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- Precision cross roller bearings, rotary table bearings and various non-standard bearings

A manufacturer specializing in R&D and producing precision bearings



Luoyang E-find Precision Bearing Manufacturing Co.,Ltd

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Luoyang E-find Precision Bearing Manufacturing Co.,Ltd



OPENNESS, PROFESSIONALISM AND RESPONSIBILITY



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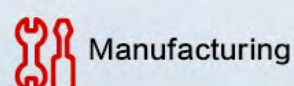
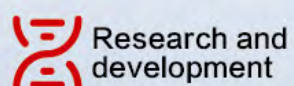
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+Company Profiles>>>

Luoyang EFANT Precision Bearing Manufacturing Co., Ltd. is located in China's bearing manufacturing base---Luoyang. Our company specializes in R&D and manufacturing of precision cross roller bearings, rotary table bearings and various non-standard bearings. The machining accuracy is P5, P4 and P2.

Benefits from Luoyang's unique bearing industry foundation, our company has established a complete quality management system and has an excellent technical team. At the same time, sophisticated production process equipment and perfect test equipment are necessary conditions for the production of precision bearings, and the high precision, high reliability of products are guaranteed. All kinds of bearings produced by our company are widely used in the automation industry, CNC machine tool industry and robot industry.

The company adheres to the concept of "openness, professionalism and responsibility", actively participate in competition and cooperation, strives to become a professional bearing application service provider, and shoulders its due social responsibilities.



+Service concept>>>



Create value for customers

Professional team, quick response, pre-sale consultation, sales support, and after-sales service full process guarantee



+ Cross roller bearing

In crossed cylindrical roller bearings, the cylindrical rollers are arranged in two 90° V-shaped raceways at a 90° included angle 1:1, and the cylindrical rollers are separated by the spacer block. This structure makes a set of bearings It can bear radial load, axial load and overturning load at the same time.

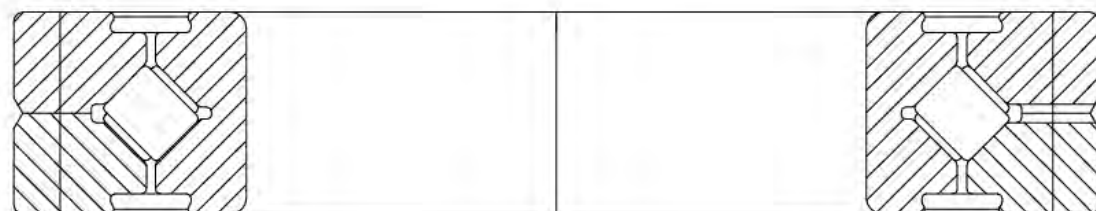
This kind of combined bearing has a compact structure, and at the same time greatly simplifies the structure design of the bearing under the premise of ensuring structural rigidity. Most bearings can be pre-loaded before leaving the factory, which further facilitates installation and maintenance work. Therefore, cross cylindrical roller bearings It has the characteristics of high precision, high load and high rigidity, which is very suitable for the occasions where the space size is clearly restricted, such as the rotating part of the robot, the joint part of the manipulator, the numerical control indexing table, the medical equipment, and the measuring instrument.



Product category

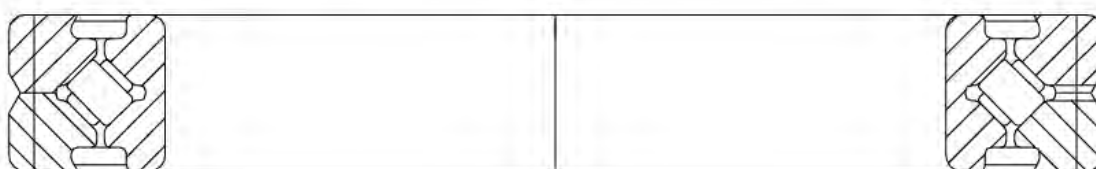
ERBC standard type

This model is a standard type of crossed cylindrical roller bearings. The outer ring is divided into two parts in the axial direction, and the inner ring is integral. It is most suitable for parts that require the rotation accuracy of the inner ring.



ERBS compact type

This model is a compact model obtained by reducing the thickness of the RB type inner ring and outer ring. Similarly, the outer ring is divided into two parts in the axial direction, and the inner ring is integral. Most suitable for parts with lightweight and small space requirements.



ERBH high rigidity type

The inner and outer rings of this type of bearing are of an integral structure, which has higher structural rigidity than the RB-type separate outer ring. This type of bearing is widely used in robots, machine tools and medical equipment that require small, high rigidity and high rotational accuracy And other rotating parts.



