	348	64	46	158	350	394	4	49.1
	440	95	5	1680	6390	640	**9069356**	413	348	64	46	158	350	394	4	49.1
320	500	109	5	2110	8200	530	**29364/YAD**	445	385	68	55	180	400	449	4	67.6
340	460	73	3	1210	5400	750	**29268/YAD**	438	388	48	36	204	395	427	2.5	31.4
	620	170	7.5	4720	17200	330	**29468A**	520	450	102	77	201	465	541	6	197

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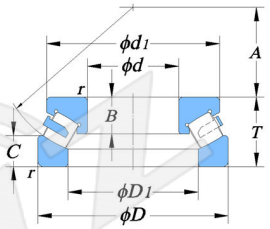
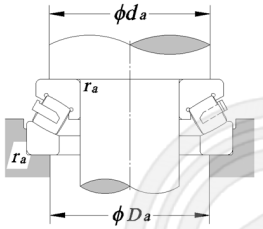
d 420～1320mm

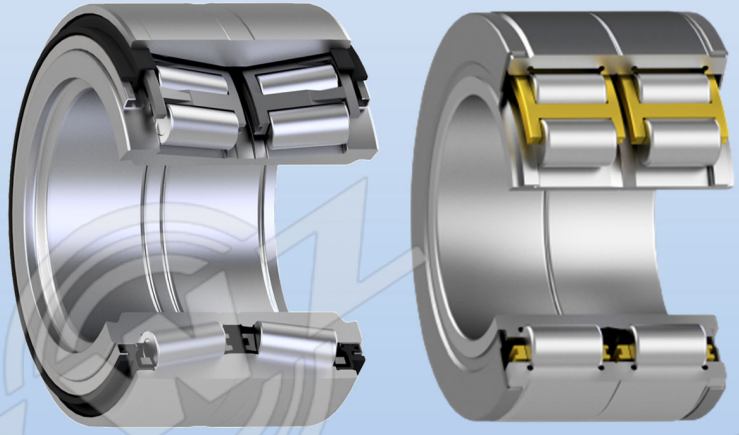




Principal dimensions(mm)				Basic load ratings(kN)		Limiting speeds (r/min)	Designations	Other dimensions(mm)					Abutment and fillet dimensions(mm)			Mass(kg) (approx.)
d	*D*	*T*	r_{min}	C_a	C_{oa}	Oil		d_1	D_1	*B*	*C*	*A*	d_{amax}	D_{amax}	r_{amax}	
420	580	95	4.7	2020	9140	530	**29284/YAD**	548	489	62	46	251	490	534	4	78.9
430	710	155	6	5390	24700	320	**29386X3A/HC**	680	495	66	65	690	542	598	5	225
440	780	206	9.5	6700	24900	230	**29488A**	650	583	115	96.5	260	595	684	8	355
460	800	206	9.5	7520	31000	230	**29492/HCRYAD**	727	532	82	82	765	615	704	8	376
490	655	90	5	2470	12700	500	**217/490/YAD**	627	552	52	40	482	556	589	4	73.7
500	870	224	9.5	6770	26500	200	**294/500/YAD**	760	654	140	108	290	670	765	8	462
	870	224	9.5	6770	26500	200	**294/500YAD**	760	654	140	108	290	670	765	8	462
570	870	180	7.5	6970	33700	240	**293/570X3A/HC**	845	640	72	72	1020	690	750	6	358
590	755	95	5	2400	12800	440	**217/590/YAD**	727	654	55	41.5	570	656	689	4	90.0
630	850	132	6	3850	18300	320	**292/630F3/YAD**	800	728	86	65	338	718	762	5	231
670	900	140	6	4030	19700	290	**292/670/YAD**	830	750	86	70	365	762	808	5	210
	900	140	6	4030	19700	290	**292/670F3/YAD**	830	750	86	70	365	762	808	5	212
710	950	145	6	4310	21500	270	**292/710F3/YAD**	895	805	92	75	380	806	854	5	279
750	1280	315	15	14300	60500	120	**294/750F1/YAD**	1152	972	160	158	448	962	1068	12	1340
	1280	315	15	14300	60500	120	**294/750F3/YAD**	1152	972	160	158	448	962	1068	12	1340
1320	1540	175	6	6560	46800	140	**217/1320**	1510	1380	98	72	1446	1408	1452	5	514
	1540	175	6	6560	46800	140	**217/1320F3**	1510	1380	98	72	1446	1408	1452	5	511

ZWZ

Railway Bearings



●Railway bearings

1. Product type

Railway bearings include axle box bearings for passenger cars, axle box-free bearings for wagons, high-speed train bogies bearings, and bearings subway bearings.

Railway locomotive bearings include axle box bearings, main generator bearings, traction motor bearings, gearbox bearings, traction motor suspension tube, and hollow axle drive bearings for wheelsets (fully suspended bearings). Subway bearings mainly include various types of subway axle box bearings, subway gearbox bearings, subway traction motor bearings, light rail axle box bearings, and low-floor car axle box bearings.

2. Wheel bearings

Wheel systems employ different designs due to the application conditions. Locomotives have axle boxes, which connect bearings and the bogie. Wagons do not have axle boxes; instead, the bearings are connected to the bogie side frames through bearing saddles. The bearings withstand the impact loads between the wheelsets and the bogie frame, as well as the axial loads generated when the vehicle turns.

The wheel bearings structure includes CRBs, double-row TRBs, single-row TRB, and single-row CRB. For specific structural examples, refer to Table 1.

Table 1

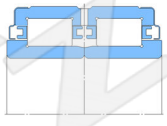
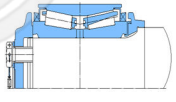
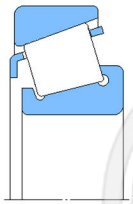
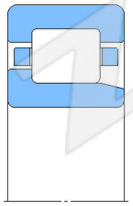
Type	Structural characteristics	Figure
Cylindrical roller bearings units	● Cylindrical roller bearing units are primarily used in railway locomotives, passenger cars, and urban rail vehicle axle boxes. They generally consist of dual-row cylindrical roller bearings with seals on both sides or two paired single-row cylindrical roller bearings with seals on one side. The bearing units are pre-lubricated with grease before delivery and installation, eliminating the need for additional lubrication during installation. Since the bearing has an integral sealing device, it has a long maintenance cycle. ● These bearings feature a special internal structural design, with corrected linear contact between the rollers and raceways to avoid edge stress. This makes the bearings particularly suitable for bearing very high radial loads, while also being capable of supporting some axial loads. ● Compared to tapered roller bearing units, cylindrical roller bearing units are easier to disassemble and assemble, facilitating bearing inspection and maintenance.	
Double-row tapered roller bearings units	● The bearing unit features complete sealing and is pre-lubricated with grease and adjusted for clearance before delivery and installation. The integrated design of the unit facilitates easy installation and removal, with the bearing being cold-pressed onto the journal. ● The bearing's internal design employs an ECP structure, optimizing the inner ring flange and roller base surface to reduce sliding friction and operating temperature. Additionally, the corrected linear contact design between the roller generatrix and the raceway prevents edge stress, ensuring the bearing is particularly suitable for combined radial and axial load applications. ● To minimize shaft bending deformation under heavy loads, the bearing units for high axle load railway vehicles adopt a compact design, shortening the distance between the bearing and the shaft shoulder. This reduces the journal length, increases shaft rigidity, minimizes bearing fretting corrosion, decreases bearing application failures, and extends the bearing's service life.	

Table 1 (continued)

Type	Structural characteristics	Figure
Single-row tapered roller bearings	• This series of bearings is generally used in low-speed urban rail low-floor light rail vehicles. Due to the structural constraints of trailer bogies in low-floor light rail vehicles, conventional axlebox wheelsets cannot be used. Instead, a low-floor dedicated axle is required, with the bearings installed inside the wheelset. The inner ring of the bearing fits with the dedicated axle, and the outer ring fits with the wheelset, with the wheelset acting as the axlebox and the outer ring of the bearing rotating. This application is known as an embedded hub bearing unit. •**ZWZ** embedded hub bearing unit, used on independent wheelsets of low-floor light rail vehicles, consists of a pair of tapered roller bearings. These bearings are manufactured with high precision to ensure high installation accuracy and operational performance. The appropriate matched clearance can be used to provide high rigidity to the wheelset, ensuring the stability of the vehicle's operation.	
Single-row cylindrical roller bearings	•Cylindrical roller bearings are one of the most widely used bearings in railway applications, enduring tests on various railway vehicle wheelsets. They are utilized in the axle boxes of railway locomotives, passenger cars, as well as subway and light rail vehicles. This type of bearing is typically applied in NJ/NJP configurations, suitable for handling high radial loads and certain axial loads. • The bearings feature a special internal structural design with optimized roller and raceway profiles, which mitigate edge stresses and ensure high load-carrying capacity. • Utilizing a plastic steel cage facilitates high-speed rotation of the bearings.	

3. Drive and powertrain system bearings

Bearings structural characteristics and samples of drive and powertrain system are as shown in Table 2.

Table 2

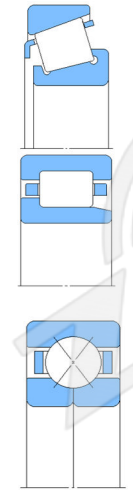
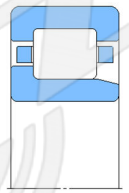
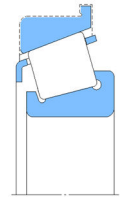
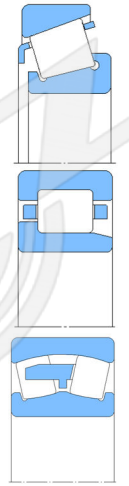
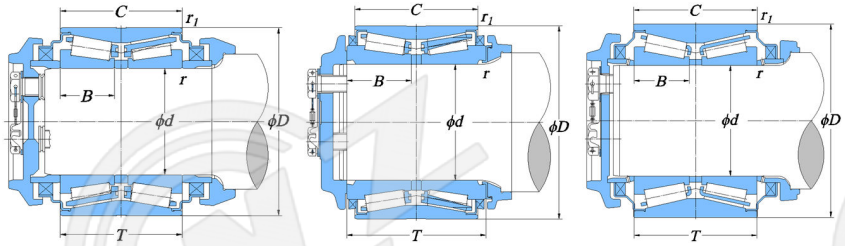
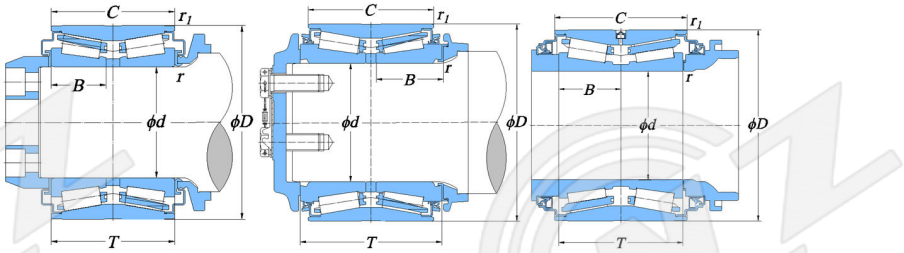
Type	Structural characteristics	Figure
Vehicle axle Gearbox Bearings	• The primary function of rolling bearings in gearboxes is to support shafts and withstand the meshing forces of gears, thus requiring bearings to endure extreme loads in complex environments. • Bearings commonly used in gearboxes include tapered roller bearings, four-point contact ball bearings, and cylindrical roller bearings, with additional options such as deep groove ball bearings, self-aligning roller bearings, and angular contact ball bearings. Bearing configurations vary according to gearbox design and operating conditions. • Key performance requirements for bearings in gearboxes include high speed capability, high load-carrying capacity, resistance to vibration and impact, high temperature resistance, high guiding accuracy, and compact structure. Bearing selection is based on relevant dimensional domains of the gearbox, while considering the above application factors, typically aiming for a calculated lifespan exceeding 2 million kilometers. • In addition to employing special structural designs, bearings in gearboxes enhance their strength by increasing the thickness of copper cage webbing and applying surface treatments to the steel plate stamping frames. This is to withstand the impact generated during high-speed operation of locomotives. The main structural features of the bearings include reinforced internal designs to enhance load-carrying capacity. • High-strength, high-quality copper alloy materials are used, and the structure of the cage is optimized to ensure the reliability of bearing operation. Tolerances and internal clearances are adjusted, and the outer ring is equipped with anti-rotation grooves to effectively prevent "outer ring rotation together".	

Table 2 (continued)

Type	Structural characteristics	Figure
Traction motor bearings	• Traction motors are the main components in locomotive transmission systems, and bearings play a critical role in these motors. Besides supporting the weight of the motor rotor, bearings also withstand the traction and braking forces generated by frequent starts and stops. Additionally, they endure the impact loads during locomotive operation and the forces generated by gear meshing. In such complex operating conditions, bearings must meet high reliability and long service life requirements, leading to elevated demands on their design and manufacturing quality. • Traction motor bearings typically include cylindrical roller bearings and deep groove ball bearings, with some traction motor designs incorporating self-aligning roller bearings. The calculated lifespan of these bearings exceeds 2 million kilometers. • The traction motor bearings developed ZWZ are tailored to the specific needs of users. These bearings are optimized through careful selection of clearances, optimization of cage structures, advanced heat treatment processes for rings and rolling elements, and enhancement of internal structural optimization. These measures elevate the design and manufacturing quality of the bearings, ensuring they meet the demanding requirements of traction motor applications under complex operating conditions.	
Suspension tube bearings	• Two suspension bearings installed in the axle boxes are utilized in locomotives with axle-hung traction motor structures to support laterally configured traction motors. Typically, one side of the traction motor is supported by the bogie frame, while the other side is supported by the axle through the suspension bearings. • To ensure high reliability and achieve a long service life (usually exceeding 2 million kilometers), the suspension bearings used here should possess high load-carrying capacity. •The suspension tube employ tapered roller bearings, which are particularly suitable for bearing high radial and axial loads, and facilitate precise gear axial guidance. Special tapered roller bearings with enhanced steel plate cages can withstand high vibration and impact loads, featuring a special design with flanged or insulated outer rings. • Cylindrical roller bearings can withstand high radial loads, easy to install. • Self-aligning roller bearings are preferred for applications where high radial and bi-directional axial loads need to be accommodated, and where good self-aligning capability is required.	
Wheelset Hollow shaft Bearings (full suspension bearings)	• This type of bearing is used in hollow axle drive units for wheelsets, where the large gear is supported by bearings on the hollow axle sleeve, and the hollow axle sleeve is secured to the body of the traction motor, allowing the outer ring of the bearing to rotate. •Hollow axle drive units for wheelsets are widely employed in high-speed locomotives and multiple units. Their main feature is the fixed mounting of the traction motor on the bogie frame, with the total mass of the traction motor being equal to the mass supported by the springs. This reduces the mass supported by the springs, resulting in lower vertical dynamic loads on the wheel-rail interface. Any vertical and lateral accelerations caused by uneven tracks and wheel-rail impacts are not directly transmitted to the traction motor and gear assembly. This greatly improves the working conditions of the traction motor and gear assembly, reduces failure rates, extends service life, and facilitates high-speed operation of locomotives. • The types of bearings for wheelsets mainly include cylindrical roller bearings, tapered roller bearings, and self-aligning roller bearings. •Cylindrical roller bearings are suitable for all types of wheelset bearings in standard gauge railways and regional trains. Through continuous development and improvement, cylindrical roller bearings can fully meet the requirements of modern trains. • Tapered roller bearing units are supplied with pre-adjusted clearances, filled with grease, and sealed. They can be equipped with plastic-steel cages, resulting in longer grease service life.	

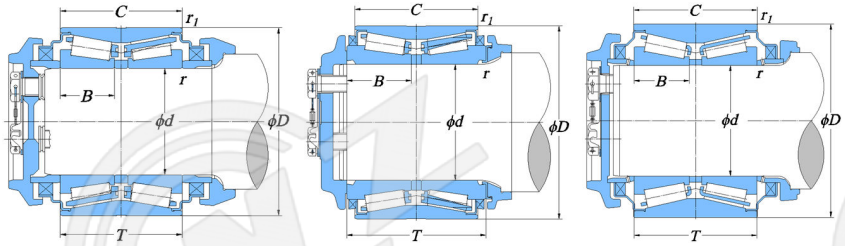
d 99～130mm

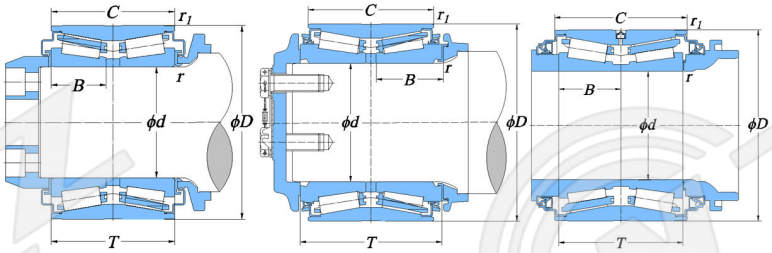




Principal dimensions(mm)							Basic load ratings(kN)		Designations	Factor				Mass(kg) (approx.)	Mounting position
d	*D*	*T*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}		*e*	Y_1	Y_2	Y_o		
99	182	117	52	117	2.5	1	535	917	**197720K2**	0.26	2.55	3.80	2.50	15.7	Axle box-free bearing for wagon
	182	117	52	117	2.5	1	535	917	**197720K2ZC**	0.26	2.55	3.80	2.50	21.8	Axle box-free bearing for wagon
99.5	182	117	52	117	2.5	1	535	917	**197720K1**	0.26	2.55	3.80	2.50	15.7	Axle box-free bearing for wagon
	182	117	52	117	2.5	1	535	917	**197720K1ZC**	0.26	2.55	3.80	2.50	21.8	Axle box-free bearing for wagon
	182	112	46	112	3	0.7	510	867	**197720K**	0.40	1.68	2.50	1.65	12.9	Axle box-free bearing for wagon
100	182	112	46	112	2.5	1	535	917	**197720**	0.26	2.55	3.80	2.50	15.7	Axle box-free bearing for wagon
	182	117	52	117	2.5	1	535	917	**197720ZC**	0.26	2.55	3.80	2.50	15.7	Axle box-free bearing for wagon
110	195	126	57.658	131.35	1.5	0.3	570	1170	**352222X3-2RS**	0.26	2.55	3.80	2.50	19.3	Axle box-free bearing for wagon
	195	126	57.658	131.35	1.5	0.3	570	1170	**352222X3-2RS-ZC**	0.26	2.55	3.80	2.50	21.3	Axle box-free bearing for wagon
119.062	195.262	136.525	57.15	142.875	1.5	0.3	570	1170	**3506/119X4-2RS**	0.26	2.55	3.80	2.50	18.6	Axle box-free bearing for wagon
	195.262	136.525	57.15	142.875	1.5	0.3	570	1170	**3506/119X4-2RS-ZC**	0.26	2.55	3.80	2.50	22.1	Axle box-free bearing for wagon
	195.262	136.525	57.15	142.875	1.5	0.3	620	1050	**HM124646/HM124618XD**	0.26	2.55	3.80	2.50	19.9	Axle box-free bearing for wagon
	195.262	136.525	57.15	142.875	1.5	0.3	620	1050	**197924**	0.26	2.55	3.80	2.50	25.6	Axle box-free bearing for wagon
120	195	126	57.65	131.35	2	0.8	650	1210	**353124-DTZ**	0.26	2.55	3.80	2.50	16.3	Subway vehicle Axle box
130	230	150	67	150	2.5	1	882	1590	**352226X2-2RZ**	0.26	2.55	3.80	2.50	28.8	Axle box-free bearing for wagon
	230	150	67	150	2.5	1	882	1590	**352226X2-2RZ-ZC**	0.26	2.55	3.80	2.50	28.8	Axle box-free bearing for wagon
	230	150	67	150	2.5	1	882	1590	**352226X2-2RZ-DX**	0.26	2.55	3.80	2.50	28.8	Axle box-free bearing for wagon
	230	150	67	150	2.5	1	882	1590	**352226X2-2RZ-DX-ZC**	0.26	2.55	3.80	2.50	28.8	Axle box-free bearing for wagon
	230	150	67	150	2.5	1	882	1590	**352226X2-SH**	0.26	2.55	3.80	2.50	28.8	Axle box-free bearing for wagon
	230	150	75	160	1.5	0.2	920	1580	**352226X2A**	0.27	2.50	3.74	2.45	32.8	Railway high-speed vehicle axle box
	230	150	66	160	1.5	0.7	860	1580	**HTBU130X230B**	0.26	2.55	3.80	2.50	33.1	Railway high-speed vehicle axle box
	230	150	67	160	2.5	1	920	1600	**352226X2-DTZ**	0.26	2.55	3.80	2.50	29.0	Subway vehicle axle box
	230	176	79.5	160	8	0.8	870	1600	**352226GS**	0.26	2.55	3.80	2.50	28.0	Railway high-speed vehicle axle box
	230	176	79.5	160	2.5	0.8	870	1600	**352226GSA**	0.26	2.55	3.80	2.50	34.1	Railway high-speed vehicle axle box
	230	176	79.5	160	2.5	0.8	870	1600	**352226GSB**	0.26	2.55	3.80	2.50	34.1	Railway high-speed vehicle axle box
	230	166.35	75.675	150	2.5	1	870	1600	**352226X2B**	0.26	2.55	3.80	2.50	29.0	Subway vehicle axle box
	230	166.34	75.67	150	2.5	1	870	1600	**352226X2B-DTZ**	0.26	2.55	3.80	2.50	29.0	Subway vehicle axle box
	230	182	83	160	2.5	0.5	881	1664	**352226A**	0.26	2.55	3.80	2.50	28.4	Subway vehicle axle box
	240	160	80	160	2.5	1	1040	1860	**HTBU130x240G**	0.26	2.55	3.80	2.50	37.0	Railway high-speed vehicle axle box
	240	160	72	165	2.5	1	930	1590	**HTBU130x240F**	0.32	2.11	3.14	2.06	36.7	Railway high-speed vehicle axle box
	240	160	80	160	2.5	1	1040	1860	**HTBU130x240B**	0.26	2.55	3.80	2.50	35.4	Railway high-speed vehicle axle box
	240	180	73	160	2.5	1	995	1778	**352226X3A**	0.26	2.55	3.80	2.50	32.4	Railway high-speed vehicle axle box

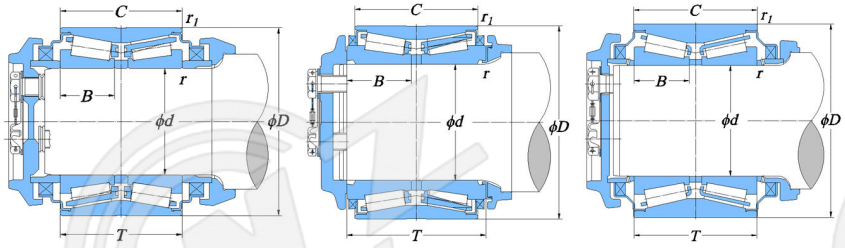
d 130～150mm

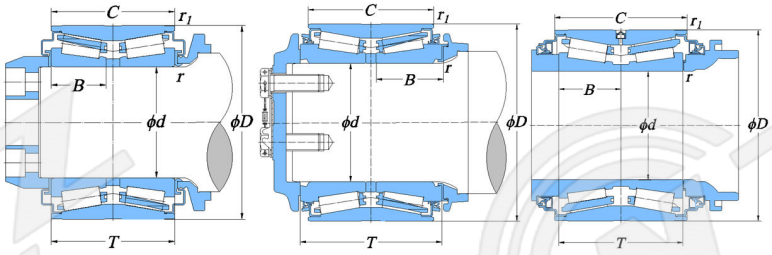




Principal dimensions(mm)							Basic load ratings(kN)		Designations	Factor				Mass(kg) (approx.)	Mounting position
d	*D*	*T*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}		*e*	Y_1	Y_2	Y_o		
130	240	180	73	160	2.5	1	995	1778	352226X3A-ZCA	0.26	2.55	3.80	2.50	38.1	Railway high-speed vehicle axle box
	240	180	73	160	2.5	1	995	1778	352226X3A-ZCB	0.26	2.55	3.80	2.50	39.0	Railway high-speed vehicle axle box
	240	160	80	165	2.5	1	1040	1860	352226X3B	0.26	2.55	3.80	2.50	38.1	Railway high-speed vehicle axle box
	240	160	72	160	2.5	1	930	1600	352226X3C	0.32	2.11	3.14	2.06	30.0	Railway high-speed vehicle axle box
	240	180	73	160	2.5	1	995	1778	352226X3	0.26	2.55	3.80	2.50	32.2	Railway high-speed vehicle axle box
	240	180	73	160	2.5	1	995	1778	352226X3-ZC	0.26	2.55	3.80	2.50	38.9	Railway high-speed vehicle axle box
	240	160	72	160	2.5	1	930	1600	HTBU130X240I	0.32	2.11	3.14	2.06	30.0	Railway high-speed vehicle axle box
	240	160	80	160	2.5	1	1040	1860	HTBU130x240G	0.26	2.55	3.80	2.50	37.0	Railway high-speed vehicle axle box
131.75	207.962	146.05	57.15	152.4	1.8	0.8	630	1260	TBU5 1/2X10	0.26	2.55	3.80	2.50	28.9	Wagon axle box-free for export
144.45	220.663	155.576	58.738	163.627	1.626	1.473	760	1310	KHM129848/KHM129814XD	0.26	2.55	3.80	2.50	23.0	Wagon axle box-free for export
	220.663	155.576	58.738	163.627	1.626	1.473	760	1310	HM129848/HM129814XD	0.26	2.55	3.80	2.50	18.2	Wagon axle box-free for export
	220.663	155.576	58.738	163.627	1.626	1.778	760	1310	TBU6X11-1	0.26	2.55	3.80	2.50	28.3	Wagon axle box-free for export
	220.663	155.576	58.738	163.627	1.626	1.473	760	1310	TBU6X11-2	0.26	2.55	3.80	2.50	23.5	Wagon axle box-free for export
	220.663	155.576	58.738	163.627	1.626	1.473	760	1310	TBU6X11	0.26	2.55	3.80	2.50	27.4	Wagon axle box-free for export
150	250	180.6	83.15	160	3	1	968	1800	353130B	0.26	2.55	3.80	2.50	32.3	Axle box-free bearing for wagon
	250	180.6	83.15	160	3	1	968	1800	353130B-ZC	0.26	2.55	3.80	2.50	41.2	Axle box-free bearing for wagon
	250	180.6	83.15	160	3	1	968	1800	353130B-DX	0.26	2.55	3.80	2.50	32.3	Axle box-free bearing for wagon
	250	180.6	83.15	160	3	1	968	1800	353130B-DX-ZC	0.26	2.55	3.80	2.50	32.4	Axle box-free bearing for wagon
	250	156	71	160	2.5	0.5	962	1900	353130A	0.26	2.55	3.80	2.50	30.7	Axle box-free bearing for wagon
	250	156	71	160	2.5	0.5	962	1900	353130A-ZC	0.26	2.55	3.80	2.50	35.5	Axle box-free bearing for wagon
	250	180.6	83.15	160	2	1	1000	1930	353130X2-2RS-ZC	0.26	2.55	3.80	2.50	32.1	Axle box-free bearing for wagon
	250	180.6	83.15	160	2	1	1000	1930	353130X2-2RS	0.26	2.55	3.80	2.50	32.0	Axle box-free bearing for wagon
	250	181.3	83.5	160	2	1	960	1900	353130X2-2RS-1-ZC	0.26	2.55	3.80	2.50	41.6	Axle box-free bearing for wagon
	250	181.3	83.5	160	2	1	960	1900	353130X2-2RS-1	0.26	2.55	3.80	2.50	32.0	Axle box-free bearing for wagon
	250	154.5	70.25	160	2.5	1	900	1820	353130X2-2RS-2-ZC	0.26	2.55	3.80	2.50	34.4	Axle box-free bearing for wagon
	250	154.5	70.25	160	2.5	1	900	1820	353130X2-2RS-2	0.26	2.55	3.80	2.50	32.3	Axle box-free bearing for wagon
	260	187	86.5	160	2.5	0.5	1060	2040	353130X3-2RS	0.26	2.55	3.80	2.50	37.0	Axle box-free bearing for wagon
	260	187	86.5	160	2.5	0.5	1060	2040	353130X3-2RS-ZC	0.26	2.55	3.80	2.50	48.1	Axle box-free bearing for wagon
	250	156	71	160	2.5	0.5	962	1926	353130X2-2RZ	0.26	2.55	3.80	2.50	35.4	Axle box-free bearing for wagon
	250	156	71	160	2.5	0.5	962	1926	353130X2-2RZ-ZC	0.26	2.55	3.80	2.50	35.5	Axle box-free bearing for wagon
	250	180.6	83.15	160	3	1	968	1910	353130X2-SH	0.26	2.55	3.80	2.50	32.0	Axle box-free bearing for wagon
	250	180.6	83.15	160	3	1	968	1910	353130X2-SH-ZC	0.26	2.55	3.80	2.50	32.1	Axle box-free bearing for wagon

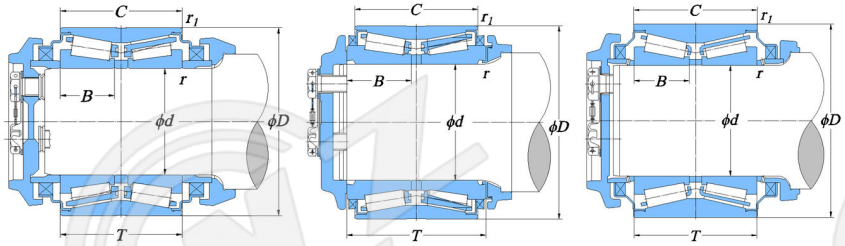
d 150～174.612mm

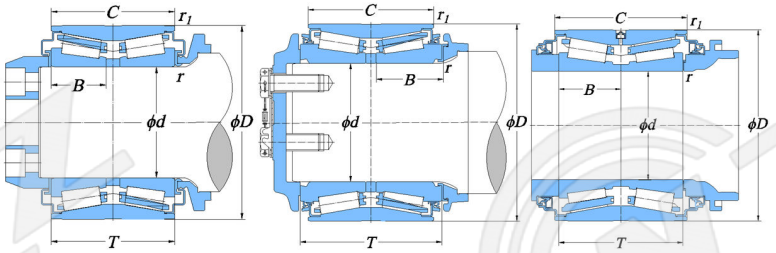




Principal dimensions(mm)							Basic load ratings (kN)		Designations	Factor				Mass(kg) (approx.)	Mounting position
d	*D*	*T*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}		*e*	Y_1	Y_2	Y_o		
150	250	180.6	83	160	2	1	960	1800	ZTZ15X25	0.26	2.55	3.80	2.50	32.0	Axle box-free bearing for wagon
	250	180.6	83	160	2	1	960	1800	ZTZ15X25-ZC	0.26	2.55	3.80	2.50	42.0	Axle box-free bearing for wagon
	270	170	75	170	2.5	0.7	1220	2470	197730	0.27	2.47	3.68	2.42	43.8	Axle box-free bearing for wagon
	270	170	75	170	2.5	0.7	1220	2470	197730Y	0.27	2.47	3.68	2.42	46.8	Axle box-free bearing for wagon
	270	170	75	170	2.5	0.7	1220	2470	197730Y1	0.27	2.47	3.68	2.42	42.9	Axle box-free bearing for wagon
	270	170	75	170	2.5	0.7	1220	2470	197730Y2	0.27	2.47	3.68	2.42	46.8	Axle box-free bearing for wagon
157.15	249.873	183.13	84.58	160	0.5	1	1050	1800	356032X4	0.26	2.55	3.80	2.50	29.9	"Harmonious" series axle box
	249.873	183.13	84.58	160	0.5	1	1050	1800	356032X4-ZC	0.26	2.55	3.80	2.50	40.4	"Harmonious" series axle box
	252.489	177.8	69.85	184.277	1.626	1.473	900	1800	TBU61/2X12	0.26	2.55	3.80	2.50	36.8	Wagon axle box-free for export
	252.489	177.8	69.85	184.277	1.626	1.473	900	1800	TBU61/2X12-ZC	0.26	2.55	3.80	2.50	51.8	Wagon axle box-free for export
	252.489	177.8	69.85	184.277	1.626	1.473	900	1800	TBU61/2X12-ZC-1	0.26	2.55	3.80	2.50	51.8	Wagon axle box-free for export
	252.489	177.8	69.85	184.277	1.626	1.473	900	1800	KHM133444/KHM133416XDA	0.26	2.55	3.80	2.50	36.8	Wagon axle box-free for export
	252.489	177.8	69.85	184.277	1.626	1.473	900	1800	KHM133444/KHM133416XDA/HCR	0.26	2.55	3.80	2.50	36.8	Wagon axle box-free for export
157.175	250	180.6	83	160	2.5	1	968	1800	353130X4	0.26	2.55	3.80	2.50	34.4	Axle box-free bearing for wagon
160	270	195	91	170	2.5	0.5	1180	2350	352132A	0.26	2.55	3.80	2.50	40.4	Axle box-free bearing for wagon
	270	195	91	170	2.5	0.5	1180	2350	352132A-ZC	0.26	2.55	3.80	2.50	40.5	Axle box-free bearing for wagon
	270	195	91	170	2.5	1	1180	2350	353132A-DX	0.26	2.55	3.80	2.50	40.4	Axle box-free bearing for wagon
	270	195	90.5	170	2.5	1	1200	2320	353132X2A-ZC	0.26	2.55	3.80	2.50	53.3	Axle box-free bearing for wagon
	270	195	90.5	170	2.5	1	1200	2320	353132X2A	0.26	2.55	3.80	2.50	40.6	Axle box-free bearing for wagon
	270	195	90.5	170	2.5	1	1250	2400	353132B	0.26	2.55	3.80	2.50	40.6	Axle box-free bearing for wagon
	270	195	90.5	170	2.5	1	1250	2400	353132B-ZC	0.26	2.55	3.80	2.50	53.0	Axle box-free bearing for wagon
	270	195	90.5	170	2.5	1	1250	2400	353132B-DX	0.26	2.55	3.80	2.50	40.6	Axle box-free bearing for wagon
	270	182	86	150	1.3	1.3	1050	2020	353132X2B-DTZ	0.32	2.11	3.14	2.06	42.3	Subway vehicle axle box
	280	180	80	180	2.5	0.5	1250	2390	352132X3	0.26	2.55	3.80	2.50	46.5	"Harmonious" series axle box
165.087	301.701	190.5	87.312	196.85	4.8	1	1360	2750	197933	0.35	1.95	2.90	1.9	72.0	Railway locomotive axle box-free
	301.701	190.5	87.312	196.85	4.8	1	1360	2750	197933S	0.35	1.95	2.90	1.9	72.0	Railway locomotive axle box-free
	301.701	190.475	87.3	196.85	4.8	1	1540	2960	GG6 1/2	0.35	1.95	2.90	1.9	77.3	Wagon axle box-free for export
	301.701	191.745	87.312	196.85	2	0.5	1540	2960	GG6 1/2-1	0.35	1.95	2.90	1.9	65.9	Wagon axle box-free for export
170	305	190.5	87.3	196	4.8	1	1180	2610	350634X3-2RS	0.35	1.95	2.90	1.9	66.0	Railway locomotive axle box
174.612	301.701	190.475	87.3	196.85	1	4.8	1540	2960	GG6 7/8	0.35	1.95	2.90	1.9	72.2	Wagon axle box-free for export
	301.701	191.475	87.312	196.85	0.54	1.7	1540	2960	GG6 7/8-1	0.35	1.95	2.90	1.9	59.1	Wagon axle box-free for export
	301.701	190.475	87.3	196.85	0.8	4.8	1540	2960	GG6 7/8-2	0.35	1.95	2.90	1.9	61.9	Wagon axle box-free for export

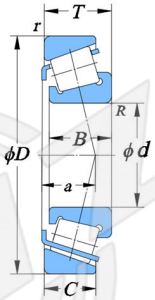
d 175～177.787mm





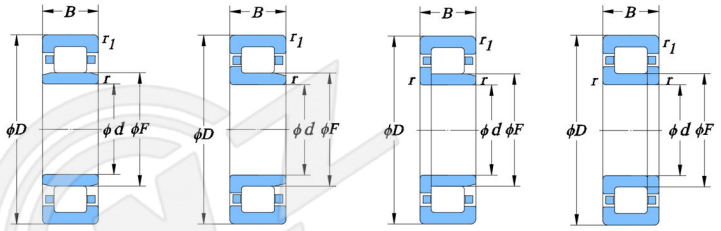
Principal dimensions(mm)							Basic load ratings(kN)		Designations	Factor				Mass(kg) (approx.)	Mounting position
d	*D*	*T*	*B*	*C*	r_{min}	r_{1min}	C_r	C_{or}		*e*	Y_1	Y_2	Y_o		
175	290	205	95	180	3	1	1300	2650	**353135X2-2RS**	0.26	2.55	3.80	2.50	48.3	Railway wagon axle box-free
	290	205	95	180	3	1	1300	2650	**353135X2-2RS-ZC**	0.26	2.55	3.80	2.50	63.5	Railway wagon axle box-free
	305	190.475	87.3	196	4.8	1	1180	2160	**197735**	0.35	1.95	2.90	1.9	63.7	Railway wagon axle box-free
	305	190.475	87.3	196	4.8	1	1180	2160	**197735ZC**	0.35	1.95	2.90	1.9	77.2	Railway wagon axle box-free
	305	210	97.0625	196	4.8	1	1180	2160	**197735Y**	0.35	1.95	2.90	1.9	62.3	Railway wagon axle box-free
	305	210	97.0625	196	4.8	1	1180	2160	**197735Y-1**	0.35	1.95	2.90	1.9	62.3	Railway wagon axle box-free
177.787	276.225	180.975	74.612	185.852	1.5	1	1130	2520	**197935**	0.26	2.55	3.80	2.50	44.5	Railway wagon axle box-free
	276.225	180.975	74.612	185.852	1.5	1	1130	2520	**197935ZC**	0.26	2.55	3.80	2.50	59.7	Railway wagon axle box-free
	276.225	181.36	74.612	185.72	1.7	0.54	1380	2630	**7x12**	0.26	2.55	3.80	2.50	40.0	Wagon axle box-free for export
	276.225	181.102	74.676	185.725	4	0.5	1040	2140	**355236X4**	0.26	2.55	3.80	2.50	42.9	Railway locomotive axle box
	276.225	181.102	74.676	185.725	4	0.5	1040	2140	**355236X4-ZCA**	0.26	2.55	3.80	2.50	56.2	Railway locomotive axle box
	276.225	181.102	74.676	185.725	4	0.5	1040	2140	**355236X4-ZCB**	0.26	2.55	3.80	2.50	56.4	Railway locomotive axle box

d 120～130mm

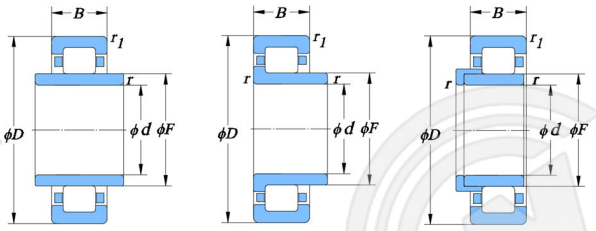


Principal dimensions(mm)							Basic load ratings(kN)		Designations	Limiting speeds(r/min)		Factor				Mass(kg) (approx.)	Mounting position
d	*D*	*T*	*B*	*C*	R_{min}	r_{min}	C_r	C_{or}		Grease	Oil	*e*	*Y*	Y_o	*a*		
120	180	48	48	38	2.5	2	295	530	**33024A**	1800	2600	0.31	2	1.1	36	4.17	Light rail axle box
130	230	67.75	64	54	4	3	560	855	**32226A**	1500	2000	0.44	1.4	0.76	57	11.7	Light rail axle box

d 75～130mm



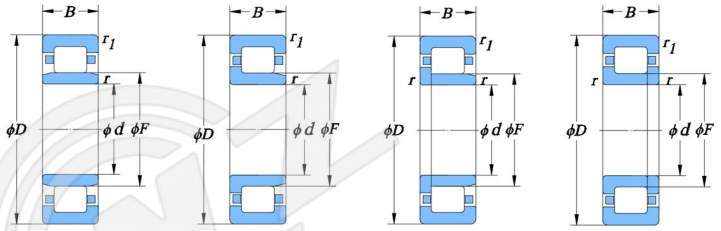
NU NJ NUP NJP



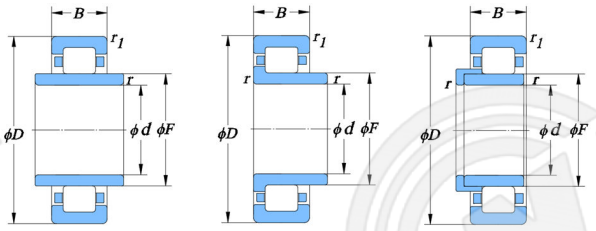
NU...WB NJ...WB NUHJ...WB

d	Principal dimensions(mm) D	B	r_{smin}	r_{1smin}	F	Basic load ratings(kN) C_r	C_{or}	Limiting speeds(r/min) Grease	Oil	Designations	Mass(kg) (approx.)	Mounting position
75	130	25	1.5	1.5	88.5	145	160	4200	5200	NU215EQ1-DTZ	1.45	Subway vehicle gearbox
	130	25	1.5	1.5	88.5	145	160	4200	5200	NUP215EQ1-DTZ	1.49	Subway vehicle gearbox
80	150	45	2	2	97	245	320	3700	4500	NJ3216X3M/P54	3.69	Tourist coach axle box
	150	45	2	2	97	245	320	3700	4500	NJP3216X3M/P54	3.69	Tourist coach axle box
	150	90	2	2	97	420	640	3700	4500	NJ/NJP3216X3M/P54	7.40	Tourist coach axle box
100	180	60.3	2.1	2.1	119	335	440	3200	3800	NJ3220TN1/HG2P54	6.00	Subway vehicle axle box
	180	60.3	2.1	2.1	119	335	440	3200	3800	NJP3220TN1/HG2P54	5.98	Subway vehicle axle box
	180	46	2.1	2.1	119	375	420	3200	3800	ZNU2220	4.93	Subway vehicle gearbox
	215	73	3	3	127.5	665	700	2560	3150	4G42620EQT	13.4	Railway vehicles axle box
	215	73	3	3	127.5	665	700	2560	3150	4G152620EQT	13.5	Railway vehicles axle box
	215	47	3	3	127.5	381	427	2560	3150	ZNU320J3	8.54	Railway locomotive traction motor
110	200	53	2.1	2.1	132.5	440	520	2500	3100	ZNU2222	7.52	Subway vehicle gearbox
119	240	80	3.7	3	150	535	708	2400	3200	42724QK1T	17.3	Railway passenger car axle box
	240	80	3.7	3	150	535	708	2400	3200	152724QK1T	17.4	Railway passenger car axle box
119.5	240	80	3.7	3	150	535	708	2400	3200	152724QKT	17.2	Railway passenger car axle box
	240	80	3.7	3	150	535	708	2400	3200	42724QKT	17.2	Railway passenger car axle box
120	240	80	3.7	3	150	535	708	2400	3200	42724QT	17.1	Railway passenger car axle box
	240	80	3.7	3	150	535	708	2400	3200	152724QT	17.2	Railway passenger car axle box
129	250	80	3.7	3	158	604	807	1800	2200	42726QK1T	18.6	Railway vehicles axle box
	250	80	3.7	3	158	604	807	1800	2200	152726QK1T	18.6	Railway vehicles axle box
	250	80	3.7	3	158	604	807	1800	2200	NJP3226X1K2	18.6	Railway passenger car axle box
129.5	250	80	3.7	3	158	604	807	1800	2200	NJ3226X1K1	18.4	Railway passenger car axle box
	250	80	3.7	3	158	604	807	1800	2200	NJP3226X1K1	18.5	Railway passenger car axle box
	250	80	3.7	3	158	604	807	1800	2200	42726QKT	18.6	Railway vehicles axle box
	250	80	3.7	3	158	604	807	1800	2200	152726QKT	18.5	Railway vehicles axle box
130	220	62	2.1	2.1	150	480	675	2200	2800	NJ2226X3TN1/HG2P64	8.62	Subway vehicle axle box
	220	62	2.1	2.1	150	480	675	2200	2800	NJP2226X3TN1/HG2P64	8.61	Subway vehicle axle box
	230	64	3	3	156	410	590	2200	2800	NJ2226Q1/C4S0	11.9	Railway locomotive security vehicle axle box
	230	64	3	3	156	410	590	2200	2800	NJP2226Q1/C4S0	11.9	Railway locomotive security vehicle axle box
	240	80	3	3	156	580	800	2200	2800	NJ3226X1SCTN	15.0	Quasi high speed passenger car axle box
	240	80	3	3	156	580	800	2200	2800	NJP3226X1SCTN	14.8	Quasi high speed passenger car axle box
	240	160	3	3	156	845	1400	2200	2800	NJ/NJP3226X1SCTN	29.7	Quasi high speed passenger car axle box

d 130～159mm



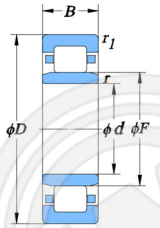
NU NJ NUP NJP



NU...WB NJ...WB NUHJ...WB

d	Principal dimensions(mm) *D*	*B*	r_{smin}	r_{1smin}	*F*	Basic load ratings(kN) C_r	C_{or}	Limiting speeds(r/min) Grease	Oil	Designations	Mass(kg) (approx.)	Mounting position
130	250	80	3.7	3	158	604	807	1800	2200	**NJP3226X1**	16.6	Railway passenger car axle box
	250	80	3.7	3	158	604	807	1800	2200	**NJ3226X1**	16.6	Railway passenger car axle box
	250	80	3.7	3	158	604	807	1800	2200	**42726QT**	18.5	Railway vehicles axle box
	250	80	3.7	3	158	604	807	1800	2200	**42726QT2**	18.1	Railway vehicles axle box
	250	80	3.7	3	158	604	807	1800	2200	**152726QT**	18.4	Railway vehicles axle box
	250	80	3.7	3	158	604	807	1800	2200	**152726QT2**	18.0	Railway vehicles axle box
	250	97.5	3.7	3	158	600	810	1800	2200	**NU3226X1WB**	17.2	Railway passenger car axle box
	250	110	3.7	3	158	600	810	1800	2200	**NJ3226X1WB**	18.2	Railway passenger car axle box
	250	110	3.7	3	158	600	810	1800	2200	**NUHJ3226X1WB**	19.1	Railway passenger car axle box
	280	93	4	4	167	930	1990	1910	2360	**4G42626EQT**	29.0	Railway vehicles axle box
	280	93	4	4	167	930	1990	1910	2360	**4G152626EQT**	29.0	Railway vehicles axle box
140	250	68	3	3	169	510	755	2000	2600	**NJP2228Q1/C4S0**	15.1	Engineering vehicle axle box
	250	68	3	3	169	510	755	2000	2600	**NJ2228Q1/C4S0**	15.1	Engineering vehicle axle box
150	320	65	4	4	193	725	868	1900	2400	**ZNU330J3**	25.6	Railway locomotive traction motor
158	290	80	3	3	193	935	1130	1800	2200	**NJ2232WBK3**	26.5	Railway locomotive axle box
	290	80	3	3	193	935	1130	1800	2200	**NU2232WBK3**	25.1	Railway locomotive axle box
	290	80	3	3	193	935	1130	1800	2200	**NUHJ2232WBK3**	27.5	Railway locomotive axle box
	290	80	3	3	193	935	1130	1800	2200	**NUHJ2232WBY1K3**	27.0	Railway locomotive axle box
	290	80	3	3	193	935	1130	1800	2200	**NUHJ2232WBYK3**	27.6	Railway locomotive axle box
	290	80	3	3	193	935	1130	1800	2200	**NJ2232WBYK3**	24.6	Railway locomotive axle box
158.5	290	80	3	3	193	935	1130	1800	2200	**NJ2232WBK2**	26.4	Railway locomotive axle box
	290	80	3	3	193	935	1130	1800	2200	**NU2232WBK2**	25.0	Railway locomotive axle box
	290	80	3	3	193	935	1130	1800	2200	**NUHJ2232WBK2**	27.4	Railway locomotive axle box
	290	80	3	3	193	935	1130	1800	2200	**NUHJ2232WBY1K2**	26.9	Railway locomotive axle box
	290	80	3	3	193	935	1130	1800	2200	**NUHJ2232WBYK2**	27.5	Railway locomotive axle box
	290	80	3	3	193	935	1130	1800	2200	**NJ2232WBYK2**	24.5	Railway locomotive axle box
159	290	80	3	3	193	935	1130	1800	2200	**NJ2232WBK1**	26.0	Railway locomotive axle box
	290	80	3	3	193	935	1130	1800	2200	**NUHJ2232WBK1**	27.2	Railway locomotive axle box
	290	80	3	3	193	935	1130	1800	2200	**NU2232WBK1**	24.8	Railway locomotive axle box
	290	80	3	3	193	935	1130	1800	2200	**NUHJ2232WBY1K1**	26.6	Railway locomotive axle box
	290	80	3	3	193	935	1130	1800	2200	**NUHJ2232WBYK1**	27.2	Railway locomotive axle box
	290	80	3	3	193	935	1130	1800	2200	**NJ2232WBYK1**	24.4	Railway locomotive axle box

d 159.5～400mm



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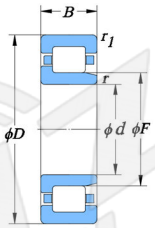
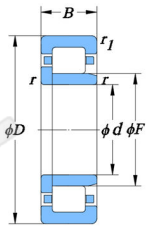
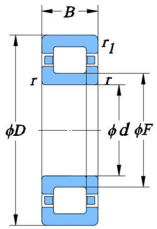


NJ



NUP



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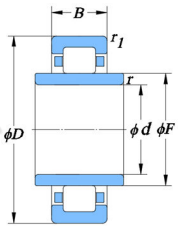
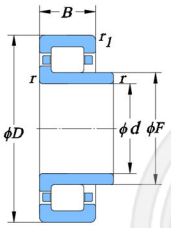
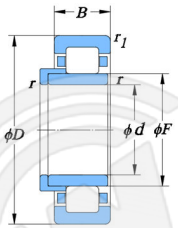


NU...WB



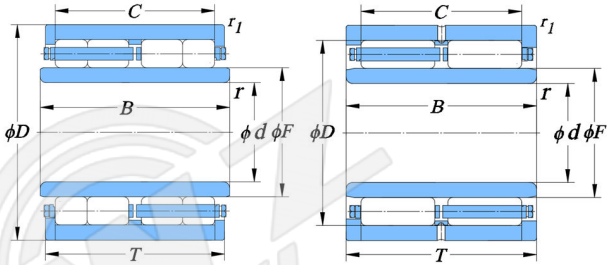
NJ...WB



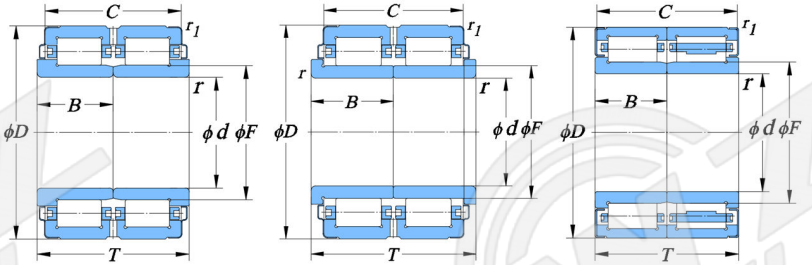
NUHJ...WB

Principal dimensions(mm)						Basic load ratings(kN)		Limiting speeds(r/min)		Designations	Mass(kg) (approx.)	Mounting position
d	*D*	*B*	r_{smin}	r_{1smin}	*F*	C_r	C_{or}	Grease	Oil			
159.5	290	80	3	3	193	935	1130	1800	2200	**NU2232WBK**	24.8	Railway locomotive axle box
	290	80	3	3	193	935	1130	1800	2200	**NJ2232WBK**	26.0	Railway locomotive axle box
	290	80	3	3	193	935	1130	1800	2200	**NUHJ2232WBK**	27.2	Railway locomotive axle box
	290	80	3	3	193	935	1130	1800	2200	**NUHJ2232WBY1K**	26.6	Railway locomotive axle box
	290	80	3	3	193	935	1130	1800	2200	**NUHJ2232WBYK**	27.2	Railway locomotive axle box
	290	80	3	3	193	935	1130	1800	2200	**NJ2232WBYK**	24.3	Railway locomotive axle box
160	290	80	3	3	193	935	1130	1800	2200	**NU2232WBQ1/YB2**	24.8	Railway locomotive axle box
	290	80	3	3	193	935	1130	1800	2200	**NJ2232WB1Q1/YB2**	26.0	Railway locomotive axle box
	290	80	3	3	193	935	1130	1800	2200	**NU2232WBQ1/YB2+HJR2**	26.5	Railway locomotive axle box
	290	80	3	3	193	935	1130	1800	2200	**NU2232WBQ1/YB2+HJR**	27.1	Railway locomotive axle box
	290	80	3	3	193	935	1130	1800	2200	**NU2232WBQ1/YB2+HJR1**	27.1	Railway locomotive axle box
	290	80	3	3	193	935	1130	1800	2200	**NU2232WB**	24.8	Railway locomotive axle box
	290	80	3	3	193	935	1130	1800	2200	**NUHJ2232WB**	27.2	Railway locomotive axle box
	290	80	3	3	193	935	1130	1800	2200	**NJ2232WB**	26.0	Railway locomotive axle box
	290	80	3	3	193	935	1130	1800	2200	**NUHJ2232WBY1**	26.6	Railway locomotive axle box
	290	80	3	3	193	935	1130	1800	2200	**NJ2232WB11Q1/YB2**	24.2	Railway locomotive axle box
	290	80	3	3	193	935	1130	1800	2200	**NJ2232WBY**	24.2	Railway locomotive axle box
	290	80	3	3	193	935	1130	1800	2200	**NUHJ2232WBY**	27.2	Railway locomotive axle box
180	320	86	4	4	216	850	1230	1500	2100	**4E42536QT**	32.3	Railway locomotive axle box
	320	86	4	4	216	850	1230	1500	2100	**4E52536QT**	33.7	Railway locomotive axle box
400	500	46	2.1	0.5	428	440	880	700	900	**KNU1880**	19.9	Railway locomotive drive full suspension
	500	46	2.1	0.5	428	440	880	700	900	**KNH1880**	23.6	Railway locomotive drive full suspension
	500	46	2.1	0.5	428	440	880	700	900	**KNUP1880**	21.0	Railway locomotive drive full suspension

d 120～180mm



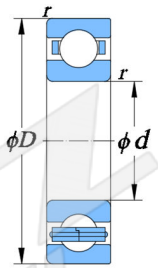
97…QT 98…QT



NNJ NNUP NJ…DF

Principal dimensions(mm)								Designations	Basic load ratings(kN)		Mass(kg) (approx.)	Mounting position
d	*D*	*B*	*C*	*T*	r_{smin}	r_{1smin}	*F*		C_r	C_{or}		
120	215	73	71.5	146	2.1	1	143.5	**NJ3224X2/DF**	952	1613	21.4	Subway vehicle axle box
	215	73	143	146	2.1	1	143.5	**NNJ5224X2-DTZ**	952	1613	21.7	Subway vehicle axle box
130	220	62	60.5	124	2.1	2	150	**NJ2226X3/DF**	820	1350	17.5	Subway vehicle axle box
159	290	220	178	220	3	3	191	**972832K1QT**	1910	3580	67.5	Railway locomotive axle box
159.5	290	220	178	220	3	3	191	**972832KQT**	1910	3580	67.3	Railway locomotive axle box
160	270	85	146	170	3	2	182	**NNJ5132X2**	1080	1830	35.1	“Harmonious” series axle box
	270	88	146	176	3	2	182	**NNUP5132X2**	1080	1830	34.4	“Harmonious” series axle box
	280	90	156	180	3	2	190	**NNUP5232X3**	1250	2120	40.9	“Harmonious” series axle box
	290	220	178	206	3	3	191	**972832QT**	1910	3580	67.2	Railway locomotive axle box
	290	220	178	206	3	3	191	**972832QKT**	1910	3580	67.3	Railway locomotive axle box
	290	180	152	180	3	3	191	**982832QT**	1510	2640	56.8	Railway locomotive axle box
	290	180	152	180	3	3	191	**982832Q1T**	1510	2640	54.4	Railway locomotive axle box
180	320	100	200	200	4	1.5	215	**NNJ5236X2**	1660	2880	63.8	“Harmonious” series axle box
	320	112	200	224	4	1.5	215	**NNJ5236X2WB**	1660	2880	66.4	“Harmonious” series axle box

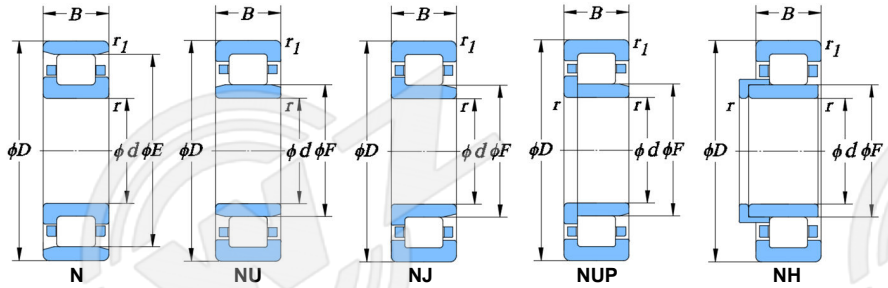
d 55～170mm



Principal dimensions(mm)				Basic load ratings(kN)		Limiting speeds (r/min)		Designations(new)	Designations(old)	Mass(kg) (approx.)	Mounting position
d	*D*	*B*	r_{smin}	C_r	C_{or}	Grease	Oil				
55	120	29	2	71.5	45	10170	-	**H6311J5B**	**-**	1.39	High-speed train traction motor
60	130	31	2.1	82.0	52.0	5300	-	**6312Q/P64S0**	**4E312QT**	2.07	Railway locomotive traction motor
75	130	25	1.5	68.9	49.3	4800	5600	**6215-DTZ**	**-**	1.19	Subway gearbox
	130	25	1.5	68.9	49.3	4800	5600	**6215Q1-DTZ**	**-**	1.33	Subway gearbox
80	125	22	1.1	47.6	40.0	8016	-	**H6016J5A**	**-**	0.995	High-speed train traction motor
170	260	42	2.1	170	171	2200	2800	**6034Q/C4S0**	**4G134QT**	7.94	Railway locomotive axle box

ZWZ

d 50～110mm

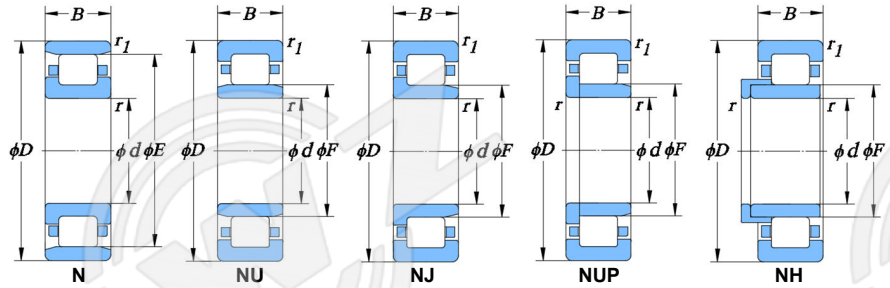


N NU NJ NUP NH

d	D	B	r_{smin}	r_{1smin}	F	E	C_r	C_{or}	Limiting speeds(r/min) Grease	Oil	Designations(new)	Designations(old)	Mass(kg) (approx.)	Mounting position
50	90	20	1.1	1.1	59.5	-	64.1	69.3	9300	-	HNU210J5A	-	0.534	High-speed train traction motor
60	130	31	2.1	2.1	77	-	128	150	4600	5600	NU312Q1/P63S0	3E32312QT	2.03	Locomotive transmission box
65	140	33	2.1	2.1	83.5	-	156	168	4200	5200	NU313Q/P63S0	3E32313QT	2.46	Locomotive transmission box
70	125	24	1.5	1.5	84.5	-	83.5	95	8000	-	HNU214J5A	-	1.29	High-speed train traction motor
	125	24	1.5	1.5	83.5	-	121	141		11839	HNU214B	-	1.29	High-speed train gearbox
	150	35	2.1	2.1	90	-	181	202	4200	5200	NU314Q/P63S0	3E32314QT	3.03	Locomotive transmission box
	150	35	2.1	2.1		130	161	172	-	10490	HN314B	-	3.00	High-speed train gearbox
	150	35	2.1	2.1	89	-	207	226	-	10490	HNU314A	-	0.631	High-speed train gearbox
75	130	25	1.5	1.5	88.5		133	160	-	5281	HNU215B	-	1.41	High-speed train gearbox
	130	25	1.5	1.5		118.5	127	152	-	5281	HN215A	-	1.40	High-speed train gearbox
	130	25	1.5	1.5		118.5	127	152	-	5100	HN215B	-	1.39	High-speed train gearbox
80	140	26	2	2	95	-	135	170	4000	4800	NU216Q1	-	1.74	Subway gearbox
	140	26	2	2	95.3	-	167	171	4000	4800	NU216-EQ1-P5-WZ	-	1.72	Subway gearbox
	140	26	2	2	95.3	-	167	171	4000	4800	NU216EQ1/YA8-DTZ	-	1.73	Subway traction motor
	170	39	2.1	2.1	103	-	204	228	3200	3800	NU316Q/P64S0	4E32316QT	4.45	Locomotive traction motor
	170	58	2.1	2.1	103	-	304	380	3200	3800	NU2316Q/P63S0Y	3E32616QKT	6.23	Locomotive axle gearbox
85	180	41	3	3	108	-	217	208	3200	3900	NU317EQ/P64S0	4E32317EQT	5.18	Locomotive transmission box
	210	52	4	4	113	-	400	485	2900	3600	NUP417Q/C9S0	92417QTU	10.4	Locomotive traction motor
90	190	43	3	3	115	-	270	315	3000	3700	NH318Q/C4S0	4G62318QT	6.63	Locomotive traction motor
	190	43	3	3	115	-	270	315	3000	3700	NH318Q/C9S0	62318QTU	6.63	Locomotive traction motor
	190	43	3	3	115	-	270	315	3000	3700	NH318Q/P69S0	E62318QTU	6.63	Locomotive traction motor
	190	43	3	3	115	-	270	315	3000	3700	NH318Q/C4S0	4G62318QT	6.63	Locomotive traction motor
	190	43	3	3	115	-	270	315	3000	3700	NU318Q1/P63S0	-	5.88	Locomotive axle gearbox
	190	43	3	3	113.5	-	330	360	3000	3700	NH318EQ1/YB2	-	6.64	Traction motor
95	200	67	3	3	121.5	-	413	530	2600	3200	NU2319Q/C4S0	4G32619QT	9.86	Locomotive axle gearbox
100	180	34	2.1	2.1	120	-	231	238	3000	3700	NU220Q/P63S0	3E32220QT	3.57	Locomotive transmission box
	215	47	3	3	129.5	-	335	370	2400	3000	NH320Q/S0	62320QT	9.64	Locomotive traction motor
	215	47	3	3	129.5	-	335	370	2400	3000	NH320Q/C9S0	62320QTU	9.64	Locomotive traction motor
	215	47	3	3	129.5	-	305	395	2400	3000	NU320Q1/P63S0	3E32320QT	8.78	Locomotive transmission box
	215	73	3	3	127.5	-	665	700	2600	3200	NJ2320EQ/P63S0	3E42620EQT	13.4	Locomotive transmission box
110	200	38	2.1	2.1	132.5	-	215	290	2700	3300	NU222Q/P63S0	3D32222QT	5.36	Locomotive transmission box turbine axle
	240	50	3	3	143	-	455	515	2000	2600	NH322Q/S0	62322QT	13.0	Locomotive traction motor
	240	50	3	3	143	-	420	430	2000	2600	NU322Q/P63S0	3E32322QT	11.6	Locomotive transmission box
	240	80	3	3	143	-	610	770	2000	2600	NU2322EQ/S0	32622EQT	17.6	Locomotive axle gearbox

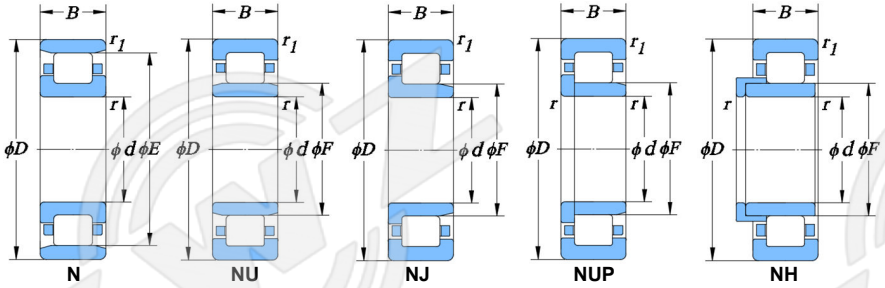
ZWZ

d 110～160mm



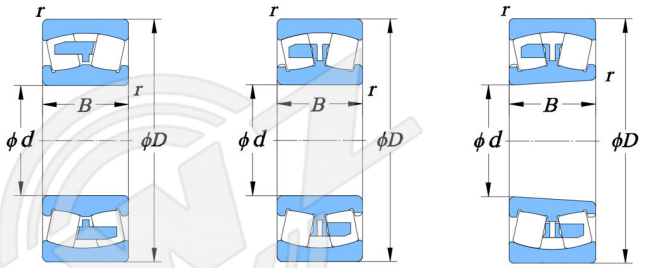
d	Principal dimensions(mm) D	B	r_{smin}	r_{1smin}	F	E	Basic load ratings(kN) C_r	C_{or}	Limiting speeds(r/min) Grease	Oil	Designations(new)	Designations(old)	Mass(kg) (approx.)	Mounting position
110	240	80	3	3	143	-	610	770	2000	2600	NU2322EQ/P63S0	3E32622EQT	17.6	Locomotive axle gearbox
120	215	40	2.1	2.1	143.5	-	340	430	2400	3000	NU224EQ/P53S0	3D32224EQT	7.08	Locomotive axle gearbox
	215	40	2.1	2.1	143.5	-	340	430	2400	3000	NU224EQ/P63S0	3E32224EQT	7.08	Locomotive axle gearbox
	260	55	3	3	154	-	539	647	2100	2600	NU324Q/P63S0	3E32324QT	15.2	Locomotive axle gearbox
	260	55	3	3	154	-	565	660	2100	2600	-	4E62324EQT	16.6	Locomotive traction motor
	310	72	5	5	170	-	730	855	1900	2400	NU424Q/C4S0	4G32424QT	28.8	Locomotive traction motor
130	230	40	3	3	153.5	-	335	465	2200	2800	NU226EQ/P53S0	3D32226EQT	7.38	Locomotive transmission box
	230	40	3	3	153.5	-	335	465	2200	2800	NU226EQ/P63S0	3E32226EQT	7.38	Locomotive transmission box
	230	64	3	3	153.5	-	525	735	2200	2800	NU2226EQ/P63S0	3E32526EQT	11.1	Locomotive axle gearbox
	280	58	4	4	167	-	625	805	1800	2200	NU326Q/S0	32326QT	17.9	Locomotive main generator
	280	58	4	4	167	-	625	805	1800	2200	NU326Q/P63S0	3E32326QT	17.9	Locomotive main generator
	280	93	4	4	167	-	780	1060	1800	2200	-	E32626QTY	30.3	Locomotive main generator
	280	93	4	4	167	-	780	1060	1800	2200	-	32626QTY	30.3	Locomotive main generator
	340	78	4.7	4.7	185	-	890	1030	1800	2200	NU426Q/P6S0Y	E32426QTY	37.5	Locomotive traction motor
	340	78	4.7	4.7	185	-	890	1030	1800	2200	NU426Q/P6S0Y1	E32426QTY1	39.9	Locomotive traction motor
	340	78	4.7	4.7	185	-	890	1030	1800	2200	NU426Q/S0Y	32426QTY	37.5	Locomotive traction motor
140	300	62	4	4	180	-	625	760	1900	2400	NJ328Q/C4S0	4G42328QT	22.1	Locomotive traction motor
	300	62	4	4	180	-	680	820	1800	2200	-	4E42328EQT	23.5	Locomotive traction motor
	300	62	4	4	180	-	625	760	1900	2400	NU328Q1/P63S0	-	21.7	Locomotive traction motor
	300	62	4	4	180	-	680	820	1800	2200	NU328EQ1/P63SO	E32328EQTU	21.6	Locomotive axle gearbox
	300	62	4	4	180	-	680	820	1800	2200	NJ328EQ/S0	42328EQT	23.5	Locomotive traction motor
	300	62	4	4	180	-	680	820	1800	2200	NU328E/S0	32328ET	21.9	Locomotive traction motor
150	270	45	3	3	182	-	460	610	1900	2400	NU230EQ/P63S0	3E32230EQT	11.8	Locomotive axle gearbox
	320	65	4	4	193	-	770	945	1700	2100	NU330EQ/C4S0	4G32330EQT	26.2	Locomotive traction motor
	320	65	4	4	193	-	770	945	1700	2100	NU330EQ	32330EQ	26.2	Locomotive traction motor
	320	65	4	4	193	-	770	945	1700	2100	NU330EQ/C9	32330EQU	26.2	Locomotive traction motor
	320	65	4	4	193	-	770	945	1700	2100	NU330EQ/P69S0	E32330EQTU	26.0	Locomotive traction motor
	320	65	4	4	193	-	820	1015	1700	2100	NU330EQ/S0	32330EQT	26.2	Locomotive traction motor
	320	65	4	4	193	-	820	1015	1700	2100	NU330EQ1/YB2	-	26.7	Locomotive traction motor
	320	65	4	4	193	-	770	945	1700	2100	-	4E42330EQTY	27.4	Locomotive traction motor
158.5	290	80	3	3	193	-	935	1130	1700	2100	-	552732QTK2	26.3	Locomotive traction motor
160	340	68	4	4	204	-	910	1150	1500	1800	NU332EQ/S0	32332EQT	27.8	Locomotive traction motor
	340	68	4	4	204	-	910	1150	1500	1800	-	32332EQ	27.8	Locomotive traction motor
	340	68	4	4	204	-	890	1150	1500	1800	-	4E32332EQT	29.2	Locomotive traction motor

d 190～380mm



Principal dimensions(mm)							Basic load ratings(kN)		Limiting speeds (r/min)		Designations(new)	Designations(old)	Mass(kg) (approx.)	Mounting position
d	*D*	*B*	r_{smin}	r_{1smin}	*F*	*E*	C_r	C_{or}	Grease	Oil				
190	260	42	1.1	2	208	-	315	610	1700	2100	**NU2938Q1/P53S0**	**3D2032938QT**	6.98	Locomotive transmission box
220	340	56	3	3	250	-	520	780	1800	2200	**NU1044Q/P63S0**	**3E32144QT**	19.4	Locomotive axle gearbox
240	360	56	3	3	270	-	485	830	1100	1400	**NU1048Q/P53S0**	**3D32148QT**	21.2	Locomotive axle gearbox
379.5	480	60	2.1	2.1	-	454	550	680	700	890	**N2876K/P69**	**-**	26.0	Locomotive wheelset hollow axle
	480	60	2.1	2.1	406	-	550	680	700	890	**NUP2876K/P69**	**-**	27.1	Locomotive wheelset hollow axle
	480.5	60	2.1	2.1	-	454	550	680	700	890	**N2876KY/P69**	**-**	26.1	Locomotive wheelset hollow axle
	480.5	60	2.1	2.1	406	-	550	680	700	890	**NUP2876KY/P69**	**-**	27.2	Locomotive wheelset hollow axle
380	480	60	2.1	2.1	-	454	550	680	700	890	**N2876/P69**	**-**	25.9	Locomotive wheelset hollow axle
	480	60	2.1	2.1	406	-	550	680	700	890	**NUP2876/P69**	**-**	27.0	Locomotive wheelset hollow axle

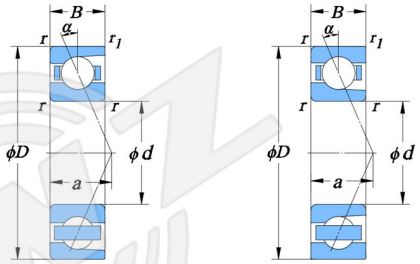
d 70～280mm



Principal dimensions(mm)				Basic load ratings(kN)		Limiting speeds (r/min)		Designations (new)
d	*D*	*B*	r_{smin}	C_r	C_{or}	Grease	Oil	
70	150	51	2.1	285	325	2200	3000	**22314Q/C3S0**
75	160	55	2.1	330	395	2200	3000	**22315Q/C3S0**
80	170	58	2.1	413	455	2000	2800	**22316Q/C3S0**
90	190	64	3	420	410	1800	2400	**22318Q/C3S0**
130	280	93	4	965	1500	1300	1700	**22326CAQ/S0**
	280	93	4	1060	1250	1300	1700	**22326Q/C3S0**
	280	93	4	1060	1250	1300	1700	**22326Q/S0**
160	270	86	2.1	840	1350	1300	1700	**23132CAQ/C3S0**
170	320	108	3.7	1160	1790	950	1200	**-**
180	300	118	3	1170	2030	950	1300	**24136CA/C3S0**
240	360	92	3	1060	2430	1000	1400	**23048Q/S0**
280	380	75	2.1	770	1850	1000	1400	**23956CAQ/C3S0Y**

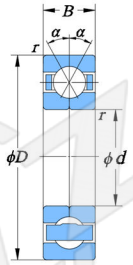
Designations (old)	Factor				Mass(kg) (approx.)	Mounting position
	e	Y_1	Y_2	Y_0		
3G3614QT	0.37	1.80	2.70	1.80	4.21	Locomotive axle gearbox
3G3615QT	0.39	1.75	2.61	1.71	5.29	Locomotive axle gearbox
3G3616QT	0.37	1.80	2.70	1.80	6.19	Locomotive axle gearbox
3G3618QT	0.36	1.87	2.79	1.83	8.56	Locomotive traction motor
53626QT	0.34	1.99	2.96	1.94	18.1	Locomotive main generator
3G3626QT	0.36	1.87	2.79	1.83	27.2	Locomotive main generator
3626QT	0.36	1.87	2.79	1.83	27.2	Locomotive main generator
3G3053732QT	0.30	2.30	3.40	2.20	21.8	Locomotive axle box
3G113734T	0.36	1.87	2.79	1.83	38.8	Locomotive axle box
3G4053736T	0.37	1.80	2.70	1.80	33.0	Locomotive axle box
3003148QT	0.25	2.70	4.00	2.60	34.5	Locomotive axle gearbox
3G3053956QKT	0.18	3.80	5.66	3.72	25.7	Locomotive traction motor suspension tube

d 55～170mm



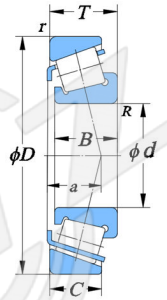
Principal dimensions(mm)					Basic load ratings(kN)		Limiting speeds(r/min)		Designations(new)	Designations(old)	Mass(kg) (approx.)	Mounting position
d	*D*	*B*	r_{min}	r_{1min}	C_r	C_{or}	Grease	Oil				
55	120	29	2	1	88.5	63	5100	6900	**7311ACQ/P6S0**	**E46311QT**	1.64	Locomotive gearbox
75	160	37	2.1	2.1	108	109	3900	5100	**E446315QT**	**E46315QT**	3.52	Locomotive static hydraulic pump
	160	74	2.1	2.1	175	218	2800	3700	**E446315QT**	**E446315QT**	7.04	Locomotive static hydraulic pump
120	215	40	2.1	2.1	189	183	3200	4500	**B7224ACQ1/HAS0**	**146224QT**	6.45	Railway locomotive axle box
140	250	42	3	3	218	235	2200	3000	**B7228ACQ/P6S0**	**E146228QT**	8.70	Locomotive intermediate gearbox
160	240	38	2.1	2.1	160	237	2000	2700	**B7032ACQ/S0**	**146132QT**	5.74	Railway locomotive axle box
170	260	42	2.1	2.1	198	227	1900	2500	**7034ACQ/S0**	**46134QT**	8.27	Railway locomotive axle box

d 65～260mm



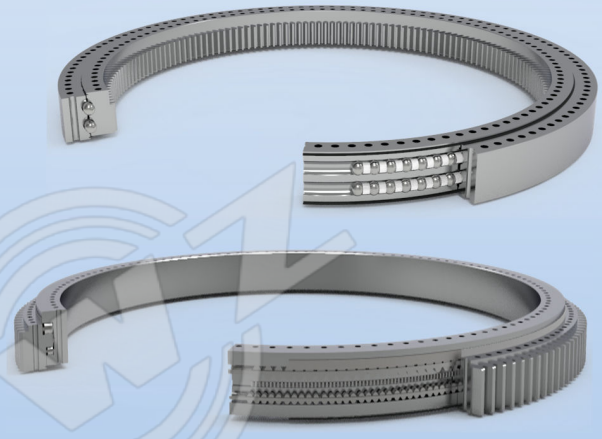
Principal dimensions(mm)				Basic load ratings(kN)		Limiting speeds(r/min)		Designations(new)	Designations(old)	Mass(kg) (approx.)	Mounting position
d	*D*	*B*	r_{min}	C_r	C_{or}	Grease	Oil				
65	140	33	2.1	118	132	3500	4700	QJ313QN2/P63S0	3E176313QKT	2.32	Locomotive transmission box
70	125	24	1.5	84	107	3700	4900	QJ214QN2/P63S0	3E176214QKT	1.29	Locomotive transmission box
	125	24	1.5	124	101	-	8418	HQJ214A	-	1.36	High-speed train gearbox
	125	24	1.5	140	114	-	8418	HQJ214B	-	1.36	High-speed train gearbox
75	130	25	1.5	120	122	3600	4800	QJ215N2-WTL	-	1.50	Subway gearbox
	130	25	1.5	118	123	-	8220	HQJ215A	-	1.42	High-speed train gearbox
80	140	26	2	138	146	3500	4700	QJ216N2-P5-WZ	-	1.79	Subway gearbox
85	149	28	2	155	160	3300	4400	QJ217X1N2-WTL	-	2.20	Subway gearbox
90	190	43	3	251	260	2500	3400	QJ1038QN2/P63S0	3E176318QKT	6.22	Locomotive transmission box
100	180	34	2.1	197	215	2400	3300	QJ220QN2/P63S0	3E176220QKT	3.74	Locomotive transmission box
110	240	50	3	343	405	2200	2900	QJ322QN2/P63S0	3E176322QKT	11.7	Locomotive axle gearbox
120	215	40	2.1	270	308	2100	2800	QJ224QN2/P53S0	3D176224QKT	6.29	Locomotive transmission box
	215	40	2.1	270	308	2100	2800	QJ224QN2/P63S0	3E176224QKT	6.29	Locomotive transmission box
130	230	40	3	293	369	1900	2500	QJ226QN2/P53S0	3D176226QKT	7.43	Locomotive transmission box
	230	40	3	293	369	1900	2500	QJ226QN2/P63S0	3E176226QKT	7.43	Locomotive transmission box
140	250	42	3	315	410	1700	2200	QJ228QN2/P63S0	3E176228QKT	9.36	Locomotive transmission box
150	270	45	3	336	470	1600	2100	QJ230QN2/P63S0	3E176230QKT	12.0	Locomotive axle gearbox
190	290	46	2.1	244	483	1400	1800	QJ1038QN2/P63S0	3E176138QKT	11.5	Locomotive transmission box
220	340	56	3	398	650	1300	1600	QJ1044QN2/P63S0	3E176144QKT	17.8	Locomotive axle gearbox
240	360	56	3	430	750	1100	1400	QJ1048QN2/P63S0	3E176148QKT	20.9	Locomotive axle gearbox
260	340	28	2	230	410	1000	1300	QJ1852X1TP-DTZ	-	6.89	Subway axle box

d 70～257.175mm



Principal dimensions(mm)							Basic load ratings (kN)		Limiting speeds (r/min)		Designations	Factor				Mass(kg) (approx.)	Mounting position
d	D	T	B	C	R_{min}	r_{min}	C_r	C_{or}	Grease	Oil		e	Y	Y_o	a		
70	150	38	35	25	3	2.5	164	183	-	6150	**HTB70X150A**	0.81	0.74	0.41	24.5	2.86	High-speed train gearbox
95	170	45.5	43	37	3	2.5	300	415	1900	2800	**32219N1-WTL**	0.42	1.4	0.79	40	4.18	Subway gearbox
190	260	46	44	36.5	3	2.5	360	764	1200	1500	**KJM738249/KJM738210-DTZ**	0.48	1.25	0.69	51	7.01	Subway gearbox
199.949	282.575	46.037	49.212	36.512	1.5	3.3	327	687	-	2726	**HTB200X282A**	0.51	1.18	0.65	39	9.21	High-speed train gearbox
	282.575	46.037	49.212	36.512	1.5	3.3	347	743	-	2726	**HTB200X282B**	0.51	1.18	0.65	39	9.29	High-speed train gearbox
205	310	60	60	47	3	2.5	546	1027	-	2726	**HTB205X310A**	0.37	1.61	0.88	30.9	16.3	High-speed train gearbox
210	285	41	40	33	4	3	360	725	1100	1400	**30642N1-WTL**	0.32	1.9	1.04	45	7.39	Subway gearbox
	285	41	40	33	4	3	360	725	1100	1400	**30642N1-P5-WZ**	0.32	1.9	1.04	45	7.39	Subway gearbox
216.5	285	41	40	33	4	3	360	725	1100	1400	**306/216.5N1-P5-WZ**	0.32	1.9	1.04	45	6.79	Subway gearbox
215.9	285.75	46.038	46.038	34.925	3.6	3.3	370	780	1000	1500	**KLM742749/KLM742710-WTL**	0.48	1.25	0.7	61	7.66	Subway gearbox
254	324.975	39	41.5	28	1.5	3.3	315	800	850	1080	**1-7009 (KJL848849/KJL848811)**	0.56	1.07	0.59	71	8.06	Locomotive suspension tube
	324.975	39	41.5	28	1.5	3.3	315	800	850	1080	**JL848849/JL848810/YB2**	0.56	1.07	0.59	71	8.06	Locomotive suspension tube
	358.775	71.438	76.2	53.975	3.3	1.5	740	1450	850	1200	**M249747/M249710B/YAB**	0.34	1.76	0.97	65	23.6	Subway gearbox
255.6	342.9	57.15	63.5	44.45	1.5	3.3	512	1170	800	1020	**KM349547/KM349510(1-7008)**	0.35	1.73	0.95	59	16.1	Locomotive suspension tube
257.175	358.775	71.438	76.2	53.975	1.5	1.5	730	1470	850	1200	**M249747/M249710/YAB**	0.34	1.76	0.97	65	21.2	Subway gearbox
	358.775	71.438	76.2	53.975	1.5	3.3	770	1570	850	1200	**M249747/M249710/YAD**	0.33	1.8	0.99	64	21.7	Subway gearbox

Slewing Bearings



●Slewing bearings

1 Preparation method of slewing bearing code

1.1 ZWZ slewing bearing code composition (original)

The ZWZ slewing bearing old code is composed of three parts: basic code, middle code and rear code, as shown in the figure below.

