



Cam Followers

&

Roller Followers

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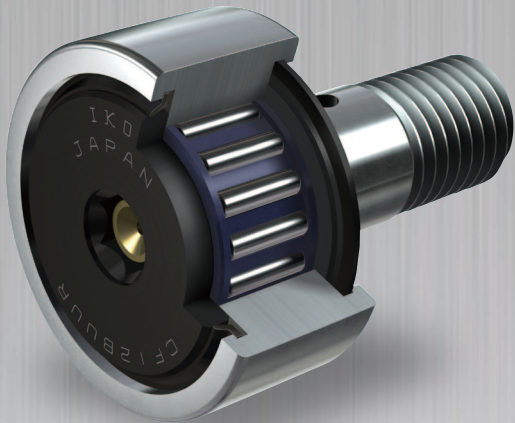
# Experts in Needle Roller Bearings.

## IKO Cam Followers & Roller Followers

Cam Followers and Roller Followers are comprised of needle rollers surrounded by a thick outer ring. These bearings are designed for rotation of the outer ring, with a low coefficient of friction and excellent rotation performance.

These bearings are designed with a small radial clearance so as to effectively expand the loading zone. This ensures stable and long life by lessening the shock load as the outer ring rolls over the mating cam surface.

A wide variety of models are available in both Cam Followers with studs and Roller Followers with inner rings. Thus, an appropriate bearing can be selected for various operating conditions. They are often used for cam mechanisms or linear motion on conveying equipment.



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### External Lubrication Parts for Cam Followers C-Lube Units

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### Roller Follower Series

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Cam Follower Series CAM FOLLOWER Series

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Roller Follower Series ROLLER FOLLOWER Series

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Cam Follower Series

|                               |    |
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| Load Rating and Life          | 22 |
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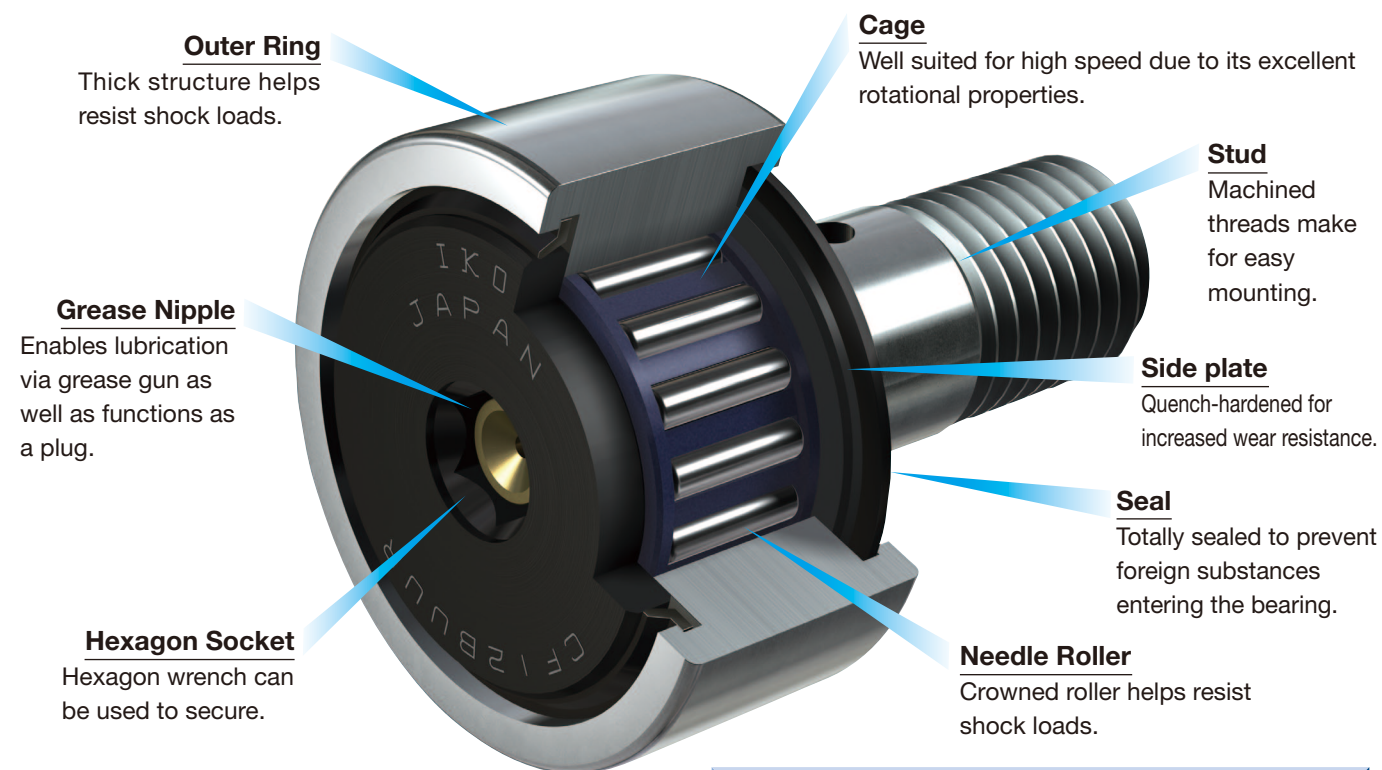
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| Way for Cam Follower | 73 |



