



## New Product

High Rigidity Type Crossed Roller Bearing V

# CRBHV

Mounting Holed Type High Rigidity Crossed Roller Bearing V

# CRBFV



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# IKO's New CRBHV / CRBFV Models of High Rigidity Crossed Roller Bearings!

Quick delivery and affordable cost Crossed Roller Bearings are now available from **IKO**.



## CRBHV / CRBFV Features

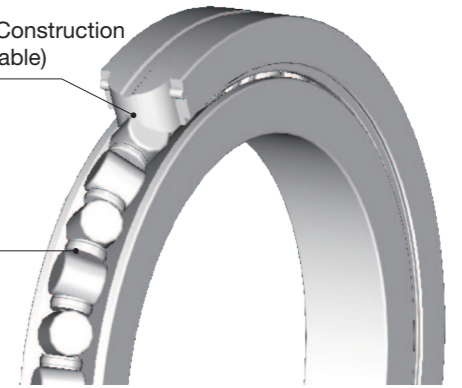
### ■ High Rigidity / High Accuracy

Both inner and outer rings have solid one-piece construction that minimizes mounting errors and allows these bearings to easily achieve high rigidity and high accuracy.

Separators incorporated between the cylindrical rollers allow for smooth rotation, and making them suitable for applications with comparatively high rotational speed.

One-Piece Construction  
(Non-Separable)

Separator



### ■ Quick Delivery / Very Affordable

CRBHV/CRBFV are manufactured at a dedicated site. This newly developed site allowed us to shorten lead-times and reduce production cost by making improvements to the whole processes from design to manufacturing. With our continued efforts to support our customers, we now offer these bearings with excellent cost value. This product will contribute to cost reductions and shorter production lead time when integrated into various machines we incorporate.

### ■ Special models for your applications

We offer Crossed Roller Bearings with individual specifications customized to our customers' usages and or applications. We have abundant manufacturing experience of special specification products so if you have any requirement for a special product application, please contact **IKO**.

### IKO Crossed Roller Bearings

**IKO** Crossed Roller Bearings are compact bearings with their rollers alternately crossed at right angles to each other between an inner and outer ring. This allows them to sustain loads such as radial, thrust and moment from any direction at the same time. The rollers make line-contact with raceway surfaces, thus elastic deformation due to bearing loads is very small.

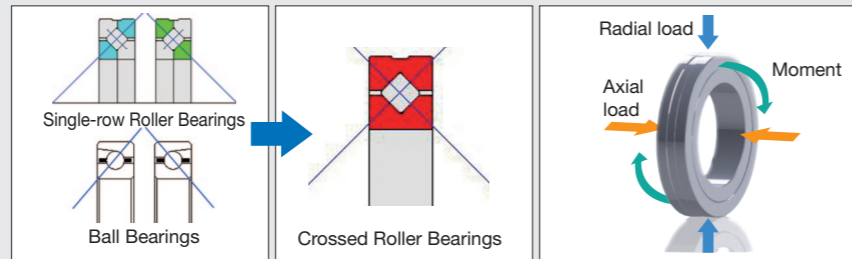


# IKO Crossed Roller Bearing advantages.

**IKO** Crossed Roller Bearings are high performance bearings with a variety of characteristics not seen in other bearings.

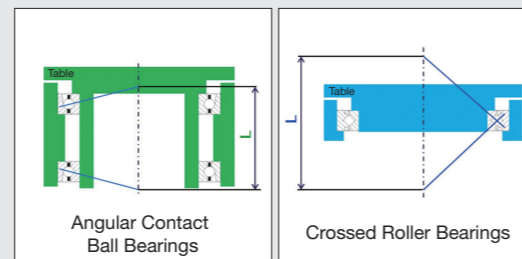
## Compact

The orthogonal array of rollers makes it possible to simultaneously receive complex loads from various directions with just a single bearing. When compared to opposed mounting single row roller or ball bearings, the contact area can be reduced thus contributing to compactness and space-saving equipment.