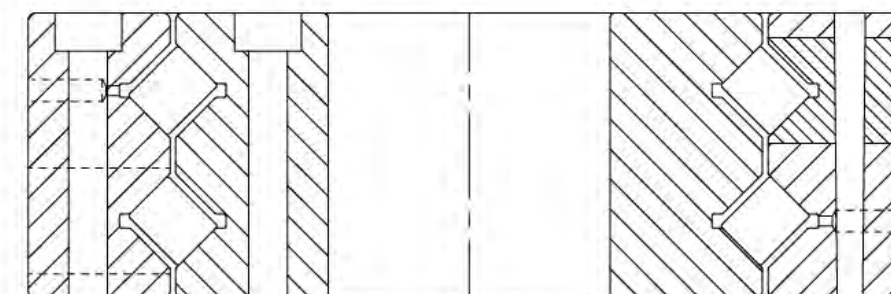
ERBF end face mount type

This model is the overall structure of the inner and outer rings. Compared with the ERBH model, there are mounting holes on the end face, which is convenient for the structural design application of end face installation. It can be installed and used without the shaft or bearing seat.



EDRX dual row type

This model is a cross cylindrical roller structure with a double-row raceway structure. The inner and outer rings are integral structures. The single row rollers are arranged in one direction crossing. The two rows of cylindrical rollers are arranged 90° cross in two 90° V-shaped raceways, inside and outside. Mounting holes are designed on the end face of the ring to facilitate the structural design of the end face installation.



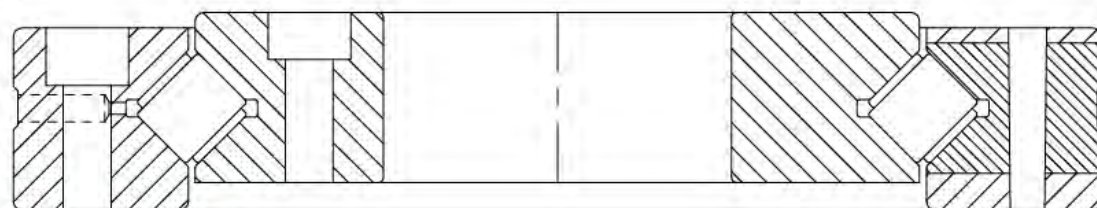
EFSX type

This type of crossed cylindrical roller bearing is designed in accordance with the deep groove ball bearing 618 series. The cylindrical rollers are arranged at a 90° included angle and are arranged in a 1:1 cross between two 90° V-shaped raceways. The inner ring is an integral structure, the outer ring is divided into two parts in the axial direction up and down, connected by 3 connecting rings in the circumferential direction, and there is no sealing ring between the inner and outer rings.



EFXU and EXSU European standard

The inner and outer rings of these two types of crossed cylindrical roller bearings are of integral structure and can be directly mounted on the end face.



Model name rules

Nominal model	Inner diameter	Width	Structure code	Sealed	Clearance	Runout accuracy grade
ERBC	80	16		UU	CC0/C0/C1	P5/P4/P2
ERBS	50	08		UU	CC0/C0	P5/P4
ERBH	90	16		UU	CC0/C0/C1	P5/P4/P2
ERBF	35	15	G/X	UU	CC0/C0	P5/P4/P2
EDRX	100	20	G	UU	CC0	P5/P4/P2

Nominal model	Inner diameter	Width	Sealed	Clearance	Runout accuracy grade
EFSX	70	10	No sealed by default	VSP/RL0/RL1	P5 (Can be omitted)
EFXU	40	22	With sealed by default	VSP/RL0/RL1	P5 (Can be omitted)
EXSU	130	25	With sealed by default	VSP/RL0/RL1	P5 (Can be omitted)

Comment:

1. Sealing: UU inner and outer ring diameters are sealed on both sides, blank means no seal.

2. Bearing clearance: CC0 preload, C0 positive clearance, C1 large clearance;

VSP preload, RL0 positive clearance, RL1 large clearance;

Bearing clearance only represents radial clearance. In special cases, axial clearance shall be explained separately.

3. Runout accuracy grade: P5, P4, P2 are limited to the runout accuracy of the bearing (Kea, Sea, Kia, Sia).

4. All bearing dimensional tolerance grades are P5.

5. For ERBF and EDRX, the structure code blank means that the inner and outer ring end faces are counterbore holes in the same direction, G means that the inner and outer ring end faces are counterbore holes in different direction, X means that the outer ring end faces are counterbore holes and the inner ring end faces are threaded holes.

6. For products that are not in the range of standard models, please consult our company. When conditions permit, our company can customize non-standard bearings.