# IKO Cam Followers European RoHS Compliant Products

# CF

**IKO** Cam Followers are bearings incorporating needle rollers with a stud enclosed in a thick outer ring. These Bearings are designed for outer ring rotation with superior rotational performance, a low coefficient of friction and high load capacity. Cam Followers have a high rigidity and accuracy making them well suited for various applications such as cam mechanisms and guide rollers for linear motion. They have a wide range of uses such as machine tools, industrial robots, electronic parts and office automation equipment. The hexagon socket on the stud head allows for secure tightening with a hexagon wrench as means for mounting. In addition, **IKO**'s original lubrication structure enables the Cam Follower to be lubricated from multiple locations including the stud head allowing for more freedom when designing equipment.



**Standard Type Cam Followers**



**Miniature Type Cam Followers**

## Variety & Originality

## Reliable and Proven Cam Follower Series!

### Introducing the features of **IKO** Cam Follower excellence!

#### 1 Substantial Product Lineup

Our substantial product lineup offers types such as extremely-small-sized miniature, built-in thrust disk good for mounting errors, maintenance free with pre-packed solid lubricant as well as other types.

7 page

#### 2 Wide Selection of Product Specifications to match your needs

Options such as material type, roller guide method, seal structure and shape of the outer ring surface are available to meet the needs of your application.

13 page

#### 3 Hexagon Socket for Easy Mounting

The hexagon socket on the stud head allows for easy means of mounting with hexagon wrench.

15 page

#### 4 **IKO** Original Lubricating Structure which allows for lubrication from the stud head

The hexagon socket's unique design allows for grease to be administered from the stud head end.

16 page

#### 5 New Innovation of C-Lube Unit for Cam Followers

The C-Lube unit supplies lubrication oil to the outside surface of the Cam Follower's outer ring and the track surface. Thus reducing friction and wear as well as eliminating the need to routinely grease these surfaces.

17 page



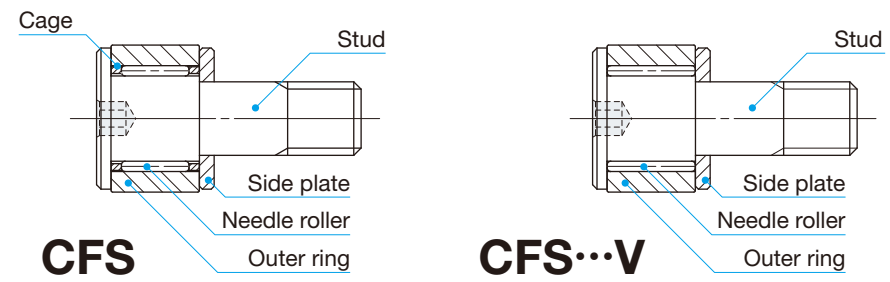
1 Substantial product lineup 1

Miniature Type Cam Followers

Stud diameter mm  
2 to 6

CFS

Ultrafine needle roller is incorporated to the outer ring of bearing so the compact design is realized with outer ring outside diameter which is small relative to the stud diameter. They are used in electronic devices, OA equipment, small index devices, etc.