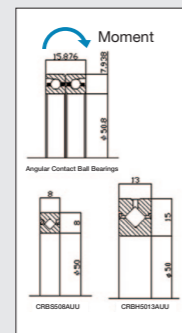
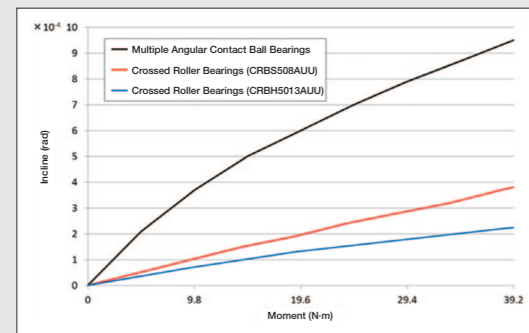


## High Rigidity

The figure at right is a cross-section of a rotating turntable. The application point distance from the time a moment load applied to the turntable is L, and the allowable moment load of the bearing is proportional to application point distance L. If increasing application point distance L to increase the moment rigidity of the turntable, two Angular Contact Ball Bearings are required. Because of the need for distance between the bearings, the equipment size increases as well. However, even a single Crossed Roller Bearing can increase application point distance L, keeping equipment compact and improving moment rigidity.

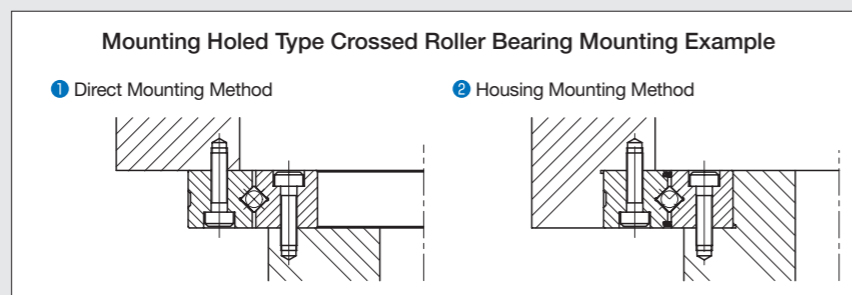


Because of the line contact structure of Crossed Roller Bearings, when using rollers for the bearing inner rolling elements, rigidity is greatly improved compared to ball type bearings. For example, rigidity is increased 3 to 4 times while achieving more compact cross-section dimensions compared to a double row Angular Contact Ball Bearing.



## Easy Mounting

Mounting Holed Type High Rigidity Crossed Roller Bearings feature mounting holes to allow direct mounting to the mounting surface without requiring the use of a housing or pressure plate as with conventional Crossed Roller Bearings. It is recommended to use a housing for applications with large loads or moments.



## Quality

Many years of experience with roller type bearings allows **IKO** the ability to produce highly accurate Crossed Roller Bearings due to our manufacturing know-how and rigorous quality standards.



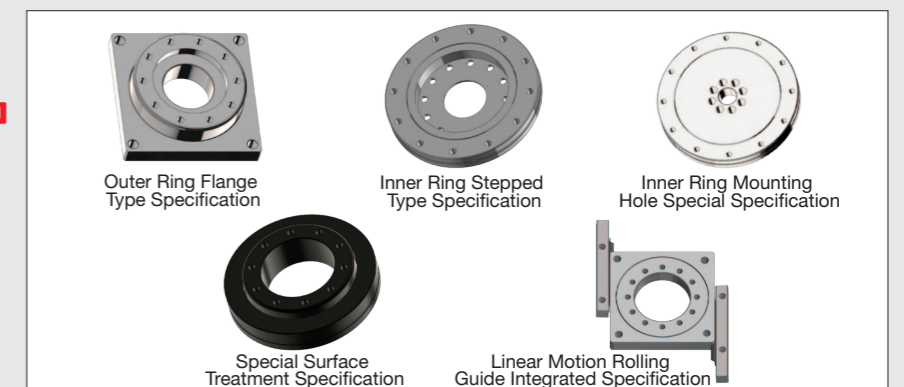
## Diversity

**IKO** Crossed Roller Bearings are available in a wide variety of types. For machine tools, large robots, medical, and general industrial equipment, optimal types are CRBH/CRBHV, with its inner and outer ring combined integral structure, and CRB/CRBC, with outer rings split in two in the axial direction. For electric and electronic automated equipment such as small/medium robotic joints or semiconductors, the Slim Type CRBS with its small cross-sectional dimension works best. For even smaller precision equipment, the Super Slim Type CRBT is optimal with its minimized cross-sectional area. The high rigidity CRBF/CRBFV is also available, with mounting holes to simplify the mating with the housing structure.



## Flexibility

**IKO**'s unique flexibility and diverse production allows us to offer customized Crossed Roller Bearings to fit the customers' applications. **IKO** has a sound record of producing a wide variety of special products with non-standard shapes, sizes, surface treatments and other unique features. Please contact **IKO** when your application requires certain special features that are not on our stock products.