Customized according to the size range of the sample book, such as internal teeth, external teeth, additional flanges, surface heat treatment, and bearing housings and shafts that match the bearings can be customized and processed, and the drawings agreed and confirmed by both parties shall prevail.

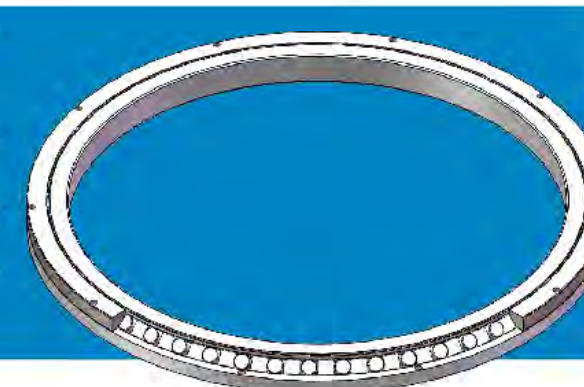
Customization process:

1. The customer informs the working condition or the sample drawing
2. Technical personnel of both parties communicate technical details
3. We will issue confirmation drawings for customers to confirm
4. Both parties confirm the drawings and sign a technical agreement (the technical agreement and the contract have the same legal effect)



Bearing selection

1. Determine the conditions of use and fill in the application condition table;
2. Determine the bearing model category;
3. Select the bearing size according to life calculation and determine bearing model;
4. Determine the bearing runout accuracy and clearance according to the used accuracy and rigidity requirements;
5. Combined with structural design, determine special conditions such as lubrication method and starting torque.



Life calculation

Bearing rating life

Bearing rating life refers to the total number of revolutions that a batch of bearings of the same model can operate under the same conditions, 90% of the bearings do not peel off the raceway surface due to rolling fatigue. It is often expressed in L, and the unit is the revolution. Calculated as follows:

$$L = (C/f_w P)^{10/3} \times 10^6$$

C The rated dynamic load of the bearing

P Equivalent dynamic load under working conditions

f_w Load factor under working conditions, see the table below for details

Working conditions	f_w
Smooth operation	1-1.2
Normal operation (changes in load direction and size)	1.2-1.5
Severe shock and vibration	1.5-3

The calculation formula of equivalent dynamic load P is as follows:

$$P = X * (F_r + 2 * M / D_{pw}) + Y * F_a$$

X dynamic radial coefficient (see the table below for specific values)

Y dynamic axial coefficient

F_r radial load

F_a axial load

M overturning moment

D_{pw} cylindrical roller movement pitch circle diameter

Calculation conditions	X	Y
$F_a / (F_r + 2 * M / D_{pw}) \leq 1.5$	1	0.45
$F_a / (F_r + 2 * M / D_{pw}) > 1.5$	0.67	0.67
$F_r = 0, M = 0$	0.67	0.67

Static safety factor

The static load rating of a bearing refers to a static load with a certain direction and size. At this time, the maximum contact stress at the center point of the contact area between the cylindrical roller and the raceway surface reaches the limit value of the contact stress of the material itself, and the bearing can move slowly (approximately Static state) without failure. Therefore, when the bearing is subjected to external loads in a static manner, the static safety factor must be considered. The static safety factor of the bearing is represented by S_0 , and its calculation formula is as follows:

$$S_0 = C_0 / P_0$$

C_0 Bearing static load rating

P_0 Equivalent static load under working conditions

Static safety factor value table

Load condition	S_0
Normal load	1-2
Impact load	2-3

Considering the dynamic performance of the bearing life, it is recommended that the static safety factor be at least 7 or more.

The calculation formula of equivalent static load P_0 is as follows:

$$P_0 = (F_r + 2 * M / D_{pw}) + 0.44 * F_a$$

F_r Radial load

M Overturning moment

D_{pw} Cylindrical roller movement pitch circle diameter

F_a Axial load

For crossed roller bearings, there is not only the influence of static radial load, but also the influence of static allowable axial load and static allowable overturning moment.

Static allowable axial load $F_{a0} = C_0 / 0.44$

Static allowable overturning moment $M_0 = C_0 * D_{pw} / 2$

C_0 Bearing static load rating

D_{pw} Pitch circle diameter of cylindrical roller

Matching

For ERBC、ERBS、ERBH、EFSX bearings without end face mounting holes, the recommended matching relationship is shown in the following table:

Radial clearance	Application conditions	Axis	Bearing seat
CC0	Regardless of conditions	g5	H7
C0	Inner ring rotation	h5	H7
	Outer ring rotation	g5	Js7
C1	Ordinary load of inner ring rotation	J5	H7
	Rotating impact load of inner ring	K5	Js7
	Ordinary load of outer ring rotation	g5	Js7
	Rotating impact load of outer ring	h5	K7