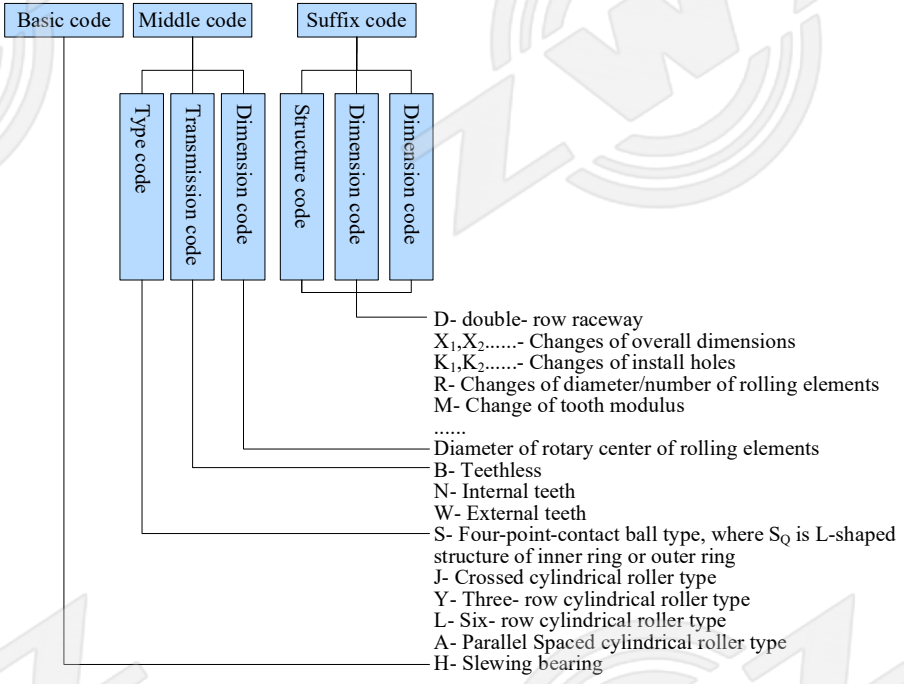


Figure 1-1 Schematic Diagram of Code Composition (original)

1.2 ZWZ slewing bearing code composition (new)

The ZWZ slewing bearing new code is composed of the basic code and the suffix code, and its composition and arrangement sequence are shown in the figure below. When the user has special requirements for the code, it is determined by the user and ZWZ together.

The basic code is divided into three parts, the front is the structural form and the transmission form code, the middle is the diameter of the rolling element (for the bearing with more than two rows of rolling elements, it is the largest diameter of rolling element), the rear is the diameter of the rotary center of rolling element (for the bearing

with more than two rows of rolling elements, it is the largest diameter of the rotary center of rolling element).

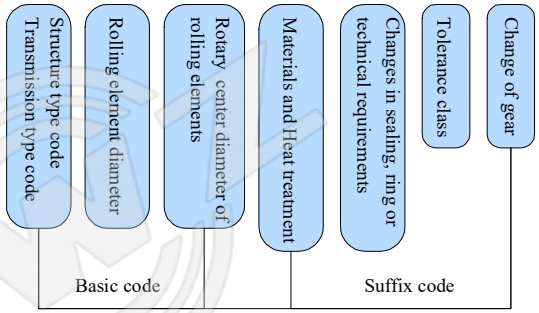


Figure 1-2 Schematic diagram of code composition (new)

1.2.1 Structural type code is specified in Table 1-1.

Table 1-1 Structural type code

Structure type code	Structural type
01	Four-point-contact ball bearing
02	Double row different diameter ball bearing
03	Double row same diameter ball bearing
11	Crossed cylindrical (tapered) roller bearing
13	Three row cylindrical roller bearing
22	Ball and cylindrical combined bearing (angular contact ball and cylindrical roller combined bearing)

1.2.2 Transmission type code is specified in Table 1-2.

Table 1-2 Transmission type code

Transmission type code	Transmission type
0	Toothless
1	Smaller module of involute cylindrical gear external tooth (m≤20)
2	Larger modulus of involute cylindrical gear external tooth (m >20)
3	Smaller module of evolvent cylindrical gear internal tooth (m≤20)
4	Larger modulus of evolvent cylindrical gear internal tooth (m >20)

1.2.3 Suffix code meaning and preparation rules

1.2.3.1 Material and thermal treatment method

Material and thermal treatment method code is specified in Table 1-3, and "." is used before its code to separate from the basic code.

Table 1-3 Materials and Thermal Treatment Method Code

Code	03	04	11	12	13
Material	42CrMoT[a]	42CrMoZ[b]	50MnT[a]	50MnZ[b]	Others

a T indicates that the material shall be tempered.
b Z indicates that the material shall be normalized.

1.2.3.2 Changes in sealing, ring structure or technical requirements

When there are changes in sealing, ring or technical requirements, the "K" and numbers are used to indicate, such as "K1" "K2", etc., the specific content of the change shall refer to the drawing or the supplemented technical conditions. Half a Chinese character distance is left between its code and material code.

1.2.3.3 Tolerance level

Tolerance levels are divided into three levels, 0, 6 and 5, rising from front to back. A "/" is used in front of its code to separate from the previous code, and it is not necessary to mark when the tolerance level is 0.

1.2.3.4 Gear change

When there are changes in gear (such as the parameters change or gear is required for surface quenching), the "G" and numbers are used to indicate, the specific content of the change shall refer to the drawing or the supplemented technical conditions. Half a Chinese character distance is left between its code and tolerance level.

1.2.4 Code example

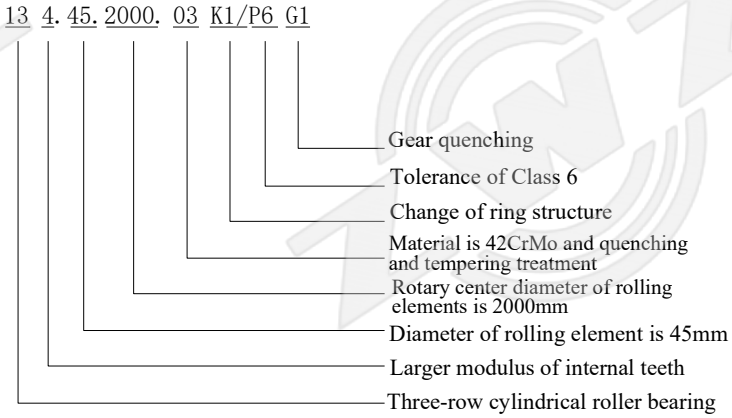


Figure 1-3 Example of slewing bearing code

1.3 Shield machine bearing code

ZWZ shield machine spindle series slewing bearing code is composed of front code, basic code and suffix code, and arrangement sequence is as follows:

Table 1-4 Shield machine bearing code composition

Shield machine bearing code		
Front code	Basic code	Suffix code

1.3.1 Front code

The front code is "DG", which is the combination of the first uppercase letter of shield in pinyin. The front code and the basic code are separated by hyphens"-".

1.3.2 Basic code

The basic code is divided into two parts, the front is the structural type code and transmission type code, and the back is the bearing outer diameter size.

1.3.3 Structural type code is specified in Table 1-5.

Table 1-5 Structural type code

Structure type code	Structural type
13	Three row cylindrical roller bearing

1.3.4 Transmission type code is specified in Table 1-6.

Table 1-6 Transmission type code

Transmission type code	Transmission type
1	Smaller module of involute cylindrical gear external tooth (m≤20)
2	Larger modulus of involute cylindrical gear external tooth (m >20)
3	Smaller module of evolvent cylindrical gear internal tooth (m≤20)
4	Larger modulus of evolvent cylindrical gear internal tooth (m >20)

1.3.5 Basic code Preparation Rules

When the basic code is prepared, the structural type code and the transmission code are written together, and the "." is used between the front part and the rear part to separate.

1.3.5 Basic code Preparation Rules

When the basic code is prepared, the structural type code and the transmission code are written together, and the " " is used between the front part and the rear part to separate.

1.3.6 Suffix code

The suffix code is divided into two parts, the front part indicates the modulus of the bearing ring gear, and the rear part indicates that the bearing size, materials, seals, technical requirements, etc., have changed.

1.3.7 Suffix code meaning and preparation rules

1.3.7.1 Gear module code

Bearing ring gear module code is indicated by Arabic numbers, and ". " is used before the code to separate from the basic code.

1.3.7.2 Changes in size, sealing structure and other technical requirements

When there are changes in bearing size, material, sealing, technical requirements, etc., the "K" or "the combination of K and numbers" are used to indicate, such as K, K1, K2, etc. The user can consult the manufacturer for their meanings, and half a Chinese character distance is left between its code and modular code.

1.3.8 Code example

Example:

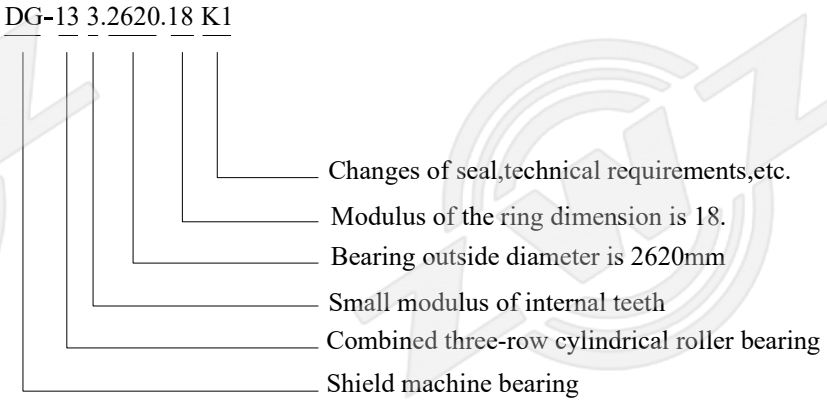


Figure 1-4 Example of shield machine bearing code

2 Slewing bearing selection

Slewing bearing include a variety of structural forms, and reasonable selection can give full play to the performance of bearing and ensure the service life of bearing.

2.1 Carrying capacity of slewing bearing

In the process of use, the slewing bearing generally works under the joint action of axial force Fa, radial force Fr and overturning moment M. Under different applications, due to the working mode and structural type of the principal machine, the combination of the above three loads will change, sometimes it may be the joint action of two loads, sometimes it may just be the single action of a load.

Generally, the slewing bearing are installed in the following three types: - horizontal installation, vertical installation and suspension mounting. The loads withstood by the support in three installation forms are shown as follows.

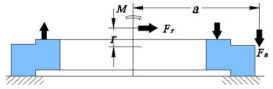


Figure 2-1 Horizontal Installation

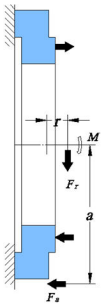


Figure 2-2 Vertical Installation

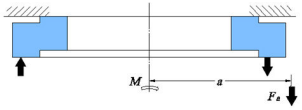


Figure 2-3 Suspension Installation

2.2 Related issues to be considered in bearing selection

2.2.1 Overall dimensions

Overall dimensions (inner or outer diameter, assembly height) must be determined to ensure bearing strength, stiffness, carrying capacity, service life, installation requirements, etc. The carrying capacity and service life expectancy can be predicted by theoretical calculation, and the safety requirements are shown in Table 2-1.

Generally, under certain conditions of carrying capacity, service life and safety, the overall dimension of roller bearing is smaller than that of ball bearing, and the overall dimension of single row bearing is smaller than that of multi-row bearing.

Please consult ZWZ for the calculation of bearing strength and stiffness.

2.2.2 Load capacity

Under the condition that the overall dimensions are basically the same, the bearing carrying capacity from high to low is as follows: six row cylindrical roller bearing, three row cylindrical roller bearing, four-point-contact ball bearing and crossed roller bearing.

2.2.3 Friction torque

Ball bearing is better than roller bearing, single row rolling element is better than multi-row rolling element, and the bearing with cage is better than that without cage.

Please consult **ZWZ** for calculation of bearing starting torque and running torque.

2.2.4 Installation accuracy requirements

Ball bearing contact is point contact, so the running resistance of ball bearing is small, and product manufacturing error, installation clearance, support seat deformation, etc., have small impact on the contact between bearing internal ball and raceway. Under the same load condition, the contact stress of point contact is greater than that of line contact, so the carrying capacity of point contact is lower than that of line contact.

Roller bearing is line contact, and the contact stress of roller bearing is lower than that of ball bearing is lower, so its carrying capacity is greater than that of ball bearing. However, the friction resistance generated by the line contact motion is greater than that of the point contact, and it has higher requirements on the manufacturing accuracy, the installation accuracy and the manufacturing accuracy and rigidity of the support seat of the bearing. Therefore, roller bearing shall not be selected when the rigidity of the support seat is inadequate and the installation conditions are poor.

2.2.5 Rigidity

Bearing carrying capacity is calculated on the premise that bearing has sufficient stiffness. Bearing rigidity refers to the elastic deformation of the contact part between the ring and the rolling element under the action of load. Generally, roller bearing are more rigid than ball bearing. Appropriate bearing preload (such as negative clearance, etc.) and increase of the rigidity of support seat can be used to improve bearing rigidity.

2.2.6 Reliability

Slewing bearing usually withstand large loads, and under the premise of meeting the carrying capacity and service life, there shall be a certain safety factor to ensure the reliability of bearing use.

2.3 Load curve of slewing bearing

Each type of slewing bearing in the product sample corresponds to a carrying capacity curve, and the curve can facilitate the customers to initially select the slewing bearing. There are two types of curves in the curve, one is the static carrying curve, indicating the maximum load that the slewing bearing can withstand when it remains static. The other type is the ultimate load curve of slewing bearing bolt (10.9 limit), which is determined under the condition that the bolt clamping length is 5 times of the nominal diameter of the bolt and the preload force is 70% of the yield limit of the bolt material.

Table 2-1 Bearing application safety factors

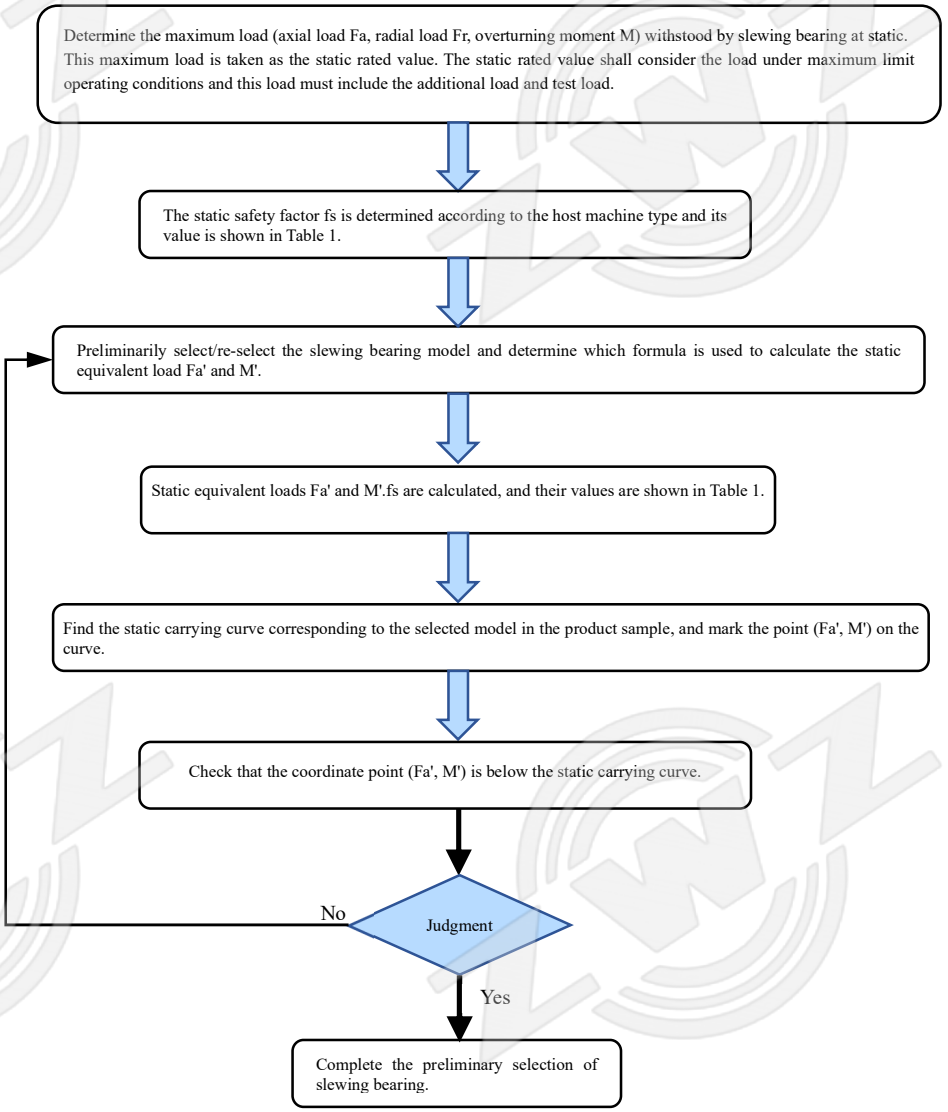
Devices			Static load Safety factor f_s	Service life Load factor f_l
Marine floating crane, truck crane, grab deck crane, rotary table (continuous rotation is required when used)			1.10	1.0
Tower crane for construction	Bearing installed on the tower	Mf≤0.5M	1.25	1.0
		0.5M＜Mf＜0.8M		1.15
		Mf≥0.8M		1.25
	Bearing installed on the foundation			1.0
Port gantry crane, marine crane				1.15
Metallurgical plant crane			1.45	1.5
Truck crane (grab bucket type or heavy-duty manual operation) Rotary crane (grab bucket type or sucker type) Wheel crane (grab bucket type or sucker type) Bridge crane (grab bucket type or sucker type) Floating crane (grab bucket type or sucker type)				1.7
Rope excavator Stacker-reclaimer Row cargo conveyor				2.15
Railway crane			1.0	Under these application occasions, the operating conditions vary greatly, and dynamic life calculations will be required for slewing bearing used in continuous and intermittent rotation.
Small cargo conveyer			1.1	
Dragline shovel			1.25	
Hydraulic excavator	Use the four-point-contact ball slewing bearing		1.25	
	Use other types of slewing bearing	Bucket capacity<1.5m³	1.45	
		Bucket capacity≥1.5m³	1.75	
Ladle car			1.75	

Note: f1 is a dynamic safety factor, and it must be used together with the dynamic carrying curve (dynamic carrying curve is not included in this sample). As it comes from experience and tests, if it is required to select the slewing bearing according to the life, please contact **ZWZ** technical department.

2.4 Calculation method of slewing bearing selection

2.4.1 Static selection

2.4.1.1 Selection calculation process



2.4.1.2 Static equivalent load calculation

Table 2-2 Static Equivalent Load Calculation

Slewing bearing structure type	Calculation method (selection according to static operating conditions)
Four-point-contact ball slewing bearing (α=45°)	When $F_r \leq 0.44F_a$, $F_a'=(F_a+2.3F_r)\cdot f_s$ When $F_r>0.44$Fa, please contact **ZWZ** for the calculation method of Fa' $M'=M\cdot f_s$
Double row angular contact ball thrust ball slewing bearing	When $F_r \leq 10\%\ F_a$, $F_a'=F_a\cdot$fs When $F_r>10\%F_a$, please contact **ZWZ** for the calculation method of F_a' $M'=M\cdot f_s$
Crossed cylindrical roller slewing bearing	When $F_r \leq 0.44\ F_a$, $F_a'=(F_a+2.3F_r)\cdot f_s$ For $F_r \geq 0.44$Fa, please contact **ZWZ** for the calculation method of Fa' $M'=M\cdot f_s$
Three row cylindrical roller combined slewing bearing	$F_a'=F_a\cdot f_s$ $M'=M\cdot f_s$ Radial load F_r is withstood by a row of rollers that withstand the radial load

2.4.2 Dynamic selection

For continuous operation, high-speed rotation and other application occasions with specific requirements on the service life of slewing bearing, please contact ZWZ technical department.

2.4.3 Checking calculation of bolt carrying capacity

1) The ultimate load withstood by the slewing bearing is taken as the load of the selected bolt;

2) Check whether the load falls below the bolt carrying curve;

3) If the bolt carrying capacity is inadequate, please re-select the slewing bearing, or contact ZWZ technical department.

2.5 Selection parameters

In order to ensure that bearing meet the usage requirements, the customers shall fill in the relevant information used for selection in accordance with Table 2-3 before selecting ZWZ products.

Table 2-3 Selection Information Table

Selection information sheet							
Host machine name				Host machine type			
Operating conditions		axial load（kN）	Radial load（kN）	Overturning moment（kN.m）	Rotating speed（rpm）	Working hours（%）	
Load	Static maximum:						
	Test:						
	.....						
	Dynamic maximum:						
	Test:						
	Overload:						
	.....						
	Vibration and impact Degree	Mild:	Moderate:	Severe:			
Usage	Service life (h)						
	Installation mode	Horizontal: horizontal type, suspension type	Vertical:	Others:			
	Mode of usage	Continuous:	Intermittent:	Swing:	Others:		
	Rotating part	Outer ring:	Inner ring:				
	Lubrication mode	Grease:	Oil:	Others:			
	Sealing	Host machine setting:		Bearing setting:			
	Bearing drive Peripheral force	N					
	Environmental conditions	Humidity (%):	Temperature (°C):	Pollution:			
	Bearing Operating temperature	℃					

3. Installation and maintenance of slewing bearing

3.1 Loading/unloading and storage

1) slewing bearing must be carefully loaded and unloaded.

2) It shall be placed horizontally on a dry, ventilated and flat site, and shall be stored in isolation from chemicals and other corrosive items.

3) When multiple sets of slewing bearing are stacked together for storage, minimum three wooden pads of equal height shall be placed between each set of slewing bearing along the circumference, and the upper and lower pads are placed in the same position.

4) The lifting shall be conducted with ring screws in a horizontal manner. Please do not collide, and avoid collision in the radial direction.

5) ZWZ slewing bearing are subject to anti-rust treatment when they are delivered

from the factory. The anti-rust effective period is generally one year, and the slewing bearing (that are required to be continuously stored and are beyond the anti-rust effective period) shall be subject to anti-rust treatment again.

3.2 Requirements on installation bracket

1) The installation bracket must have sufficient and uniform axial stiffness and horizontal stiffness.

2) The thermal treatment for stress relief shall be conducted after welding the installation bracket, and the machining shall be done, leaving flange for positioning the convex (concave) to prevent radial displacement.

3) The flatness of the installation bracket (including the angular deviation from the horizontal plane) shall be controlled within a certain range (see Table 3-1).

Table 3-1 Flatness of Installation Bracket

Raceway center diameter (mm)		Flatness (mm)		
Over	Incl.	Single row four-point-contact ball slewing bearing	Double row ball slewing bearing	Cylindrical roller slewing bearing
~	1000	0.15	0.20	0.10
1000	1500	0.19	0.25	0.12
1500	2000	0.22	0.30	0.15
2000	2500	0.25	0.35	0.17
2500	4000	0.30	0.40	0.20
4000	6000	0.40	0.50	0.30
6000	8000	0.50	0.60	0.40

4) The maximum flatness value of the installation bracket is allowed only to appear at 180°, and multiple wavy peaks are not allowed, that is, uniformly progressive increase or decrease within 0° to 90° and 90° to 180°, as shown in Figure 3-1.

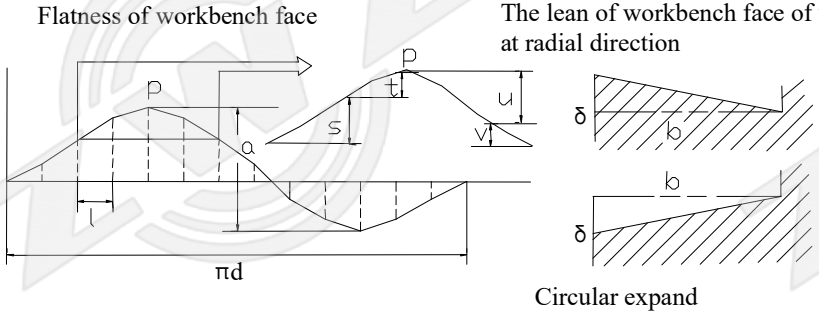


Figure 3-1 Flatness Requirements

5) The installation bracket shall have good rigidity. Under the maximum allowable load, the deflection deformation volume shall be controlled within the range specified in Table 3-2.

Table 3-2 Maximum Deflection of Bracket Plane

Raceway center diameter(mm)	~1000	>1000 ~ 1500	>1500 ~ 2000	>2000 ~ 2500	>2500 ~ 4000	>4000 ~ 6000	>6000 ~ 8000
Maximum deflection of bracket plane (mm)	0.1	0.12	0.12	0.15	0.2	0.25	0.3

3.3 Requirements on bolt preload force

When tightening the bolt, a certain preload force shall be ensured, and the preload force is generally 70% of the yield limit of the bolt. Refer to Table 3-3 for the preload torque or preload force.

Table 3-3 Bolt preload force and preload torque

Bolt strength category			8.8			10.9			12.9		
Yield limit N/mm²			M≤16 640 M>16 660			940			1100		
Bolt diameter	Stress area of thread	Cross-sectional area of bolt	Preload force of bolt installation	Theoretical tightening moment	Torsional moment Nm	Preload force of bolt installation	Theoretical tightening moment	Torsional moment Nm	Preload force of bolt installation	Theoretical tightening moment	Torsional moment Nm
	mm²	mm²	FM N	MA Nm	M'= 0.9MA	FM N	MA Nm	M'= 0.9MA	FM N	MA Nm	M'= 0.9MA
M5	14.2	12.7	6400	6.1	5.5	9300	8.9	8	10900	10.4	9.3
M6	20.1	17.9	9000	10.4	9.3	13200	15.5	13.9	15400	18	16.2
M8	36.6	32.8	16500	25	22.5	24200	37	33	28500	43	38
M10	58	52.3	26000	51	45	38500	75	67	45000	87	78
M12	84.3	76.2	38500	87	78	56000	120	117	66000	150	135
M14	115	105	53000	140	126	77000	205	184	90000	240	216
M16	157	144	72000	215	193	106000	310	279	124000	370	333
M18	193	175	91000	300	270	129000	430	387	151000	510	459
M20	245	225	117000	430	387	166000	620	558	194000	720	648
M22	303	282	146000	580	522	208000	830	747	243000	970	873
M24	353	324	168000	740	666	239000	1060	954	280000	1240	1116
M27	459	427	221000	1100	990	315000	1550	1395	370000	1850	1665
M30	561	519	270000	1500	1350	385000	2100	1890	450000	2500	2250
M33	694	647	335000	Bolt hydraulic tensioning device is required		480000	Bolt hydraulic tensioning device is required		560000	Bolt hydraulic tensioning device is required	
M36	817	759	395000			560000			660000		
M39	976	913	475000			670000			790000		
M42	1120	1045	542000			772000			904000		
M45	1300	1224	635000			905000			1059000		
M48	1470	1377	714000			1018000			1191000		
M52	1760	1652	857000			1221000			1429000		
M56	2030	1905	989000			1408000			1648000		
M60	2360	2227	1156000			1647000			1927000		

3.4 Bearing installation

Before installation, the bearing installation surface and the bracket surface must be cleaned, without oil stain, burrs and other foreign matters.

3.4.1 Bearing positioning

There is a quenching soft belt on the ring of the slewing bearing, and the position symbol is "S". The user shall place the soft belt in the non-load area or non-regular load area during installation.

3.4.2 Tightening for bolt installation

For toothed slewing bearing, the toothless rings shall be bolted and tightened first. Before installing the bolts, apply a little lubricating oil on the bolt threads to obtain uniform friction resistance for all bolts. The bolt shall be tightened in the "star" method (see Figure 3-2) to obtain a uniform tightening effect on the circumference. Tightening bolts is divided into 3 cycles, and 30%, 70% and 100% of the total tightening force shall be applied in each cycle, respectively. After each tightening cycle is completed, the ring is rotated for several turns, and then the next tightening cycle is conducted.

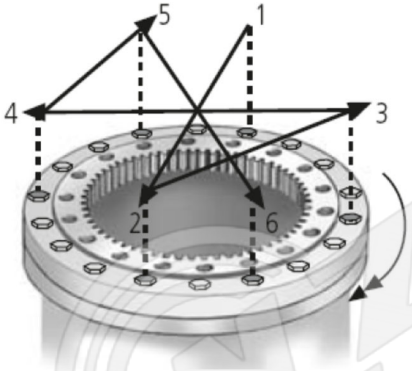


Figure 3-2 Bolt Tightening Method

Figure 3-3 Side Clearance Inspection Method

3.4.3 Side clearance adjustment of gear pair

During the installation of the toothed slewing bearing, it is necessary to adjust the gear engagement side clearance by moving the pinion. There are maximum tooth runout points (three teeth marked with green paint) at the tooth top of the slewing bearing, where the engagement side clearance value δ is 0.03 to 0.04m (m is the gear modulus), and the inspection method is shown in Figure 3-3. Rotate the bearing for more than one turn, check the engagement side clearance of other positions of the gear, and the side clearance value shall not be less than δ.

3.5 Bearing lubrication and maintenance

3.5.1 Bearing re-lubrication

The slewing bearing have been filled with specific greases according to the operating conditions when delivered from the factory. It is necessary to supplement lubrication during operation, and the raceway must be filled with grease in each lubrication. When injecting the grease, slowly rotate the bearing to ensure that the grease is evenly filled. The lubrication cycle is shown in Table 3-4.

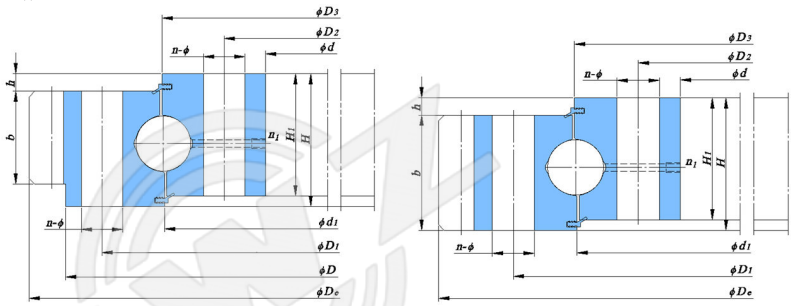
Table 3-4 Re-lubrication Cycle

Working conditions	Lubrication cycle
Weekly operating hours h less than 5 hours	Half a year
Weekly operating hours h more than 100 hours	Re-lubricate every 2 weeks
weekly operating hours h between 5 and 100 hours	$T = -0.25h + 27$ T: Re-lubrication cycle, week h: Weekly operating time, hours

3.5.2 Bolt inspection

When the slewing bearing is working, it must ensure that the bolt has sufficient preload force. After the initial 100-hour operation of the slewing bearing, the preload force of the bolt shall be checked, and then the preload force shall be checked every 500-hour operation.

D_{PW} 186～1120mm



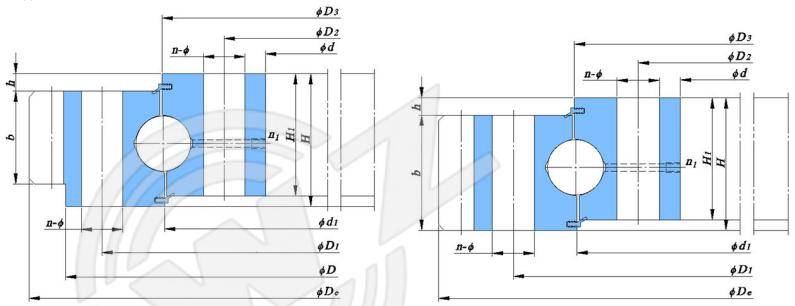
Note:

1. n_1 is the amount of lubricating holes, customer can specify the position of lubricating hole according to using conditions.
2. n-ϕ can change to threaded hole, thread diameter M.
3. The products in this catalogue are standard products, please contact ZWZ if you have other special requirements.

Principal dimensions(mm)				Bolt hole dimensions(mm)				Designations
D_c	D	d	H	D_1	D_2	n	ϕ	
256	234	135	38	216	154	16	11	**HSW186**
430	-	190	165	360	230	10	18	**011.20.302.11**
474	448	262	70	412	298	20	M16	**011.25.355.11**
474	448	262	70	412	298	20	M16	**011.25.355.03**
474	448	262	70	412	298	20	18	**011.25.355.03**
474	448	262	70	412	298	20	16	**011.25.355.11**
528	493	307	70	457	343	24	18	**HSW400**
576	543	357	60	507	393	24	16	**011.25.450.11**
576	507	357	70	507	393	24	18	**HSW450**
576	543	357	70	507	393	24	16	**011.25.450.11**
625	600	398	80	566	434	20	18	**HSW500**
628.8	602	398	80	566	434	20	18	**HSW500M**
679.386	655	425	80	620	475	12	18	**HSW548**
688.8	662	458	80	626	494	20	18	**HSW560**
732	-	505	56	660	540	18	20	**HSW600**
768	732	528	80	696	564	24	18	**HSW630**
744	744	572	56	680	600	24	14	**HSW644**
850.8	812	608	80	776	644	24	18	**HSW710**
924	922	710	67	845	744	8	11	**HSW800**
966.4	975	678	100	878	722	30	22	**HSW800X1**
966.4	922	678	90	878	722	30	22	**011.40.800.11**
1026.5	1022	745	111	940	784	20	23	**HSW862**
1062.4	1046.4	778	100	978	822	30	22	**HSW900**
1046.4	1000	873.5	56	985	900	44	13.5	**HSW944**
1110.4	1120	887	63	1039	922	30	18	**HSW980**
1188	1125	878	100	1078	922	36	22	**HSW1000**
1180	1160	876	90	1074	926	24	17.5	**HSW1000X1**
1188	-	878	80	1078	922	24	20	**011.30.1000.03**
1180	1200	895	100	1085	935	10	22	**HSW1009**
1112	1072	960	58	1057	980	12	10	**011.20.1020.11K**
1192.626	1200	930	80	1125	980	28	18	**HSW1052.5**
1200	1198.1	905	90	1116	945	30	22	**HSW1055**
1200	1240	905	90	1116	945	30	22	**HSW1055X1**
1198	-	905	71	1116	945	30	22	**011.28.1056.11G**
1198.1	1240	1022	56	1135	1048	48	14	**HSW1094**
1278	1314.1	1013	79	1183	1057	30	22	**HSW1120**

Structure dimensions(mm)							Gear parameters			Mass(kg)
D_3	d_1	H_1	h	n_1	M	m	Z	b(mm)	x	(approx.)
185	187	30	8	4	10	4	162	26	0	6.76
300	300	165	0	2	16	5	84	50	0	76.1
353.5	356.5	60	10	2	-	5	93	50	0	47.8
353.5	356.5	60	10	2	-	5	93	50	0	47.8
355	355	60	10	4	16	5	93	50	0	46.5
355	355	60	10	2	16	5	93	50	0	47.8
396	400	60	10	2	16	6	86	50	0	53.8
450	450	60	10	2	16	6	94	50	0	61.9
450	450	60	10	2	16	6	94	50	0	61.7
450	450	60	10	2	16	6	94	50	0	61.9
499	501	70	10	4	16	5	123	60	0	85.4
501	498	70	10	4	16	6	102	60	0.5	89.0
548	548	71	9	3	16	4.5	147	56	0	110
558.5	561.5	70	10	4	16	6	112	46	0.5	95.2
600	600	48	8	2	16	6	120	48	0	72.4
630	631	70	10	4	16	6	126	60	0	114
642.5	645.5	44.5	11.5	4	12	6	122	44.5	0	50.1
708	711	70	10	4	16	6	139	60	0.5	69.1
799	801	58	9	4	10	6	152	58	0	121
801	798	90	10	6	20	8	118	80	0.5	215
801	798	90	10	6	20	8	118	80	0.5	215
860	864	90	21	4	20	8	120	80	0	242
901	898	90	10	6	20	8	130	80	-0.5	239
941	947	45.5	10.5	4	12	8	129	45.5	0	77.0
981	979	54	9	5	18	8	136	54	0.5	124
1000	1000	90	10	6	20	10	116	80	0.5	288
1000	1000	80	10	0	16	10	116	70	0	256
1000	1000	80	20		20	10	116	90	0.5	283
1004.5	1008.5	85	15	4	20	10	116	75	0	262
1020	1020	48	10	1	10	8	136	48	0.5	73.6
1052.5	1052.5	70	10	4	16	5	231	55	0	210
1056.5	1053.5	71	19	6	20	10	118	71	0.0136	227
1056.5	1053.5	71	19	6	20	10	118	71	0	227
1056	1053	71	19	6	20	10	118	71	0	182
1092.5	1095.5	44.5	11.5	4	12	8	148	44.5	0	91.6
1121	1119	54	9	5	20	10	125	70	0.5	182

D_{PW} 1120～1708mm



Note:

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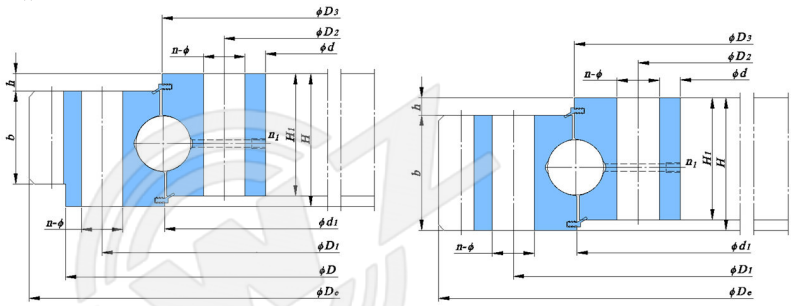
2. n-ϕ can change to threaded hole, thread diameter M.
3. The products in this catalogue are standard products, please contact ZWZ if you have other special requirements.

Principal dimensions(mm)				Bolt hole dimensions(mm)				Designations	Structure dimensions(mm)						Gear parameters			Mass(kg)
D_e	D	d	H	D_1	D_2	n	ϕ		D_3	d_1	H_1	h	n_1	M	m	Z	b(mm)	x	(approx.)
1300	1320	996	90	1194	1046	28	24	**HSW1120R**	1121	1118	80	10	4	22	10	129	70	-0.5	272
1308	1338	996	90	1194	1046	28	24	**HSW1120RM**	1121	1118	80	10	4	22	12	108	70	-0.5	272
1314.1	1365	1040	80	1220	1080	30	17.5	**HSW1148**	1139	1157	70	10	0	16	10	125	70	0	225
1380	-	1041	80	1220	1080	30	26	**HSW1155K**	1155	1155	70	10	0	24	10	136	70	0	309
1320	1370	1045	93	1236	1084	36	21	**HSW1162**	1166.5	1158.5	77	16	4	20	10	130	77	0	276
1338	1370	1068	79	1248	1112	36	22	**HSW1180**	1181	1178	63	9	6	22	10	131	70	0.5	227
1435.9	1391	1075	120	1310	1130	36	24	**HSW1220**	1221	1218	105	15	6	22	12	116	90	1	488
1408	1510	1143	79	1313	1187	36	22	**HSW1250**	1251	1249	54	9	6	22	10	138	70	0.5	221
1449.6	1390	1110	110	1337	1163	40	26	**HSW1250C**	1250	1250	100	10	5	24	12	118	90	0.5	426
1430	1520	1126	90	1324	1176	32	24	**HSW1250R**	1251	1248	80	10	4	24	10	142	70	-0.5	302
1440	-	1126	90	1324	1176	32	24	**HSW1250RM**	1251	1248	80	10	4	24	12	119	70	-0.5	309
1449.6	1390	1109	122	1337	1163	40	26	**011.45.1250.11**	1252	1248	112	10	5	24	12	118	90	0.5	450
1428.266	-	1150	80	1356	1200	32	18	**HSW1278**	1278	1278	70	8	4	16	6	228	55	0	261
1497.6	-	1208	89	1388	1252	42	22	**HSW1320**	1321	1318	63	9	6	20	12	122	80	0.5	298
1533.6	1470	1197	112	1417	1249	47	26	**HSW1333C**	1333	1333	100	12	6	24	12	125	80	0.5	423
1510	-	1215	90	1426	1255	24	22	**HSW1358**	1354	1362	71	19	6	20	10	149	71	0	256
1584	-	1276	90	1474	1326	36	24	**HSW1400**	1401	1398	80	10	6	22	12	131	70	-0.5	337
1596	1520	1276	90	1474	1326	36	24	**HSW1400M**	1401	1398	80	10	6	22	14	113	70	-0.5	347
1608	1540	1258	102	1486	1314	36	26	**HSW1400R**	1401	1398	90	12	6	24	12	133	80	-0.5	448
1600	1540	1260	100	1487	1313	40	24	**011.45.1400.11G1**	1398	1402	100	10	5	24	10	158	90	0	488
1582	1515	1330	70	1485	1370	12	18	**011.25.1430.11K**	1430	1430	60	10	1	18	14	111	40	0	206
1600	1600	1305	90	1516	1345	48	22	**HSW1452**	1455	1454	71	19	6	20	10	158	71	0	253
1600	1553	1330	113	1513	1388	40	22	**HSW1453**	1453	1453	80	33	6	20	10	158	62	0	341
1600	1600	1305	90	1516	1345	48	22	**HSW1452X1**	1456.5	1453.5	71	19	6	20	10	158	71	0	262
1680	1613	1293	132	1553	1353	48	30	**HSW1453X1**	1453	1453	122	10	6	28	14	118	105	0	635
1600	1550	1305	102	1505	1345	24	22	**HSW1454**	1450	1458	78	17	3	20	10	158	65	0	282
1702.4	1634	1366	81	1582	1418	60	26	**011.40.1500.03F**	1500	1500	81	9	6	24	14	119	81	0.5	407
1677.6	1645	1388	89	1568	1432	48	22	**HSW1500**	1501	1498	63	9	6	20	12	137	80	0.5	338
1690	1720	1390	91	1600	1440	22	20	**HSW1520**	1500	1521.5	91	14	4	18	5	336	47	0	347
1791.1	1740	1360	140	1660	1420	42	26	**HSW1540**	1540	1540	122	18	6	24	14	124	110	1.15	926
1803.2	1740	1466	94	1682	1518	40	26	**HSW1600X**	1601	1598	81	9	8	24	14	126	85	0.5	479
1812	1740	1458	102	1686	1514	40	26	**HSW1600**	1601	1598	90	12	5	24	12	150	80	-0.5	528
1820	1845	1458	102	1686	1514	40	26	**HSW1600M**	1601	1598	90	12	5	24	14	129	80	-0.5	534
1817.2	1902	1460	110	1687	1513	45	26	**HSW1600R**	1602	1598	100	10	5	24	14	127	90	0.5	584
1845	1940	1506	95	1728	1550	40	22	**HSW1618**	1617	1620	86	9	10	20	14	129	67	0.5	425
1929.6	1870	1538	127	1818	1598	72	30	**HSW1708**	1708	1708	118	9	6	28	12	158	100	0.5	730

D_{PW} 1800～4976mm



Note:

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2. n-ϕ can change to threaded hole, thread diameter M.
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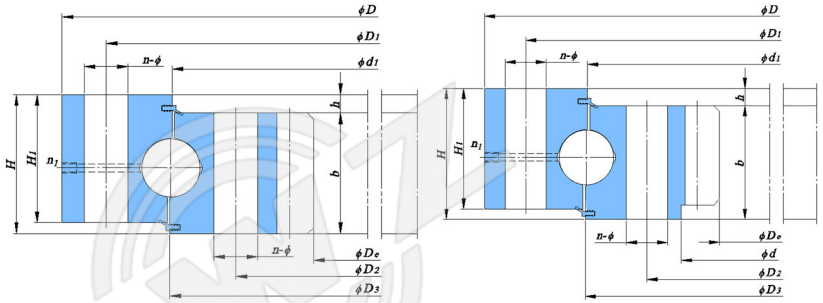
Principal dimensions(mm)				Bolt hole dimensions(mm)				Designations
D_c	D	d	H	D_1	D_2	n	ϕ	
1934.47	1940	1680	105	1848	1736	24	18	**HSW1800**
2032	2013.2	1658	102	1886	1714	44	26	**HSW1800M**
2013.2	2085	1660	110	1887	1713	45	26	**HSW1800R**
2013.2	2129	1705	122	1896	1749	48	22	**HSW1824**
2139.2	2178	1729	109	2005	1795	36	33	**HSW1900**
2152.81	2150	1820	90	2045	1870	36	18	**HSW1958**
2223.2	2160	1812	114	2096	1884	72	36	**HSW1990**
2195.2	2220	1877	111	2068	1927	40	22	**HSW2000**
2264.4	2342	1825	144	2110	1891	48	33	**HSW2000M**
2192.041	2418	1880	105	2110	1945	48	18	**HSW2028**
2263.047	2541	1970	105	2180	2020	36	22	**HSW2100**
2380.8	2519	1959	109	2235	2025	48	33	**HSW2130**
2382	2660	2130	80	2306	2174	48	18	**HSW2240**
2498.4	2678	2065	144	2350	2131	48	33	**HSW2240M**
2624.4	2978	2184	130	2460	2250	76	33	**HSW2355**
2568	2978	2325	72	2490	2365	40	18	**HSW2425**
2754	3340	2325	144	2610	2391	36	33	**HSW2500**
2776	3376	2325	144	2610	2391	56	33	**HSW2500M**
2786.4	-	2327	119	2627	2393	56	33	**HSW2510**
2892.8	3376	2474	109	2750	2540	60	33	**HSW2645**
3074.4	3972	2625	144	2910	2691	56	33	**HSW2800**
3076	-	2625	144	2910	2691	56	33	**HSW2800M**
3456	-	2940	183	3254	2994	72	26	**HSW3124**
3476	-	2922	174	3286	3014	56	45	**HSW3150**
3471.6	-	2922	174	3286	3014	56	45	**HSW3150M**
3600	-	3054	165	3420	3146	56	36	**HSW3283**
3876	3776	3322	174	3686	3414	56	45	**HSW3550**
3972	-	3400	220	3740	3460	72	32	**HSW3600**
5258	5200	4732	174	5116	4836	36	24	**HSW4976**

Structure dimensions(mm)							Gear parameters			Mass(kg)
D_3	d_1	H_1	h	n_1	M	m	Z	b(mm)	x	(approx.)
1801	1803	90	15	6	16	6	308	90	0	450
1802	1798	90	12	4	24	16	126	80	0.5	607
1802	1798	100	10	5	24	14	141	90	0.5	652
1824	1821	80	10	24	20	14	141	112	0.5	566
1902	1898	99	9	9	30	14	150	100	0.5	820
1958	1958	70	20	4	16	8	258	60	0	496
1990	1990	105	9	6	34	14	156	80	0.5	783
2001	2003	74	34	10	20	14	154	102	0.5	599
2002	1998	132	12	8	30	18	123	120	0.5	1170
2026	2030	90	15	6	16	7.5	270	80	0	635
2098	2102	90	15	6	20	8	270	80	0	700
2132	2128	99	9	8	30	16	146	100	0.5	931
2238	2242	70	10	6	16	6	395	30	0	388
2242	2238	132	12	8	30	18	136	120	0.5	1290
2357	2353	121	9	12	30	18	143	120	0.5	1210
2425	2425	63	9	8	16	10	255	55	0	450
2498	2502	132	12	6	30	18	151	120	0	1460
2502	2498	132	12	8	30	20	136	120	0.5	1510
2508	2512	109	10	10	30	18	152	109	0.5	1300
2647	2643	99	9	12	30	16	178	100	0.5	1140
2802	2798	132	12	8	30	18	168	120	0.5	1700
2802	2798	132	12	8	30	20	151	120	0.5	1700
3124	3124	133	43	20	24	24	141	110	0.5	2280
3152	3147	162	12	8	42	20	171	150	0.5	2870
3152	3147	162	12	8	42	22	155	150	0.5	2870
3284.5	3281.5	153	12		36	20	178	153	0	2960
3686	3414	162	12	8	42	20	191	150	0.5	3370
3600	3604	205	60	20	30	24	163	160	0.25	3830
4976	4976	162	12	8	24	10	524	142	0	4740

D_{PW} 400～1220mm



Note:

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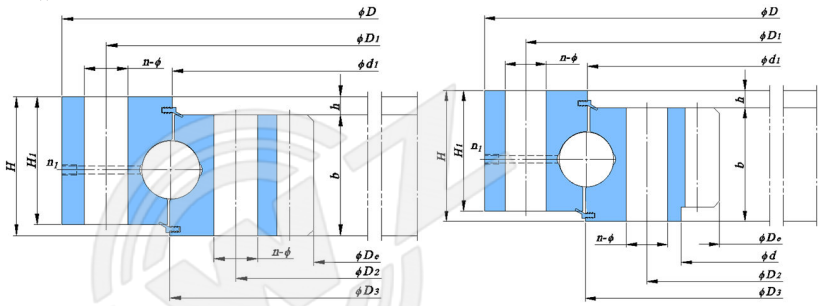
Principal dimensions(mm)				Bolt hole dimensions(mm)				Designations	Structure dimensions(mm)							Gear parameters			Mass(kg)
D_e	D	d	H	D_1	D_2	n	ϕ		D_3	d_1	H_1	h	n_1	M	m	Z	b(mm)	x	(approx.)
300	475	-	55	448	352	16	13.5	**HSN400**	401	339	46	9	2	14	5	61	46	0.5	33.0
345	531	-	55	500	400	16	15.5	**HSN450**	451	449	46	9	2	14	5	70	46	0.5	38.0
380	573	400	55	538	420	16	16	**HSN480**	478.5	481.5	45	5	2	14	4	96	45	0.5	49.0
388	562	408	60	538	440	24	13.5	**HSN489**	487.5	490.5	50	10	12	22	4	99	43	0	44.9
367	602	398	80	566	434	20	18	**HSN500**	501	498	70	10	4	16	5	74	60	0.5	90.0
367	602	398	80	566	434	20	18	**HSN500C**	499	501	70	10	4	16	5	74	60	0.5	82.2
368.4	602	398	80	566	434	20	18	**HSN500M**	501	498	70	10	4	16	6	62	60	0.5	90.0
450	641	-	55	610	510	20	15.5	**HSN560**	561	559	46	9	4	14	6	76	46	0.5	51.0
427	662	458	80	626	494	20	18	**HSN560R**	561	558	70	10	4	16	5	86	60	0.5	102
428.4	662	458	80	626	494	20	18	**HSN560RM**	561	558	70	10	4	16	6	72	60	0.5	102
471.5	640	496	55	615	520	20	13.5	**HSN567.5**	567.5	567.5	45	10	1	12	5	96	44.5	0.15	49.2
494.4	732	528	80	696	564	24	18	**HSN630**	631	628	70	10	4	16	6	83	60	0.5	116
491.2	732	528	80	696	564	24	18	**HSN630M**	631	628	70	10	4	16	8	62	60	0.5	116
594	797	-	55	762	658	24	18	**HSN710**	711	709	46	9	4	16	6	100	46	0.5	68.0
572.4	812	608	80	776	644	24	18	**HSN710R**	711	708	70	10	4	16	6	96	60	0.5	132
582	820	620	80	780	660	18	18	**HSN720**	721	719	70	10	12	16	6	99	60	0	125
635.2	922	678	100	878	722	30	22	**HSN800**	801	798	90	10	6	20	8	80	80	0.5	224
634	922	678	100	878	722	30	22	**HSN800M**	801	798	90	10	6	20	10	64	80	0.5	224
752	980	-	63	944	827	36	18	**HSN886**	887	885	54	9	4	16	8	95	54	0.5	111
739.2	1022	778	100	978	822	30	22	**HSN900**	901	898	90	10	6	20	8	93	80	0.5	252
734	1022	778	100	978	822	30	22	**HSN900M**	901	898	90	10	6	20	10	74	80	0.5	252
850	1016	870	56	990	905	36	6	**HSN950**	945.5	942.5	44.5	11.5	4	6	2.5	342	40	0	80.4
824	1122	878	100	1078	922	36	22	**HSN1000**	1001	998	90	10	6	20	10	83	80	0.5	292
820.8	1122	878	100	1078	922	36	22	**HSN1000M**	1001	998	90	10	6	20	12	69	80	0.5	292
930	1169	-	63	1134	1017	36	18	**HSN1077**	1078	1076	54	9	6	16	10	94	54	0.5	140
888.6	1170	920	98	1125	975	40	22	**HSN1050**	1040	1052	80	10	2	20	8	150	60	0	248
920	1200	-	90	1158	940	12	20	**HSN1086S**	1086	1090	80	10	4	18	10	94	80	0	320
984	1166	-	56	1140	1055	60	13.5	**HSN1094C**	1095.5	1092.5	45	11	4	12	8	125	45	0	90.5
926.8	1215	-	100	1175	1030	12	20	**HSN1102**	1101	1103	90	10	4	20	14	68	90	0	299
960	1232	-	79	1188	1052	36	22	**HSN1120**	1121	1118	63	9	6	20	10	97	70	0.5	206
944	1242	998	100	1198	1042	36	22	**HSN1120R**	1121	1118	90	10	6	20	10	95	80	0.5	333
940.8	1242	998	100	1198	1042	36	22	**HSN1120RM**	1121	1118	90	10	6	20	12	79	80	0.5	333
1082	1309	1130	108	1274	1164	36	20	**HSN1211**	1211	1211	98	10	1	20	10	110	98	0.1	247
1082	1309	1130	108	1274	1164	36	20	**HSN1211K**	1211	1211	98	10	1	20	10	110	98	0.1	247
1017.3	1365	-	120	1310	1130	36	24	**HSN1220**	1219	1221	105	15	6	22	12	86	105	0.35	474
1071	1327	1130	99.5	1288	1170	32	22	**013.32.1220.11G1**	1220	1220	90	9.5	1	20	12	91	90	0	286

D_{PW} 1241～2240mm



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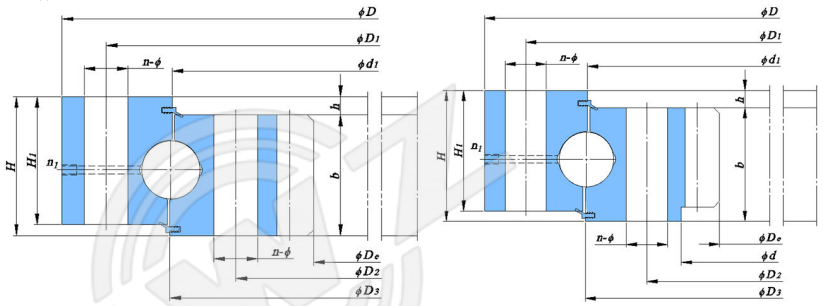
Principal dimensions(mm)				Bolt hole dimensions(mm)				Designations	Structure dimensions(mm)							Gear parameters			Mass(kg)
D_e	D	d	H	D_1	D_2	n	ϕ		D_3	d_1	H_1	h	n_1	M	m	Z	b(mm)	x	(approx.)
1010	1355	1070	90	1315	1170	20	18	**013.40.1241.11**	1241	1241	80	10	4	16	10	103	80	0	351
1052	1360	-	98	1303	1147	40	26	**HSN1225**	1223	1227	80	10	4	24	10	106	88	0.5	320
1068	1374	-	90	1324	1176	20	26	**HSN1250**	1250	1250	80	10	4	24	12	90	80	0.5	318
1041.6	1390	-	110	1337	1163	20	26	**HSN1250X1**	1250	1250	100	10	4	24	14	75	100	0.5	457
1090	1362	-	79	1318	1182	40	22	**HSN1250RM**	1251	1248	63	9	8	20	10	110	70	0.5	231
1048.8	1390	1110	110	1337	1163	40	26	**HSN1250RM**	1252	1248	100	10	5	24	12	88	90	0.5	467
1041.6	1390	1110	110	1337	1163	40	26	**HSN1250RM**	1252	1248	100	10	5	24	14	75	90	0.5	467
1131.2	1408	1200	120	1370	1245	36	20	**HSN1293**	1293	1293	110	10	1	20	14	82	110	0.4	356
1131.2	1416	1200	120	1376	1247	36	20	**HSN1297**	1297	1297	110	10	1	20	14	82	110	0.4	372
1278	1695	-	165	1636	1434	40	30	**HSN1535**	1533	1537	125	25	4	27	18	72	140	0.5	930
1224	1512	-	89	1468	1332	44	22	**HSN1400**	1401	1398	63	9	11	20	12	103	80	0.5	296
1192.8	1540	1260	110	1487	1313	40	26	**HSN1400R**	1402	1398	100	10	5	24	12	100	90	0.5	529
1195.6	1540	1260	110	1487	1313	40	26	**HSN1400RM**	1402	1398	100	10	5	24	14	86	90	0.5	529
1235	1526	-	122	1481	1358	40	26	**HSN1405**	1403	1407	97	12	3	24	14	90	110	0	434
1234.8	1535	1301	122	1486	1358	34	26	**013.40.1405.11G1**	1403	1407	110	12	1	24	14	89	110	0.5	457
1238.4	1550	1320	152	1505	1358	35	26	**013.50.1405.11G1**	1403	1407	140	12	3	24	16	78	140	0.5	544
1271.2	1602	1341	120	1555	1393	36	24	**HSN1470**	1470	1470	110	10	1	24	14	92	110	0.4	523
1271.2	1613	1341	120	1562	1393	36	24	**HSN1477**	1477	1477	110	10	1	24	14	92	110	0.4	543
1308	1634	-	94	1582	1418	40	26	**HSN1500**	1501	1498	81	9	8	24	12	110	85	0.5	410
1428	1712	-	89	1668	1532	48	22	**HSN1600**	1601	1598	63	9	8	20	12	120	80	0.5	334
1391.6	1740	1460	110	1687	1513	45	26	**HSN1600R**	1602	1598	100	10	5	24	14	100	90	0.5	607
1382.4	1740	1460	110	1687	1513	45	26	**HSN1600RM**	1602	1598	100	10	5	24	16	87	90	0.5	620
1382.4	1740	1460	110	1687	1513	45	26	**HSN1600X**	1600	1600	100	10	5	24	16	87	90	0.5	584
1498	1834	-	94	1782	1618	44	26	**HSN1700**	1701	1698	81	9	11	24	14	108	85	0.5	475
1500.8	1905	1580	117	1810	1640	30	22/26	**HSN1728**			95	9	10	20/24	14	108	98	0.5	701
1573.6	1940	1660	110	1887	1713	50	26	**HSN1800**	1798	1802	100	10	5	24	14	113	90	0.5	649
1568	1972	1650	140	1912	1700	60	30	**HSN1806C**	1806	1806	127	13	6	28	14	113	120	0.5	912
1552	1972	1640	140	1912	1700	48	30	**013.60.1806.11G1**	1806	1806	127	13	6	28	16	98	120	0	960
1552	1972	1640	140	1915	1700	48	33	**013.60.1806.11G1K1**	1806	1806	127	13	6	30	16	98	120	0.5	960
1662	1916	1662	78	1876	1746	24	17.5	**HSN1810**	110	1810	70	8	4	16	10	168	70	0	331
1830	1960	-	115	1865	1925	36/34	-	**HSN1895**	1990	1825	64	30		24	5	368	39	0	258
1728	2178	1825	144	2110	1891	48	33	**HSN2000**	1998	2002	132	12	12	30	16	109	120	0.5	1180
1910.2	2260	-	140	2180	1995	48	-	**HSN2070**	2066	2074	100	40	6	20	10	192	100	0.5	862
1820	2320	1910	160	2255	1990	30	39	**HSN2122C**	2122	2122	140	20	4	36	14	132	140	0	1490
2032	2335	-	124	2280	2144	64	22	**HSN2211**	2208	2214	80	20	6	20	14	147	100	0	633
1984	2411	-	109	2345	2135	48	33	**HSN2240**	2242	2238	99	9	8	30	16	125	100	0.5	961

D_{PW} 2240～6830mm



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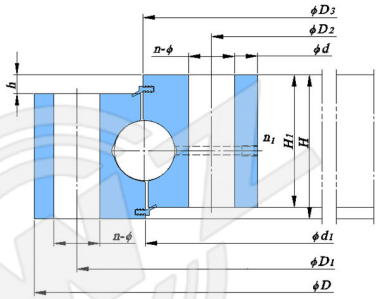
Principal dimensions(mm)				Bolt hole dimensions(mm)				Designations	Structure dimensions(mm)							Gear parameters			Mass(kg)
D_e	D	d	H	D_1	D_2	n	ϕ		D_3	d_1	H_1	h	n_1	M	m	Z	b(mm)	x	(approx.)
1968	2418	2065	132	2350	2131	48	33	**013.60.2240.03G1**	2242	2238	132	12	8	30	12	165	120	0.5	1350
1994.4	2411	-	109	2345	2135	48	33	**HSN2240F**	2240	2240	100	9	8	30	12	167	100	0.5	991
1990.4	2418	2065	144	2350	2131	48	33	**HSN2240R**	2242	2238	132	12	8	30	16	125	120	0.5	1390
1987.2	2418	2065	144	2350	2131	48	33	**HSN2240RM**	2242	2238	132	12	8	30	18	111	120	0.5	1390
2023.4	2410	-	132	2358	2140	36	22	**HSN2249**	2246	2252	122	9	4	20	14	146	123	0.245	1120
2230	2404	2256	120	2270	2410	42/40		**HSN2335**	2470	2231.4	74	18		20	5	448	45	0	516
2240	2661	-	109	2595	2385	54	33	**HSN2490**	2492	2488	99	9	9	30	16	141	100	0.5	1050
2239.2	2678	2325	144	2610	2391	56	33	**HSN2500**	2502	2498	132	12	8	30	18	125	120	0.5	1580
2228	2678	2325	144	2610	2391	56	33	**HSN2500M**	2502	2498	132	12	8	30	20	112	120	0.5	1580
2228	2691	2330	144	2610	2391	56	31	**014.50.2500**	2502	2498	132	12		30	20	112	120	0.5	1650
2323	2880	-	178	2810	2510	60	39	**HSN2660**	2664	2656	161	17	4	36	18	131	161	0	2370
2590	2750	2616	119	2634	2744	48/38		**HSN2675**	2784	2600	72	26	3	20	5	520	45	0	431
2544.38	2942	2622	155	2890	2683	48	26	**HSN2786**	2784	2789	125	30	24	24	16	160	115	0.5	1410
2515.2	3000	2590	152	2922	2670	72	39	**HSN2796**	2794	2798	134	20	12	36	16	158	131	0.5	2030
2528	2978	2625	144	2910	2691	56	30	**014.60.2800.03**	2806	2794	132	12	8	30	20	127	120	0.5	1780
2502	2978	2625	144	2910	2691	60		**HSN2800**	2809	2791	132	12	8	30	18	141	117	0	1780
2576	3025	-	144	2945	2715	36	33	**HSN2830**	2825	2535	132	12	12	30	16	162	132	0.5	1810
2622.4	2990	2735	160	2945	2770	48	23	**HSN2840**	2835	2820	135	5	8	20	22	121	144	0	1440
2828	3376	2922	174	3286	3014	56	45	**HSN3150**	3152	3147	162	12	8	42	20	142	150	0.5	2840
2824.8	3376	2922	174	3286	3014	56	45	**HSN3150M**	3152	3147	162	12	8	42	22	129	150	0.5	2840
2960	3302	2960	99	3258	3112	60	22	**HSN3185**	3183	3187	90	9	12	20	16	186	90	0.5	939
3564	3939	3651	105	3895	3711	60	22	**HSN3803**	3807	3799	82	10	15	20	18	199	90	0.5	1430
6498.8	7100	6591	180	6981	6676	144	35	**013.70.6830.03G1**	6836	3824	165	15	16	30	14	465	135	0.5	7020

D_{PW} 290～844mm



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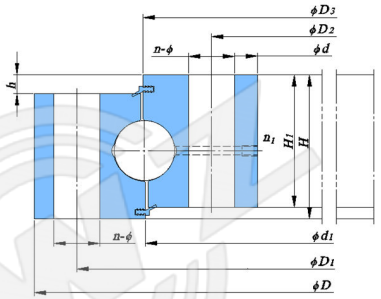
Principal dimensions(mm)			Bolt hole dimensions(mm)				Designations	Structure dimensions(mm)					Mass(kg)
D	d	H	D_1	D_2	n	ϕ		D_3	d_1	H_1	h	n_1	(approx.)
330	240	60		260	8	12	**HSB290**	292	288	48	12	2	15.9
360	240	38	240	260	12	8	**HSB300**	298	302	31	7	3	12.5
420	266	55	390	294	12	18	**HSB344**	344	345	45	10	2	25.7
410	285	40	385	305	12	11	**HSB345**	344	346	35	5	-	16.8
496	338	55	460	364	12	18.5	**HSB411**	412	410	45	10	2	33.4
485.521	342.9	55.88	457.2	368.3	12	14	**HSB413**	410.5	415	44.45	11.38	-	28.9
518	304	56	490	332	8	18	**HSB414**	412	416	34	22	2	38.5
520.344	355.6	50.8	492.125	387.35	12	14.275	**HSB441**	438.65	444	50.8	0	-	40.1
559	332	72	514	377	20	22	**HSB445**	446	447	63	9	3	67
600	398	80	566	434	20	18	**HSB500**	499	501	70	10	4	78.2
600	398	80	566	434	20	18	**HSB500X1**	515	485	70	10	4	80.1
626	424	72	590	460	24	22	**HSB525/P5**	530	520	63	9	3	69.1
590	460	40	570	488	12	8	**HSB530**	527	533	40	0	-	30.4
590	460	40	570	488	12	8	**HSB530A**	527	533	40	0	-	30.8
648	434	56	620	462	45213	18	**HSB544**	546	542	45.5	10.5	4	30.9
662	458	80	626	494	20	18	**HSB560**	561	558	70	10	4	87.5
656	464	70	618	502	14	17	**HSB560/YAD**	562	558	60	10	2	74.4
662	458	80	626	494	20	18	**HSB560K**	562	558	70	10	4	87.5
670	517	55	640	544	12	18	**HSB592**	590	594	46	9	4	47
732	528	80	696	564	24	18	**HSB630**	631	628	70	10	4	97.7
732	528	80	696	564	24	18	**HSB630K1**	631	629	70	10	4	97
748	534	56	720	562	12	18	**HSB640**	638	642	46	10	4	41
740	600	41	690	620	14	12	**HSB655/P5**	655	655	36	5	2	33.6
806	544	100	755	595	20	22	**HSB675**	676	673	90	10	2	177
800	560	82	755	605	20	22	**HSB680**	681	678	73	9	4	131
796	601	65.5	749.5	647.5	12	13	**HSB698/P49-JYJ**	696.5	699.5	54	11.5	2	84.2
812	608	80	776	644	24	18	**HSB710X1**	724	695	70	10	4	119
819.15	628.65	50.8	781.05	666.75	18	14.275	**HSB724**	722	726	50.8	0	-	78
857	635	56	820	662	12	16	**HSB741**	739	743	45.5	10.5	1	86
848	634	56	820	662	16	18	**HSB744**	742	746	45.5	10.5	4	45
875	675	80	822	706	24	20	**HSB764**	761	767	70	10	4	121
880	680	80	846	713	4	16	**HSB780-NTW**	773.5	786.5	80	0	4	142
922	676	100	879	721	30	22	**HSB800**	798	802	90	10	6	190
916	774	56	890	798	20	12	**HSB844**	840	850	46	10	4	56.5
916	774	56	890	798	20	13	**HSB844K**	842	846	46	10	4	60.8
916	772	56	890	798	40	14.7	**HSB844X1**	842	846	44.5	11.5	-	58