Selectable product specifications

|                                     |           |                        |
|-------------------------------------|-----------|------------------------|
| Type of material                    | No symbol | High carbon steel      |
|                                     | F         | Stainless steel        |
| Roller guide method                 | No symbol | With cage              |
|                                     | V         | Full complement        |
| Seal structure                      | No symbol | Shield type            |
|                                     | UU        | Sealed type            |
| Shape of outer ring outside surface | No symbol | Cylindrical outer ring |
|                                     | R         | Crowned outer ring     |

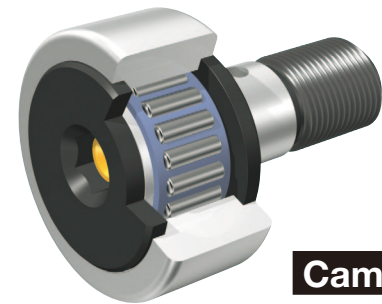
31 page

Standard Type Cam Followers

Stud diameter mm  
3 to 30

CF...B

These are the basic bearing models in the Cam Follower series. Size variations from 3 to 30 mm in stud diameter are available.



Selectable product specifications

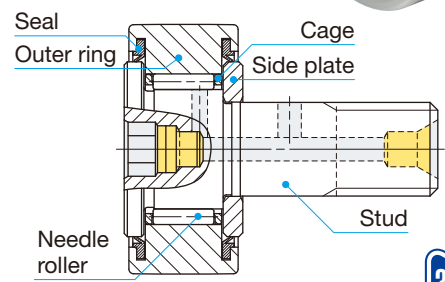
|                                     |           |                        |
|-------------------------------------|-----------|------------------------|
| Type of material                    | No symbol | High carbon steel      |
|                                     | F         | Stainless steel        |
| Roller guide method                 | No symbol | With cage              |
|                                     | V         | Full complement        |
| Seal structure                      | No symbol | Shield type            |
|                                     | UU        | Sealed type            |
| Shape of outer ring outside surface | No symbol | Cylindrical outer ring |
|                                     | R         | Crowned outer ring     |

Cam Follower G

CF...G

Cam Followers with pre-packed grease at reasonable price.

Can be used as-is when opened Pre-packed grease



Selectable product specifications

|                                     |           |                        |
|-------------------------------------|-----------|------------------------|
| Type of material                    | No symbol | High carbon steel      |
|                                     | F         | Stainless steel        |
| Roller guide method                 | No symbol | With cage              |
|                                     | V         | Full complement        |
| Seal structure                      | No symbol | Shield type            |
|                                     | UU        | Sealed type            |
| Shape of outer ring outside surface | No symbol | Cylindrical outer ring |
|                                     | R         | Crowned outer ring     |

35 page

Thrust Disk Type Miniature Cam Followers

Stud diameter mm  
1.4 to 6

CFS...W

Miniature Type Cam Followers incorporated with special synthetic resin thrust washers excellent in wear and heat resistance. It receives axial load of outer ring generated due to installation errors to prevent friction and wear on the sliding surface.

World's smallest size!  
A Cam Follower with stud diameter of just 1.4 mm!!



Ultra-compact CFS1.4WV with a stud diameter of 1.4 mm and outer ring diameter of just 4 mm. The built-in thrust disk receives the axial load of the outer ring generated due to mounting errors.

5 Features of CFS1.4WV



Selectable product specifications

|                                     |           |                        |
|-------------------------------------|-----------|------------------------|
| Type of material                    | No symbol | High carbon steel      |
|                                     | F         | Stainless steel        |
| Roller guide method                 | No symbol | With cage              |
|                                     | V         | Full complement        |
| Seal structure                      | No symbol | Shield type            |
|                                     | UU        | Sealed type            |
| Shape of outer ring outside surface | No symbol | Cylindrical outer ring |
|                                     | R         | Crowned outer ring     |

