

CROSSED ROLLER BEARINGS

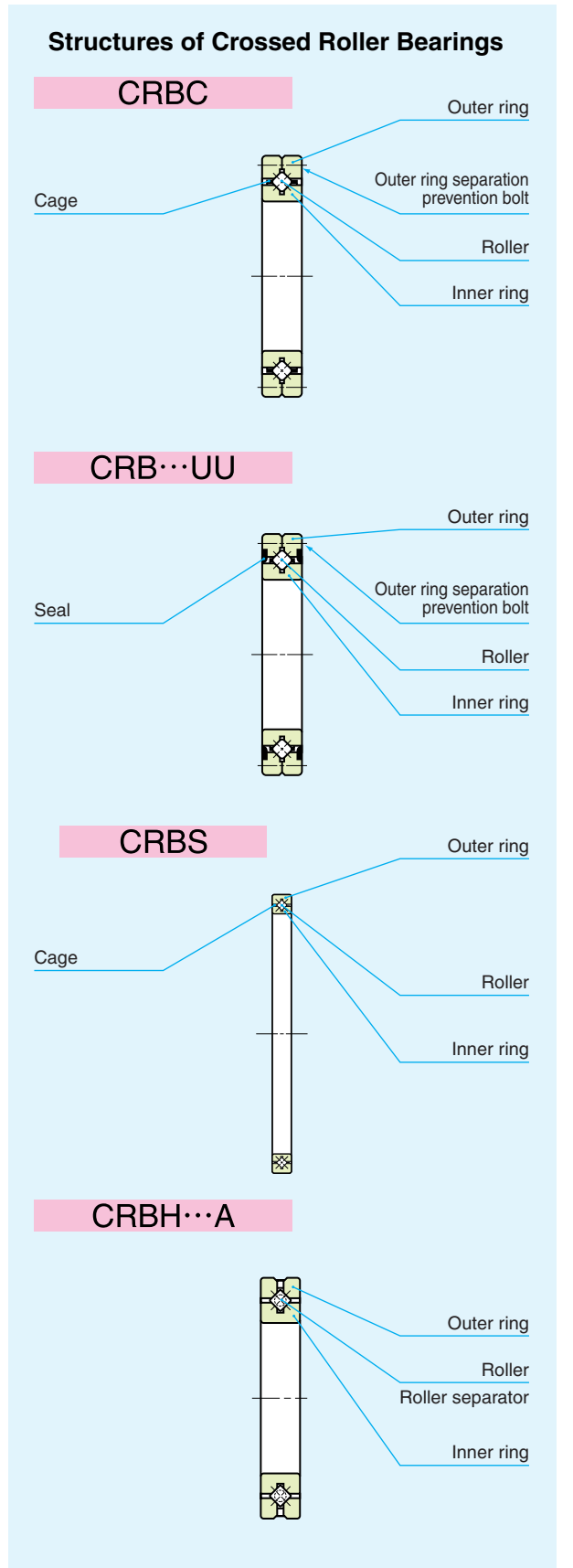
- High Rigidity Type Crossed Roller Bearings
- Standard Type Crossed Roller Bearings
- Slim Type Crossed Roller Bearings



Structure and Features

IKO Crossed Roller Bearings are compact bearings with their rollers alternately crossed at right angles to each other between inner and outer rings. They can take loads from any directions at the same time such as radial, thrust and moment loads. The rollers make line-contact with raceway surfaces, and, therefore, elastic deformation due to bearing loads is very small. These bearings are widely used in the rotating parts of industrial robots, machine tools, medical equipment, etc., which require compactness, high rigidity and high rotational accuracy.

In addition, bearings made of stainless steel or those with inner and outer rings provided with mounting holes are also available on request. Please contact IKO.



CRBH
CRBC
CRB
CRBS

Types

Crossed Roller Bearings are available in the types shown in Table 1.

Table 1 Crossed Roller Bearing Type

Type	With Cage	With Separator	Full complement
High rigidity type crossed roller bearings CRBH	Open type	—	CRBH...A
	Sealed type	—	CRBH...AUU
Standard type crossed roller bearings CRBC, CRB	Open type	CRBC	CRB
	Sealed type	CRBC...UU	CRB...UU
Slim type crossed roller bearings CRBS	Open type	—	CRBS...V
	Sealed type	—	CRBS...VUU

High Rigidity Type Crossed Roller Bearings

Both inner and outer rings have a solid one-piece construction. Therefore, high accuracy and high rigidity are achieved, and mounting errors can be minimized. As separators are incorporated between the rollers for smooth rotation, these bearings are suitable for applications where rotational speed is comparatively high.

Standard Type Crossed Roller Bearings

The outer ring is made of two split pieces, which are bolted together to prevent separation during transportation or mounting. So, handling is easy.

Slim Type Crossed Roller Bearings

These bearings are very slim bearings having a small outside diameter, in comparison with the bore diameter, and a narrow width. The type with cage and the type with separator provide smooth rotation and are suitable for applications where rotational speed is comparatively high.

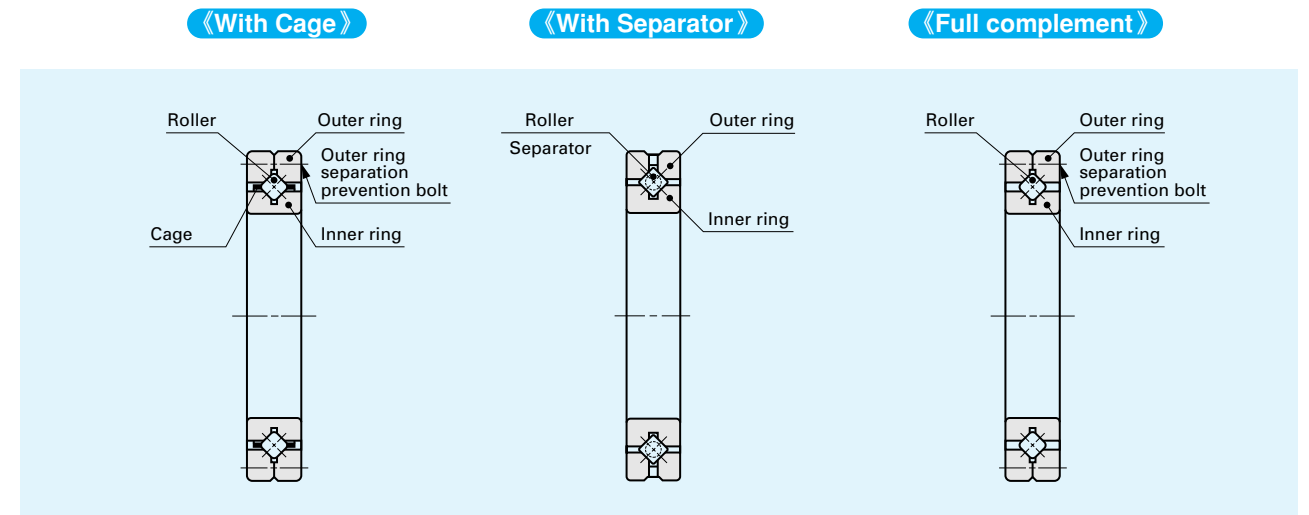
Internal Structures and Shapes

Various types are lined up in Crossed Roller Bearing series, including the type with cage, the type with separator, open type, sealed type, etc..