D_{PW} 900～2011mm



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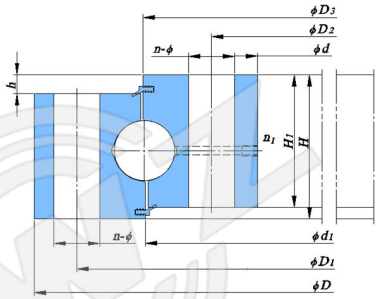
Principal dimensions(mm)				Bolt hole dimensions(mm)			Designations	Structure dimensions(mm)					Mass(kg)
D	d	H	D_1	D_2	n	ϕ		D_3	d_1	H_1	h	n_1	(approx.)
22	778	100	978	822	16	22	**010.40.900.03K**	900	900	90	10	4	229
1055	830	115	1010	870	16	23	**HSB940**	938	942	92	23	6	225
1052	864	63.5	1020	895	12	16	**HSB944**	942.5	945.5	51.5	12	6	38.6
1074	840	81	1030	884	44	22	**HSB957**	955	959	72	9	4	170
1052	864	63.5	1020	895	24	16	**HSB957.5-DTZ**	956	959	63.5		6	102
1090	870	86	1050	910	44	22	**HSB980**	978	982	72	14	4	163
1138	878	100	1078	922	36	22	**HSB1000**	998	1002	90	10	6	270
1170	830	182	1125	875	40/45	26	**HSB1000-1**	1002	1000	172	10	6	577
1117.6	914.4	50.8	1079.5	955.675	24	15.875/17.475	**HSB1016**	1014	1018	50.8	0	0	116
1100	1000	50	-	-	-	-	**HSB1045**	1042	1048	50	0	3	58.4
1244	881	160	1180	945	24	26	**HSB1078**	1076	1080	150	10	4	577
1166	1022	56	1140	1048	48	14	**HSB1094**	1092.5	1095.5	44.5	11.5	4	78.2
1242	998	100	1198	1042	36	22	**HSB1120**	1121	1118	90	10	6	271
1227	1013	63	1183	1057	36	22	**HSB1120X1**	1121	1119	54	9	6	139
1315	1125	85	1280	1160	20/16	18	**HSB1220-DTZ**	1232	1218.5	70	15	8	186
1348	1128	65	1295	1181	30	18	**HSB1238**	1240	1234	55	10	2	168
1390	1110	110	1337	1163	12	20	**HSB1250K**	1248	1252	100	10	5	405
1374	1126	90	1324	1176	32	24	**HSB1250X1**	1248	1252	80	10	2	273
1340	1200	41	1290	1220	14	12	**HSB1255/P5**	1255	1255	36	5	2	65
1390	1110	110	1337	1163	24	24	**010.45.1250.03K**	1248	1252	100	10	4	395
1395.4	1144.45	88.9	1352.55	1187.45	30	16.662/17.475	**HSB1270**	1268	1272	79.25	9.65	-	282
1540	1260	110	1487	1313	40	26	**HSB1400**	1398	1402	100	10	5	423
1600	1300	84	1555	1350	24	22	**HSB1472**	1476	1468	74	10	4	353
1740	1460	110	1687	1513	45	26	**010.45.1600.11**	1600	1600	100	10	9	482
1927	1628	130	1875	1680	36	26	**HSB1775**	1807	1743	115	15	6	715
1927	1628	130	1875	1680	36	26	**HSB1775-1**	1779	1771	115	15	6	699
1927	1628	130	1875	1680	36	26	**HSB1775A**	1804	1746	115	15	6	719
1940	1660	110	1887	1713	40	26	**HSB1800X1**	1806	1794	100	10	4	547
1946	1650	130	1900	1700	36	26	**HSB1800X2**	1802	1798	110	20	6	653
1940	1660	110	1887	1713	45	26	**010.45.1800.03**	1660	1660	100	10	5	547
2178	1825	144	2110	1891	48	30	**HSB2000**	2040	1958	132	12	8	1010
2178	1829	120	2105	1895	48	33	**HSB2000X**	2002	1998	110	10	8	766
2171	1830	109	2105	1894	40	33	**HSB2000-1**	1998	2002	99	10	8	777
2178	1825	144	2110	1891	48	30	**HSB2000-3**	2040	1958	132	12	8	1030
2171	1829	120	2105	1895	40	30	**HSB2000-4**	2029	1971	105	15	8	801
2180	1842	120	2114	1908	60	33	**HSB2011**	2041	1981	105	15	10	780

D_{PW} 2021～3455mm



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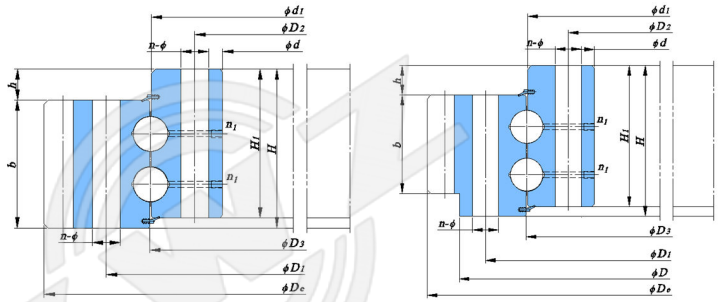
Principal dimensions(mm)			Bolt hole dimensions(mm)				Designations	Structure dimensions(mm)					Mass(kg)
D	d	H	D_1	D_2	n	ϕ		D_3	d_1	H_1	h	n_1	(approx.)
2230	1805	165	2160	1880	36	33	**HSB2021**	2016	2016	150	10	4	1440
2230	1805	165	2160	1880	36	33	**HSB2030**	2035	2023	150	15	4	1440
2240	1800	165	2160	1880	36	33	**HSB2030X1**	2035	2023	150	15	4	1500
2243	1906	145	2200	1950	36	22	**HSB2080**	2077	2083	135	10	4	1050
2315	1905	180	2240	2030	36	23	**HSB2135**	2141	2131	160	20	4	1580
2135	1905	180	2240	2030	36	23	**HSB2135S**	2141	2131	160	20	4	1580
2310	1910	180	2240	2030	36	23	**HSB2140**	2142	2138	160	20	4	1590
2365	1955	180	2290	2080	36	23	**HSB2185**	2190	2180	160	20	4	1620
2343.15	2095.5	85.725	2289.175	2133.6	52	26.988	**HSB2220**	2219.2	2218.3	73.152	12.573	-	442
2415	2005	180	2340	2130	36	23	**HSB2235**	2241	2231	160	20	4	1660
2418	2065	144	2350	2131	48	33	**HSB2240**	2242	2238	132	12	4	1130
2678	2325	144	2610	2391	48	33	**HSB2500/YAD**	2502	2498	132	12	6	1270
2678	2325	144	2610	2391	56	33	**HSB2500X**	2502	2498	132	12	8	1280
2678	2325	144	2610	2391	56	33	**010.60.2500.03**	2500	2503	132	12	8	1260
2820	2474	225	2750	2540	60	32	**HSB2645**	2647	2643	160	65	12	1620
3026	2580	174	2936	2664	60	33	**HSB2800**	2802	2798	162	12	10	2230
3136	2751	135	3064	2823	60	33	**HSB2944**	2942	2946	125	10	6	1470
3271.825	3017.2	85.725	3213.1	3067.05	60	26.988	**HSB3144**	3141.5	3143.25	76.2	9.525	-	663
3376	2922	174	3286	3014	56	39	**HSB3150**	3152	3147	162	12	8	2550
3600	3300	191	3560	3340	40	22	**HSB3455**	3455	34455	144	47	8	1740

D_{PW} 695～4500mm



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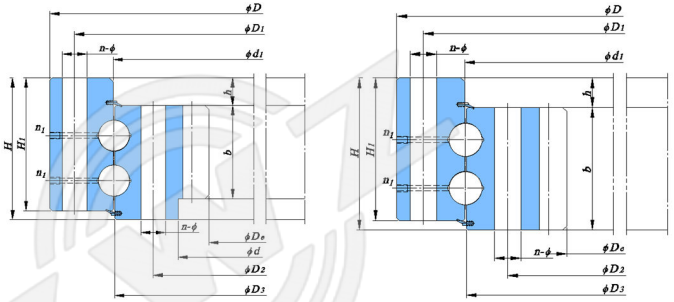
Principal dimensions(mm)				Bolt hole dimensions(mm)				Designations
D_e	D	d	H	D_1	D_2	n	ϕ	
920	867	545	133	805	611	40	30	**HSW695D**
979	935	718	102	893	753	36	21	**HSW823D**
1915.2	1850	1467	154	1778	1533	60	33	**HSW1650D**
2300.8	2221	1859	225	2155	1925	90	33	**HSW2040D**
2876	2784	2296	257	2688	2392	72	48	**HSW2540D**
3004	2930	2559	208	2864	2625	36	33	**HSW2738D**
3002.4	2919	2617	163	2850	2677	84	30	**HSW2764D**
4867.2	4754	4256	200	4642	4358	84	39	**HSW4500D**

Structure dimensions(mm)							Gear parameters			Mass(kg)
D_3	d_1	H_1	h	n_1	M	m	Z	b(mm)	x	(approx.)
693	697	123	10	4	27	10	90	90	0	310
823	823	92	10	2	18	10	94	86	0	207
1650	1650	145	9	6	30	14	134	120	0.5	981
2038	2042	213	12	6	30	16	141	170	0.5	1690
2538	2542	247	10	6	46	20	141	165	0.5	3130
2736	2740	199	9	12	30	16	185	128	0.5	2480
2766	2762	136	12	7	27	18	164	120	0.5	1510
4498	4502	190	10	7	36	24	200	180	0.5	5380

D_{PW} 762～1900mm



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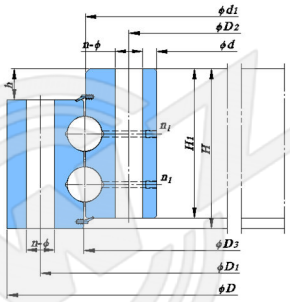
Principal dimensions(mm)				Bolt hole dimensions(mm)				Designations
D_e	D	d	H	D_1	D_2	n	ϕ	
640	850	93		820	705	36	17	**HSN762D**
1657.3	2080	142		2000	1800	54	33	**HSN1900D**

Structure dimensions(mm)							Gear parameters			Mass(kg)
D_3	d_1	H_1	h	n_1	M	m	Z	b(mm)	x	(approx.)
760	764	83	10	4	16	8	81	83	0.5	140
1898	1902	132	10	12	30	12	139	132	0.5	1159

D_{PW} 490～1783mm



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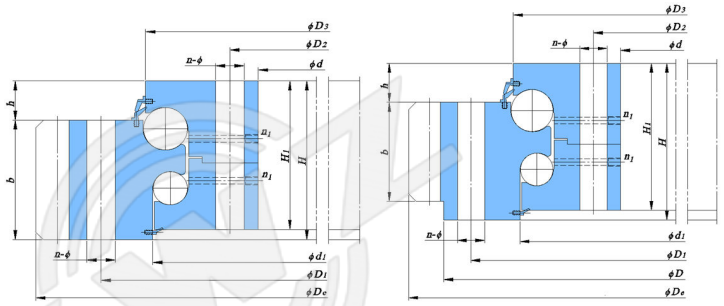
Principal dimensions(mm)			Bolt hole dimensions(mm)				Designations	Structure dimensions(mm)						Mass(kg)
D	d	H	D_1	D_2	n	ϕ		D_3	d_1	H_1	h	n_1	M	(approx.)
590	390	92	548	432	24	18	**030.20.490.03**	488	492	82	10	4	16	87.7
1959	1606	168	1893	1672	60	33	**HSB1783D**	1781	1785	140	18	10	30	974

D_{PW} 500～3150mm



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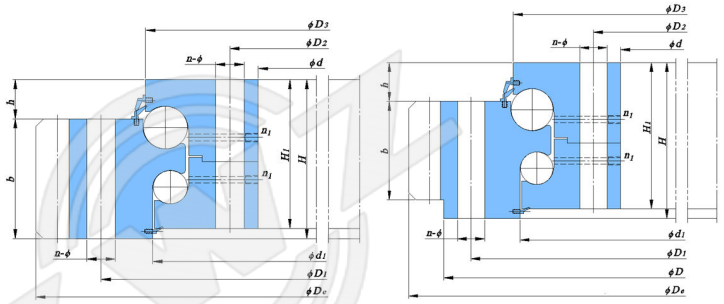
Principal dimensions(mm)				Bolt hole dimensions(mm)				Designations	Structure dimensions(mm)							Gear parameters			Mass(kg)
D_c	D	d	H	D_1	D_2	n	ϕ		D_3	d_1	H_1	h	n_1	M	m	Z	b(mm)	x	(approx.)
644	616	384	106	580	420	20	18	**HSW500D**	523	518	96	26	4	16	5	126	60	0.5	130
646.8	616	384	106	580	420	20	18	**HSW500DM**	523	518	96	26	4	16	6	105	60	0.5	130
704	676	444	106	640	480	20	18	**HSW560D**	583	578	96	26	4	16	5	138	60	0.5	146
706.8	676	444	106	640	480	20	18	**HSW560DM**	583	578	96	26	4	16	6	115	60	0.5	147
790.8	746	514	106	710	550	24	18	**HSW630D**	653	648	96	26	4	16	6	129	60	0.5	173
790.4	746	514	106	710	550	24	18	**HSW630DM**	653	648	96	26	4	16	8	96	60	0.5	170
920	867	545	133	805	611	35/40	30	**HSW695D**	693	697	123	10	4	27	10	90	90	0	310
862.8	826	594	106	790	630	24	18	**HSW710D**	733	728	96	26	4	16	6	141	60	0.5	190
862.4	826	594	106	790	630	24	18	**HSW710DM**	733	728	96	26	4	16	8	105	60	0.5	187
982.4	942	658	124	898	702	30	22	**HSW800D**	829	823	114	29	6	20	8	120	80	0.5	305
988	942	658	124	898	702	30	22	**HSW800DM**	829	823	114	29	6	20	10	96	80	0.5	307
1086.4	1042	758	124	998	802	30	22	**HSW900D**	929	923	114	29	6	20	8	133	80	0.5	349
1088	1042	758	124	998	802	30	22	**HSW900DM**	929	923	114	29	6	20	10	106	80	0.5	348
1198	1142	858	124	1098	902	36	22	**HSW1000D**	1029	1023	114	29	6	20	10	117	80	0.5	396
1197.6	1142	858	124	1098	902	36	22	**HSW1000DM**	1029	1023	114	29	6	20	12	97	80	0.5	391
1318	1262	978	124	1218	1022	36	22	**HSW1120D**	1148	1143	114	29	6	20	10	129	80	0.5	445
1317.6	1262	978	124	1218	1022	36	22	**HSW1120DM**	1148	1143	114	29	6	20	12	107	80	0.5	439
1497.6	1426	1074	160	1374	1126	40	26	**HSW1250D**	1286	1282	150	39	5	24	12	122	90	0.5	784
1495.2	1426	1074	160	1374	1126	40	26	**HSW1250DM**	1286	1282	150	39	5	24	14	104	90	0.5	774
1641.6	1576	1224	160	1524	1272	40	26	**HSW1400D**	1436	1432	150	39	5	24	12	134	90	0.5	870
1649.2	1576	1224	160	1524	1272	40	26	**HSW1400DM**	1436	1432	150	39	5	24	14	115	90	0.5	878
1845.2	1776	1424	160	1724	1476	45	26	**HSW1600D**	1636	1635	150	39	5	24	14	129	90	0.5	995
1852.8	1776	1424	160	1724	1476	45	26	**HSW1600DM**	1636	1635	150	39	5	24	16	113	90	0.5	1000
2055.2	1976	1624	160	1924	1676	45	26	**HSW1800D**	1836	1835	150	39	5	24	14	144	90	0.5	1150
2060.8	1976	1624	160	1924	1676	45	26	**HSW1800DM**	1836	1835	150	39	5	24	16	126	90	0.5	1150
2300.8	2215	1785	190	2149	1851	48	33	**HSW2000D**	2038	2035	178	47	8	30	16	141	120	0.5	1790
2300.4	2215	1785	190	2149	1851	48	33	**HSW2000DM**	2038	2035	178	47	8	30	18	125	120	0.5	1780
2540.8	2455	2025	190	2389	2091	48	33	**HSW2240D**	2278	2275	178	47	8	30	16	156	120	0.5	2020
2552.4	2455	2025	190	2389	2091	48	33	**HSW2240DM**	2278	2275	178	47	8	30	18	139	120	0.5	2050
2804.4	2715	2285	190	2649	2351	56	33	**HSW2500D**	2538	2532	178	47	8	30	18	153	120	0.5	2250
2816	2715	2285	190	2649	2351	56	33	**HSW2500DM**	2538	2532	178	47	8	30	20	138	120	0.5	2280
3110.4	3015	2585	190	2949	2651	56	33	**HSW2800D**	2838	2832	178	47	8	30	18	170	120	0.5	2550
3116	3015	2585	190	2949	2651	56	33	**HSW2800DM**	2838	2832	178	47	8	30	20	153	120	0.5	2560
3536	3428	2872	226	3338	2962	56	45	**HSW3150**	3198	3196	214	56	8	42	20	174	150	0.5	4430

D_{PW} 3150～4500mm



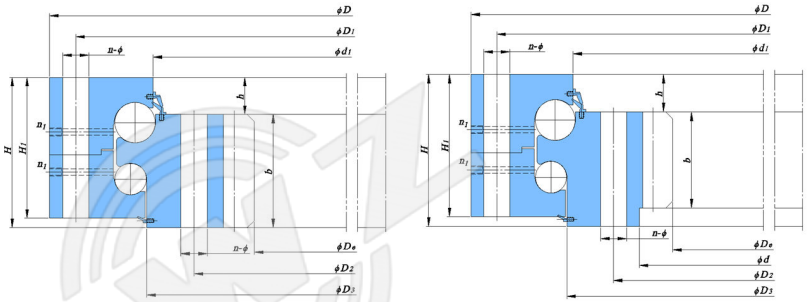
Principal dimensions(mm)				Bolt hole dimensions(mm)				Designations
D_e	D	d	H	D_1	D_2	n	ϕ	
3537.6	3428	2872	226	3338	2962	56	45	**HSW3150DM**
3936	3828	3272	226	3738	3362	56	45	**HSW3550D**
3933.6	3828	3272	226	3738	3362	56	45	**HSW3550DM**
4395.6	4278	3722	226	4188	3812	60	45	**HSW4000DM**
4395	4278	3722	226	4188	3812	60	45	**HSW4000DM**
4879.6	4778	4222	226	4688	4312	60	45	**HSW4500D**
4895	4778	4222	226	4688	4312	60	45	**HSW4500DM**

Note:

1. n_1 is the amount of lubricating holes, customer can specify the position of lubricating hole according to using conditions.
2. n-ϕ can change to threaded hole, thread diameter M.
3. The products in this catalogue are standard products, please contact ZWZ if you have other special requirements.

Structure dimensions(mm)							Gear parameters			Mass(kg) (approx.)
D_3	d_1	H_1	h	n_1	M	m	Z	b(mm)	x	
3198	3196	214	56	8	42	22	158	150	0.5	4410
3598	3596	214	56	8	42	20	194	150	0.5	5010
3598	3596	214	56	8	42	22	176	150	0.5	4970
4048	4046	214	56	10	42	22	197	150	0.5	5710
4048	4046	214	56	10	42	25	173	150	0.5	5660
4548	4546	214	56	10	42	22	219	150	0.5	6290
4548	4546	214	56	10	42	25	193	150	0.5	6390

D_{PW} 500～3150mm



Note:

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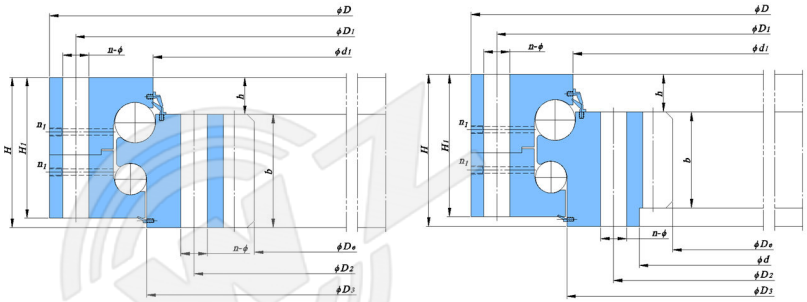
Principal dimensions(mm)				Bolt hole dimensions(mm)				Designations	Structure dimensions(mm)							Gear parameters			Mass(kg)
D_e	D	d	H	D_1	D_2	n	ϕ		D_3	d_1	H_1	h	n_1	M	m	Z	b(mm)	x	(approx.)
257	616	384	106	580	420	20	18	**HSN500D**	482	477	96	26	4	16	5	72	60	0.5	126
350.4	616	384	106	580	420	20	18	**HSN500DM**	482	477	96	26	4	16	6	59	60	0.5	128
417	676	444	106	640	480	20	18	**HSN560D**	542	537	96	26	4	16	5	84	60	0.5	143
410.4	676	444	106	640	480	20	18	**HSN560DM**	542	537	96	26	4	16	6	69	60	0.5	144
482.4	746	514	106	710	550	24	18	**HSN630D**	612	607	96	26	4	16	6	81	60	0.5	160
475.2	746	514	106	710	550	24	18	**HSN630DM**	612	607	96	26	4	16	8	60	60	0.5	162
560.4	826	594	106	790	630	24	18	**HSN710D**	692	687	96	26	4	16	6	94	60	0.5	183
555.2	826	594	106	790	630	24	18	**HSN710DM**	692	687	96	26	4	16	8	70	60	0.5	184
619.2	942	658	124	898	702	30	22	**HSN800D**	777	771	114	29	6	20	8	78	80	0.5	300
614	942	658	124	898	702	30	22	**HSN800DM**	777	771	114	29	6	20	10	62	80	0.5	301
715.2	1042	758	124	998	802	30	22	**HSN900D**	877	871	114	29	6	20	8	90	80	0.5	337
714	1042	758	124	998	802	30	22	**HSN900DM**	877	871	114	29	6	20	10	72	80	0.5	335
814	1142	858	124	1098	902	36	22	**HSN1000D**	977	971	114	29	6	20	10	82	80	0.5	371
796.8	1142	858	124	1098	902	36	22	**HSN1000DM**	977	971	114	29	6	20	12	67	80	0.5	383
924	1262	978	124	1218	1022	36	22	**HSN1120D**	1097	1091	114	29	6	20	10	93	80	0.5	429
916.8	1262	978	124	1218	1022	36	22	**HSN1120DM**	1097	1091	114	29	6	20	12	77	80	0.5	432
1012.8	1426	1074	160	1374	1126	40	26	**HSN1250D**	1215	1214	150	39	5	24	12	85	90	0.5	746
1013.6	1426	1074	160	1374	1126	40	26	**HSN1250DM**	1215	1214	150	39	5	24	14	73	90	0.5	741
1156.8	1576	1224	160	1524	1272	40	26	**HSN1400D**	1365	1364	150	39	5	24	12	97	90	0.5	850
1153.6	1576	1224	160	1524	1272	40	26	**HSN1400DM**	1365	1364	150	39	5	24	14	83	90	0.5	850
1349.6	1776	1424	160	1724	1476	45	26	**HSN1600D**	1565	1564	150	39	5	24	14	97	90	0.5	979
1350.4	1776	1424	160	1724	1476	45	26	**HSN1600DM**	1565	1564	150	39	5	24	16	85	90	0.5	972
1545.6	1976	1624	160	1924	1676	45	26	**HSN1800D**	1765	1764	150	39	5	24	14	111	90	0.5	1120
1542.4	1976	1624	160	1924	1676	45	26	**HSN1800DM**	1765	1764	150	39	5	24	16	97	90	0.5	1120
2300	2215	1785	190	2149	1851	48	33	**022.50.2000.03G1**	2048	2027.5	178	12	8	30	18	125	120	0.5	1660
1702.4	2215	1785	190	2149	1851	48	33	**HSN2000D**	1965	1962	178	47	8	30	16	107	120	0.5	1730
1699.2	2215	1785	190	2149	1851	48	33	**HSN2000DM**	1965	1962	178	47	8	30	18	95	120	0.5	1730
1942.4	2455	2025	190	2389	2091	48	33	**HSN2240D**	2206	2202	178	47	8	30	16	122	120	0.5	1960
1933.2	2455	2025	190	2389	2091	48	33	**HSN2240DM**	2206	2202	178	47	8	30	18	108	120	0.5	1970
2203.2	2715	2285	190	2649	2351	56	33	**HSN2500D**	2465	2462	178	47	8	30	18	123	120	0.5	2160
2188	2715	2285	190	2649	2351	56	33	**HSN2500DM**	2465	2462	178	47	8	30	20	110	120	0.5	2200
2491.2	3015	2585	190	2949	2651	56	33	**HSN2800D**	2765	2762	178	47	8	30	18	139	120	0.5	2490
2488	3015	2585	190	2949	2651	56	33	**HSN2800DM**	2765	2762	178	47	8	30	20	125	120	0.5	2490
2768	3428	2872	226	3338	2962	56	45	**HSN3150D**	3104	3102	214	56	8	42	20	139	150	0.5	4140

D_{PW} 3150～4500mm



Note:

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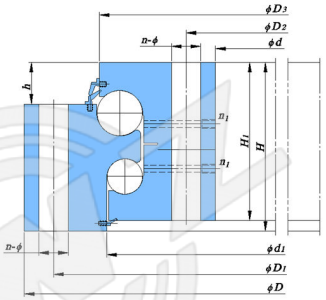
Principal dimensions(mm)				Bolt hole dimensions(mm)				Designations
D_e	D	d	H	D_1	D_2	n	ϕ	
2758.8	3428	2872	226	3338	2962	56	45	**HSN3150DM**
3168	3828	3272	226	3738	3362	56	45	**HSN3550D**
3176.8	3828	3272	226	3738	3362	56	45	**HSN3550DM**
3616.8	4278	3722	226	4188	3812	60	45	**HSN4000D**
3610	4278	3722	226	4188	3812	60	45	**HSN4000DM**
4122.8	4778	4222	226	4688	4312	60	45	**HSN4500D**
4110	4778	4222	226	4688	4312	60	45	**HSN4500DM**

Structure dimensions(mm)							Gear parameters			Mass(kg)
D_3	d_1	H_1	h	n_1	M	m	Z	b(mm)	x	(approx.)
3104	3102	214	56	8	42	22	126	150	0.5	4170
3504	3502	214	56	8	42	20	159	150	0.5	4700
3504	3502	214	56	8	42	22	145	150	0.5	4630
3954	3952	214	56	10	42	22	165	150	0.5	5300
3954	3952	214	56	10	42	25	145	150	0.5	5310
4454	4452	214	56	10	42	22	188	150	0.5	5950
4454	4452	214	56	10	42	25	165	150	0.5	6010

D_{PW} 500～4500mm



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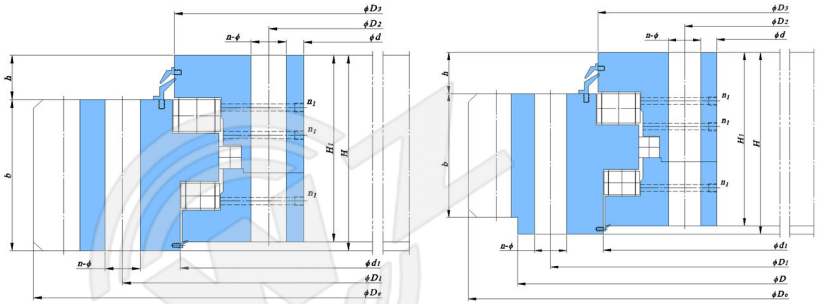
Principal dimensions(mm)			Bolt hole dimensions(mm)				Designations	Structure dimensions(mm)						Mass(kg)
D	d	H	D_1	D_2	n	ϕ		D_3	d_1	H_1	h	n_1	M	(approx.)
616	384	106	580	420	20	18	**HSB500D**	482	477	96	26	4	16	121
676	444	106	640	480	20	18	**HSB560D**	543	537	96	26	4	16	136
746	514	106	710	550	24	18	**HSB630D**	613	607	96	26	4	16	152
826	594	106	790	630	24	18	**HSB710D**	692	687	96	26	4	16	172
942	658	124	898	702	30	22	**HSB800D**	777	771	114	29	6	20	284
1042	758	124	998	802	30	22	**HSB900D**	877	871	114	29	6	20	316
1142	858	124	1098	902	36	22	**HSB1000D**	977	971	114	29	6	20	349
1262	978	124	1218	1022	36	22	**HSB1120D**	1097	1091	114	29	6	20	394
1426	1074	160	1374	1126	40	26	**HSB1250D**	1215	1214	150	39	5	24	709
1576	1224	160	1524	1272	40	26	**HSB1400D**	1365	1364	150	39	5	24	787
1776	1424	160	1724	1476	45	26	**HSB1600D**	1565	1564	150	39	5	24	899
1976	1624	160	1924	1676	45	26	**HSB1800D**	1765	1764	150	39	5	24	1020
2215	1785	190	2149	1851	48	33	**HSB2000D**	1965	1962	178	47	8	30	1590
2455	2025	190	2389	2091	48	33	**HSB2240D**	2206	2202	178	47	8	30	1790
2715	2285	190	2649	2351	56	33	**HSB2500D**	2465	2462	178	47	8	30	1990
3015	2585	190	2949	2651	56	33	**HSB2800D**	2765	2762	178	47	8	30	2240
3428	2872	226	3338	2962	56	45	**HSB3150D**	3104	3102	214	56	8	42	3760
3828	3272	226	3738	3362	56	45	**HSB3550D**	3504	3502	214	56	8	42	4270
4278	3722	226	4188	3812	60	45	**HSB4000D**	3954	3952	214	56	10	42	4830
4778	4222	226	4688	4312	60	45	**HSB4500D**	4454	4452	214	56	10	42	5470

D_{PW} 500～2260mm



Note:

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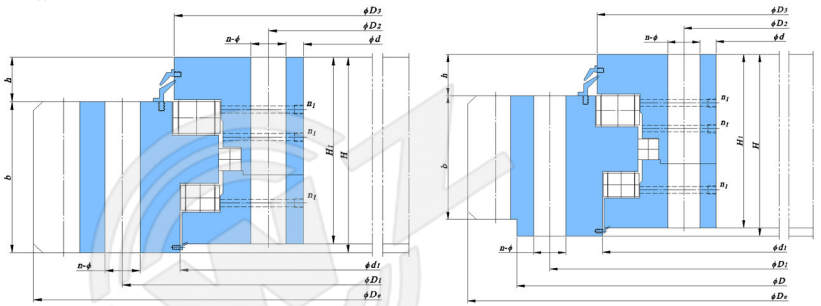
Principal dimensions(mm)				Bolt hole dimensions(mm)				Designations	Structure dimensions(mm)						Gear parameters			Mass(kg)
D_e	D	d	H	D_1	D_2	n	ϕ		D_3	d_1	H_1	h	n_1	M	m	Z	b(mm)	x	(approx.)
664	634	366	148	598	402	24	18	**HYW500**	537	526	138	32	4	16	5	130	80	0.5	200
664.8	634	366	148	598	402	24	18	**HYW500M**	537	526	138	32	4	16	6	108	80	0.5	200
724	694	426	148	658	462	24	18	**HYW560**	597	586	138	32	4	16	5	142	80	0.5	224
724.8	694	426	148	658	462	24	18	**HYW560M**	597	586	138	32	4	16	6	118	80	0.5	224
808.8	764	496	148	728	532	28	18	**HYW630**	667	656	138	32	4	16	6	132	80	0.5	262
806.4	764	496	148	728	532	28	18	**HYW630M**	667	656	138	32	4	16	8	98	80	0.5	257
886.8	844	567	148	808	612	28	18	**HYW710**	747	736	138	32	4	16	6	145	80	0.5	295
886.4	844	567	148	808	612	28	18	**HYW710M**	747	736	138	32	4	16	8	108	80	0.5	291
1006.4	964	636	182	920	680	36	22	**HYW800**	841	830	172	40	4	20	8	123	120	0.5	490
1008	964	636	182	920	680	36	22	**HYW800M**	841	830	172	40	4	20	10	98	120	0.5	487
1102.4	1064	736	182	1020	780	36	22	**HYW900**	941	930	172	40	4	20	8	135	120	0.5	549
1108	1064	736	182	1020	780	36	22	**HYW900M**	941	930	172	40	4	20	10	108	120	0.5	562
1218	1164	836	182	1120	880	40	22	**HYW1000**	1041	1030	172	40	5	20	10	119	120	0.5	631
1221.6	1164	836	182	1120	880	40	22	**HYW1000M**	1041	1030	172	40	5	20	12	99	120	0.5	631
1338	1284	956	182	1240	100	40	22	**HYW1120**	1161	1150	172	40	5	20	10	131	120	0.5	710
1341.6	1284	956	182	1240	1000	40	22	**HYW1120M**	1161	1150	172	40	5	20	12	109	120	0.5	710
1509.6	1445	1055	220	1393	1107	45	26	**HYW1250**	1300	1287	210	50	5	24	12	123	150	0.5	1140
1509.2	1445	1055	220	1393	1107	45	26	**HYW1250M**	1300	1287	210	50	5	24	14	105	150	0.5	1130
1665.6	1595	1205	220	1543	1257	45	26	**HYW1400**	1450	1437	210	50	5	24	12	136	150	0.5	1300
1663.2	1595	1205	220	1543	1257	45	26	**HYW1400M**	1450	1437	210	50	5	24	14	116	150	0.5	1280
1873.2	1795	1405	220	1743	1457	48	26	**HYW1600**	1650	1637	210	50	6	24	14	131	150	0.5	1500
1868.8	1795	1405	220	1743	1457	48	26	**HYW1600M**	1650	1637	210	50	6	24	16	114	150	0.5	1470
2018	1967	1615	141	1914	1675	70	33	**HYW1781**	1819	1812	131	10	7	30	10	199	100	0.5	829
2069.2	1995	1605	220	1943	1657	48	26	**HYW1800**	1850	1837	210	50	6	24	14	145	150	0.5	1680
2076.8	1995	1605	220	1943	1657	48	26	**HYW1800M**	1850	1837	210	50	6	24	16	127	150	0.5	1700
2169.6	2113	1690	181	2049	1762	54	36	**HYW1898**	1941	1930	172	32	6	34	12	178	100	0.5	1470
2236.8	-	1853	132	2105	1905	54	26	**HYW2000**	2030	2032	123	26	5	24	16	137	106	0.5	912
2268.8	-	1819	147	2125	1885	44	33	**HYW2000R**	2036	2026	138	30	7	30	16	139	117	0.5	1220
2300.8	2221	1779	231	2155	1845	60	33	**HYW2000R1**	2055	2033	219	54	6	30	16	141	160	0.5	2150
2300.4	2221	1779	231	2366	1845	60	33	**HYW2000R1M**	2055	2033	219	54	6	30	18	125	160	0.5	2130
2556.8	2461	2019	231	2395	2085	60	33	**HYW2240**	2298	2276	219	54	9	30	16	157	160	0.5	2480
2552.4	-	2022	181	2395	2100	40	39	**HYW2240R**	2281	2270	172	42	8	36	18	139	139	0.5	1980
2556.8	2461	2019	231	2395	2085	60	33	**HYW2240R1**	2295	2273	219	54	6	30	16	157	160	0.5	2500
2552.4	2461	2019	231	2625	2085	60	33	**HYW2240R1M**	2295	2273	219	54	6	30	18	139	160	0.5	2460
2478	2425	2071	136	2376	2137	70	33	**HYW2248X2**	2287	2276	129	7	6	30	10	245	102	0.5	1890
2559.2	2494	2050	171	2416	2128	70	39	**HYW2260**	2317	2287.6	161	10	7	36	14	180	110	0.5	1690

D_{PW} 2273～3550mm



Note:

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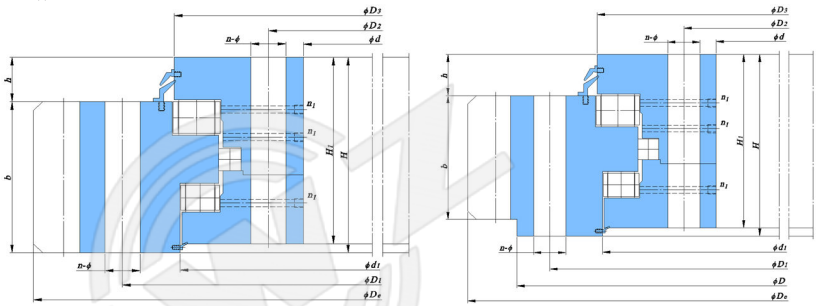
Principal dimensions(mm)				Bolt hole dimensions(mm)				Designations	Structure dimensions(mm)						Gear parameters				Mass(kg)
D_c	D	d	H	D_1	D_2	n	ϕ		D_3	d_1	H_1	h	n_1	M	m	Z	b(mm)	x	(approx.)
2587.2	2548	2050	171	2438	2128	70	39	**HYW2273**	2339	2314	161	10	7	36	14	182	110	0.5	1790
2856	2725	1998.8	316.5	2633	2081	48	40	**HYW2360**	2490	2355	295.5	51.5			22	128	240	0.5	6420
2712	2653	2168	203	2586	2242	79	42	**131.32.2400.03G1**	2462	2421	193	10	3	36	12	223	107	0.5	2240
2796	2700	2234	231	2621	2312	90	39	**HYW2455**	2510	2488	219	12	9	36	20	137	160	0.5	2620
2822.4	2721	2279	231	2655	2345	72	33	**HYW2500**	2555	2533	219	54	8	30	18	154	177	0.5	2410
2822.4	2721	2279	231	2655	2345	72	33	**HYW2500K**	2559	2540	219	12	8	30	18	154	160	0.5	2760
2822.4	-	2282	181	2655	2360	44	39	**HYW2500R**	2541	2530	172	42	7	36	18	154	139	0.5	2260
2822.4	2721	2279	231	2655	2345	72	33	**HYW2500R1**	2555	2533	219	54	8	30	18	154	160	0.5	2790
2816	2721	2279	231	2925	2345	72	33	**HYW2500R1M**	2555	2533	219	54	8	30	20	138	160	0.5	2730
2979.2	2895	2282	230	2791	2386	76	49	**HYW2577**	2655	2639	220	10	8	45	10	210	150	0.5	3600
2996	2905	2304	273	2812	2408	78	52	**HYW2600**	2684	2648	263	10	6	48	20	147	160	0.5	4100
2948.4	2866	2357	231	2787	2447	90	45	**131.45.2605.03G1**	2660	2635	219	12	9	42	18	161	160	0.5	2880
3110.4	3021	2579	231	2955	2645	72	33	**HYW2800**	2855	2833	219	54	8	30	18	170	160	0.5	2910
3136	-	2582	181	2965	2660	48	39	**HYW2800R**	2841	2830	172	42	8	36	20	154	139	0.5	2580
3136		2562	220	2965	2640	48	39	**HYW2800R1**	2850	2837	210	50	8	36	20	154	170	0.5	3270
3110.4	3021	2579	231	2955	2645	72	33	**HYW2800R2**	2855	2833	219	54	8	30	18	170	160	0.5	3070
3116	3021	2579	231	2955	2645	72	33	**HYW2800R2M**	2855	2833	219	54	8	30	20	153	160	0.5	3080
3096	-	2619	147	2925	2685	60	33	**131.25.2800.03G1**	2833	2814	138	9	10	30	20	152	117	0.5	1790
3168		2575	240	3005	2655	48	36	**HYW2825**	2875	2865	210	50	8	30	18	174	190	0	3660
3290.4	3207	2596	229	3103	2700	72	52	**HYW2871**	2943	2909	211	18	9	42	18	180	160	0.5	3980
3375.2	3285	2632	320	3189	2738	72	56	**HYW2960**	3044	3012	311	65	9	54	20	166	200	0.5	6280
3372	3360	2696	563		2820	68	62	**HYW3050**	3139	3110	337	226	12	60	20	166	185	0.5	7840
3396	3390	2710	380	3210	2815	85	52	**131.64.3065.03G1**	3207	3116	370	10	17	48	20	167	180	0.5	7200
3475	3400	2885	229	3310	2975	72	39	**HYW3130**	3194	3163	210	19	8	36	16	214	140	0.75	3760
3476	-	2932	181	3305	3010	56	39	**HYW3150**	3191	3180	172	42	7	36	20	171	139	0.5	2830
3515.6	-	2912	220	3315	2990	56	39	**HYW3150R**	3200	3187	210	50	7	36	22	157	170	0.5	3810
3536	3432	2868	270	3342	2958	72	45	**HYW3150R1**	3213	3916	258	65	8	42	20	174	180	0.5	5030
3537.6	3432	2868	270	3342	2958	72	45	**HYW3150R1M**	3213	3916	258	65	8	42	22	158	180	0.5	5010
3643.2	3620	2896	582		3036	60	70	**HYW3268**	3363	3350	362	220	10	68	22	163	220	0.5	9800
3776	3680	3230	210	3595	3308	52/54	39	**HYW3450**	3495	3441	180	30	9	36	20	186	187	0.5	3650
3970	3820	3268	270	3742	3358	72	45	**HYW3550**	3613	3596	258	65	8	42	25	156	200	0.5	5890
3911.6	-	3312	220	3715	3390	66	39	**HYW3550R**	3600	3587	210	50	8	36	22	175	170	0.5	4260
3936	3832	3268	270	3742	3358	72	45	**HYW3550R1**	3613	3596	258	65	8	42	20	194	180	0.5	5710
3911.6	3811	3312	220	3715	3390	66	39	**HYW3550R1M**	3600	3587	210	50	8	36	22	176	180	0.5	5660

D_{PW} 3550～5485mm



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2. n-ϕ can change to threaded hole, thread diameter M.
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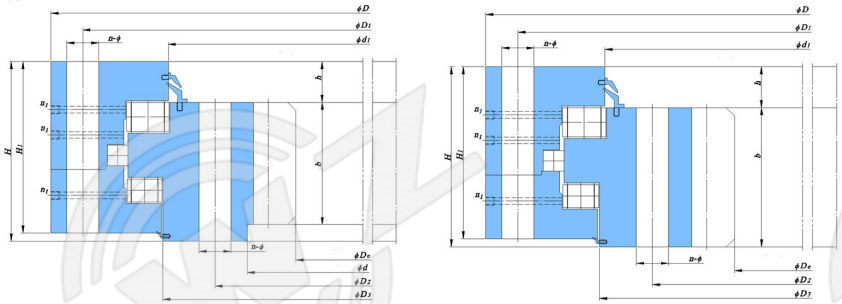
Principal dimensions(mm)				Bolt hole dimensions(mm)				Designations	Structure dimensions(mm)						Gear parameters			Mass(kg)
D_e	D	d	H	D_1	D_2	n	ϕ		D_3	d_1	H_1	h	n_1	M	m	Z	b(mm)	x	(approx.)
3970	-	3312	220	3715	3390	66	39	**HYW3550RM1**	3600	3587	210	8	8	36	25	156	170	0.5	4700
3931.2	-	3340	212	3735	3441	108	33	**HYW3580**	3642	3608	180	42	40455	30	24	161	170	0.5	3850
3931.2	-	3340	217	3735	3441	144/120	33	**HYW3580X2**	3648	3611	205	12	10	30	24	161	170	0.5	4060
3931.2	-	3340	222	3735	3441	144/120	33	**HYW3586**	3650	3619	210	52	40455	30	24	161	170	0.5	4690
3902.6	-	3370	192	3754	3448	96	39	**HYW3590**	3655	3619	180	44	12	36	16	240	148	1	3460
4076	3982	3415	270	3892	3508	80	45	**HYW3698**	3766	3746	258	65	16	24	20	201	180	0.5	5770
4243.2	-	3616	222	4041	3694	100	38/39	**HYW3850**	3920	3894	210	12	10	36	24	174	172	0.5	4750
4224	-	3629	229	4030	3715	144/120	36	**HYW3865**	3937	3903	218	11	10	33	24	173	180	0.5	4520
4266	4173	3650	222	4085	3740	90	45	**HYW3905**	3974	3943	210	50	8	42	20	210	172	0.75	5480
4262.4	4173	3650	236	4085	3740	8	45	**HYW3905X1/YAB**	3974	3943	210	25	6	42	18	234	145	0.5	5050
4363.2		3762	220	4165	3840	72	39	**HYW4000X1**	4050	4037	210	10	9	42	24	179	170	0.5	4740
4395	4282	3715	270	4192	3808	80	45	**HYW4000K1**	4066	4046	258	12	8	42	22	197	180	0.5	6470
4395	4282	3718	270	4192	3808	80	39	**HYW4000MK1**	4063	4046	258	12	8	36	25	173	180	0.5	6560
4395	4282	3718	270	4192	3808	80	45	**HYW4000MK2**	4063	4046	258	12	8	42	25	173	180	0.5	6400
4363.2	-	3762	220	4165	3840	72	39	**HYW4000R**	4050	4037	210	50	9	36	24	179	170	0.5	4810
4395.6	4282	3718	270	4192	3808	80	45	**HYW4000R1**	4063	4046	258	65	8	42	22	197	180	0.5	6510
4400	4282	3718	270	4192	3808	80	45	**HYW4000R1M**	4062	4046	258	65	8	42	25	173	180	0.5	6490
4527.6	4423	3870	240	4340	3960	80	45	**HYW4150**	4224	4175	230	55	8	42	22	203	180	0.5	5910
4501.827	4418	3925	242	4330	4010	90	45	**HYW4161**	4222	4175	230	12	18	42	20	222	182	0.577	5060
4501.827	4408	3925	222	4340	4010	90	45	**HYW4161X1**	4222	4192	210	12	18	42	20	222	162	0.577	4660
4579.2	-	3905	265	4345	4000	144/120	39	**HYW4170**	4245	4236	252	75	8	36	24	188	190	0.5	6290
4860	-	4246	233	4678	4330	96	42	**HYW4495**	4481	4580	221	12	8	40	20	240	174	0.5	5600
4867.2	-	4262	220	4665	4340	84	39	**HYW4500**	4550	4537	210	50	14	36	24	200	170	0.5	5410
4880	4782	4218	270	4692	4308	80	45	**HYW4500R**	4565	4553	258	60	16	42	20	242	185	0.5	7240
4895	4782	4218	270	4692	4308	80	45	**HYW4500RM**	4565	4553	258	60	16	42	25	193	185	0.5	7240
5160	5060	4375	275	4820	4455	88	45	**HYW4630**	4710	4678	258	70	11	42	20	256	177	0	8640
5070	-	4405	270	4865	4495	100	45	**HYW4670**	4733	4716	258	12	10	42	25	200	205	0.5	7320
5208	-	4460	240	4965	4560	144/120	45	**HYW4745**	4850	4782	232	8	10	42	24	214	190	0.5	7720
5445	5325	4690	313	5200	4780	100	48	**HYW4966**	5059	4998	293	20	20	42	25	215	205	0.5	10500
5419.2	-	4740	256	5217	4825	120	39	**HYW5010**	5035	5039	219	37	15	36	24	223	206	0.5	7610
5650	5480	4826	336	5360	4934	120	56	**132.60.5134.03**	5221	5173	321	15	12	52	25	223	220	0.5	12400
5491.2	-	4914	261	5295	4980	72	33	**HYW5137**	5237.6	5178	210	50	12	30	24	226	211	0.4	6430
5895	5782	5218	270	5692	5308	100	45	**HYW5485**	5546	5532	258	12	10	43	25	233	180	0.5	8700

D_{PW} 500～2300mm



Note:

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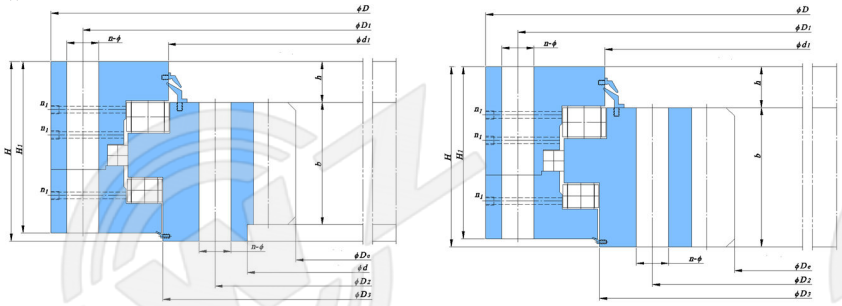
Principal dimensions(mm)				Bolt hole dimensions(mm)				Designations
D_e	D	d	H	D_1	D_2	n	ϕ	
337	634	366	148	598	402	24	18	**HYN500**
338.4	634	366	148	598	402	24	18	**HYN500M**
397	694	426	148	658	462	24	18	**HYN560**
398.4	694	426	148	658	462	24	18	**HYN560M**
458.4	764	496	148	728	532	28	18	**HYN630**
459.2	764	496	148	728	532	28	18	**HYN630M**
536.4	844	567	148	808	612	28	18	**HYN710**
539.2	844	567	148	808	612	28	18	**HYN710M**
595.2	964	636	182	920	680	36	22	**HYN800**
594	964	636	182	920	680	36	22	**HYN800M**
691.2	1064	736	182	1020	780	36	22	**HYN900**
694	1064	736	182	1020	780	36	22	**HYN900M**
784	1164	836	182	1120	880	40	22	**HYN1000**
784.8	1164	836	182	1120	880	40	22	**HYN1000M**
904	1284	956	182	1240	100	40	22	**HYN1120**
904.8	1284	956	182	1240	1000	40	22	**HYN1120M**
988.8	1445	1055	220	1393	1107	45	26	**HYN1250**
985.6	1445	1055	220	1393	1107	45	26	**HYN1250M**
1144.8	1595	1205	220	1543	1257	45	26	**HYN1400**
1139.6	1595	1205	220	1543	1257	45	26	**HYN1400M**
1335.6	1795	1405	220	1743	1457	48	26	**HYN1600**
1334.4	1795	1405	220	1743	1457	48	26	**HYN1600M**
1531.6	1995	1605	220	1943	1657	48	26	**HYN1800**
1526.4	1995	1605	220	1943	1657	48	26	**HYN1800M**
1760	2147	-	132	2095	1895	54	26	**HYN2000**
1728	2181	-	147	2115	1875	44	33	**HYN2000R**
1702.4	2221	1779	231	2155	1845	60	33	**HYN2000R1**
1699.2	2221	1779	231	2155	1845	60	33	**HYN2000R1M**
1944	2421	-	147	2355	2115	48	33	**HYN2240**
1908	2458	-	181	2380	2085	40	39	**HYN2240R**
1924.4	2461	2019	231	2395	2085	60	33	**HYN2240R1**
1933.2	2461	2019	231	2395	2085	60	33	**HYN2240R1M**
1800	2620	1890	410	2520	1980	56	45	**HYN2245**
1982.4	2531	2063	231	2459	2141	52	36	**133.45.2300.03G1**

Structure dimensions(mm)							Gear parameters			Mass(kg)
D_3	d_1	H_1	h	n_1	M	m	Z	b(mm)	x	(approx.)
474	463	138	32	4	16	5	68	80	0.5	198
474	463	138	32	4	16	6	57	80	0.5	198
534	523	138	32	4	16	5	80	80	0.5	222
534	523	138	32	4	16	6	67	80	0.5	220
604	593	138	32	4	16	6	77	80	0.5	253
604	593	138	32	4	16	8	58	80	0.5	251
684	673	138	32	4	16	6	90	80	0.5	288
684	673	138	32	4	16	8	68	80	0.5	284
770	759	172	40	4	20	8	75	120	0.5	483
770	759	172	40	4	20	10	60	120	0.5	481
870	859	172	40	4	20	8	87	120	0.5	551
870	859	172	40	4	20	10	70	120	0.5	545
970	959	172	40	5	20	10	79	120	0.5	618
970	959	172	40	5	20	12	66	120	0.5	613
1090	1079	172	40	5	20	10	91	120	0.5	698
1090	1079	172	40	5	20	12	76	120	0.5	691
1213	1200	210	50	5	24	12	83	150	0.5	1123
1213	1200	210	50	5	24	14	71	150	0.5	1122
1363	1350	210	50	5	24	12	96	150	0.5	1254
1363	1350	210	50	5	24	14	82	150	0.5	1258
1563	1500	210	50	6	24	14	96	150	0.5	1454
1563	1500	210	50	6	24	16	84	150	0.5	1448
1763	1750	210	50	6	24	14	110	150	0.5	1658
1763	1750	210	50	6	24	16	96	150	0.5	1663
1968	1969	123	26	5	24	16	111	106	0.5	902
1974	1963	138	30	7	30	16	109	117	0.5	1202
1967	1945	219	54	6	30	16	107	160	0.5	2114
1967	1945	219	54	6	30	18	95	160	0.5	2112
2214	2203	138	30	8	30	18	109	117	0.5	1406
2210	2199	172	42	8	36	18	107	139	0.5	2010
2207	2185	219	54	6	30	16	121	160	0.5	2447
2207	2185	219	54	6	30	18	108	160	0.5	2407
-	2117	400	10	5	42	18	101	210	0.5	6600
2276	2245	219	12	6	33	16	125	160	0.25	2595

D_{PW} 2500～4554mm



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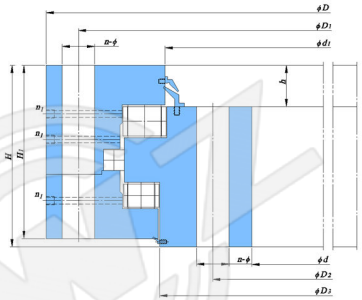
D_e	D	d	H	D_1	D_2	n	ϕ		D_3	d_1	H_1	h	n_1	M	m	Z	b(mm)	x	(approx.)
2185.2	2721	-	241	2655	2341	24/72	39	**HYN2500**	2460	2443	229	54	4	36	18	122	170	0.5	2817
2178	2718	-	181	2640	2345	44	39	**HYN2500R**	2470	2459	172	42	7	36	18	122	139	0.5	2210
2185.2	2721	2279	231	2655	2345	72	33	**HYN2500R1**	2467	2445	219	54	8	30	18	122	160	0.5	2862
2188	2721	2279	231	2655	2345	72	33	**HYN2500R1M**	2467	2445	219	54	8	30	20	110	160	0.5	2834
2198	3015	2306	415	2925	2486	60	45	**HYN2615**	-	2484	405	10	6	42	22	101	245	0	8239
2500	2981	-	147	2915	2675	60	33	**HYN2800**	2774	2763	138	30	10	30	20	126	117	0.5	1767
2460	3018	-	181	2940	2645	48	39	**HYN2800R**	2770	2759	172	42	8	36	20	124	139	0.5	2542
2460	3038	-	220	2960	2635	48	39	**HYN2800R1**	2763	2750	210	50	8	36	20	124	170	0.5	3213
2491.2	3021	2579	231	2955	2645	72	33	**HYN2800R2**	2767	2745	219	54	8	30	18	139	160	0.5	3211
2488	3021	2579	231	2955	2645	72	33	**HYN2800R2M**	2767	2745	219	54	8	30	20	125	160	0.5	3209
2656	3137	2733	181	3071	2800	64	33	**HYN2940**	2910	2899	172	9	8	30	16	167	132	0.5	2260
2704	3600	2869	450	3490	3000	64/60	45	**HYN3145**	-	2940	450	10	4	42	22	124	245	0	11666
2820	3368	-	181	3290	2995	56	39	**HYN3150**	3120	3109	172	42	7	36	20	142	139	0.5	2807
2794	3368	-	220	3310	2985	56	39	**HYN3150R**	3113	3100	210	50	7	36	22	128	170	0.5	3683
2768	3432	2868	270	3342	2958	72	45	**HYN3150R1**	3104	3090	258	65	8	42	20	139	180	0.5	4954
2758.8	3432	2868	270	3342	2958	72	45	**HYN3150R1M**	3104	3090	258	65	8	42	22	126	180	0.5	4988
3228	3776	-	190	3686	3414	56	40/45	**HYN3543**	3513	3502	178	12	8	42	20	162	178	0.5	3583
3190	3768	-	181	3690	3395	66	39	**HYN3550**	3520	3509	172	42	8	36	22	146	139	0.5	3302
3190	3788	-	220	3710	3385	66	39	**HYN3550R**	3513	3500	210	50	8	36	22	146	170	0.5	4171
3168	3832	3268	270	3742	3358	72	45	**HYN3550R1**	3504	3490	258	65	8	42	20	159	180	0.5	5638
3154.8	3832	3268	270	3742	3358	72	45	**HYN3550R1M**	3504	3490	258	65	8	42	22	144	180	0.5	5706
3652	4218	-	181	4140	3845	72	39	**HYN4000**	3970	3959	172	42	9	36	22	167	139	0.5	3664
3624	4238	-	220	4160	3835	72	39	**HYN4000R**	3963	3950	210	50	9	36	24	152	170	0.5	4810
3616.8	4282	3718	270	4192	3808	80	45	**HYN4000R1**	3954	3940	258	65	8	42	22	165	180	0.5	6257
3610	4282	3718	270	4192	3808	80	45	**HYN4000R1M**	3954	3940	258	65	8	42	25	145	180	0.5	6268
4092	4765	-	281	4675	4300	72	45	**HYN4500**	4454	4440	258	65	12	42	22	187	170	0.5	7740
4122.8	4782	4218	270	4692	4308	80	45	**HYN4500R**	4454	4440	258	65	8	42	22	188	180	0.5	7040
4110	4782	4218	270	4692	4308	80	45	**HYN4500RM**	4454	4440	258	65	8	42	25	165	180	0.5	7108
3880	4800	3970	480	4660	4100	72	52	**HYN4554-1**	-	4241	465	15	5	48	20	195	260	0.5	17000

D_{PW} 500～5035mm



Note:

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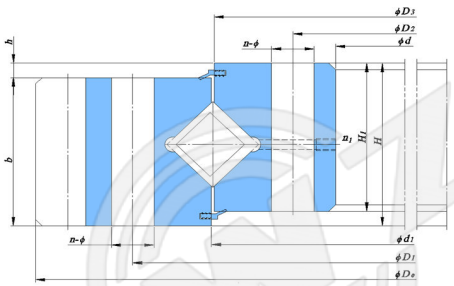
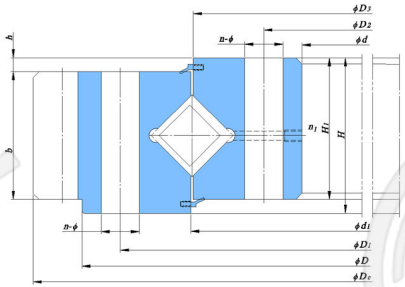
Principal dimensions(mm)			Bolt hole dimensions(mm)				Designations	Structure dimensions(mm)						Mass(kg)
D	d	H	D_1	D_2	n	ϕ		D_3	d_1	H_1	h	n_1	M	(approx.)
634	366	148	598	402	24	18	**HYB500**	474	463	138	32	4	16	191
694	426	148	658	462	24	18	**HYB560**	534	523	138	32	4	16	214
764	496	148	728	532	28	18	**HYB630**	604	593	138	32	4	16	240
844	576	148	808	612	28	18	**HYB710**	684	673	138	32	4	16	272
964	636	182	920	680	36	22	**HYB800**	770	759	172	40	4	20	459
1064	736	182	1020	780	36	22	**HYB900**	870	859	172	40	4	20	519
1164	836	182	1120	880	40	22	**HYB1000**	970	959	172	40	5	20	577
1284	956	182	1240	1000	40	22	**HYB1120**	1090	1079	172	40	5	20	650
1445	1055	220	1393	1107	45	26	**HYB1250**	1210	1200	210	50	5	24	1030
1445	1055	220	1393	1107	45	26	**HYB1257**	1213	1200	170	50	5	24	1018
1595	1205	220	1543	1257	45	26	**HYB1400**	1363	1350	210	50	5	24	1170
1795	1405	220	1743	1457	48	26	**HYB1600**	1563	1550	210	50	6	24	1341
1995	1605	220	1943	1657	48	26	**HYB1800**	1763	1750	210	50	6	24	1510
2020	1655	136	1950	1725	36	33	**HYB1825**	1880	1800	145	86	5	30	855
2221	1779	231	2155	1845	60	33	**HYB2000**	1967	1945	219	54	6	30	1949
2461	2019	231	3395	2085	60	33	**HYB2240**	2207	2185	219	54	6	30	2197
2721	2279	231	2655	2345	72	33	**HYB2500**	2555	2533	219	12	8	30	2391
2805	2460	132	2740	2525	48	33	**130.20.2643.03**	2624	2600	107	25	8	30	1191
2900	2514	180	2836	2578	72	34	**HYB2700**	2769	2737	175	5	8	32	1840
3021	2579	231	2955	2645	72	33	**HYB2800**	2867	2833	219	54	8	30	2924
3432	2868	270	3342	2958	72	45	**HYB3150**	3104	3090	258	65	8	42	4551
3375	2991	155	3310	3057	44	33	**HYB3184**	3224	3198	145	10	10	30	1889
3600	3090	283	3520	3170	84	45	**HYB3350**	3417	3331	258	25	10	42	4389
3832	3268	270	3742	3358	72	45	**HYB3550**	3504	3490	258	65	8	42	5178
3832	3268	220	3742	3358	72	45	**HYB3550X1**	3500	3513	170	50	8	42	4286
3894	3412	210	3816	3490	72	39	**HYB3660**	3629	3595	160	50	9	36	3597
3943	3589	148	3883	3649	56	30	**HYB3765**	3779	3796	138	10	8	28	1924
4243	3762	270	4165	3840	72	39	**HYB4000**	4050	4037	217	55	9	36	4580
4290	3735	230	4200	3825	80	45	**HYB4000X1**	4081	3981	219	11	10	42	4834
4850	4235	268	4700	4325	68	45	**HYB4500**	4560	4546	203	10	11	42	7150
5333	4680	305	5136	4774	90	45	**HYB4950**	5023	5015	293	12	18	42	9691
5365	4735	277	5275	4825	78	39	**HYB5035**	5139	5048	212	65	12	36	8865

D_{PW} 309～1800mm





Note:

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2. n-ϕ can change to threaded hole, thread diameter M.
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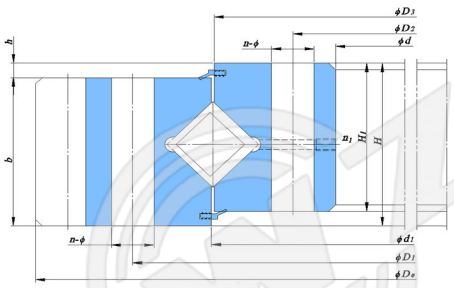
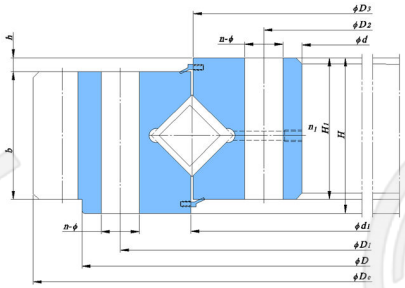
Principal dimensions(mm)				Bolt hole dimensions(mm)				Designations
D_e	D	d	H	D_1	D_2	n	ϕ	
408.4	-	235	60	359	259	24	13	**HJW309**
629	602	398	75	566	434	20	18	**HJW500**
628.8	602	398	75	566	434	20	18	**HJW500M**
689	662	458	75	626	494	20	18	**HJW560**
688.8	662	458	75	626	494	20	18	**HJW560M**
790	-	424	83	660	480	16	17.5	**HJW570**
772.8	732	528	75	696	564	24	18	**HJW630**
774.4	732	528	75	696	564	24	18	**HJW630M**
850.8	812	608	75	776	644	24	18	**HJW710**
854.4	812	608	75	776	644	24	18	**HJW710M**
846	825	634	75	795	667	18	17	**HJW730**
966	-	584	110	820	650	16	16	**HJW740**
994	-	622	100	850	680	16	16/26	**HJW770**
966.4	922	678	82	878	722	30	22	**HJW800**
968	922	678	82	878	722	30	22	**HJW800M**
976	-	702	93	907	784	16	18	**HJW845**
1062.4	1022	778	82	978	822	30	22	**HJW900**
1068	1022	778	82	978	822	30	22	**HJW900M**
1056	1022	778	82	978	822	45087	22	**HJW900-CS**
1176	-	714	133	1040	800	16	33	**HJW940**
1216	-	784	133	1080	850	24	33	**HJW980**
1188	1122	878	82	1078	922	36	22	**HJW1000**
1185.6	1122	878	82	1078	922	36	22	**HJW1000M**
1298	1242	998	82	1198	1042	36	22	**HJW1120**
1305.6	1242	998	82	1198	1042	36	22	**HJW1120M**
1285	1250	1006	114	1205	1049	36	20	**HJW1127**
1449.6	1390	1110	91	1337	1163	40	26	**HJW1250**
1453.2	1390	1110	91	1337	1163	40	26	**HJW1250M**
1605.6	1540	1260	91	1487	1313	40	26	**HJW1400**
1607.2	1540	1260	91	1487	1313	40	26	**HJW1400M**
1817.2	1740	1460	91	1687	1513	45	26	**HJW1600**
1820.8	1740	1460	91	1687	1513	45	26	**HJW1600M**
1960.8	-	1420	200	1780	1486	18	33	**HJW1660**
1979.91	1880	1600	140	1840	1650	48	33/22	**HJW1745**
2013.2	1940	1660	91	1887	1713	45	26	**HJW1800**
2012.8	1940	1660	91	1887	1713	45	26	**HJW1800M**

Structure dimensions(mm)							Gear parameters			Mass(kg)
D_3	d_1	H_1	h	n_1	M	m	Z	b(mm)	x	(approx.)
308	310	52.5	7.5	2	12	5	80	52.5	0	30.4
498	502	65	10	4	16	5	123	60	0.5	84
498	502	65	10	4	16	6	102	60	0.5	84
558	562	65	10	4	16	5	135	60	0.5	92
558	562	65	10	4	16	6	112	60	0.5	92
571	573	77	6	-	16	10	77	77	0	185
628	632	65	10	4	16	6	126	60	0.5	111
628	632	65	10	4	16	8	94	60	0.5	111
708	712	65	10	4	16	6	139	60	0.5	125
708	712	65	10	4	16	8	104	60	0.5	125
728	732	58	17	2	16	4.5	186	40	0	97.4
736	744	95	15	-	16	14	67	100	0	300
768	774	70	15	-	16/24	14	69	100	0	282
798	802	72	10	6	20	8	118	65	0.5	179
798	802	72	10	6	20	10	94	65	0.5	179
843	847	77	16	4	16	8	120	70	0	170
898	902	72	10	6	20	8	130	65	0.5	200
898	902	72	10	6	20	10	104	65	0.5	200
898	902	72	8	2	20	3	350	40	0	188
944	936	115	18	-	30	14	82	125	0	550
976	984	115	18	8	30	16	74	125	0	572
998	1002	72	10	6	20	10	116	65	0.5	242
998	1002	72	10	6	20	12	96	65	0.5	242
1118	1122	72	10	6	20	10	127	65	0.5	261
1118	1122	72	10	6	20	12	106	65	0.5	261
1127	1127	95	19	4	16	5	255	65	0	260
1248	1252	81	10	5	24	12	118	75	0.5	362
1248	1252	81	10	5	24	14	101	75	0.5	362
1398	1402	81	10	5	24	12	131	75	0.5	417
1398	1402	81	10	5	24	14	112	75	0.5	411
1598	1602	81	10	5	24	14	127	75	0.5	488
1598	1602	81	10	5	24	16	111	75	0.5	484
1657	1663	160	40	6	30	16	120	190	0.3	1670
1743	1747	105	35	8	20	10	196	99	0	836
1798	1802	81	10	5	24	14	141	75	0.5	530
1798	1802	81	10	5	24	16	123	75	0.5	530

D_{PW} 1935～4500mm





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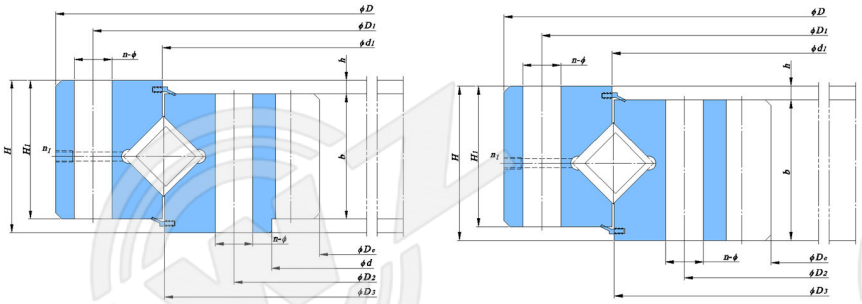
Principal dimensions(mm)				Bolt hole dimensions(mm)				Designations
D_e	D	d	H	D_1	D_2	n	ϕ	
2244	2178	1690	167	2110	1760	48	33	**111.55.1935.03G1F**
2264.4	2178	1785	220	2110	1851	48	33	**HJW1980**
2268.8	2178	1825	112	2110	1891	48	33	**HJW2000**
2264.4	2178	1825	112	2110	1891	48	33	**HJW2000M**
2520	2418	2065	112	2350	2131	48	33	**HJW2240/YB2**
2519.81	2443	2060	145	2370	2130	48	33	**HJW2250**
2580	2490	2060	185	2418	2130	48	33	**HJW2274**
2776	2678	2325	112	2610	2391	56	33	**HJW2500M**
3074.4	2978	2625	112	2910	2691	56	33	**HJW2800**
3076	2978	2625	112	2910	2691	56	33	**HJW2800M**
3076	2978	2625	112	2910	2691	60	33	**112.40.2800.03**
3076	2978	2625	144	2910	2691	56	33	**112.40.2800.03K1G1**
3232.8	-	2600	200	3050	2700	60	35	**HJW2875**
3476	3376	2922	134	3286	3014	56	45	**HJW3150**
3471.6	3376	2922	134	3286	3014	56	45	**HJW3150M**
3840	-	3268	174	3640	3360	72	33	**HJW3500**
3876	3776	3322	134	3686	3414	56	45	**111.50.3550.03**
4100	3970	3230	240	3820	3350	54	37	**HJW3580X**
4329.6	4226	3772	134	4136	3864	60	45	**HJW4000**
4920	4820	4170	220	4720	4270	48	45	**HJW4500**

Structure dimensions(mm)							Gear parameters			Mass(kg)
D_3	d_1	H_1	h	n_1	M	m	Z	b(mm)	x	(approx.)
1935	1935	155	12	4	30	12	185	145	0	1830
1978	1982	210	10	8	30	18	125	123	-0.5	2040
1997	2003	100	12	8	30	16	139	90	0.5	935
1997	2003	100	12	8	30	18	123	90	0.5	935
2240	2240	100	12	8	30	12	208	90	0	996
2249	2251	105	40	6	30	12	208	100	0	1390
2273	2275	135	50	6	30	10	256	135	0	2090
2497	2503	100	12	8	30	20	136	90	0.5	1150
2797	2803	100	12	8	30	18	168	90	0.5	1320
2797	2803	100	12	8	30	20	151	90	0.5	1320
2798	2802	100	12	8	30	20	151	90	0.5	1290
2798	2802	132	12	8	30	20	151	90	0.5	1730
2872	2878	180	20	18	32	20	160	180	-0.18	3560
3147	3153	122	12	8	42	20	171	110	0.5	2220
3147	3153	122	12	8	42	22	155	110	0.5	2220
3498	3502	160	14	12	30	24	158	160	0	3400
3547.5	3552.5	122	12	8	42	20	191	110	0.5	2470
3578	3582	220	20	16	35	25	162	200	0	7530
3997.5	4002.5	122	12	8	42	22	194	110	0.5	2790
4496	4504	200	20	8	42	12	408	155	0	7500

D_{PW} 500～2500mm



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2. n-ϕ can change to threaded hole, thread diameter M.
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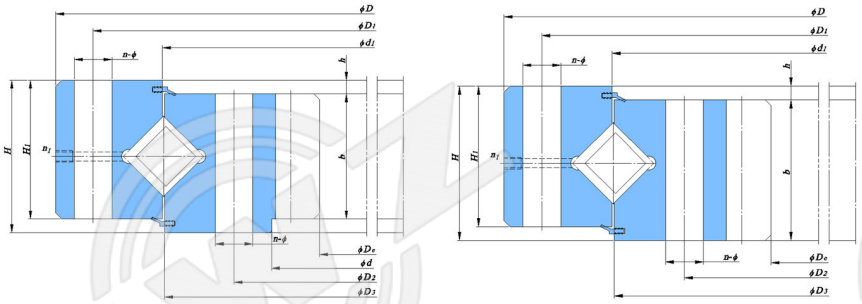
Principal dimensions(mm)				Bolt hole dimensions(mm)				Designations
D_e	D	d	H	D_1	D_2	n	ϕ	
367	602	398	75	566	434	20	18	**HJN500**
368.4	602	398	75	566	434	20	18	**HJN500M**
427	662	458	75	626	494	20	18	**HJN560**
428.4	662	458	75	626	494	20	18	**HJN560M**
494.4	732	528	75	696	564	24	18	**HJN630**
491.2	732	528	75	696	564	24	18	**HJN630M**
572.4	812	608	82	776	644	24	18	**HJN710**
571.2	812	608	82	776	644	24	18	**HJN710M**
600	850	635	75	805	670	24	18	**113.20.737.03F**
635.2	922	678	82	878	722	30	22	**HJN800**
634	922	678	82	878	722	30	22	**HJN800M**
692	990	725	95	946	785	24	18	**HJN867**
739.2	1022	778	82	978	822	30	22	**HJN900**
734	1022	778	82	978	822	30	22	**HJN900M**
824	1122	878	82	1078	922	36	22	**HJN1000**
820.8	1122	878	82	1078	922	36	22	**HJN1000M**
944	1242	998	82	1198	1042	36	22	**HJN1120**
940.8	1242	998	82	1198	1042	36	22	**HJN1120M**
1080	1317	-	106	1277	1158	34/36	22	**HJN1202**
1048.8	1390	1110	91	1337	1163	40	26	**HJN1250**
1041.6	1390	1110	91	1337	1163	40	26	**HJN1250M**
1192.8	1540	1260	91	1487	1313	40	26	**HJN1400**
1195.6	1540	1260	91	1487	1313	40	26	**HJN1400M**
1391.6	1740	1460	91	1687	1513	45	26	**HJN1600**
1382.4	1740	1460	91	1687	1513	45	26	**HJN1600M**
1573.6	1940	1660	91	1887	1713	45	26	**HJN1800**
1574.4	1940	1660	91	1887	1713	45	26	**HJN1800M**
1592.16	2150	1640	255	2070	1690	20	26	**113.50.1893.03F**
1734.4	2178	1825	112	2110	1891	48	33	**HJN2000**
1735.2	2178	1825	112	2110	1891	48	33	**HJN2000M**
1987.2	2418	2065	112	2350	2131	48	33	**HJN2240M**
1990.2	2564	2060	290	2490	2120	60	26	**HJN2270**
2239.2	2678	2325	112	2610	2391	56	33	**HJN2500**
2228	2678	2325	112	2610	2391	56	33	**HJN2500M**

Structure dimensions(mm)							Gear parameters			Mass(kg)
D_3	d_1	H_1	h	n_1	M	m	Z	b(mm)	x	(approx.)
498	502	65	10	4	16	5	74	60	0.5	85
498	502	65	10	4	16	6	62	60	0.5	85
558	562	65	10	4	16	5	86	60	0.5	96
558	562	65	10	4	16	6	72	60	0.5	96
628	632	65	10	4	16	6	83	60	0.5	110
628	632	65	10	4	16	8	62	60	0.5	110
708	712	65	10	4	16	6	96	60	0.5	126
708	712	65	10	4	16	8	72	60	0.5	122
737	737	65	10	4	16	6	102	55	0	120
798	802	72	10	6	20	8	80	65	0.5	186
798	802	72	10	6	20	10	64	65	0.5	186
865	869	80	15	4	16	4	175	45	0	218
898	902	72	10	6	20	8	93	65	0.5	208
898	902	72	10	6	20	10	74	65	0.5	208
998	1002	72	10	6	20	10	83	65	0.5	220
998	1002	72	10	6	20	12	69	65	0.5	220
1118	1122	72	10	6	20	10	95	65	0.5	273
1118	1122	72	10	6	20	12	79	65	0.5	273
1200	1204	93	13	2	20	10	110	91	-0.5	272
1248	1252	81	10	5	24	12	88	75	0.5	386
1248	1252	81	10	5	24	14	75	75	0.5	390
1398	1402	81	10	5	24	12	100	75	0.5	441
1398	1402	81	10	5	24	14	86	75	0.5	441
1598	1602	81	10	5	24	14	100	75	0.5	502
1598	1602	81	10	5	24	16	87	75	0.5	517
1798	1802	81	10	5	24	14	113	75	0.5	605
1798	1802	81	10	5	24	16	99	75	0.5	605
1891	1895	245	10	4	24	8	200	100	0.5	1840
1997	2003	100	12	8	30	16	109	90	0.5	977
1997	2003	100	12	8	30	18	97	90	0.5	977
2237	2243	100	12	8	30	18	111	90	0.5	1070
2268	2272	255	35	6	24	10	200	115	0.5	2770
2497	2503	100	12	8	30	18	125	90	0.5	1210
2497	2503	100	12	8	30	20	112	90	0.5	1210

D_{PW} 2800～3150mm



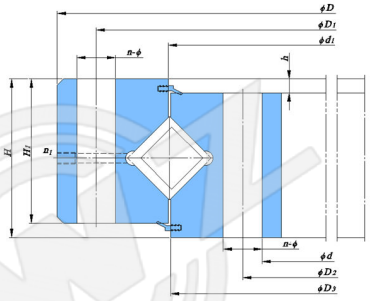
Note:

1. n_1 is the amount of lubricating holes, customer can specify the position of lubricating hole according to using conditions.
2. n-ϕ can change to threaded hole, thread diameter M.
3. The products in this catalogue are standard products, please contact ZWZ if you have other special requirements.