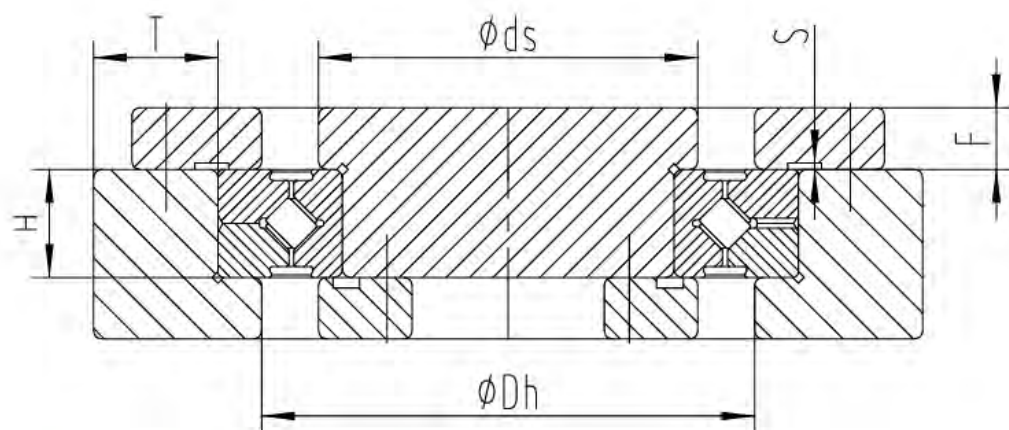
The matching relationship of bearings with CC0 clearance is generally selected as a clearance fit, but a small interference fit relationship can be used when rigidity and accuracy are higher requirements. At the same time, special attention should be paid to the change of bearing clearance under application conditions. It is best to select the corresponding shaft and bearing seat according to the bearing inner diameter tolerance and outer diameter tolerance to achieve a small interference fit.

For ERBF、EFXU、EXSU、EDRX bearings with end-face mounting holes, the matching relationship is basically not required, but the recommended matching relationship is: shaft h7 and bearing seat H7 when the accuracy of the installation position is required.

Installation

Shaft shoulder diameter size

In the bearing size specification table, we list the corresponding installation shoulder diameter D_h and d_s of each bearing. In the design of the shaft structure, please design the shaft, bearing seat and step size of axial end cover according to our recommended shaft shoulder diameter, to ensures smooth bearing application.



Shaft shoulder depth dimension

In order to ensure the effective axial positioning of the bearing during installation, the depth dimension H of the shaft shoulder should be matched according to the bearing width tolerance. The specific relationship is as follows:

$$H=B-0.1$$

Bearing seat wall thickness design

In order to ensure the structural strength, we recommend that the wall thickness dimension T of the bearing seat should be at least 0.6 or more of the radial cross-sectional dimension of the bearing, is

$$T=(D-d)/2*0.6$$

Axial end cover design

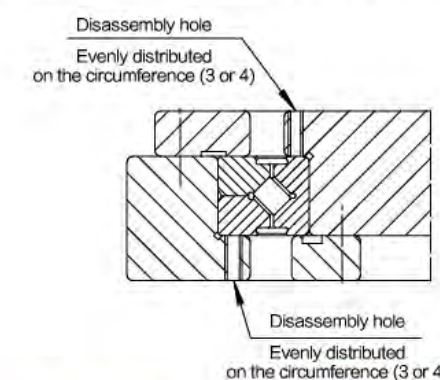
In order to ensure the structural strength, we recommend the thickness of the axial end cover $F=(0.5-1.2)*B$,

The depth of the annular groove on the mounting surface of the axial end cover is $S=0.5$; the effect of the annular groove on the axial end cover can effectively solve the problem that the end cover cannot compress the bearing.

The H , F , S and T involved in the installation dimensions of the inner ring that are not expressed in the installation diagram above (when the diameter of the shaft exceeds 100mm, the shaft can be made into a hollow shaft, and T should be designed according to the recommended value). The same applies to the above formula.

Disassembly screw hole

The compact structure of the crossed cylindrical roller bearing makes it difficult to disassemble the bearing. We recommend that you avoid the necessary design positions in the bearing structure design and add disassembly screw holes. Once the bearing needs to be disassembled, you can use screws to separate the bearings through the screw holes. Push out from the shaft and the bearing seat, and the disassembly screw hole is best divided into three or four equal circumferences.