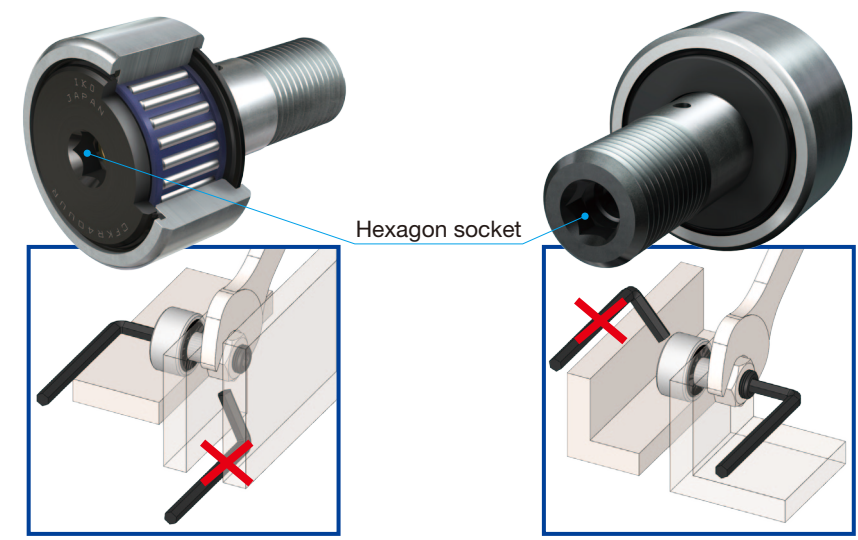
33 page

Double Hex Hole Cam Followers

Stud diameter mm  
10 to 30

CFKR

CFKR have a structure with hexagon sockets at each end of the stud and can be mounted using a hexagon wrench as baffle from either end, leaving the mounting location unrestricted.



When the stud thread is interfering

When the stud head is interfering

Selectable product specifications

|                                     |           |                        |
|-------------------------------------|-----------|------------------------|
| Type of material                    | No symbol | High carbon steel      |
|                                     | F         | Stainless steel        |
| Roller guide method                 | No symbol | With cage              |
|                                     | V         | Full complement        |
| Seal structure                      | No symbol | Shield type            |
|                                     | UU        | Sealed type            |
| Shape of outer ring outside surface | No symbol | Cylindrical outer ring |
|                                     | R         | Crowned outer ring     |

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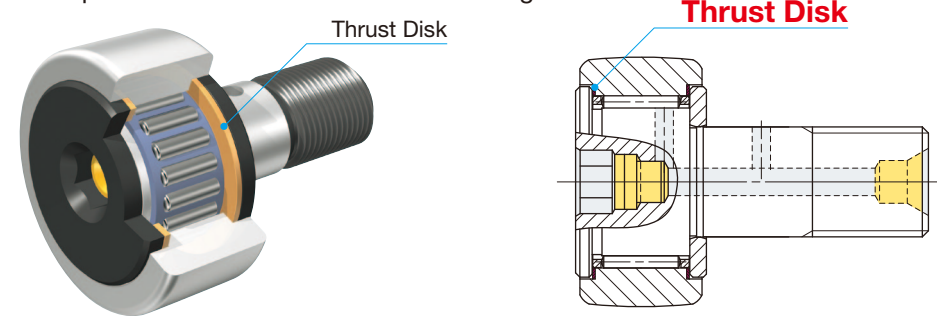
1 Substantial product lineup 2

Thrust Disk Type Cam Followers

Stud diameter mm  
3 to 20

CF...WB

As it is incorporated with special synthetic resin thrust washers excellent in wear and heat resistance, it receives axial load of outer ring generated due to mounting errors to prevent friction and wear on the sliding surface.



Selectable product specifications

|                                     |           |                        |
|-------------------------------------|-----------|------------------------|
| Type of material                    | No symbol | High carbon steel      |
|                                     | F         | Stainless steel        |
| Roller guide method                 | No symbol | With cage              |
|                                     | V         | Full complement        |
| Seal structure                      | No symbol | Shield type            |
|                                     | UU        | Sealed type            |
| Shape of outer ring outside surface | No symbol | Cylindrical outer ring |
|                                     | R         | Crowned outer ring     |

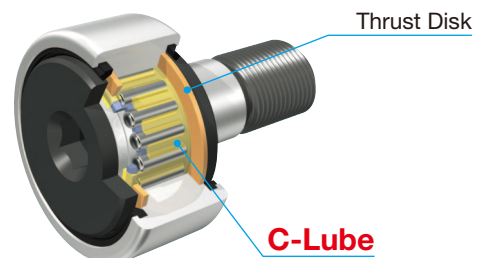
45 page

C-Lube Cam Followers

Stud diameter mm  
5 to 20

CF...WB.../SG

Maintenance free product with thermoset solid lubricant C-Lube pre-packed in the bearing space. C-Lube is heat-treated and solidified lubricant composed of an amount of lubrication oil and particulate ultra-high molecular polyethylene resin. As the bearing rotates, the lubricant oozes out of C-Lube onto the raceway in proper quantities, maintaining the lubrication performance for a long period of time.