Principal dimensions(mm)				Bolt hole dimensions(mm)				Designations
D_e	D	d	H	D_1	D_2	n	ϕ	
2527.2	2978	2625	112	2910	2691	56	33	**HJN2800**
2528	2978	2625	112	2910	2691	56	33	**HJN2800M**
2828	3376	2922	134	3286	3014	56	45	**HJN3150**
2824.8	3376	2922	134	3286	3014	56	45	**HJN3150M**

Structure dimensions(mm)							Gear parameters			Mass(kg)
D_3	d_1	H_1	h	n_1	M	m	Z	b(mm)	x	(approx.)
2797	2803	100	12	8	30	18	141	90	0.5	1400
2797	2803	100	12	8	30	20	127	90	0.5	1400
3147	3153	122	12	8	42	20	142	110	0.5	2340
3147	3153	122	12	8	42	22	129	110	0.5	2340

D_{PW} 160～2000mm



Note:

1. n_1 is the amount of lubricating holes, customer can specify the position of lubricating hole according to using conditions.
2. n-ϕ can change to threaded hole, thread diameter M.
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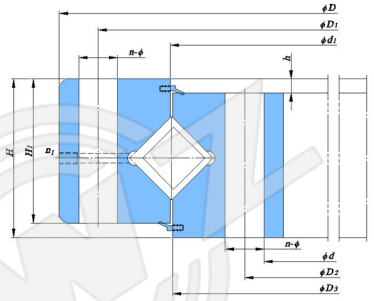
Principal dimensions(mm)			Bolt hole dimensions(mm)				Designations	Structure dimensions(mm)						Mass(kg)
D	d	H	D_1	D_2	n	ϕ		D_3	d_1	H_1	h	n_1	M	(approx.)
200	115	22	183	132	10	6.6	**HJB160**	159	161	22	0	-	5	3.35
230	145	25	213	162	10	9	**HJB188**	187	189	25	0	-	8	8.72
381	266.7	25.4	368.3	285.75	8	8	**HJB327**	326.2	327.8	23.8	1.6	-	8	10.5
848	344	56	460	368	24	14	**HJB414**	413	415	44.5	11.5	4	12	28.3
480	380	26	462	398	20	-	**HJB430**	429.4	430.6	26	0	2	45148	12.2
480	400	35		439	12	4.5	**HJB440.3**	439	441.5	35	0	4	3	14.7
540	350	45	505	385	24	45274	**HJB445**	443	447	45	0	2	12	41.5
540	350	45	505	385	24	45274	**HJB445-1**	443	447	45		2	12	41.5
602	398	75	566	434	20	18	**HJB500**	498	502	65	10	4	16	77
600	500	40		516.5	12	4.3	**HJB550/P4-NTW**	548	552	40	0	4	6	26.1
662	458	75	626	494	20	18	**HJB560**	558	562	65	10	4	16	87
660	450	70	624	486	20	17.5	**HJB560/YAB**	558	562	70	0	4	16	88.5
665	505	64	638	532.2	12	13.7	**HJB585**	585	585	64	0	2	12	65.5
732	528	75	696	564	24	18	**HJB630**	628	632	65	10	4	16	95
700	600	40	683		10	-	**HJB640**	639	641	40	10	2	3	26.6
700	600	47	688	612	18	8	**HJB650**	648.5	651.5	45	2	2	8	33.9
812	608	75	776	644	24	18	**HJB710**	708	712	65	10	4	16	111
900	600	125	848	656	30	26/24	**HJB752**	750	754	105	20	3	24	267
922	678	82	878	722	30	22	**HJB800**	798	802	72	10	6	20	167
979	715	100	893	753	36	22	**HJB823**	823	845	82	18	4	20	189
970	732	130	918	778	16	18	**110.25.848.03**	848	848	110	20	4	16	264
1022	778	82	978	822	30	22	**HJB900**	898	902	72	10	6	20	186
1014	874	56	990	898	44	14	**HJB944**	943	945	44.5	11.5	4	12	67
1122	878	82	1078	922	36	22	**HJB1000**	998	1002	72	10	6	20	204
1200	962	90	1150	1030	-	-	**HJB1090**	1088	1092	76	14	-	-	238
1242	998	82	1198	1042	36	22	**HJB1120**	1118	1122	72	10	6	20	233
1390	1110	91	1337	1163	40	26	**HJB1250**	1248	1252	81	10	5	24	337
1520	1200	140	1452	1270	24	22	**110.35.1364.03**	1362	1364	111	29	4	20	584
1540	1260	91	1487	1313	40	26	**HJB1400**	1398	1402	81	10	5	24	369
1640	1300	190	1555	1370	18	30	**HJB1462**	1640	1644	160	30	4	30	930
1740	1460	91	1687	1513	45	26	**HJB1600**	1598	1602	81	10	5	24	425
1940	1660	91	1887	1713	45	26	**HJB1800**	1798	1802	81	12	5	24	525
1940	1660	91	1887	1713	40	24	**110.32.1800.03K**	1798	1802	81	10	5	24	470
2178	1825	112	2110	1891	48	33	**HJB2000**	1997	2003	100	12	8	30	815

D_{PW} 2240～4760mm



Note:

1. n_1 is the amount of lubricating holes, customer can specify the position of lubricating hole according to using conditions.
2. n-ϕ can change to threaded hole, thread diameter M.
3. The products in this catalogue are standard products, please contact ZWZ if you have other special requirements.

Bolt hole dimensions(mm)							Designations	Structure dimensions(mm)						Mass(kg) (approx.)
D	d	H	D_1	D_2	n	ϕ		D_3	d_1	H_1	h	n_1	M	
2418	2065	112	2350	2131	48	33	**HJB2240**	2237	2243	100	12	8	30	944
2678	2325	112	2610	2391	56	33	**HJB2500**	2497	2503	100	12	8	30	1030
2978	2625	112	2910	2691	56	33	**HJB2800**	2797	2803	100	12	8	30	1380
3376	2922	134	3286	3014	56	45	**HJB3150**	3147	3153	122	12	8	42	2100
4726	4272	174	4636	4364	30	33	**HJB4500**	4500	4500	162	12	8	30	3770
5200	4320	320	5020	4500	90	39	**110.100.4760.03F**	4757	4763	300	20	9	36	14600

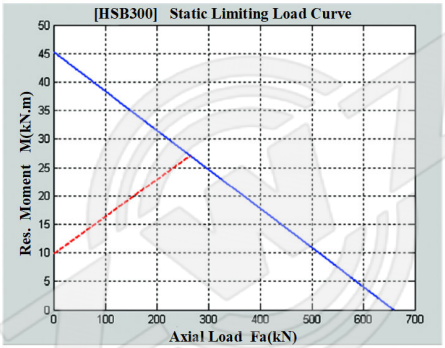


Figure A-1

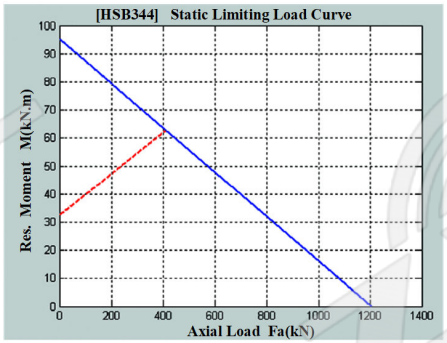


Figure A-2

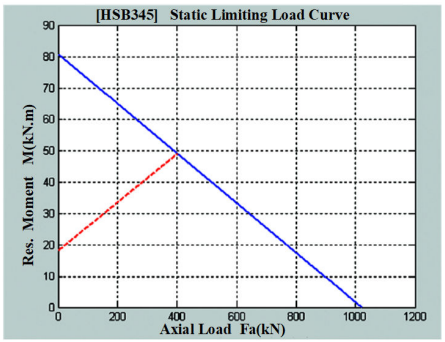


Figure A-3

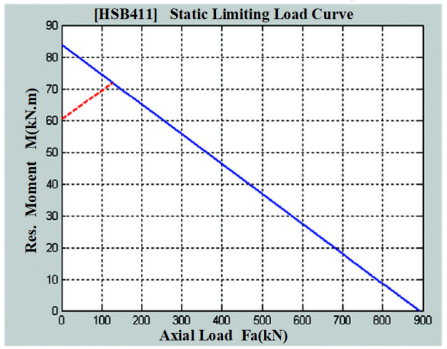


Figure A-4

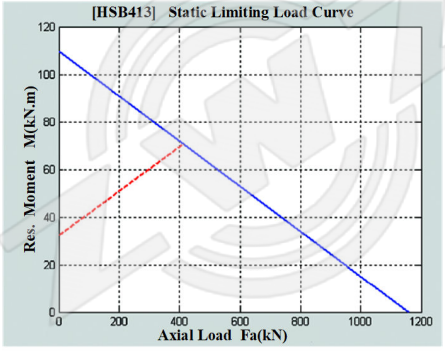


Figure A-5

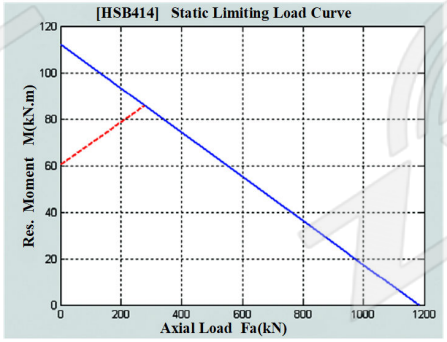


Figure A-6

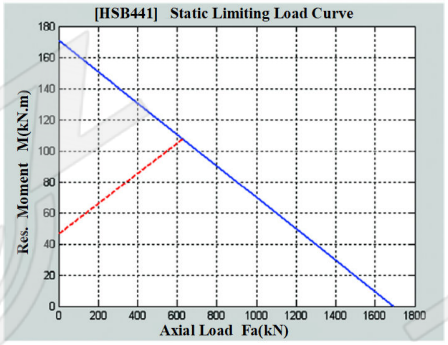


Figure A-7

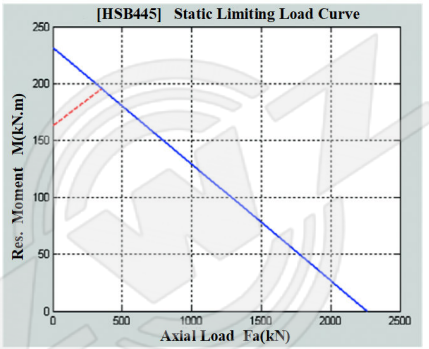


Figure A-8

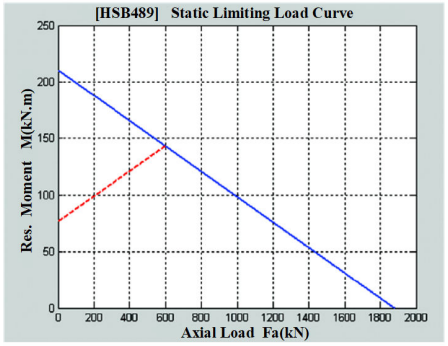


Figure A-9

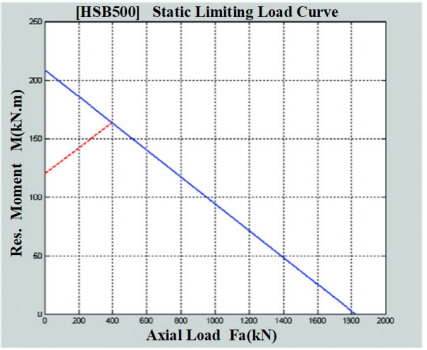


Figure A-10

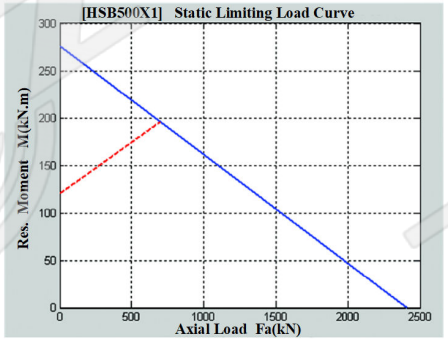


Figure A-11

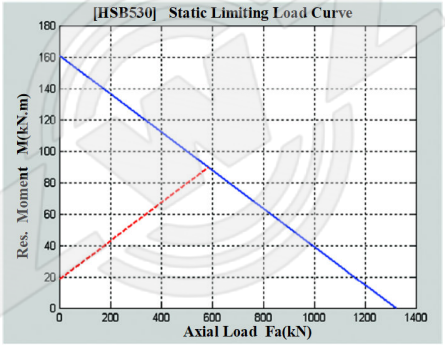


Figure A-12

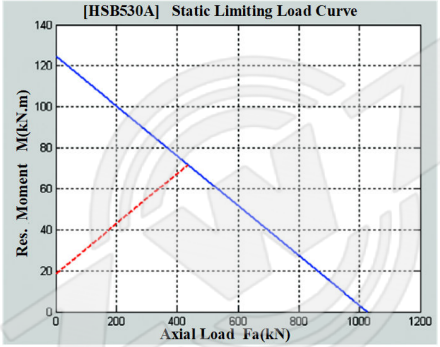


Figure A-13

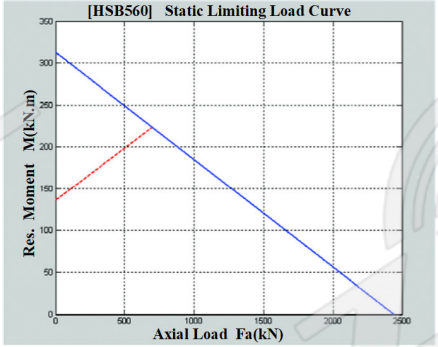


Figure A-14

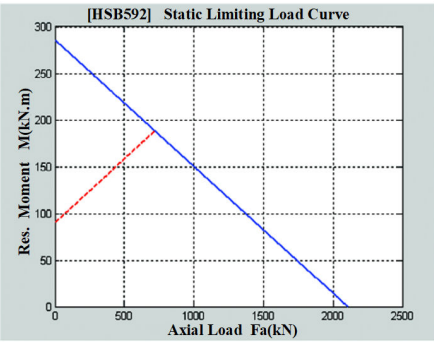


Figure A-15

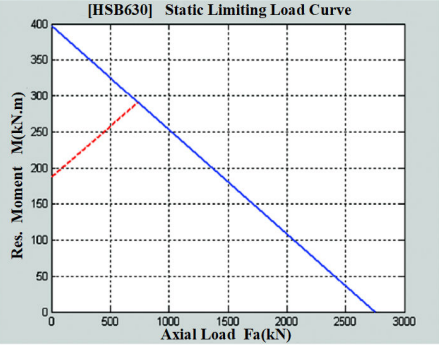


Figure A-16

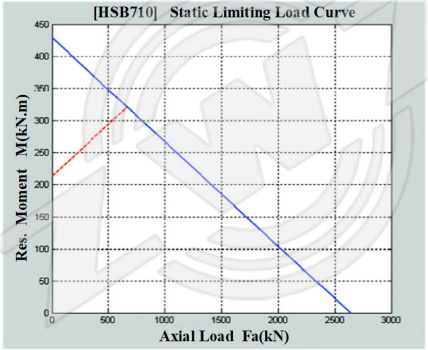


Figure A-17

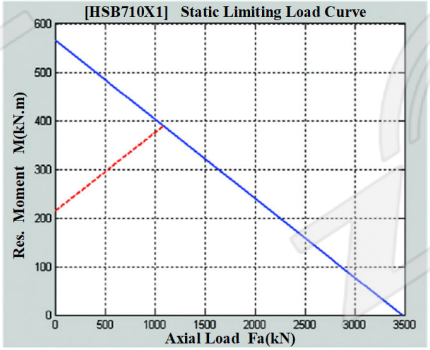


Figure A-18

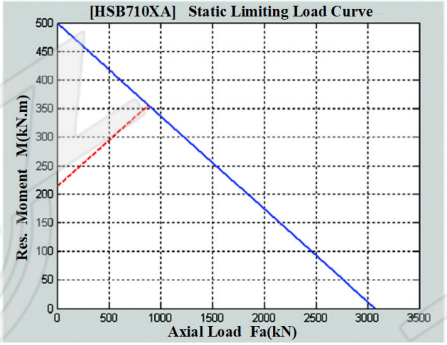


Figure A-19

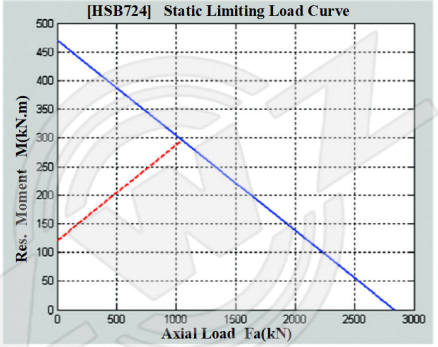


Figure A-20

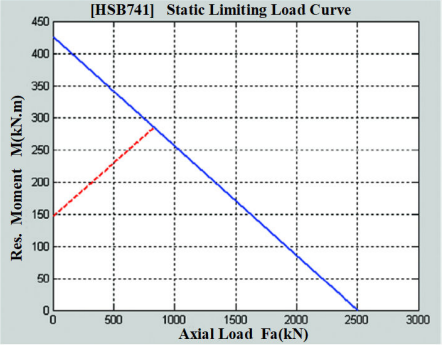
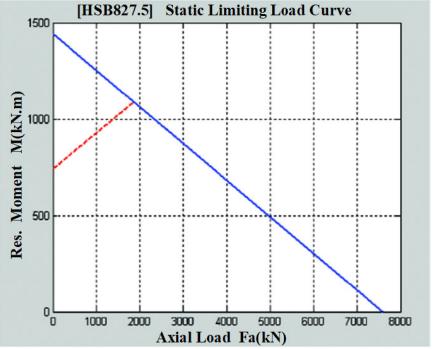


Figure A-21



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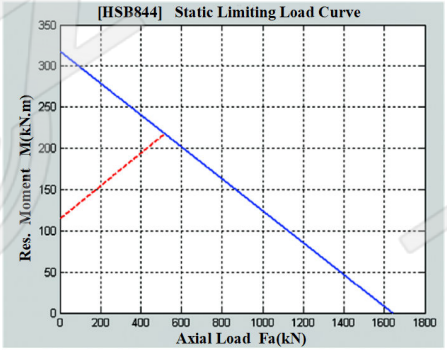


Figure A-23

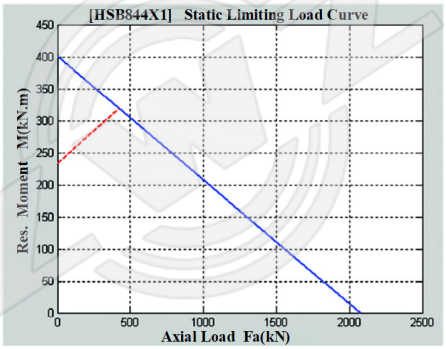


Figure A-24

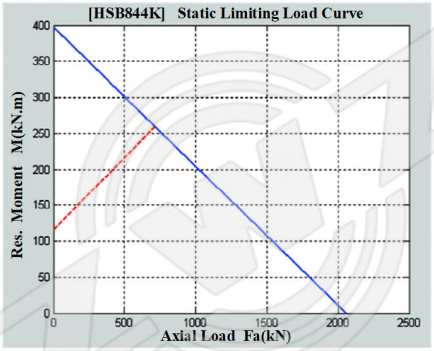


Figure A-25

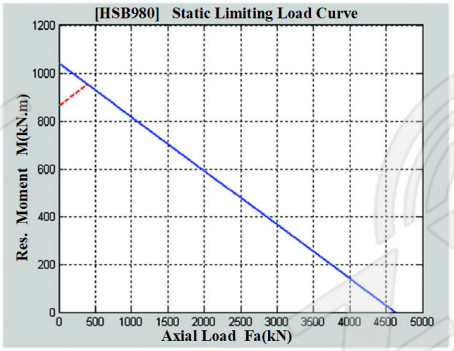


Figure A-26

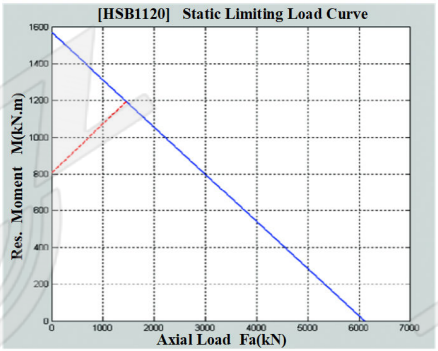
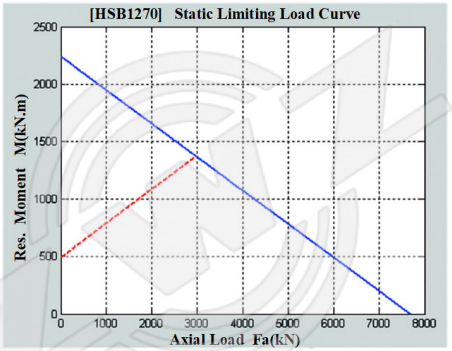


Figure A-31



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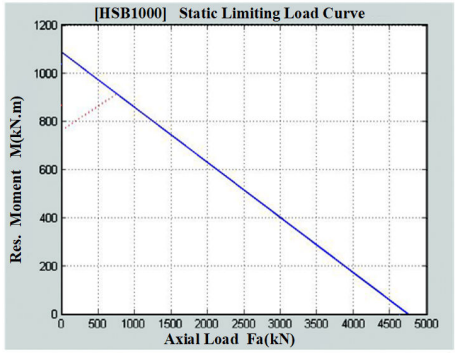

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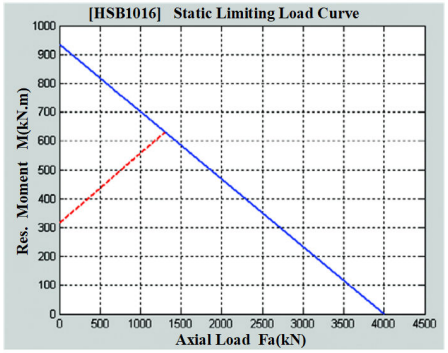


Figure A-28

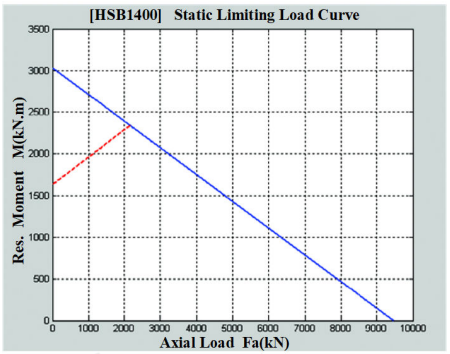


Figure A-33

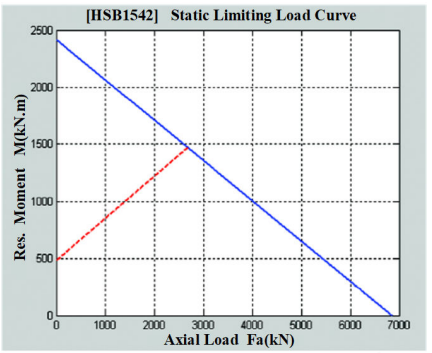


Figure A-34

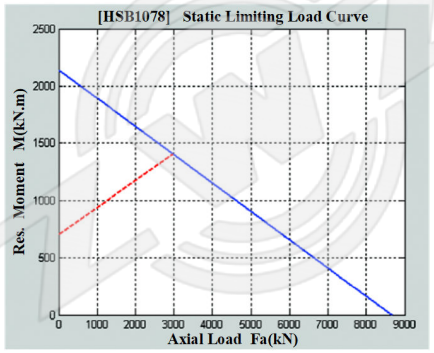


Figure A-29

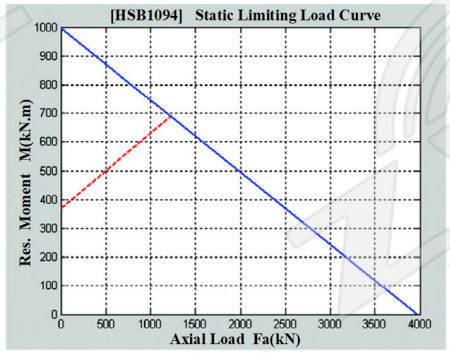
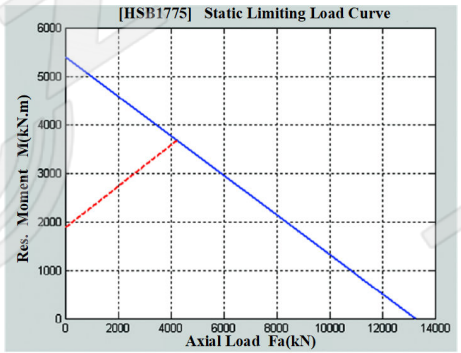


Figure A-30



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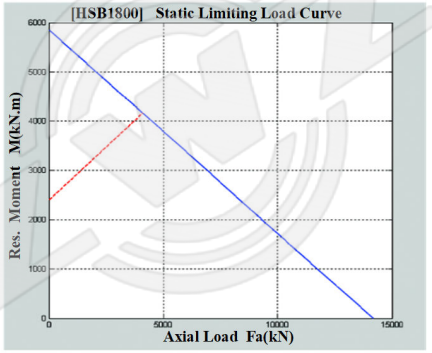


Figure A-36

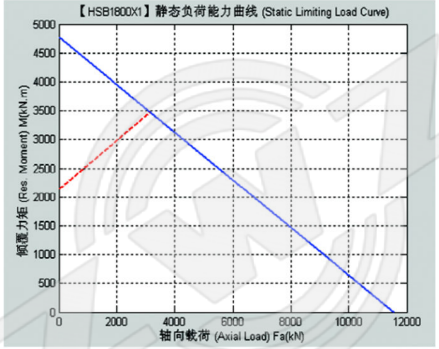
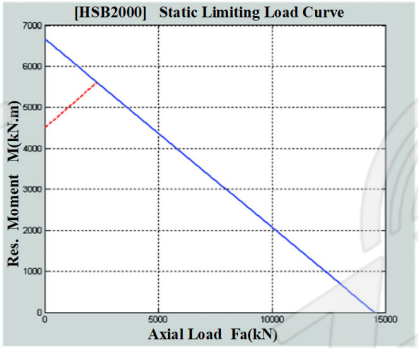


Figure A-37



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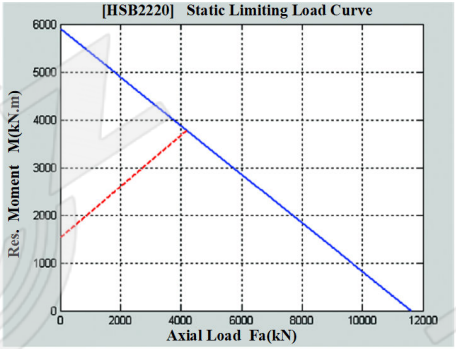

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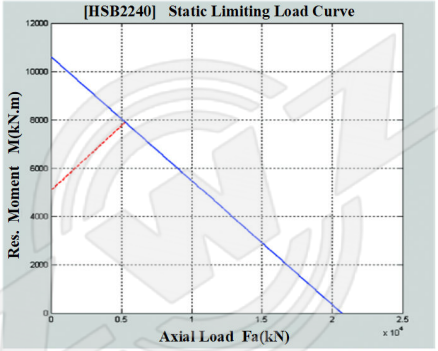

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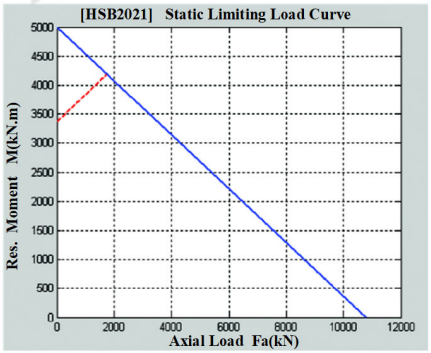

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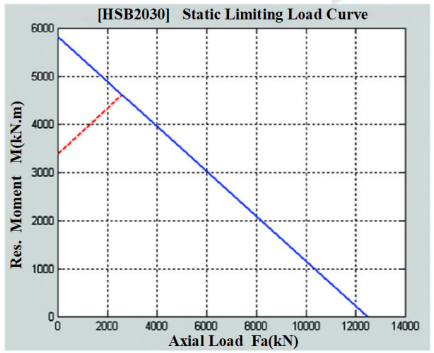

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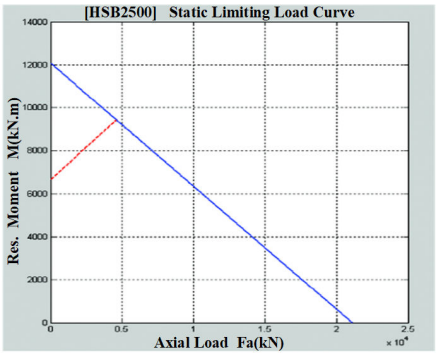

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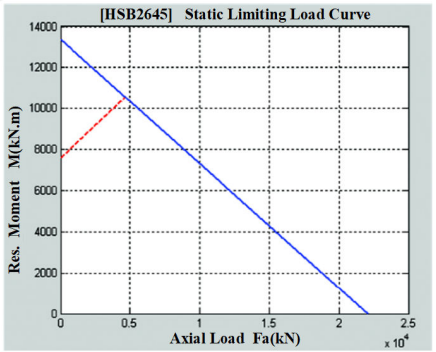

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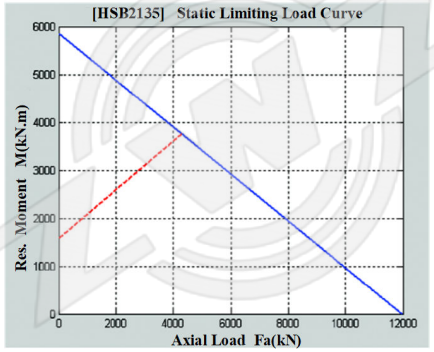

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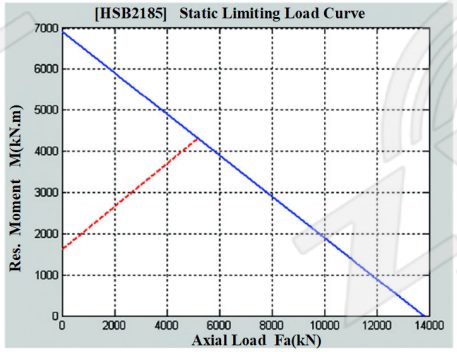

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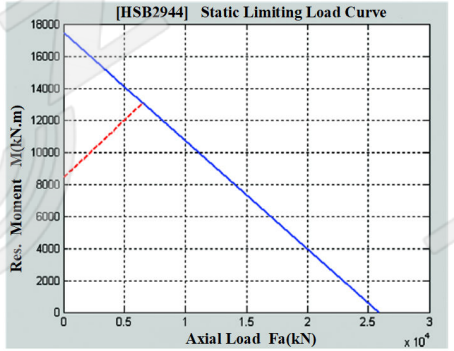

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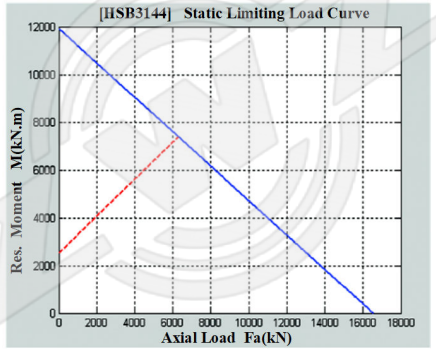

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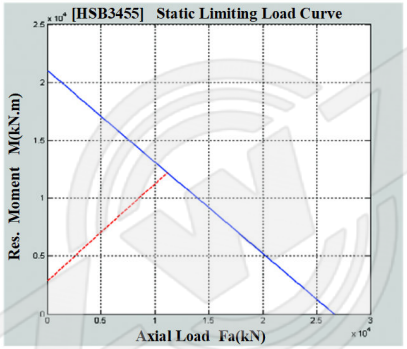

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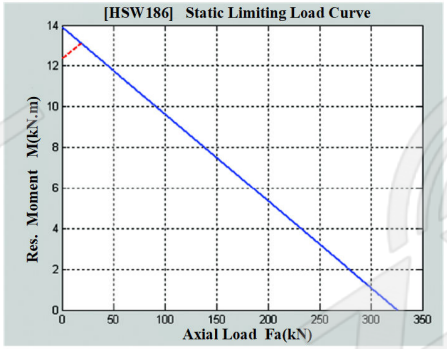

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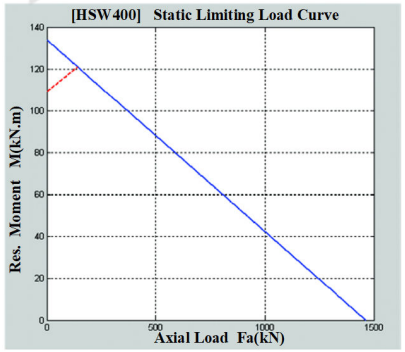

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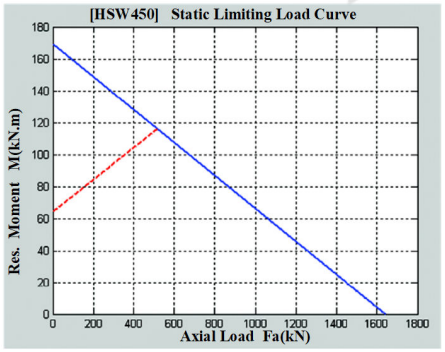

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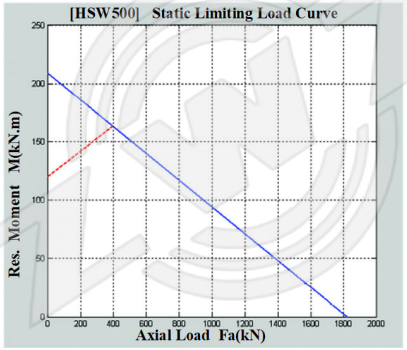

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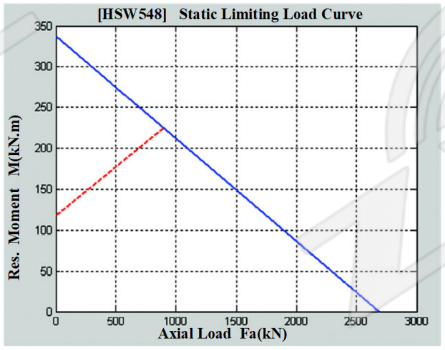

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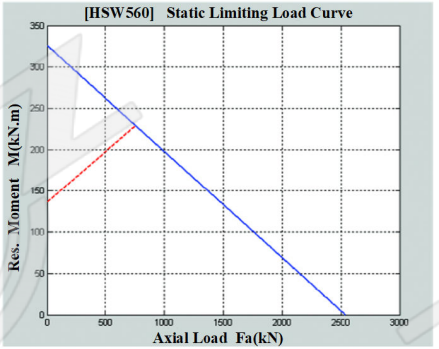

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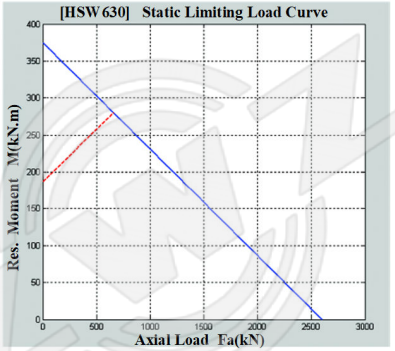

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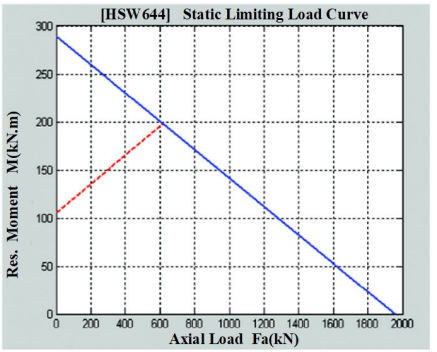

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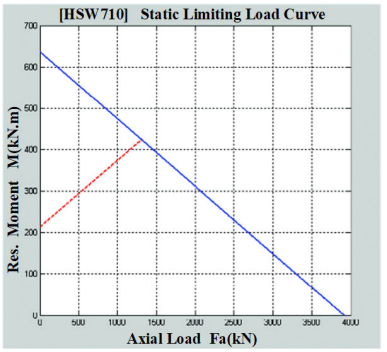

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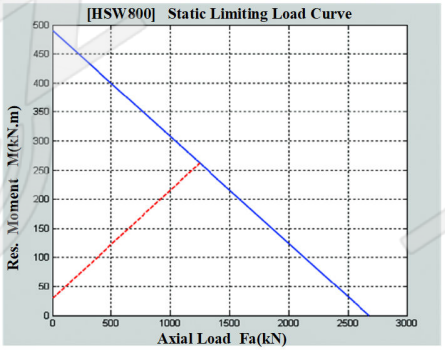

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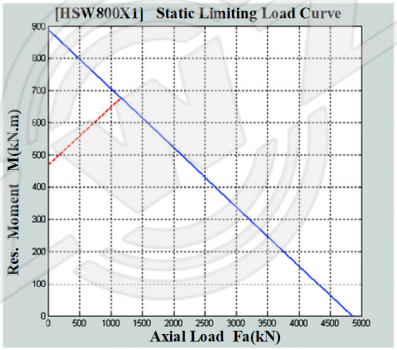
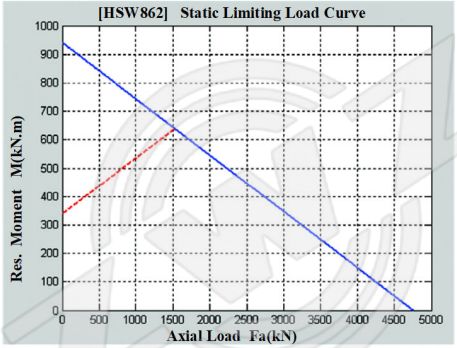


Figure A-60



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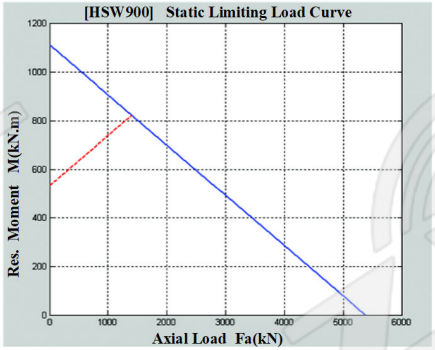

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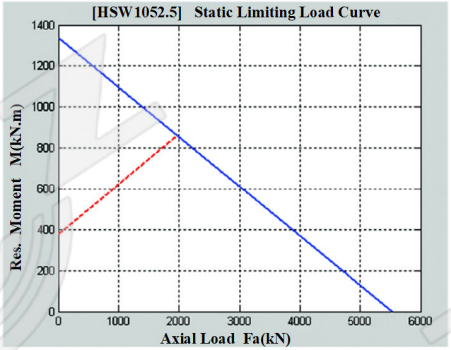

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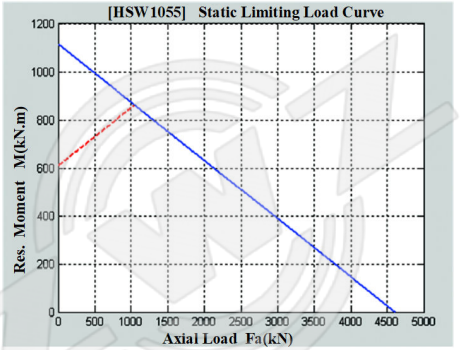

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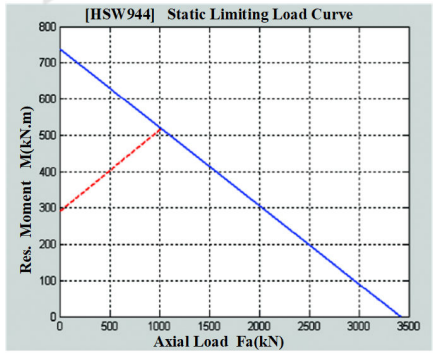

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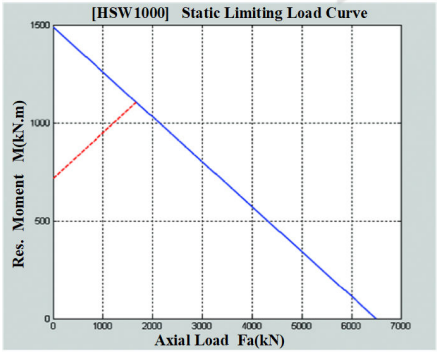

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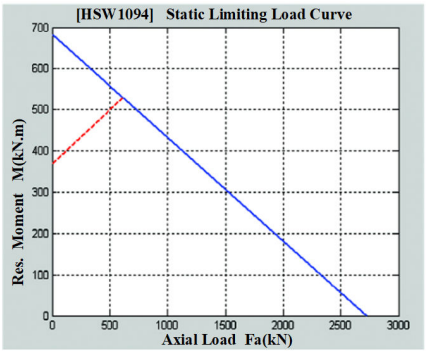

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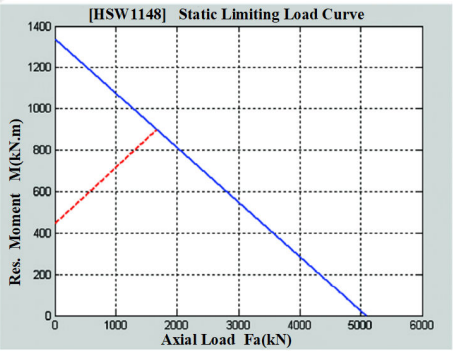


Figure A-70

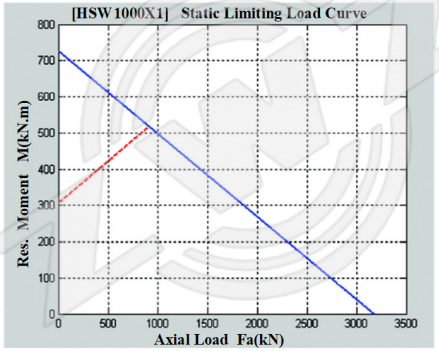
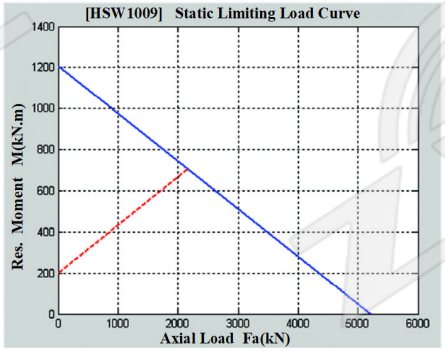


Figure A-65



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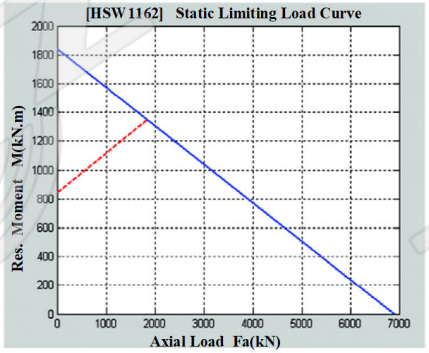


Figure A-71

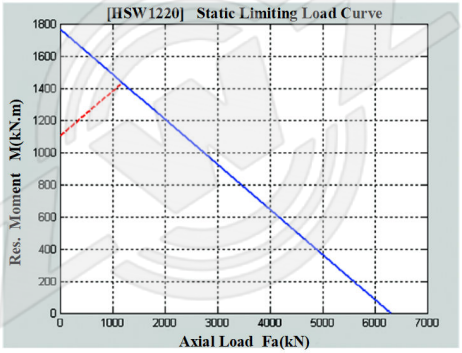
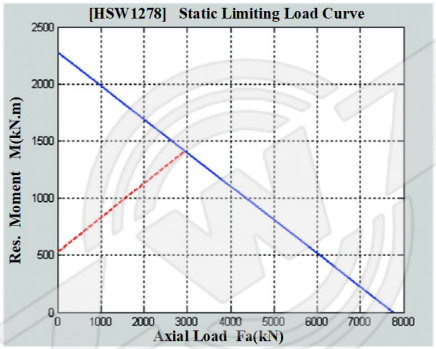


Figure A-72



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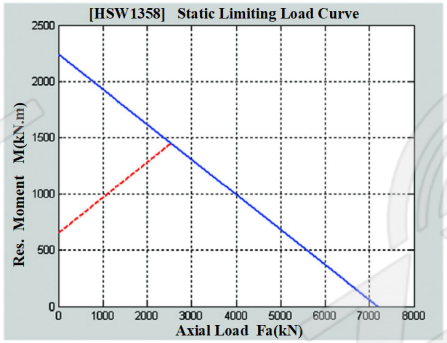

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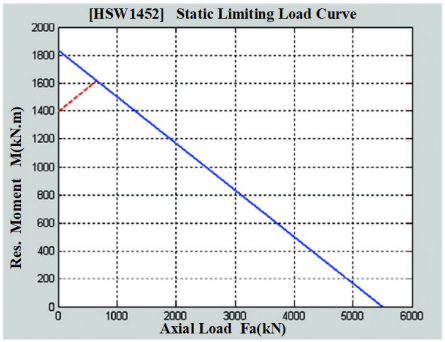
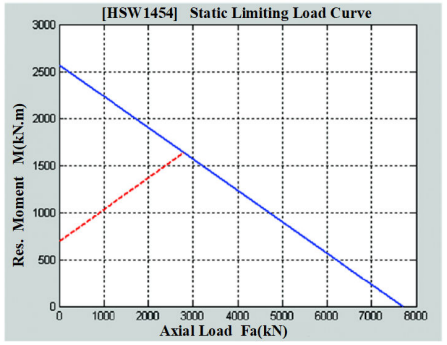


Figure A-75



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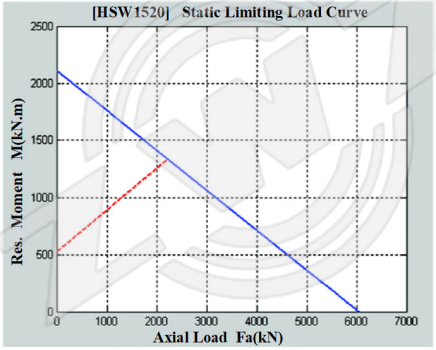

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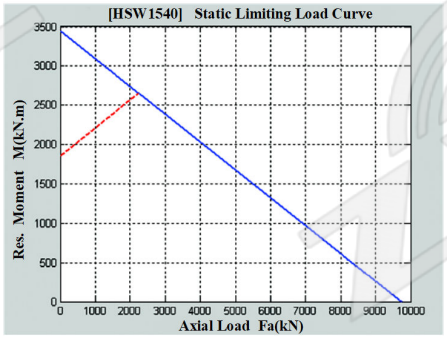

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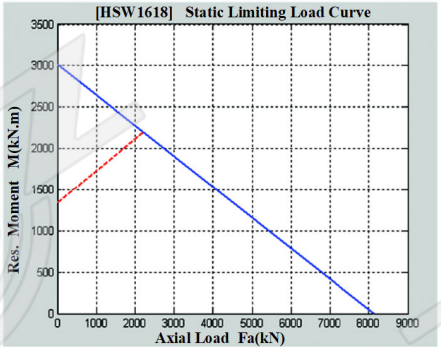

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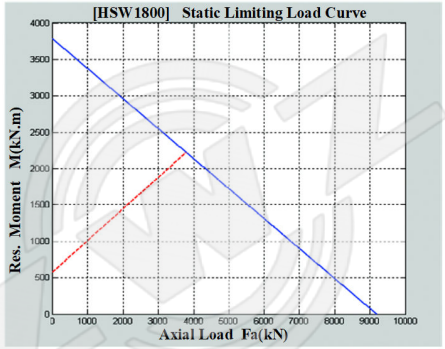
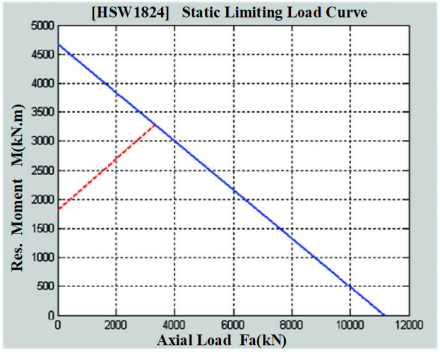


Figure A-80



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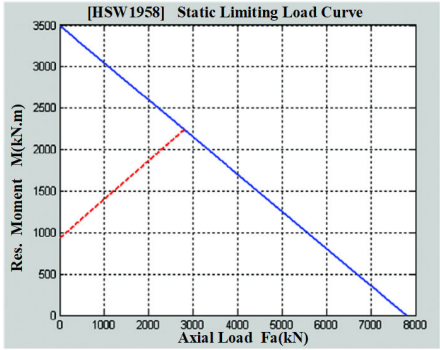

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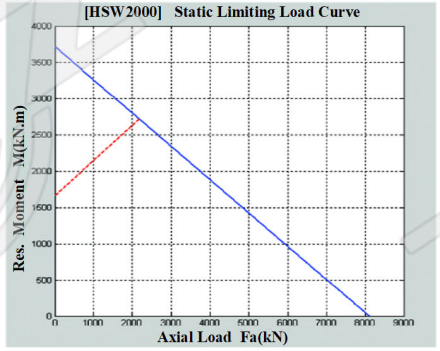

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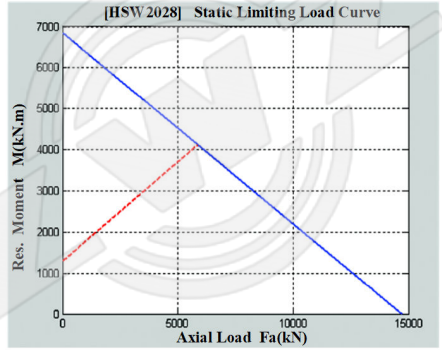

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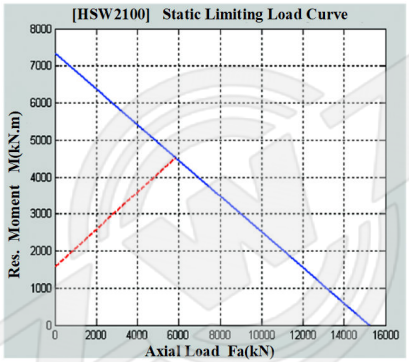

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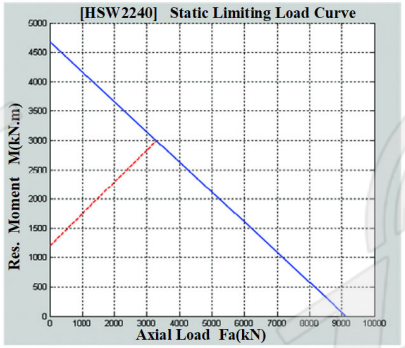
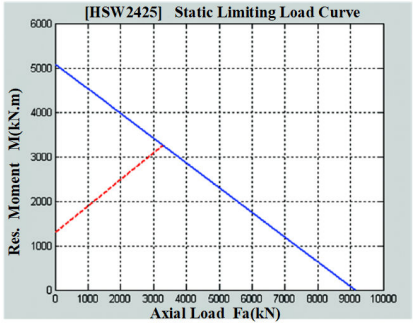


Figure A-86



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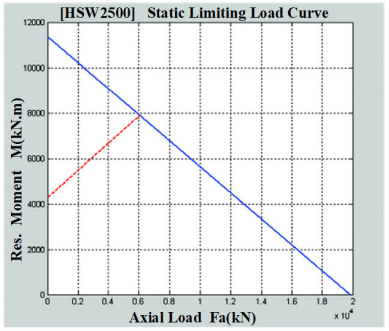

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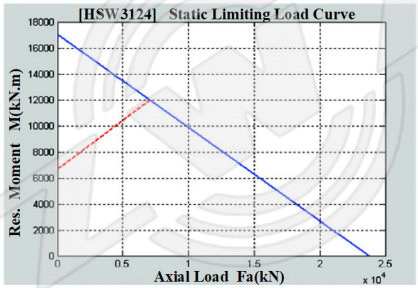

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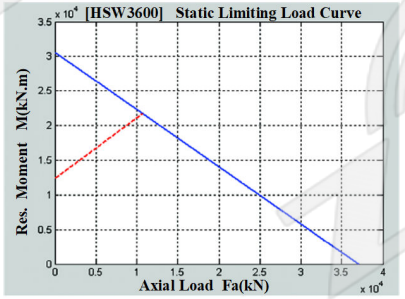

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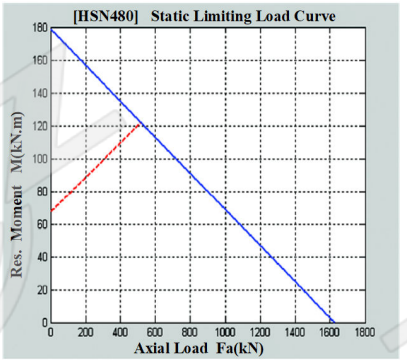

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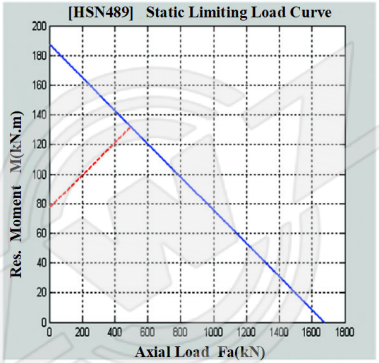

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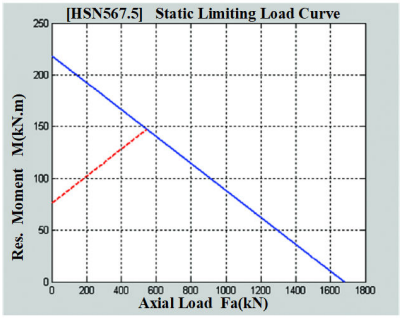
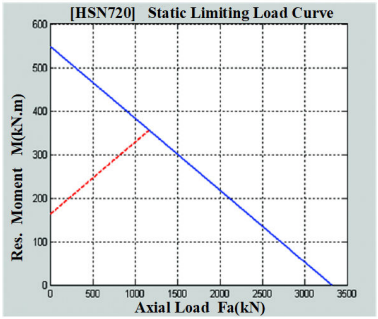


Figure A-93



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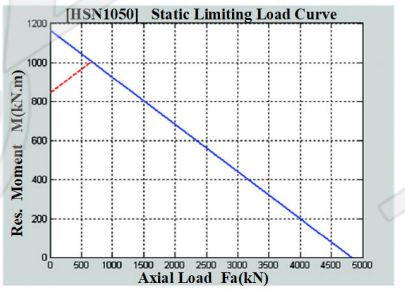

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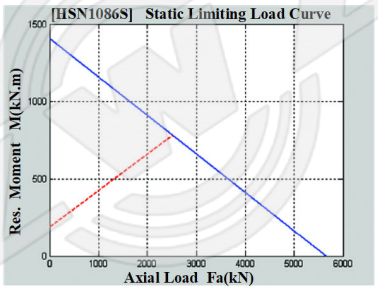

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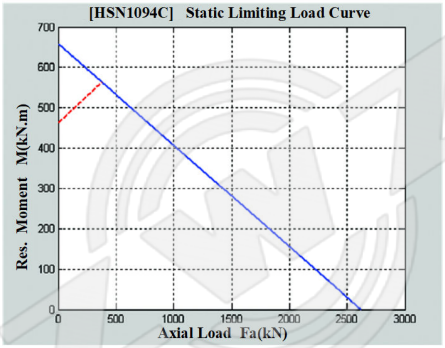

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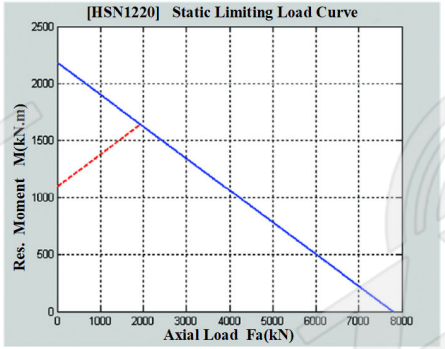

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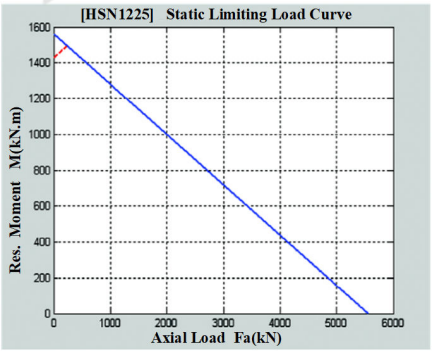

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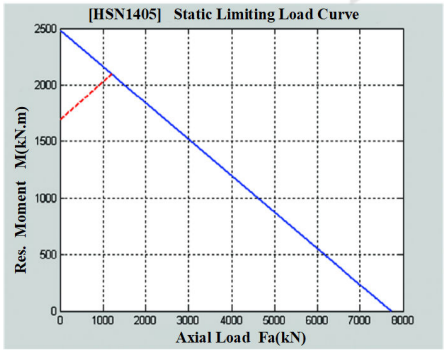

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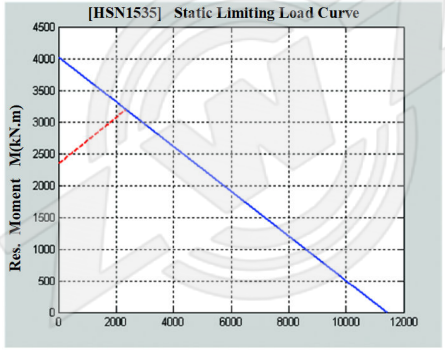

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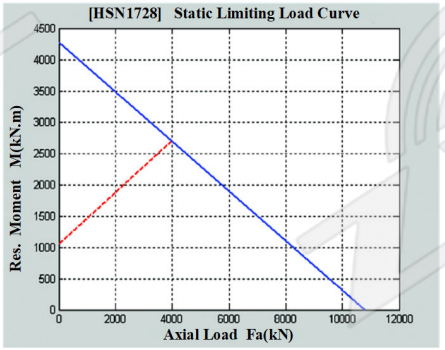

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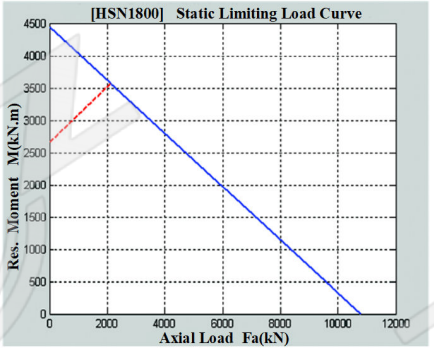

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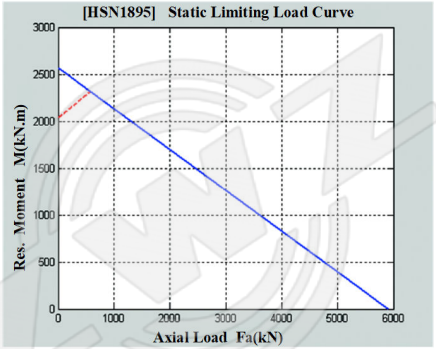

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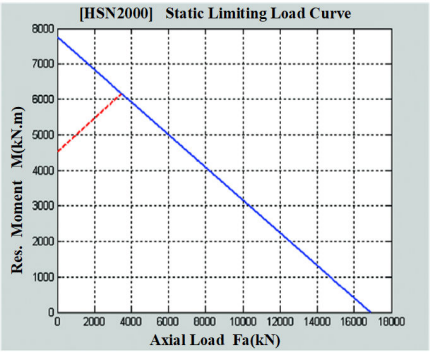

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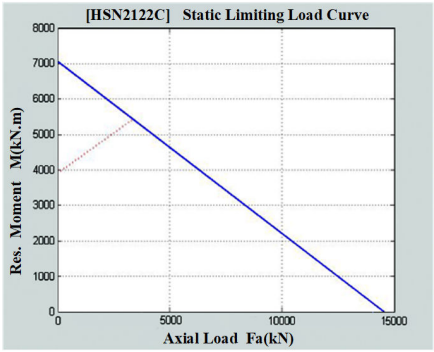

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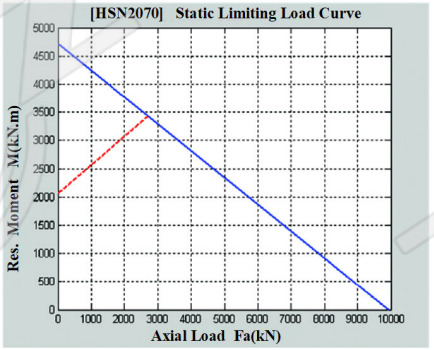

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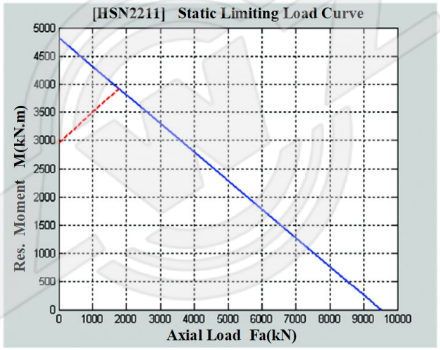

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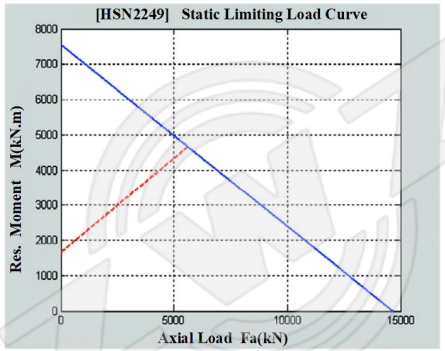

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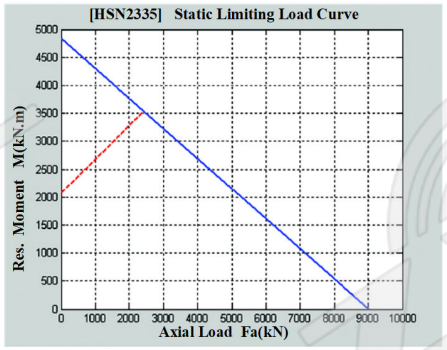

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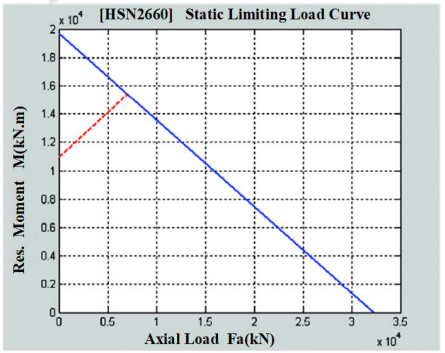

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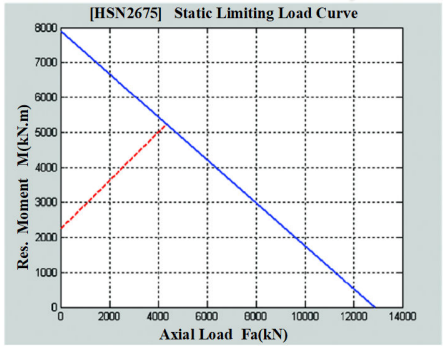

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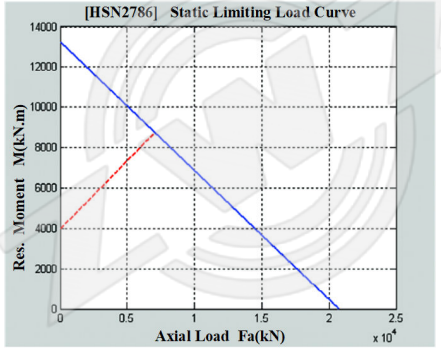

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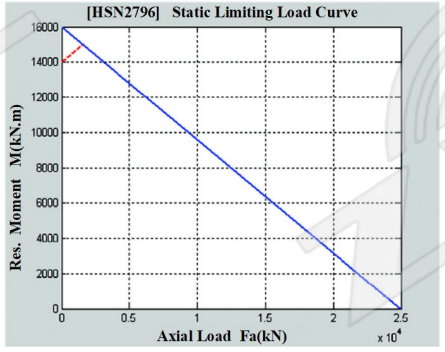

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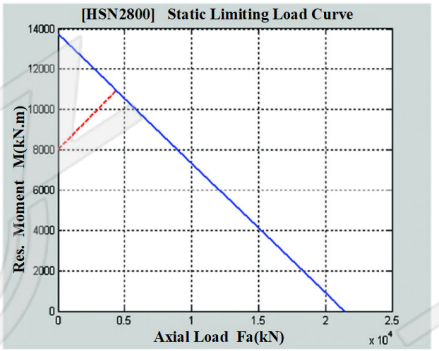

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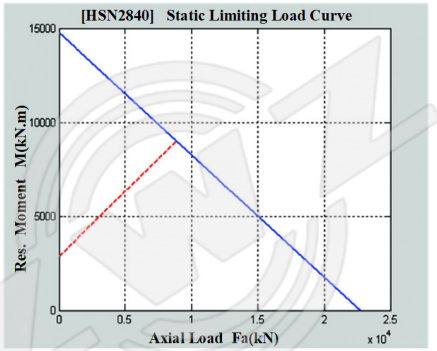

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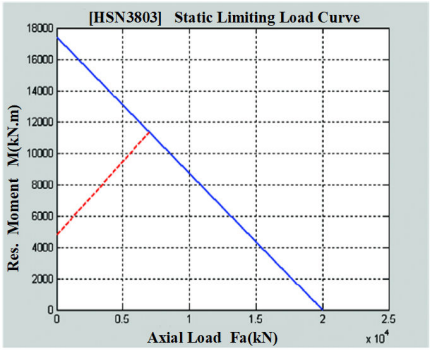

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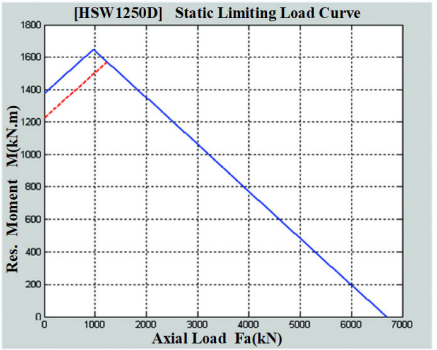

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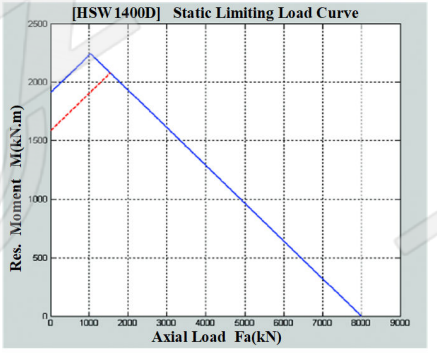

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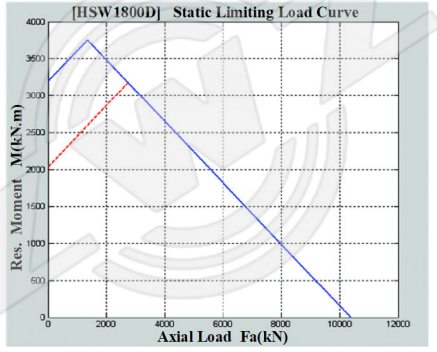

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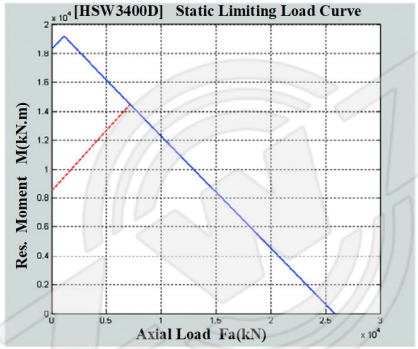

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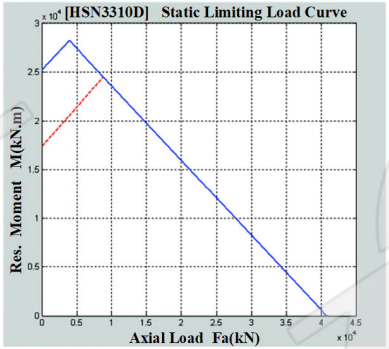

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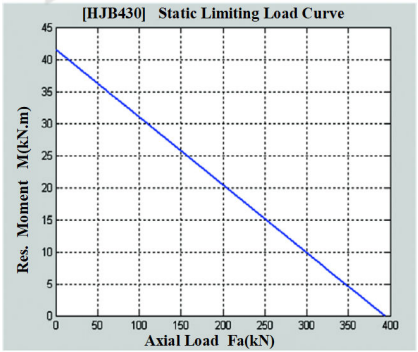

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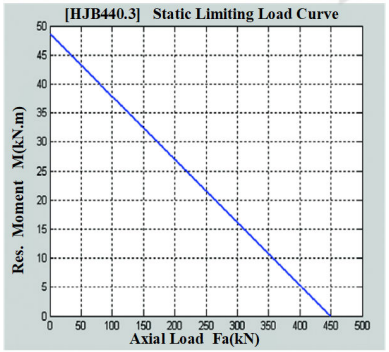

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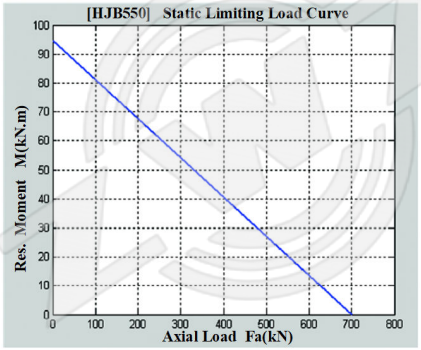

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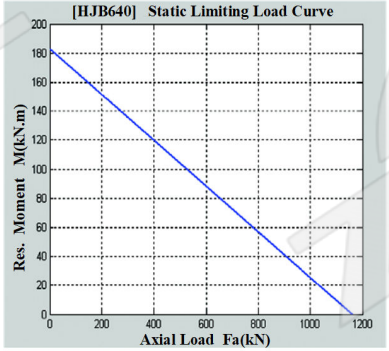

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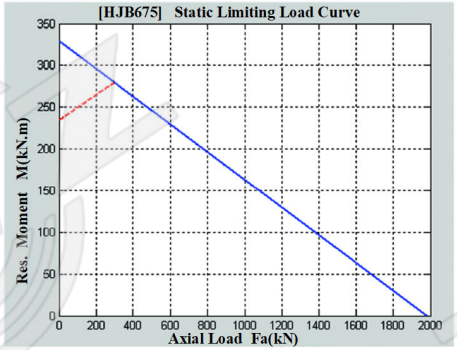

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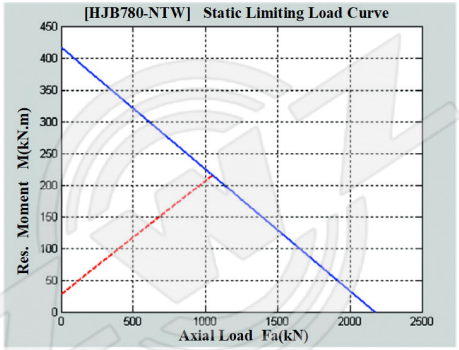

