

Product Specification

Tolerances and allowable values of inner ring and tolerances of outer ring width

Unit: μm

d		△ _{dmp} (1)								△ _{bs}		△ _{cs} (2)		K _{ra}					S _{ra}				
Nominal bore diameter		Single plane mean bore dia. Deviation								Deviation of a single inner ring width		Deviation of a single outer ring width		Radial run-out of assembled bearing inner ring					Axial run-out of assembled bearing inner ring				
mm		0(Class)		P6		P5		P4		High	low	High	low	0(Class)	P6	P5	P4	P2	0(Class)	P6	P5	P4	P2
Over	Incl.	High	low	High	low	High	low	High	low	High	low	High	low	Max.					Max.				
18	30	0	-10	0	-8	0	-6	0	-5	0	-75	0	-100	13	8	4	3	2.5	13	8	4	3	2.5
30	50	0	-12	0	-10	0	-8	0	-6	0	-75	0	-100	15	10	5	4	2.5	15	10	5	4	2.5
50	80	0	-15	0	-12	0	-9	0	-7	0	-75	0	-100	20	10	5	4	2.5	20	10	5	4	2.5
80	120	0	-20	0	-15	0	-10	0	-8	0	-75	0	-100	25	13	6	5	2.5	25	13	6	5	2.5
120	150	0	-25	0	-18	0	-13	0	-10	0	-100	0	-120	30	18	8	6	2.5	30	18	8	6	2.5
150	180	0	-25	0	-18	0	-13	0	-10	0	-100	0	-120	30	18	8	6	5	30	18	8	6	5
180	250	0	-30	0	-22	0	-15	0	-12	0	-100	0	-120	40	20	10	8	5	40	20	10	8	5
250	315	0	-35	0	-25	0	-18	-	-	0	-120	0	-150	50	25	13	10	7	50	25	13	10	7
310	400	0	-40	0	-30	0	-23	-	-	0	-150	0	-200	60	30	15	12	8	60	30	15	12	8
400	500	0	-45	0	-35	-	-	-	-	0	-150	0	-200	65	35	18	14	10	65	35	18	14	10
500	630	0	-50	0	-40	-	-	-	-	0	-150	0	-200	70	40	20	16	12	70	40	20	16	12
630	800	0	-75	-	-	-	-	-	-	0	-150	0	-200	80	50	25	20	15	80	50	25	20	15

Notes(1) when values are not indicated in the table (Class 2, etc.) those for the highest class for which the value are indicated are applicable.

Tolerances and allowable values of outer ring

Unit: μm

d		△ _{dmp} (1)								K _{ra}					S _{ra}				
Nominal bore diameter		Single plane mean outside dia. Deviation								Radial run-out of assembled bearing outer ring					Axial run-out of assembled bearing outer ring				
mm		0(Class)		P6		P5		P4		0(Class)	P6	P5	P4(2)	P2(2)	0(Class)	P6	P5	P4(2)	P2(2)
Over	Incl.	High	low	High	low	High	low	High	low	Max.					Max.				
30	50	0	-11	0	-9	0	-7	0	-6	20	10	7	5	2.5	20	10	7	5	2.5
50	80	0	-13	0	-11	0	-9	0	-7	25	13	8	5	4	25	13	8	5	4
80	120	0	-15	0	-13	0	-10	0	-8	35	18	10	6	5	35	18	10	6	5
120	150	0	-18	0	-15	0	-11	0	-9	40	20	11	7	5	40	20	11	7	5
150	180	0	-25	0	-18	0	13	0	-10	45	23	13	8	5	45	23	13	8	6
180	250	0	-30	0	-20	0	-15	0	-11	50	25	15	10	7	50	25	15	10	7
250	315	0	-35	0	-25	0	-18	0	-13	60	30	18	11	7	60	30	18	11	7
315	400	0	-40	0	-28	0	-20	-	-	70	35	20	-	-	70	35	20	-	-
400	500	0	-45	0	-33	0	-23	-	-	80	40	23	-	-	80	40	23	-	-
500	630	0	-50	0	-38	0	-28	-	-	100	50	25	-	-	100	50	25	-	-
630	800	0	-75	0	-45	-	-	-	-	120	60	30	-	-	120	60	30	-	-
800	1000	0	-100	0	-60	-	-	-	-	120	75	35	-	-	120	75	35	-	-
1000	1030	0	-125	-	-	-	-	-	-	120	75	35	-	-	120	75	35	-	-

Notes(1) when values are not indicated in the table (Class 2, etc.) those for the highest class for which the value are indicated are applicable.