# IKO Crossed Roller Bearings application examples.

High performance and compact **IKO** Crossed Roller Bearings had been integrated into various machines and devices, resulting in improved efficiency, reliability and compactness. Here are some great examples of Crossed Roller Bearings in action:

### Robot

Increasingly a number of customers are switching out conventional ball bearings with **IKO** Crossed Roller Bearings on their robots in order to reduce size and weight.

■ Pick-up robot

|               |                         |
|---------------|-------------------------|
| Structure     | Horizontal articulation |
| Location used | Joint swivel part       |

■ Androids

|               |                |
|---------------|----------------|
| Structure     | Android Robots |
| Location used | Joints         |

■ Welding robot

|               |                          |
|---------------|--------------------------|
| Structure     | Vertical articulation    |
| Location used | Swivel Joints, Gearboxes |

### Medical equipment

Many various of **IKO** Crossed Roller Bearings, including those with special specifications, are available for applications requiring smooth operation with high rotational accuracy. Some are designed to be used in environments where rust prevention oil is not allowed or in medical equipment.

■ X-Ray Diagnostic Equipment

|               |                       |
|---------------|-----------------------|
| Structure     | C-Type Arm Operation  |
| Location used | X-Ray Detector Rotors |

### Motor

High Rotational Accuracy **IKO** Crossed Roller Bearings also have a proven track record for use on Theta-Axis Rotary Drive units. A key attribute is **IKO**'s ability and flexibility to accommodate special shapes such as flanges and steps.

■ DD Motor

|               |                    |
|---------------|--------------------|
| Structure     | Direct Drive Motor |
| Location used | Output Shaft       |

### Machine tools

Bearings supporting rotation often need minimal deflection even when operating in tough environments. High Rigidity **IKO** Crossed Roller Bearings provide minimal deflection and are especially suited for use in machine tools.

■ Machine Tool Tables

|               |                      |
|---------------|----------------------|
| Structure     | NC Lathes            |
| Location used | Table Rotating Parts |

### Windmills

Bearings in windmills are forced to work in harsh environments. They need to stand up to moment loads caused by the wind as well as high rotational speed. It is in the harsh environments that **IKO** Crossed Roller Bearings show their true potential.

■ Power Generating Windmills

|               |                        |
|---------------|------------------------|
| Structure     | Compact Wind Generator |
| Location used | Systems Swivel Parts   |

# Capabilities of Crossed Roller Bearings proposed by **IKO**.

**IKO** Crossed Roller Bearings are ideally suited for robotics, so **IKO** proposes using them in the following applications:

### Marine Antenna

Marine antennas are constantly battered by strong winds. The support for these antennas require bearings that are very rigid to be able to stand up to these winds. **IKO** High Rigidity Crossed Roller Bearings are ideal for this application.

■ Marine Antenna

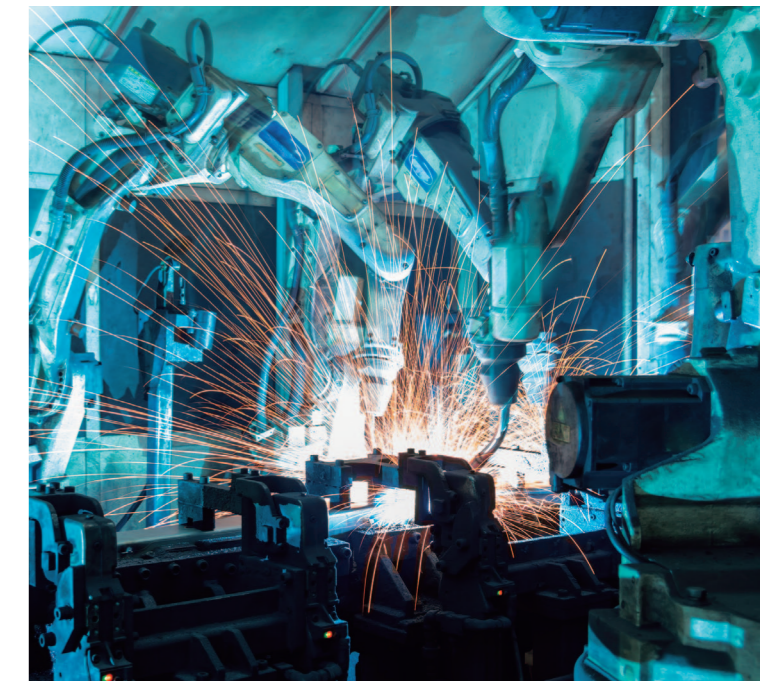
|               |                         |
|---------------|-------------------------|
| Structure     | Marine Parabola Antenna |
| Location used | Base swivel part        |