Roller guide method

Crossed Roller Bearings include the type with cage, type with separator and full complement type. The type with cage and the type with separator have a small coefficient of friction and are suitable for com-

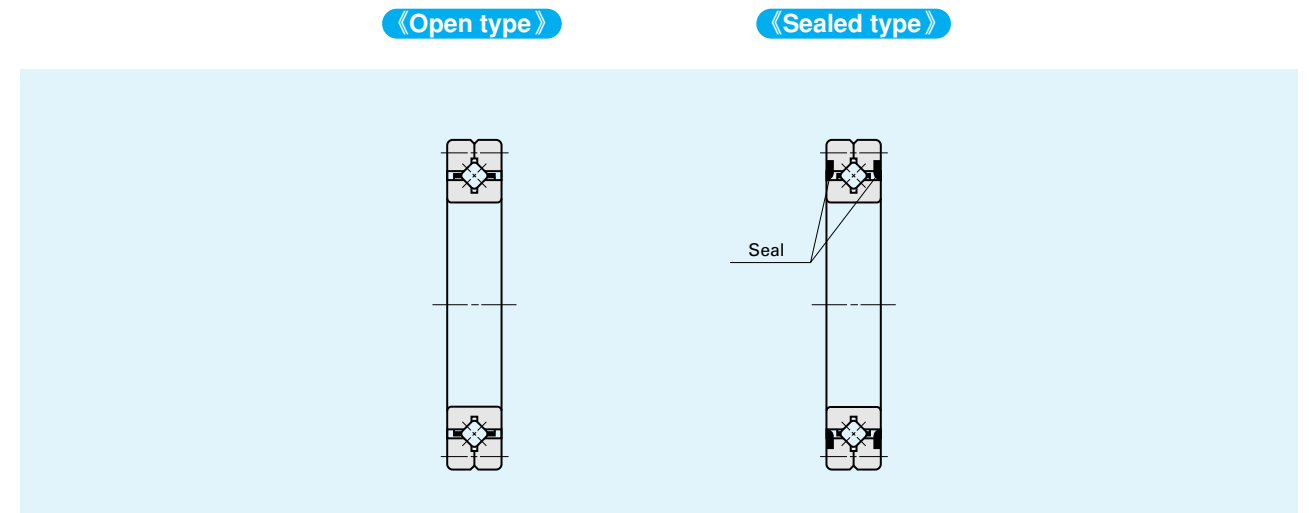
paratively high speed rotations, while the full complement type is suitable for heavy load applications at low speed rotations.



Seal structure

Crossed Roller Bearings include the open type and sealed type. The sealed type bearing incorporates seals made of special synthetic rubber that have

excellent sealing performance against dust and dirt penetration and grease leakage.

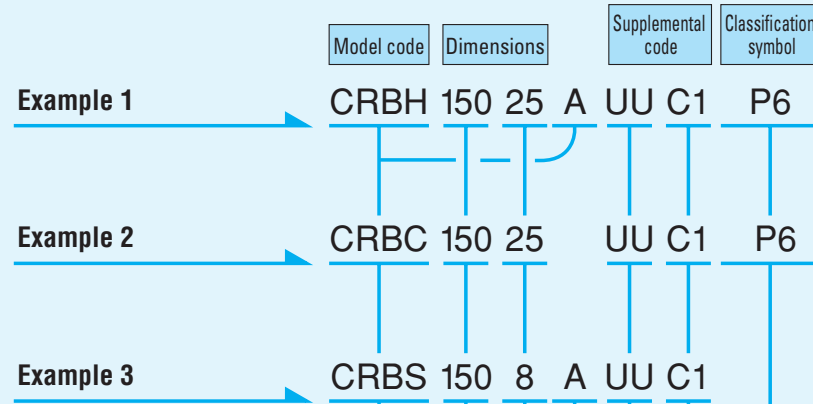


CRBH
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Identification number

The identification number of Crossed Roller Bearings consists of a model code, dimensions, any supplemental codes and a classification symbol. Some examples are shown below.

Examples of identification number



Model code	
CRBH···A	High Rigidity Type Crossed Roller Bearing (With separator)
CRBC	Standard Type Crossed Roller Bearing (With cage)
CRB	Standard Type Crossed Roller Bearing (Full complement)
CRBS	Slim Type Crossed Roller Bearing (With cage)
CRBS···A	Slim Type Crossed Roller Bearing (With separator)
CRBS···V	Slim Type Crossed Roller Bearing (Full complement)

Dimension	
The dimension indicates the bore diameter of the bearing. (unit : mm)	
The dimension indicates the bearing width. (unit : mm)	

Supplemental code - 1	
No symbol	Open type
UU	Sealed type ⁽¹⁾

Note⁽¹⁾ For the type with a seal on one side, "U" is attached.

Supplemental code - 2		
T1	T1 clearance	
C1	C1 clearance	
C2	C2 clearance	Not applicable to Slim Type Crossed Roller Bearings.
No symbol	Normal clearance	Applicable to Slim Type Crossed Roller Bearings.

Classification symbol		
No symbol	Accuracy class 0	
P6	Accuracy class 6	Not applicable to Slim Type Crossed Roller Bearings.
P5	Accuracy class 5	
P4	Accuracy class 4	
P2	Accuracy class 2	

Dynamic Equivalent Load

The dynamic equivalent radial load of Crossed Roller Bearings can be obtained from the following equation.

$$P_r = X \left(F_r + \frac{2M}{D_{pw}} \right) + Y F_a \quad \dots\dots\dots (1)$$

where, P_r : Dynamic equivalent radial load, N
 F_r : Radial load, N
 F_a : Axial load, N
 M : Moment, N-mm
 D_{pw} : Pitch circle diameter of roller set, mm

$$\left(D_{pw} \doteq \frac{d+D}{2} \right)$$

X : Radial load factor (Refer to Table 2.)
 Y : Axial load factor (Refer to Table 2.)