Tolerances and allowable values of inner rings of Mounting Holed Type Cross Roller Bearings.

Unit: μm

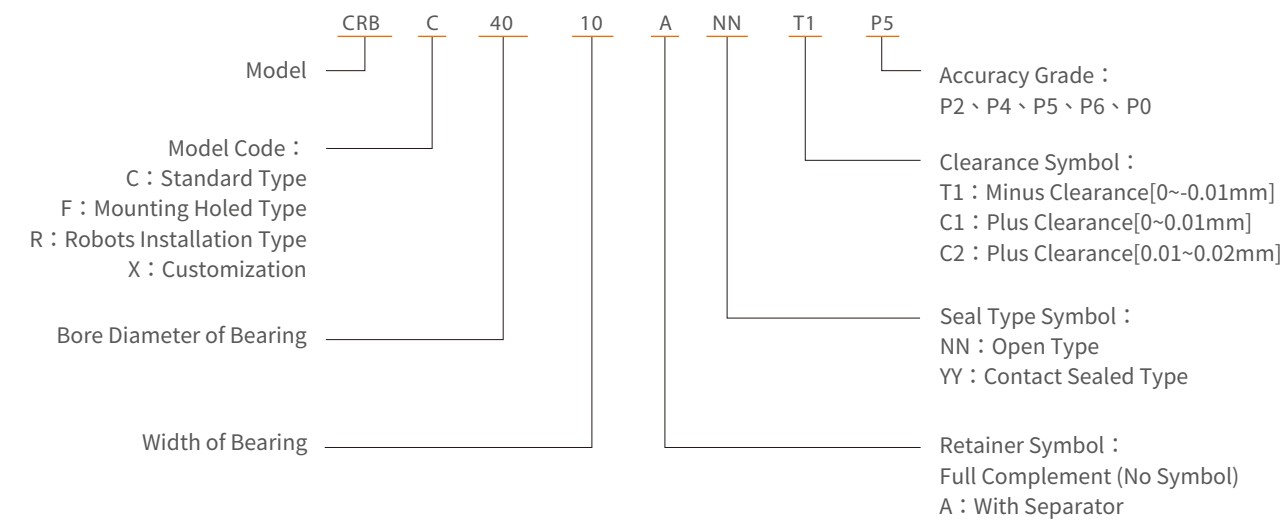
d		△ _{dmp}								△ _{bs}		K _{ra}					S _{ra}				
Nominal bore diameter		Single plane mean bore dia. Deviation								Deviation of a single inner ring width		Radial run-out of assembled bearing inner ring					Axial run-out of assembled bearing inner ring				
mm		0(Class)		P6		P5		P4 ~ P2		High	low	0(Class)	P6	P5	P4	P2	0(Class)	P6	P5	P4	P2
Over	Incl.	High	low	High	low	High	low	High	low	High	low	Max.					Max.				
-	20	0	-10	0	-8	0	-6	0	-5	0	-75	13	8	4	3	2.5	13	8	4	3	2.5
20	30	0	-10	0	-8	0	-6	0	-5	0	-75	15	10	5	4	2.5	15	10	5	4	2.5
30	35	0	-12	0	-10	0	-8	0	-6	0	-75	15	10	5	4	2.5	15	10	5	4	2.5
35	50	0	-12	0	-10	0	-8	0	-6	0	-75	20	10	5	4	2.5	20	10	5	4	2.5
50	65	0	-15	0	-12	0	-9	0	-7	0	-75	20	10	5	4	2.5	20	10	5	4	2.5
65	80	0	-15	0	-12	0	-9	0	-7	0	-75	25	13	6	5	2.5	25	13	6	5	2.5
80	100	0	-20	0	-15	0	-10	0	-8	0	-75	25	13	6	5	2.5	25	13	6	5	2.5
100	120	0	-20	0	-15	0	-10	0	-8	0	-75	30	18	8	6	2.5	30	18	8	6	2.5

Tolerances and allowable values of outer rings of Mounting Holed Type Cross Roller Bearings.