### Security Camera

Security cameras move horizontally and vertically nonstop all year round. Extreme reliability is required for this continuous compound operation. **IKO** Crossed Roller Bearings can receive complex loads from multiple directions, making them ideal for use in security cameras.

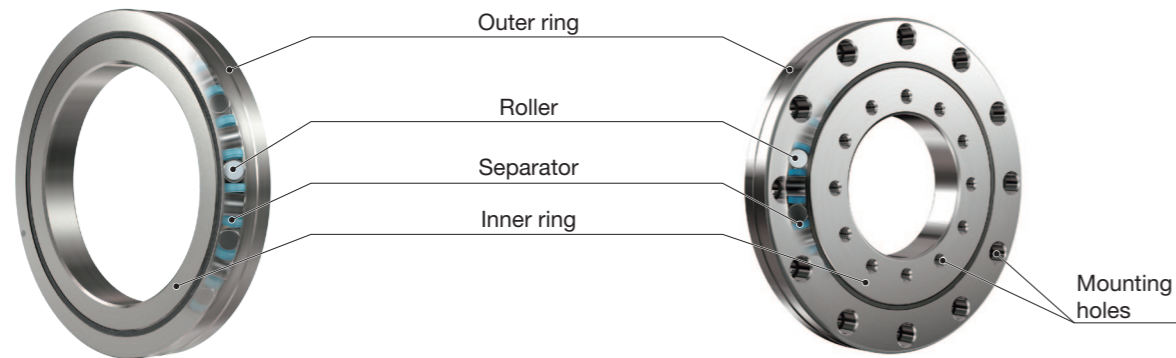
■ Security Cameras

|               |                          |
|---------------|--------------------------|
| Structure     | Movable Security Cameras |
| Location used | Camera Drive Parts       |





# CRBHV / CRBFV Structure



## CRBHV

| Variation |                                     |             |             |                    |
|-----------|-------------------------------------|-------------|-------------|--------------------|
| Size      | Shaft dia. 30-250 mm <sup>(1)</sup> |             |             |                    |
| Seal      | Yes                                 |             | None        |                    |
| Clearance | T1 (Preload)                        | C1 (Slight) | C2 (Medium) | No symbol (Normal) |
|           | Accuracy class                      | Class 0     | P6 RP6      | P5 RP5             |
| Accuracy  | → High                              |             |             |                    |

Notes <sup>(1)</sup> Sizes with a shaft diameter greater than 120mm are scheduled to be produced starting December 2016.

## CRBFV

| Variation |                                     |             |             |                    |
|-----------|-------------------------------------|-------------|-------------|--------------------|
| Size      | Shaft dia. 35-115 mm <sup>(1)</sup> |             |             |                    |
| Seal      | Yes                                 |             | None        |                    |
| Clearance | T1 (Preload)                        | C1 (Slight) | C2 (Medium) | No symbol (Normal) |
|           | Accuracy class                      | Class 0     | P6 RP6      | P5 RP5             |
| Accuracy  | → High                              |             |             |                    |

Notes <sup>(1)</sup> Sizes with a shaft diameter greater than 80mm are scheduled to be produced starting December 2016.