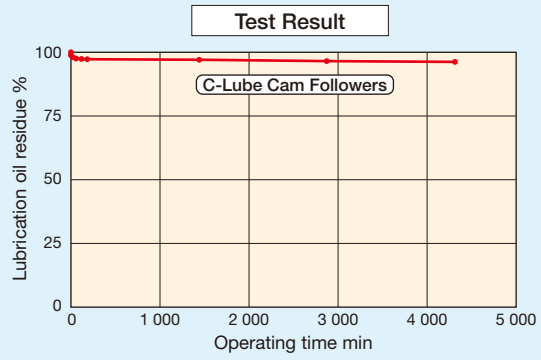


Selectable product specifications

|                                     |           |                        |
|-------------------------------------|-----------|------------------------|
| Type of material                    | No symbol | High carbon steel      |
|                                     | F         | Stainless steel        |
| Roller guide method                 | No symbol | With cage              |
|                                     | V         | Full complement        |
| Seal structure                      | No symbol | Shield type            |
|                                     | UU        | Sealed type            |
| Shape of outer ring outside surface | No symbol | Cylindrical outer ring |
|                                     | R         | Crowned outer ring     |

<Durability Test>

| Test conditions        |                                   |
|------------------------|-----------------------------------|
| Test portion           | CF10WBUUR/SG                      |
| Lubrication conditions | C-Lube only, no pre-packed grease |
| Rotational speed       | 1000 min <sup>-1</sup>            |
| Ambient temperature    | Room temperature                  |



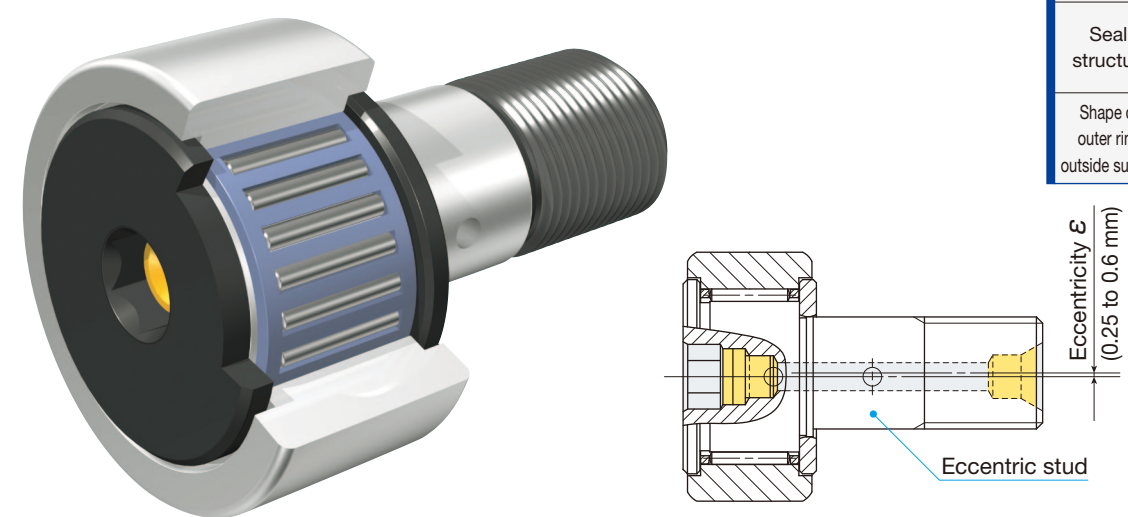
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Solid Eccentric Stud Type Cam Followers

Stud diameter mm  
6 to 18

CFES...B

Rotation of eccentric stud can align height of outer ring outside diameter when multiple rings are used. Eccentricity is from 0.25 to 0.6 mm and it can be mounted to the same mounting hole as the Standard Type Cam Followers.