Static Equivalent Load

The static equivalent radial load of Crossed Roller Bearings can be obtained from the following equation.

$$P_{0r} = F_r + \frac{2M}{D_{pw}} + 0.44 F_a \quad \dots\dots\dots (2)$$

where, P_{0r} : Static equivalent radial load, N
 F_r : Radial load, N
 F_a : Axial load, N
 M : Moment, N-mm
 D_{pw} : Pitch circle diameter of roller set, mm

$$\left(D_{pw} \doteq \frac{d+D}{2} \right)$$

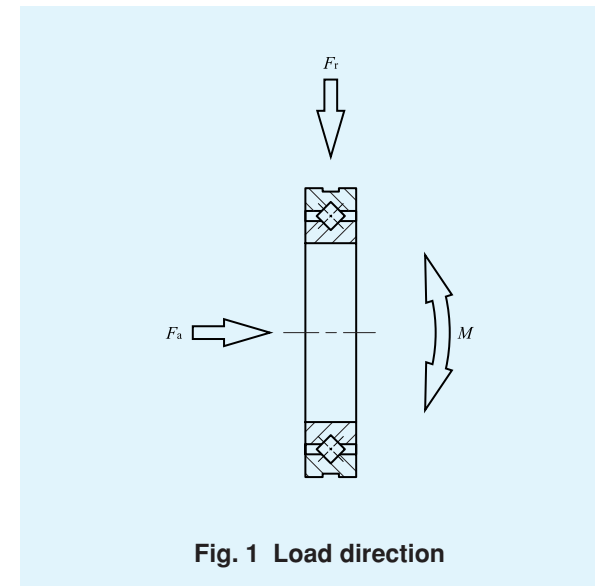


Fig. 1 Load direction

Table 2 Radial load factor and axial load factor

Conditions	X	Y
$\frac{F_a}{F_r + 2M/D_{pw}} \leq 1.5$	1	0.45
$\frac{F_a}{F_r + 2M/D_{pw}} > 1.5$	0.67	0.67

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CRBS

Accuracy

The accuracy of Crossed Roller Bearings is shown in Tables 3 and 4. However, the accuracy of Slim Type Crossed Roller Bearings is based on Table 5.

Bearings with special accuracy are also optionally available. Please consult IKO.

Table 3 Tolerances and allowable values of inner rings and tolerances of outer ring width unit: μm

Nominal bore diameter mm	$\Delta_{dmp}^{(1)}$ Single plane mean bore dia. deviation								Δ_{Bs} Deviation of a single inner ring width		$\Delta_{Cs}^{(2)}$ Deviation of a single outer ring width		K_{ia} Radial run-out of assembled bearing inner ring					S_{ia} Assembled bearing inner ring face run-out with raceway					
	Class 0		Class 6		Class 5		Class 4		High	Low	High	Low	Class 0	Class 6	Class 5	Class 4	Class 2	Class 0	Class 6	Class 5	Class 4	Class 2	
	Over	Incl.	High	Low	High	Low	High	Low															High
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
315	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 values are indicated are applicable.
⁽²⁾ In case of High Rigidity Type Crossed Roller Bearings, the tolerances for deviation of a single inner ring width are applicable to those of a single outer ring width.

Remark The accuracy specified in this table is not applicable to Slim Type Crossed Roller Bearings.

Table 4 Tolerances and allowable values of outer ring unit: μm

Nominal outside diameter mm	$\Delta_{dmp}^{(1)}$ Single plane mean outside dia. deviation								K_{ea} Radial run-out of assembled bearing outer ring					S_{ea} Assembled bearing outer ring face run-out with raceway					
	Class 0		Class 6		Class 5		Class 4		Class 0	Class 6	Class 5	Class 4 ⁽²⁾	Class 2 ⁽²⁾	Class 0	Class 6	Class 5	Class 4 ⁽²⁾	Class 2 ⁽²⁾	
	Over	Incl.	High	Low	High	Low	High	Low											High
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	5
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 values are indicated are applicable.
⁽²⁾ Classes 4 and 2 apply to High Rigidity Type Crossed Roller Bearings. For Standard Type Crossed Roller Bearings, the tolerance values for Class 5 are applicable to Classes 4 and 2.

Remark The accuracy specified in this table is not applicable to Slim Type Crossed Roller Bearings.

Table 5 Tolerances and allowable values of Slim Type Crossed Roller Bearings unit: μm

Nominal bore diameter mm	Δ_{dmp} Single plane mean bore dia. deviation		Δ_{Dmp} Single plane mean outside dia. deviation		Δ_{Bs} and Δ_{Cs} Deviations of a single inner ring width and outer ring width		K_{ia} and S_{ia} Radial and axial run-out of assembled bearing inner ring	K_{ea} and S_{ea} Radial and axial run-out of assembled bearing outer ring
	High	Low	High	Low	High	Low		
50	0	-15	0	-13	0	-127	13	13
60	0	-15	0	-13	0	-127	13	13
70	0	-15	0	-15	0	-127	15	15
80	0	-20	0	-15	0	-127	15	15
90	0	-20	0	-15	0	-127	15	15
100	0	-20	0	-15	0	-127	15	15
110	0	-20	0	-20	0	-127	20	20
120	0	-25	0	-20	0	-127	20	20
130	0	-25	0	-25	0	-127	25	25
140	0	-25	0	-25	0	-127	25	25
150	0	-25	0	-25	0	-127	25	25
160	0	-25	0	-25	0	-127	25	25
170	0	-25	0	-30	0	-127	25	25
180	0	-30	0	-30	0	-127	30	30
190	0	-30	0	-30	0	-127	30	30
200	0	-30	0	-30	0	-127	30	30

Clearance

The radial internal clearances of Crossed Roller Bearings are shown in Table 6.1. However, the radial internal clearances of Slim Type Crossed Roller Bearings are based on Table 6.2.

Table 6.1 Radial internal clearances unit: μm

Nominal bore diameter mm	Radial internal clearance						
	T1		C1		C2		
	Min.	Max.	Min.	Max.	Min.	Max.	
-	30	-10	0	0	10	10	20
30	40	-10	0	0	10	10	20
40	50	-10	0	0	10	10	25
50	65	-10	0	0	10	10	25
65	80	-10	0	0	15	15	30
80	100	-10	0	0	15	15	35
100	120	-15	0	0	15	15	35
120	140	-15	0	0	20	20	45
140	160	-15	0	0	20	20	50
160	200	-15	0	0	20	20	50
200	250	-20	0	0	25	25	60
250	315	-20	0	0	25	25	60
315	400	-25	0	0	30	30	70
400	500	-30	0	0	40	40	85
500	630	-30	0	0	50	50	100
630	710	-30	0	0	60	60	120
710	800	-40	0	0	70	70	140

Remark This table is not applicable to Slim Type Crossed Roller Bearings.

Table 6.2 Radial internal clearances of Slim Type Crossed Roller Bearings unit: μm

Nominal bore diameter mm	Radial internal clearance					
	T1		C1		Normal	
	Min.	Max.	Min.	Max.	Min.	Max.
50	-8	0	0	15	30	56
60	-8	0	0	15	30	56
70	-8	0	0	15	30	56
80	-8	0	0	15	41	66
90	-8	0	0	15	41	66
100	-8	0	0	15	41	66
110	-8	0	0	15	41	66
120	-8	0	0	15	51	76
130	-8	0	0	15	51	76
140	-8	0	0	15	51	76
150	-8	0	0	15	51	76
160	-10	0	0	20	51	76
170	-10	0	0	20	51	76
180	-10	0	0	20	61	86
190	-10	0	0	20	61	86
200	-10	0	0	20	61	86

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Fit

The standard fits of Crossed Roller Bearings are shown in Table 7.1. For large bearings, fit based on the actual measured dimensions of the bearings is recommended, and fit allowance should be chosen as small as possible in accordance with the tolerance class given in Table 7.1. When complex loads or shock loads are applied or when high rotational accuracy and rigidity of the bearing are required, it is recommended to use a slight interference fit adjusted to the actual measured dimensions for both inner and outer rings.