## Identification number

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

**Example** → **CRBFV 35 15 A T UU C1 RP6**

| Model code   |  |
|--|--|
| <b>CRBHV...A</b>   | High Rigidity Type Crossed Roller Bearing V (With separator)                                   |
| <b>CRBFV...A</b>   | Mounting Holed High Rigidity Type Crossed Roller Bearing V (With separator)                    |
| Dimensions   |  |
| The dimension indicates the bore diameter of the bearing. (unit: mm)                                   |  |
| The dimension indicates the bearing width. (unit: mm)  |  |
| Supplemental code - 1 <sup>(1)</sup>   |  |
| <b>T</b>   | With female threaded mounting holes on the inner ring  |
| No symbol  | With counter-bored mounting holes on both inner ring and outer ring in the same direction.     |
| <b>D</b>   | With counter-bored mounting holes on both inner ring and outer ring in the opposite direction. |
| Note <sup>(1)</sup> Applicable only to CRBFV.  |  |
| Supplemental code - 2  |  |
| No symbol  | Open type  |
| <b>UU</b>  | Sealed Type  |
| <b>U</b>   | One Side Sealed Type <sup>(2)</sup>  |
| <b>UJ</b>  | One side sealed in the opposite direction to counter bored mounting holes on outer ring        |
| Note <sup>(2)</sup> For CRBFV...A, sealed at the side with counter bored mounting holes of outer ring. |  |
| Supplemental code - 3  |  |
| <b>T1</b>  | T1 clearance   |
| <b>C1</b>  | C1 clearance   |
| <b>C2</b>  | C2 clearance   |
| Classification symbol  |  |
| No symbol  | Accuracy class 0   |
| <b>P6</b>  | Accuracy class 6   |
| <b>P5</b>  | Accuracy class 5   |
| <b>P4</b>  | Accuracy class 4   |
| <b>P2</b>  | Accuracy class 2   |
| <b>RP6</b>   | Rotation accuracy class 6  |
| <b>RP5</b>   | Rotation accuracy class 5  |
| <b>RP4</b>   | Rotation accuracy class 4  |
| <b>RP2</b>   | Rotation accuracy class 2  |

Rotational accuracy class ... classes specifying accuracy standards for only rotational accuracy (radial runout / axial runout)

## Accuracy

### CRBHV Accuracy

Table 1 Tolerance and allowance of inner ring

unit: [μm]

| d<br>Nominal bore diameter<br>mm | Exceeding<br>Incl. | $\Delta d_{mp}$<br>Deviation of mean bore diameter in a single plane |     |      |     |      |     |        |     | $\Delta B_s, \Delta C_s$<br>Width of Inner/Outer Rings |           | Kia<br>Radial runout |           |           |         |           | Sia<br>Axial runout |           |           |         |     |
|----------------------------------|--------------------|--|-----|------|-----|------|-----|--------|-----|--|-----------|----------------------|-----------|-----------|---------|-----------|---------------------|-----------|-----------|---------|-----|
|                                  |                    | Class 0<br>RP6 to RP2  |     | P6   |     | P5   |     | P4, P2 |     | Class 0  | P6<br>RP6 | P5<br>RP5            | P4<br>RP4 | P2<br>RP2 | Class 0 | P6<br>RP6 | P5<br>RP5           | P4<br>RP4 | P2<br>RP2 |         |     |
|                                  |                    | High   | Low | High | Low | High | Low | High   | Low |  |           |                      |           |           |         |           |                     |           |           | Maximum |     |
| 18                               | 30                 | 0  | -10 | 0    | -8  | 0    | -6  | 0      | -5  | 0  | -75       | 13                   | 8         | 4         | 3       | 2.5       | 13                  | 8         | 4         | 3       | 2.5 |
| 30                               | 50                 | 0  | -12 | 0    | -10 | 0    | -8  | 0      | -6  | 0  | -75       | 15                   | 10        | 5         | 4       | 2.5       | 15                  | 10        | 5         | 4       | 2.5 |
| 50                               | 80                 | 0  | -15 | 0    | -12 | 0    | -9  | 0      | -7  | 0  | -75       | 20                   | 10        | 5         | 4       | 2.5       | 20                  | 10        | 5         | 4       | 2.5 |
| 80                               | 120                | 0  | -20 | 0    | -15 | 0    | -10 | 0      | -8  | 0  | -75       | 25                   | 13        | 6         | 5       | 2.5       | 25                  | 13        | 6         | 5       | 2.5 |
| 120                              | 150                | 0  | -25 | 0    | -18 | 0    | -13 | 0      | -10 | 0  | -100      | 30                   | 18        | 8         | 6       | 2.5       | 30                  | 18        | 8         | 6       | 2.5 |
| 150                              | 180                | 0  | -25 | 0    | -18 | 0    | -13 | 0      | -10 | 0  | -100      | 30                   | 18        | 8         | 6       | 2.5       | 30                  | 18        | 8         | 6       | 2.5 |
| 180                              | 250                | 0  | -30 | 0    | -22 | 0    | -15 | 0      | -12 | 0  | -100      | 40                   | 20        | 10        | 8       | 5         | 40                  | 20        | 10        | 8       | 5   |