Selectable product specifications

|                                     |           |                        |
|-------------------------------------|-----------|------------------------|
| Type of material                    | No symbol | High carbon steel      |
|                                     | F         | Stainless steel        |
| Roller guide method                 | No symbol | With cage              |
|                                     | V         | Full complement        |
| Seal structure                      | No symbol | Shield type            |
|                                     | UU        | Sealed type            |
| Shape of outer ring outside surface | No symbol | Cylindrical outer ring |
|                                     | R         | Crowned outer ring     |

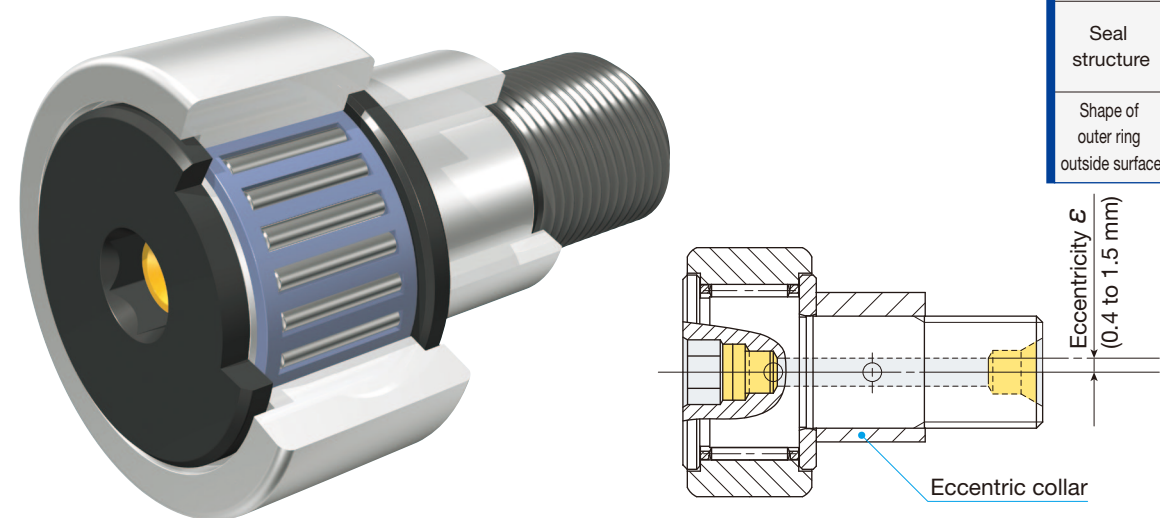
49 page

Eccentric Type Cam Followers

Stud diameter mm  
6 to 30

CFE...B

In these bearings, an eccentric collar is assembled with the Cam Follower stud, enabling the outer ring to be positioned easily in the radial direction against the mating cam guide surface. Eccentricity is from 0.4 to 1.5 mm.



Selectable product specifications

|                                     |           |                        |
|-------------------------------------|-----------|------------------------|
| Type of material                    | No symbol | High carbon steel      |
|                                     | F         | Stainless steel        |
| Roller guide method                 | No symbol | With cage              |
|                                     | V         | Full complement        |
| Seal structure                      | No symbol | Shield type            |
|                                     | UU        | Sealed type            |
| Shape of outer ring outside surface | No symbol | Cylindrical outer ring |
|                                     | R         | Crowned outer ring     |