For the interference fit, the radial internal clearance after the fit decreases by approximately 70% to 90% of the interference amount. To avoid excessive pre-load due to fit, it is recommended to use a slight interference fit adjusted to the actual measured dimensions for both T1 and C1 clearances.

Table 7.1 Recommended fits for Crossed Roller Bearings under normal load

Radial internal clearance	Tolerance class			
	Inner ring rotating load		Outer ring rotating load	
	Shaft	Housing bore	Shaft	Housing bore
C1 clearance	h5	H7	g5	J7 ⁽¹⁾
C2 clearance	j5	H7	g5	J7 ⁽¹⁾

Note⁽¹⁾ It is recommended that a slight interference fit adjusted to the actual measured dimensions of the bearing is used.

Table 7.2 Recommended fits for Slim Type Crossed Roller Bearings with normal clearances

(Dimensional tolerances of shaft and housing bore)

unit: μm

Nominal bore diameter d mm	Inner ring rotating load				Outer ring rotating load			
	Shaft		Housing bore		Shaft		Housing bore	
	High	Low	High	Low	High	Low	High	Low
50	+15	0	+13	0	-15	-30	-13	-25
60	+15	0	+13	0	-15	-30	-13	-25
70	+15	0	+15	0	-15	-30	-15	-30
80	+20	0	+15	0	-20	-40	-15	-30
90	+20	0	+15	0	-20	-40	-15	-30
100	+20	0	+15	0	-20	-40	-15	-30
110	+20	0	+20	0	-20	-40	-20	-40
120	+25	0	+20	0	-25	-50	-20	-40
130	+25	0	+25	0	-25	-50	-25	-50
140	+25	0	+25	0	-25	-50	-25	-50
150	+25	0	+25	0	-25	-50	-25	-50
160	+25	0	+25	0	-25	-50	-25	-50
170	+25	0	+30	0	-25	-50	-30	-60
180	+30	0	+30	0	-30	-60	-30	-60
190	+30	0	+30	0	-30	-60	-30	-60
200	+30	0	+30	0	-30	-60	-30	-60

Allowable rotational speed

Allowable rotational speeds of Crossed Roller Bearings are affected by mounting and operating conditions. The values in general operation are shown in Table 8.

Table 8 $d_m n$ values⁽¹⁾ of Crossed Roller Bearings

Lubricant	Grease	Oil
CRBH ... A CRBC CRBS	75000	150000
CRB CRBS ... V	50000	75000

Note⁽¹⁾ $d_m n$ value = $d_m \times n$
 where, d_m : Mean value of bearing bore and outside diameters, mm
 n : Number of rotations per minute, rpm
 * These are not applicable to the Sealed Type.

Lubrication

These bearings are generally lubricated with grease. Grease is supplied through the clearance between the inner ring and the outer ring.

In the sealed type bearings, ALVANIA EP GREASE 2 is prepacked as the lubricating grease.

For bearings without prepacked grease, supply grease or oil for use. Operating without grease or oil will increase the wear of the rolling contact surfaces and cause a short bearing life.

When using a special grease, carefully examine the grease properties and contents such as base oil viscosity and extreme pressure additives. In this case, please contact IKO.

Oil Hole

For Crossed Roller Bearings, oil holes and oil grooves can be provided on bearing rings on request. When an oil hole is required on the outer ring, attach "-OH" before the clearance symbol in the identification number. When an oil hole and an oil groove are required on the outer ring, attach "-OG" at the same place in the identification number. For an oil hole on the inner ring, attach "/OH", and for an oil hole and an oil groove on the inner ring, attach "/OG", at the same place in the identification number. High Rigidity Type Crossed Roller Bearings have an oil groove and two oil holes on the outer ring as standard. Table 9 shows availability of oil holes for each bearing type.

Table 9 Oil holes

Bearing type ⁽¹⁾	Oil hole code			
	/nOH	/nOG	-nOH	-nOG
CRBH	○	○	—	— ⁽²⁾
CRB, CRBC	○	○	○	○
CRBS	○	—	○	—

Notes⁽¹⁾ Only representative types are shown in the table, but this table is applicable to all Crossed Roller Bearings.

⁽²⁾ CRBH is provided with an oil groove and two oil holes on the outer ring.

Remark n denotes the number of oil holes not exceeding 4. For one oil hole, number is not indicated. When preparing multiple oil holes, please contact IKO.

Example 1 When the inner ring has 4 oil holes
 CRBC 10020 / 4OH C1

Example 2 When the outer ring has a single oil hole
 CRBC 10020 - OH C1

Operating Temperature Range

The operating temperature range for Crossed Roller Bearings is $-20^{\circ}\text{C} \sim +120^{\circ}\text{C}$. However, the maximum allowable temperature for types with separator and with seal is $+110^{\circ}\text{C}$, and $+100^{\circ}\text{C}$ when they are continuously operated.

Mounting

① When the rigidity of the mounting parts is insufficient, stress concentration will occur at the contact area between the rollers and the raceways, and the bearing performance will be deteriorated significantly. Therefore, carefully examine the rigidity of housing and the strength of fixing bolts when a large moment is applied.

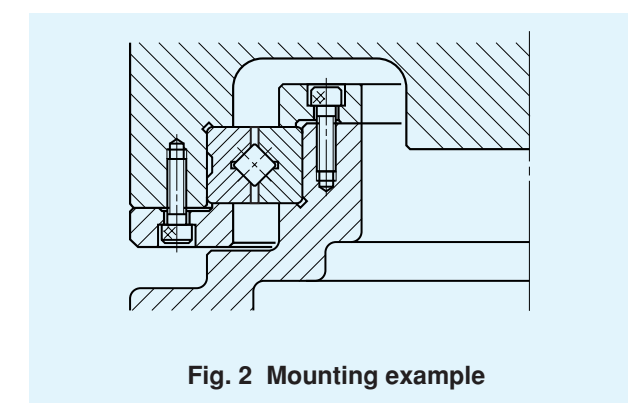


Fig. 2 Mounting example

② The inner and outer rings should be securely fixed in the axial direction by using fixing plates, etc. Recommended thickness of the fixing plate is 1/2 or more of the bearing width B . The dimensions in the axial direction of the housing bore and the fixing plates should be determined to get a secure fixing while considering the dimension of bearing width which is given a minus tolerance.