Unit: μm

d		△ _{dmp}								△ _{bs}		K _{ra}					S _{ra}				
Nominal bore diameter		Single plane mean outside dia. Deviation								Deviation of a single outer ring width		Radial run-out of assembled bearing inner ring					Axial run-out of assembled bearing inner ring				
mm		0(Class)		P6		P5		P4 ~ P2		High	low	0(Class)	P6	P5	P4	P2	0(Class)	P6	P5	P4	P2
Over	Incl.	High	low	High	low	High	low	High	low	High	low	Max.					Max.				
50	60	0	-13	0	-11	0	-9	0	-7	0	-75	20	10	7	5	2.5	20	10	7	5	2.5
60	80	0	-13	0	-11	0	-9	0	-7	0	-75	25	13	8	5	4	25	13	8	5	4
80	95	0	-15	0	-13	0	-10	0	-8	0	-75	25	13	8	5	4	25	13	8	5	4
95	120	0	-15	0	-13	0	-10	0	-8	0	-75	35	18	10	6	5	35	18	10	6	5
120	140	0	-18	0	-15	0	-11	0	-9	0	-75	35	18	10	6	5	35	18	10	6	5
140	150	0	-18	0	-15	0	-11	0	-9	0	-75	40	20	11	7	5	40	20	11	7	5
150	165	0	-25	0	-18	0	-13	0	-10	0	-75	40	20	11	7	5	40	20	11	7	5
165	180	0	-25	0	-18	0	-13	0	-10	0	-75	45	23	13	8	5	45	23	13	8	5
180	210	0	-30	0	-20	0	-15	0	-11	0	-75	45	23	13	8	5	45	23	13	8	5
210	240	0	-30	0	-20	0	-15	0	-11	0	-75	50	25	15	10	7	50	25	15	10	7

Product Specification Identification



Precautions for use

- The normal operating temperature of the bearing is 10 - 80 °C. If it exceeds this temperature range, the resin or rubber parts may be deformed and damaged.
- When foreign matter enters inside of the bearing, it may cause damage to the rolling path of the roller or loss of function. Please pay attention to the cleaning of parts, environment and tools during installation. To prevent foreign matter, dust, etc. from entering the inside of the bearing.
- If the impact force is applied to the bearing during use, the track surface and the roller will be cracked and indented, resulting in shortened bearing life, so care must be taken.
- When foreign matter such as chips is found to adhere or invade between the inner and outer rings of the bearing, clean and refill the grease.
- Please pay attention to the installation, when using the outer ring fixed and inner ring rotation, if need to correct the adjustment, you can only hit the outer ring
- When installing or removing the bearing, do not apply force to the fixing pin or screw.



Cross Roller Bearing

Cross Roller Bearing



To solve the problem of reducing the mechanism which use one bearing to replace two bearing solution. PMI's designs and manufactures a variety of cross roller bearings that can handle radial, thrust and moment loads at the same time. These compact bearing feature rollers crossed at right angles between inner and outer rings. This structure can reduce the combined height required for bearings, achieving high rigidity and excellent load capacity. There are currently Standard type CRB, Mounting Holed type CRBF, Robots Installation type CRBR and Customization type CRBX for choose.

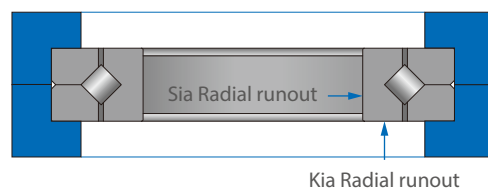
Product Application

It suitable used in the rotating parts of machine tools, industrial robots, measuring instrument and IC manufacturing.

Product Characteristics

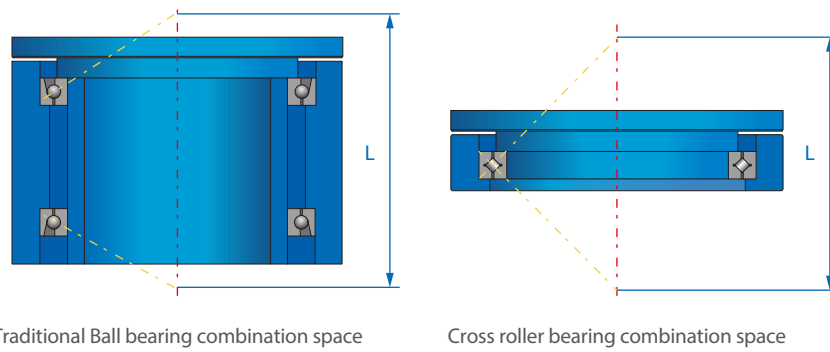
► High Accuracy

PMI offers precision cross roller bearing in the P2, P4, P5, P6 and P0 grades that to satisfy the needs of customers for precision equipment. The bearings produced by the test are classified that according to the accuracy of the ISO standard.