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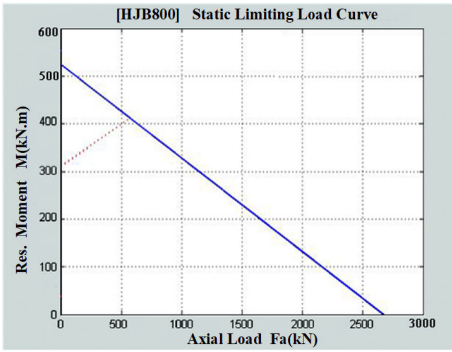

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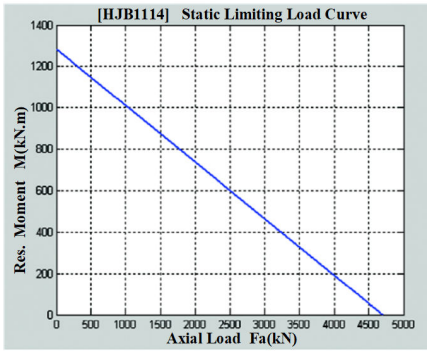

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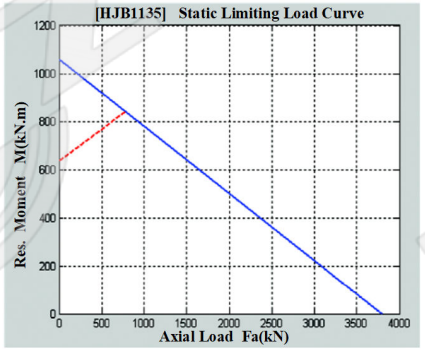

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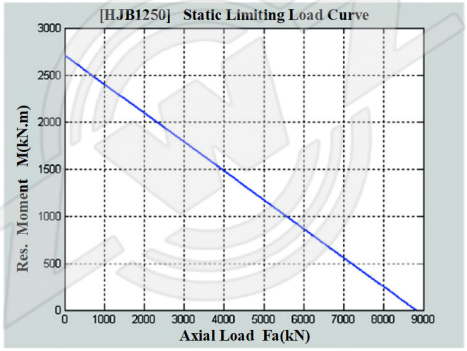

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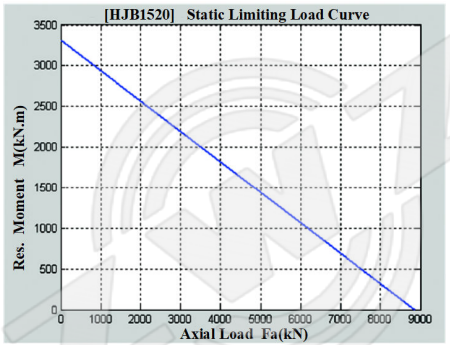

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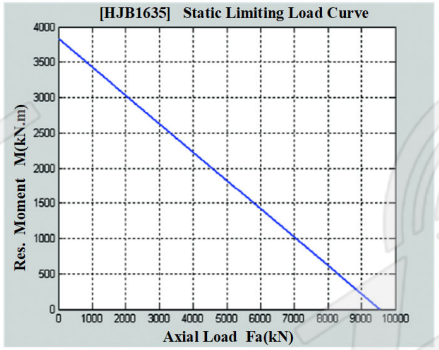

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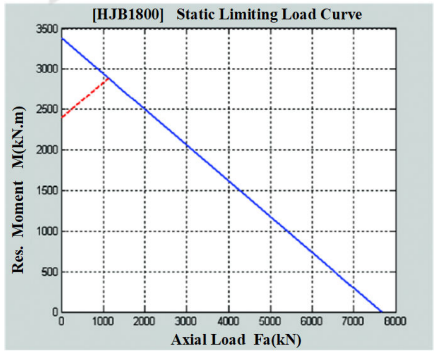

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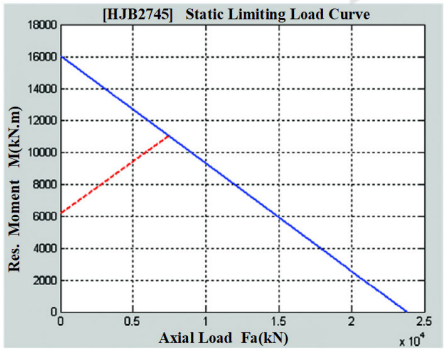

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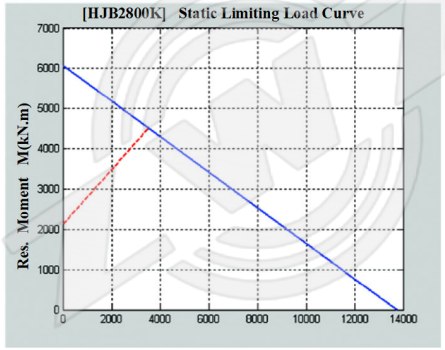

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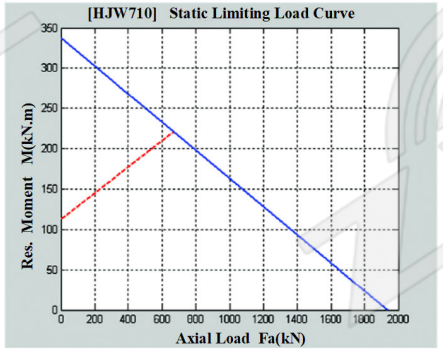

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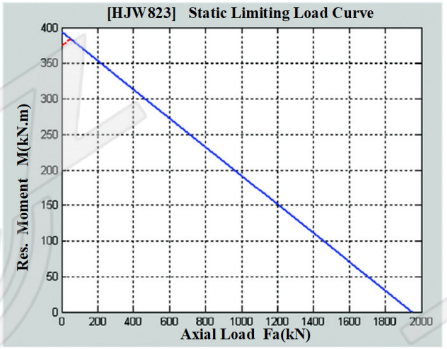

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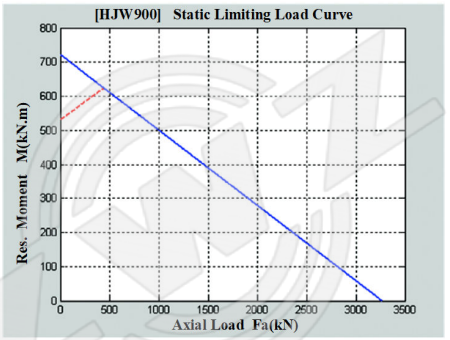

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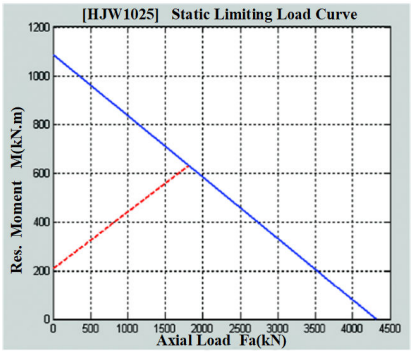

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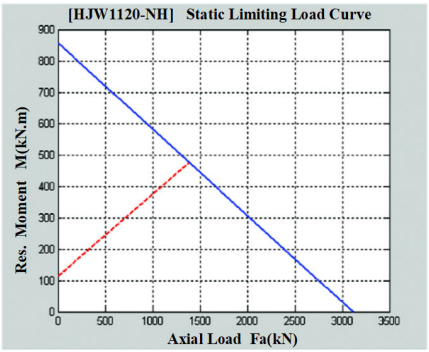

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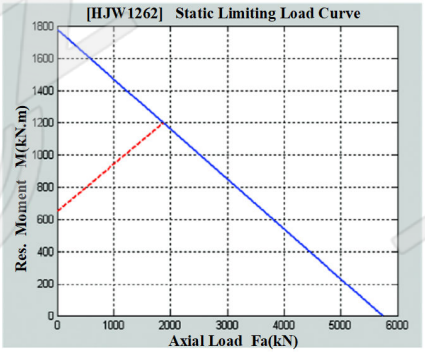

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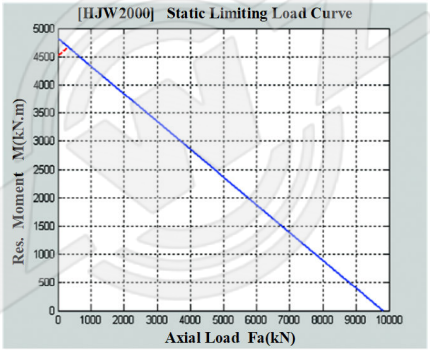

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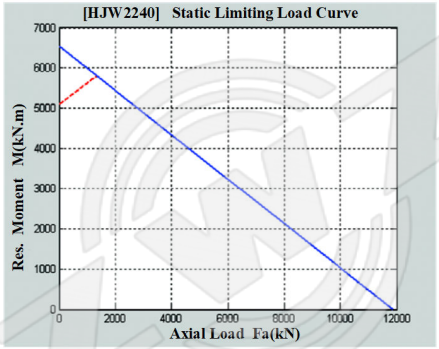

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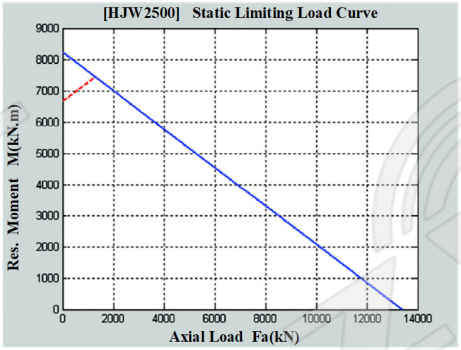

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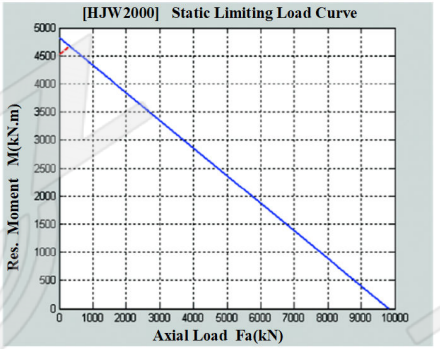

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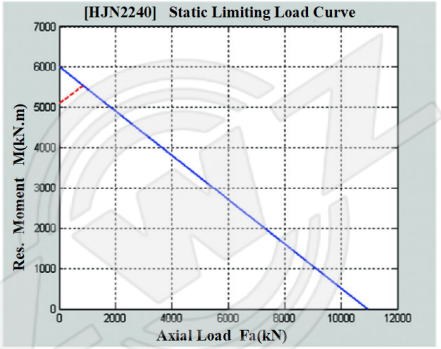

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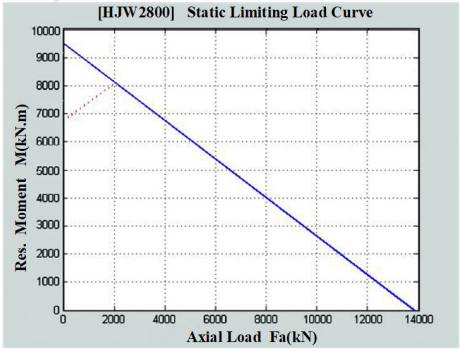

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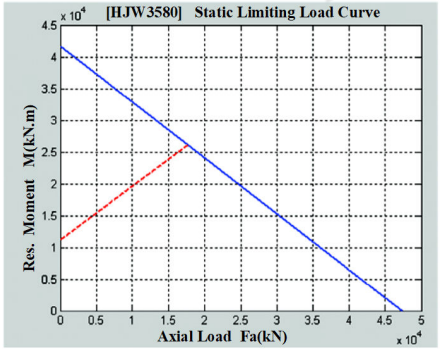

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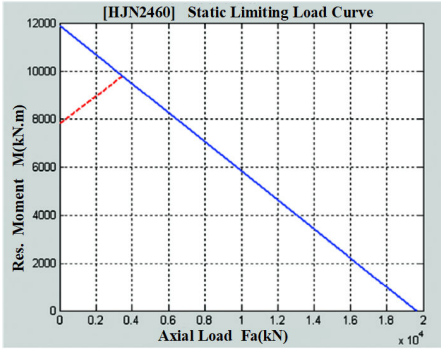

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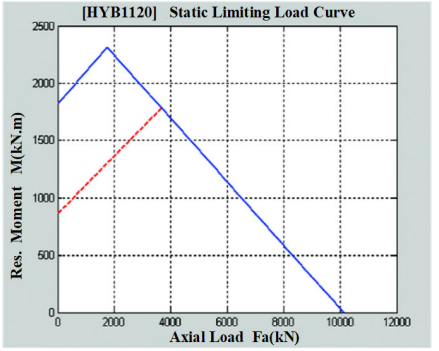

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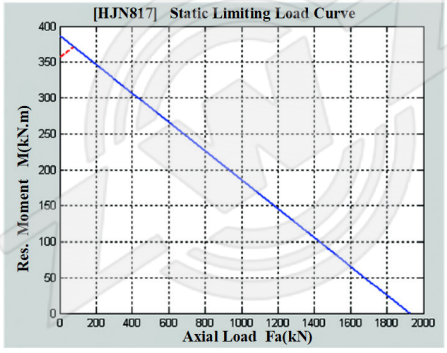

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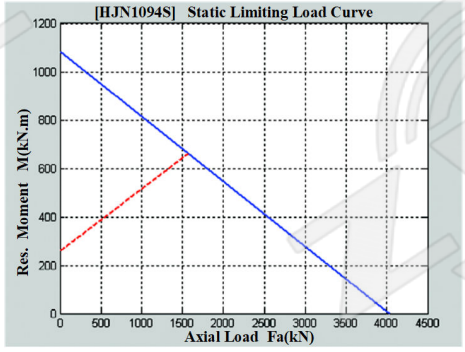

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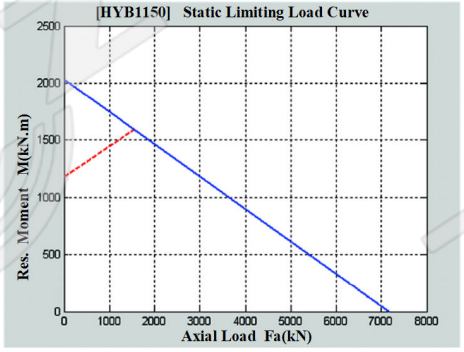

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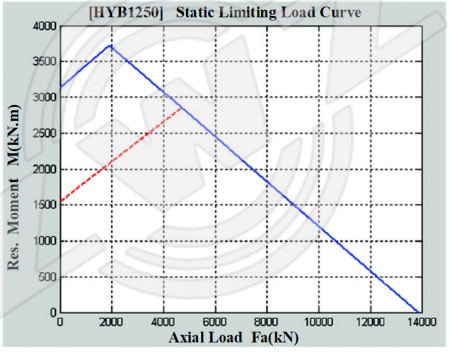

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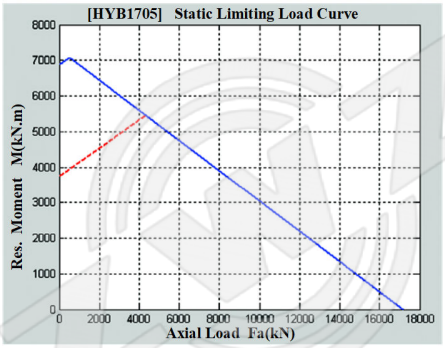

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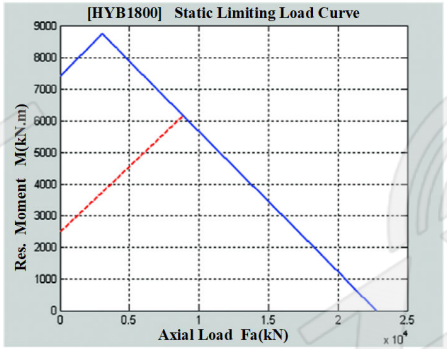

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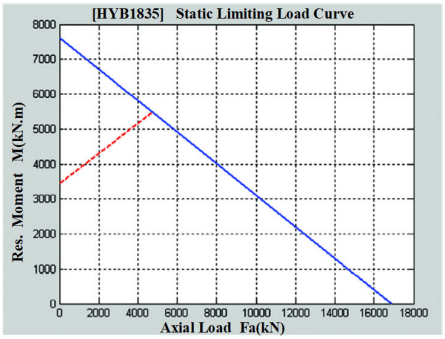

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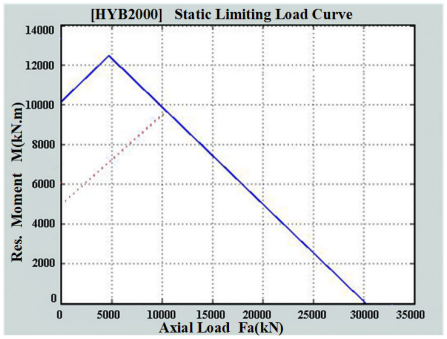

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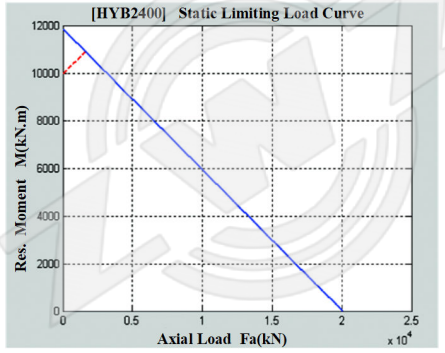

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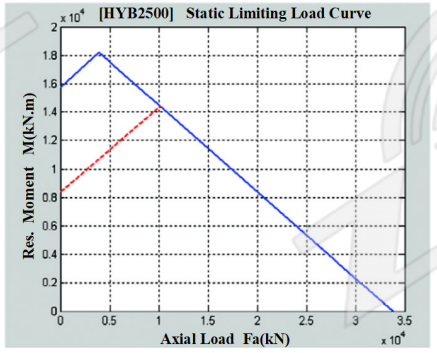

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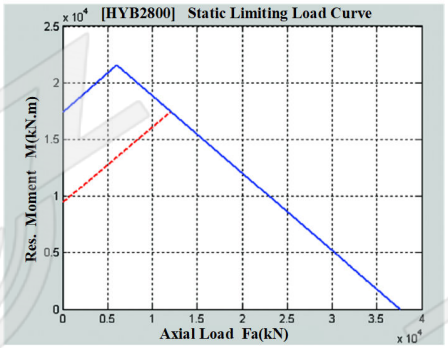

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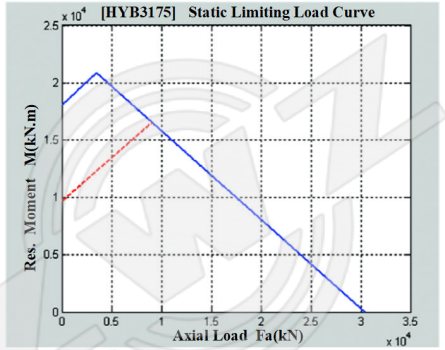

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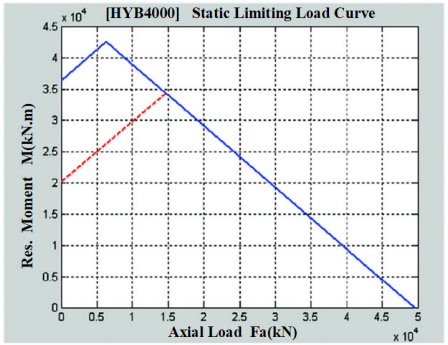

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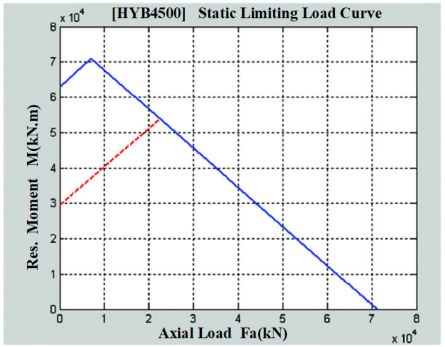

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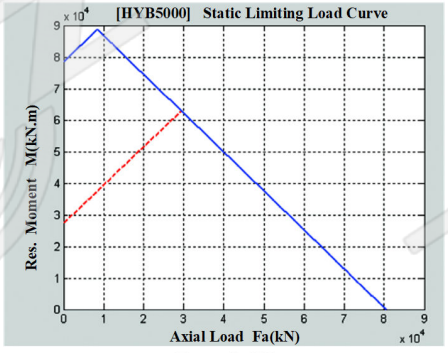

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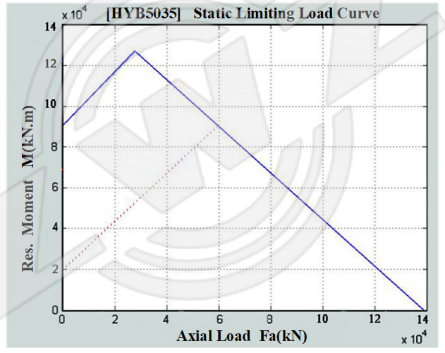

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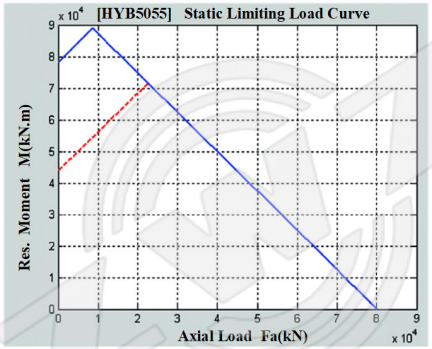

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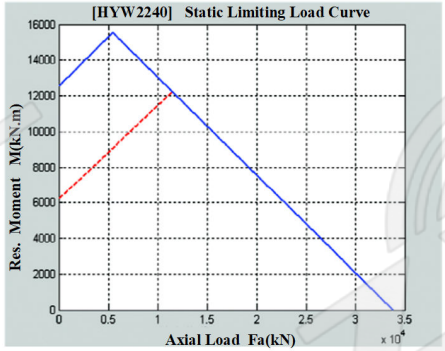

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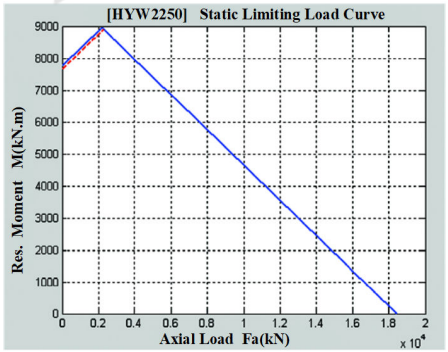

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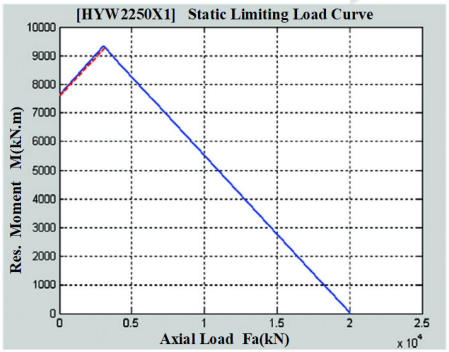

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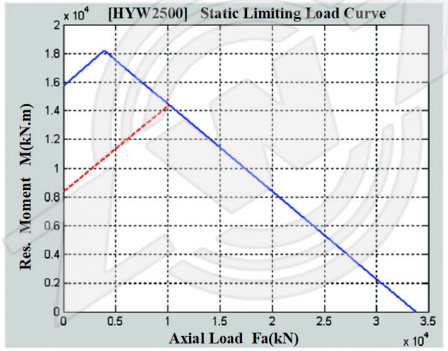

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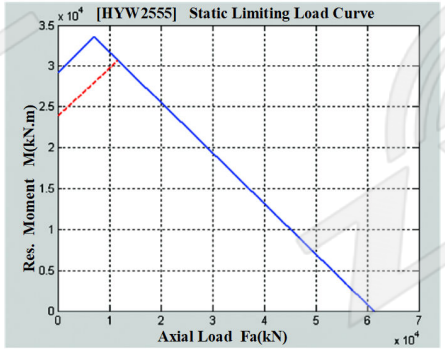

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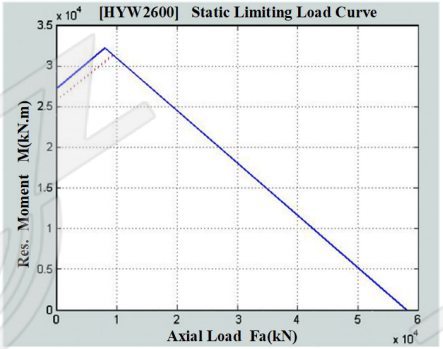

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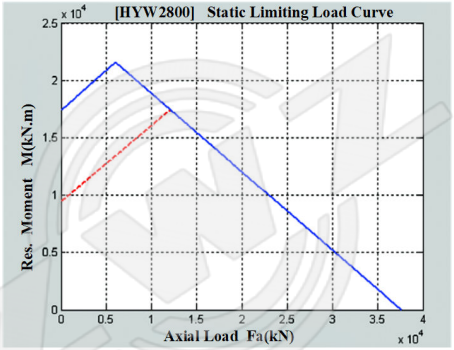

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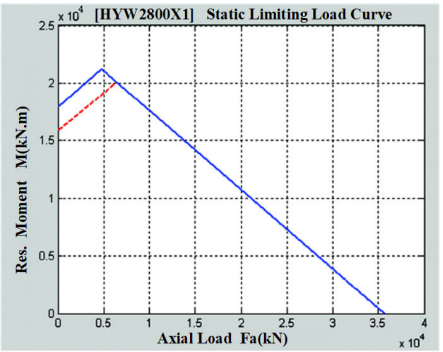

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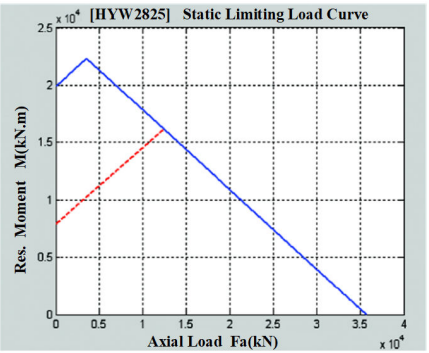

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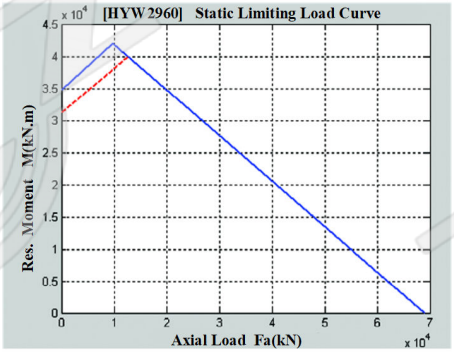

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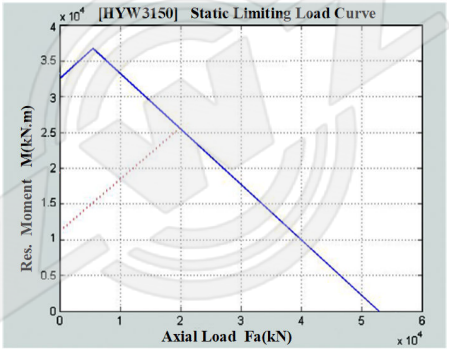

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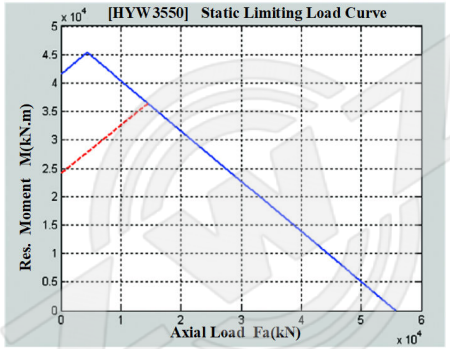

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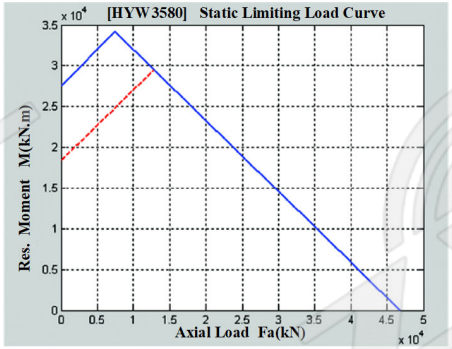

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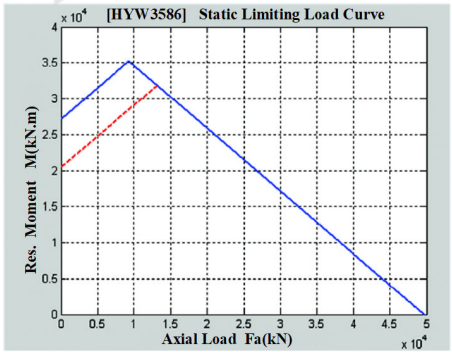

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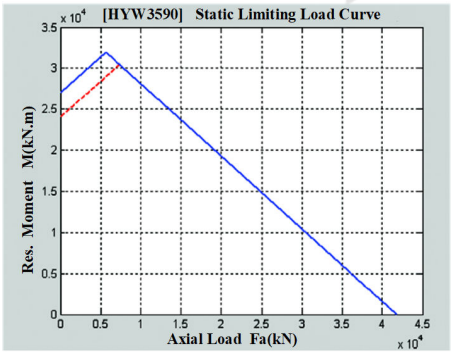

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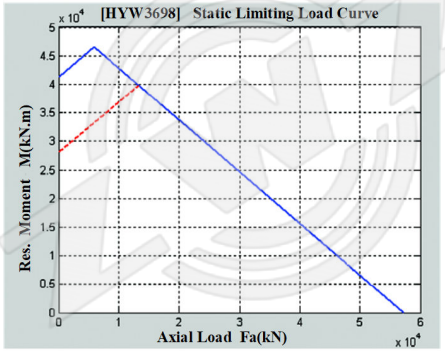

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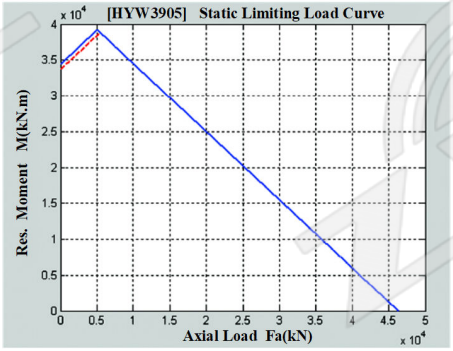

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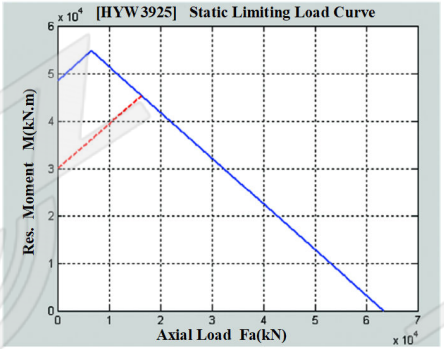

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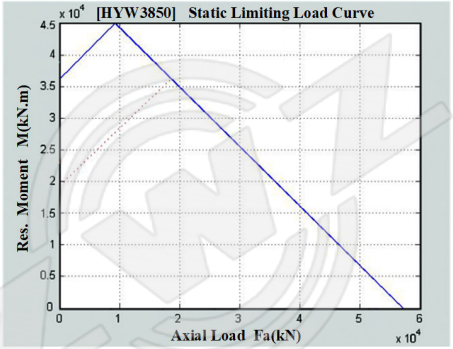

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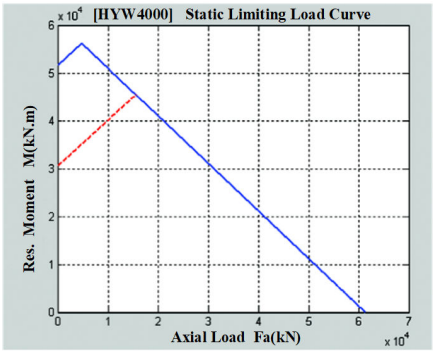

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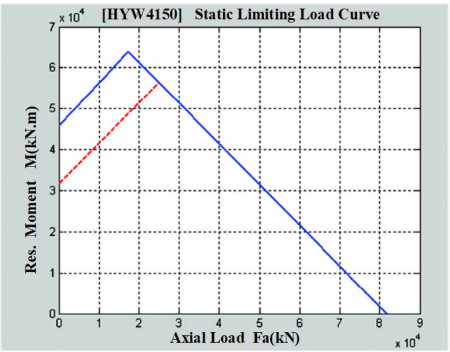

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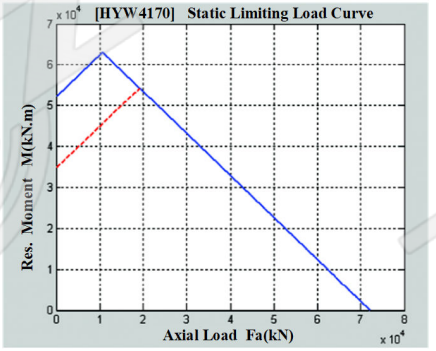

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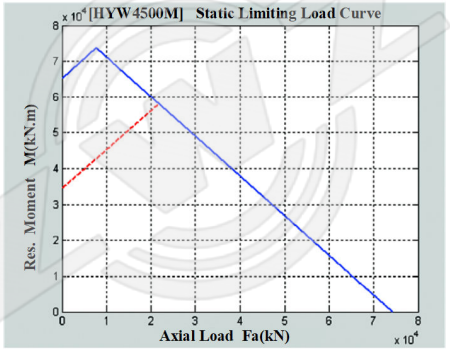

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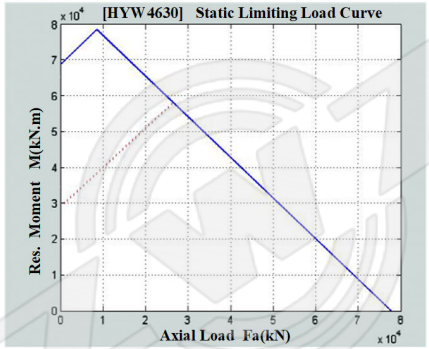

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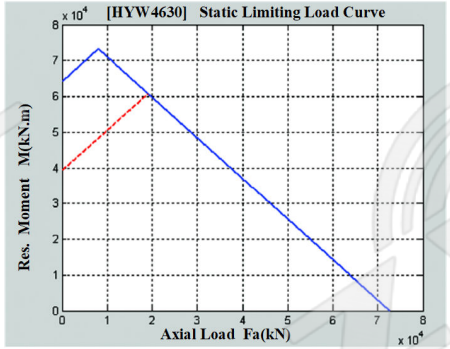

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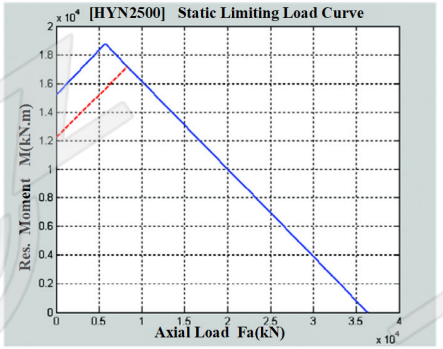

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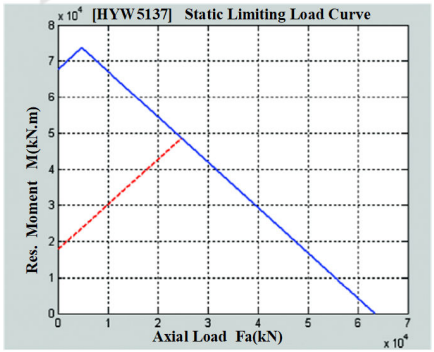

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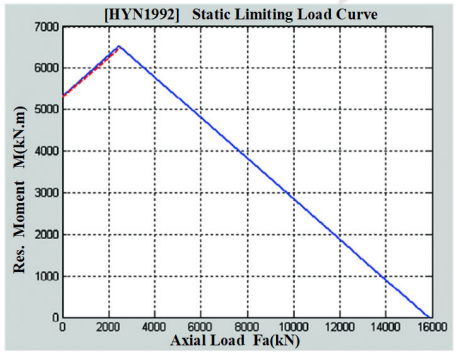

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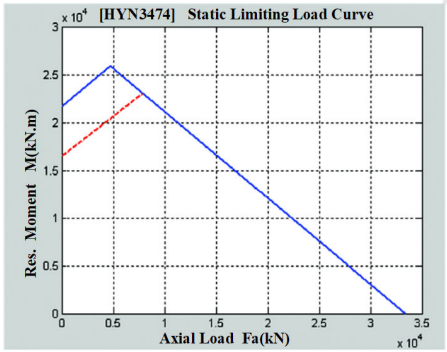

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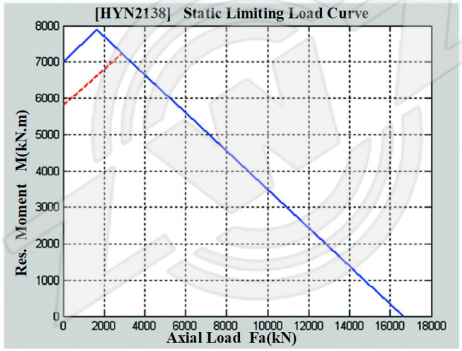

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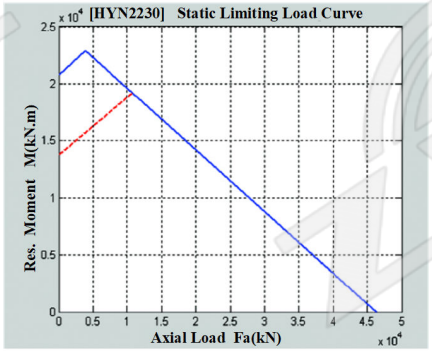

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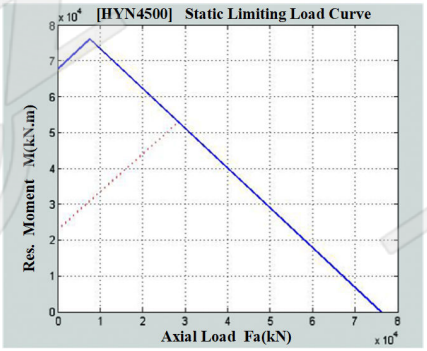
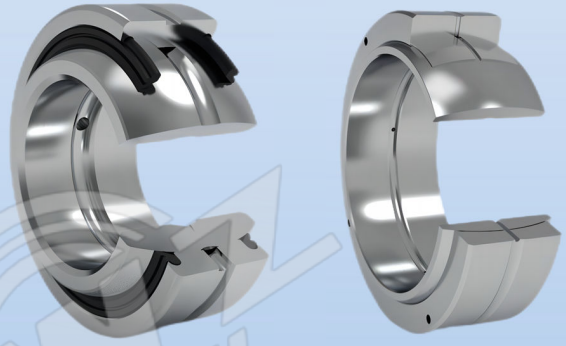


Figure A-201

ZWZ

Spherical Plain Bearings



●Spherical plain bearings

1. Spherical plain bearings code method

1.1 Spherical plain bearings code composition

The spherical plain bearing code is composed of basic code, supplementary code and clearance group code. They are arranged as follows:

Basic code, supplementary code, clearance group code

Table 1(GB304.2)

Basic code		
Type code	Size series code, inside diameter code	Structural type code, material code

In Table 1, the type code and size series code are indicated by uppercase Latin letters (hereinafter referred to as letters), the inner diameter code is indicated by Arabic numerals (hereinafter referred to as numbers), and the structural type and material code are indicated by letters and numbers.

Example: GEG50ES

Where: GE-Type code; G-Size series code; 50- Inside diameter code; E- Structural type code (single-split outer ring); S-Structural type code (ring with lubrication groove and lubrication hole).

1.2 Type code

The type code of the spherical plain bearing is indicated by letter as specified in Table 2.

Table 2

Type code	Basic code
GE	Radial spherical plain bearing
GAC	Angular contact spherical plain bearing
GX	Thrust spherical plain bearing

1.3 Size series code

The size series code is indicated in letters as specified in Table 3.

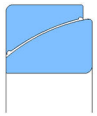
Table 3

Size series code	Size series
C	Large and extra-large radial joint bearing C series
E	Basic series (omitted from code)
F	The inner and outer ring widths are wider than the E series
G	The ball diameter, outer diameter and inner ring width are larger than the E series
H	Radial joint bearing H series
K	Inner ring ball diameter size is larger than the basic series
W(EW)	Extended inner ring, inner hole diameter positive tolerance
M(EM)	Extended inner ring, inner hole diameter negative tolerance

2. Combined code composed of type code and size series code

Common spherical plain bearing type, size series code and combined code composed of bearing type and size series code are specified in Table 4.

Table 4

Bearing type	Schematic diagram	Type code	Size series code	Combined code	Standard number
Radial Spherical Plain Bearing		GE	E	GE	GB/T 9163-2001
			G	GEG	
			C	GEC	
			K	GEK	
			H	GEH	
			W(EW)	GEW(GEEW)	
			M(EM)	GEM(GEEM)	—
			F	GEF	—
			Z	GEZ	—
Angular Contact Spherical Plain Bearing		GAC	—	GAC	GB/T 9164-2001
Thrust Spherical Plain Bearing		GX	—	GX	GB/T 9162-2001

3 Inner diameter code of spherical plain bearing

The inner diameter code of spherical plain bearing in the metric series is directly expressed by the nominal inner diameter in millimeters.

3.1 suffix code

3.1.1 Suffix code composition

The suffix code is composed of a spherical plain bearing structure type code, a material code, a supplementary code and a clearance group code.

3.1.2 Structural type code and material code

The structural type code and material code of the spherical plain bearing are indicated by letters and numbers, as specified in Table 5.

Table 5

Code	spherical plain bearing structure
E	Single-split outer ring
H	Two-piece outer rings
N	The outer ring has a snap ring groove
S	The ring has a lubrication groove and a lubrication hole
T	The sliding surface of outer ring is made of polytetrafluoroethylene fabric
X	Two-piece outer ring (split outer ring)

3.2 Supplementary code

3.2.1 Content and expression method of supplementary code

When there are changes in the material, technical requirements, structure, etc., the supplementary code is added to the right of the basic code, which is expressed with letters and numbers.

And is separate with a "/".

3.2.2 Supplementary code and meaning

Supplementary code and meaning are specified in Table 6.

Table 6

Code	Meaning	Feature change category
X	The ring is made of stainless steel	Material change
S	The ring is made of carburized steel	
V	The ring or sliding surface is made of a material not commonly used	
Q	The ring or sliding surface is made of bronze or bronze discs	
P	The ring is made of beryllium bronze	
L	The ring is made of aluminum alloy	
T	The tempering temperature of the parts has special requirements	Special technical requirements
R	The joint bearing is filled with grease	
M	The friction torque and rotary flexibility of the joint bearing have special requirements	
G	The sliding surface of the ring is applied with a dry film of solid lubricant	Special technical requirements
B	Joint bearing threads have special requirements	
D	Surfaces other than the sliding surface are required to be electroplated	
J	The sliding surface of the ring has a cross lubrication groove	
H	The sliding surface of the ring has a annular lubrication groove	
K	Change in the shape or size of the parts	Structural change
Yn	It is combined with numbers (1, 2 and other sequence numbers) to identify multiple feature changes and design order	Others

Note: If there is a suffix code "Y" in the bearing model, please refer to the drawing or supplemented technical conditions in order to understand the specific content of change thereof.

3.2.3 Supplementary code preparation rules

The supplementary code of spherical plain bearing is prepared in the order listed in Table 6, with a maximum of three letters. When there are more than three feature changes, the first and second are prepared by selecting two items in the order of the feature changes listed in Table 6, and the third is expressed with the letter "Y" for the remaining items.

Example :GE200ES/XR

It represents a radial spherical plain bearing with nominal inner diameter of 200mm, single-split outer ring, lubricating oil hole, the ring made of stainless steel, filled with grease.

3.2.4 Clearance group code

The clearance group code of spherical plain bearing is marked on the far right of the spherical plain bearing code, and is separated by a short line "-". The clearance group code of the spherical plain bearing is expressed with letters and numbers, as specified in Table 7.

Table 7

Code	Meaning
C2	The clearance conforms to the group 2 specified in the standard
—	The clearance conforms to the group N specified in the standard
C3	The clearance conforms to the group 3 specified in the standard
C9	Joint bearing clearance is different from the current standard

Example: GE15ES-C2

It represents a radial spherical plain bearing with nominal inner diameter of 15mm, single-split outer ring, lubricating oil hole, radial clearance conforming to the group 2 specified in the standard.

4. Terminology and definitions

Table 8

Terminology	Definitions
dynamic load rating	It is used to calculate the dynamic stress withstood by the spherical plain bearing. It represents that under a load of constant size and direction, the distance slid in one service life cycle is equivalent to the distance swung continuously at room temperature and a certain sliding speed. It assumes that the load withstood by the radial spherical plain bearing, the angular contact spherical plain bearing and the rod end spherical plain bearing is the pure radial load, and the load withstood by the thrust spherical plain bearing is pure axial load and the direction of force action point is in the center. Tilting, swinging, and rotary motion under certain loads generates dynamic stresses, and under tiny sliding (similar to vibrations) of alternating loads or high frequency alternating loads, it also generates dynamic stresses. Different kinds of dynamic stresses are often generated jointly.

Table 8(Continued)

Terminology	Definitions
static load rating	It is used to calculate the static stress withstood by the spherical plain bearing. When the spherical plain bearing is static (or occasionally aligning) when carrying, the rated static load is used. When the joint bearing with dynamic load withstands a large impact load, the rated static load shall also be considered. The rated static load represents the static load when the static contact stress of the sliding surface of the bearing reaches the stress limit of the material. It is only suitable for room temperature and under the assumption that the parts around the bearing can prevent bearing deformation. At higher temperatures, the temperature factor of rated static load must be considered, and the temperature factor depends on the sliding friction pair combination. The same as the temperature factor of rated dynamic load, the temperature factor of rated static load is also required to consider the usage temperature range allowed by different sliding friction pair combinations
Service life	Under mixed or dry friction conditions, the service life of radial spherical plain bearing depends on the increase of bearing clearance, or the increase of bearing friction factor caused by gradual wear of sliding surface, elastic deformation of sliding material or sliding surface fatigue. Depending on the purpose and friction pair conditions, the allowable wear increase and friction factor increase are different. This indicates that under the same operating conditions, the actual service life may be different. The service life of the radial spherical plain bearing is the total swinging times of total working hours of the bearing before the increase of the clearance or friction factor reaches the specified value. The actual service life is the life of the bearing under actual operating conditions, which depends on the size and type of load, but also depends on several other factors, such as impurities, corrosion, high frequency load and operating cycle, impact and so on. Individual of these factors may not be unable or difficult to determine.
Contact stress	In order to obtain a proper service life, the contact stress of the bearing must be suitable for the operating conditions. The contact stress represents the surface stress generated from the bearing, which plays a decisive role in evaluating the application of the bearing. p=k·P/Cd p=Contact stress N/mm2 k=Contact stress coefficient N/mm2 Cd=Rated dynamic load kN P=Dynamic equivalent load kN

5. Bearing clearance

Bearing clearance refers to the total distance of radial or axial motion of a ring relative to another ring under a certain measured force.

It is necessary to distinguish between the bearing clearance before installation and the working clearance after installation. The ring is installed via interference or transition fit, and the ring is expanded or compressed, so the initial bearing clearance is always greater than the working clearance.

If the bearing is installed in the recommended fit and under normal operating

conditions, it is appropriate to select the working clearance of the basic group clearance bearing. If the inner ring and outer ring are installed with interference fit or the operating temperature is higher/lower, the clearance value can be larger or smaller than the normal group clearance.

6 Lubrication

For steel-to-steel lubricated radial spherical plain bearing, the purpose of lubrication is to reduce wear, lower friction and prevent occlusion. At the same time, the grease has an anti-corrosion effect. During the working process, the periodic lubrication significantly improves the service life of the bearing.

For steel-to-PTFE braided self-lubricating radial spherical plain bearing, the PTFE in the braided fabric will be transferred to the sphere of the inner ring. Lubrication generally interferes with this transfer, thereby reducing the service life of the bearing. Therefore, this bearing is not allowed to be lubricated.

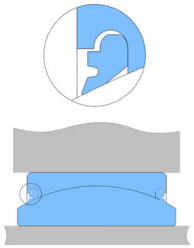
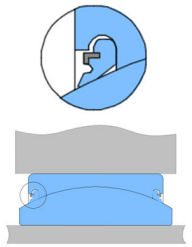
For steel-to-PTFE composite radial spherical plain bearing, usually, lubrication is not required in the work, but in the case of corrosion prevention and improved sealing, the filling of lithium-based grease in the bearing or the space around the bearing is allowed.

Molybdenum disulfide can also be added for lubrication, and in the running-in stage, the addition of molybdenum disulfide is in favor to the running-in of the bearing to reduce wear. Molybdenum disulfide treatment can be divided into two methods: wet and dry. Wet molybdenum disulfide treatment is conducted by coating, and dry molybdenum disulfide treatment is conducted by spraying. The effect of dry molybdenum disulfide treatment is better than that of wet disulfide treatment.

7 Seal

Most bearing are fitted with sealing rings to resist the entry of dirt and moisture. The sealing ring has a decisive effect on the service life of the bearing. LS sealing ring has two structural forms, as shown in Table 9.

Table 9

Seal	Schematic diagram	Product characteristics	Suitable environment
2RS seal		Combined seal (-25℃ to +120℃)	1. Compact structure requirements 2. Space constraints 3. Combined seal 4. Rotary requirements 5. Long life requirements
2GS seal		Rubber seal with frame (-25℃ to +120℃)	1. Compact structure requirements 2. Higher sealing requirements 3. Rotary requirements 4. Long life requirements 5. Requirements under mud or sand operating conditions

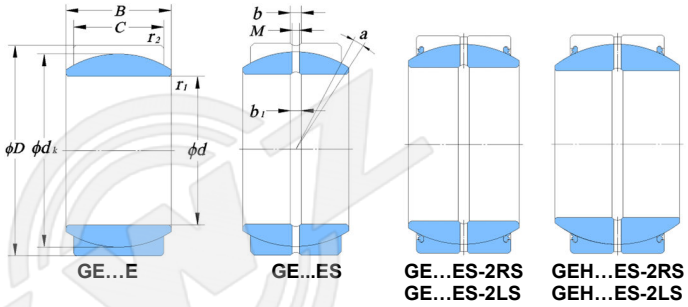
8. Accuracy

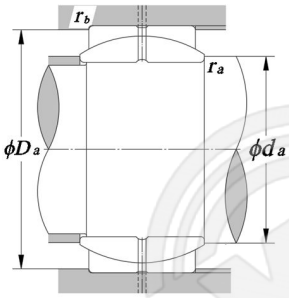
The dimensions and tolerances of the outer ring are values before surface treatment and splitting. After splitting, the outer diameter of the outer ring becomes a little out of round, but when the bearing is installed into the bearing seat, the outer diameter will return to the circle (see Figure 1). The measured value for the outer diameter of the uninstalled bearing can't be used as the original actual value of the outer diameter.

Outer diameter roundness before installation Outer diameter after installation

ZWZ

d 4～50mm





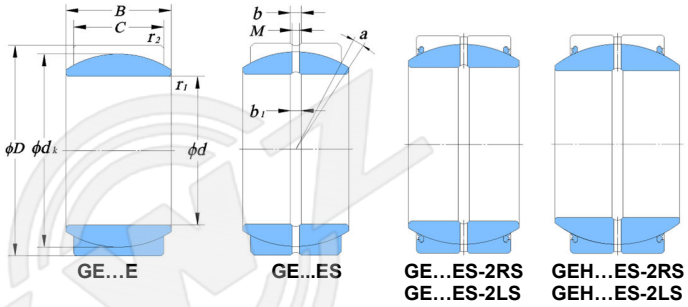
Note: The size of G E... ES is the same as GE... ET's

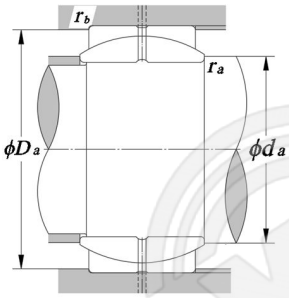
Principal dimensions(mm)						Slope angle	Basic load ratings(kN)		Designations	
d	*D*	*B*	*C*	r_{1min}	r_{2min}	*α*	*C*	C_o		
4	12	5	3	0.3	0.3	16	2.04	10.2	**GE4E**	**–**
5	14	6	4	0.3	0.3	13	3.40	17.0	**GE5E**	**–**
6	14	6	4	0.3	0.3	13	3.40	17.0	**GE6E**	**–**
8	16	8	5	0.3	0.3	15	5.50	27.5	**GE8E**	**–**
10	19	9	6	0.3	0.3	12	8.15	40.5	**GE10E**	**–**
12	22	10	7	0.3	0.3	10	10.8	54.0	**GE12E**	**–**
15	26	12	9	0.3	0.3	8	17.0	85.0	**GE15ES**	**–**
	26	12	9	0.3	0.3	8	21.2	106	**GE15ES-2RS**	**–**
17	30	14	10	0.3	0.3	10	30.0	148	**GE17ES**	**–**
	30	14	10	0.3	0.3	10	30.0	148	**GE17ES-2RS**	**–**
20	35	16	12	0.3	0.3	9	48.0	240	**GE20E**	**–**
	35	16	12	0.3	0.3	9	48.0	240	**GE20ES**	**–**
	35	16	12	0.3	0.3	9	48.0	240	**GE20ES-2RS**	**-2LS**
	42	25	16	0.3	0.6	17	48.0	240	**GEH20ES-2RS**	**-2LS**
25	42	20	16	0.6	0.6	7	62.0	310	**GE25E**	**–**
	42	20	16	0.6	0.6	7	62.0	310	**GE25ES**	**–**
	42	20	16	0.6	0.6	7	80.0	400	**GE25ES-2RS**	**-2LS**
	47	28	18	0.6	0.6	17	80.0	400	**GEH25ES-2RS**	**-2LS**
30	47	22	18	0.6	0.6	6	80.0	400	**GE30ES**	**–**
	47	22	18	0.6	0.6	6	100	500	**GE30ES-2RS**	**-2LS**
	55	32	20	0.6	1	17	100	500	**GEH30ES-2RS**	**-2LS**
	55	32	20	0.6	1	17	100	500	**GEG30ES-2RS**	**-2LS**
35	55	25	20	0.6	1	6	127	640	**GE35ES**	**–**
	55	25	20	0.6	1	6	127	640	**GE35ES-2RS**	**-2LS**
	62	35	22	0.6	1	15	127	640	**GEH35ES-2RS**	**-2LS**
40	62	28	22	0.6	1	7	156	780	**GE40ES**	**–**
	62	28	22	0.3	1	7	156	780	**GE40ES/YB2**	**–**
	62	28	22	0.6	1	6	245	1220	**GE40ES-2RS**	**-2LS**
	68	40	25	0.6	1	17	245	1220	**GEH40ES-2RS**	**-2LS**
45	68	32	25	0.6	1	7	245	1220	**GE45ES**	**–**
	68	32	25	0.6	1	7	245	1220	**GE45ES-2RS**	**-2LS**
	75	43	28	0.6	1	14	245	1220	**GEH45ES-2RS**	**-2LS**
50	75	35	28	0.6	1	6	315	1560	**GE50ES**	**–**
	75	35	28	0.6	1	6	315	1560	**GE50ES-2RS**	**-2LS**

Other dimensions(mm)					Abutment and fillet dimensions(mm)						Mass(kg)
d	d_k	*b*	b_1	*M*	d_{amin}	d_{amax}	D_{amin}	D_{amax}	r_{amax}	r_{bmax}	(approx.)
4	8	–	–	–	5.5	6.2	7.6	10.7	0.3	0.3	0.00300
5	10	–	–	–	6.6	8	9.5	12.6	0.3	0.3	0.00400
6	10	–	–	–	7.5	8	9.5	12.6	0.3	0.3	0.00400
8	13	–	–	–	9.6	10.2	12.3	14.5	0.3	0.3	0.00800
10	16	–	–	–	11.7	13.2	15	16.2	0.3	0.3	0.0120
12	18	–	–	–	13.8	15	17.1	20.4	0.3	0.3	0.0170
15	22	2.3	2.3	1.5	16.9	18.4	20.9	24.3	0.3	0.3	0.0320
-	22	2.3	2.3	1.5	16.9	18.4	22.8	24.3	0.3	0.3	0.0500
17	25	2.5	2.5	1.5	19	20.7	23.7	28.3	0.3	0.3	0.0670
-	25	2.5	2.5	1.5	19	20.7	26	28.3	0.3	0.3	0.0660
20	29	–	–	–	22.1	24.2	27.6	33.2	0.3	0.3	0.160
-	29	2.7	2.7	2	22.1	24.2	27.6	33.2	0.3	0.3	0.120
-	29	3.1	3.1	2	22.1	24.2	30.9	33.2	0.3	0.3	0.120
-	35.5	3.1	3.1	2	22.7	25.2	36.9	39.2	0.3	0.6	0.120
25	35.5	–	–	–	28.2	29.3	33.7	39.2	0.6	0.6	0.160
-	35.5	3.1	3.1	2	28.2	29.3	33.7	39.2	0.6	0.6	0.160
-	35.5	3.1	3.1	2	28.2	29.3	36.9	39.2	0.6	0.6	0.350
-	40.7	3.1	3.1	2	28.6	29.5	41.3	44	0.6	0.6	0.295
30	40.7	3.1	3.1	2	33.3	34.2	38.7	44	0.6	0.6	0.230
-	40.7	3.1	3.1	2	33.3	34.2	41.3	44	0.6	0.6	0.470
-	47	3.9	3.9	2.5	33.7	34.4	48.5	50.9	0.6	1	0.320
-	47	3.9	3.9	2.5	33.7	34.4	48.5	50.9	0.6	1	0.314
35	47	4	4	2	38.5	39.8	44.6	50.9	0.6	1	0.610
-	47	3.9	3.9	2.5	38.5	39.8	48.5	50.9	0.6	1	0.460
-	53	3.9	3.9	2.5	38.8	39.8	54.5	57.8	0.6	1	0.460
40	53	3.9	3.9	2.5	43.6	45	50.3	57.8	0.6	1	0.560
-	53	4	4	2	43.6	45	50.3	57.8	0.6	1	0.560
-	53	3.9	3.9	2.5	43.6	45	54.5	57.8	0.6	1	1.60
-	60	4.6	4.6	3	43.2	44.7	61	63.6	0.6	1	1.42
45	60	4.6	4.6	3	49.4	50.8	57	63.6	0.6	1	1.10
-	60	4.6	4.6	3	49.4	50.8	61	63.6	0.6	1	1.10
-	66	4.6	4.6	3	49.8	50.1	66.2	70.5	0.6	1	1.02
50	66	4.6	4.6	3	54.6	56	62.7	70.5	0.6	1	2.38
-	66	4.6	4.6	3	54.6	56	66.2	70.5	0.6	1	1.57

ZWZ

d 50～180mm

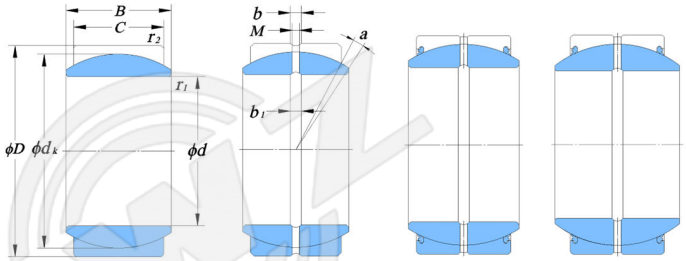




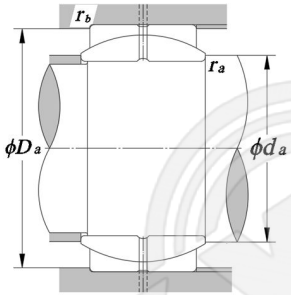
Note: The size of G E... ES is the same as GE... ET's

Principal dimensions(mm)						Slope angle	Basic load ratings(kN)		Designations		Other dimensions(mm)					Abutment and fillet dimensions(mm)						Mass(kg)
d	D	B	C	r_{1min}	r_{2min}	α	C	C_0			d	d_k	b	b_1	M	d_{amin}	d_{amax}	D_{amin}	D_{amax}	r_{amax}	r_{bmax}	(approx.)
50	90	56	36	0.6	1	17	315	1560	**GEH50ES-2RS**	**-2LS**	-	80	6.2	6.2	4	55.8	57.1	79.7	84.2	0.6	1	1.55
	90	56	36	0.6	1	17	400	2000	**GEG50ES-2RS**	**-2LS**	-	80	6.2	6.2	4	55.8	57.1	79.7	84.2	0.6	1	3.40
	90	56	36	0.6	1	17	405	2020	**GEG50ES**	**–**	-	80	6.2	6.2	4	54.6	56	77.7	85.5	0.6	1	2.31
60	90	44	36	1	1	6	400	2000	**GE60ES**	**–**	60	80	6.2	6.2	4	65.4	66.8	76	84.2	1	1	2.30
	90	44	36	1	1	6	490	2450	**GE60ES-2RS**	**-2LS**	-	80	6.2	6.2	4	65.4	66.8	79.7	84.2	1	1	4.10
	90	44	36	1	1	6	495	2450	**GE60D0-2RS**	**-2LS**	-	80	6.2	6.2	4	65.4	66.8	83.4	84.2	1	1	2.68
	105	63	40	1	1	17	490	2450	**GEH60ES-2RS**	**-2LS**	-	92	7.7	7.7	4	66	67	92	99	1	1	2.75
	105	63	40	1	1	17	610	3050	**GEG60ES-2RS**	**-2LS**	-	92	7.7	7.7	4	66	67	92	99	1	1	6.30
70	105	49	40	1	1	6	615	3050	**GE70ES**	**–**	70	92	7.7	7.7	4	76.7	77.9	87.4	99	1	1	4.40
	105	49	40	1	1	6	655	3250	**GE70ES-2RS**	**-2LS**	-	92	7.7	7.7	4	76.7	77.9	92	99	1	1	6.80
	120	70	45	1	1	16	645	3270	**GEH70ES-2RS**	**-2LS**	-	105	7.7	7.7	4	77	78.3	104.4	113.8	1	1	6.04
80	120	55	45	1	1	6	655	3250	**GE80ES**	**–**	80	105	7.7	7.7	4	86.1	89.4	99.7	113.8	1	1	4.80
	120	55	45	1	1	6	950	4750	**GE80DS**	**–**	-	105	7.7	7.7	4	87.1	89.4	99.7	113.8	1	1	11.0
	120	55	45	1	1	5	960	4800	**GE80ES-2RS**	**-2LS**	-	105	7.7	7.7	4	88.1	89.4	104.4	113.8	1	1	8.12
	130	75	50	1	1	14	950	4750	**GEH80ES-2RS**	**-2LS**	-	115	9.5	9.5	5	86.2	87.2	112.9	123.5	1	1	8.50
90	130	60	50	1	1	5	1080	5400	**GE90ES**	**–**	90	115	9.5	9.5	5	97.4	98.1	109.3	123.5	1	1	14.8
	130	60	50	1	1	5	1080	5400	**GE90ES-2RS**	**-2LS**	-	115	9.5	9.5	5	97.4	98.1	112.9	123.5	1	1	11.2
	150	85	55	1	1	15	1080	5400	**GEH90ES-2RS**	**-2LS**	-	130	11.3	11.3	5	98.2	98.4	131	143.2	1	1	10.9
100	150	70	55	1	1	7	1370	6800	**GE100ES**	**–**	100	130	11.3	11.3	5	107.8	109.5	123.5	143.2	1	1	14.0
	150	70	55	1	1	6	1530	7650	**GE100ES-2RS**	**-2LS**	-	130	11.3	11.3	5	107.8	109.5	131	143.2	1	1	18.5
	160	85	55	1	1	13	1530	7650	**GEH100ES-2RS**	**-2LS**	-	140	11.5	11.5	5	108.1	111.2	141.5	153.3	1	1	18.5
	160	85	55	1	1	13	1530	7650	**GEG100ES-2RS**	**-2LS**	-	140	11.5	11.5	5	108.1	111.2	141.5	153.3	1	1	18.5
110	160	70	55	1	1	6	2120	10600	**GE110ES**	**–**	110	140	11.5	11.5	5	118	121	133	153	1	1	28.0
	160	70	55	1	1	6	2120	10600	**GE110ES-2RS**	**-2LS**	-	140	11.5	11.5	5	118	121	141.5	153	1	1	28.0
	180	100	70	1	1	12	2330	11600	**GEH110ES-2RS**	**-2LS**	-	160	13.5	13.5	6	119.5	124.5	157.5	172	1	1	34.9
120	180	85	70	1	1	6	3050	15300	**GE120ES**	**–**	120	160	13.5	13.5	6	129.5	135.5	152	172	1	1	51.5
	180	85	70	1	1	6	3550	18000	**GE120ES-2RS**	**-2LS**	-	160	13.5	13.5	6	129.5	135.5	157.5	172	1	1	65.0
	210	115	70	1	1	16	3800	19000	**GEH120ES-2RS**	**-2LS**	-	180	13.5	13.5	6	130	138.5	180	202.5	1	1	78.5
	210	115	70	1	1	16	1080	5400	**GEG120ES-2RS**	**-2LS**	-	180	6.3	6.3	3	130	138.5	180	202.5	1	1	14.8
140	210	90	70	1	1	7	1080	5400	**GE140ES**	**–**	140	180	13.5	13.5	6	149	155.5	171	202.5	1	1	11.2
	210	90	70	1	1	7	1080	5400	**GE140ES-2RS**	**-2LS**	-	180	13.5	13.5	6	149	155.5	180	202.5	1	1	10.9
160	230	105	80	1	1	8	1370	6800	**GE160ES**	**–**	160	200	13.5	13.5	6	166.5	170	190	222	1	1	14
	230	105	80	1	1	8	1370	6800	**GE160ES-2RS**	**-2LS**	-	200	13.5	13.5	6	166.5	170	197	222	1	1	14
180	260	105	80	1.1	1.1	6	1530	7650	**GE180ES**	**–**	180	225	13.5	13.5	6	191	199	214	250.5	1	1	18.5

d 180～300mm



GE…E GE…ES GE…ES-2RS GE…ES-2LS GEH…ES-2RS GEH…ES-2LS



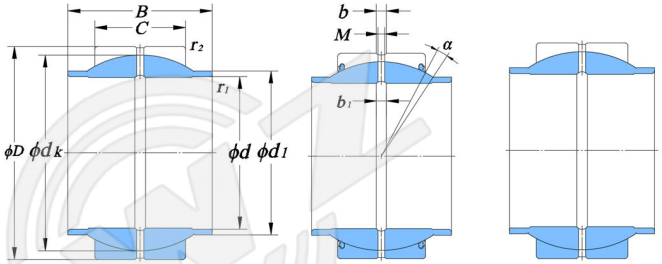
Note: The size of G E... ES is the same as GE... ET's

Principal dimensions (mm)						Slope angle	Basic load ratings (kN)		Designations	
d	*D*	*B*	*C*	r_{1min}	r_{2min}	*α*	*C*	C_0		
180	260	105	80	1.1	1.1	6	1530	7650	**GE180ES-2RS**	**-2LS**
	260	105	80	1.1	1.1	6	1530	7650	**GE180ESL**	**–**
	260	105	80	1.1	1.1	6	1530	7650	**GE180ESL-2LS**	**-2LS**
200	290	130	100	1.1	1.1	7	2120	10600	**GE200ES**	**–**
	290	130	100	1	1	7	2120	10600	**GE200ES-2RS**	**-2LS**
220	320	135	100	1.1	1.1	8	2330	11600	**GE220ES-2RS**	**-2LS**
240	340	140	100	1.1	1.1	8	2550	12700	**GE240ES-2RS**	**-2LS**
260	370	150	110	1.1	1.1	7	3050	15300	**GE260ES-2RS**	**-2LS**
280	400	155	120	1.1	1.1	6	3550	18000	**GE280ES-2RS**	**-2LS**
300	430	165	120	1.1	1.1	7	3800	19000	**GE300ES-2RS**	**-2LS**

Other dimensions(mm)						Abutment and fillet dimensions(mm)						Mass(kg)
d	d_k	*b*	b_1	*M*	d_{amin}	d_{amax}	D_{amin}	D_{amax}	r_{amax}	r_{bmax}	(484pprox..)
-	225	13.5	13.5	6	191	199	224.5	250.5	1	1	18.5
180	225	13.5	13.5	6	191	199	214	250.5	1	1	18.5
-	225	13.5	13.5	6	191	199	224.5	250	1	1	18.5
200	250	15.5	15.5	7	212.5	213.5	237.5	279.5	1	1	28
-	250	9	9	5	212.5	213.5	244.5	279.5	1	1	28
220	275	15.5	15.5	7	232.5	239.5	271	309.5	1	1	34.9
240	300	15.5	15.5	7	252.5	265	298	329.5	1	1	40
260	325	15.5	15.5	7	273	288	321.5	359	1	1	51.5
280	350	15.5	15.5	7	294	313.5	344.5	388.5	1	1	65
300	375	15.5	15.5	7	314	336.5	371	418.5	1	1	78.5

ZWZ

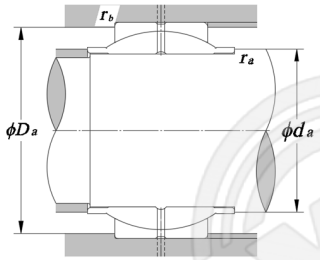
d 16～200mm



GEG…ES

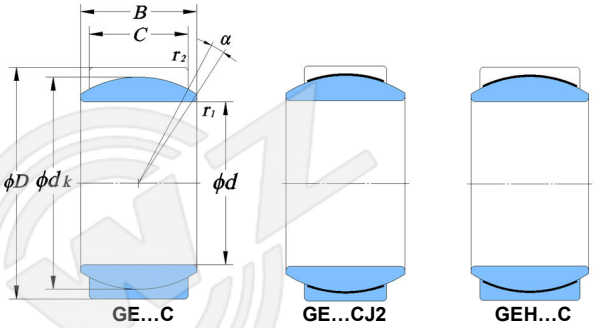
GEM…ES-2RS
GEM…ES-2LS

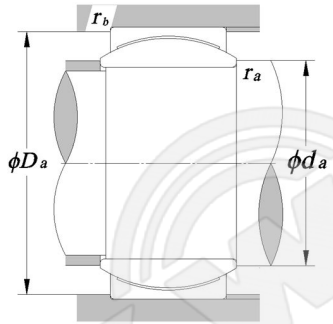
GEG…ESA



Principal dimensions(mm)						Slope angle	Basic load ratings(kN)		Designations		Other dimensions(mm)						Abutment and fillet dimensions(mm)						Mass(kg)
d	*D*	*B*	*C*	r_{1min}	r_{2min}	*α*	*C*	C_0			*d*	d_k	d_1	*b*	b_1	*M*	d_{amin}	d_{amax}	D_{amin}	D_{amax}	r_{amax}	r_{bmax}	(485pprox..)
16	28	16	9	0.3	0.3	4	17.6	88.0	**GEG16ES**	–	16	23	20	2.3	2.3	1.5	18.7	20	21.9	26.3	0.3	0.3	0.0350
20	35	20	12	0.3	0.3	4	30.0	146	**GEG20ES**	–	20	29	25	3.1	3.1	2	23.1	25	27.6	33.2	0.3	0.3	0.0700
	35	24	12	0.3	0.3	6	30.0	146	**GEM20ES-2RS**	**-2LS**		29	24	3.1	3.1	2	23	24	30.9	33.2	0.3	0.3	0.0730
25	42	25	16	0.6	0.6	4	48.0	240	**GEG25ES**	–	25	35.5	30.5	3.1	3.1	2	29.2	30.5	33.7	39.2	0.6	0.6	0.130
	42	29	16	0.3	0.6	4	48.0	240	**GEM25ES-2RS**	**-2LS**		35.5	29	3.1	3.1	2	28.3	29	36.9	39.2	0.3	0.6	0.130
30	47	30	18	0.3	0.6	4	62.0	310	**GEM30ES-2RS**	**-2LS**	30	40.7	34	3.1	3.1	2	33.5	34	41.3	44	0.3	0.6	0.170
32	52	32	18	0.6	1	4	65.5	325	**GEG32ES**	–	32	43	38	3.9	3.9	2.5	36.3	38	40.9	48.1	0.6	1	0.170
35	55	35	20	0.6	1	4	80.0	400	**GEM35ES-2RS**	**-2LS**	35	47	40	3.9	3.9	2.5	38.8	40	48.5	50.9	0.6	1	0.250
	55	35	20	0.6	1	4	48.0	118	**GEW35HFZ5**	–		47	40				38.8	40	48.5	50.9	0.6	1	0.245
40	62	38	22	0.6	1	4	100	500	**GEM40ES-2RS**	**-2LS**	40	53	45	3.9	3.9	2.5	44	45	54.5	57.8	0.6	1	0.350
	62	40	22	0.6	1	4	100	500	**GEG40ES**	–		53	46	3.9	3.9	2.5	44.8	46	50.3	57.8	0.6	1	0.340
	62	40	22	0.6	1	4	100	500	**GEEW40ES**	–		53	46	3.9	3.9	2.5	44.8	46	50.3	57.8	0.6	1	0.349
45	68	40	25	0.6	1	4	127	640	**GEM45ES-2RS**	**-2LS**	45	60	52	4.6	4.6	3	49.6	52	61	63.6	0.6	1	0.490
50	75	43	28	0.6	1	4	156	780	**GEM50ES-2RS**	**-2LS**	50	66	57	4.6	4.6	3	54.8	57	66.2	70.5	0.6	1	0.600
	75	50	28	0.6	1	4	156	780	**GEG50ES**	–		66	57	4.6	4.6	3	55.9	57	62.7	70.5	0.6	1	0.560
60	90	54	36	0.6	1	3	245	1220	**GEM60ES-2RS**	**-2LS**	60	80	68	6.2	6.2	4	65.4	68	79.7	84.2	0.6	1	1.15
63	95	63	36	1	1	4	255	1270	**GEG63ES**	–	63	83	71.5	6.2	6.2	4	69.7	71.5	78.9	89.2	1	1	1.25
70	105	65	40	0.6	1	4	315	1560	**GEM70ES-2RS**	**-2LS**	70	92	78	7.7	7.7	4	75.7	78	92	99	0.6	1	1.65
	105	70	40	0.6	1	4	315	1560	**GEEW70ES-2RS**	**-2LS**		92	78	7.7	7.7	4	75.7	78	92	99	0.6	1	1.65
80	120	74	45	0.6	1	4	400	2000	**GEM80ES-2RS**	**-2LS**	80	105	90	7.7	7.7	4	86.1	90	104.4	113.8	0.6	1	2.50
	120	80	45	1	1	4	400	2000	**GEG80ES**	–		105	91	7.7	7.7	4	88.7	91	99.7	113.8	1	1	2.40
	120	74	45	0.6	1	4	400	2000	**GEEM80ES-2RS**	**-2LS**		105	90	7.7	7.7	4	86.1	90	104.4	113.8	0.6	1	2.43
100	150	100	55	1	1	4	610	3050	**GEW100ES**	–	100	130	113	11.3	11.3	5	110.1	113	123.5	143.2	1	1	5.01
125	180	125	70	1	1	4	950	4750	**GEG125ES**	–	125	160	138	13.5	13.5	6	136.5	138	152	172	1	1	8.50
160	230	160	80	1	1	4	1370	6800	**GEG160ES**	–	160	200	177	13.5	13.5	6	172	177	190	222	1	1	16.5
200	290	200	100	1.1	1.1	4	2120	10600	**GEG200ES**	–	200	250	221	15.5	15.5	7	213	221	237.5	279.5	1	1	32.0

d 4～60mm



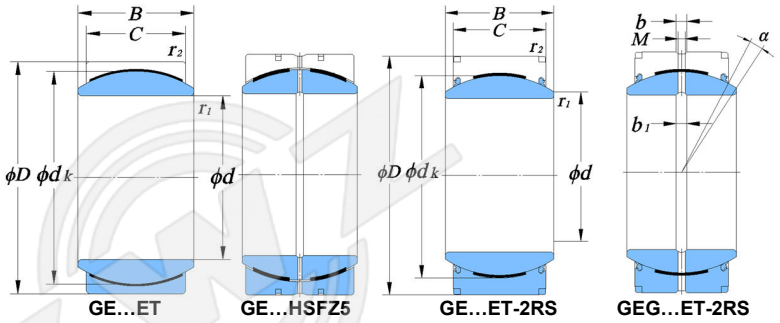


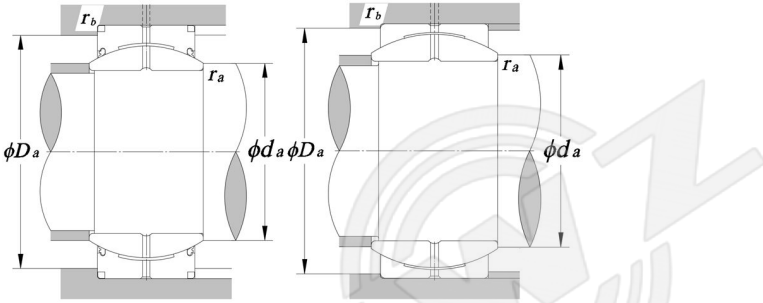
Principal dimensions(mm)						Slope angle	Basic load ratings (kN)		Designations
d	*D*	*B*	*C*	r_{1min}	r_{2min}	*α*	*C*	C_o	
4	12	5	3	0.3	0.3	16	2.16	5.4	**GE4C**
6	14	6	4	0.3	0.3	13	3.6	9	**GE6C**
8	16	8	5	0.3	0.3	15	5.85	14.6	**GE8C**
10	19	9	6	0.3	0.3	12	8.65	21.6	**GE10C**
	22	12	7	0.3	0.3	18	11.4	28.5	**GEH10C**
12	22	10	7	0.3	0.3	10	11.4	28.5	**GE12C**
	26	15	9	0.3	0.3	18	18	45	**GEH12C**
15	26	12	9	0.3	0.3	8	18	45	**GE15C**
	30	16	10	0.3	0.3	16	22.4	56	**GEH15C**
17	30	14	10	0.3	0.3	10	22.4	56	**GE17C**
	35	20	12	0.3	0.3	19	31.5	78	**GEH17C**
20	35	16	12	0.3	0.3	9	31.5	78	**GE20C**
	42	25	16	0.3	0.6	17	51	127	**GEH20C**
25	42	20	16	0.6	0.6	7	51	127	**GE25C**
	47	28	18	0.6	0.6	17	65.5	166	**GEH25C**
30	47	22	18	0.6	0.6	6	65.5	166	**GE30C**
35	55	25	20	0.6	1	6	80	200	**GE35CJ2**
40	62	28	22	0.6	1	7	100	250	**GE40CJ2**
45	68	32	25	0.6	1	7	127	320	**GE45CJ2**
50	75	35	28	0.6	1	6	156	390	**GE50CJ2**
60	90	44	36	1	1	6	245	610	**GE60CJ2**