③ The shoulder height diameters (d_a and D_a) that are related to mounting should satisfy the values shown in the dimension tables. When these dimensions are incorrect, deformations of inner and outer rings will occur and the bearing performance will be remarkably impaired.

④ The depth of the housing bore is recommended to be equal to or larger than the bearing width.

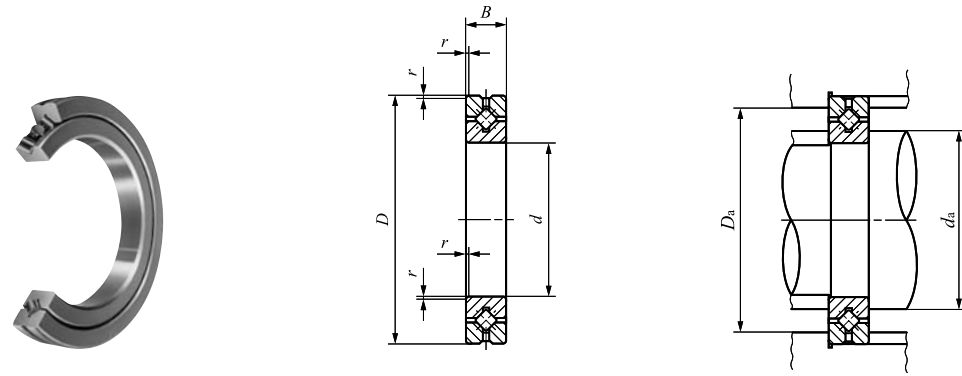
⑤ Separation prevention bolts for the outer ring are provided to prevent separation of two halves of the outer ring during transportation or mounting. When mounting, they should be loosened slightly.

⑥ High Rigidity Type Crossed Roller Bearings and Slim Type Crossed Roller Bearings have a plug for hole for inserting rollers. When mounting the bearings, locate the plug at a position that is not included in the maximum loading zone. The plug is a press-fitted pin that can be found on the side face of the outer ring.

CRBH
CRBC
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CRBS

CROSSED ROLLER BEARINGS

High Rigidity Type Crossed Roller Bearings **Open Type/With Separator**



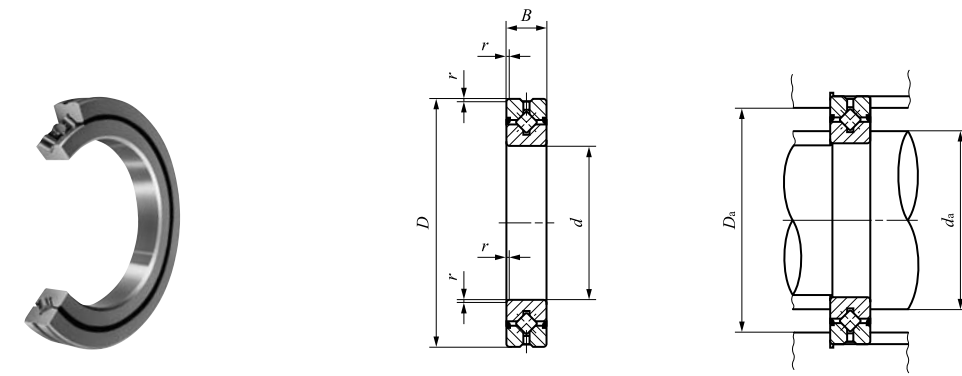
Shaft dia. 20 – 250mm

CRBH...A

Shaft dia. mm	Identification number	Mass (Ref.) kg	Boundary dimensions mm				Mounting dimensions mm		Basic dynamic load rating C N	Basic static load rating C ₀ N
			d	D	B	r _{min} ⁽¹⁾	d _a	D _a		
20	CRBH 208 A	0.04	20	36	8	0.3	24	31	2 910	2 430
25	CRBH 258 A	0.05	25	41	8	0.3	29	36	3 120	2 810
30	CRBH 3010 A	0.12	30	55	10	0.3	36.5	48.5	7 600	8 370
35	CRBH 3510 A	0.13	35	60	10	0.3	41.5	53.5	7 900	9 130
40	CRBH 4010 A	0.15	40	65	10	0.3	46.5	58.5	8 610	10 600
45	CRBH 4510 A	0.16	45	70	10	0.3	51.5	63.5	8 860	11 300
50	CRBH 5013 A	0.29	50	80	13	0.6	56	74	17 300	20 900
60	CRBH 6013 A	0.33	60	90	13	0.6	66	84	18 800	24 300
70	CRBH 7013 A	0.38	70	100	13	0.6	76	94	20 100	27 700
80	CRBH 8016 A	0.74	80	120	16	0.6	88	112	32 100	43 400
90	CRBH 9016 A	0.81	90	130	16	0.6	98	122	33 100	46 800
100	CRBH 10020 A	1.45	100	150	20	0.6	110	140	50 900	72 200
110	CRBH 11020 A	1.56	110	160	20	0.6	120	150	52 400	77 400
120	CRBH 12025 A	2.62	120	180	25	1	132	168	73 400	108 000
130	CRBH 13025 A	2.82	130	190	25	1	142	178	75 900	115 000
140	CRBH 14025 A	2.96	140	200	25	1	152	188	81 900	130 000
150	CRBH 15025 A	3.16	150	210	25	1	162	198	84 300	138 000
200	CRBH 20025 A	4.0	200	260	25	1	212	248	92 300	169 000
250	CRBH 25025 A	4.97	250	310	25	1.5	262	298	102 000	207 000

Note⁽¹⁾ Minimum allowable single value of chamfer dimension r
 Remarks1. The outer ring has an oil groove and two oil holes.
 2. Grease is not prepacked. Perform proper lubrication.

High Rigidity Type Crossed Roller Bearings **Sealed Type/With Separator**



Shaft dia. 20 – 250mm

CRBH...AUU

Shaft dia. mm	Identification number	Mass (Ref.) kg	Boundary dimensions mm				Mounting dimensions mm		Basic dynamic load rating C N	Basic static load rating C ₀ N
			d	D	B	r _{min} ⁽¹⁾	d _a	D _a		
20	CRBH 208 A UU	0.04	20	36	8	0.3	24	31	2 910	2 430
25	CRBH 258 A UU	0.05	25	41	8	0.3	29	36	3 120	2 810
30	CRBH 3010 A UU	0.12	30	55	10	0.3	36.5	48.5	7 600	8 370
35	CRBH 3510 A UU	0.13	35	60	10	0.3	41.5	53.5	7 900	9 130
40	CRBH 4010 A UU	0.15	40	65	10	0.3	46.5	58.5	8 610	10 600
45	CRBH 4510 A UU	0.16	45	70	10	0.3	51.5	63.5	8 860	11 300
50	CRBH 5013 A UU	0.29	50	80	13	0.6	56	74	17 300	20 900
60	CRBH 6013 A UU	0.33	60	90	13	0.6	66	84	18 800	24 300
70	CRBH 7013 A UU	0.38	70	100	13	0.6	76	94	20 100	27 700
80	CRBH 8016 A UU	0.74	80	120	16	0.6	88	112	32 100	43 400
90	CRBH 9016 A UU	0.81	90	130	16	0.6	98	122	33 100	46 800
100	CRBH 10020 A UU	1.45	100	150	20	0.6	110	140	50 900	72 200
110	CRBH 11020 A UU	1.56	110	160	20	0.6	120	150	52 400	77 400
120	CRBH 12025 A UU	2.62	120	180	25	1	132	168	73 400	108 000
130	CRBH 13025 A UU	2.82	130	190	25	1	142	178	75 900	115 000
140	CRBH 14025 A UU	2.96	140	200	25	1	152	188	81 900	130 000
150	CRBH 15025 A UU	3.16	150	210	25	1	162	198	84 300	138 000
200	CRBH 20025 A UU	4.0	200	260	25	1	212	248	92 300	169 000
250	CRBH 25025 A UU	4.97	250	310	25	1.5	262	298	102 000	207 000