Table 2 Tolerance and allowance of outer ring

unit: [μm]

| D<br>Nominal outside diameter<br>mm | Exceeding<br>Incl. | $\Delta D_{mp}$<br>Deviation of mean outside diameter in a single plane |     |      |     |      |     |        |     | Kea<br>Radial runout |           |           |           |           | Sea<br>Axial runout |           |           |           |           |
|-------------------------------------|--------------------|---|-----|------|-----|------|-----|--------|-----|----------------------|-----------|-----------|-----------|-----------|---------------------|-----------|-----------|-----------|-----------|
|                                     |                    | Class 0<br>RP6 to RP2   |     | P6   |     | P5   |     | P4, P2 |     | Class 0              | P6<br>RP6 | P5<br>RP5 | P4<br>RP4 | P2<br>RP2 | Class 0             | P6<br>RP6 | P5<br>RP5 | P4<br>RP4 | P2<br>RP2 |
|                                     |                    | High  | Low | High | Low | High | Low | High   | Low |                      |           |           |           |           |                     |           |           |           |           |
| 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         |

### CRBFV Accuracy

Table 3 Tolerance and allowance of inner ring

unit: [μm]

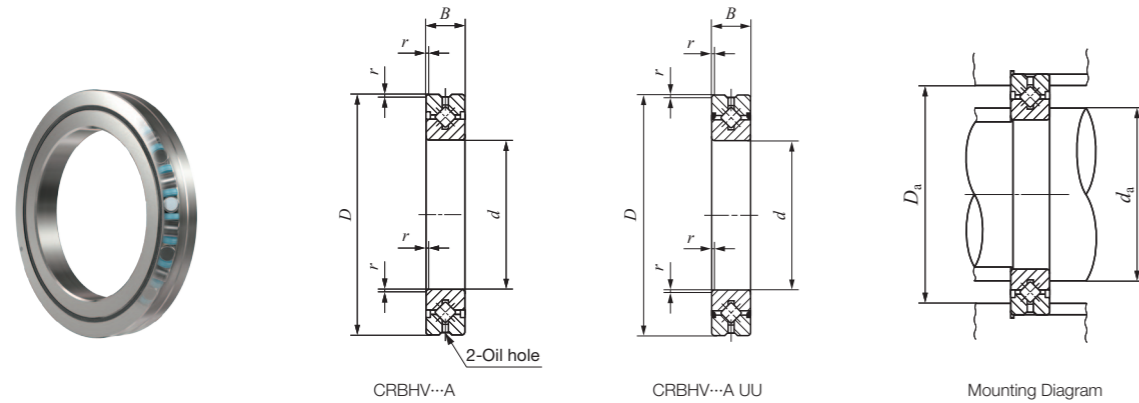
| d<br>Nominal bore diameter<br>mm | Exceeding<br>Incl. | $\Delta d_{mp}$<br>Deviation of mean bore diameter in a single plane |     |      |     |      |     |        |     | $\Delta B_s$<br>Deviation of a single inner ring width |           | Kia<br>Radial runout |           |           |         |           | Sia<br>Axial runout |           |           |         |     |
|----------------------------------|--------------------|--|-----|------|-----|------|-----|--------|-----|--|-----------|----------------------|-----------|-----------|---------|-----------|---------------------|-----------|-----------|---------|-----|
|                                  |                    | Class 0<br>RP6 to RP2  |     | P6   |     | P5   |     | P4, P2 |     | Class 0  | P6<br>RP6 | P5<br>RP5            | P4<br>RP4 | P2<br>RP2 | Class 0 | P6<br>RP6 | P5<br>RP5           | P4<br>RP4 | P2<br>RP2 |         |     |
|                                  |                    | High   | Low | High | Low | High | Low | High   | Low |  |           |                      |           |           |         |           |                     |           |           | Maximum |     |
| 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 |