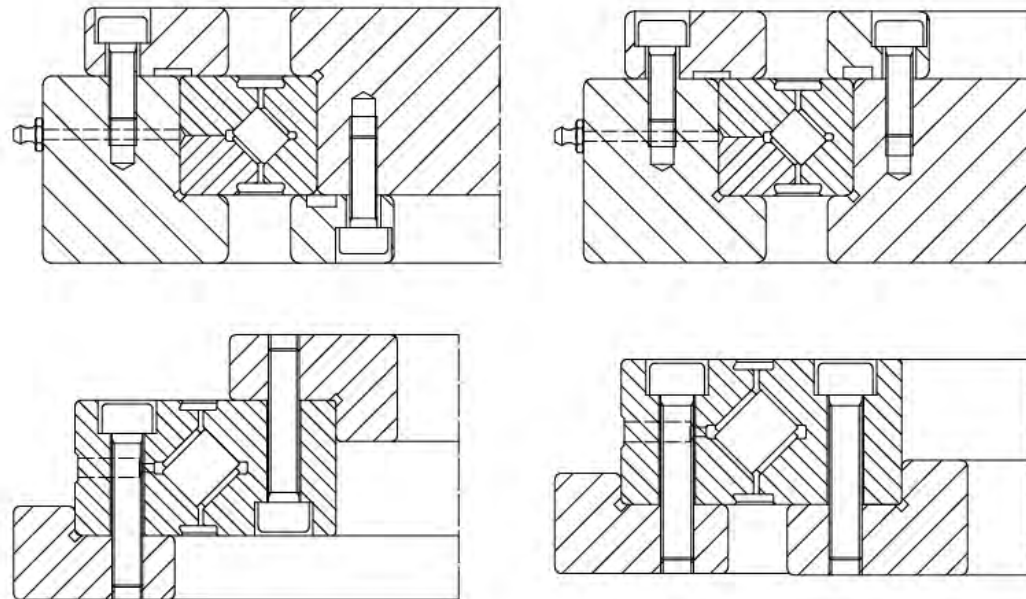
Axial end cover fixing screw design

Outer ring outer diameter size D		Quantity of screws	Screw specifications
Exceed	T_0		
	100	≥ 8	M3、M4、M5
100	200	≥ 12	M4、M5、M6、M8
200	500	≥ 16	M5、M6、M8、M10、M12
500		≥ 24	$\geq M12$

Screw tightening torque

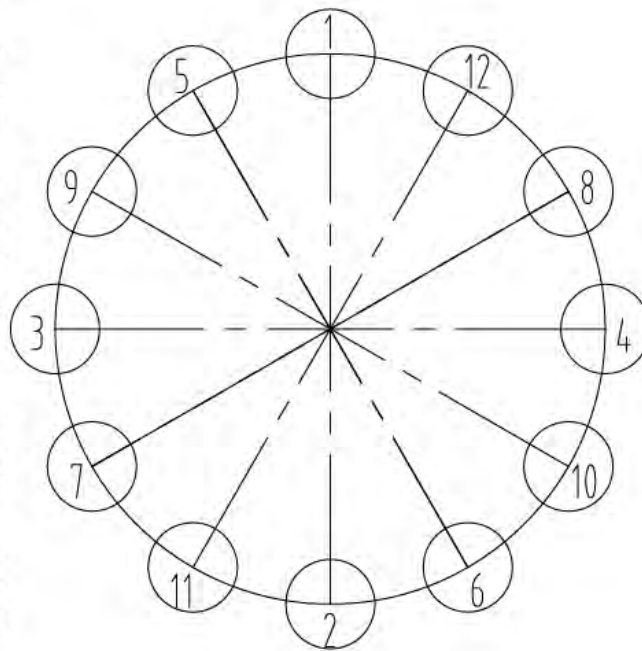
Screw specifications (level 10.9)	Tightening torque	Screw specifications (level 10.9)	Tightening torque
M3	2	M10	70
M4	4	M12	120
M5	8.5	M16	200
M6	14	M20	390
M8	34	M22	530

Typical installation structure



Installation process

1. Prepare installation tools, including brush, cleaning cloth, cleaning fluid, vernier caliper, feeler gauge, heater or installation tooling, torque wrench, magnetic gauge holder, dial indicator, etc.
2. Use brushes, cleaning cloths, and cleaning fluid to clean the installation parts and tools used.
3. Use heaters or installation tools to install the bearings on the shaft, or use heaters or installation tools to install the bearings into the bearing housing. The sequence of this process can be determined according to the specific cooperation and structural design.
4. It is strictly forbidden to force the rolling elements during the installation process, and it is strictly prohibited to knock the outer ring when installing the inner ring, and it is also strictly prohibited to knock the inner ring when installing the outer ring.
5. Use vernier calipers and feeler gauges to inspect the size of the installation and matching positions, focusing on ensuring the correct depth of the shaft shoulder.
6. Install the axial end cover, use a torque wrench to tighten the fixing screws three times, and tighten the screws step by step in the order of 40%, 70%, and 100% of the standard torque of the screw and the "cross method" each time.
7. After the inner ring and the shaft are installed or the outer ring and the bearing seat are installed, check the installation accuracy with a magnetic meter seat and a dial indicator. Once a problem is found, it needs to be removed and reinstalled.
8. For the installation structure with the lubricating oil hole, pay special attention to the corresponding installation of the lubricating oil hole position.