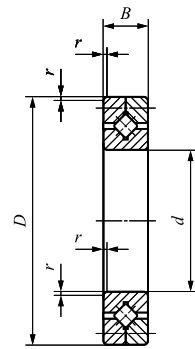
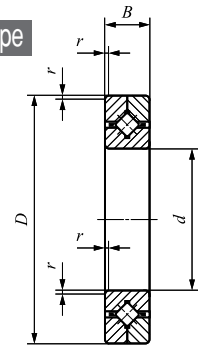
Note⁽¹⁾ Minimum allowable single value of chamfer dimension r
 Remarks1. The outer ring has an oil groove and two oil holes.
 2. Provided with prepacked grease.

CRBH
CRBC
CRB
CRBS

CROSSED ROLLER BEARINGS

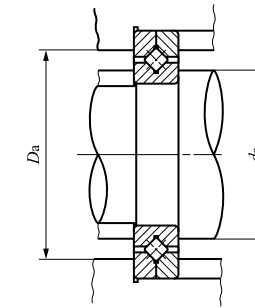
Standard Type Crossed Roller Bearings **Open Type/With Cage**

Open Type/Full Complement Type



CRBC

CRB



Shaft dia. 30 – 250mm

Shaft dia. mm	Identification number		Mass (Ref.) kg	Boundary dimensions mm				Mounting dimensions mm		CRBC	
	With Cage	Full complement		d	D	B	r _{min} ⁽¹⁾	d _a	D _a	Basic dynamic load rating C N	Basic static load rating C ₀ N
30	CRBC 3010	CRB 3010	0.12	30	55	10	0.3	34	44	3 830	4 130
40	CRBC 4010	CRB 4010	0.15	40	65	10	0.3	44	54	4 280	5 140
50	CRBC 5013	CRB 5013	0.29	50	80	13	0.6	55	71	10 700	12 600
60	CRBC 6013	CRB 6013	0.33	60	90	13	0.6	64	81	11 600	14 600
70	CRBC 7013	CRB 7013	0.38	70	100	13	0.6	75	91	12 300	16 700
80	CRBC 8016	CRB 8016	0.74	80	120	16	0.6	86	107	18 200	25 500
90	CRBC 9016	CRB 9016	0.81	90	130	16	1	98	118	19 400	28 600
100	CRBC 10020	CRB 10020	1.45	100	150	20	1	108	134	31 500	45 100
110	CRBC 11020	CRB 11020	1.56	110	160	20	1	118	144	33 500	50 700
120	CRBC 12025	CRB 12025	2.62	120	180	25	1.5	132	164	47 700	70 500
130	CRBC 13025	CRB 13025	2.82	130	190	25	1.5	140	172	49 200	74 800
140	CRBC 14025	CRB 14025	2.96	140	200	25	1.5	151	183	50 700	79 200
150	CRBC 15025	CRB 15025	3.16	150	210	25	1.5	160	192	53 800	87 700
	CRBC 15030	CRB 15030	5.3	150	230	30	1.5	166	202	69 200	108 000
200	CRBC 20025	CRB 20025	4.0	200	260	25	2	208	239	60 200	110 000
	CRBC 20030	CRB 20030	6.7	200	280	30	2	218	262	108 000	178 000
	CRBC 20035	CRB 20035	9.58	200	295	35	2	221	274	137 000	215 000
250	CRBC 25025	CRB 25025	4.97	250	310	25	2.5	259	290	67 200	136 000
	CRBC 25030	CRB 25030	8.1	250	330	30	2.5	265	310	116 000	208 000
	CRBC 25040	CRB 25040	14.8	250	355	40	2.5	271	330	179 000	299 000

Note⁽¹⁾ Minimum allowable single value of chamfer dimension r
 Remarks1. No oil hole is provided.
 2. Grease is not prepacked. Perform proper lubrication.

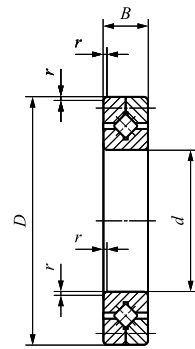
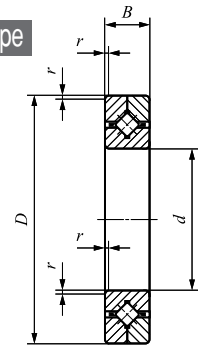
CRB	
Basic dynamic load rating C N	Basic static load rating C ₀ N
5 290	6 350
5 980	8 040
14 200	18 400
15 400	21 500
17 000	25 500
24 300	37 500
25 900	42 100
39 400	61 100
41 200	66 700
59 900	95 400
61 000	99 800
64 100	108 000
65 000	113 000
85 900	144 000
75 300	148 000
133 000	234 000
168 000	282 000
83 900	183 000
146 000	283 000
215 000	382 000

CRBH
CRBC
CRB
CRBS

CROSSED ROLLER BEARINGS

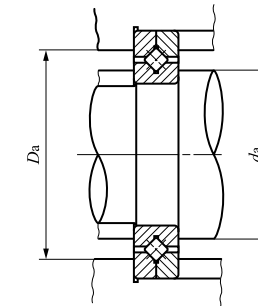
Standard Type Crossed Roller Bearings **Open Type/With Cage**