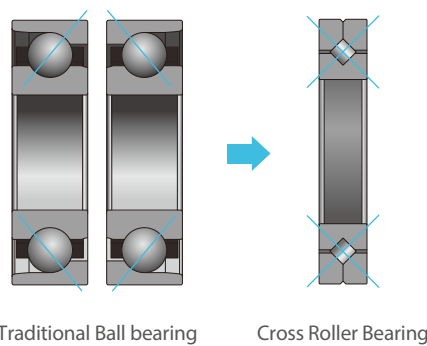
► High Rigidity · High Load Capacity

Rollers crossed at right angles between inner and outer rings, the roller and groove contact area compare with ball bearings is bigger and contributing to miniaturization and increase load capacity and rigidity.



► Save Space

Traditional Ball bearing combination space larger than Cross roller bearing about 1.5~2times, reduce the design space and miniaturization.



► Specification Diversification

Bore diameter 20mm to 110mm available for selection.

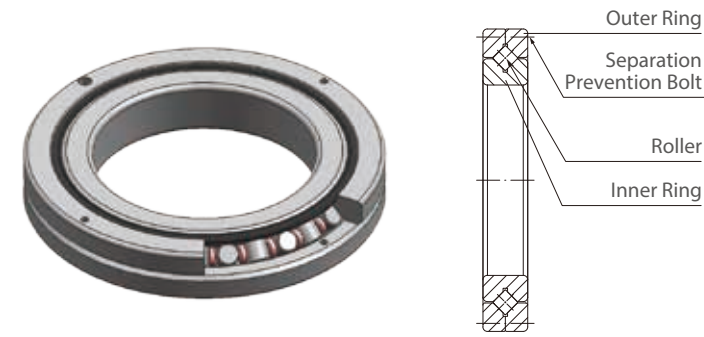
► Crowning Rollers

The rollers designed crowning curve that to avoid stress concentrate at both ends of the roller for the reason that it is maximum stress value of the roller can be reduced and the loading is relatively average, so improve the life of cross roller bearing.

Product Category

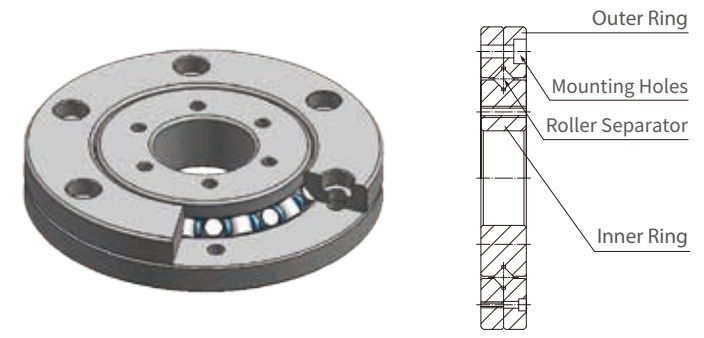
• Standard Type - CRB

The outer ring is separable, this model is used in locations where accuracy of the inner ring is required. Ex: Rotary part of hollow rotary table.



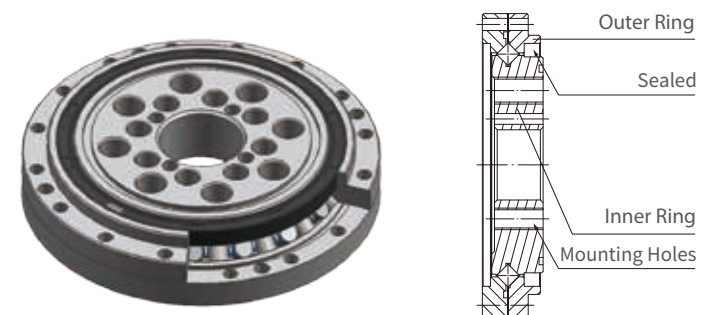
• Mounting Holed Type - CRBF

Mounting holes for direct fixing on outer and inner ring, helps produce smaller and lightweight equipment, product design becomes more compact, CRBF can be assembled on the device according to the customers use, reduce the costs and delivery.



• Robots Installation Type - CRBR

Robots Installation type CRBR the outer ring is made of two split pieces, inner ring as a whole structure, mounting holes for direct fixing on mating mounting surface are available, east installation, suitable for harmonic drive CSG(CSF) series and Multi-axis robot.



• Customization TYPE CRBX

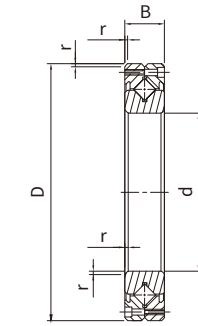
Customers can provide design drawings to PMI, develop customized cross roller bearing products.