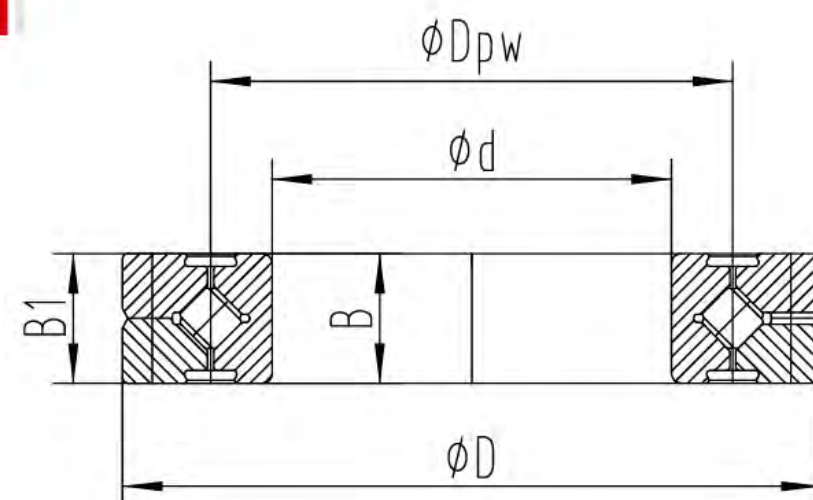


Precautions

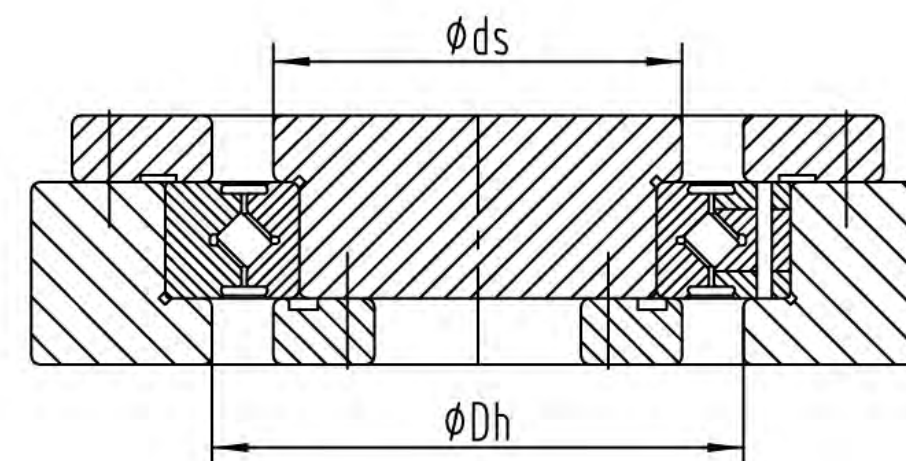
1. The bearing has been filled with grease, and there is no need to add grease during installation; after installation and long-term operation, the same brand of grease can be refilled through the lubricating hole.
2. When handling bearings weighing more than 20KG, it is best to work together to prevent bumps and injuries.
3. The working temperature should not exceed 80° C to prevent the sealing ring from aging and failing too quickly.
4. When installing the split ferrule, do not loosen the connecting screws or rivets, just install the bearing directly on the shaft or in the bearing seat.
5. For the bearings installed on the end face, the axial end cover is not necessary, and the screws fixed on the end face still have to be tightened three times according to the "cross method".

Lubrication

1. Do not mix greases of different brands to prevent premature failure due to reactions.
2. For special application conditions such as low temperature, high temperature, vibration and impact load, the corresponding grease should be selected to ensure that the bearing will not fail in long-term use.
3. The replenishment period of grease can be determined according to the specific working conditions. Under normal load conditions, 3-6 months is a more appropriate replenishment period.
4. Bearings installed on the end face can be installed with grease nipple to directly replenish grease when the outer diameter of the bearing is not positioned.