Open Type/Full Complement Type



CRBC

CRB



Shaft dia. 300 – 800mm

Shaft dia. mm	Identification number		Mass (Ref.) kg	Boundary dimensions mm				Mounting dimensions mm		CRBC	
	With Cage	Full complement		d	D	B	r ⁽¹⁾ _{min}	d _a	D _a	Basic dynamic load rating C N	Basic static load rating C ₀ N
300	CRBC 30025	CRB 30025	5.88	300	360	25	2.5	310	341	73 800	162 000
	CRBC 30035	CRB 30035	13.4	300	395	35	2.5	318	372	163 000	299 000
	CRBC 30040	CRB 30040	17.2	300	405	40	2.5	321	381	194 000	351 000
400	CRBC 40035	CRB 40035	14.5	400	480	35	2.5	414	457	133 000	300 000
	CRBC 40040	CRB 40040	23.5	400	510	40	2.5	423	483	222 000	455 000
	CRBC 40070	CRB 40070	72.4	400	580	70	2.5	430	532	470 000	811 000
500	CRBC 50040	CRB 50040	26.0	500	600	40	2.5	517	573	212 000	497 000
	CRBC 50050	CRB 50050	41.7	500	625	50	2.5	531	592	247 000	561 000
	CRBC 50070	CRB 50070	86.1	500	680	70	2.5	530	633	536 000	1 020 000
600	CRBC 60040	CRB 60040	30.6	600	700	40	3	621	676	231 000	581 000
	CRBC 60070	CRB 60070	102	600	780	70	3	630	734	591 000	1 230 000
	CRBC 600120	CRB 600120	274	600	870	120	3	643	817	1 250 000	2 210 000
700	CRBC 70045	CRB 70045	46.5	700	815	45	3	730	785	250 000	681 000
	CRBC 70070	CRB 70070	115	700	880	70	3	731	834	630 000	1 390 000
	CRBC 700150	CRB 700150	478	700	1 020	150	3	751	953	1 660 000	3 010 000
800	CRBC 80070	CRB 80070	109	800	950	70	4	831	907	417 000	1 090 000
	CRBC 800100	CRB 800100	247	800	1 030	100	4	840	972	936 000	2 040 000

Note⁽¹⁾ Minimum allowable single value of chamfer dimension r
 Remarks1. No oil hole is provided.
 2. Grease is not prepacked. Perform proper lubrication.

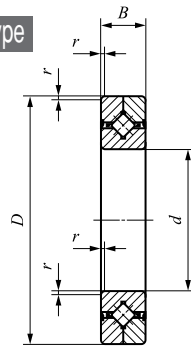
CRB	
Basic dynamic load rating C N	Basic static load rating C ₀ N
91 900	217 000
205 000	408 000
235 000	451 000
165 000	400 000
270 000	590 000
576 000	1 060 000
259 000	648 000
306 000	747 000
653 000	1 330 000
287 000	774 000
700 000	1 540 000
1 490 000	2 800 000
313 000	917 000
766 000	1 810 000
1 980 000	3 820 000
513 000	1 440 000
1 140 000	2 640 000

CRBH
CRBC
CRB
CRBS

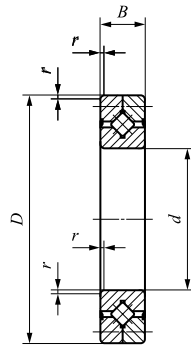
CROSSED ROLLER BEARINGS

Standard Type Crossed Roller Bearings **Sealed Type/With Cage**

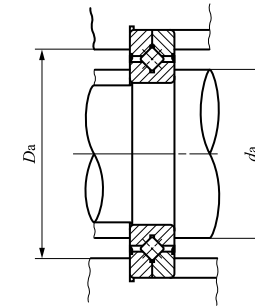
Sealed Type/Full Complement Type



CRBC...UU



CRB...UU



Shaft dia. 30 – 300mm

Shaft dia. mm	Identification number		Mass (Ref.) kg	Boundary dimensions mm				Mounting dimensions mm		CRBC...UU	
	With Cage	Full complement		<i>d</i>	<i>D</i>	<i>B</i>	<i>r</i> _{min} ⁽¹⁾	<i>d</i> _a	<i>D</i> _a	Basic dynamic load rating <i>C</i> N	Basic static load rating <i>C</i> ₀ N
30	CRBC 3010 UU	CRB 3010 UU	0.12	30	55	10	0.3	34	44	3 830	4 130
40	CRBC 4010 UU	CRB 4010 UU	0.15	40	65	10	0.3	44	54	4 280	5 140
50	CRBC 5013 UU	CRB 5013 UU	0.29	50	80	13	0.6	55	71	10 700	12 600
60	CRBC 6013 UU	CRB 6013 UU	0.33	60	90	13	0.6	64	81	11 600	14 600
70	CRBC 7013 UU	CRB 7013 UU	0.38	70	100	13	0.6	75	91	12 300	16 700
80	CRBC 8016 UU	CRB 8016 UU	0.74	80	120	16	0.6	86	107	18 200	25 500
90	CRBC 9016 UU	CRB 9016 UU	0.81	90	130	16	1	98	118	19 400	28 600
100	CRBC 10020 UU	CRB 10020 UU	1.45	100	150	20	1	108	134	31 500	45 100
110	CRBC 11020 UU	CRB 11020 UU	1.56	110	160	20	1	118	144	33 500	50 700
120	CRBC 12025 UU	CRB 12025 UU	2.62	120	180	25	1.5	132	164	47 700	70 500
130	CRBC 13025 UU	CRB 13025 UU	2.82	130	190	25	1.5	140	172	49 200	74 800
140	CRBC 14025 UU	CRB 14025 UU	2.96	140	200	25	1.5	151	183	50 700	79 200
150	CRBC 15025 UU	CRB 15025 UU	3.16	150	210	25	1.5	160	192	53 800	87 700
	CRBC 15030 UU	CRB 15030 UU	5.3	150	230	30	1.5	166	202	69 200	108 000
200	CRBC 20025 UU	CRB 20025 UU	4.0	200	260	25	2	208	239	60 200	110 000
250	CRBC 25025 UU	CRB 25025 UU	4.97	250	310	25	2.5	259	290	67 200	136 000
300	CRBC 30025 UU	CRB 30025 UU	5.88	300	360	25	2.5	310	341	73 800	162 000

Note⁽¹⁾ Minimum allowable single value of chamfer dimension *r*

- Remarks1. No oil hole is provided.
2. Provided with prepacked grease.

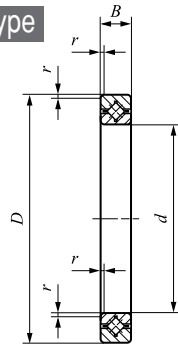
CRB...UU	
Basic dynamic load rating <i>C</i> N	Basic static load rating <i>C</i> ₀ N
5 290	6 350
5 980	8 040
14 200	18 400
15 400	21 500
17 000	25 500
24 300	37 500
25 900	42 100
39 400	61 100
41 200	66 700
59 900	95 400
61 000	99 800
64 100	108 000
65 000	113 000
85 900	144 000
75 300	148 000
83 900	183 000
91 900	217 000