Table 4 Tolerance and allowance of outer ring

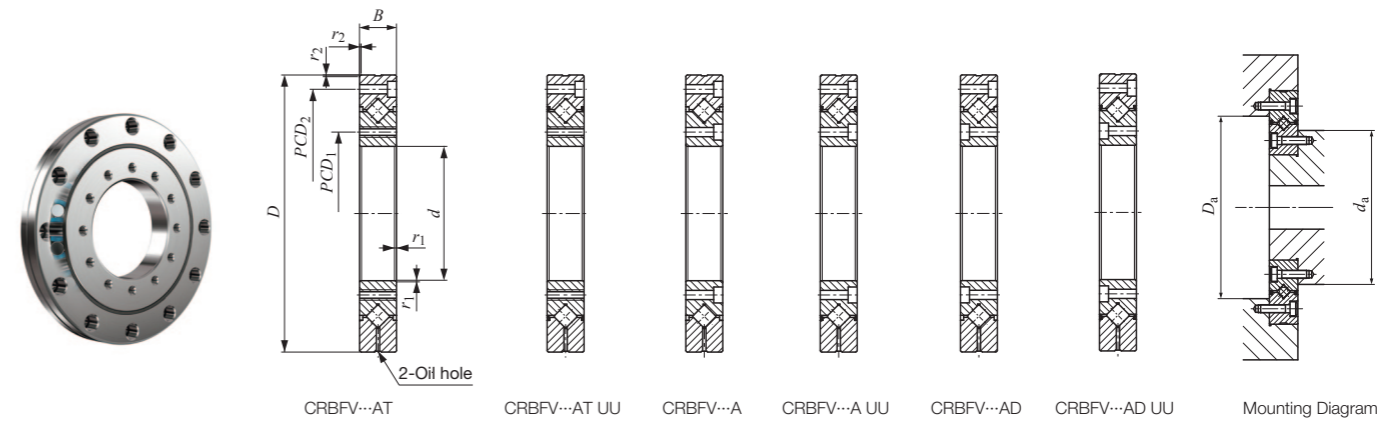
unit: [μm]

| D<br>Nominal outside diameter<br>mm | Exceeding<br>Incl. | $\Delta D_{mp}$<br>Deviation of mean outside diameter in a single plane |     |      |     |      |     |        |     | $\Delta C_s$<br>Deviation of a single outer ring width |           | Kea<br>Radial runout |           |           |         |           | Sea<br>Axial runout |           |           |         |   |
|-------------------------------------|--------------------|---|-----|------|-----|------|-----|--------|-----|--|-----------|----------------------|-----------|-----------|---------|-----------|---------------------|-----------|-----------|---------|---|
|                                     |                    | Class 0<br>RP6 to RP2   |     | P6   |     | P5   |     | P4, P2 |     | Class 0  | P6<br>RP6 | P5<br>RP5            | P4<br>RP4 | P2<br>RP2 | Class 0 | P6<br>RP6 | P5<br>RP5           | P4<br>RP4 | P2<br>RP2 |         |   |
|                                     |                    | High  | Low | High | Low | High | Low | High   | Low |  |           |                      |           |           |         |           |                     |           |           | Maximum |   |
| 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 |