Other dimensions(mm)		Abutment and fillet dimensions(mm)						Mass(kg) (486pprox.)
d	d_k	d_{amin}	d_{amax}	D_{amin}	D_{amax}	r_{amax}	r_{bmax}	
4	8	5.4	6.2	7.6	10.7	0.3	0.3	0.003
6	10	7.4	8	9.5	12.7	0.3	0.3	0.004
8	13	9.4	10.2	12.3	14.6	0.3	0.3	0.008
10	16	11.5	13.2	15.2	17.6	0.3	0.3	0.012
	18	11.6	13.4	17.1	20.6	0.3	0.3	0.020
12	18	13.5	15	17.1	20.6	0.3	0.3	0.017
	22	13.7	16.1	20.9	24.5	0.3	0.3	0.030
15	22	16.6	18.4	20.9	24.5	0.3	0.3	0.032
	25	16.7	19.2	23.7	28.5	0.3	0.3	0.050
17	25	18.7	20.7	23.7	28.5	0.3	0.3	0.050
	29	18.9	21	27.6	33.4	0.3	0.3	0.090
20	29	21.8	24.2	27.6	33.4	0.3	0.3	0.065
	35.5	22.1	25.2	33.7	39.5	0.3	0.6	0.160
25	35.5	27.7	29.3	33.7	39.5	0.6	0.6	0.120
	40.7	27.9	29.5	38.7	44.4	0.6	0.6	0.200
30	40.7	32.8	34.2	38.7	44.4	0.6	0.6	0.160
35	47	37.9	39.8	44.7	51.4	0.6	1	0.230
40	53	42.9	45	50.4	58.3	0.6	1	0.320
45	60	48.7	50.8	57	64.2	0.6	1	0.460
50	66	53.9	56	62.7	71.1	0.6	1	0.560
60	80	65.4	66.8	76	85.8	1	1	1.10

ZWZ

d 30～420mm



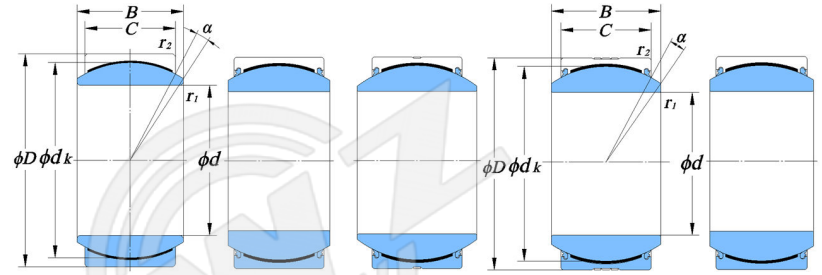


Principal dimensions(mm)						Slope angle	Basic load ratings (kN)		Designations	
d	*D*	*B*	*C*	r_{1min}	r_{2min}	*α*	*C*	C_0		
30	47	22	18	0.6	0.6	6	165	275	**GE30UK-2RS**	**-2LS**
35	55	25	20	0.6	1	6	112	224	**GE35ET-2RS**	**-2LS**
40	68	40	25	0.6	1	17	180	363	**GEG40ET-2RS**	**-2LS**
50	75	35	28	0.6	1	6	220	440	**GE50ET-2RS**	**-2LS**
70	105	49	40	1	1	6	880	1560	**GE70UK-2RS**	**-2LS**
80	120	55	45	1	1	5	567	1140	**GE80ET-2RS**	**-2LS**
	130	75	50	1	1	14	1380	2300	**GEG80ET-2RS**	**-2LS**
100	150	70	55	1	1	6	360	900	**GE100HSFZ5**	**–**
	150	70	55	0.6	1	6	858	1730	**GE100ET-2RS**	**-2LS**
110	160	70	55	1	1	6	986	1960	**GE110ET**	**–**
120	180	85	70	1	1	6	560	1400	**GE120HSFZ5**	**–**
	180	85	70	1	1	6	560	1400	**GE120HFZ5**	**–**
	180	60	60	2	2	0	816	4080	**GE120HSXFZ5**	**–**
160	230	105	80	1	1	8	800	2000	**GE160HSFZ5**	**–**
	230	105	80	1	1	8	800	2000	**GE160ESFZ5**	**–**
	230	105	80	1	1	8	3840	6400	**GE160UK-2RS**	**-2LS**
	230	105	80	1	1	8	3840	6400	**GE160TXG3A-2RS**	**-2LS**
200	290	130	100	1.1	1.1	7	6000	10000	**GE200UK-2RS**	**-2LS**
	290	130	100	1.1	1.1	7	3100	10000	**GE200ET-2RS**	**-2LS**
	290	130	100	1.1	1.1	7	3050	6150	**GE200XT-2RS**	**-2LS**
220	320	135	100	1.1	1.1	8	6600	11000	**GE220TXA-2RS**	**-2LS**
240	340	140	100	1.1	1.1	8	7200	12000	**GE240UK-2RS**	**-2LS**
	340	140	100	1.1	1.1	8	3660	7380	**GE240XT-2RS**	**-2LS**
260	370	150	110	1.1	1.1	7	4290	8650	**GE260XT-2RS**	**-2LS**
280	400	155	120	1.1	1.1	6	10100	16800	**GE280XT-2RS**	**-2LS**
300	430	165	120	1.1	1.1	7	5400	10800	**GE300ESF-2RS**	**-2LS**
320	440	160	135	1.1	3	4	7380	11100	**GEC320FBAS/YAB**	**–**
340	460	160	135	1.1	3	3	9720	14600	**GEC340FBAS/YAB**	**–**
380	520	190	160	1.5	4	4	9000	18700	**GEC380FHS/K/C9**	**–**
	520	190	160	3.5	3	4	9000	18700	**GEC380FDAS**	**–**
	520	190	160	1.5	3	4	9000	18700	**GEC380FDAS/YAB**	**–**
400	540	190	160	1.5	4	3	9400	19600	**GEC400FHS/K/C9**	**–**
420	560	190	160	1.5	3	3	14100	21200	**GEC420FBAS/YAB**	**–**

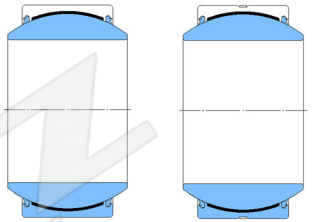
Other dimensions(mm)					Abutment and fillet dimensions(mm)						Mass(kg) (487ppro x..)
d	d_k	*b*	b_1	*M*	d_{amin}	d_{amax}	D_{amin}	D_{amax}	r_{amax}	r_{bmax}	
30	40.7	-	-		33.3	34.2	41.3	44	0.6	0.6	0.188
35	47	-	-	-	38.5	39.8	48.5	50.9	0.6	1	0.230
40	60	-	-	-	44.1	44.7	61	63.6	0.6	1	0.528
50	66	-	-	-	54.6	56	66.2	70.5	0.6	1	0.558
70	92	-	-	-	76.7	77.9	92	99	1	1	1.52
80	105	-	-	-	86.1	89.4	104.4	113.8	1	1	2.32
	115	9.5	9.5	5	86.2	87.2	112.9	123.5	1	1	3.65
100	130	11.5	11.5	5	107.8	109.5	123.5	143.2	1	1	4.31
	130	-	-	-	107.8	109.5	131	143.2	1	1	4.33
110	140	-	-	-	118	121	133	153	1	-	4.92
120	160	13.5	13.5	6	129.5	135.5	152	172	1	1	8.04
	160	-	-	-	129.5	135.5	152	172	1	-	8.04
	160	8.3	8.3	4	129.5	135.5	152	168	2	2	6.58
160	200	13.5	13.5	6	166.5	170	190	222	1	1	13.7
	200	13.5	13.5	6	166.5	170	190	222	1	1	13.7
	200	-	-	-	166.5	170	197	222	1	1	13.7
	200	-	-	-	166.5	170	197	222	1	1	14.1
200	250	-	-	-	212.5	213.5	244.5	279.5	1	1	27.9
	250	-	-	-	212.5	213.5	244.5	279.5	1	1	27.9
	250	-	-	-	212.5	213.5	244.5	279.5	1	1	28.0
220	275	-	-	-	232.5	239.5	271	309.5	1	1	34.2
240	300	-	-	-	252.5	265	298	329.5	1	1	38.7
240	300	-	-	-	252.5	265	298	329.5	1	1	39.9
260	325	-	-	-	273	288	321.5	359	1	1	51.4
280	350	-	-	-	294	313.5	344.5	388.5	1	1	65.1
300	375	15.5	15.5	8	314	336.5	371	418.5	1	1	76.3
320	380	21	21	8	335	345	376	425	1	3	76.6
340	400	21	21	8	357	360	385	445	1	3	80.6
380	450	21	21	8	395	407	440	500	1.5	4	125
	450	21	21	8	395	407	440	500	3.5	3	125
	450	21	21	8	395	407	440	500	1.5	3	126
400	470	-	-	-	420	429	465	510	1.5	4	132
420	490	21	21	8	439	451	485	530	1.5	3	137

ZWZ

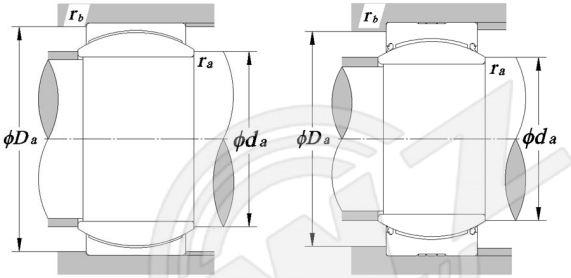
d 12～180mm



GE…TXGR | GE…TX(G3)E-2LS | GE…TX(G3)A-2LS | GEC…TXA-2RS d≤400mm | GEC…TXA-2RS d≥420mm



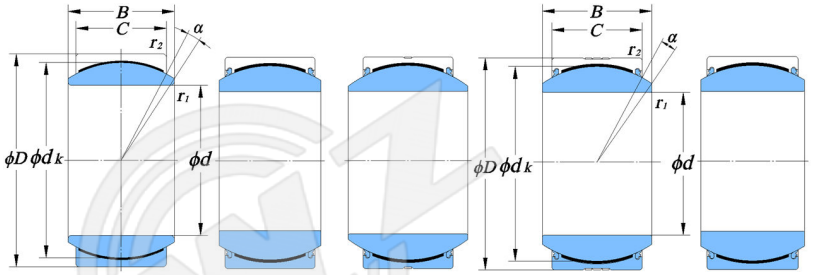
GEH…TX(G3)A-2LS | GEH…TX(G3)A-2LS



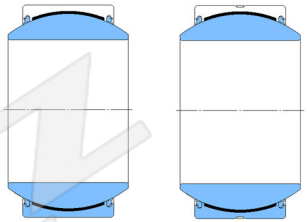
Principal dimensions(mm)						Slope angle	Basic load ratings (kN)		Designations	Designations	Other dimensions (mm)		Abutment and fillet dimensions(mm)						Mass(kg)
d	*D*	*B*	*C*	r_{1min}	r_{2min}	*α*	*C*	C_0	Bearing steel	Stainless steel	*d*	d_k	d_{amin}	d_{amax}	D_{amin}	D_{amax}	r_{amax}	r_{bmax}	(488ppro x..)
12	22	10	7	0.3	0.3	10	30.0	50.0	–	GE12TXGR	12	18	13.8	15	17.1	20.4	0.3	0.3	0.0170
15	26	12	9	0.3	0.3	8	47.5	80.0	–	GE15TXGR	15	22	16.9	18.4	20.9	24.3	0.3	0.3	0.0320
17	30	14	10	0.3	0.3	10	60.0	100	–	GE17TXGR	17	25	19	20.7	23.7	28.3	0.3	0.3	0.0500
20	35	16	12	0.3	0.3	9	83.0	140	GE20TXE-2LS	GE20TXG3E-2LS	20	29	22.1	24.2	27.6	33.2	0.3	0.3	0.0650
	42	25	16	0.3	0.6	17	137	228	GEH20TXE-2LS	GEH20TXG3E-2LS	-	35.5	22.9	25.2	36.9	39.2	0.3	0.6	0.150
25	42	20	16	0.6	0.6	7	137	228	GE25TXE-2LS	GE25TXG3E-2LS	25	35.5	28.2	29.3	36.9	39.2	0.6	0.6	0.120
	47	28	18	0.6	0.6	17	176	290	GEH25TXE-2LS	GEH25TXG3E-2LS	-	40.7	28.7	29.5	41.3	44	0.6	0.6	0.190
30	47	22	18	0.6	0.6	6	176	290	GE30TXE-2LS	GE30TXG3E-2LS	30	40.7	33.3	34.2	41.3	44	0.6	0.6	0.160
	55	32	20	0.6	1	17	224	375	GEH30TXE-2LS	GEH30TXG3E-2LS	-	47	33.8	34.4	48.5	51	0.6	1	0.290
35	55	25	20	0.6	1	6	224	375	GE35TXE-2LS	GE35TXG3E-2LS	35	47	38.5	39.8	48.5	51	0.6	1	0.230
	62	35	22	0.6	1	15	280	465	GEH35TXE-2LS	GEH35TXG3E-2LS	-	53	39	39.7	54.5	57.5	0.6	1	0.390
40	62	28	22	0.6	1	6	280	465	GE40TXE-2LS	GE40TXG3E-2LS	40	53	43.5	45	54.5	57.5	0.6	1	0.320
	68	40	25	0.6	1	17	360	600	GEH40TXE-2LS	GEH40TXG3E-2LS	-	60	44.2	44.7	61	63.5	0.6	1	0.520
45	68	32	25	0.6	1	7	360	600	GE45TXE-2LS	GE45TXG3E-2LS	45	60	49.5	50.8	61	63.5	0.6	1	0.460
	75	43	28	0.6	1	14	440	735	GEH45TXE-2LS	GEH45TXG3E-2LS	-	66	49	50	66.5	70.5	0.6	1	0.690
50	75	35	28	0.6	1	6	440	735	GE50TXE-2LS	GE50TXG3E-2LS	50	66	54.5	56	66.5	70.5	0.6	1	0.560
	90	56	36	0.6	1	17	695	1160	GEH50TXE-2LS	GEH50TXG3E-2LS	-	80	56	57.1	80	84	0.6	1	1.41
60	90	44	36	1	1	6	695	1160	GE60TXE-2LS	GE60TXG3E-2LS	60	80	66	66.8	80	84	1	1	1.10
	105	63	40	1	1	17	880	1460	GEH60TXE-2LS	GEH60TXG3A-2LS	-	92	66	67	92	99	1	1	2.06
70	105	49	40	1	1	6	880	1460	GE70TXE-2LS	GE70TXG3A-2LS	70	92	76.5	77.9	92	99	1	1	1.55
	120	70	45	1	1	16	1140	1900	GEH70TXE-2LS	GEH70TXG3A-2LS	-	105	77	78.2	105	113	1	1	2.99
80	120	55	45	1	1	5	1140	1900	GE80TXE-2LS	GE80TXG3A-2LS	80	105	86	89.4	105	113	1	1	2.30
	130	75	50	1	1	14	1370	2320	GEH80TXE-2LS	GEH80TXG3A-2LS	-	115	86.1	87.1	113	123	1	1	3.55
90	130	60	50	1	1	5	1370	2320	GE90TXE-2LS	GE90TXG3A-2LS	90	115	97	98.1	113	123	1	1	2.75
	150	85	55	1	1	15	1730	2850	GEH90TXA-2LS	GEH90TXG3A-2LS	-	130	97	98.3	131	144	1	1	5.40
100	150	70	55	1	1	6	1730	2850	GE100TXA-2LS	GE100TXG3A-2LS	100	130	108	109.5	131	144	1	1	4.40
	160	85	55	1	1	13	1860	3100	GEH100TXA-2LS	GEH100TXG3A-2LS	-	140	108.5	111.2	141.5	153	1	1	5.90
110	160	70	55	1	1	6	1860	3100	GE110TXA-2LS	GE110TXG3A-2LS	110	140	118	121	141.5	153	1	1	4.80
	180	100	70	1	1	12	2700	4500	GEH110TXA-2LS	GEH110TXG3A-2LS	-	160	120	124.5	157.5	172	1	1	9.50
120	180	85	70	1	1	6	2700	4500	GE120TXA-2LS	GE120TXG3A-2LS	120	160	130	135.5	157.5	172	1	1	8.25
	210	115	70	1	1	16	3000	5000	GEH120TXA-2LS	GEH120TXG3A-2LS	-	180	130.5	138	180	202	1	1	14.9
140	210	90	70	1	1	7	3000	5000	GE140TXA-2LS	GE140TXG3A-2LS	140	180	149	155.5	180	202	1	1	11.0
160	230	105	80	1	1	8	3800	6400	GE160TXA-2LS	GE160TXG3A-2LS	160	200	166.5	170	197	222	1	1	14.0
180	260	105	80	1.1	1.1	6	4300	7200	GE180TXA-2LS	GE180TXG3A-2LS	180	225	191	199	224.5	250	1	1	18.5

ZWZ

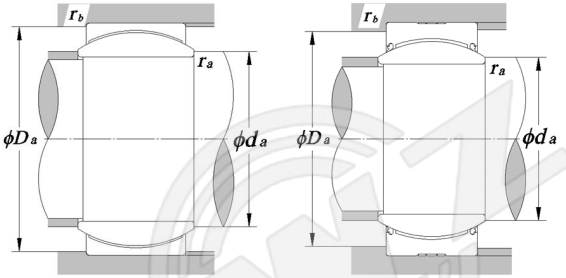
d 200～800mm



GE…TXGR | GE…TX(G3)E-2LS | GE…TX(G3)A-2LS | GEC…TXA-2RS d≤400mm | GEC...TXA-2RS d≥420mm

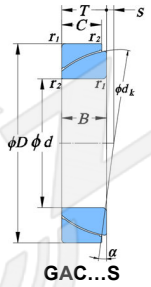


GEH...TX(G3)A-2LS | GEH...TX(G3)A-2LS

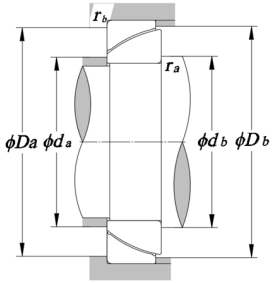


Principal dimensions(mm)						Slope angle	Basic load ratings (kN)		Designations	Designations	Other dimensions(mm)		Abutment and fillet dimensions(mm)						Mass(kg)
d	D	B	C	r_{1min}	r_{2min}	α	C	C_0	Bearing steel	Stainless steel	d	d_k	d_{amin}	d_{amax}	D_{amin}	D_{amax}	r_{amax}	r_{bmax}	(approx.)
200	290	130	100	1.1	1.1	7	6000	10000	GE200TXA-2LS	GE200TXG3A-2LS	200	250	212.5	213.5	244.5	279	1	1	28.0
220	320	135	100	1.1	1.1	8	6600	11000	GE220TXA-2LS	–	220	275	233	239.5	271	309	1	1	35.5
	320	135	100	1.1	1.1	8	6600	11000	GE220TXA-2RS	–	-	275	233	239.5	271	309	1	1	34.2
240	340	140	100	1.1	1.1	8	7200	12000	GE240TXA-2LS	–	240	300	253	265	298	329	1	1	40.0
260	370	150	110	1.1	1.1	7	8650	14300	GE260TXA-2LS	–	260	325	273	288	321.5	359	1	1	51.5
280	400	155	120	1.1	1.1	6	10000	16600	GE280TXA-2LS	–	280	350	294	313.5	344.5	388	1	1	65.0
300	430	165	120	1.1	1.1	7	10800	18000	GE300TXA-2LS	–	300	375	314	336.5	371	418	1	1	78.5
320	440	160	135	1.1	3	4	14000	23200	GEC320TXA-2RS	–	320	380	337	344	376	414	1	3	75.0
	440	160	135	3.5	3	4	14000	23200	GEC320FBAS	–	-	380	337	344	376	414	3.5	3	75.9
340	460	160	135	1.1	3	3	14600	24500	GEC340TXA-2RS	–	340	400	357	366	396	434	1	3	82.5
360	480	160	135	1.1	3	3	15300	25500	GEC360TXA-2RS	–	360	420	376	388	416	454	1	3	84.0
380	520	190	160	1.5	4	4	19300	32500	GEC380TXA-2RS	–	380	450	400	407	445	490	1.5	4	125
400	540	190	160	1.5	4	3	20400	34000	GEC400TXA-2RS	–	400	470	420	429	465	510	1.5	4	130
	540	190	160	1.5	4	3	9400	19600	GEC400FHS/K/C9	–	-	470	420	429	465	510	1.5	4	132
	540	190	160	1.5	4	3	6580	32900	GEC400XS	–	-	470	420	429	465	510	1.5	4	133
420	560	190	160	1.5	4	3	21200	35500	GEC420TXA-2RS	–	420	490	439	451	485	530	1.5	4	140
440	600	218	185	1.5	4	3	26000	43000	GEC440TXA-2RS	–	440	520	461	472	514	568	1.5	4	195
460	620	218	185	1.5	4	3	27000	45000	GEC460TXA-2RS	–	460	540	482	494	534	587	1.5	4	200
480	650	230	195	2	5	3	30000	50000	GEC480TXA-2RS	–	480	565	504	516	559	613	2	5	235
500	670	230	195	2	5	3	31000	51000	GEC500TXA-2RS	–	500	585	524	537	579	633	2	5	245
530	710	243	205	2	5	3	34500	57000	GEC530TXA-2RS	–	530	620	555	570	613	672	2	5	290
	710	243	205	2	5	3	11400	57700	GE530-SDJR	–	-	620	555	570	613	672	2	5	291
560	750	258	215	2	5	3	38000	63000	GEC560TXA-2RS	–	560	655	585	602	648	711	2	5	340
600	800	272	230	2	5	3	43000	72000	GEC600TXA-2RS	–	600	700	627	644	692	760	2	5	405
630	850	300	260	3	6	3	52000	86500	GEC630TXA-2RS	–	630	740	662	676	732	802	3	6	525
670	900	308	260	3	6	3	55000	91500	GEC670TXA-2RS	–	670	785	702	722	776	853	3	6	590
710	950	325	275	3	6	3	62000	102000	GEC710TXA-2RS	–	710	830	744	763	821	901	3	6	685
750	1000	335	280	3	6	3	65500	110000	GEC750TXA-2RS	–	750	875	784	808	865	950	3	6	770
800	1060	355	300	3	6	3	75000	125000	GEC800TXA-2RS	–	800	930	835	859	920	1008	3	6	910

d 30～120mm



GAC…S

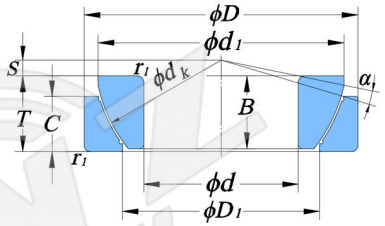


Principal dimensions(mm)							Slope angle	Basic load ratings (kN)	
d	*D*	*B*	*C*	*T*	r_{1min}	r_{2min}	*α*	*C*	C_0
30	55	17	15	17	1	0.3	3.5	27	43
35	62	18	16	18	1	0.3	3.5	32.5	52
40	68	19	17	19	1	0.3	3.5	39	62
45	75	20	18	20	1	0.3	3	45.5	73.5
50	80	20	19	20	1	0.3	3	53	85
60	95	23	21	23	1.5	0.6	3	69.5	112
70	110	25	23	25	1.5	0.6	2.5	88	143
80	125	29	25.5	29	1.5	0.6	2.5	110	176
90	140	32	28	32	2	0.6	2.5	134	216
100	150	32	31	32	2	0.6	2	170	270
110	170	38	34	38	2	2	2	480	2390
	170	38	34	38	2	2	2	470	2360
120	180	38	37	38	2.5	0.6	1.5	500	2510

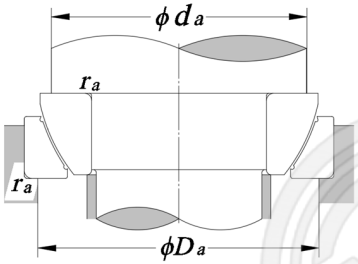
Designations	Other dimensions(mm)			Abutment and fillet dimensions(mm)					Mass(kg) (approx.)
Bearing Steel	*d*	d_k	*s*	d_{amin}	d_{bmax}	D_{amin}	D_{bmin}	r_{amax}	
GAC30S	30	49.5	1.3	35	45	39	50.5	1	0.21
GAC35S	35	55.5	2.1	40	50	45	56.5	1	0.27
GAC40S	40	62	2.8	45	54	50	63	1	0.33
GAC45S	45	68.5	3.5	51	60	55	69	1	0.42
GAC50S	50	74	4.3	56	67	60	74.5	1	0.46
GAC60S	60	88.5	5.7	68	77	70	90	1.5	0.743
GAC70S	70	102	7.2	78	92	85	103	1.5	1.05
GAC80S	80	115	8.6	88	104	95	116	1.5	1.55
GAC90S	90	128.5	10.1	101	118	105	129	2	2.1
GAC100S	100	141	11.6	112	128	120	141	2	2.35
GAC110S/K	110	160	13	124	145	130	156	2	3.7
GAC110S/Y	110	157.5	13	121	145	127	156	2	3.79
GAC120S	120	168	14.5	134	155	140	169	2.5	4

ZWZ

d 17～200mm



GX...CS



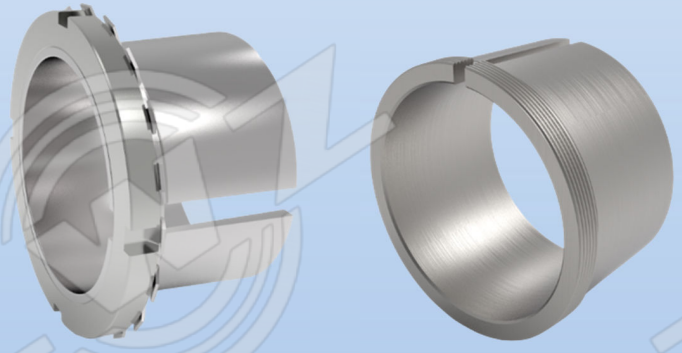
Principal dimensions(mm)						Slope angle	Basic load ratings (kN)		Designations
d	*D*	B	C	*T*	r_{1min}	*α*	*C*	C_0	Bearing Steel
17	47	11.8	11.2	16	0.6	5	36.5	58.5	**GX17CS**
20	55	14.5	13.8	20	1	5	46.5	73.5	**GX20CS**
25	62	16.5	16.7	22.5	1	5	69.5	112	**GX25CS**
30	75	19	19	26	1	5	182	909	**GX30S/YAD**
	75	19	19	26	1	5	95	153	**GX30CS**
35	90	22	20.7	28	1	6	134	216	**GX35CS**
	90	22	20	28	1	6	254	1520	**GX35**
40	105	27	21.5	32	1	6	173	275	**GX40CS**
	105	27	22	32	1	6	365	2200	**GX40**
45	120	31	25.5	36.5	1	6	224	355	**GX45CS**
50	130	33	30.5	42.5	1	6	275	440	**GX50CS**
60	150	37	34	45	1	6	375	600	**GX60CS**
70	160	42	36.5	50	1	5	475	750	**GX70CS**
	160	42	36.5	50	1.5	5	620	3150	**GX70S**
	160	42	36.5	50	1	5	1380	2760	**GX70T/YAD**
80	180	43.5	38	50	1	5	570	915	**GX80CS**
100	210	51	46	59	1	5	735	1180	**GX100CS**
106	195	40	44	55	1	5	1070	4550	**GX106**
120	230	53.5	50	64	1	4	880	1430	**GX120CS**
140	256	61	54	72	1.5	3	2700	5400	**GX140CS**
	260	61	54	72	1.5	3	2710	5443	**GX140T**
160	290	66	58	77	1.5	3	3300	6600	**GX160CS**
180	320	74	62	86	1.5	3	4000	8000	**GX180CS**
200	340	80	66	94	1	3	4900	9800	**GX200CS**
	340	71	58	87	1	1	2800	14000	**GX200S/YAB**

Other dimensions(mm)					Abutment and fillet dimensions(mm)			Mass(kg) (approx.)
d	d_k	d_1	D_1	s	d_{amin}	D_{amax}	r_{amax}	
17	52	43.5	27	11	34	37	0.6	0.140
20	60	50	31	12.5	40	44	1	0.250
25	68	58.5	34.5	14	45	47	1	0.420
30	82	70	44.5	17.5	56	61	1	0.663
-	82	70	42	17.5	56	59	1	0.610
35	98	84	50.5	22	66	71	1	0.980
-	98	84	52	22	66	73	1	1.04
40	114	97	59	24.5	78	84	1	1.50
-	114	98	58	24.5	79	83	1	1.65
45	128	110	67	27.5	89	97	1	2.25
50	139	120	70	30	98	105	1	3.15
60	160	140	84	35	109	120	1	4.65
70	176	153	94.5	35	121	125	1	5.40
-	176	153	95.5	35	121	125	1.5	5.88
-	176	153	95.5	35	122	125	1	5.88
80	197	172	107.5	42.5	135	145	1	6.95
100	222	198	127	45	155	170	1	11.0
106	205	175	130	45	138	173	1	7.93
120	250	220	145	52.5	170	190	1	14.0
140	274	243	177	52.5	190	216	1.5	19.0
-	274	243	177	52.5	190	220	1.5	18.9
160	313	271	200	65	210	245	1.5	25.2
180	340	299	225	67.5	225	275	1.5	32.3
200	400	320	247	70	245	290	1	35.2
-	400	330	242	92.5	245	290	1	37.0

ZWZ

Bearing Accessories

Adapter Sleeves, Withdrawal Sleeves



●**Adapter sleeve,Withdrawal sleeve**

1. Adapter sleeve and withdrawal bushing code

The code of the adapter sleeve, adapter bushing and withdrawal bushing is composed of the type code, the size series code, the inner diameter code of applicable bearing and the structure code, which is arranged in the following order: type code + size series code + inner diameter code of applicable bearing + structure code.

1.1 The type code is indicated by letters, as specified in Table 1.

Table 1 Type Code

Accessories type	Type code	Meaning
Adapter sleeve	H	Aadapter sleeve with taper 1:12
	H2	Aadapter sleeve with taper 1:30
Adapter bushing	A	Adapter bushing with taper 1:12
	A2	Adapter bushing with taper 1:30
Withdrawal bushing	AH	Withdrawal bushing with taper 1:12
	AH2	Withdrawal bushing with taper 1:30
	AHX	Withdrawal bushing with taper 1:12 and varying thread size

1.2 Size series code

Size series code is subject to the bearing size series code specified in GB/T 272. The size series code for adapter sleeve, adapter bushing and withdrawal bushing is divided into size series 30, 31, (0) 2, 22, 32, (0) 3, 23, 39 (taper 1:12) and size series 40, 41 (taper 1:30).

1.3 Inner diameter code of applicable bearing

The inner diameter code of applicable bearing is subject to the bearing inner diameter code specified in GB/T 272.

1.4 Structural code

For narrow notch adapter bushing with an inner diameter of applicable bearing below 44 (i.e., bearing inner diameter d<220 mm), the structure code "X" shall be added to the inner diameter code when the straight inner claw lock washer is used.

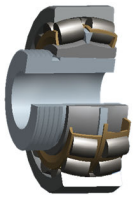
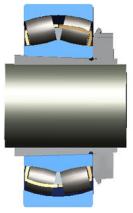
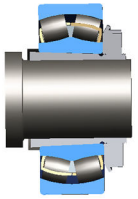
For the adapter sleeve, adapter bushing and withdrawal bushing with hydraulic oil holes, the structural code shall be added after the inner diameter code, and its structural code and meaning are shown in Table 2.

Table 2 Structural Code with Hydraulic Oil Holes

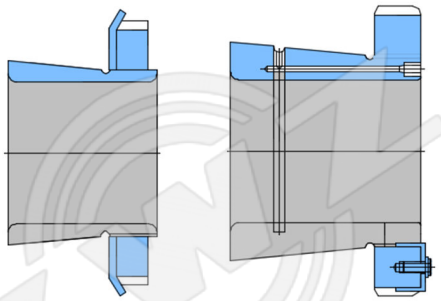
Structural code with hydraulic oil holes	Meaning
-H	Adapter sleeve and adapter bushing with hydraulic oil hole at the threaded end and with oil groove on the conical surface. Withdrawal bushing: with two hydraulic oil holes 90° apart at the threaded end and with oil grooves on both the inner and outer surfaces of the sleeve.
-HB	Adapter sleeve and adapter bushing: with two hydraulic oil holes 90° apart at the threaded end and with oil grooves on both the inner and outer surfaces of the sleeve.

2. Adapter sleeve and withdrawal bushing functions

The adapter sleeve and withdrawal bushing provided by ZWZ can facilitate the convenient and quick installation of tapered inner hole spherical roller bearings onto optical shafts or stepped shafts.

Type of bearing with adapter sleeve and withdrawal sleeve	Examples
Bearing with adapter sleeve	
Bearing with withdrawal sleeve	
The adapter sleeve is installed on the straight shaft	
The adapter sleeve is installed on the stepped shaft	

3. Adapter sleeve design



As one of the most commonly used bearing accessories, the adapter bushing is used to fixe tapered bore bearings onto the cylindrical shaft neck, including optical shafts or stepped shafts. This accessory is easy to install, and no other devices are required to fix it.

When an adapter sleeve is used on an optical shaft, the bearing can be fixed to any position on the shaft. When used in the stepped shaft and fitted with the stepped ring, the bearing can be more accurately fixed on the given position on the shaft, and the disassembly is relatively easy.

The adapter sleeve provided by ZWZ has lock nut and the required lock device, as shown below.

The smaller adapter sleeve uses a lock washer to fix the lock nut, while the larger adapter sleeve uses a lock buckle to lock the nut. There is a split in the adapter sleeve, and the taper of the surface is 1:12. The surface of adapter sleeve with size 40 or below is phosphating, while the surface of larger adapter sleeve is protected with an insoluble anti-rust agent.

Bearing installation and disassembly can be simplified using the oiling method, and ZWZ offers an option of designs with oil circuit and oil tank to fit this method. The oil injection inlet is on the threaded side of these adapter sleeves; the oil groove is on the conical surface of the adapter sleeve. When the hydraulic oil is injected into the oil circuit and oil tank, an oil film is formed on the fitting surface between the bearing and the adapter sleeve, which can greatly reduce the force required for the installation of the bearing. The code of this standard adapter sleeve OH... H.

3.1 Dimensions and tolerances

The dimensions of the adapter sleeve conform to ISO2982-1, and the adapter sleeve tolerance of ZWZ conforms to JB/T7919.

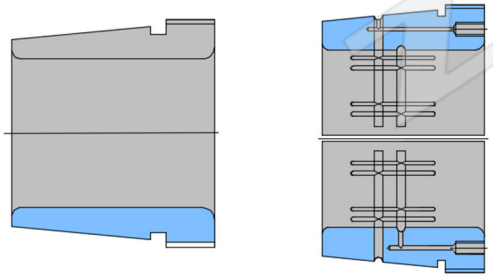
3.2 Thread

For the ZWZ adapter bushing with size 40 or below, the metric thread tolerance is 6g, which conforms to ISO9653. For larger adapter sleeve, the metric trapezoidal thread tolerance is 7e, which conforms to ISO2903.

3.3 Tolerance requirements of shaft

Because the adapter sleeve is installed on the shaft to cooperate with the shaft, it allows a larger tolerance range than installing the bearing directly on the cylindrical shaft neck. However, the form and position tolerance must still be maintained within a very narrow range, because the accuracy of the shape tolerance will directly affect the rotary accuracy of the bearing. In general, the tolerance of the shaft shall be h9, and according to ISO1101, the cylindricity shall be IT5/2.

4. Withdrawal bushing design



The withdrawal bushing is mainly used to fix the tapered bore bearing onto the cylindrical shaft neck of the stepped shaft. The withdrawal bushing is pressed between the tapered bore bearing (resting against the shoulder or similar device) and the shaft, and then fixed to the shaft with a nut or end plate. Since the thread of the shaft end can be of different sizes according to the actual application, the lock nut or end plate is not supplied with the withdrawal bushing, which is required to be ordered separately. The nuts required to disassemble the withdrawal bushing is also required to be ordered separately.

ZWZ withdrawal bushing is applied with anti-rust agent on the surface. There is a split on the sleeve, and the taper of the surface is generally 1:12.

Bearing installation and disassembly can be simplified using the oiling method, and ZWZ offers designs with oil circuit and oil tank to fit this method.

The AOH withdrawal bushing has two oil injection inlet on the threaded side, and there are some oil grooves distributed along the circumference and axial direction on the conical surface and the cylindrical inner surface of the withdrawal bushing. When the hydraulic oil is injected into the oil circuit and oil tank, an oil film is formed between the bearing and withdrawal bushing as well as on the fitting surface between the bearing and the withdrawal bushing, which can greatly reduce the force required for the installation of the bearing.

4.1 Dimensions and tolerances

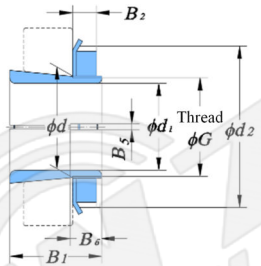
The dimensions of the **ZWZ** withdrawal bushing conform to ISO2982-1, and the withdrawal bushing tolerance of ZWZ conforms to JB/T7919.

4.2 Thread

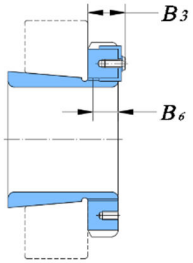
For the ZWZ withdrawal bushing with size 38 or below, the metric thread tolerance is 6g, which conforms to ISO9653. For larger withdrawal bushing, the metric trapezoidal thread tolerance is 7e, which conforms to ISO2903.

4.3 Tolerance requirements of shaft

Because the withdrawal bushing is installed on the shaft to cooperate with the shaft, it allows a larger tolerance range than installing the bearing directly on the cylindrical shaft neck. However, the form and position tolerance must still be maintained within a very narrow range, because the accuracy of the shape tolerance will directly affect the rotary accuracy of the bearing. In general, the tolerance of the shaft shall be h9, and according to ISO1101, the cylindricity shall be IT5/2.



Adapter sleeve with lock nut and lock clamp assembly

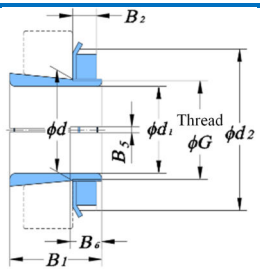


Adapter sleeve with lock nut and lock washer

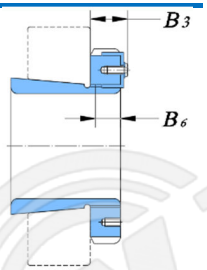
Adapter sleeves with a taper 1:12 - series 30

Nominal Designations	Principal dimensions(mm) d_1	d_2	B_1	$B_2\approx$	B_{3max}	Components designations Adapter sleeves	Lock nut*	Lock washer*	lock clamp*	Inner diameter code
H3024	110	145	72	22	—	A3024X	KML24	MBL24	—	24
H3026	115	155	80	23	—	A3026X	KML26	MBL26	—	26
H3028	125	165	82	24	—	A3028X	KML28	MBL28	—	28
H3030	135	180	87	26	—	A3030X	KML30	MBL30	—	30
H3032	140	190	93	28	—	A3032X	KML32	MBL32	—	32
H3034	150	200	101	29	—	A3034X	KML34	MBL34	—	34
H3036	160	210	109	30	—	A3036X	KML36	MBL36	—	36
H3038	170	220	112	31	—	A3038X	KML38	MBL38	—	38
H3040	180	240	120	32	—	A3040X	KML40	MBL40	—	40
H3044	200	260	126	—	41	A3044	HML44	—	MSL44	44
H3048	220	290	133	—	46	A3048	HML48	—	MSL48	48
H3052	240	310	145	—	46	A3052	HML52	—	MSL48	52
H3056	260	330	152	—	50	A3056	HML56	—	MSL56	56
H3060	280	360	168	—	54	A3060	HML60	—	MSL60	60
H3064	300	380	171	—	55	A3064	HML64	—	MSL64	64
H3068	320	400	187	—	58	A3068	HML68	—	MSL64	68
H3072	340	420	188	—	58	A3072	HML72	—	MSL72	72
H3076	360	450	193	—	62	A3076	HML76	—	MSL76	76
H3080	380	470	210	—	66	A3080	HML80	—	MSL76	80
H3084	400	490	212	—	66	A3084	HML84	—	MSL84	84
H3088	410	520	228	—	77	A3088	HML88	—	MSL88	88
H3092	430	540	234	—	77	A3092	HML92	—	MSL88	92
H3096	450	560	237	—	77	A3096	HML96	—	MSL96	96
H30/500	470	580	247	—	85	A30/500	HML/500	—	MSL96	/500
H30/530	500	630	265	—	90	A30/530	HML/530	—	MSL/530	/530
H30/560	530	650	282	—	97	A30/560	HML/560	—	MSL/560	/560
H30/600	560	700	289	—	97	A30/600	HML/600	—	MSL/560	/600
H30/630	600	730	301	—	97	A30/630	HML/630	—	MSL/630	/630
H30/670	630	780	324	—	102	A30/670	HML/670	—	MSL/670	/670
H30/710	670	830	342	—	112	A30/710	HML/710	—	MSL/710	/710
H30/750	710	870	356	—	112	A30/750	HML/750	—	MSL/750	/750
H30/800	750	920	366	—	112	A30/800	HML/800	—	MSL/750	/800
H30/850	800	980	380	—	115	A30/850	HML/850	—	MSL/850	/850
H30/900	850	1030	400	—	125	A30/900	HML/900	—	MSL/850	/900
H30/950	900	1080	420	—	125	A30/950	HML/950	—	MSL/950	/950
H30/1000	950	1140	430	—	125	A30/1000	HML/1000	—	MSL/1000	/1000
H30/1060	1000	1200	447	—	125	A30/1060	HML/1060	—	MSL/1000	/1060

*Lock nut、lock washer and lock clamp as specified in GB/T9160.2



Adapter sleeve with lock nut and lock clamp assembly

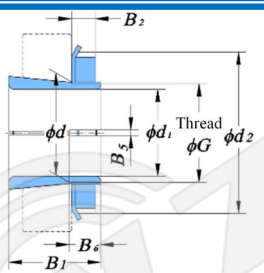


Adapter sleeve with lock nut and lock washer

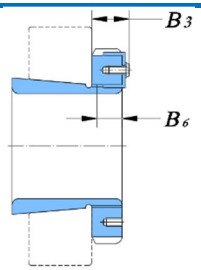
Adapter sleeves with a taper 1:12 - series 31

Nominal Designations	Principal dimensions(mm) d_1	d_2	B_1	$B_2\approx$	B_{3max}	Components designations Adapter sleeves	Lock nut*	Lock washer*	lock clamp*	Inner diameter code
H3120	90	130	76	20	—	A3120X	KM20	MB20	—	20
H3121	95	140	80	20	—	A3121X	KM21	MB20	—	21
H3122	100	145	81	21	—	A3122X	KM22	MB22	—	22
H3124	110	155	88	22	—	A3124X	KM24	MB24	—	24
H3126	115	165	92	23	—	A3126X	KM26	MB26	—	26
H3128	125	180	97	24	—	A3128X	KM28	MB28	—	28
H3130	135	195	111	26	—	A3130X	KM30	MB30	—	30
H3132	140	210	119	28	—	A3132X	KM32	MB32	—	32
H3134	150	220	122	29	—	A3134X	KM34	MB34	—	34
H3136	160	230	131	30	—	A3136X	KM36	MB36	—	36
H3138	170	240	141	31	—	A3138X	KM38	MB38	—	38
H3140	180	250	150	32	—	A3140X	KM40	MB40	—	40
H3144	200	280	161	—	44	A3144	HM44	—	MS44	44
H3148	220	300	172	—	46	A3148	HM48	—	MS44	48
H3152	240	330	190	—	49	A3152	HM52	—	MS52	52
H3156	260	350	195	—	51	A3156	HM56	—	MS52	56
H3160	280	380	208	—	53	A3160	HM60	—	MS60	60
H3164	300	400	226	—	56	A3164	HM64	—	MS64	64
H3168	320	440	254	—	72	A3168	HM68	—	MS68	68
H3172	340	460	259	—	75	A3172	HM72	—	MS68	72
H3176	360	490	264	—	77	A3176	HM76	—	MS76	76
H3180	380	520	272	—	82	A3180	HM80	—	MS80	80
H3184	400	540	304	—	90	A3184	HM84	—	MS80	84
H3188	410	560	307	—	90	A3188	HM88	—	MS88	88
H3192	430	580	326	—	95	A3192	HM92	—	MS88	92
H3196	450	620	335	—	95	A3196	HM96	—	MS96	96
H31/500	470	630	356	—	100	A31/500	HM/500	—	MS/500	/500
H31/530	500	670	364	—	105	A31/530	HM/530	—	MS/530	/530
H31/560	530	710	377	—	110	A31/560	HM/560	—	MS/560	/560
H31/600	560	750	399	—	110	A31/600	HM/600	—	MS/560	/600
H31/630	600	800	424	—	120	A31/630	HM/630	—	MS/630	/630
H31/670	630	850	456	—	131	A31/670	HM/670	—	MS/670	/670
H31/710	670	900	467	—	135	A31/710	HM/710	—	MS/710	/710
H31/750	710	950	493	—	141	A31/750	HM/750	—	MS/750	/750
H31/800	750	1000	505	—	141	A31/800	HM/800	—	MS/750	/800
H31/850	800	1060	536	—	147	A31/850	HM/850	—	MS/850	/850
H31/900	850	1120	557	—	154	A31/900	HM/900	—	MS/900	/900
H31/950	900	1170	583	—	154	A31/950	HM/950	—	MS/950	/950
H31/1000	950	1240	609	—	154	A31/1000	HM/1000	—	MS/1000	/1000
H31/1060	1000	1300	622	—	154	A31/1060	HM/1060	—	MS/1000	/1060

* Lock nut、lock washer and lock clamp as specified in GB/T9160.2



Adapter sleeve with lock nut and lock clamp assembly

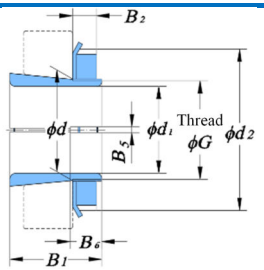


Adapter sleeve with lock nut and lock washer

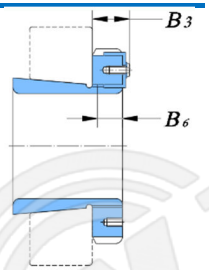
Adapter sleeves with a taper 1:12 - series (0)2

Nominal Designations	Principal dimensions(mm) d_1	d_2	B_1	$B_2\approx$	Components designations Adapter sleeves	Lock nut*	Lock washer*	Inner diameter code
H202	12	25	19	6	A202X	KM02	MB02	02
H203	14	28	20	6	A203X	KM03	MB03	03
H204	17	32	24	7	A204X	KM04	MB04	04
H205	20	38	26	8	A205X	KM05	MB05	05
H206	25	45	27	8	A206X	KM06	MB06	06
H207	30	52	29	9	A207X	KM07	MB07	07
H208	35	58	31	10	A208X	KM08	MB08	08
H209	40	65	33	11	A209X	KM09	MB09	09
H210	45	70	35	12	A210X	KM10	MB10	10
H211	50	75	37	12	A211X	KM11	MB11	11
H212	55	80	38	13	A212X	KM12	MB12	12
H213	60	85	40	14	A213X	KM13	MB13	13
H214	60	92	41	14	A214X	KM14	MB14	14
H215	65	98	43	15	A215X	KM15	MB15	15
H216	70	105	46	17	A216X	KM16	MB16	16
H217	75	110	50	18	A217X	KM17	MB17	17
H218	80	120	52	18	A218X	KM18	MB18	18
H219	85	125	55	19	A219X	KM19	MB19	19
H220	90	130	58	20	A220X	KM20	MB20	20
H221	95	140	60	20	A221X	KM21	MB21	21
H222	100	145	63	21	A222X	KM22	MB22	22

* Lock nut、lock washer and lock clamp as specified in GB/T9160.2



Adapter sleeve with lock nut and lock clamp assembly

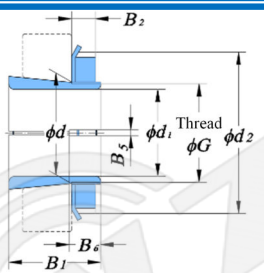


Adapter sleeve with lock nut and lock washer

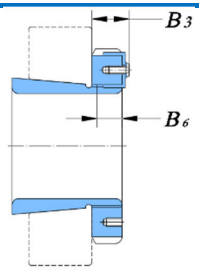
Adapter sleeves with a taper 1:12 - series 32

Nominal Designations	Principal dimensions(mm) d_1	d_2	B_1	B_{3max}	Components designations Adapter sleeves	Lock nut*	lock clamp*	Inner diameter code
H3260	280	380	240	53	A3260	HM60	MS60	60
H3264	300	400	258	56	A3264	HM64	MS64	64
H3268	320	440	288	72	A3268	HM68	MS68	68
H3272	340	460	299	75	A3272	HM72	MS68	72
H3276	360	490	310	77	A3276	HM76	MS76	76
H3280	380	520	328	82	A3280	HM80	MS80	80
H3284	400	540	352	90	A3284	HM84	MS80	84
H3288	410	560	361	90	A3288	HM88	MS88	88
H3292	430	580	382	95	A3292	HM92	MS88	92
H3296	450	620	397	95	A3296	HM96	MS96	96
H32/500	470	630	428	100	A32/500	HM/500	MS/500	/500
H32/530	500	670	447	105	A32/530	HM/530	MS/530	/530
H32/560	530	710	462	110	A32/560	HM/560	MS/560	/560
H32/600	560	750	487	110	A32/600	HM/600	MS/560	/600
H32/630	600	800	521	120	A32/630	HM/630	MS/630	/630
H32/670	630	850	558	131	A32/670	HM/670	MS/670	/670
H32/710	670	900	572	135	A32/710	HM/710	MS/710	/710
H32/750	710	950	603	141	A32/750	HM/750	MS/750	/750
H32/800	750	1000	618	141	A32/800	HM/800	MS/800	/800
H32/850	800	1060	651	147	A32/850	HM/850	MS/850	/850
H32/900	850	1120	660	154	A32/900	HM/900	MS/900	/900
H32/950	900	1170	675	154	A32/950	HM/950	MS/950	/950
H32/1000	950	1240	707	154	A32/1000	HM/1000	MS/1000	/1000

* Lock nut、lock washer and lock clamp as specified in GB/T9160.2



Adapter sleeve with lock nut and lock clamp assembly

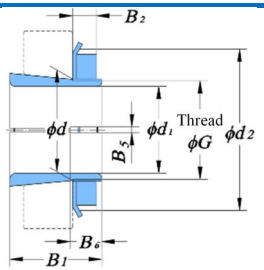


Adapter sleeve with lock nut and lock washer

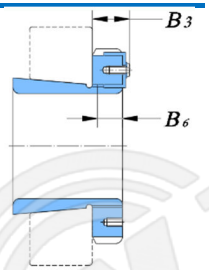
Adapter sleeves with a taper 1:12 - series (0)3

Nominal Designations	Principal dimensions(mm) d_1	d_2	B_1	$B_2\approx$	Components designations Adapter sleeves	Lock nut*	Lock washer*	Inner diameter code
H302	12	25	22	6	A302X	KM02	MB02	02
H303	14	28	24	6	A303X	KM03	MB03	03
H304	17	32	28	7	A304X	KM04	MB04	04
H305	20	38	29	8	A305X	KM05	MB05	05
H306	25	45	31	8	A306X	KM06	MB06	06
H307	30	52	35	9	A307X	KM07	MB07	07
H308	35	58	36	10	A308X	KM08	MB08	08
H309	40	65	39	11	A309X	KM09	MB09	09
H310	45	70	42	12	A310X	KM10	MB10	10
H311	50	75	45	12	A311X	KM11	MB11	11
H312	55	80	47	13	A312X	KM12	MB12	12
H313	60	85	50	14	A313X	KM13	MB13	13
H314	60	92	52	14	A314X	KM14	MB14	14
H315	65	98	55	15	A315X	KM15	MB15	15
H316	70	105	59	17	A316X	KM16	MB16	16
H317	75	110	63	18	A317X	KM17	MB17	17
H318	80	120	65	18	A318X	KM18	MB18	18
H319	85	125	68	19	A319X	KM19	MB19	19
H320	90	130	71	20	A320X	KM20	MB20	20
H321	95	140	74	20	A321X	KM21	MB21	21
H322	100	145	77	21	A322X	KM22	MB22	22

* Lock nut、lock washer and lock clamp as specified in GB/T9160.2



Adapter sleeve with lock nut and lock clamp assembly

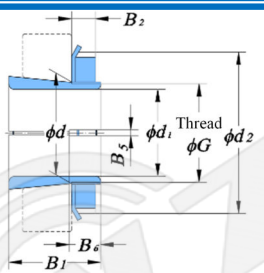


Adapter sleeve with lock nut and lock washer

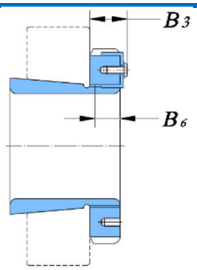
Adapter sleeves with a taper 1:12 - series 23

Nominal Designations	Principal dimensions(mm) d_1	d_2	B_1	$B_2\approx$	B_{3max}	Components designations Adapter sleeves	Lock nut*	Lock washer*	lock clamp*	Inner diameter code
H2302	12	25	25	6	—	A2302X	KM02	MB02	—	02
H2303	14	28	27	6	—	A2303X	KM03	MB03	—	03
H2304	17	32	31	7	—	A2304X	KM04	MB04	—	04
H2305	20	38	35	8	—	A2305X	KM05	MB05	—	05
H2306	25	45	38	8	—	A2306X	KM06	MB06	—	06
H2307	30	52	43	9	—	A2307X	KM07	MB07	—	07
H2308	35	58	46	10	—	A2308X	KM08	MB08	—	08
H2309	40	65	50	11	—	A2309X	KM09	MB09	—	09
H2310	45	70	55	12	—	A2310X	KM10	MB10	—	10
H2311	50	75	59	12	—	A2311X	KM11	MB11	—	11
H2312	55	80	62	13	—	A2312X	KM12	MB12	—	12
H2313	60	85	65	14	—	A2313X	KM13	MB13	—	13
H2314	60	92	68	14	—	A2314X	KM14	MB14	—	14
H2315	65	98	73	15	—	A2315X	KM15	MB15	—	15
H2316	70	105	78	17	—	A2316X	KM16	MB16	—	16
H2317	75	110	82	18	—	A2317X	KM17	MB17	—	17
H2318	80	120	86	18	—	A2318X	KM18	MB18	—	18
H2319	85	125	90	19	—	A2319X	KM19	MB19	—	19
H2320	90	130	97	20	—	A2320X	KM20	MB20	—	20
H2321	95	140	101	20	—	A2321X	KM21	MB21	—	21
H2322	100	140	105	21	—	A2322X	KM22	MB22	—	22
H2324	110	155	112	22	—	A2324X	KM24	MB24	—	24
H2326	115	165	121	23	—	A2326X	KM26	MB26	—	26
H2328	125	180	131	24	—	A2328X	KM28	MB28	—	28
H2330	135	195	139	26	—	A2330X	KM30	MB30	—	30
H2332	140	210	147	28	—	A2332X	KM32	MB32	—	32
H2334	150	220	154	29	—	A2334X	KM34	MB34	—	34
H2336	160	230	161	30	—	A2336X	KM36	MB36	—	36
H2338	170	240	169	31	—	A2338X	KM38	MB38	—	38
H2340	180	250	176	32	—	A2340X	KM40	MB40	—	40
H2344	200	280	186	—	44	A2344	HM44	—	MS44	44
H2348	220	300	199	—	46	A2348	HM48	—	MS44	48
H2352	240	330	211	—	49	A2352	HM52	—	MS52	52
H2356	260	350	224	—	51	A2356	HM56	—	MS52	56

* Lock nut、lock washer and lock clamp as specified in GB/T9160.2



Adapter sleeve with lock nut and lock clamp assembly

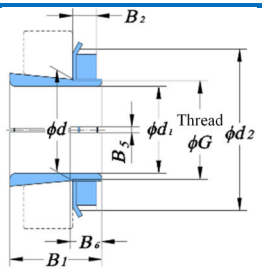


Adapter sleeve with lock nut and lock washer

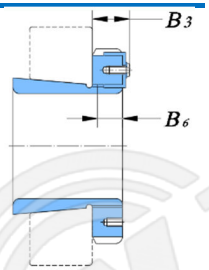
Adapter sleeves with a taper 1:12 - series 39

Nominal Designations	Principal dimensions(mm) d_1	d_2	B_1	$B_2\approx$	B_{3max}	Components designations Adapter sleeves	Lock nut*	Lock washer*	lock clamp*	Inner diameter code
H3924	110	145	60	22	—	A3924X	KML24	MBL24	—	24
H3926	115	155	65	23	—	A3926X	KML26	MBL26	—	26
H3928	125	165	66	24	—	A3928X	KML28	MBL28	—	28
H3930	135	180	76	26	—	A3930X	KML30	MBL30	—	30
H3932	140	190	78	28	—	A3932X	KML32	MBL32	—	32
H3934	150	200	79	29	—	A3934X	KML34	MBL34	—	34
H3936	160	210	87	30	—	A3936X	KML36	MBL36	—	36
H3938	170	220	89	31	—	A3938X	KML38	MBL38	—	38
H3940	180	240	98	32	—	A3940X	KML40	MBL40	—	40
H3944	200	260	96	—	41	A3944	HML44	—	MSL44	44
H3948	220	290	101	—	46	A3948	HML48	—	MSL48	48
H3952	240	310	116	—	46	A3952	HML52	—	MSL48	52
H3956	260	330	121	—	50	A3956	HML56	—	MSL56	56
H3960	280	360	140	—	54	A3960	HML60	—	MSL60	60
H3964	300	380	140	—	55	A3964	HML64	—	MSL64	64
H3968	320	400	144	—	58	A3968	HML68	—	MSL64	68
H3972	340	420	144	—	58	A3972	HML72	—	MSL72	72
H3976	360	450	164	—	62	A3976	HML76	—	MSL76	76
H3980	380	470	168	—	66	A3980	HML80	—	MSL76	80
H3984	400	490	168	—	66	A3984	HML84	—	MSL84	84
H3988	410	520	189	—	77	A3988	HML88	—	MSL88	88
H3992	430	540	189	—	77	A3992	HML92	—	MSL88	92
H3996	450	560	200	—	77	A3996	HML96	—	MSL96	96
H39/500	470	580	208	—	85	A39/500	HML/500	—	MSL96	/500
H39/530	500	630	216	—	90	A39/530	HML/530	—	MSL/53O	/530
H39/560	530	650	227	—	97	A39/560	HML/560	—	MSL/560	/560
H39/600	560	700	239	—	97	A39/600	HML/600	—	MSL/560	/600
H39/630	600	730	254	—	97	A39/630	HML/630	—	MSL/630	/630
H39/670	630	780	264	—	102	A39/670	HML/670	—	MSL/670	/670
H39/710	670	830	286	—	112	A39/710	HML/710	—	MSL/710	/7l0
H39/750	710	870	291	—	112	A39/750	HML/750	—	MSL/750	/750
H39/800	750	920	303	—	112	A39/800	HML/800	—	MSL/750	/800
H39/850	800	980	308	—	115	A39/850	HML/850	—	MSL/850	/850
H39/900	850	1030	326	—	125	A39/900	HML/900	—	MSL/850	/900
H39/950	900	1080	344	—	125	A39/950	HML/950	—	MSL/950	/950
H39/1000	950	1140	358	—	125	A39/1000	HML/1000	—	MSL/1000	/1000
H39/1060	1000	1200	372	—	125	A39/1060	HML/1060	—	MSL/1000	/1060

* Lock nut、lock washer and lock clamp as specified in GB/T9160.2



Adapter sleeve with lock nut and lock clamp assembly



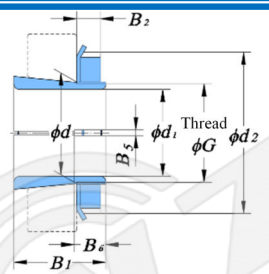
Adapter sleeve with lock nut and lock washer

Adapter sleeves with a taper 1:30 - series 40

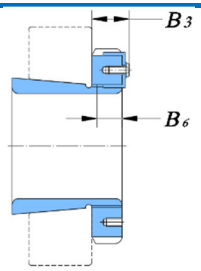
Nominal Designations	Principal dimensions(mm) d_1	d_2	B_1	$B_2\approx$	B_{3max}	Components designations Adapter sleeves	Lock nut*	Lock washer*	lock clamp*	Inner diameter code
H24020	90	130	80	20	—	A24020	KM20	MB20	—	20
H24022	100	145	90	21	—	A24022	KM22	MB22	—	22
H24024	110	145	91	22	—	A24024	KML24	MBL24	—	24
H24026	115	155	102	23	—	A24026	KML26	MBL26	—	26
H24028	125	165	103	24	—	A24028	KML28	MBL28	—	28
H24030	135	180	112	26	—	A24030	KML30	MBL30	—	30
H24032	140	190	118	28	—	A24032	KML32	MBL32	—	32
H24034	150	200	130	29	—	A24034	KML34	MBL34	—	34
H24036	160	210	140	30	—	A24036	KML36	MBL36	—	36
H24038	170	220	143	31	—	A24038	KML38	MBL38	—	38
H24040	180	240	153	32	—	A24040	KML40	MBL40	—	40
H24044	200	260	162	—	41	A24044	HML44	—	MSL44	44
H24048	220	290	167	—	46	A24048	HML48	—	MSL48	48
H24052	240	310	190	—	46	A24052	HML52	—	MSL48	52
H24056	260	330	195	—	50	A24056	HML56	—	MSL56	56
H24060	280	360	220	—	54	A24060	HML60	—	MSL60	60
H24064	300	380	220	—	55	A24064	HML64	—	MSL64	64
H24068	320	400	244	—	58	A24068	HML68	—	MSL64	68
H24072	340	420	244	—	58	A24072	HML72	—	MSL72	72
H24076	360	450	248	—	62	A24076	HML76	—	MSL76	76
H24080	380	470	272	—	66	A24080	HML80	—	MSL76	80
H24084	400	490	274	—	66	A24084	HML84	—	MSL84	84
H24088	410	520	294	—	77	A24088	HML88	—	MSL88	88
H24092	430	540	300	—	77	A24092	HML92	—	MSL88	92
H24096	450	56	301	—	77	A24096	HML96	—	MSL96	96
H240/500	470	580	309	—	85	A240/500	HML/500	—	MSL96	/500
H240/530	500	630	343	—	90	A240/530	HML/530	—	MSL/530	/530
H240/560	530	650	358	—	97	A240/560	HML/560	—	MSL/560	/560
H240/600	560	700	377	—	97	A240/600	HML/600	—	MSL/560	/600
H240/630	600	730	395	—	97	A240/630	HML/630	—	MSL/630	/630
H240/670	630	780	418	—	102	A240/670	HML/670	—	MSL/670	/670
H240/710	670	830	438	—	112	A240/710	HML/710	—	MSL/710	/710
H240/750	710	870	460	—	112	A240/750	HML/750	—	MSL/750	/750
H240/800	750	920	475	—	112	A240/800	HML/800	—	MSL/750	/800
H240/850	800	980	495	—	115	A240/850	HML/850	—	MSL/850	/850
H240/900	850	1030	520	—	125	A240/900	HML/900	—	MSL/850	/900
H240/950	900	1080	557	—	125	A240/950	HML/950	—	MSL/950	/950
H240/1000	950	1140	562	—	125	A240/1000	HML/1000	—	MSL/1000	/1000
H240/1060	1000	1200	588	—	125	A240/1060	HML/1060	—	MSL/1000	/1060

* Lock nut、lock washer and lock clamp as specified in GB/T9160.2

16.1 Adapter Sleeves with Accessories



Adapter sleeve with lock nut and lock clamp assembly



Adapter sleeve with lock nut and lock washer

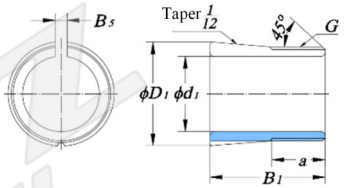
Adapter sleeves with a taper 1:30 - series 41

Nominal Designations	Principal dimensions(mm)					Components designations				Inner diameter code
	d_1	d_2	B_1	$B_2\approx$	B_{3max}	Adapter sleeves	Lock nut*	lock washer*	lock clamp*	
H24120	90	130	94	20	—	A24120	KM20	MB20	—	20
H24122	100	145	99	21	—	A24122	KM22	MB22	—	22
H24124	110	155	111	22	—	A24124	KM24	MB24	—	24
H24126	115	165	113	23	—	A24126	KM26	MB26	—	26
H24128	125	180	119	24	—	A24128	KM28	MB28	—	28
H24130	135	195	137	26	—	A24130	KM30	MB30	—	30
H24132	140	210	148	28	—	A24132	KM32	MB32	—	32
H24134	150	220	149	29	—	A24134	KM34	MB34	—	34
H24136	160	230	159	30	—	A24136	KM36	MB36	—	36
H24138	170	240	172	31	—	A24138	KM38	MB38	—	38
H24140	180	250	185	32	—	A24140	KM40	MB40	—	40
H24144	200	280	199	—	44	A24144	HM44	—	MS44	44
H24148	220	300	212	—	46	A24148	HM48	—	MS44	48
H24152	240	330	235	—	49	A24152	HM52	—	MS52	52
H24156	260	350	238	—	51	A24156	HM56	—	MS52	56
H24160	280	380	258	—	53	A24160	HM60	—	MS60	60
H24164	300	400	278	—	56	A24164	HM64	—	MS64	64
H24168	320	440	317	—	72	A24168	HM68	—	MS68	68
H24172	340	460	321	—	75	A24172	HM72	—	MS68	72
H24176	360	490	323	—	77	A24176	HM76	—	MS76	76
H24180	380	520	332	—	82	A24180	HM80	—	MS80	80
H24184	400	540	372	—	90	A24184	HM84	—	MS80	84
H24188	410	560	372	—	90	A24188	HM88	—	MS88	88
H24192	430	580	398	—	95	A24192	HM92	—	MS88	92
H24196	450	620	408	—	95	A24196	HM96	—	MS96	96
H241/500	470	630	430	—	100	A241/500	HM/500	—	MS/500	/500
H241/530	500	670	440	—	105	A241/530	HM/530	—	MS/530	/530
H241/560	530	710	468	—	110	A241/560	HM/560	—	MS/560	/560
H241/600	560	750	490	—	110	A241/600	HM/600	—	MS/600	/600
H241/630	600	800	525	—	120	A241/630	HM/630	—	MS/630	/630
H241/670	630	850	548	—	131	A241/670	HM/670	—	MS/670	/670
H241/710	670	900	577	—	135	A241/710	HM/710	—	MS/710	/710
H241/750	710	950	622	—	141	A241/750	HM/750	—	MS/750	/750
H241/800	750	1000	627	—	141	A241/800	HM/800	—	MS/800	/800
H241/850	800	1060	658	—	147	A241/850	HM/850	—	MS/850	/850
H241/900	850	1120	685	—	154	A241/900	HM/900	—	MS/900	/900
H241/950	900	1170	715	—	154	A241/950	HM/950	—	MS/950	/950
H241/1000	950	1240	755	—	154	A241/1000	HM/1000	—	MS/1000	/1000
H241/1060	1000	1300	775	—	154	A241/1060	HM/1060	—	MS/1000	/1060

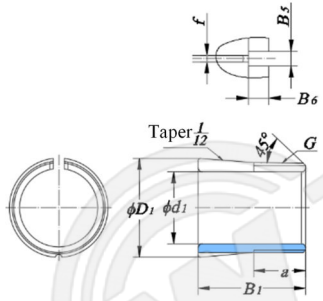
*Lock nut、lock washer and lock clamp as specified in GB/T9160.2

16.2 Adapter Sleeves

ZWZ



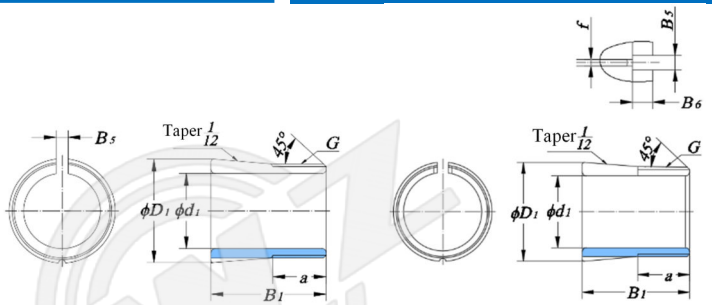
Adapter sleeve with wide notch



Adapter sleeve with narrow notch

Adapter sleeves with a taper 1:12 - series 30

Designations	Principal dimensions(mm)					Reference dimensions(mm)		
	G	d_1	B_1	$B_{5\,min}$	D_1	a	f	B_6
A3024X	M120X2	110	72	15	124.17	32	4	32
A3026X	M130X2	115	80	15	134.75	33	4	33
A3028X	M140X2	125	82	17	144.83	34	4	34
A3030X	M150X2	135	87	17	155.08	36	4	36
A3032X	M160X3	140	93	19	165.42	38	5	38
A3034X	M170X3	150	101	19	176	39	5	39
A3036X	M180X3	160	109	21	186.58	40	5	40
A3038X	M190X3	170	112	21	196.75	41	5	41
A3040X	M200X3	180	120	21	207.33	42	5	42
A3044	Tr220X4	200	126	20	228	45	5	18
A3048	Tr240X4	220	133	20	248.25	49	5	18
A3052	Tr260X4	240	145	20	269.33	49	6	18
A3056	Tr280X4	260	152	24	289.5	53	6	18
A3060	Tr300X4	280	168	24	310.5	57	6	18
A3064	Tr320X5	300	171	24	330.75	57	6	25
A3068	Tr340X5	320	187	24	351.83	65	6	25
A3072	Tr360X5	340	188	28	371.82	65	6	25
A3076	Tr380X5	360	193	28	392.08	68	6	25
A3080	Tr400X5	380	210	28	413.17	72	6	25
A3084	Tr420X5	400	212	32	433.33	72	8	25
A3088	Tr440X5	410	228	32	454	80	8	25
A3092	Tr460X5	430	234	32	475.00	80	8	25
A3096	Tr480X5	450	237	36	494.75	80	8	25
A30/500	Tr500X5	470	247	36	514.92	88	8	25
A30/530	Tr530X6	500	265	40	546.42	93	8	34
A30/560	Tr560X6	530	282	40	577.25	100	8	34
A30/600	Tr600X6	560	289	40	617.83	100	8	34
A30/630	Tr630X6	600	301	45	648.83	100	10	34
A30/670	Tr670X7	630	324	45	690.33	105	10	34
A30/710	Tr710X7	670	342	50	731	115	10	34
A30/750	Tr750X7	710	356	55	772.17	115	10	34
A30/800	Tr800X7	750	366	55	823	115	10	34
A30/850	Tr850X7	800	380	60	874.17	115	10	34
A30/900	Tr900X7	850	400	60	925	125	10	34
A30/950	Tr950X8	900	420	60	976.67	125	10	34
A30/1000	Tr1000X8	950	430	60	1027.5	125	10	34
A30/1060	Tr1060X8	1000	447	60	1088.92	125	10	34



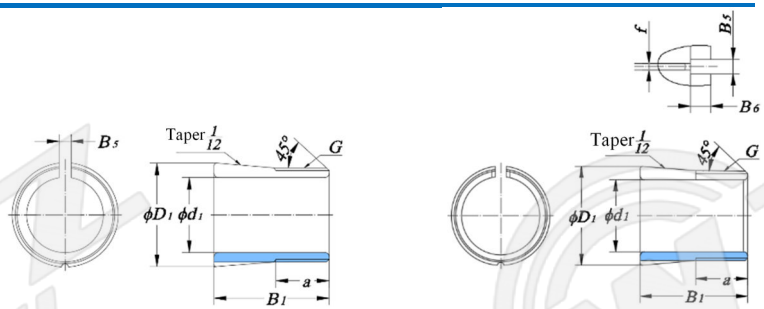
Adapter sleeve with wide notch

Adapter sleeve with narrow notch

Adapter sleeves with a taper 1:12 - series 31

Designations	Principal dimensions(mm)				Reference dimensions(mm)			
	G	d_1	B_1	B_{5min}	D_1	a	f	B_6
A3120X	M100X2	90	76	13	104.67	26	4	26
A3121X	M105X2	95	80	13	110	26	4	26
A3122X	M110X2	100	81	13	115	27	4	27
A3124X	M120X2	110	88	15	125.5	32	4	32
A3126X*	M130X2	115	92	15	135.75	33	4	33
A3128X*	M140X2	125	97	17	146.08	34	4	34
A3130X*	M150X2	135	111	17	157.08	36	4	36
A3132X*	M160X3	140	119	19	167.58	38	5	38
A3134X*	M170X3	150	122	19	177.75	39	5	39
A3136X*	M180X3	160	131	21	188.42	40	5	40
A3138X*	M190X3	170	141	21	199.17	41	5	41
A3140X*	M200X3	180	150	21	209.83	42	5	42
A3144	Tr220X4	200	161	20	230.75	47	5	18
A3148	Tr240X4	220	172	20	251.5	49	5	18
A3152	Tr260X4	240	190	24	272.83	51	6	18
A3156	Tr280X4	260	195	24	293.08	53	6	18
A3160	Tr300X4	280	208	24	314	55	6	18
A3164	Tr320X5	300	226	24	335.33	57	6	25
A3168	Tr340X5	320	254	28	356.58	75	6	25
A3172	Tr360X5	340	259	28	376.75	78	6	25
A3176	Tr380X5	360	264	32	397	80	6	25
A3180	Tr400X5	380	272	32	417.5	82	6	25
A3184	Tr420X5	400	304	32	439.5	90	8	25
A3188	Tr440X5	410	307	36	459.75	90	8	25
A3192	Tr460X5	430	326	36	480.93	95	8	25
A3196	Tr480X5	450	335	36	501.67	95	8	25
A31/500	Tr500X5	470	356	40	523	100	8	25
A31/530	Tr530X6	500	364	40	553.67	105	8	34
A31/560	Tr560X6	530	377	45	584.33	110	8	34
A31/600	Tr600X6	560	399	45	627	110	8	34
A31/630	Tr630X6	600	424	50	657.42	120	8	34
A31/670	Tr670X6	630	456	50	699.17	131	10	34
A31/710	Tr710X7	670	467	55	740.08	131	10	34
A31/750	Tr750X7	710	493	60	781.75	137	10	34
A31/800	Tr800X7	750	505	60	832.75	137	10	34
A31/850	Tr850X7	800	536	70	884.83	143	10	34
A31/900	Tr900X7	850	557	70	936	150	10	34
A31/950	Tr950X8	900	583	70	988.17	150	10	34
A31/1000	Tr1000X8	950	609	70	1040.33	150	10	34
A31/1060	Tr1060X8	1000	622	70	1101.42	150	10	34

*you can also use bent inner claw type lock washer.