Model	Inside diameter	Tolerance	Outer diameter	Tolerance	Inner ring Width	Tolerance	Outer ring Width	Tolerance	Pitch diameter	Inner ring shaft shoulder	Outer ring shaft shoulder
	d (mm)	δd (mm)	D (mm)	δD (mm)	B (mm)	δB (mm)	B1 (mm)	$\delta B1$ (mm)	Dpw (mm)	ds (mm)	Dh (mm)
ERBS5008	50	0/-0.015	66	0/-0.013	8	0/-0.120	8	0/-0.120	57	53.5	60.5
ERBS6008	60	0/-0.015	76	0/-0.013	8	0/-0.120	8	0/-0.120	67	63.5	70.5
ERBS7008	70	0/-0.015	86	0/-0.015	8	0/-0.120	8	0/-0.120	77	73.5	80.5
ERBS8008	80	0/-0.018	96	0/-0.020	8	0/-0.120	8	0/-0.120	87	83.5	90.5
ERBS9008	90	0/-0.020	106	0/-0.015	8	0/-0.120	8	0/-0.120	97	93.5	100.5
ERBS10008	100	0/-0.020	116	0/-0.015	8	0/-0.120	8	0/-0.120	107	103.5	110.5
ERBS11008	110	0/-0.020	126	0/-0.025	8	0/-0.120	8	0/-0.120	117	113.5	120.5
ERBS12008	120	0/-0.020	136	0/-0.018	8	0/-0.120	8	0/-0.120	127	123.5	130.5
ERBS13008	130	0/-0.025	146	0/-0.018	8	0/-0.120	8	0/-0.120	137	133.5	140.5
ERBS14008	140	0/-0.025	156	0/-0.025	8	0/-0.200	8	0/-0.200	147	143.5	150.5
ERBS15008	150	0/-0.025	166	0/-0.025	8	0/-0.200	8	0/-0.200	157	153.5	160.5
ERBS16013	160	0/-0.025	186	0/-0.025	13	0/-0.150	13	0/-0.150	172	165	179
ERBS17013	170	0/-0.025	196	0/-0.025	13	0/-0.150	13	0/-0.150	182	175	189
ERBS18013	180	0/-0.025	206	0/-0.025	13	0/-0.150	13	0/-0.150	192	185	199
ERBS19013	190	0/-0.025	216	0/-0.025	13	0/-0.150	13	0/-0.150	202	195	209
ERBS20013	200	0/-0.025	226	0/-0.025	13	0/-0.150	13	0/-0.150	212	205	219



Model	Static load	Dynamic load	Inner ring runout P5	Inner ring runout P4	Preload	Positive clearance	Weight
	Cor (KN)	Cr (KN)	Kia/Sia (mm)	Kia/Sia (mm)	CC0 (mm)	C0 (mm)	m (Kg)
ERBS5008	7.19	5.1	0.013	0.010	0/-0.008	0/0.015	0.08
ERBS6008	8.68	5.68	0.013	0.010	0/-0.008	0/0.015	0.09
ERBS7008	9.8	5.98	0.015	0.012	0/-0.008	0/0.015	0.1
ERBS8008	11.3	6.37	0.015	0.012	0/-0.008	0/0.015	0.11
ERBS9008	12.4	6.76	0.015	0.012	0/-0.008	0/0.015	0.12
ERBS10008	13.9	7.15	0.015	0.012	0/-0.008	0/0.015	0.14
ERBS11008	15	7.45	0.020	0.015	0/-0.008	0/0.015	0.15
ERBS12008	16.5	7.84	0.020	0.015	0/-0.008	0/0.015	0.17
ERBS13008	17.6	7.94	0.025	0.020	0/-0.008	0/0.015	0.18
ERBS14008	19.1	8.33	0.025	0.020	0/-0.008	0/0.015	0.19
ERBS15008	20.6	8.82	0.025	0.020	0/-0.008	0/0.015	0.2
ERBS16013	44.9	23.3	0.025	0.020	0/-0.010	0/0.020	0.59
ERBS17013	46.5	23.5	0.025	0.020	0/-0.010	0/0.020	0.64
ERBS18013	49.8	24.5	0.030	0.025	0/-0.010	0/0.020	0.68
ERBS19013	51.5	24.9	0.030	0.025	0/-0.010	0/0.020	0.69
ERBS20013	54.7	25.8	0.030	0.025	0/-0.010	0/0.020	0.71