# CRBHV Dimensions



# CRBFV Dimensions



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

Notes <sup>(1)</sup> Minimum allowable single value of chamfer dimension r

Starting December 2016

| Shaft diameter<br>mm | Identification number |                   | Mass<br>(Ref.)<br>kg | Boundary dimensions<br>mm |     |    |                                     |                                     |                  | Mounting hole related<br>mm                     |                             | Mounting related<br>dimensions<br>mm              |                | Basic dynamic<br>load rating<br>C<br>N | Basic static<br>load rating<br>C <sub>0</sub><br>N |         |
|----------------------|-----------------------|-------------------|----------------------|---------------------------|-----|----|-------------------------------------|-------------------------------------|------------------|---|-----------------------------|---|----------------|--|--|---------|
|                      | Open Type             | Sealed Type       |                      | d                         | D   | B  | <sup>(1)</sup><br>r <sub>1min</sub> | <sup>(1)</sup><br>r <sub>2min</sub> | PCD <sub>1</sub> | Inner Ring<br>Mounting Hole<br>PCD <sub>2</sub> | Outer Ring<br>Mounting Hole | d <sub>a</sub>                                    | D <sub>a</sub> |  |  |         |
| 35                   | CRBFV 3515 AT         | CRBFV 3515 AT UU  | 0.66                 | 35                        | 95  | 15 | 0.6                                 | 0.6                                 | 45               | 8-M4 through                                    | 83                          | 8-φ4.5 through<br>φ8 counter bore depth 4.4       | 56             | 74                                     | 17 300   | 20 900  |
| 55                   | CRBFV 5515 AT         | CRBFV 5515 AT UU  | 0.96                 | 55                        | 120 | 15 | 0.6                                 | 0.6                                 | 65               | 8-M5 through                                    | 105                         | 8-φ5.5 through<br>φ9.5 counter bore depth 5.4     | 76             | 94                                     | 20 100   | 27 700  |
| 80                   | CRBFV 8022 AT         | CRBFV 8022 AT UU  | 2.63                 | 80                        | 165 | 22 | 0.6                                 | 1                                   | 97               | 10-M5 through                                   | 148                         | 10-φ5.5 through<br>φ9.5 counter bore<br>Depth 5.4 | 107            | 137                                    | 51 100   | 72 000  |
|                      | CRBFV 8022 A          | CRBFV 8022 A UU   | 2.60                 |                           |     |    |                                     |                                     |                  |   |                             |   |                |  |  |         |
|                      | CRBFV 8022 AD         | CRBFV 8022 AD UU  | 2.60                 |                           |     |    |                                     |                                     |                  |   |                             |   |                |  |  |         |
| 90                   | CRBFV 9025 AT         | CRBFV 9025 AT UU  | 4.83                 | 90                        | 210 | 25 | 1.5                                 | 1.5                                 | 112              | 12-M8 through                                   | 187                         | 12-φ9 through<br>φ14 counter bore<br>Depth 12     | 132            | 168                                    | 73 400   | 108 000 |
|                      | CRBFV 9025 A          | CRBFV 9025 A UU   | 4.67                 |                           |     |    |                                     |                                     |                  |   |                             |   |                |  |  |         |
|                      | CRBFV 9025 AD         | CRBFV 9025 AD UU  | 4.67                 |                           |     |    |                                     |                                     |                  |   |                             |   |                |  |  |         |
| 115                  | CRBFV 11528 AT        | CRBFV 11528 AT UU | 6.81                 | 115                       | 240 | 28 | 1.5                                 | 1.5                                 | 139              | 12-M8 through                                   | 217                         | 12-φ9 through<br>φ14 counter bore<br>Depth 13.5   | 162            | 198                                    | 84 300   | 138 000 |
|                      | CRBFV 11528 A         | CRBFV 11528 A UU  | 6.63                 |                           |     |    |                                     |                                     |                  |   |                             |   |                |  |  |         |
|                      | CRBFV 11528 AD        | CRBFV 11528 AD UU | 6.63                 |                           |     |    |                                     |                                     |                  |   |                             |   |                |  |  |         |

Notes <sup>(1)</sup> Minimum allowable single value of chamfer dimension r

Starting December 2016

## Lubrication

These bearings are generally lubricated with grease. Grease is supplied by applying a grease gun nozzle to various locations on the periphery of the clearance between the inner ring and the outer ring. Grease is packed into sealed types (UU) only. ALVANIA GREASE EP2 (SHOWA SHELL SEKIYU K.K) is prepacked as the lubrication grease.

For bearings without prepacked grease, supply grease or oil before use. Operating without lubrication will increase the wear on the rolling contact surfaces and lead to short bearing life. For the sealed type, be careful with pressure when applying grease so that the seals do not come off. 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 groove

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. CRBHV and CRBFV have an oil groove and two oil holes on the outer ring as standard. The table below shows availability of oil holes for each bearing type.

Table 5 Oil Hole Availability

| Model code | Oil hole code |       |      |      |
|------------|---------------|-------|------|------|
|            | / nOH         | / nOG | -nOH | -nOG |
| CRBHV...A  | ○             | ○     | -    | -    |
| CRBFV...A  | -             | -     | -    | -    |

Remarks 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**.

## Allowable rotational speed

The allowable rotational speed of CRBHV / CRBFV is affected by mounting and operating conditions. The table below can be used as a guide for  $d_{mn}$  under general operating conditions.

Table 6 Crossed Roller Bearings  $d_{mn}$  Values <sup>(1)</sup>

| Model of bearing | Lubrication        |                 |
|------------------|--------------------|-----------------|
|                  | Grease lubrication | Oil lubrication |
| Open type        | 75 000             | 150 000         |
| Sealed Type      | 60 000             | -               |

Notes <sup>(1)</sup>  $d_{mn}$  vale =  $d_m \times n$   
Here,  $d_m$ : Mean value of bearing bore and outside diameters, mm  
 $n$ : Rotational speed, min<sup>-1</sup>

## Operating Temperature Range

The permissible temperature range of CRBHV / CRBFV is -20 ~ +110°C. However, for continuous use, keep the temperature at 100°C or below.