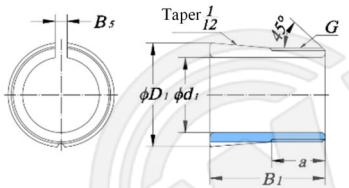


Adapter sleeve with wide notch

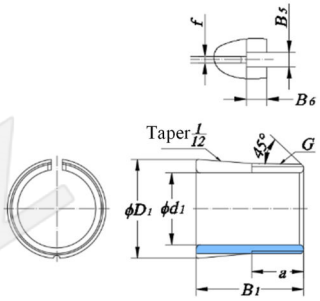
Adapter sleeve with narrow notch

Adapter sleeves with a taper 1:12 - series (0)2

Designations	Principal dimensions(mm)				Reference dimensions(mm)			
	G	d_1	B_1	B_{5min}	D_1	a	f	B_8
A202X	M15X1	12	19	5	16.08	10	2	10
A203X	M17X1	14	20	5	18.17	10	2	10
A204X	M20X1	17	24	5	21.42	11	2	11
A205X	M25X1.5	20	26	6	26.5	12	2	12
A206X	M30X1.5	25	27	6	31.58	12	2	12
A207X	M35X1.5	30	29	7	36.67	13	2	13
A208X	M40X1.5	35	31	7	41.75	14	2	14
A209X	M45X1.5	40	33	7	46.83	15	2	15
A210X	M50X1.5	45	35	7	51.92	16	2	16
A211X	M55X2	50	37	9	57.08	17	3	17
A212X	M60X2	55	38	9	62.08	18	3	18
A213X	M65X2	60	40	9	67.17	19	3	19
A214X	M70X2	60	41	9	72.25	19	3	19
A215X	M75X2	65	43	9	77.33	20	3	20
A216X	M80X2	70	46	11	82.42	22	3	22
A217X	M85X2	75	50	11	87.67	24	3	24
A218X	M90X2	80	52	11	92.83	24	3	24
A219X	M95X2	85	55	11	98	25	4	25
A220X	M100X2	90	58	13	103.17	26	4	26
A221X	M105X2	95	60	13	108.34	26	4	26
A222X	M110X2	100	63	13	113.5	27	4	27



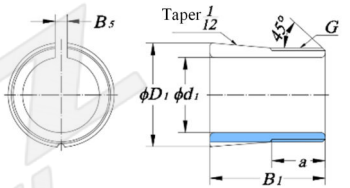
Adapter sleeve with wide notch



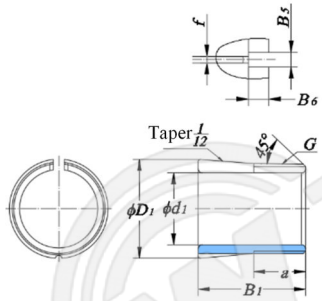
Adapter sleeve with narrow notch

Adapter sleeves with a taper 1:12 - series 32

Designations	Principal dimensions(mm)				Reference dimensions(mm)			
	G	d_1	B_1	$B_{5\,min}$	D_1	a	f	B_6
A3260	Tr300X4	280	240	24	316.67	55	6	18
A3264	Tr320X5	300	258	24	338	57	6	25
A3268	Tr340X5	320	288	28	359.42	75	6	25
A3272	Tr360X5	340	299	28	380.08	78	6	25
A3276	Tr380X5	360	310	32	400.83	80	6	25
A3280	Tr400X5	380	328	32	422.17	82	6	25
A3284	Tr420X5	400	352	32	443.5	90	8	25
A3288	Tr440X5	410	361	36	464.25	90	8	25
A3292	Tr460X5	430	382	36	485.58	95	8	25
A3296	Tr480X5	450	397	36	506.83	95	8	25
A32/500	Tr500X5	470	428	40	529	100	8	25
A32/530	Tr530X6	500	447	40	560.58	105	8	34
A32/560	Tr560X6	530	462	45	591.42	110	8	34
A32/600	Tr600X6	560	487	45	634.33	100	8	34
A32/630	Tr630X6	600	521	50	665.5	120	8	34
A32/670	Tr670X6	630	558	50	707.67	131	10	34
A32/710	Tr710X7	670	572	55	748.83	131	10	34
A32/750	Tr750X7	710	603	60	790.92	137	10	34
A32/800	Tr800X7	750	618	60	842.17	137	10	34
A32/850	Tr850X7	800	651	70	894.42	143	10	34
A32/900	Tr900X7	850	660	70	944.58	150	10	34
A32/950	Tr950X8	900	675	70	995.83	150	10	34
A32/1000	Tr1000X8	950	707	70	1048.5	150	10	34



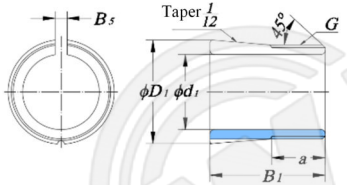
Adapter sleeve with wide notch



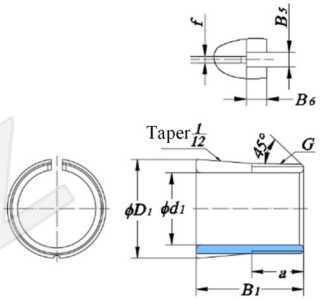
Adapter sleeve with narrow notch

Adapter sleeves with a taper 1:12 - series (0)3

Designations	Principal dimensions(mm)				Reference dimensions(mm)			
	G	d_1	B_1	$B_{5\,min}$	D_1	a	f	B_6
A302X	M15X1	12	22	5	16.33	10	2	10
A303X	M17X1	14	24	5	18.5	10	2	10
A304X	M20X1	17	28	5	21.75	11	2	11
A305X	M25X1.5	20	29	6	26.75	12	2	12
A306X	M30X1.5	25	31	6	31.92	12	2	12
A307X	M35X1.5	30	35	7	37.17	13	2	13
A308X	M40X1.5	35	36	7	42.17	14	2	14
A309X	M45X1.5	40	39	7	47.33	15	2	15
A310X	M50X1.5	45	42	7	52.5	16	2	16
A311X	M55X2	50	45	9	57.75	17	3	17
A312X	M60X2	55	47	9	62.83	18	3	18
A313X	M65X2	60	50	9	68	19	3	19
A314X	M70X2	60	52	9	73.17	19	3	19
A315X	M75X2	65	55	9	78.33	20	3	20
A316X	M80X2	70	59	11	83.5	22	3	22
A317X	M85X2	75	63	11	88.75	24	3	24
A318X	M90X2	80	65	11	93.92	24	3	24
A319X	M95X2	85	68	11	99.08	25	4	25
A320X	M100X2	90	71	13	104.25	26	4	26
A321X	M105X2	95	74	13	109.5	26	4	26
A322X	M110X2	100	77	13	114.67	27	4	27



Adapter sleeve with wide notch

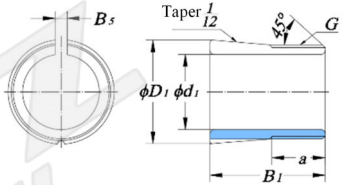


Adapter sleeve with narrow notch

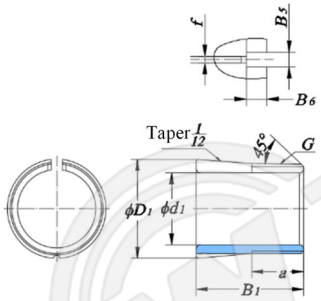
Adapter sleeves with a taper 1:12 - series 23

Designations	Principal dimensions(mm)				Reference dimensions(mm)			
	G	d_1	B_1	$B_{5\,min}$	D_1	a	f	B_6
A2302X	M15X1	12	25	5	16.58	10	2	10
A2303X	M17X1	14	27	5	18.75	10	2	10
A2304X	M20X1	17	31	5	22	11	2	11
A2305X	M25X1.5	20	35	6	27.25	12	2	12
A2306X	M30X1.5	25	38	6	32.5	12	2	12
A2307X	M35X1.5	30	43	7	37.83	13	2	13
A2308X	M40X1.5	35	46	7	43	14	2	14
A2309X	M45X1.5	40	50	7	48.25	15	2	15
A2310X	M50X1.5	45	55	7	53.58	16	2	16
A2311X	M55X2	50	59	9	58.92	17	3	17
A2312X	M60X2	55	62	9	64.08	18	3	18
A2313X	M65X2	60	65	9	69.25	19	3	19
A2314X	M70X2	60	68	9	74.5	19	3	19
A2315X	M75X2	65	73	9	79.83	20	3	20
A2316X	M80X2	70	78	11	85.08	22	3	22
A2317X	M85X2	75	82	11	90.33	24	3	24
A2318X	M90X2	80	86	11	95.67	24	3	24
A2319X	M95X2	85	90	11	100.92	25	4	25
A2320X	M100X2	90	97	13	106.42	26	4	26
A2322X	M110X2	100	105	13	117	27	4	27
A2324X	M120X2	110	112	15	127.5	32	4	32
A2326X*	M130X2	115	121	15	138.17	33	4	33
A2328X*	M140X2	125	131	17	148.92	34	4	34
A2330X*	M150X2	135	139	17	159.42	36	4	36
A2332X*	M160X3	140	147	19	169.92	38	5	38
A2334X*	M170X3	150	154	19	180.42	39	5	39
A2336X*	M180X3	160	161	21	190.92	40	5	40
A2338X*	M190X3	170	169	21	201.5	41	5	41
A2340X*	M200X3	180	176	21	212	42	5	42
A2344	M220X4	200	186	20	232.83	47	5	18
A2348	Tr240X4	220	199	20	253.75	49	5	18
A2352	Tr260X4	240	211	24	274.58	51	6	18
A2356	Tr280X4	260	224	24	295.5	53	6	18

*you can also use bent inner claw type lock washer.



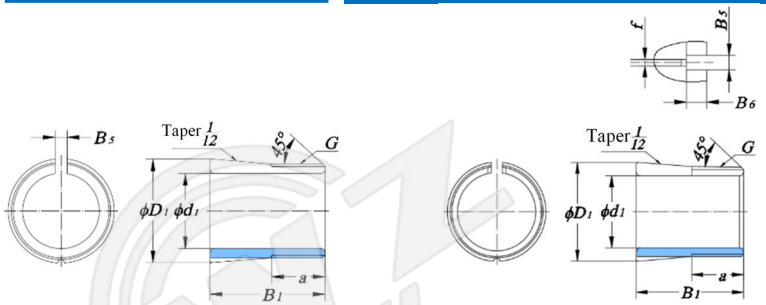
Adapter sleeve with wide notch



Adapter sleeve with narrow notch

Adapter sleeves with a taper 1:12 - series 39

Designations	Principal dimensions(mm)				Reference dimensions(mm)			
	G	d_1	B_1	$B_{5\,min}$	D_1	a	f	B_6
A3924X	M120X2	110	60	15	123.17	29	5	34
A3926X	M130X2	115	65	15	133.5	31	5	36
A3928X	M140X2	125	66	17	143.5	32	5	37
A3930X	M150X2	135	76	17	154.17	34	5	39
A3932X	M160X3	140	78	19	164.17	36	6	42
A3934X	M170X3	150	79	19	174.17	37	6	43
A3936X	M180X3	160	87	21	184.75	38	6	44
A3938X	M190X3	170	89	21	194.83	40	6	46
A3940X	M200X3	180	98	21	205.5	41	6	47
A3944	Tr220X4	200	96	20	225.5	39	5	21
A3948	Tr240X4	220	101	20	245.58	43	8	21
A3952	Tr260X4	240	116	20	266.83	44	8	22
A3956	Tr280X4	260	121	24	286.92	48	8	22
A3960	Tr300X4	280	140	24	308.17	52	8	22
A3964	Tr320X5	300	140	24	328.17	53	8	25
A3968	Tr340X5	320	144	24	348.25	56	8	26
A3972	Tr360X5	340	144	28	368.25	56	10	26
A3976	Tr380X5	360	164	28	389.67	60	10	26
A3980	Tr400X5	380	168	28	409.67	64	10	27
A3984	Tr420X5	400	168	32	429.67	64	10	27
A3988	Tr440X5	410	189	32	450.75	73	10	27
A3992	Tr460X5	430	189	32	470.75	73	10	28
A3996	Tr480X5	450	200	36	491.67	73	10	28
A39/500	Tr500X5	470	208	36	511.67	81	10	28
A39/530	Tr530X6	500	216	40	542.33	—	—	—
A39/560	Tr560X6	530	227	40	572.67	—	—	—
A39/600	Tr600X6	560	239	40	613.67	—	—	—
A39/630	Tr630X6	600	254	45	644.92	—	—	—
A39/670	Tr670X6	630	264	45	685.33	—	—	—
A39/710	Tr710X7	670	286	50	726.33	—	—	—
A39/750	Tr750X7	710	291	55	766.75	—	—	—
A39/800	Tr800X7	750	303	55	817.75	—	—	—
A39/850	Tr850X7	800	308	60	868.17	—	—	—
A39/900	Tr900X7	850	326	60	918.83	—	—	—
A39/950	Tr950X8	900	344	60	970.33	—	—	—
A39/1000	Tr1000X8	950	358	60	1021.5	—	—	—
A39/1060	Tr1060X8	1000	372	60	1082.67	—	—	—

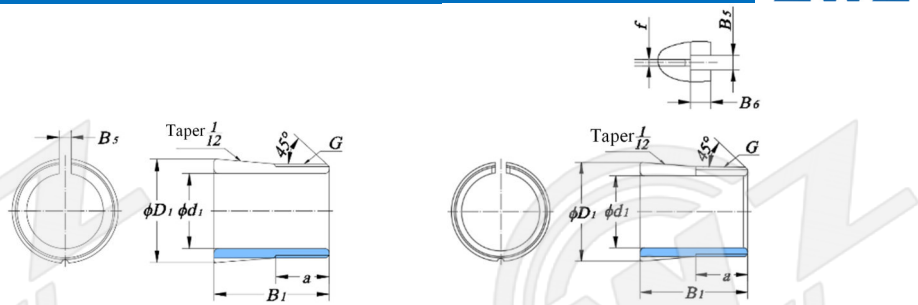


Adapter sleeve with wide notch

Adapter sleeve with narrow notch

Adapter sleeves with a taper 1:30 - series 40

Designations	Principal dimensions(mm)				Reference dimensions(mm)			
	G	d_1	B_1	$B_{5\,min}$	D_1	a	f	B_6
A24020	M100X2	90	80	13	102	26	4	26
A24022	M110X2	100	90	13	112.3	27	4	27
A24024	M120X2	110	91	15	122.3	32	4	32
A24026	M130X2	115	102	15	132.63	33	4	33
A24028	M140X2	125	103	17	142.63	34	4	34
A24030	M150X2	135	112	17	152.87	36	4	36
A24032	M160X3	140	118	19	163	38	5	38
A24034	M170X3	150	130	19	173.37	39	5	39
A24036	M180X3	160	140	21	183.67	40	5	40
A24038	M190X3	170	143	21	193.73	41	5	41
A24040	M200X3	180	153	21	204.03	42	5	42
A24044	Tr220X4	200	162	20	224.33	47	5	18
A24048	Tr240X4	220	167	20	244.43	49	5	18
A24052	Tr260X4	240	190	24	265.13	51	6	18
A24056	Tr280X4	260	195	24	285.23	53	6	18
A24060	Tr300X4	280	220	24	306	55	6	18
A24064	Tr320X5	300	220	24	325.93	57	6	25
A24068	Tr340X5	320	244	24	346.3	75	6	25
A24072	Tr360X5	340	244	28	366.2	78	6	25
A24076	Tr380X5	360	248	28	386.27	80	6	25
A24080	Tr400X5	380	272	28	407	82	6	25
A24084	Tr420X5	400	274	32	426.8	90	8	25
A24088	Tr440X5	410	294	32	447.47	90	8	25
A24092	Tr460X5	430	300	32	467.5	95	8	25
A24096	Tr480X5	450	301	36	487.53	95	8	25
A240/500	Tr500X5	470	309	36	507.63	100	8	25
A240/530	Tr530X6	500	343	40	—	—	—	—
A240/560	Tr560X6	530	358	40	—	—	—	—
A240/600	Tr600X6	560	377	40	—	—	—	—
A240/630	Tr630X6	600	395	45	—	—	—	—
A240/670	Tr670X6	630	418	45	—	—	—	—
A240/710	Tr710X7	670	438	50	—	—	—	—
A240/750	Tr750X7	710	460	55	—	—	—	—
A240/800	Tr800X7	750	475	55	—	—	—	—
A240/850	Tr850X7	800	495	60	—	—	—	—
A240/900	Tr900X7	850	520	60	—	—	—	—
A240/950	Tr950X8	900	557	60	—	—	—	—
A240/1000	Tr1000X8	950	562	60	—	—	—	—
A240/1060	Tr1060X8	1000	588	60	—	—	—	—



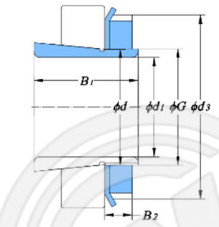
Adapter sleeve with wide notch

Adapter sleeve with narrow notch

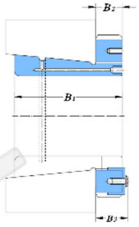
Adapter sleeves with a taper 1:30 - series 41

Designations	Principal dimensions(mm)				Reference dimensions(mm)			
	G	d_1	B_1	$B_{5\,min}$	D_1	a	f	B_6
A24120	M100X2	90	94	13	102.47	26	4	26
A24122	M110X2	100	99	13	112.6	27	4	27
A24124	M120X2	110	111	15	122.97	32	4	32
A24126	M130X2	115	113	15	133.00	33	4	33
A24128	M140X2	125	119	17	143.17	34	4	34
A24130	M150X2	135	137	17	153.17	36	4	36
A24132	M160X3	140	148	19	164	38	5	38
A24134	M170X3	150	149	19	174	39	5	39
A24136	M180X3	160	159	21	184.3	40	5	40
A24138	M190X3	170	172	21	194.7	41	5	41
A24140	M200X3	180	185	21	205.1	42	5	42
A24144	Tr220X4	200	199	20	225.57	47	5	18
A24148	Tr240X4	220	212	20	245.93	49	5	18
A24152	Tr260X4	240	235	24	266.63	51	6	18
A24156	Tr280X4	260	238	24	286.67	53	6	18
A24160	Tr300X4	280	258	24	307.27	55	6	18
A24164	Tr320X5	300	278	24	327.87	57	6	25
A24168	Tr340X5	320	317	28	348.73	75	6	25
A24172	Tr360X5	340	321	28	368.77	78	6	25
A24176	Tr380X5	360	323	32	388.77	80	6	25
A24180	Tr400X5	380	332	32	409	82	6	25
A24184	Tr420X5	400	372	32	430.07	90	8	25
A24188	Tr440X5	410	372	36	450.07	90	8	25
A24192	Tr460X5	430	398	36	470.77	95	8	25
A24196	Tr480X5	450	408	36	491.1	95	8	25
A241/500	Tr500X5	470	430	40	511.67	100	8	25
A241/530	Tr530X6	500	440	40	—	—	—	—
A241/560	Tr560X6	530	468	45	—	—	—	—
A241/600	Tr600X6	560	490	50	—	—	—	—
A241/630	Tr630X6	600	525	50	—	—	—	—
A241/670	Tr670X6	630	548	50	—	—	—	—
A241/710	Tr710X7	670	577	55	—	—	—	—
A241/750	Tr750X7	710	622	60	—	—	—	—
A241/800	Tr800X7	75。	627	60	—	—	—	—
A241/850	Tr850X7	800	658	70	—	—	—	—
A241/900	Tr900X7	850	685	70	—	—	—	—
A241/950	Tr950X8	900	715	70	—	—	—	—
A241/1000	Tr1000X8	950	755	70	—	—	—	—
A241/1060	Tr1060X8	1000	775	70	—	—	—	—

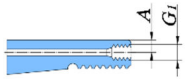
d_1 25～220mm



Adapter sleeve with lock nut and lock clamp assembly

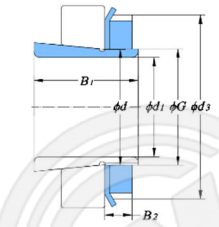


Adapter sleeve with lock nut and lock washer

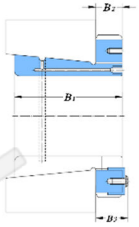


Principal dimensions(mm)									Designations - adapter sleeve with lock nut and Lock device	Lock nut number	Lock device number	Applicable hydraulic nut number	Mass(kg) (approx.)
d_1	d	d_3	B_1	B_2	B_3	G	G_1	A					
25	30	45	31	8	-	M30×2	-	-	**H306**	KM06	MB06	HMV06E	0.105
50	55	75	45	12	-	M55×2	-	-	**H311**	KM11	MB11	HMV11E	0.320
60	65	85	65	14	-	M65×2	-	-	**H2313**	KM13	MB13	HMV13E	0.582
70	80	105	46	17	-	M80×2	-	-	**H216**	KM16	MB16	HMV16E	0.966
	80	105	59	17	-	M80×2	-	-	**H316**	KM16	MB16	HMV16E	1.04
75	85	110	63	18	-	M85×2	-	-	**H317**	KM17	MB17	HMV17E	1.17
	85	110	82	18	-	M85×2	-	-	**H2317**	KM17	MB17	HMV17E	1.35
80	90	120	65	18	-	M90×2	-	-	**H318**	KM18	MB18	HMV18E	1.10
90	100	130	71	20	-	M100×2	-	-	**H320**	KM20	MB20	HMV20E	1.60
	100	130	97	20	-	M100×2	-	-	**H2320**	KM20	MB20	HMV20E	2.76
100	110	145	81	21	-	M110×2	-	-	**H3122**	KM22	MB22	HMV22E	2.33
	110	145	105	21	-	M110×2	-	-	**H2322**	KM22	MB22	HMV22E	2.84
110	120	145	72	22	-	M120×2	-	-	**H3024**	KML24	MBL24	HMV24E	1.95
	120	155	88	22	-	M120×2	-	-	**H3124**	KM24	MB24	HMV24E	2.39
115	130	165	121	23	-	M130×2	-	-	**H2326**	KM26	MB26	HMV26E	4.72
	130	165	92	23	-	M130×2	-	-	**H3126**	KM26	MB26	HMV26E	3.45
125	140	165	82	24	-	M140×2	-	-	**H3028**	KML28	MBL28	HMV28E	3.24
135	150	180	87	26	-	M150×2	-	-	**H3030**	KML30	MBL30	HMV30E	4.00
140	160	190	93	28	-	M160×3	-	-	**H3032**	KML32	MBL32	HMV32E	6.64
	160	210	119	28	-	M160×3	-	-	**H3132**	KM32	MB32	HMV32E	7.47
	160	210	147	28	-	M160×3	-	-	**H2332**	KM32	MB32	HMV32E	9.2
150	170	200	101	29	-	M170×3	-	-	**H3034**	KML34	MBL34	HMV34E	6.31
	170	220	122	29	-	M170×3	-	-	**H3134**	KM34	MB34	HMV34E	8.00
160	180	210	109	30	-	M180×3	-	-	**H3036**	KML36	MBL36	HMV36E	6.73
	180	230	131	30	-	M180×3	-	-	**H3136**	KM36	MB36	HMV36E	9.39
170	190	220	112	31	-	M190×3	-	-	**H3038**	KML38	MBL38	HMV38E	7.62
180	200	240	120	32	-	M200×3	-	-	**H3040**	KML40	MBL40	HMV40E	9.71
	200	250	150	32	-	M200×3	-	-	**H3140**	KM40	MB40	HMV40E	12.0
200	220	260	126	30	41	Tr220×4	M6	4.2	**H3044**	HML44	MSL44	HMV44E	11.2
	220	280	161	35	-	Tr220×4			**H3144**	HM44	MS44	HMV44E	15.3
	220	280	161	35	-	Tr220×4	M6	4.2	**OH3144XH**	HM44	MB44	HMV44E	14.9
	220	280	186	35	-	Tr220×4			**H2344**	HM44	MB44	HMV44E	16.8
220	240	300	199	37	-	Tr220×4	M6	4.2	**H2348**	HM48	MB48	HMV48E	20.5
	240	300	172	37	-	Tr240×4			**H3148**	HM48	MB48	HMV48E	18.4
	240	300	172	37	-	Tr240×4	M6	4.2	**OH3148H**	HM48	MB48	HMV48E	16.0

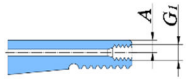
d_1 240～380mm



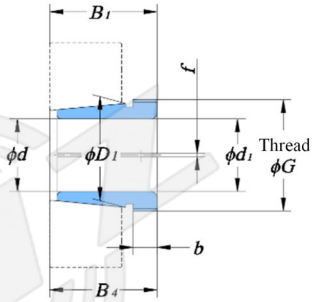
Adapter sleeve with lock nut and lock clamp assembly



Adapter sleeve with lock nut and lock washer



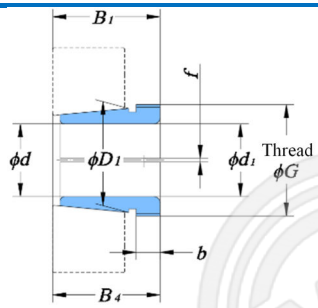
Principal dimensions(mm)									Designations - adapter sleeve with lock nut and Lock device	Lock nut number	Lock device number	Applicable hydraulic nut number	Mass(kg) (approx.)
d_1	d	d_3	B_1	B_2	B_3	G	G_1	A					
240	260	310	116	34	46	Tr260×4	M6	4.2	**OH3952H**	HML52	MSL48	HMV52E	14.8
	260	310	145	34	46	Tr260×4	M6	4.2	**H3052**	HML52	MSL48	HMV52E	16.0
	260	330	190	39	-	Tr260×4			**H3152**	HM52	MB52	HMV52E	22.8
	260	330	190	39	-	Tr260×4	M6	4.2	**OH3152H**	HM52	MB52	HMV52E	23.3
260	280	330	152	38	50	Tr280×4	M6	4.2	**H3056**	HML56	MSL56	HMV56E	18.4
	280	350	195	38	51	Tr280×4	M6	4.2	**H3156**	KM56	MS52	HMV56E	25.2
	280	350	195	41	41	Tr280×4	M6	4.2	**OH3156H**	HM56X2	MB56	HMV56E	25.9
	280	350	224	41	-	Tr280×4	M6	4.2	**H2356**	HM56	MB56	HMV56E	29.6
280	300	360	168	42	54	Tr300×4	M6	4.2	**H3060**	HML60	MSL60	HMV60E	24.0
	300	380	208	40	53	Tr300×4	M6	4.2	**OH3160H**	HM60	MS60	HMV60E	31.4
	300	380	208	40	53	Tr300×4	M6	4.2	**H3160**	HM60	MS60	HMV60E	31.6
300	320	380	140	42	55	Tr320×5	M6	4	**OH3964H**	HML64	MSL64	HMV64E	21.4
	320	400	226	42	56	Tr320×5	M6	4	**OH3164H**	HM64	MS64	HMV64E	32.5
	320	400	226	42	56	Tr320×5	M6	4	**H3164**	HM64	MS64	HMV64E	35.4
	320	400	258	42	56	Tr320×5	M6	4	**H3264**	HM64	MS64	HMV64E	40.8
320	340	440	254	55	72	Tr340×5	M6	4	**OH3168H**	HM68	MS68	HMV68E	52.4
	340	400	187		58	Tr340×5	M6	4	**H3068**	HML68	MSL64	HMV68E	27.0
340	360	420	188	45	58	Tr360×5	M6	4	**H3072**	HML72	MSL72	HMV72E	29.0
	360	420	188	45	58	Tr360×5	M6	4	**OH3072H**	HML72	MSL72	HMV72E	20.6
	360	460	259	58	75	Tr360×5	M6	4	**OH3172H**	HM72	MS68	HMV72E	57.3
360	380	450	193	48	62	Tr380×5	M6	4	**H3076**	HML76	MSL76	HMV76E	43.5
	380	490	264	60	77	Tr380×5	M6	4	**H3176**	HM76	MS76	HMV76E	62.9
380	400	470	210	52	66	Tr400×5	M6	4	**H3080**	HML80	MSL76	HMV80E	43.5
	400	520	272	62	82	Tr400×5	M6	4	**OH3180H**	HM80	MS80	HMV80E	65.0



Withdrawal sleeve with a taper 1:12 - series 30

Designations	Principal dimensions(mm)					Reference dimensions(mm)			Suitable lock nut number*
	d	d_1	*G*	$B_{1\,max}$	B_4	D_1	*b*	*f*	
AH3024	120	115	M130X2	60	64	124	13	4	KML26
AH3026	130	125	M140X2	67	71	134.5	14	4	KML28
AH3028	140	135	M150X2	68	73	144.67	14	4	KML30
AH3030	150	145	M160X3	72	77	154.92	15	4	KML32
AH3032	160	150	M170X3	77	82	165.25	16	5	KML34
AH3034	170	160	M180X3	85	90	175.83	17	5	KML36
AH3036	180	170	M190X3	92	98	186.25	17	5	KML38
AHX3038	190	180	M200X3	96	102	196.5	18	5	KML40
AHX3040	200	190	Tr210X4	102	108	206.92	19	5	KM42
AHX3044	220	200	Tr230X4	111	117	227.58	20	5	KM46
AH3048	240	220	Tr260X4	116	123	248	21	5	HML52
AH3052	260	240	Tr280X4	128	135	268.83	23	6	HML56
AH3056	280	260	Tr300X4	131	139	289.08	24	6	HML60
AH3060	300	280	Tr320X5	H5	153	310.08	26	6	HML64
AHX3064	320	300	Tr340X5	149	157	330.33	27	6	HML68
AHX3068	340	320	Tr360X5	162	171	351.42	28	6	HML72
AHX3072	360	340	Tr380X5	167	176	371.67	30	6	HML76
AHX3076	380	360	Tr400X5	170	180	391.92	31	6	HML80
AHX3080	400	380	Tr420X5	183	193	412.83	33	6	HML81
AHX3084	420	400	Tr440X5	186	196	433	34	8	HML88
AHX3088	440	420	Tr460X5	194	205	453.67	35	8	HML92
AHX3092	460	440	Tr480X5	202	213	474.17	37	8	HML96
AHX3096	480	460	Tr500X5	205	217	494.42	38	8	HML/500
AHX30/500	500	480	Tr530X6	209	221	514.58	40	8	HMI7530
AH30/530	530	500	Tr560X6	230	242	545.58	45	10	HML/560
AH30/560	560	530	Tr600X6	240	252	576.42	45	10	HML/600
AH30/600	600	570	Tr630X6	245	259	617	45	10	HML/630
AH30/630	630	600	Tr670X6	258	272	647.83	48	10	HML/670
AH30/670	670	630	Tr710X7	280	294	689.17	54	10	HML/710
AH30/710	710	670	Tr750X7	286	302	729.83	54	10	HML/750
AH30/750	750	710	Tr800X7	300	316	771	54	12	HML/800
AH30/800	800	750	Tr850X7	308	326	821.83	54	12	HML/850
AH30/850	850	800	Tr900X7	325	343	872.75	60	12	HML/900
AH30/900	900	850	Tr950X8	335	355	923.75	60	12	HML/950
AH30/950	950	900	Tr1000X8	355	375	975.42	60	14	HML/1000
AH30/1000	1000	950	Tr1060X8	365	387	1026.42	60	14	HML/1060
AH30/1060	1060	1000	Tr1120X8	385	407	1088.08	60	14	HML/1120

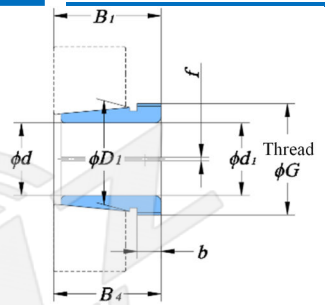
* Lock nut as specified in GB/T 9160.2.



Withdrawal sleeve with a taper 1:12 - series 31

Designations	Principal dimensions(mm)					Reference dimensions(mm)			Suitable lock nut number*
	d	d_1	*G*	$B_{s\,max}$	B_4	D_1	*b*	*f*	
AH3120	100	95	M110X2	64	68	104.5	11	4	KM22
AH3121	105	100	M115X2	68	72	109.83	11	4	KM23
AH3122	110	105	M120X2	68	72	114.83	11	4	KM24
AH3124	120	115	M130X2	75	79	125.33	12	4	KM26
AH3126	130	125	M140X2	78	82	135.58	12	4	KM28
AH3128	140	135	M150X2	83	88	145.92	14	4	KM30
AHX3130	150	145	M160X3	96	101	156.92	15	4	KM32
AHX3132	160	150	M170X3	103	108	167.42	16	5	KM34
AHX3134	170	160	M180X3	104	109	177.5	16	5	KM36
AHX3136	180	170	M190X3	116	122	188.33	19	5	KM38
AHX3138	190	180	M200X3	125	131	198.75	20	5	KM40
AH3140	200	190	Tr220X4	134	140	209.42	21	5	KM44
AH3144	220	200	Tr240X4	145	151	230.17	23	5	KM48
AH3148	240	220	Tr260X4	154	161	250.83	25	5	KM52
AHX3152	260	240	Tr280X4	172	179	272.25	26	6	KM56
AHX3156	280	260	Tr300X4	175	183	292.42	28	6	HM60
AHX3160	300	280	Tr320X5	192	200	313.67	30	6	HM64
AHX3164	320	300	Tr340X5	209	217	335	31	6	HM68
AHX3168	340	320	Tr360X5	225	234	356.25	33	6	HM72
AHX3172	360	340	Tr380X5	229	238	376.42	35	6	HM76
AHX3176	380	360	Tr400X5	232	242	396.67	36	6	HM80
AHX3180	400	380	Tr420X5	240	250	417.17	38	6	HM84
AHX3184	420	400	Tr440X5	266	276	439.17	40	8	HM88
AHX3188	440	420	Tr460X5	270	281	459.42	42	8	HM92
AHX3192	460	440	Tr480X5	285	296	480.58	43	8	HM96
AHX3196	480	460	Tr500X5	295	307	501.33	45	8	HM/500
AHX31/500	500	480	Tr530X6	313	325	522.67	47	8	HM/530
AH31/530	530	500	Tr560X6	325	337	553	51	10	HM/560
AH31/560	560	530	Tr600X6	335	347	584.33	45	10	HM/600
AH31/600	600	570	Tr630X6	355	369	625.17	57	10	HM630
AH31/630	630	600	Tr670X6	375	389	656.25	64	10	HM/670
AH31/670	670	630	Tr710X7	395	409	697.92	64	10	HM/710
AH31/710	710	670	Tr750X7	405	421	738.67	67	10	HM/750
AH31/750	750	710	Tr800X7	425	441	780.33	67	12	HM/800
AH31/800	800	750	Tr850X7	438	456	831.25	71	12	HM/850
AH31/850	850	800	Tr900X7	462	480	882.92	75	12	HM/900
AH31/900	900	850	Tr950X8	475	495	934.17	75	12	HM/950
AH31/950	950	900	Tr1000X8	500	520	986.285	75	14	HM/1000
AH31/1000	1000	950	Tr1060X8	525	547	1038.5	75	14	HM/1060
AH31/1060	1060	1000	Tr1120X8	540	562	1099.75	75	14	HM/1120

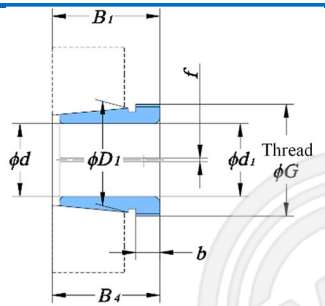
* Lock nut as specified in GB/T 9160.2.



Withdrawal sleeve with a taper 1:12 - series (0)2

Designations	Principal dimensions(mm)					Reference dimensions(mm)			Suitable lock nut number*
	d	d_1	*G*	$B_{s\,max}$	B_4	D_1	*b*	*f*	
AH208	40	35	M45X1.5	25	27	41.5	6	2	KM09
AH209	45	40	M50X1.5	26	29	46.67	6	2	KM10
AH210	50	45	M55X2	28	31	51.15	7	2	KM11
AH211	55	50	M60X2	29	32	56.83	7	3	KM12
AH212	60	55	M65X2	32	35	62	8	3	KM13
AHX213	65	60	M70X2	32.5	36	67.08	8	3	KM14
AHX214	70	65	M75X2	33.5	37	72.17	8	3	KM15
AHX215	75	70	M80X2	34.5	38	77.25	8	3	KM16
AH216	80	75	M90X2	35.5	39	82.33	8	3	KM18
AH217	85	80	M95X2	38.5	42	87.5	9	3	KM19
AH218	90	85	M100X2	40	44	92.67	9	3	KM20
AH219	95	90	M105X2	43	47	97.83	10	4	KM21
AH220	100	95	M110X2	45	49	103	10	4	KM22
AH221	105	100	M115X2	47	51	108.08	11	4	KM23
AH222	110	105	M120X2	50	54	113.33	11	4	KM24
AH224	120	115	M130X2	53	57	123.5	12	4	KM26
AH226	130	125	M140X2	53	57	133.5	12	4	KM28
AH228	140	135	M150X2	56	61	143.75	13	4	KM30
AH230	150	145	M160X3	60	65	154	14	4	KM32
AH232	160	150	M170X3	64	69	164.25	15	5	KM34
AH234	170	160	M180X3	69	74	174.58	16	5	KM36
AH236	180	170	M190X3	69	74	184.58	16	5	KM38
AHX238	190	180	M200X3	73	78	194.58	17	5	KM40
AHX240	200	190	Tr210X4	77	82	204.83	18	5	KM42
AHX244	220	200	Tr230X4	85	91	225.58	18	5	KM46
AHX248	240	220	Tr260X4	96	102	246.17	22	5	KM52
AHX252	260	240	Tr280X4	105	111	266.83	23	6	KM56
AHX256	280	260	Tr300X4	105	113	287	23	6	HM60

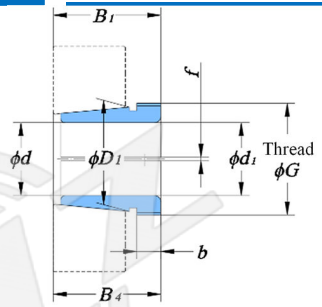
* Lock nut as specified in GB/T 9160.2.



Withdrawal sleeve with a taper 1:12 - series 22

Designations	Principal dimensions(mm)					Reference dimensions(mm)			Suitable lock nut number*
	d	d_1	*G*	$B_{s\,max}$	B_4	D_1	*b*	*f*	
AHX2236	180	170	M190X3	105	110	187.50	17	5	KM38
AHX2238	190	180	M200X3	112	117	197.50	18	5	KM40
AH2240	200	190	Tr220X4	118	123	208.17	19	5	KM44
AH2244	220	200	Tr240X4	130	136	229.17	20	5	KM48
AH2248	240	220	Tr260X4	144	150	250.25	21	5	KM52
AHX2252	260	240	Tr280X4	155	161	271	23	6	KM56
AHX2256	280	260	Tr300X4	155	163	291.08	24	6	HM60
AHX2260	300	280	Tr320X5	170	178	312.17	26	6	HM64
AHX2264	320	300	Tr340X5	180	190	333.08	27	6	HM68

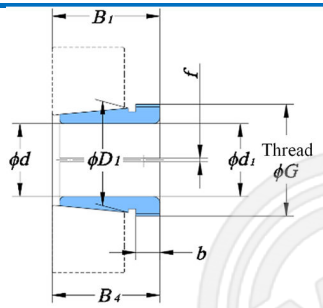
* Lock nut as specified in GB/T 9160.2.



Withdrawal sleeve with a taper 1:12 - series 32

Designations	Principal dimensions(mm)					Reference dimensions(mm)			Suitable lock nut number*
	d	d_1	*G*	$B_{1\,max}$	B_4	D_1	*b*	*f*	
AH3218	90	85	M100X2	63	67	94.5	10	3	KM20
AH3219	95	90	M105X2	67	71	99.75	11	4	KM21
AH3220	100	95	M110X2	73	77	105.25	11	4	KM22
AH3221	105	100	M115X2	78	82	110.67	11	4	KM23
AHX3222	110	105	M120X2	82	86	116	11	4	KM24
AHX3224	120	115	M130X2	90	94	126.5	13	4	KM26
AHX3226	130	125	M140X2	98	102	137	15	4	KM28
AHX3228	140	135	M150X2	104	109	147.58	15	4	KM30
AHX3230	150	145	M160X3	114	119	158.25	17	4	KM32
AHX3232	160	150	M170X3	124	130	168.92	20	5	KM34
AHX3234	170	160	M180X3	134	140	179.42	24	5	KM36
AHX3236	180	170	M190X3	140	146	189.92	24	5	KM38
AHX3238	190	180	M200X3	145	152	200.08	25	5	KM40
AH3240	200	190	Tr220X4	153	160	210.75	25	5	KM44
AHX3260	300	280	Tr320X5	228	236	316.33	34	6	HM64
AHX3264	320	300	Tr340X5	246	254	337.67	36	6	HM68
AHX3268	340	320	Tr360X5	264	273	359.08	38	6	HM72
AHX3272	360	340	Tr380X5	274	283	379.75	40	6	HM76
AHX3276	380	360	Tr400X5	284	294	400.5	42	6	HM80
AHX3280	400	380	Tr420X5	302	312	421.83	44	6	HM84
AHX3284	420	400	Tr440X5	321	331	443.25	46	8	HM88
AHX3288	440	420	Tr460X5	330	341	463.92	48	8	HM92
AHX3292	460	440	Tr480X5	349	360	485.33	50	8	HM96
AHX3296	480	460	Tr500X5	364	376	506.5	52	8	HM/500
AHX32/500	500	480	Tr530X6	393	405	528.75	54	8	HM/530
AH32/530	530	500	Tr560X6	412	424	559.83	56	10	HM/560
AH32/560	560	530	Tr600X6	422	434	591.17	50	10	HM/600
AH32/600	600	570	Tr630X6	445	459	632.08	64	10	HM/630
AH32/630	630	600	Tr670X6	475	489	664.08	70	10	HM/670
AH32/670	670	630	Tr710X7	500	514	706.17	70	10	HM/710
AH32/710	710	670	Tr750X7	515	531	747.25	74	10	HM/750
AH32/750	750	710	Tr800X7	540	556	789.33	74	12	HM/800
AH32/800	800	750	Tr850X7	550	568	839.83	80	12	HM/850
AH32/850	850	800	Tr900X7	585	603	892.42	84	12	HM/900
AH32/900	900	850	Tr950X8	585	605	942.58	84	14	HM/950
AH32/950	950	900	Tr1000X8	600	620	993.83	84	14	HM/1000
AH32/1000	1000	950	Tr1060X8	630	652	1046.5	84	14	HM/1060

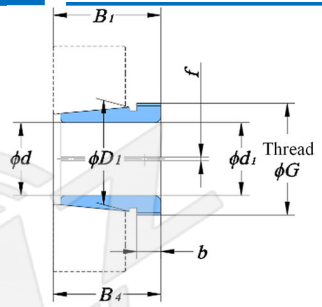
* Lock nut as specified in GB/T 9160.2.



Withdrawal sleeve with a taper 1:12 - series (0)3

Designations	Principal dimensions(mm)					Reference dimensions(mm)			Suitable lock nut number*
	d	d_1	*G*	$B_{1\,max}$	B_4	D_1	*b*	*f*	
AH308	40	35	M45X1.5	29	32	41.92	6	2	KM09
AH309	45	40	M50X1.5	31	34	47.08	6	2	KM10
AH310	50	45	M55X2	35	38	52.33	7	2	KM11
AH311	55	50	M60X2	37	40	57.38	7	3	KM12
AH312	60	55	M65X2	40	43	62.38	8	3	KM13
AHX313	65	60	M70X2	42	45	67.83	8	3	KM14
AHX314	70	65	M75X2	43	47	73	8	3	KM15
AHX315	75	70	M80X2	45	49	78.17	8	3	KM16
AH316	80	75	M90X2	48	52	83.42	8	3	KM18
AH317	85	80	M95X2	52	56	88.67	9	3	KM19
AH318	90	85	M100X2	53	57	93.75	9	3	KM20
AH319	95	90	M105X2	57	61	99	10	4	KM21
AH320	100	95	M110X2	59	63	104.17	10	4	KM22
AH321	105	100	M115X2	62	66	109.25	12	4	KM23
AH322	110	105	M120X2	63	67	114.33	12	4	KM24
AH324	120	115	M130X2	69	73	124.75	13	4	KM26
AH326	130	125	M140X2	74	78	135.08	14	4	KM28
AH328	140	135	M150X2	77	82	145.42	14	4	KM30
AHX330	150	145	M160X3	83	88	155.83	15	4	KM32
AHX332	160	150	M170X3	88	93	166.17	16	5	KM34
AHX334	170	160	M180X3	93	98	176.5	17	5	KM36

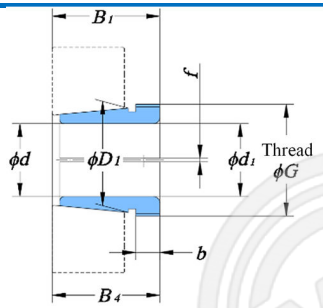
* Lock nut as specified in GB/T 9160.2.



Withdrawal sleeve with a taper 1:12 - series 23

Designations	Principal dimensions(mm)					Reference dimensions(mm)			Suitable lock nut number*
	d	d_1	*G*	$B_{1\,max}$	B_4	D_1	*b*	*f*	
AH2308	40	35	M45X1.5	40	43	43	7	2	KM09
AH2309	45	40	M50X1.5	44	47	48	7	2	KM10
AH2310	50	45	M55X2	50	53	53.17	9	2	KM11
AH2311	55	50	M60X2	54	57	58.42	10	3	KM12
AH2312	60	55	M65X2	58	61	63.63	11	3	KM13
AHX2313	65	60	M70X2	61	64	69.08	12	3	KM14
AHX2314	70	65	M75X2	64	68	74.42	12	3	KM15
AHX2315	75	70	M80X2	68	72	79.75	12	3	KM16
AH2316	80	75	M90X2	71	75	85	12	3	KM18
AH2317	85	80	M95X2	74	78	90.17	13	3	KM19
AH2318	90	85	M100X2	79	83	95.5	14	3	KM20
AH2319	95	90	M105X2	85	89	100.83	16	4	KM21
AH2320	100	95	M110X2	90	94	106.25	16	4	KM22
AH2321	105	100	M120X2	94	98	111.58	16	4	KM24
AHX2322	110	105	M120X2	98	102	116.92	16	4	KM24
AHX2324	120	115	M130X2	105	109	127.42	17	4	KM26
AHX2326	130	125	M140X2	115	119	138.08	19	4	KM28
AHX2328	140	135	M150X2	125	130	148.92	20	4	KM30
AHX2330	150	145	M160X3	135	140	159.42	24	4	KM32
AHX2332	160	150	M170X3	140	146	169.92	24	5	KM34
AHX2334	170	160	M180X3	146	152	180.42	24	5	KM36
AHX2336	180	170	M190X3	154	160	190.92	26	5	KM38
AHX2338	190	180	M200X3	160	167	201.25	26	5	KM40
AH2340	200	190	Tr220X4	170	177	211.75	30	5	KM44
AH2344	220	200	Tr240X4	181	189	232.75	30	5	KM48
AH2348	240	220	Tr260X4	189	197	253.42	30	5	KM52
AHX2352	260	240	Tr280X4	205	213	274.75	30	6	KM56
AHX2356	280	260	Tr300X4	212	220	295.33	30	6	HM60

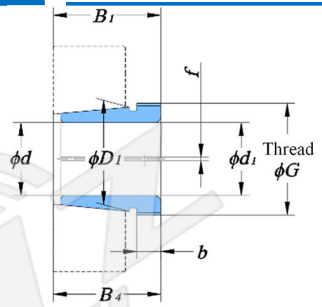
* Lock nut as specified in GB/T 9160.2.



Withdrawal sleeve with a taper 1:12 - series 39

Designations	Principal dimensions(mm)					Reference dimensions(mm)			Suitable lock nut number*
	d	d_1	*G*	$B_{1\,max}$	B_4	D_1	*b*	*f*	
AH3934	170	160	M180X3	59	64	173.67	13	5	KML36
AH3936	180	170	M190X3	66	71	184.25	13	5	KML38
AH3938	190	180	M200X3	66	71	193.92	13	5	KML40
AH3940	200	190	Tr210X4	77	83	204.83	16	5	KM42
AH3944	220	200	Tr230X4	77	83	224.75	16	5	KM46
AH3948	240	220	Tr250X4	77	83	244.67	16	5	KM50
AH3952	260	240	Tr280X4	94	100	265.92	18	6	HML56
AH3956	280	260	Tr300X4	94	100	285.83	18	6	HML60
AH3960	300	280	Tr320X5	112	119	307.25	21	6	HML64
AH3964	320	300	Tr340X5	112	119	327.17	21	6	HML68
AH3968	340	320	Tr360X5	112	119	347.08	21	6	HML72
AH3972	360	340	Tr380X5	112	119	366.92	21	6	HML76
AH3976	380	360	Tr400X5	130	138	388.42	22	6	HML80
AH3980	400	380	Tr420X5	130	138	408.25	22	6	HML84
AH3984	420	400	Tr440X5	130	138	428.17	22	8	HML88
AH3988	440	420	Tr460X5	145	153	449.33	25	8	HML92
AH3992	460	440	Tr480X5	145	153	469.17	25	8	HML96
AH3996	480	460	Tr500X5	158	167	490.25	28	8	HML/500
AH39/500	500	480	Tr530X6	162	172	510.5	32	8	HML/530
AH39/530	530	500	Tr560X6	175	185	540.83	37	10	HML/560
AH39/560	560	530	Tr600X6	180	190	571.25	37	10	HML/600
AH39/600	600	570	Tr630X6	192	202	612.25	38	10	HML/630
AH39/630	630	600	Tr670X6	210	222	643.67	40	10	HML/670
AH39/670	670	630	Tr710X7	216	228	683.67	41	10	HML/710
AH39/710	710	670	Tr750X7	228	240	724.67	43	10	HML/750
AH39/750	750	710	Tr800X7	234	246	765.17	44	12	HML/800
AH39/800	800	750	Tr850X7	245	257	816.08	45	12	HML/850
AH39/850	850	800	Tr900X7	258	270	866.67	50	12	HML/900
AH39/900	900	850	Tr950X8	265	277	917.25	51	12	HML/950
AH39/950	950	900	Tr1000X8	282	297	968.92	51	14	HML/1000
AH39/1000	1000	950	Tr1060X8	296	311	1020.08	52	14	HML/1060
AH39/1060	1060	1000	Tr1120X8	310	325	1081.25	52	14	HML/1120

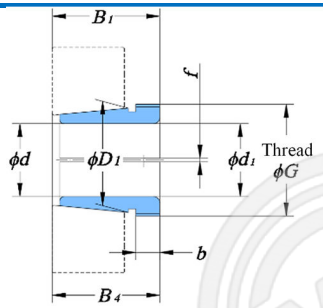
* Lock nut as specified in GB/T 9160.2.



Withdrawal sleeve with a taper 1:30 - series 40

Designations	Principal dimensions(mm)					Reference dimensions(mm)			Suitable lock nut number*
	d	d_1	*G*	$B_{1\,max}$	B_4	D_1	*b*	*f*	
AH24024	120	115	M125X2	73	82	122.20	13	4	KM25
AH24026	130	125	M135X2	83	93	132.53	14	4	KM27
AH24028	140	135	M145X2	83	93	142.53	14	4	KM29
AH24030	150	145	M155X3	90	101	152.47	15	5	KM31
AH24032	160	150	M170X3	95	106	162.93	15	5	KM34
AH24034	170	160	M180X3	106	117	173.23	16	5	KM36
AH24036	180	170	M190X3	116	127	183.57	16	5	KM38
AH24038	190	180	M200X3	118	131	193.57	18	5	KM40
AH24040	200	190	Tr210X4	127	140	203.87	18	5	KM42
AH24044	220	200	Tr230X4	138	152	224.2	20	5	KM46
AH24048	240	220	Tr250X4	138	153	244.23	20	5	KM50
AH24052	260	240	Tr280X4	162	178	265	22	6	KM56
AH24056	280	260	Tr300X4	162	179	285.03	22	6	HM60
AH24060	300	280	Tr320X5	184	202	305.73	24	6	HM64
AH24064	320	300	Tr340X5	184	202	325.73	24	6	HM68
AH24068	340	320	Tr360X5	206	225	346.43	26	6	HM72
AH24072	360	340	Tr380X5	206	226	366.47	26	6	HM76
AH24076	380	360	Tr400X5	208	228	386.47	28	6	HM80
AH24080	400	380	Tr420X5	228	248	407.13	28	6	HM84
AH24084	420	400	Tr440X5	230	252	427.2	30	8	HM88
AH24088	440	420	Tr460X5	242	264	447.6	30	8	HM92
AH24092	460	440	Tr480X5	250	273	467.83	32	8	HM96
AH24096	480	460	Tr500X5	250	273	487.83	32	8	HM/500
AH240/500	500	480	Tr530X6	253	276	507.83	35	8	HM/530
AH240/530	530	500	Tr560X6	285	309	538.93	35	10	HM/560
AH240/560	560	530	Tr600X6	296	320	569.2	38	10	HM/600
AH240/600	600	570	Tr630X6	310	336	609.73	38	10	HM/630
AH240/630	630	600	Tr670X6	330	356	640.4	38	10	HM/670
AH240/670	670	630	Tr710X7	348	374	680.8	40	10	HM/710
AH240/710	710	670	Tr750X7	360	386	721.03	45	10	HM/750
AH240/750	750	710	Tr800X7	380	408	761.77	45	10	HM/800
AH240/800	800	750	Tr850X7	395	423	811.93	50	10	HM/850
AH240/850	850	800	Tr900X7	415	445	862.67	50	10	HM/900
AH240/900	900	850	Tr950X8	430	475	913.5	55	10	HM/950
AH240/950	950	900	Tr1000X8	467	512	964.73	55	10	HM/1000
AH240/1000	1000	950	Tr1060X8	469	519	1014.9	57	10	HM/1060
AH240/1060	1060	1000	Tr1120X8	498	548	1075.77	60	10	HM/1120

* Lock nut as specified in GB/T 9160.2.



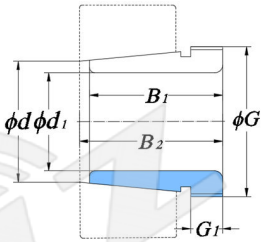
Withdrawal sleeve with a taper 1:30 - series 41

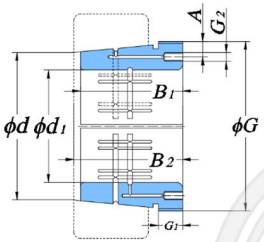
Designations	Principal dimensions(mm)					Reference dimensions(mm)			Suitable lock nut number*
	d	d_1	*G*	$B_{1\,max}$	B_4	D_1	*b*	*f*	
AH24122	110	105	M115X2	82	91	112.50	13	4	KM23
AH24124	120	115	M130X2	93	102	122.87	13	4	KM26
AH24126	130	125	M140X2	94	104	132.9	14	4	KM28
AH24128	140	135	M150X2	99	109	143.07	14	4	KM30
AH24130	150	145	M160X3	115	126	153.6	15	4	KM32
AH24132	160	150	M170X3	124	135	163.9	15	5	KM34
AH24134	170	160	M180X3	125	136	173.9	16	5	KM36
AH24136	180	170	M190X3	134	145	184.2	16	5	KM38
AH24138	190	180	M200X3	146	159	194.6	18	5	KM40
AH24140	200	190	Tr210X4	158	171	204.9	18	5	KM42
AH24144	220	200	Tr230X4	170	184	225.27	20	5	KM46
AH24148	240	220	Tr260X4	180	195	245.63	20	5	KM52
AH24152	260	240	Tr280X4	202	218	266.33	22	6	KM56
AH24156	280	260	Tr300X4	202	219	286.37	22	6	HM60
AH24160	300	280	Tr320X5	224	242	307.07	24	6	HM64
AH24164	320	300	Tr340X5	242	260	327.67	24	6	HM68
AH24168	340	320	Tr360X5	269	288	348.53	26	6	HM72
AH24172	360	340	Tr380X5	269	289	368.57	26	6	HM76
AH24176	380	360	Tr400X5	271	291	388.57	28	6	HM80
AH24180	400	380	Tr420X5	278	298	408.8	28	6	HM84
AH24184	420	400	Tr440X5	310	332	429.87	30	8	HM88
AH24188	440	420	Tr460X5	310	332	449.87	30	8	HM92
AH24192	460	440	Tr480X5	332	355	470.57	32	8	HM96
AH24196	480	460	Tr500X5	340	363	490.83	32	8	HM/500
AH241/500	500	480	Tr530X6	360	383	511.4	35	8	HM/530
AH241/530	530	500	Tr560X6	370	394	541.47	35	10	HM/560
AH241/560	560	530	Tr600X6	393	417	572.07	38	10	HM/600
AH241/600	600	570	Tr630X6	413	439	612.63	38	10	HM/630
AH241/630	630	600	Tr670X6	440	466	643.87	40	10	HM/670
AH241/670	670	630	Tr710X7	452	478	684.27	40	10	HM/710
AH241/710	710	670	Tr750X7	483	509	725.13	45	10	HM/750
AH241/750	750	710	Tr800X7	520	548	766.43	45	10	HM/800
AH241/800	800	750	Tr850X7	525	553	816.27	50	10	HM/850
AH241/850	850	800	Tr900X7	560	600	867.67	55	10	HM/900
AH241/900	900	850	Tr950X8	575	620	918.17	60	10	HM/950
AH241/950	950	900	Tr1000X8	605	650	969.17	60	10	HM/1000
AH241/1000	1000	950	Tr1060X8	645	695	1020.5	65	10	HM/1060
AH241/1060	1060	1000	Tr1120X8	665	715	1081.17	65	10	HM/1120

* Lock nut as specified in GB/T 9160.2.

ZWZ

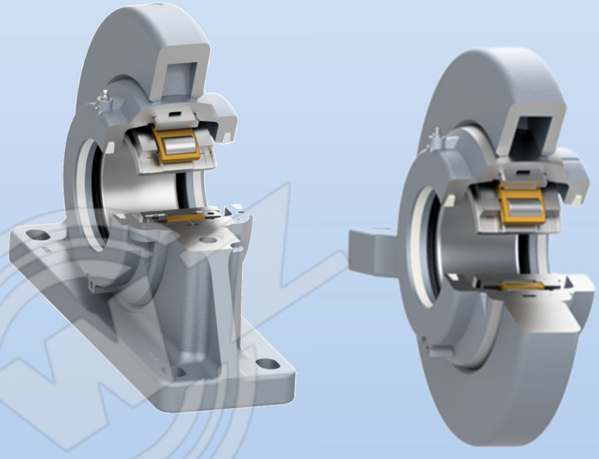
d 95～1010mm



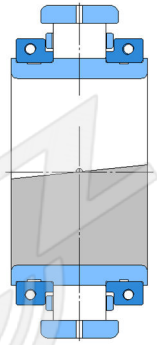


Principal dimensions(mm)								Designations	Suitable nut number for disassembly	Applicable hydraulic nut number	Mass(kg) (approx.)
d_1	d	B_1	B_2	G	G_1	G_2	A				
95	100	64	68	M110×2	11	-	-	**AH3120**	KM22	HMV22E	0.660
105	110	68	72	M120×2	11	-	-	**AH3122**	KM24	HMV24E	0.760
145	150	96	101	M160×3	15	-	-	**AHX3130**	KM32	HMV32E	1.80
	150	72	77	M160×3	15	-	-	**AH3030**	KM32	HMV32E	1.15
170	180	105	110	M200×3	17	-	-	**AH2236**	KM40	HMV40E	3.40
	180	116	122	M190×3	19	-	-	**AHX3136**	KM38	HMV38E	4.25
	180	69	74	M190X3	16	-	-	**AH236**	KM38	HMV38E	2.14
190	200	102	108	Tr210X4	19	-	-	**AH3040**	KM42	HMV42E	4.30
200	220	130	136	Tr240×4	20	-	-	**AH2244**	KM48	HMV48E	9.23
	220	111	117	Tr230X4	20	G1/4	9	**AHX3044**	KM46	HMV46E	7.22
220	240	154	161	Tr260×4	25	-	-	**AH3148**	HM52	HMV52E	12.0
	240	189	197	Tr260×4	30	-	-	**AH2348**	HM52	HMV52E	15.9
	240	180	195	Tr260×4	20	G1/4	9	**AOH24148**	HM52	HMV52E	11.5
240	260	105	111	Tr280X4	23	-	-	**AHX252**	HM56	HMV56E	8.87
260	280	175	183	Tr300X4	28	-	-	**AHX3156**	HM60	HMV60E	17.0
	280	155	163	Tr300X4	24	-	-	**AHX2256**	HM60	HMV60E	14.7
300	320	149	157	Tr340X5	27	-	-	**AHX3064**	HM68	HMV68E	16.2
	320	209	217	Tr340X5	31	-	-	**AHX3164**	HM68	HMV68E	24.5
	320.8	210	-	Tr340×5	32	-	-	**AHX3164-1SY**	HM68	HMV68E	25.0
	320.8	210	-	Tr350×5	32	-	-	**AHX3164-1SY1**	HM70	HMV70E	25.1
320	340	225	234	Tr360×5	33	-	-	**AHX3168**	HM72	HMV72E	28.1
	340	269	288	Tr360×5	26	G1/4	9	**AOH24168**	HM72	HMV72E	25.5
340	360	167	176	Tr380×5	30	G1/4	9	**AOH3072**	HM76	HMV3076E	21.0
	360	269	289	Tr380×5	26	G1/4	9	**AOH24172**	HM76	HMV3076E	29.6
360	380	170	180	Tr410×5	31	G1/4	9.5	**AOH3076**	HM82	HMV82E	22.8
	380	170	180	Tr400×5	31	-	-	**AHX3076**	HM80	HMV80E	22.5
	380.8	232	-	Tr400X5	36	-	-	**AHX3176/YAD**	HM80	HMV80E	35.7
400	420	186	196	Tr440×5	34	-	-	**AHX3084**	HM388	HMV88E	26.9
	420	186	196	Tr440×5	34	-	-	**AHX3084/YA6**	HM388	HMV88E	26.9
	420	266	276	Tr440×5	40	-	-	**AHX3184**	HM388	HMV88E	42.9
440	460	202	213	Tr480×5	37	-	-	**AHX3092H**	HM96	HMV96E	34.0
460	480	295	307	Tr500×5	45	G1/4	9	**AOH3196**	HM/500	HMV100E	60.0
	480	205	217	Tr500×5	38	-	-	**AHX3096**	HM/500	HMV100E	35.0
	480	205	217	Tr500×5	38	-	-	**AHX3096/YA6**	HM/500	HMV100E	35.0
510	530	225	235	Tr560×6	54	-	-	**AHX06/530**	HM/560	HMV112E	47.8
540	560	250	261	Tr600×6	54	-	-	**AH30/560-1**	HM/600	HMV120E	60.6
560	580	181	191	Tr600×6	47	-	-	**AH26/580**	HM/600	HMV120E	38.0
	580	300	308	Tr620×6	60	-	-	**AH26/580-1**	HM/620	HMV122E	86.0
630	670	280	294	Tr710X7	50	-	-	**AH30/670**	HM/710	HMV142E	126
670	710	483	509	Tr750×7	45	G1/4	12	**AOH241/710**	HM/750	HMV150E	208
1010	1060	310	328	Tr1095×8	50	G1/4	15	**AOH239/1060**	HM/1095	HMV219E	261

Split Unit•Bearing Housing



● Split unit•Bearing housing



■ Product characteristics

The split bearing unit is mainly composed of split bearing housing, bearing box and cylindrical roller bearing. The bearing housing and bearing box are composed of the upper part and the lower part, and are connected by screws. The split cylindrical roller bearing is generally composed of two half outer rings, two half inner rings, two half retainers, two half clamping rings, rollers and screws, in which, the two half clamping rings are connected with screws to fix the two half inner rings, the two half cages are connected with screws to form a component together with the roller, and the two half outer rings are usually not connected, limited by the bearing box.

The cylindrical roller bearing inside the split bearing unit can realize high-speed medium-load support, and the spherical design of the bearing housing and bearing box can realize the aligning function of a certain angle to compensate the deflection of the long straight shaft. At the same time, the split structure design is convenient to install, maintain and replace, so it is widely used in metallurgy, coal, electric power, shipbuilding, cement, paper making, chemical industry, sugar making, water treatment, convey, fan, bucket wheel turbine, port machinery, ball mill and other fields.

■ Code preparation method

The code of split bearing unit is composed of type code, series code, assembly & component code, size code, supplementary code, etc., which is formed in the order shown in the table below.

Basic code				
Type code	Serial code	Assembly & component code	Dimension code	Supplementary code

1. Type code

Type code	Explanation
N	Cylindrical roller bearing

2. Series code

According to the carrying capacity of the split bearing unit, it is divided into 100, 200 and 300 series.

Serial code	Explanation
100	Medium load
200	Heavy load
300	Super heavy load

3. Assembly & component code

Type code	Explanation
UT	Split bearing unit
DH	Split bearing box
DP	Split bearing housing
DB	Split type bearing

4. Size code

Size code is expressed with Arabic number ×××× : indicating the inner diameter size of the split bearing unit.

5. Supplementary code

The supplementary code is used to indicate the installation position and manner of the split bearing unit, which is followed by the size code.

Type code	Explanation
FX	Fixed-end, bottom installation
FR	Float-end, bottom installation
FL	Fixed-end, waist installation
FW	Float-end, waist installation

Example: The code N100UT0135FR indicates a split bearing unit installation position at float-end, bottom installation, subject to medium load and an inner diameter of 135 mm.

■ Inner ring joint clearance

When the inner ring is installed on the shaft, there shall be a small clearance in the joint. The clearance can ensure the complete contact between the inner hole of inner ring and the shaft, and the clearance on each side of the inner ring is between 0.2mm and 0.4mm, as shown in the figure below.

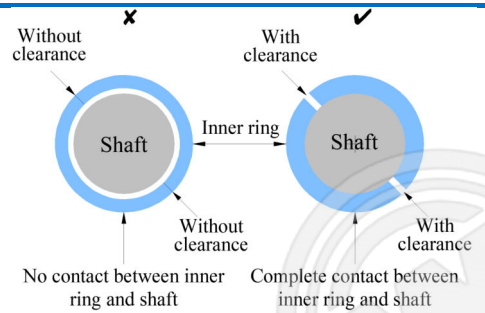


Figure 1 Inner Ring Joint Clearance and Shaft Fitting Legend

■ Basic Information

Accuracy	●**ZWZ** split cylindrical roller bearing have P0, P6 and P5 accuracy, which is consistent with GB 307.1, and tolerance values are detailed in the preface table. ●Bearing housing and bearing box shall be conducted in accordance with casting standards.
Shaft tolerance	●The shaft neck diameter tolerance is generally h7. ● The bearing diameter tolerance is h6 for bearings with speeds exceeding 150,000 $*d_n$ and with C2 clearance. ●For light loads and slower rotating speed, wider tolerances are allowed to the h9. ●If a wider tolerance range is required, or the bearing is required to match on a shaft with a different tolerance than the one specified above, please contact our technical department. ●The shaft neck has a surface roughness and parallelism of IT6 for all situations. ●Shaft tolerances for shaft diameter below 600mm: ●When the shaft diameter tolerance is h7, the maximum roughness of the shaft neck surface shall not exceed 3.2 μm Ra. ●When the shaft diameter tolerance is h6, the maximum roughness of the shaft neck surface shall not exceed 1.6 μm Ra.
Clearance	●**ZWZ** split cylindrical roller bearing have C2, standard (CN), C3 and C5 group radial clearance, which is consistent with GB 4604.1, and clearance values are detailed in the preface table.
Aligning characteristics	●The bearing box of the split bearing unit has a spherical outer surface, which is fitted with the bearing housing, and the principle is similar to that of the joint bearing, which can realize the aligning function. ●Under standard design conditions, the aligning angle of the split bearing unit is ± 2.5°. If you have other requirements, please contact **ZWZ** technicians.
Bearing selection	●When selecting bearing, both radial and axial load capacity shall be considered. ●Only under the normal working load and rotating speed, when the influence of axial force on the bearing surface is small enough, the radial and axial load can be considered separately. ➢**Influencing factors of bearing load** Bearing load is affected by one or more of the following factors: • Shaft, flywheel, pulley, pulley, gear, etc.; • The tension generated by the belt or chain transmission device; • The tangential force, centrifugal force and axial force generated by the gear; • The inertial force generated by acceleration and deceleration; • The centrifugal force caused by rotary or uneven motion.

life calculation

The basic rated dynamic loads listed in the catalogue are based on ISO standards. The basic rated dynamic load is expressed in Cr. The selection of radial load is considered separately from the axial load. Determine radial load, speed, and minimum required service life. Generally, after the shaft diameter has been determined, the bearing selection is required to meet the following conditions:

$$C_r \geq P * f_n * f_L * f_d$$

where: C_r- Basic dynamic load rating
P- Calculated effective equivalent load
f_n- Rotary speed (rpm) coefficient
f_L- Service life (hours) coefficient
f_d- Dynamic or operating coefficient
$f_n = (0.03 * rpm)^{0.3}$
$f_L = (L_{10}/500)^{0.3}$
$f_n * f_L \geq 1$;

Life calculated by formula$L_{10} = (c_r/c_p * f_d)^{10/3}$) L_{10}(hour) service life is 90% of the expected life of similar bearings under similar working conditions, in one million revolutions;

➢ Recommended life and factor for specific operating conditions are shown in the table below:

Operating conditions	life coefficient f_L	L_{10} life (hours)
Working eight hours a day	3.0～4.0	20000～50000
Continuous operation of main power plants (large motors, machinery, flywheels, mining)	4.4～5.0	70000～100000
Continuous operation and high reliability required	5.0～6.0	100000～200000

In addition to bearings selected based on static rated load, the specified bearings recommend by us can provide at least 10,000 hours L_{10} life.

➢ The appropriate dynamic parameters can be selected from the table below

Working conditions	f_d
Stable loads or minimal fluctuations,	1.0～1.3
Mild impact,	1.3～2.0
Severe impact, vibration or reciprocating motion	2.0～3.5

➢ Service life adjustment factor for critical applications

For applications under normal conditions, the equations and tables in the catalog are suitable for their basic L_{10} service life calculations.

For most applications, the bearing L10 life is specified using the above equations. For reliability over 90% (L_{10} service life), L_{10} in the equation above is replaced by L_{na}, where,

$L_{na} = a_1 * L_{10}$,$a_1$refer to the table on the right.