CRBH
CRBC
CRB
CRBS

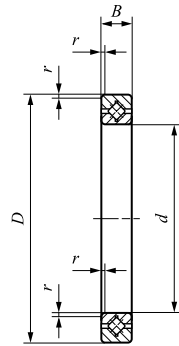
CROSSED ROLLER BEARINGS

Slim Type Crossed Roller Bearings **Open Type/With Cage**

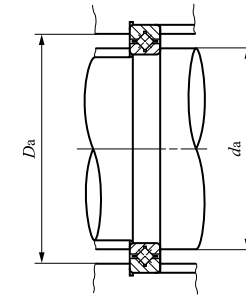
Open Type/Full Complement Type



CRBS



CRBS...V



Shaft dia. 50 – 200mm

Shaft dia. mm	Identification number		Mass (Ref.) g	Boundary dimensions mm				Mounting dimensions mm		CRBS	
	With Cage	Full complement		d	D	B	r ⁽¹⁾ _{min}	d _a	D _a	Basic dynamic load rating C N	Basic static load rating C ₀ N
50	CRBS 508	CRBS 508 V	84	50	66	8	0.4	54	61	4 900	6 170
60	CRBS 608	CRBS 608 V	94	60	76	8	0.4	64	71	5 350	7 310
70	CRBS 708	CRBS 708 V	108	70	86	8	0.4	74	81	5 740	8 440
80	CRBS 808	CRBS 808 V	122	80	96	8	0.4	84	91	6 130	9 590
90	CRBS 908	CRBS 908 V	135	90	106	8	0.4	94	101	6 490	10 700
100	CRBS 1008	CRBS 1008 V	152	100	116	8	0.4	104	111	6 850	11 900
110	CRBS 1108	CRBS 1108 V	163	110	126	8	0.4	114	121	7 160	13 000
120	CRBS 1208	CRBS 1208 V	184	120	136	8	0.4	124	131	7 530	14 100
130	CRBS 1308	CRBS 1308 V	199	130	146	8	0.4	134	141	7 860	15 300
140	CRBS 1408	CRBS 1408 V	205	140	156	8	0.4	144	151	8 060	16 400
150	CRBS 1508	CRBS 1508 V	220	150	166	8	0.4	154	161	8 350	17 500
160	CRBS 16013	CRBS 16013 V	620	160	186	13	0.6	166	179	20 300	39 900
170	CRBS 17013	CRBS 17013 V	675	170	196	13	0.6	176	189	20 900	42 200
180	CRBS 18013	CRBS 18013 V	710	180	206	13	0.6	186	199	21 500	44 600
190	CRBS 19013	CRBS 19013 V	740	190	216	13	0.6	196	209	22 100	46 900
200	CRBS 20013	CRBS 20013 V	780	200	226	13	0.6	206	219	22 500	49 300

Note⁽¹⁾ Minimum allowable single value of chamfer dimension r

- Remarks1. No oil hole is provided.
2. Grease is not prepacked. Perform proper lubrication.

CRBS...V	
Basic dynamic load rating C N	Basic static load rating C ₀ N
6 930	9 800
7 600	11 700
8 190	13 600
8 790	15 500
9 310	17 400
9 850	19 300
10 300	21 200
10 900	23 000
11 200	24 600
11 700	26 800
12 100	28 700
26 900	58 200
27 800	61 600
28 600	65 200
29 300	68 600
30 000	72 200

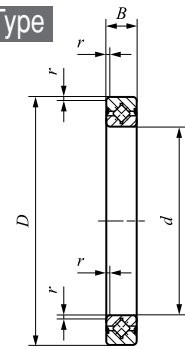
CRBH
CRBC
CRB
CRBS

CROSSED ROLLER BEARINGS

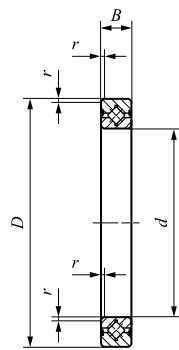
Slim Type Crossed Roller Bearings

Sealed Type/With Separator

Sealed Type/Full Complement Type

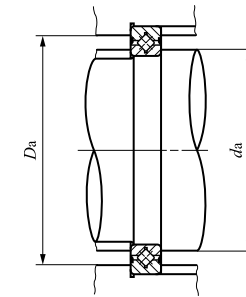


CRBS...AUU



CRBS...VUU

Shaft dia. 50 – 200mm



Shaft dia. mm	Identification number		Mass (Ref.) g	Boundary dimensions mm				Mounting dimensions mm		CRBS... A UU	
	With separator	Full complement		d	D	B	r ⁽¹⁾ r _{min}	d _a	D _a	Basic dynamic load rating C N	Basic static load rating C ₀ N
50	CRBS 508 A UU	CRBS 508 V UU	84	50	66	8	0.4	54	61	4 680	5 810
60	CRBS 608 A UU	CRBS 608 V UU	94	60	76	8	0.4	64	71	5 350	7 310
70	CRBS 708 A UU	CRBS 708 V UU	108	70	86	8	0.4	74	81	5 740	8 440
80	CRBS 808 A UU	CRBS 808 V UU	122	80	96	8	0.4	84	91	6 130	9 590
90	CRBS 908 A UU	CRBS 908 V UU	135	90	106	8	0.4	94	101	6 490	10 700
100	CRBS 1008 A UU	CRBS 1008 V UU	152	100	116	8	0.4	104	111	6 530	11 100
110	CRBS 1108 A UU	CRBS 1108 V UU	163	110	126	8	0.4	114	121	6 850	12 300
120	CRBS 1208 A UU	CRBS 1208 V UU	184	120	136	8	0.4	124	131	7 070	13 000
130	CRBS 1308 A UU	CRBS 1308 V UU	199	130	146	8	0.4	134	141	7 270	13 800
140	CRBS 1408 A UU	CRBS 1408 V UU	205	140	156	8	0.4	144	151	7 510	14 900
150	CRBS 1508 A UU	CRBS 1508 V UU	220	150	166	8	0.4	154	161	7 810	16 000
160	CRBS 16013 A UU	CRBS 16013 V UU	620	160	186	13	0.6	166	179	19 400	37 700
170	CRBS 17013 A UU	CRBS 17013 V UU	675	170	196	13	0.6	176	189	20 000	39 900
180	CRBS 18013 A UU	CRBS 18013 V UU	710	180	206	13	0.6	186	199	21 900	45 700
190	CRBS 19013 A UU	CRBS 19013 V UU	740	190	216	13	0.6	196	209	22 900	49 200
200	CRBS 20013 A UU	CRBS 20013 V UU	780	200	226	13	0.6	206	219	23 300	51 600

Note⁽¹⁾ Minimum allowable single value of chamfer dimension r

- Remarks1. No oil hole is provided.
2. Provided with prepacked grease.

CRBS... V UU	
Basic dynamic load rating C N	Basic static load rating C ₀ N
6 930	9 800
7 600	11 700
8 190	13 600
8 790	15 500
9 310	17 400
9 850	19 300
10 300	21 200
10 900	23 000
11 200	24 600
11 700	26 800
12 100	28 700
26 900	58 200
27 800	61 600
28 600	65 200
29 300	68 600
30 000	72 200

CRBH
CRBC
CRB
CRBS