

FRB Bearings

Cross Roller Bearing



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● **Structure and Features**

Crossed Roller Bearing because of its vertical arrangement of tapered roller with a 90°V through the separate separator in the deep groove rolling surface, compared to other kinds of bearings, has increased rigidity to a large extent. Therefore, a set of crossed roller bearing can support radial load, axial load and loading moment from all directions.

At the same time, cross roller bearing is a lightweight, compact type with thinnest possible inner and outer rings, especially for the thinnest, with high rigidity. It is optimal for application such as joints and swiveling units of industrial robots, swiveling tables of machine centers, rotary units of manipulators, precision tables, medical equipment, measuring instruments and IC manufacturing machines.

● **High Rotation Accuracy**

The spacers fitting among cross arranged rollers prevents rollers from skewing and the rotation torque from increasing due to friction between rollers. The spacers keeps roller or locked rollers. Since the inner and outer rings are designed to be separable, the bearing clearance can be adjusted. In addition, a preload can be applied. These features enable accurate rotation.

● **Easy Handling**

The inner and outer rings, which are separable, are secured to the body after being installed with rollers and spacers. Therefore, it is easy to handle the rings when installing the cross roller bearing.

● **Accuracy standards**

The cross roller bearing is manufactured with the accuracy and the dimensional tolerance according to Table 1 to 7

Table1 Rotational accuracy of inner ring of Model CHRA

Unit: μm

Nominal dimensions of the bearing inner diameter(mm)		Radial runout
		Axial runout
Above	Below	Tolerance
40	65	13
65	80	15
80	100	15
100	120	20
120	140	25
140	180	25
180	200	30

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Table 2 Rotational accuracy of inner ring of Model CHR/CHRBC/XHRBH

Unit: μm

Nominal dimensions of the bearing inner diameter(mm)		Radial runout tolerance of inner ring					Axial runout tolerance of inner ring				
Above	Below	P0	P6	P5	P4	P2	P0	P6	P5	P4	P2
18	30	13	8	4	3	2.5	13	8	4	3	2.5
30	50	15	10	5	4	2.5	15	10	5	4	2.5
50	80	20	10	5	4	2.5	20	10	5	4	2.5
80	120	25	13	6	5	2.5	25	13	6	5	2.5
120	150	30	18	8	6	2.5	30	18	8	6	2.5
150	180	30	18	8	6	5	30	18	8	6	5
180	250	40	20	10	8	5	40	20	10	8	5
250	315	50	25	13	10		50	25	13	10	
315	400	60	30	15	12		60	30	15	12	
400	500	65	35	18	14		65	35	18	14	
500	630	70	40	20	16		70	40	20	16	
630	800	80	45	23	18		80	45	23	18	
800	1000	90	50	25	20		90	50	25	20	
1000	1250	100	55	30	25		100	55	30	25	

Table 3 Rotational accuracy of outer ring of Model CHRE

Unit: μm

Nominal dimensions of the bearing outer diameter(mm)		Radial runout tolerance of inner ring					Axial runout tolerance of outer ring				
Above	Below	P0	P6	P5	P4	P2	P0	P6	P5	P4	P2
30	50	20	10	7	5	2.5	20	10	7	5	2.5
50	80	25	13	8	5	4	25	13	8	5	4
80	120	35	18	10	6	5	35	18	10	6	5
120	150	40	20	11	7	5	40	20	11	7	5
150	180	45	23	13	8	5	45	23	13	8	5
180	250	50	25	15	10	7	50	25	15	10	7
250	315	60	30	18	11	7	60	30	18	11	7
315	400	70	35	20	13	8	70	35	20	13	8
400	500	80	40	23	15		80	40	23	15	
500	630	100	50	25	16		100	50	25	16	
630	800	120	60	30	20		120	60	30	20	
800	1000	120	75				120	75			
1000	1250	120					120				
1250	1600	120					120				

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Table 4 Dimensions tolerance of the bearing inner diameter for Model CHRBC/CHRBC/CHRBC/CHRBC

Unit: μm

Nominal dimensions of the bearing inner diameter(mm)		Tolerance of dm(note 1)							
		P0		P6		P5		P4/P2	
Above	Below	Up	Down	Up	Down	Up	Down	Up	Down
18	30	0	-10	0	-8	0	-6	0	-5
30	50	0	-12	0	-10	0	-8	0	-6
50	80	0	-15	0	-12	0	-9	0	-7
80	120	0	-20	0	-15	0	-10	0	-8
120	150	0	-25	0	-18	0	-13	0	-10
150	180	0	-25	0	-18	0	-13	0	-10
180	250	0	-30	0	-22	0	-15	0	-12
250	315	0	-35	0	-25	0	-18		
315	400	0	-40	0	-30	0	-23		
400	500	0	-45	0	-35				
500	630	0	-50	0	-40				
630	800	0	-75						
800	1000	0	-100						
1000	1250	0	-125						

Note:1.dm represents the arithmetic average of the maximum and minimum diameters obtained in measuring the bearing inner diameter at two points.

2.For accuracy grades in bearing inner diameter with no values indicated in the table, the highest value among low accuracy grades applies.

Table 5 Dimensional tolerance of the bearing outer diameter for Model CHRBC/CHRBC/CHRBC/CHRBC

Unit: μm

Nominal dimensions of the bearing outer diameter (mm)		Tolerance of Dm (note 1)							
		P0		P6		P5		P4/P2	
Above	Below	Up	Down	Up	Down	Up	Down	Up	Down
30	50	0	-11	0	-9	0	-7	0	-6
50	80	0	-13	0	-11	0	-9	0	-7
80	120	0	-15	0	-13	0	-10	0	-8
120	150	0	-18	0	-15	0	-11	0	-9
150	180	0	-25	0	-18	0	-13	0	-10
180	250	0	-30	0	-20	0	-15	0	-11
250	315	0	-35	0	-25	0	-18	0	-13
315	400	0	-40	0	-28	0	-20	0	-15
400	500	0	-45	0	-33	0	-23		
500	630	0	-50	0	-38	0	-28		
630	800	0	-75	0	-45	0	-35		
800	1000	0	-100						
1000	1250	0	-125						
1250	1600	0	-160						

Note:1.Dm represents the arithmetic average of the maximum and minimum diameters obtained in measuring the bearing inner diameter at two points.

2.For accuracy grades in bearing inner diameter with no values indicated in the table, the highest value among low accuracy grades applies.