Working Condition Requirement Sheet

I Contact Info.			
1.Name:	2.Position:	3.Tel.:	4.E-mail:
5.Company:		6.Industry:	
II Application conditions			
1.Equipment type: ①Machining center ②grinding machine non-standard equipment ④testing equipment ⑤other equipment			
2.application site: ①NC rotary table ②Angular milling head ③Direct drive motor ④Others			
3.Precision and material of parts to be machined: ①Cast iron, semi-finishing ②Steel, precision processing ③Aluminum alloy, precision machining ④Handling,positioning			
4.Mode of power transmission: ①manual ②Motor direct drive ③Motor, worm gear drive ④Motor, gear reducer ⑤Motor, belt ⑥Hydraulic transmission ⑦Other			
5.Loading conditions: $F_a =$ KN, $F_r =$ KN, $F_t =$ KN, $L_1 =$ mm.			
6.Bearing rotating speed and working hours: Limit speed= RPM, Working speed= RPM, Working hours: ①Intermittent ②continuous.			
7.Working environment & temperature conditions: ①Indoor, 10℃--60℃ ②Outdoor, -20℃--50℃ ③Other			
III Primary selection of bearing model			
1.Dimension: ID mm, OD mm, H mm.			
2.Precision: ①P5 ②P4 ③P2			
IV Special requirements			
Note: Above information will be protected by our company as confidential secret of both parties. Please rest assured when filling in the information.			

Customized according to the size range of the sample book, such as internal teeth, external teeth, additional flanges, surface heat treatment, and bearing housings and shafts that match the bearings can be customized and processed, and the drawings agreed and confirmed by both parties shall prevail.

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Model comparison table

EFANT	THK	IKO	EFANT	THK	IKO
ERBC	RB	CRB	ERBC	RB	CRB
ERBC2008	RB2008	CRBC208	ERBC30025	RB30025	CRBC30025
ERBC2508	RB2508	CRBC258	ERBC30035	RB30035	CRBC30035
ERBC3010	RB3010	CRBC3010	ERBC30040	RB30040	CRBC30040
ERBC3510	RB3510	CRBC3510	ERBC35020	RB35020	CRBC35020
ERBC4010	RB4010	CRBC4010	ERBC40035	RB40035	CRBC40035
ERBC4510	RB4510	CRBC4510	ERBC40040	RB40040	CRBC40040
ERBC5013	RB5013	CRBC5013	ERBC45025	RB45025	CRBC45025
ERBC6013	RB6013	CRBC6013	ERBC50025	RB50025	CRBC50025
ERBC7013	RB7013	CRBC7013	ERBC50040	RB50040	CRBC50040
ERBC8016	RB8016	CRBC8016	ERBC50050	RB50050	CRBC50050
ERBC9016	RB9016	CRBC9016	ERBC60040	RB60040	CRBC60040
ERBC10016	RB10016	CRBC10016	ERBC70045	RB70045	CRBC70045
ERBC10020	RB10020	CRBC10020	ERBC80070	RB80070	CRBC80070
ERBC11012	RB11012	CRBC11012	ERBC90070	RB90070	
ERBC11015	RB11015	CRBC11015	ERBC1000110	RB1000110	
ERBC11020	RB11020	CRBC11020	ERBC1250110	RB1250110	
ERBC12016	RB12016	CRBC12016			
ERBC12025	RB12025	CRBC12025			
ERBC13015	RB13015	CRBC13015			
ERBC13025	RB13025	CRBC13025			
ERBC14016	RB14016	CRBC14016			
ERBC14025	RB14025	CRBC14025			
ERBC15013	RB15013	CRBC15013			
ERBC15025	RB15025	CRBC15025			
ERBC15030	RB15030	CRBC15030			
ERBC16025	RB16025	CRBC16025			
ERBC17020	RB17020	CRBC17020			
ERBC18025	RB18025	CRBC18025			
ERBC19025	RB19025	CRBC19025			
ERBC20025	RB20025	CRBC20025			
ERBC20030	RB20030	CRBC20030			
ERBC20035	RB20035	CRBC20035			
ERBC22025	RB22025	CRBC22025			
ERBC24025	RB24025	CRBC24025			
ERBC25025	RB25025	CRBC25025			
ERBC25030	RB25030	CRBC25030			
ERBC25040	RB25040	CRBC25040			

EFANT	THK	IKO
ERBS	RA	CRBS
ERBS5008	RA5008	CRBS508A
ERBS6008	RA6008	CRBS608A
ERBS7008	RA7008	CRBS708A
ERBS8008	RA8008	CRBS808A
ERBS9008	RA9008	CRBS908A
ERBS10008	RA10008	CRBS1008A
ERBS11008	RA11008	CRBS1108A
ERBS12008	RA12008	CRBS1208A
ERBS13008	RA13008	CRBS1308A
ERBS14008	RA14008	CRBS1408A
ERBS15008	RA15008	CRBS1508A
ERBS16013	RA16013	CRBS16013A
ERBS17013	RA17013	CRBS17013A
ERBS18013	RA18013	CRBS18013A
ERBS19013	RA19013	CRBS19013A
ERBS20013	RA20013	CRBS20013A