Product Specification

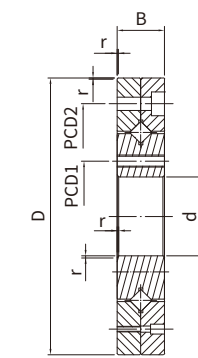
• Standard Type - CRB

Shaft dia (mm)	Identification number				Mass (Ref.) kg	Boundary dimensions (mm)				Basic dynamic load rating C (N)	Basic static load rating C ₀ (N)
	With separator		Full complement			d	D	B	r _{min}		
	Open type	Sealed type	Open type	Sealed type							
30	CRBC 3010	CRBC 3010 YY	CRB 3010	CRB 3010 YY	0.12	30	55	10	0.5	5300	6300
40	CRBC 4010	CRBC 4010 YY	CRB 4010	CRB 4010 YY	0.15	40	65	10	0.6	6000	8100
45	CRBC 4510	CRBC 4510 YY	CRB 4510	CRB 4510 YY	0.16	45	70	10	0.6	6700	8600
50	CRBC 5013	CRBC 5013 YY	CRB 5013	CRB 5013 YY	0.29	50	80	13	0.7	14200	19000
60	CRBC 6013	CRBC 6013 YY	CRB 6013	CRB 6013 YY	0.33	60	90	13	0.7	15200	21500
70	CRBC 7013	CRBC 7013 YY	CRB 7013	CRB 7013 YY	0.38	70	100	13	0.7	17000	25500
80	CRBC 8013	CRBC 8013 YY	CRB8013	CRB 8013 YY	0.41	80	110	13	0.8	18600	28300
80	CRBC 8016	CRBC 8016 YY	CRB 8016	CRB 8016 YY	0.72	80	120	16	0.8	24300	37500
100	CRBC 10020	CRBC 10020 YY	CRB 10020	CRB 10020 YY	1.43	100	150	20	1	39400	61000
110	CRBC 11020	CRBC 11020 YY	CRB 11020	CRB 11020 YY	1.56	110	160	20	1	41200	66700



• Mounting Holed Type - CRBF

Shaft dia (mm)	Identification number	Mass (Ref.) kg	Boundary dimensions (mm)				Mounting holes (mm)				Basic dynamic load rating C (N)	Basic static load rating C ₀ (N)		
			With separator		Full complement		Inner ring		Outer ring					
			Open type	Sealed type	d	D	B	r _{min}	r _{2min}	PCD1			Mounting holes	PCD2
10	CRBF 1008	CRBF 1008 YY	0.12	10	52	8	0.9	0.9	16	4-M3 through	42	6-φ3.4 through φ6.5 counter bore depth 3.3	2900	2400
20	CRBF 2012	CRBF 2012 YY	0.31	20	70	12	0.9	0.9	28	6-M3 through	57	6-φ3.4 through φ6.5 counter bore depth 3.3	7600	8400
25	CRBF 2512	CRBF 2512 YY	0.4	25	80	12	1	1	35	6-M3 through	67	6-φ3.4 through φ6.5 counter bore depth 3.3	8600	10600
35	CRBF 3515	CRBF 3515 YY	0.66	35	95	15	1.1	1.1	45	8-M4 through	83	8-φ4.5 through φ8 counter bore depth 4.4	17300	21000
55	CRBF 5515	CRBF 5515 YY	0.96	55	120	15	1.1	1.1	65	8-M5 through	105	8-φ5.5 through φ9.5 counter bore depth 5.4	20000	28000



• Robots Installation Type - CRBR

Shaft dia (mm)	Identification number	Mass (Ref.) kg	Boundary dimensions (mm)				Mounting holes (mm)				Basic dynamic load rating C (N)	Basic static load rating C ₀ (N)			
			With separator		Full complement		Inner ring		Outer ring						
			Open type	Sealed type	d	D	B	r _{min}	r _{2min}	PCD1			Mounting holes	PCD2	Mounting holes
10	CRBR 17	0.15	10	62	16.5	0.3	0.33	19	6-M5 through	27	6-M5 through	56	10-φ3.5 through	3540	4030
14	CRBR 20	0.24	14	70	16	0.3	0.35	24	8-M6 through	32	8-M6 through	64	12-φ3.5 through	5480	7730
20	CRBR 25	0.5	20	85	18.5	0.3	0.35	30	8-M8 through	42	8-M8 through	79	16-φ3.5 through	6600	9300
26	CRBR 32	1.24	26	112	22.5	0.3	0.5	40	8-M10 through	55	8-M10 through	104	16-φ4.5 through	10400	13300
24	CRBR 40	1.7	24	126	24	0.5	0.5	50	8-M10 through	68	8-M10 through	117	20-φ5 through	7160	12500