Reliability %	a_1
95	0. 64
96	0. 55
97	0. 47
98	0. 37
99	0. 25

Basic static load rating

If the rotating speed is very low (less than 5 RPM); or it is intermittent, the bearing specifications can be selected according to the static carrying capacity.

Minimum radial load

To ensure that the roller is rolling and not sliding, the radial load must exceed a certain value. The split bearing unit can operate at lower loads than other rolling bearing. For FX bearing, the minimum axial load is about Cr/65, and the minimum axial load of FR bearing is about Cr/120, which can adapt lower loads than the minimum load under specific conditions. Please contact our technical department.

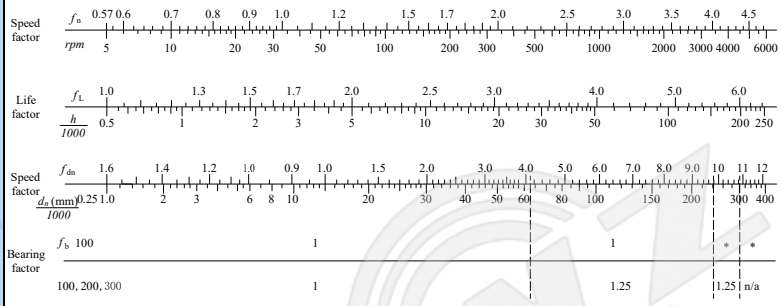
Axial load

The selection of axial load shall be considered separately from the radial load, which depends on the axial load applied to the bearing. If bearing speed and bearing specification are known, bearing selection can be conducted with the following formula:

$$C_a > (P_a * f_{da} * f_{dn})/f_b$$

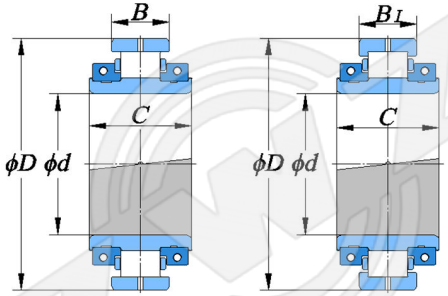
Where: C_a- Rated axial load;
f_{da}- Dynamic or operating coefficient
P_a- Calculated axial load
f_{dn}- Speed coefficient, see the scale table below;
f_b- Bearing coefficient, see the scale table below;

In full load operation, the dynamic or operating factor can be set to 1; under normal operating conditions, it can be set to 1.1 to 1.2 according to the exact load value (depending on whether it operates smoothly). If the calculated large load values is not accurate enough, make sure that the axial load capacity is not exceeded, for 100, 200 and 300 series bearing, when P_a>0.5C_a, a positioning ring is required to install.

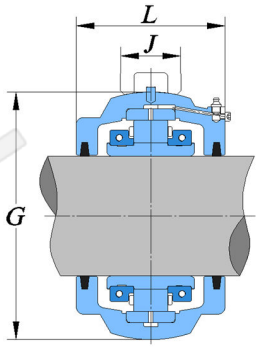


Note: The speed factor is only applicable to the axial load of FX bearings, d_a (mm) =Shaft diameter*Shaft speed n (rpm).

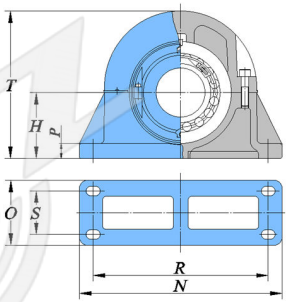
d 135～250mm



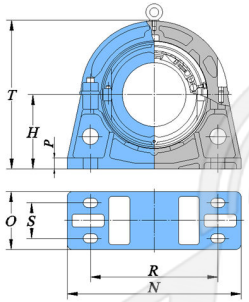
Bearing unit



Bearing housing

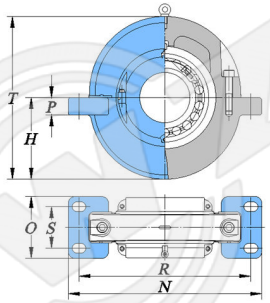


For d≤155mm



For d＞160mm

Bottom installation



Waist installation

Shaft diameter (mm)	Split bearing												Bearing housing
	Designations	load rating (kN)			Limiting speeds (r/min)	Principal dimensions (mm)				Axial displacement (mm)		Mass (Kg)	Designations
d		C_r	C_{or}	C_a		*D*	*C*	*B*	B_1	normal	Max.		
135	N100UT0135	403	559	25.8	1410	241.3	98.4	55.6	55.6	8	16	15.7	N100DH0135
140	N100UT0140	394	542	25.8	1570	241.3	98.4	55.6	55.6	8	16	15	N100DH0140
150	N100UT0150	438	635	29.4	1300	254	98.4	55.6	55.6	8	16	16	N100DH0150
160	N100UT0160	495	730	33	1180	273.05	109	60.3	60.3	8	16	22	N100DH0160
170	N100UT0170	524	801	36.4	1100	285.75	109	55.5	55.5	8	13.5	23	N100DH0170
180	N100UT0180	524	801	36.4	1100	285.75	109	55.5	55.5	8	13.5	23	N100DH0180
190	N100UT0190	555	893	41	960	285.75	109	55.5	55.5	8	13.5	23	N100DH0190
200	N100UT0200	555	893	41	960	311.15	109	60.3	60.3	8	18	25	N100DH0200
220	N100UT0220	600	980	49	830	342.9	115	63.5	63.5	8	19	32	N100DH0220
240	N100UT0240	675	1182	57.8	740	374.65	122	66.7	66.7	9	22	40	N100DH0240
250	N100UT0250	675	1182	57.8	740	374.65	122	66.7	66.7	9	22	40	N100DH0250

Bearing housing				Vertical bearing seat													
Principal dimensions (mm)			Mass (Kg)	Bearing Seat Designations	Principal dimensions (mm)				Bolt size			Other dimensions (mm)				Mass (Kg)
G	*J*	*L*			*H*	R_{min}	R_{max}	*S*	Num.	Metric	Inch	*N*	*O*	*P*	*T*	
280	76	168	20.9	N100DP0135	181	470	494	120	4	M24	7/8"	558	178	41	405	52
280	76	168	20.8	N100DP0140	181	470	494	120	4	M24	7/8"	558	178	41	405	52
295.28	82	174	24.4	N100DP0150	181	484	508	120	4	M24	7/8"	558	178	41	415	54
311.15	76	172	35	N100DP0160	213	356	380	114	4	M24	1"	508	178	32	430	58
323.85	70	172	36	N100DP0170	235	376	400	128	4	M24	1"	534	190	35	470	68
323.85	70	172	36	N100DP0180	235	376	400	128	4	M24	1"	534	190	35	470	68
323.85	70	172	36	N100DP0190	235	376	400	128	4	M24	1"	534	190	35	470	68
358.78	86	172	46	N100DP0200	248	410	434	140	4	M24	1"	572	204	38	495	88
387.35	82	178	50	N100DP0220	270	440	480	140	4	M30	1¼"	636	216	40	540	100
419.1	90	188	63	N100DP0240	292	482	522	140	4	M30	1¼"	686	228	44	585	119
419.1	90	188	63	N100DP0250	292	482	522	140	4	M30	1¼"	686	228	44	585	114

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Appendix table 1 Normal fitting tolerance between radial bearings and shafts (except tapered roller bearings)

Nominal dimensions mm		Deviation of bore diameter Δ_{dmp}/μm		Shaft tolerance zone												
				g6		g5		h6		h5		j5		j6		js6
				Limit deviation of shafts diameter /μm												
>	≤	U	L	U	L	U	L	U	L	U	L	U	L	U	L	U
3	6	0	-8	-4	-12	-4	-9	0	-8	0	-5	+3	-2	+6	-2	+4
6	10	0	-8	-5	-14	-5	-11	0	-9	0	-6	+4	-2	+7	-2	+4.5
10	18	0	-8	-6	-17	-6	-14	0	-11	0	-8	+5	-3	-8	-3	+5.5
18	30	0	-10	-7	-20	-7	-16	0	-13	0	-9	+5	-4	+9	-4	+6.5
30	50	0	-12	-9	-25	-9	-20	0	-16	0	-11	+6	-5	+11	-5	+8
50	80	0	-15	-10	-29	-10	-23	0	-19	0	-13	+6	-7	+12	-7	+9.5
80	120	0	-20	-12	-34	-12	-27	0	-22	0	-15	+6	-9	+13	-9	+11
120	140	0	-25	-14	-39	-14	-32	0	-25	0	-18	+7	-11	+14	-11	+12.5
140	160															
160	180															
180	200	0	-30	-15	-44	-15	-35	0	-29	0	-20	+7	-13	+16	-13	+14.5
200	225															
225	250															
250	280	0	-35	-17	-49	-17	-40	0	-32	0	-23	+7	-16	—	—	+16
280	315															
315	355	0	-40	-18	-54	-18	-43	0	-36	0	-25	+7	-18	—	—	+18
355	400															
400	450	0	-45	-20	-60	-20	-47	0	-40	0	-27	+7	-20	—	—	+20
450	500															

Nominal dimensions mm		Maximum clearance fit (CF) or Maximum interference fit (IF) μm													
>	≤	CF	IF	CF	IF	CF	IF	CF	IF	CF	IF	CF	IF	CF	
3	6	12	4	9	4	8	8	5	8	2	11	2	14	4	
6	10	14	3	11	3	9	8	6	8	2	12	2	15	4.5	
10	18	17	2	14	2	11	8	8	8	3	13	3	16	5.5	
18	30	20	3	16	3	13	10	9	10	4	15	4	19	6.5	
30	50	25	3	20	3	16	12	11	12	5	18	5	23	8	
50	80	29	5	23	5	19	15	13	15	7	21	7	27	9.5	
80	120	34	8	27	8	22	20	15	20	9	26	9	33	11	
120	140	39	11	32	11	25	25	18	25	11	32	11	39	12.5	
140	160														
160	180														
180	200	44	15	35	15	29	30	20	30	13	37	13	46	14.5	
200	225														
225	250														
250	280	49	18	40	18	32	35	23	35	16	42	—	—	16	
280	315														
315	355	54	22	43	22	36	40	25	40	18	47	—	—	18	
355	400														
400	450	60	25	47	25	40	45	27	45	20	52	—	—	20	
450	500														

		k5		k6		m5		m6		n6		p6		r6		r7	
		Limit deviation of shafts diameter /μm															
	L	U	L	U	L	U	L	U	L	U	L	U	L	U	L	U	L
	-4	+6	+1	+9	+1	+9	+4	+12	+4	+16	+8	+20	+12	—	—	—	—
	-4.5	+7	+1	+10	+1	+12	+6	+15	+6	+19	+10	+24	+15	—	—	—	—
	-5.5	+9	+1	+12	+1	+15	+7	+18	+7	+23	+12	+29	+18	—	—	—	—
	-6.5	+11	+2	+15	+2	+17	+8	+21	+8	+28	+15	+35	+22	—	—	—	—
	-8	+13	+2	+18	+2	+20	+9	+25	+9	+33	+17	+42	+26	—	—	—	—
	-9.5	+15	+2	+21	+2	+24	+11	+30	+11	+39	+20	+51	+32	—	—	—	—
	-11	+18	+3	+25	+3	+28	+13	+35	+13	+45	+23	+59	+37	—	—	—	—
	-12.5	+21	+3	+28	+3	+33	+15	+40	+15	+52	+27	+68	+43	+88 +90 +93	+63 +65 +68	—	—
	-14.5	+24	+4	+33	+4	+37	+17	+46	+17	+60	+31	+79	+50	+106 +109 +113	+77 +80 +84	+123 +126 +130	+77 +80 +84
	-16	+27	+4	+36	+4	+43	+20	+52	+20	+66	+34	+88	+58	+126 +130	+94 +98	+146 +150	+94 +98
	-18	+29	+4	+40	+4	+46	+21	+57	+21	+73	+37	+98	+62	+144 +150	+108 +114	+165 +171	+108 +114
	-20	+32	+5	+45	+5	+50	+23	+63	+23	+80	+40	+108	+68	+166 +172	+126 +132	+189 +195	+126 +132

	Interference fit μm																
	IF	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
	12	1	14	1	17	4	17	4	20	8	24	12	28	—	—	—	—
	12.5	1	15	1	18	6	20	6	23	10	27	15	32	—	—	—	—
	13.5	1	17	1	20	7	23	7	26	12	31	18	37	—	—	—	—
	16.5	2	21	2	25	8	27	8	31	15	38	22	45	—	—	—	—
	20	2	25	2	30	9	32	9	37	17	45	26	54	—	—	—	—
	24.5	2	30	2	36	11	39	11	45	20	54	32	68	—	—	—	—
	31	3	38	3	45	13	48	13	55	23	65	37	79	—	—	—	—
	37.5	3	46	3	53	15	58	15	65	27	77	43	93	63 65 68	113 115 118	—	—
	44.5	4	54	4	53	17	67	17	76	31	90	50	109	77 80 84	136 139 143	77 80 84	153 156 160
	51	4	62	4	71	20	78	20	87	34	101	58	123	94 98	161 165	94 98	181 185
	58	4	69	4	80	21	86	21	97	37	113	62	138	108 114	184 190	108 114	205 211
	65	5	77	5	90	23	95	23	108	40	125	68	153	126 132	211 217	126 132	234 240

Appendix table 2 Normal fitting tolerance between radial bearings and housing bores (except tapered roller bearings)

Nominal dimensions mm		Deviation of outer diameter Δ_{Dmp}/μm		Bore tolerance zone													
		G7		H8		H7		H6		J7		J6		JS7			
		Limit deviation of dimensions for bearing housing bores μm															
>	≤	U	L	U	L	U	L	U	L	U	L	U	L	U	L	U	L
10	18	0	-8	+24	+6	+27	0	+18	0	+11	0	+10	-8	+6	-5	+9	-9
18	30	0	-9	+28	+7	+33	0	+21	0	+13	0	+12	-9	+8	-5	+10	-10
30	50	0	-11	+34	+9	+39	0	+25	0	+16	0	+14	-11	+10	-6	+12	-12
50	80	0	-13	+40	+10	+46	0	+30	0	+19	0	+18	-12	+13	-6	+15	-15
80	120	0	-15	+47	+12	+54	0	+35	0	+22	0	+22	-13	+16	-6	+17	-17
120	150	0	-18	+54	+14	+63	0	+40	0	+25	0	+26	-14	+18	-7	+20	-20
150	180	0	-25	+54	+14	+63	0	+40	0	+25	0	+26	-14	+18	-7	+20	-20
180	250	0	-30	+61	+15	+72	0	+46	0	+29	0	+30	-16	+22	-7	+23.	-23
250	315	0	-35	+69	+17	+81	0	+52	0	+32	0	+36	-16	+25	-7	+26	-26
315	400	0	-40	+75	+18	+89	0	+57	0	+36	0	+39	-18	+29	-7	+28	-28
400	500	0	-45	+83	+20	+97	0	+63	0	+40	0	+43	-20	+33	-7	+31	-31
500	630	0	-50	+92	+22	+110	0	+70	0	+44	0	—	—	—	—	+35	-35
630	800	0	-75	+104	+24	+125	0	+80	0	+50	0	—	—	—	—	+40	-40
800	1000	0	-100	+116	+26	+140	0	+90	0	+56	0	—	—	—	—	+45	-45
1000	1250	0	-125	+133	+28	+165	0	+105	0	+66	0	—	—	—	—	+52	-52

Nominal dimensions mm		Clearance fit μm		Maximum clearance fit (CF) or Maximum interference fit (IF) μm													
>	≤	Max	Min	CF	IF	CF	IF	CF	IF	CF	IF	CF	IF	CF	IF	CF	IF
10	18	32	6	35	0	26	0	19	0	18	8	14	5	17	9		
18	30	37	7	42	0	30	0	22	0	21	9	17	5	19	10		
30	50	45	9	50	0	36	0	27	0	25	11	21	6	23	12		
50	80	53	10	59	0	43	0	32	0	31	12	26	6	28	15		
80	120	62	12	69	0	50	0	37	0	37	13	31	6	32	17		
120	150	72	14	81	0	58	0	43	0	44	14	36	7	38	20		
150	180	79	14	88	0	65	0	50	0	51	14	43	7	45	20		
180	250	91	15	102	0	76	0	59	0	60	16	52	7	53	23		
250	315	104	17	116	0	87	0	67	0	71	16	60	7	61	26		
315	400	115	18	129	0	97	0	76	0	79	18	69	7	68	28		
400	500	128	20	142	0	108	0	85	0	88	20	78	7	76	31		
500	630	142	22	160	0	120	0	94	0	—	—	—	—	85	35		
630	800	179	24	200	0	155	0	125	0	—	—	—	—	115	40		
800	1000	216	26	240	0	190	0	156	0	—	—	—	—	145	45		
1000	1250	258	28	290	0	230	0	191	0	—	—	—	—	177	52		

[a] "-" represents interference.
[b] "-" represents clearance.

	JS6		K6		K7		M6		M7		N6		N7		P6		P7	
	U	L	U	L	U	L	U	L	U	L	U	L	U	L	U	L	U	L
	+5.5	-5.5	+2	-9	+6	-12	-4	-15	0	-18	-9	-20	-5	-23	-15	-26	-11	-29
	+6.5	-6.5	+2	-11	+6	-15	-4	-17	0	-21	-11	-24	-7	-28	-18	-31	-14	-35
	+8	-8	+3	-13	+7	-18	-4	-20	0	-25	-12	-28	-8	-33	-21	-37	-17	-42
	+9.5	-9.5	+4	-15	+9	-21	-5	-24	0	-30	-14	-33	-9	-39	-26	-45	-21	-51
	+11	-11	+4	-18	+10	-25	-6	-28	0	-35	-16	-38	-10	-45	-30	-52	-24	-59
	+12.5	-12.5	+4	-21	+12	-28	-8	-33	0	-40	-20	-45	-12	-52	-36	-61	-28	-68
	+12.5	-125	+4	-21	+12	-28	-8	-33	0	-40	-20	-45	-12	-52	-36	-61	-28	-68
	+14.5	-14.5	+5	-24	+13	-33	-8	-37	0	-46	-22	-51	-14	-60	-41	-70	-33	-79
	+16	-16	+5	-27	+16	-36	-9	-41	0	-52	-25	-57	-14	-66	-47	-79	-36	-88
	+18	-18	+7	-29	+17	-40	-10	-46	0	-57	-26	-62	-16	-73	-51	-87	-41	-98
	+20	-20	+8	-32	+18	-45	-10	-50	0	-63	-27	-67	-17	-80	-55	-95	-45	-108
	+22	-22	0	-44	0	-70	-26	-70	-26	-96	-44	-88	-44	-114	-78	-122	-78	-148
	+25	-25	0	-50	0	-80	-30	-80	-30	-110	-50	-100	-50	-130	-88	-138	-88	-168
	+28	-28	0	-56	0	-90	-34	-90	-34	-124	-56	-112	-56	-146	-100	-156	-100	-190
	+33	-33	0	-66	0	-105	-40	-106	-40	-145	-66	-132	-66	-171	-120	-186	-120	-225

															Interference fit μm			
	CF	IF	CF	IF	CF	IF	CF	IF	CF	IF	CF	IF	CF	IF	Min	Max	Min	Max
	13.5	5.5	10	9	14	12	4	15	8	18	-1[a]	20	3	23	7	26	3	29
	15.5	6.5	11	11	15	15	5	17	9	21	-2[a]	24	2	28	9	31	5	35
	19	8	14	13	18	18	7	20	11	25	-1[a]	28	3	33	10	37	6	42
	22.5	9.5	17	15	22	21	8	24	13	30	-1[a]	33	4	39	13	45	8	51
	26	11	19	18	25	25	9	28	15	35	-1[a]	38	5	45	15	52	9	59
	30.5	12.5	22	21	30	28	10	33	18	40	-2[a]	45	6	52	18	61	10	68
	37.5	12.5	29	21	37	28	17	33	25	40	5	45	13	52	11	61	3	68
	44.5	14.5	35	24	43	33	22	37	30	46	8	51	16	60	11	70	3	79
	51	16	40	27	51	36	26	41	35	52	10	57	21	66	12	79	1	88
	58	18	47	29	57	40	30	46	40	57	14	62	24	73	11	87	1	98
	65	20	53	32	63	45	35	50	45	63	18	67	28	80	10	95	0	108
	72	22	50	44	50	70	24	70	24	96	6	88	6	114	28	122	28	148
	100	25	75	50	75	80	45	80	45	110	25	100	25	130	13	138	13	168
	128	28	100	56	100	90	66	90	66	124	44	112	44	146	0	156	0	190
	158	33	125	66	125	105	85	106	85	145	59	132	59	171	-5[b]	186	-5[b]	225

Appendix table 3 Class 6 fitting tolerance between radial bearings and shafts (except tapered roller bearings)

Nominal dimensions /mm		Deviation of bore diameter Δ_{dmp}/μm		Shaft tolerance zone												
				g6		g5		h6		h5		j5		j6		js6
				Limit deviation of the shaft diameter/μm												
>	≤	U	L	U	L	U	L	U	L	U	L	U	L	U	L	U
3	6	0	-7	-4	-12	-4	-9	0	-8	0	-5	+3	-2	+6	-2	+4
6	10	0	-7	-5	-14	-5	-11	0	-9	0	-6	+4	-2	+7	-2	+4.5
10	18	0	-7	-6	-17	-6	-14	0	-11	0	-8	+5	-3	+8	-3	+5.5
18	30	0	-8	-7	-20	-7	-16	0	-13	0	-9	+5	-4	+9	-4	+6.5
30	50	0	-10	-9	-25	-9	-20	0	-16	0	-11	+6	-5	+11	-5	+8
50	80	0	-12	-10	-29	-10	-23	0	-19	0	-13	+6	-7	+12	-7	+9.5
80	120	0	-15	-12	-34	-12	-27	0	-22	0	-15	+6	-9	+13	-9	+11
120 140 160	140 160 180	0	-18	-14	-39	-14	-32	0	-25	0	-18	+7	-11	+14	-11	+12.5
180 200 225	200 225 250	0	-22	-15	-44	-15	-35	0	-29	0	-20	+7	-13	+16	-13	+14.5
250 280	280 315	0	-25	-17	-49	-17	-40	0	-32	0	-23	+7	-16	—	—	+16
315 355	355 400	0	-30	-18	-54	-18	-43	0	-36	0	-25	+7	-18	—	—	+18
400 450	450 500	0	-35	-20	-60	-20	-47	0	-40	0	-27	+7	-20	—	—	+20

Nominal dimensions mm		Maximum Clearance fit (CF) or Maximum Interference fit (IF) μm												
>	≤	CF	IF	CF	IF	CF	IF	CF	IF	CF	IF	CF	IF	CF
3	6	12	3	9	3	8	7	5	7	2	10	2	13	4
6	10	14	2	11	2	9	7	6	7	2	11	2	14	4.5
10	18	17	1	14	1	11	7	8	7	3	12	3	15	5.5
18	30	20	1	16	1	13	8	9	8	4	13	4	17	6.5
30	50	25	1	20	1	16	10	11	10	5	16	5	21	8
50	80	29	2	23	2	19	12	13	12	7	18	7	24	9.5
80	120	34	3	27	3	22	15	15	15	9	21	9	28	11
120 140 160	140 160 180	39	4	32	4	25	18	18	18	11	25	11	32	12.5
180 200 225	200 225 250	44	7	35	7	29	22	20	22	13	29	13	38	14.5
250 280	280 315	49	8	40	8	32	25	23	25	16	32	—	—	16
315 355	355 400	54	12	43	12	36	30	25	30	18	37	—	—	18
400 450	450 500	60	15	47	15	40	35	27	35	20	42	—	—	20

		k5		k6		m5		m6		n6		p6		r6		r7	
		Limit deviation of the shaft diameter/μm															
	L	U	L	U	L	U	L	U	L	U	L	U	L	U	L	U	L
	-4	+6	+1	+9	+1	+9	+4	+12	+4	+16	+8	+20	+12	—	—	—	—
	-4.5	+7	+1	+10	+1	+12	+6	+15	+6	+19	+10	+24	+15	—	—	—	—
	-5.5	+9	+1	+12	+1	+15	+7	+18	+7	+23	+12	+29	+18	—	—	—	—
	-6.5	+11	+2	+15	+2	+17	+8	+21	+8	+28	+15	+35	+22	—	—	—	—
	-8	+13	+2	+18	+2	+20	+9	+25	+9	+33	+17	+42	+26	—	—	—	—
	-9.5	+15	+2	+21	+2	+24	+11	+30	+11	+39	+20	+51	+32	—	—	—	—
	-11	+18	+3	+25	+3	+28	+13	+35	+13	+45	+23	+59	+37	—	—	—	—
	-12.5	+21	+3	+28	+3	+33	+15	+40	+15	+52	+27	+68	+43	+88 +90 +93	+63 +65 +68	—	—
	-14.5	+24	+4	+33	+4	+37	+17	+46	+17	+60	+31	+79	+50	+106 +109 +113	+77 +80 +84	+123 +126 +130	+77 +80 +84
	-16	+27	+4	+36	+4	+43	+20	+52	+20	+68	+34	+88	+56	+126 +130	+94 +98	+146 +150	+94 +98
	-18	+29	+4	+40	+4	+46	+21	+57	+21	+73	+37	+98	+62	+144 +150	+108 +114	+165 +171	+108 +114
	-20	+32	+5	+45	+5	+50	+23	+63	+23	+80	+40	+108	+68	+166 +172	+126 +132	+189 +195	+126 +132

		Interference fit μm															
	IF	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
	11	1	13	1	16	4	16	4	19	8	23	12	27	—	—	—	—
	11.5	1	14	1	17	6	19	6	22	10	26	15	31	—	—	—	—
	12.5	1	16	1	19	7	22	7	25	12	30	18	39	—	—	—	—
	14.5	2	19	2	23	8	25	8	29	15	36	22	43	—	—	—	—
	18	2	23	2	28	9	30	9	35	17	43	26	52	—	—	—	—
	21.5	2	27	2	33	11	36	11	42	20	51	32	63	—	—	—	—
	26	3	33	3	40	13	43	13	50	23	60	37	74	—	—	—	—
	30.5	3	39	3	46	15	51	15	58	27	70	43	86	63 65 68	106 108 111	—	—
	36.5	4	46	4	55	17	59	17	68	31	82	50	101	77 80 84	128 131 135	77 80 84	145 148 152
	41	4	52	4	61	20	68	20	77	34	91	58	113	94 98	151 155	94 98	171 175
	48	4	59	4	70	21	76	21	87	37	103	62	128	108 114	174 180	108 114	195 201
	55	5	67	5	80	23	85	23	98	40	115	68	143	126 132	201 207	126 132	224 230

Appendix table 4 Class 6 fitting tolerance between radial bearings and housing bores (except tapered roller bearings)

Nominal dimensions mm		Deviation of outer diameter Δ_{Dmp}/μm		Bore tolerance zone													
		G7		H8		H7		H6		J7		J6		JS7			
		Limit deviation of dimensions for bearing housing bores μm															
>	≤	U	L	U	L	U	L	U	L	U	L	U	L	U	L	U	L
10	18	0	-7	+24	+6	+27	0	+18	0	+11	0	+10	-8	+6	-5	+9	-9
18	30	0	-8	+28	+7	+33	0	+21	0	+13	0	+12	-9	+8	-5	+10	-10
30	50	0	-9	+34	+9	+39	0	+25	0	+16	0	+14	-11	+10	-6	+12	-12
50	80	0	-11	+40	+10	+46	0	+30	0	+19	0	+18	-12	+13	-6	+15	-15
80	120	0	-13	+47	+12	+54	0	+35	0	+22	0	+22	-13	+16	-6	+17	-17
120	150	0	-15	+54	+14	+63	0	+40	0	+25	0	+26	-14	+18	-7	+20	-20
150	180	0	-18	+54	+14	+63	0	+40	0	+25	0	+26	-14	+18	-7	+20	-20
180	250	0	-20	+61	+15	+72	0	.+46	0	+29	0	+30	-16	+22	-7	+23	-23
250	315	0	-25	+69	+17	+81	0	+52	0	+32	0	+36	-16	+25	-7	+26	-26
315	400	0	-28	+75	+18	+89	0	+57	0	+36	0	+39	-18	+29	-7	+28	-28
400	500	0	-33	+83	+20	+97	0	+63	0	+40	0	+43	-20	+33	-7	+31	-31
500	630	0	-38	+92	+22	+110	0	+70	0	+44	0	—	—	—	—	+35	-35
630	800	0	-45	+104	+24	+125	0	+80	0	+50	0	—	—	—	—	+40	-40
800	1000	0	-60	+116	+26	+140	0	+90	0	+56	0	—	—	—	—	+45	-45

Nominal dimensions mm		Clearance fit μm		Maximum Clearance fit (CF) or Maximum Interference fit (IF) μm													
>	≤	Max	Min	CF	IF	CF	IF	CF	IF	CF	IF	CF	IF	CF	IF	CF	IF
10	18	31	6	34	0	25	0	18	0	17	8	13	5	16	9		
18	30	36	7	41	0	29	0	21	0	20	9	16	5	18	10		
30	50	43	9	48	0	34	0	25	0	23	11	19	6	21	12		
50	80	51	10	57	0	41	0	30	0	29	12	24	6	26	15		
80	120	60	12	67	0	48	0	35	0	35	13	29	6	30	17		
120	150	69	14	78	0	55	0	40	0	41	14	33	7	35	20		
150	180	72	14	81	0	58	0	43	0	44	14	36	7	38	20		
180	250	81	15	92	0	66	0	49	0	50	16	42	7	43	23		
250	315	94	17	106	0	77	0	57	0	61	16	50	7	51	26		
315	400	103	18	117	0	85	0	64	0	67	18	57	7	56	28		
400	500	116	20	130	0	96	0	73	0	76	20	66	7	64	31		
500	630	130	22	148	0	108	0	82	0	—	—	—	—	73	35		
630	800	149	24	170	0	125	0	95	0	—	—	—	—	85	40		
800	1000	176	26	200	0	150	0	116	0	—	—	—	—	105	45		

[a] "-" represents interference.

JS6		K6		K7		M6		M7		N6		N7		P6		P7	
U	L	U	L	U	L	U	L	U	L	U	L	U	L	U	L	U	L
+5.5	-5.5	+2	-9	+6	-12	-4	-15	0	-18	-9	-20	-5	-23	-15	-26	-11	-29
+6.5	-6.5	+2	-11	+6	-15	-4	-17	0	-21	-11	-24	-7	-28	-18	-31	-14	-35
+8	-8	+3	-13	+7	-18	-4	-20	0	-25	-12	-28	-8	-33	-21	-37	-17	-42
+9.5	-9.5	+4	-15	+9	-21	-5	-24	0	-30	-14	-33	-9	-39	-26	-45	-21	-51
+11	-11	+4	-18	+10	-25	-6	-28	0	-35	-16	-38	-10	-45	-30	-52	-24	-59
+12.5	-12.5	+4	-21	+12	-28	-8	-33	0	-40	-20	-45	-12	-52	-36	-61	-28	-68
+12.5	-12.5	+4	-21	+12	-28	-8	-33	0	-40	-20	-45	-12	-52	-36	-61	-28	-68
+14.5	-14.5	+5	-24	+13	-33	-8	-37	0	-46	-22	-51	-14	-60	-41	-70	-33	-79
+16	-16	+5	-27	+16	-36	-9	-41	0	-52	-25	-57	-14	-66	-47	-79	-36	-88
+18	-18	+7	-29	+17	-40	-10	-46	0	-57	-26	-62	-16	-73	-51	-87	-41	-98
+20	-20	+8	-32	+18	-45	-10	-50	0	-63	-27	-67	-17	-80	-55	-95	-45	-108
+22	-22	0	-44	0	-70	-26	-70	-26	-96	-44	-88	-44	-114	-78	-122	-78	-148
+25	-25	0	-50	0	-80	-30	-80	-30	-110	-50	-100	-50	-130	-88	-138	-88	-168
+28	-28	0	-56	0	-90	-34	-90	-34	-124	-56	-112	-56	-146	-100	-156	-100	-190

Interference fit μm			
Min	Max	Min	Max
8	26	4	29
10	31	6	35
12	37	8	42
15	45	10	51
17	52	11	59
21	61	13	68
18	61	10	68
21	70	13	79
22	79	11	88
23	87	13	98
22	95	12	108
40	122	40	148
43	138	43	168
40	156	40	190

Appendix table 5 Normal and class 6X fitting tolerance between tapered roller bearings and shafts

Nominal dimensions mm		Deviation of bore diameter Δ_{dmp}/μm		Shaft tolerance zone													
				f6		g6		g5		h6		h5		j5		j6	
				Limit deviation of the shaft diameter μm													
>	≤	U	L	U	L	U	L	U	L	U	L	U	L	U	L	U	
10	18	0	-12	-16	-27	-6	-17	-6	-14	0	-11	0	-8	+5	-3	+8	
18	30	0	-12	-20	-33	-7	-20	-7	-16	0	-13	0	-9	+5	-4	+9	
30	50	0	-12	-25	-41	-9	-25	-9	-20	0	-16	0	-11	+6	-5	+11	
50	80	0	-15	-30	-49	-10	-29	-10	-23	0	-19	0	-13	+6	-7	+12	
80	120	0	-20	-36	-58	-12	-34	-12	-27	0	-22	0	-15	+6	-9	+13	
120 140 160	140 160 180	0	-25	-43	-68	-14	-39	-14	-32	0	-25	0	-18	+7	-11	+14	
180 200 225	200 225 250	0	-30	-50	-79	-15	-44	-15	-35	0	-29	0	-20	+7	-13	+16	
250 280	280 315	0	-35	-56	-88	-17	-49	-17	-40	0	-32	0	-23	+7	-16	—	
315 355	355 400	0	-40	-62	-98	-18	-54	-18	-43	0	-36	0	-25	+7	-18	—	

Nominal dimensions mm		Clearance fit μm		Maximum Clearance fit (CF) or Maximum Interference fit (IF) μm											
>	≤	Max	Min	CF	IF	CF	IF	CF	IF	CF	IF	CF	IF	CF	
10	18	27	4	17	6	14	6	11	12	8	12	3	18	3	
18	30	33	8	20	5	16	5	13	12	9	12	4	18	4	
30	50	41	13	25	3	20	3	16	12	11	12	5	18	5	
50	80	49	15	29	5	23	5	19	15	13	15	7	21	7	
80	120	58	16	34	8	27	8	22	20	15	20	9	26	9	
120 140 160	140 160 180	68	18	39	11	32	11	25	25	18	25	11	32	11	
180 200 225	200 225 250	79	20	44	15	35	15	29	30	20	30	13	37	13	
250 280	280 315	88	21	49	18	40	18	32	35	23	35	16	42	—	
315 355	355 400	98	22	54	22	43	22	36	40	25	40	18	47	—	

		js6		k5		k6		m5		m6		n6		p6		r6	
	L	U	L	U	L	U	L	U	L	U	L	U	L	U	L	U	L
	-3	+5,5	-5.5	+9	+1	+12	+1	+15	+7	+18	+7	+23	+12	+29	+18	—	—
	-4	+6.5	-6.5	+11	+2	+15	+2	+17	+8	+21	+8	+28	+15	+35	+22	—	—
	-5	+8	-8	+13	+2	+18	+2	+20	+9	+25	+9	+33	+17	+42	+26	—	—
	-7	+9.5	-9.5	+15	+2	+21	+2	+24	+11	+30	+11	+39	+20	+51	+32	—	—
	-9	+11	-11	+18	+3	+25	+3	+28	+13	+35	+13	+45	+23	+59	+37	—	—
	-11	+12.5	-12.5	+21	+3	+28	+3	+33	+15	+40	+15	+52	+27	+68	+43	+88 +90 +93	+63 +65 +68
	-13	+14.5	-14.5	+24	+4	+33	+4	+37	+17	+46	+17	+60	+31	+79	+50	+106 +109 +113	+77 +80 +84
	—	+16	-16	+27	+4	+36	+4	+43	+20	+52	+20	+66	+34	+88	+56	+126 +130	+94 +98
	—	+18	-18	+29	+4	+40	+4	+46	+21	+57	+21	+73	+37	+98	+62	+144 +150	+108 +114

		Interference fit μm															
	CF	IF	CF	IF	CF	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
	20	5.5	17.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	21	6.5	18.5	2	23	2	27	—	—	—	—	—	—	—	—	—	—
	23	8	20	2	25	2	30	9	32	9	37	—	—	—	—	—	—
	27	9.5	24.5	2	30	2	36	11	39	11	45	20	54	—	—	—	—
	33	11	31	3	38	3	45	13	48	13	55	23	65	37	79	—	—
	39	12.5	37.5	3	46	3	53	15	58	15	65	27	77	43	93	63 65 68	113 115 118
	46	14.5	44.5	4	54	4	63	17	67	17	67	31	90	50	109	77 80 84	136 139 143
	—	16	51	4	62	4	71	20	78	20	87	34	101	56	123	94 98	161 165
	—	18	58	4	69	4	80	21	86	21	97	37	113	62	138	108 114	184 190

Appendix table 6 Normal and class 6X fitting tolerance between tapered roller bearings and housing bores

Nominal dimensions mm		Deviation of outer diameter Δ_{Dmp}/μm		Bore tolerance zone													
		G7		H8		H7		H6		J7		J6		JS7			
		Limit deviation of dimensions for bearing housing bores μm															
>	≤	U	L	U	L	U	L	U	L	U	L	U	L	U	L	U	L
30	50	0	-14	+34	+9	+39	0	+25	0	+16	0	+14	-11	+10	-6	+12	-12
50	80	0	-16	+40	+10	+46	0	+30	0	+19	0	+18	-12	+13	-6	+15	-15
80	120	0	-18	+47	+12	+54	0	+35	0	+22	0	+22	-13	+16	-6	+17	-17
120	150	0	-20	+54	+14	+63	0	+40	0	+25	0	+26	-14	+18	-7	+20	-20
150	180	0	-25	+54	+14	+63	0	+40	0	+25	0	+26	-14	+18	-7	+20	-20
180	250	0	-30	+61	+15	+72	0	+46	0	+29	0	+30	-16	+22	-7	+23	-23
250	315	0	-35	+69	+17	+81	0	+52	0	+32	0	+36	-16	+25	-7	+26	-26
315	400	0	-40	+75	+18	+89	0	+57	0	+36	0	+39	-18	+29	-7	+28	-28
400	500	0	-45	+83	+20	+97	0	+63	0	+40	0	+43	-20	+33	-7	+31	-31

Nominal dimensions mm		Clearance fit μm		Maximum Clearance fit (CF) or Maximum Interference fit (IF) μm													
>	≤	Max	Min	CF	IF	CF	IF	CF	IF	CF	IF	CF	IF	CF	IF	CF	IF
30	50	48	9	50	0	39	0	30	0	28	11	24	6	26	12		
50	80	56	10	59	0	46	0	35	0	34	12	29	6	31	15		
80	120	65	12	69	0	53	0	40	0	40	13	34	6	35	17		
120	150	74	14	81	0	60	0	45	0	46	14	38	7	40	20		
150	180	79	14	88	0	65	0	50	0	51	14	43	7	45	20		
180	250	91	15	102	0	76	0	59	0	60	16	52	7	53	23		
250	315	104	17	116	0	87	0	67	0	71	16	60	7	61	26		
315	400	115	18	129	0	97	0	76	0	79	18	69	7	68	28		
400	500	128	20	142	0	108	0	85	0	88	20	78	7	76	31		

JS6		K6		K7		M6		M7		N6		N7		P6		P7	
U	L	U	L	U	L	U	L	U	L	U	L	U	L	U	L	U	L
+8.5	-8.5	+3	-13	+7	-18	-4	-20	0	-25	-12	-28	-8	-33	-21	-37	-17	-42
+9.5	-9.5	+4	-15	+9	-21	-5	-24	0	-30	-14	-33	-9	-39	-26	-45	-21	-51
+11	-11	+4	-18	+10	-25	-6	-28	0	-35	-16	-38	-10	-45	-30	-52	-24	-59
+12.5	-12.5	+4	-21	+12	-28	-8	-33	0	-40	-20	-45	-12	-52	-36	-61	-28	-68
+12.5	-12.5	+4	-21	+12	-28	-8	-33	0	-40	-20	-45	-12	-52	-36	-61	-28	-68
+14.5	-14.5	+5	-24	+13	-33	-8	-37	0	-46	-22	-51	-14	-60	-41	-70	-33	-79
+16	-16	+5	-27	+16	-36	-9	-41	0	-52	-25	-57	-14	-66	-47	-79	-36	-88
+18	-18	+7	-29	+17	-40	-10	-46	0	-57	-26	-62	-16	-73	-51	-87	-41	-98
+20	-20	+8	-32	+18	-45	-10	-50	0	-63	-27	-67	-17	-80	-55	-95	-45	-108

Maximum Clearance fit (CF) or Maximum Interference fit (IF) μm														Interference fit μm			
CF	IF	CF	IF	CF	IF	CF	IF	CF	IF	CF	IF	CF	IF	Min	Max	Min	Max
22	8	17	13	21	18	10	20	14	25	2	28	6	33	7	37	3	42
25.5	9,5	20	15	25	21	11	24	16	30	2	33	7	39	10	45	5	51
29	11	22	18	28	25	12	28	18	35	2	38	8	45	12	52	6	59
32.5	12.5	24	21	32	28	12	33	20	40	0	45	8	52	16	61	8	68
37.5	12.5	29	21	37	28	17	33	25	40	5	45	13	52	11	61	3	68
44.5	14.5	35	24	43	33	22	37	30	46	8	51	16	60	11	70	3	79
51	16	40	27	51	36	26	41	35	52	10	57	21	66	12	79	1	88
58	18	47	29	57	40	30	46	40	57	14	62	24	73	11	87	1	98
65	20	53	32	63	45	35	50	45	63	18	67	28	80	10	95	0	108

Appendix table 7 Greek alphabet and common referential meanings

Upper case	Lower case	Phonetic symbol	English	Common referential meanings
A	*α*	/'ælfə/	alpha	Angle, factor, angular acceleration, ionization, conversion rate
B	*β*	/'beɪtə/	beta	Angle, factor, flux factor
Γ	*γ*	/'gæmə/	gamma	Conductivity coefficient, angle, specific heat capacity ratio
Δ	*δ*	/'deltə/	delta	Variation, enthalpy change, entropy change, chemical shift
E	*ε*	/'epsɪlɒn/	epsilon	Dielectric constant, capacitivity, strain
Z	*ζ*	/'zi:tə/	zeta	factor, azimuth, impedance, relative viscosity
H	*η*	/'i:tə/	eta	Hysteresis factor, mechanical efficiency
Θ	θ	/'θi:tə/	theta	Temperature, angle
I	*ι*	/aɪ'əʊtə/	iota	Tiny, a little
K	*κ*	/'kæpə/	kappa	Dielectric constant, adiabatic index
Λ	*λ*	/'læmdə/	lambda	Wavelength, volume, thermal conductivity
M	*μ*	/mju:/	mu	Permeability, micro, dynamic friction coefficient (factor), fluid kinetic viscosity, monetary unit
N	*ν*	/nju:/	nu	Magnetoresistive factor, fluid kinematic viscosity, light wave frequency, stoichiometric number
Ξ	*ξ*	/ksi/	xi	Random variable, an unknown specific value within a (small) interval
O	*o*	/əu'maikrən/	omicron	Infinitesimal functions of higher order
Π	*π*	/paɪ/	pi	PI, π(n) represents the number of prime numbers not greater than n, continuous multiplication
P	*ρ*	/rəʊ/	rho	Resistivity, polar diameter, density, radius of curvature in cylindrical and polar coordinates
Σ	*σ*	/'sɪgmə/	sigma	Sum, surface density, transconductance, stress, conductivity
T	*τ*	/tɔ:/	tau	Time constant, shear stress, 2π
Y	*υ*	/'ɪpsilon/	upsilon	Displacement
Φ	*φ*	/faɪ/	phi	Magnetic flux, electric flux, angle, lens focal, heat flux, potential, diameter, Euler function, phase, porosity
X	*χ*	/kaɪ/	chi	Chi-square (χ^2) distribution
Ψ	*ψ*	/psaɪ/	psi	Angular speed, dielectric electric flux, ψ function
Ω	*ω*	/'əʊmɪgə/	omega	Ohms, angular speed, angular frequency, AC electric angle, mass fraction in chemistry, unsaturation of organic matter

Appendix table 8 Prefixes SI in system

Multiples	Prefix	Symbols	Multiples	Prefix	Symbols
10^{18}	Exa	E	10^{-1}	Deci	d
10^{15}	Peta	P	10^{-2}	Centi	c
10^{12}	Tera	T	10^{-3}	Milli	m
10^{9}	Giga	G	10^{-6}	Micro	μ
10^{6}	Mega	M	10^{-9}	Nano	n
10^{3}	Kilo	k	10^{-12}	Pico	p
10^{2}	Hecto	h	10^{-15}	Femto	f
10	Deca	da	10^{-18}	Ato	a

Appendix table 9 (1) Conversion factors from SI units

Parameter	SI units	Units other than SI	Conversion factors from SI units	Conversion factors from other units
Angle	rad (Radian)	° ※ ′ ※ ″ ※	1°= π/180 rad 1=π/10 800 rad 1"=π/648 000 rad	1 rad=57.29578°
Length	m (Meter)	Å μ in ft yd mile	1 Å=10^{-10}m=0.1 nm=100 pm 1μ=1μm 1 in=25.4 mm 1 ft=12 in=0.3048 m 1yd=3ft=0.9144 m 1 mile=5280 ft=1609.344 m	1 m=10^{10} Å 1 m=39.37 in 1 m=3.2808 ft 1 m=1.0936 yd 1 km=0.6214 mile
Area	m^2	a ha acre	1 a=100m^2 1 ha=$10^4$$m^2$ 1 acre=4840 yd^2=4046.86m^2	1 km^2=247.1 acre
Volume	m^3	l,L ※ cc gal(US) floz(US) barrel(US)	1 l =1 dm^3=10^{-3} m^3 1 cc=1cm^3=10^{-6} m^3 1 gal(US)=231m^3=3.78541 dm^3 1 floz(US)=29.5735 cm^3 1 barrel(US)= 158.987 dm^3	1 m^3=10^3l 1 m^3=10^6cc 1 m^3=264.17 gal 1 m^3=33814 floz 1m^3=6.2898 barrel
Time	S (Second)	min, h, d ※		
Angular velocity	rad/s			
Velocity	m/s	kn m/h ※	1 kn=1852 m/h	1 km/h=0.53996 kn
Acceleration	m/s^2	G	1 G=9.80665 m/s^2	1 m/s^2=0.10197 G
Frequency	Hz (Hertz)	c/s	1c/s=$1s^{-1}$=1Hz	
Rotational speed	s^{-1}	rpm min^{-1} ※ r/min	1 rpm=1/60s^{-1}	$1s^{-1}$=60 rpm

[Note]※: Units rather than SI are to used continuously. The units of the Conference international des Poids et Mesures (CIPM)

Appendix table 9 (2) Conversion factors from SI units

Parameter	SI units	Units other than SI	Conversion factors from SI units	Conversion factors from other units
Mass	kg (Kilogram)	T ※ lb gr oz ton(UK) ton (US) car	1t=10^3 kg 1 lb=0.453 592 37 kg 1 gr=64.798 91 mg 1 oz=1/16 lb=28.3495g 1 ton(UK)=1016.05 kg 1 ton(US)=907.185 kg 1 car=200 mg	1 kg=2.204 6 lb 1 g=15.432 4 gr 1 kg=35.274 0 oz 1 t=0.984 2 ton (UK) 1 t=1.102 3 ton(US) 1g=5 car
Density	kg/m^3			
Linear density	kg/m			
Momentum	Kg·m/s			
Moment of momentum, Angular momentum	kg·m^2/s			
Moment of Inertia	kg·m^2			
Force	N (Newton)	dyn kgf gf tf lbf	1 dyn=10^{-5}N 1 kgf=9.806 65 N 1 gf=9.806 65×10^{-3}N 1 tf=9.806 65×103 N 1 lbf=4.448 22N	1 N=10^5 dyn 1 N=0.101 97 kgf 1 N=0.224 809 lbf
Torque or moment	N·m (Newton·meter)	gf·cm kgf·cm kgf·m tf·m lbf·ft	1 gf·cm=9.80665×10^{-5}N·m 1kgf·cm=9.80665×10^{-2}N·m 1 kf·m=9.80665 N·m 1 tf·m=9.80665×10^3N·m 1 lbf·ft=1.355 82 N·m	1 N·m=0.101 97 kgf·m 1 N·m=0.737 56 lbf·ft
Stress or pressure	Pa (Pascal) or N/m^2 1Pa=1N/m^2	gf/cm^2· kgf/mm^2 kgf/ m^2 lbf/in^2 bar at mH_2O, mAq atm mHg Torr	1 gf/cm^2=9.80665×10 Pa 1 kgf/mm^2=9 80665×10^6Pa 1 kgf/m^2=9.80665 Pa 1 lbf/in^2=6894.76 Pa 1 bar=10^5 Pa 1at=1kgf/cm^2=9.80665×10^4Pa 1mH_2O=9.80665×10^3 Pa 1 atm=101325 Pa 1mHg=101325/0.76 Pa 1 Torr=1 mmHg=133.322 Pa	1 MPa=0.10197 kgf/mm^2 1 Pa=0.10197 kgf/m^2 1 Pa=0.145×10^{-3}1bf/in^2 1 Pa=10^{-2} mbar 1 Pa =7.5006×10^{-3}Torr
Viscosity	Pa·s (Pascal·second)	P kgf s/m^2	10^{-2}p=1cP=1 mPa·s 1 kgf·s/m^2=9.80665 Par·s	1 Pa·s=0.10197 kf·s/ m^2
Kinematic viscosity	m^2/s	St	10^{-2}St=1 cSt=1 mm^2/s	
Surface tension	N/m			
Energy	J (Joule) 1 J=1 N·m	eV ※ erg kgf·m lbf·ft	1 eV= (1.6021892±0.0000046)×10^{-19}J 1erg=10^{-7}J 1 kgf·m=9.80665 J 1 lbf·ft=1.35582 J	1 J=10^7 erg 1 J=0.10197 kgf·m 1 J=0.73756 lbf ft
Power	W (Watt)	erg/s kgf·m/s PS HP 1bf·ft/s	1 erg/s=10^{-7} W 1 kgf·m/s=9.80665 W 1 PS=75 kgf m/s=735.5 W 1 HP=550 1bf ft/s= 745.7 W 1 lbf ft/s=1.35582 W	1 W=0.10197 kgf·m/s 1 W=0.00136 PS 1 W=0.00134 HP

Appendix table 9 (3) Conversion factors from SI units

Parameter	SI units	Units other than SI	Conversion factors from SI units	Conversion factors from other units
Temperature	K (Kelvin) ℃(Degree celsius) t℃=(t+273.15)K	℉	$t\,^{\circ}F=\frac{5}{9}(t-32)\,^{\circ}C$	$t\,^{\circ}C=\left(\frac{9}{5}t+32\right)\,^{\circ}F$
linear expansion coefficient	K^{-1}	$℃^{-1}$		
Heat	J (Joule) 1·J=1 N·m	erg kgf·m cal_{IT}	1 erg=10^{-7}J 1 cal_{IT} =4.1868J 1 M cal_{IT} = 1.163 kW h	1 J=107 erg 1 J=0.23885 cal_{IT} 1kw·h=0.86×10^6 cal_{IT}
Thermal conductivity	W/(m·K)	w/(m·℃) cal/(s·m·℃)	1 W/(m·℃)=1 W/(m·K) 1 cal/(s·m·℃) = 4.18605 W/(m·K)	
Heat transfer Coefficient	W/(m^2·K)	w/(m^2·℃) cal/(s·m^2·℃)	1 W/(m^2·℃)=1 W/(m^2·K) 1 cal/(s·m^2·℃) = 4.18605 W/(m^2·K)	
Heat capacity	J/K	J/℃	1 J/℃=1 J/K	
Specific heat capacity	J/ (kg·K)	J/(kg·℃)		
Electric current	A (Ampere)			
Charge, Electric quantity	C (Coulomb) 1C=1A·s	A·h ※	1A·h=3.6kC	
Voltage, Potential	V (Volt) 1V=1W/A			
Capacitance	F (Farad) 1F=1C/V			
Magnetic field strength	A/m	Oe	$1\ Oe=\frac{10^3}{4\pi}A/m$	$1\ A/m=4\pi\times10^{-3}Oe$
Magnetic flux density	T (Tesla) 1T=1N/(Am) =1Wb/m^2 =1V·s/m^2	Gs γ	1Gs=10T 1γ=10^{-9}T	1T=10·Gs 1T=10^9γ
Magnetic flux	Wb (Weber) 1Wb=1V·s	Mx	1Mx=10^{-8}Wb	1Wb=10^8Mx
Self-inductance	H (Henry) 1H=1Wb/A			
Electrical resistance (DC)	Ω (Ohm) 1Ω=1 V/A			
Conductance (DC)	S (Siemens) 1S=1A/V			
Electric power	W 1W=1J/s =1A·V			

Appendix table 10 inch-mm conversion table

inch		0	1	2	3	4	5	6	7	8	9	10
Fraction	Decimal	mm										
0	0.000000	0.000	25.400	50.800	76.200	101.600	127.000	152.400	177.800	203.200	228.600	254.000
1/64	0.015625	0.397	25.797	51.197	76.597	101.997	127.397	152.797	178.197	203.597	228.997	254.397
1/32	0.031250	0.794	26.194	51.594	76.994	102.394	127.794	153.194	178.594	203.994	229.394	254.794
3/64	0.046875	0.191	26.591	51.991	77.391	102.791	128.191	153.591	178.991	204.391	229.791	255.191
1/16	0.062500	1.588	26.988	52.388	77.788	103.188	128.588	153.988	179.388	204.788	230.188	255.588
5/64	0.078125	1.984	27.384	52.784	78.184	103.584	128.984	154.384	179.784	205.184	230.584	255.984
3/32	0.093750	2.381	27.781	53.181	78.581	103.981	129.381	154.781	180.181	205.581	230.981	256.381
7/64	0.109375	2.778	28.178	53.578	78.978	104.378	129.778	155.178	180.578	205.978	231.378	256.778
1/8	0.125000	3.175	28.575	53.975	79.375	104.775	130.175	155.575	180.975	206.375	231.775	257.175
9/64	0.140625	3.572	28.972	54.372	79.772	105.172	130.572	155.972	181.372	206.772	232.172	257.572
5/32	0.156250	3.969	29.369	57.769	80.169	105.569	130.969	156.369	181.769	207.169	232.569	257.969
11/64	0.171875	4.366	29.766	55.166	80.566	105.966	131.366	156.766	182.166	207.566	232.966	258.366
3/16	0.187500	4.762	30.162	55.562	80.962	106.362	131.762	157.162	182.562	207.962	233.362	258.762
13/64	0.203125	5.159	30.559	55.959	81.359	106.759	132.159	157.559	182.959	208.359	233.759	259.159
7/32	0.218750	5.556	30.956	56.356	81.756	107.156	132.556	157.956	183.356	208.756	234.156	259.556
15/64	0.234375	5.953	31.353	56.753	82.153	107.553	132.953	158.353	183.753	209.153	234.553	259.953
1/4	0.250000	6.350	31.750	57.150	82.550	107.950	133.350	158.750	184.150	209.550	234.950	260.350
17/64	0.265625	6.747	32.147	57.547	82.947	108.347	133.747	159.147	184.547	209.947	235.347	260.747
9/32	0.281250	7.144	32.544	57.944	83.344	108.744	134.144	159.544	184.944	210.344	235.744	261.144
19/64	0.296875	7.541	32.941	58.341	83.741	109.141	134.541	159.941	185.341	210.741	236.141	261.541
5/16	0.312500	7.938	33.338	58.738	84.138	109.538	134.938	160.338	185.738	211.138	236.538	261.938
21/64	0.328125	8.334	33.734	59.134	84.534	109.934	135.334	160.734	186.134	211.534	236.934	262.334
13/32	0.343750	8.731	34.131	59.531	84.931	110.331	135.731	161.131	186.531	211.931	237.331	262.731
23/64	0.359375	9.128	34.528	59.928	85.328	110.728	136.128	161.528	186.928	212.328	237.728	263.128
3/8	0.375000	9.525	34.925	60.325	85.725	111.125	136.525	161.925	187.325	212.725	238.125	263.525
25/64	0.390625	9.922	35.322	60.722	86.122	111.522	136.922	162.322	187.722	213.122	238.522	263.922
13/32	0.406250	10.319	35.719	61.119	86.519	111.919	137.319	162.719	188.119	213.519	238.919	264.319
27/64	0.421875	10.716	36.116	61.516	86.916	112.316	137.716	163.116	188.516	213.916	239.316	264.716
7/16	0.437500	11.112	36.512	61.912	87.312	112.712	138.112	163.512	188.912	214.312	239.712	256.112
29/64	0.453125	11.509	36.909	62.309	87.709	113.109	138.509	163.909	189.309	214.709	240.109	265.509
15/32	0.468750	11.906	37.306	62.706	88.106	113.506	138.906	164.306	189.706	215.106	240.506	265.906
31/64	0.484375	12.303	37.703	63.103	88.503	113.903	139.303	164.703	190.103	215.503	240.903	266.303
1/2	0.50000	12.700	38.100	63.500	88.900	114.300	139.700	165.100	190.500	215.900	241.300	266.700
33/64	0.515625	13.097	38.497	63.897	89.297	114.697	140.097	165.497	190.897	216.297	241.697	267.097
17/32	0.531250	13.494	38.894	64.294	89.694	115.094	140.494	165.894	191.294	216.694	242.094	267.494
35/64	0.546875	13.891	39.291	64.691	90.091	115.491	140.891	166.291	191.691	217.091	242.491	267.891
5/8	0.625000	15.875	41.275	66.675	92.075	117.475	142.875	168.275	193.675	219.075	244.475	269.875
41/64	0.640625	16.272	41.672	67.072	92.472	117.872	143.272	168.672	194.072	219.072	244.872	270.272
21/32	0.656250	16.669	42.069	67.469	92.869	118.269	143.669	169.069	194.469	219.869	245.269	270.669
43/64	0.671875	17.066	42.466	67.866	93.266	118.666	144.066	169.466	194.866	220.266	245.666	271.066
11/16	0.687500	17.462	42.862	68.262	93.662	119.062	144.462	169.862	195.262	220.662	246.062	271.462
45/64	0.703125	17.859	43.259	68.659	94.059	119.459	144.859	170.259	195.659	221.059	246.459	271.859
23/32	0.718750	18.256	43.656	69.056	94.456	119.856	145.256	170.656	196.056	221.456	246.856	272.256
47/64	0.734375	18.653	44.053	69.453	94.853	120.253	145.653	171.053	196.453	221.853	247.253	272.653
3/4	0.750000	19.050	44.450	69.850	95.250	120.650	146.050	171.450	196.850	222.250	247.650	273.050
49/64	0.765625	19.447	44.847	70.247	95.647	121.047	146.447	171.847	197.247	222.647	248.047	273.447
25/32	0.781250	19.844	45.244	70.644	96.044	121.444	146.844	172.244	197.644	223.044	248.444	273.844
51/64	0.796875	20.241	45.641	71.041	96.441	121.841	147.241	172.641	198.041	223.441	248.841	274.241
13/16	0.812500	20.638	46.038	71.438	96.838	122.638	147.638	173.038	198.438	223.838	249.238	274.638
53/64	0.828125	21.034	46.434	71.834	97.234	122.634	148.034	173.434	198.834	224.234	249.634	275.034
27/32	0.843750	21.431	46.831	72.231	97.631	123.031	148.431	173.831	199.231	224.631	250.031	275.431
55/64	0.859375	21.828	47.228	72.628	98.028	123.428	148.828	174.228	199.628	225.028	250.428	275.828
7/8	0.875000	22.225	47.625	73.025	98.425	123.825	149.225	174.625	200.025	225.425	250.825	276.225
57/64	0.890625	22.622	48.022	73.422	98.822	124.222	149.622	175.022	200.422	225.822	251.222	276.622
29/32	0.906250	23.019	48.419	73.819	99.219	124.619	150.019	175.419	200.819	226.219	251.619	277.019
59/64	0.921875	23.416	48.816	74.216	99.616	125.016	150.416	175.816	201.216	226.616	252.016	277.416
15/16	0.937500	23.812	49.212	74.612	100.012	125.412	150.812	176.212	201.612	227.012	252.412	277.812
61/64	0.953125	24.209	49.609	75.009	100.409	125.809	151.209	176.609	202.009	227.409	252.809	278.209
31/32	0.968750	24.606	50.006	75.406	100.806	126.206	151.606	177.006	202.406	227.806	253.206	278.606
63/64	0.984375	25.003	50.403	75.803	101.203	126.603	152.003	177.403	202.803	228.203	253.603	279.003

Appendix table 11 Basic tolerance IT

Basic dimensional classification (mm)		Tolerance grade																
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Over	Incl.	Basic tolerance value (μm)											Basic tolerance value (mm)						
-	3	0.8	1.2	2	3	4	6	10	14	25	40	60	0.10	0.14	0.26	0.40	0.60	1.00	1.40
3	6	1	1.5	2.5	4	5	8	12	18	30	48	75	0.12	0.18	0.30	0.48	0.75	1.20	1.80
6	10	1	1.5	2.5	4	6	9	15	22	36	58	90	0.15	0.22	0.36	0.58	0.90	1.50	2.20
10	18	1.2	2	3	5	8	11	18	27	43	70	110	0.18	0.27	0.43	0.70	1.10	1.80	2.70
18	30	1.5	2.5	4	6	9	13	21	33	52	84	130	0.21	0.33	0.52	0.84	1.30	2.10	3.30
30	50	1.5	2.5	4	7	11	16	25	39	62	100	160	0.25	0.39	0.62	1.00	1.60	2.50	3.90
50	80	2	3	5	8	13	19	30	46	74	120	190	0.30	0.46	0.74	1.20	1.90	3.00	4.60
80	120	2.5	4	6	10	15	22	35	54	87	140	220	0.35	0.54	0.87	1.40	2.20	3.50	5.40
120	180	3.5	5	8	12	18	25	40	63	100	160	250	0.40	0.63	1.00	1.60	2.50	4.00	6.30
180	250	4.5	7	10	14	20	29	46	72	115	185	290	0.46	0.72	1.15	1.85	2.90	4.60	7.20
250	315	6	8	12	16	23	32	52	81	130	210	320	0.52	0.81	1.30	2.10	3.20	5.20	8.10
315	400	7	9	13	18	25	36	57	89	140	230	360	0.57	0.89	1.40	2.30	3.60	5.70	8.90
400	500	8	10	15	20	27	40	63	97	155	250	400	0.63	0.97	1.55	2.50	4.00	6.30	9.70
500	630	9	11	16	22	30	44	70	110	175	280	440	0.70	1.10	1.75	2.80	4.40	7.00	11.00
630	800	10	13	18	25	35	50	80	125	200	320	500	0.80	1.25	2.00	3.20	5.00	8.00	12.50
800	1000	11	15	21	29	40	56	90	140	230	360	560	0.90	1.40	2.30	3.60	5.60	9.00	14.00
1000	1250	13	18	24	34	46	66	105	165	260	420	660	1.05	1.65	2.60	4.20	6.60	10.50	16.50
1250	1600	15	21	29	40	54	78	125	195	310	500	780	1.25	1.95	3.10	5.00	7.80	12.50	19.50
1600	2000	18	25	35	48	65	92	150	230	370	600	920	1.50	2.30	3.70	6.00	9.20	15.00	23.00
2000	2500	22	30	41	57	77	110	175	280	440	700	1100	1.75	2.80	4.40	7.00	11.00	17.50	28.00
2500	3150	26	36	50	69	93	135	210	330	540	860	1350	2.10	3.30	5.40	8.60	13.50	21.00	33.00

Appendix table 12 Viscosity conversion table

Kinematic viscosity mm^2/s	Saybolt universal viscosity SUS(Second)		Redwood Viscosity R(Second)		Engler viscosity E(°C)
	100°F	210°F	50°C	100°C	
2	32.6	32.8	30.8	31.2	1.14
3	36.0	36.3	33.3	33.7	1.22
4	39.1	39.4	35.9	36.5	1.31
5	42.3	42.6	38.5	39.1	1.40
6	45.5	45.8	41.1	41.7	1.48
7	48.7	49.0	43.7	44.3	1.56
8	52.0	52.4	46.3	47.0	1.65
9	55.4	55.8	49.1	50.0	1.75
10	58.8	59.2	52.1	52.9	1.84
11	62.3	62.7	55.1	56.0	1.93
12	65.9	66.4	58.2	59.1	2.02
13	69.6	70.1	61.4	62.3	2.12
14	73.4	73.9	64.7	65.6	2.22
15	77.2	77.7	68.0	69.1	2.32
16	81.1	81.7	71.5	72.6	2.43
17	85.1	85.7	75.0	76.1	2.54
18	89.2	89.8	78.6	79.7	2.64
19	93.3	94.0	82.1	83.6	2.76
20	97.5	98.2	85.8	87.4	2.87
21	102	102	89.5	91.3	2.98
22	106	107	93.3	95.1	3.10
23	110	111	97.1	98.9	3.22
24	115	115	101	103	3.34
25	119	120	105	107	3.46
26	123	124	109	111	3.58
27	128	129	112	115	3.70
28	132	133	116	119	3.82
29	137	138	120	123	3.95
30	141	142	124	127	4.07
31	145	146	128	131	4.20
32	150	150	132	135	4.32
33	154	155	136	139	4.45
34	159	160	140	143	4.57
35	163	164	144	147	4.70
36	168	170	148	151	4.83
37	172	173	153	155	4.96
38	177	178	156	159	5.08
39	181	183	160	164	5.21
40	186	187	164	168	5.34
41	190	192	168	172	5.47

Appendix table 12(Continued)

Kinematic viscosity mm^2/s	Saybolt universal viscosity SUS(Second)		Redwood Viscosity R(Second)		Engler viscosity E(°C)
	100°F	210°F	50°C	100°C	
42	195	196	172	176	5.59
43	199	201	176	180	5.72
44	204	205	180	185	5.85
45	208	210	184	189	5.98
46	213	215	188	193	6.11
47	218	219	193	197	6.24
48	222	224	197	202	6.37
49	227	228	201	206	6.50
50	231	233	205	210	6.63
55	254	256	225	231	7.24
60	277	279	245	252	7.90
65	300	302	266	273	8.55
70	323	326	286	294	9.21
75	346	349	306	315	9.89
80	371	373	326	336	10.5
85	394	397	347	357	11.2
90	417	420	367	378	11.8
95	440	443	387	399	12.5
100	464	467	408	420	13.2
120	556	560	490	504	15.8
140	649	653	571	588	18.4
160	742	747	653	672	21.1
180	834	840	734	575	23.7
200	927	933	816	841	26.3
250	1159	1167	1020	1051	32.9
300	1391	1400	1224	1241	39.5

Appendix table 13 Rockwell, Vickers, Brinell hardness conversion table

Rockwell hardness		Superficial Rockwell			Vickers hardness	Brinell hardness	
HRC	HRA	HR15N	HR30N	HR45N	HV	HB30D²	d_{10}, $2d_5$ $4d_{2.5}$ mm
70.0	86.6				1037		
69.5	86.3				1017		
69.0	86.1				997		
68.5	85.8				978		
68.0	85.5				959		
67.5	85.2				941		
67.0	85.0				923		
66.5	84.7				906		
66.0	84.4				889		
65.5	84.1				872		
65.0	83.9	92.2	81.3	71.7	856		
64.5	83.6	92.1	81.0	71.2	840		
64.0	83.3	91.9	80.6	70.6	825		
63.5	83.1	91.8	80.2	70.1	810		
63.0	82.8	91.7	79.8	69.5	795		
62.5	82.5	91.5	79.4	69.0	780		
62.0	82.2	91.4	79.0	68.4	766		
61.5	82.0	91.2	78.6	67.9	752		
61.0	81.7	91.0	78.1	67.3	739		
60.5	81.4	90.8	77.7	66.8	726		
60.0	81.2	90.6	77.3	66.2	713		
59.5	80.9	90.4	76.9	65.6	700		
59.0	80.6	90.2	76.5	65.1	688		
58.5	80.3	90.0	76.1	64.5	676		
58.0	80.1	89.8	75.6	63.9	664		
57.5	79.8	89.6	75.2	63.4	653		
57.0	79.5	89.4	74.8	62.8	642		
56.5	79.3	89.1	74.4	62.2	631		
56.0	79.0	88.9	73.9	61.7	620		
55.5	78.7	88.6	73.5	61.1	609		
55.0	78.5	88.4	73.1	60.5	599		
54.5	78.2	88.1	72.6	59.9	589		
54.0	77.9	87.9	72.2	59.4	579		
53.5	77.7	87.6	71.8	58.8	570		
53.0	77.4	87.4	71.3	58.2	561		
52.5	77.1	87.1	70.9	57.6	551		
52.0	76.9	86.8	70.4	57.1	543		
51.5	76.6	86.6	70.0	56.5	534		
51.0	76.3	86.3	69.5	55.9	525	501	2.73
50.5	76.1	86.0	69.1	55.3	517	494	2.75
50.0	75.8	85.7	68.6	54.7	509	488	2.77
49.5	75.5	85.5	68.2	54.2	501	481	2.79
49.0	75.3	85.2	67.7	53.6	493	474	2.81
48.5	75.0	84.9	67.3	53.0	485	468	2.83
48.0	74.7	84.6	66.8	52.4	478	461	2.85

Appendix table 13(Continued)

Rockwell hardness		Superficial Rockwell			Vickers hardness	Brinell hardness	
HRC	HRA	HR15N	HR30N	HR45N	HV	HB30D²	d_{10}, $2d_5$ $4d_{2.5}$ mm
47.5	74.5	84.3	66.4	51.8	470	455	2.87
47.0	74.2	84.0	65.9	51.2	463	449	2.89
46.5	73.9	83.7	65.5	50.7	456	442	2.91
46.0	73.7	83.5	65.0	50.1	449	436	2.93
45.5	73.4	83.2	64.6	49.5	443	430	2.95
45.0	73.2	82.9	64.1	48.9	436	424	2.97
44.5	72.9	82.6	63.6	48.3	429	418	2.99
44.0	72.6	82.3	63.2	47.7	423	413	3.01
43.5	72.4	82.0	62.7	47.1	417	407	3.03
43.0	72.1	81.7	62.3	46.5	411	401	3.05
42.5	71.8	81.4	61.8	45.9	405	396	3.07
42.0	71.6	81.1	61.3	45.4	399	391	3.09
41.5	71.3	80.8	60.9	44.8	393	385	3.11
41.0	71.1	80.5	60.4	44.2	388	380	3.13
40.5	70.8	80.2	60.0	43.6	382	375	3.15
40.0	70.5	79.9	59.5	43.0	377	370	3.17
39.5	70.3	79.6	59.0	42.4	372	365	3.19
39.0	70.0	79.3	58.6	41.8	367	360	3.21
38.5		79.0	58.1	41.2	362	355	3.24
38.0		78.7	57.6	40.6	357	350	3.26
37.5		78.4	57.2	40.0	352	345	3.28
37.0		78.1	56.7	39.4	347	341	3.30
36.5		77.8	56.2	38.8	342	336	3.32
36.0		77.5	55.8	38.2	338	332	3.34
35.5		77.2	55.3	37.6	333	327	3.37
35.0		77.0	54.8	37.0	329	323	3.39
34.5		76.7	54.4	36.5	324	318	3.41
34.0		76.4	53.9	35.9	320	314	3.43
33.5		76.1	53.4	35.3	316	310	3.46
33.0		75.8	53.0	34.7	312	306	3.48
32.5		75.5	52.5	34.1	308	302	3.50
32.0		75.2	52.0	33.5	304	298	3.52
31.5		74.9	51.6	32.9	300	294	3.54
31.0		74.7	51.1	32.3	296	291	3.56
30.5		74.4	50.6	31.7	292	287	3.59
30.0		74.1	50.2	31.1	289	283	3.61
29.5		73.8	49.7	30.5	285	280	3.63
29.0		73.5	49.2	29.9	281	276	3.65
28.5		73.3	48.7	29.3	278	273	3.67
28.0		73.0	48.3	28.7	274	269	3.70
27.5		72.7	47.8	28.1	271	266	3.72
27.0		72.4	47.3	27.5	268	263	3.74
26.5		72.2	46.9	26.9	264	260	3.76
26.0		71.9	46.4	26.3	261	257	3.78
25.5		71.6	45.9	25.7	258	254	3.80

Appendix table 13(Continued)

Rockwell hardness		Superficial Rockwell			Vickers hardness	Brinell hardness	
HRC	HRA	HR15N	HR30N	HR45N	HV	HB30D²	d_{10}, $2d_5$ $4d_{2.5}$ mm
25.0		71.4	45.5	25.1	255	251	3.83
24.5		71.1	45.0	24.5	252	248	3.85
24.0		70.8	44.5	23.9	249	245	3.87
23.5		70.6	44.0	23.3	246	242	3.89
23.0		70.3	43.6	22.7	243	240	3.91
22.5		70.0	43.1	22.1	240	237	3.93
22.0		69.8	42.6	21.5	237	234	3.95
21.5		69.5	42.2	21.0	234	232	3.97
21.0		69.3	41.7	20.4	231	229	4.00
20.5		69.0	41.2	19.8	229	227	4.02
20.0		68.8	40.7	19.2	226	225	4.03
19.5		68.5	40.3	18.6	223	222	4.05
19.0		68.3	39.8	18.0	221	220	4.07
18.5		68.0	39.3	17.4	218	218	4.09
18.0		67.8	38.9	16.8	216	216	4.11
17.5		67.6	38.4	16.2	214	214	4.13
17.0		67.3	37.9	15.6	211	211	4.15

Appendix table 14 Leeb and Rockwell hardness conversion table

Leeb HLD	Rockwell HRC	Leeb HLD	Rockwell HRC	Leeb HLD	Rockwell HRC	Leeb HLD	Rockwell HRC
756	54.0	788	57.5	820	60.9	852	64.2
758	54.2	790	57.7	822	61.1	854	64.4
760	54.4	792	58.0	824	61.4	856	64.6
762	54.7	794	58.2	826	61.6	858	64.8
764	54.9	796	58.4	828	61.8	860	65.0
766	55.1	798	58.6	830	62.0	862	65.3
768	55.3	800	58.8	832	62.2	864	65.5
770	55.6	802	59.0	834	62.4	866	65.7
772	55.8	804	59.2	836	62.6	868	65.9
774	56.0	806	59.5	838	62.8	870	66.1
776	56.2	808	59.7	840	63.0	872	66.3
778	56.4	810	59.9	842	63.2	874	66.5
780	56.7	812	60.1	844	63.4	876	66.7
782	56.9	814	60.3	846	63.6	878	66.9
784	57.1	816	60.5	848	63.8	880	67.1
786	57.3	818	60.7	850	64.0	882	67.3