51 page



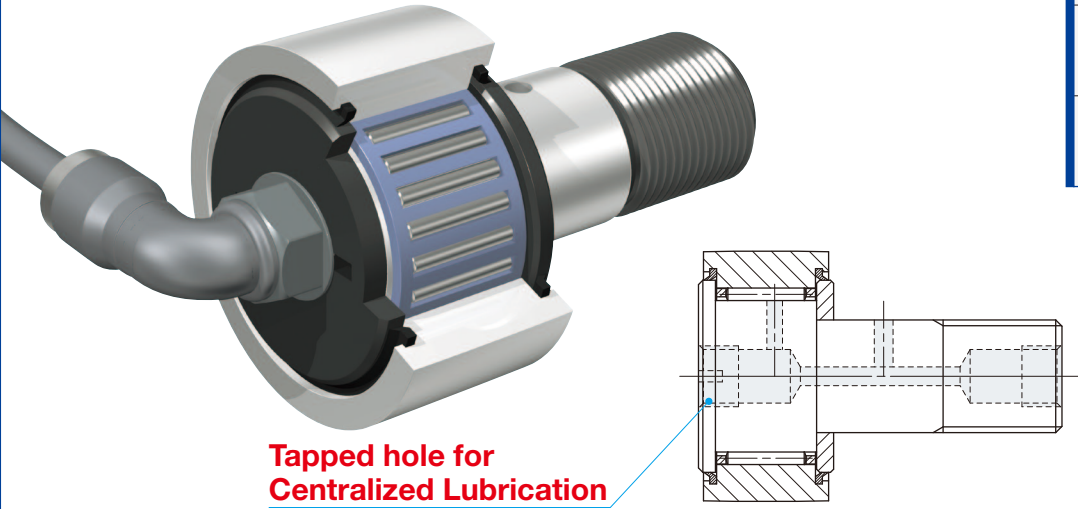
1 Substantial product lineup 3

Centralized Lubrication Type Cam Followers

Stud diameter mm  
6 to 30

CF-RU1, CF-FU1

As a tapped hole is prepared for the centralized piping on the stud head, this is optimal for applications where centralized oil piping is necessary.



Selectable product specifications

|                                     |           |  |                        |
|-------------------------------------|-----------|--|------------------------|
| Type of material                    | No symbol |  | High carbon steel      |
|                                     | F         |  | Stainless steel        |
| Roller guide method                 | No symbol |  | With cage              |
|                                     | V         |  | Full complement        |
| Seal structure                      | No symbol |  | Shield type            |
|                                     | No symbol |  | Sealed type            |
| Shape of outer ring outside surface | FU1       |  | Cylindrical outer ring |
|                                     | RU1       |  | Crowned outer ring     |

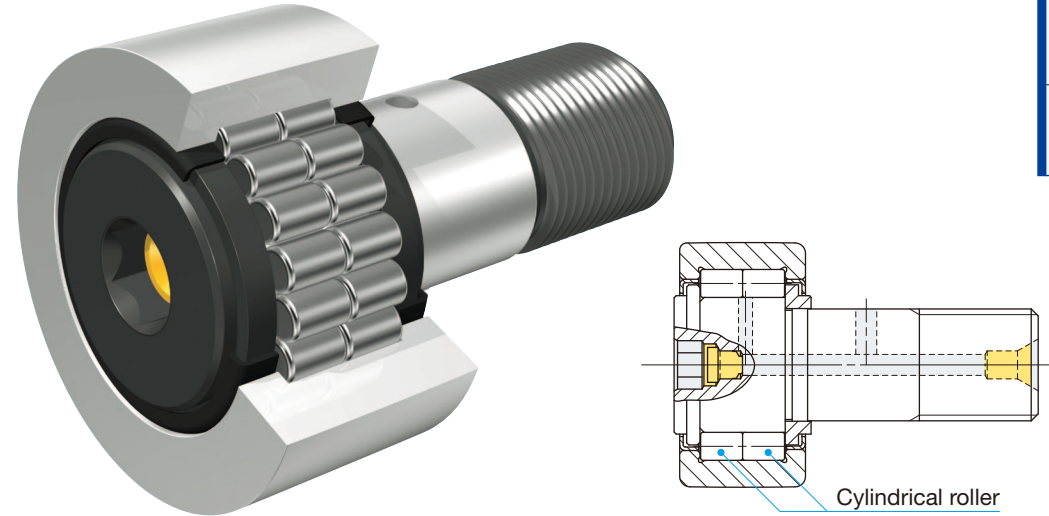
55 page

Cylindrical Roller Cam Followers

Stud diameter mm  
10 to 30

NUCF...B

These bearings are full complement type bearings incorporating double rows of full complement cylindrical rollers in the outer ring, and can withstand large radial loads and some axial loads.



Selectable product specifications

|                                     |           |  |                        |
|-------------------------------------|-----------|--|------------------------|
| Type of material                    | No symbol |  | High carbon steel      |
|                                     | F         |  | Stainless steel        |
| Roller guide method                 | No symbol |  | With cage              |
|                                     | No symbol |  | Full complement        |
| Seal structure                      | No symbol |  | Shield type            |
|                                     | UU        |  | Sealed type            |
| Shape of outer ring outside surface | No symbol |  | Cylindrical outer ring |
|                                     | R         |  | Crowned outer ring     |

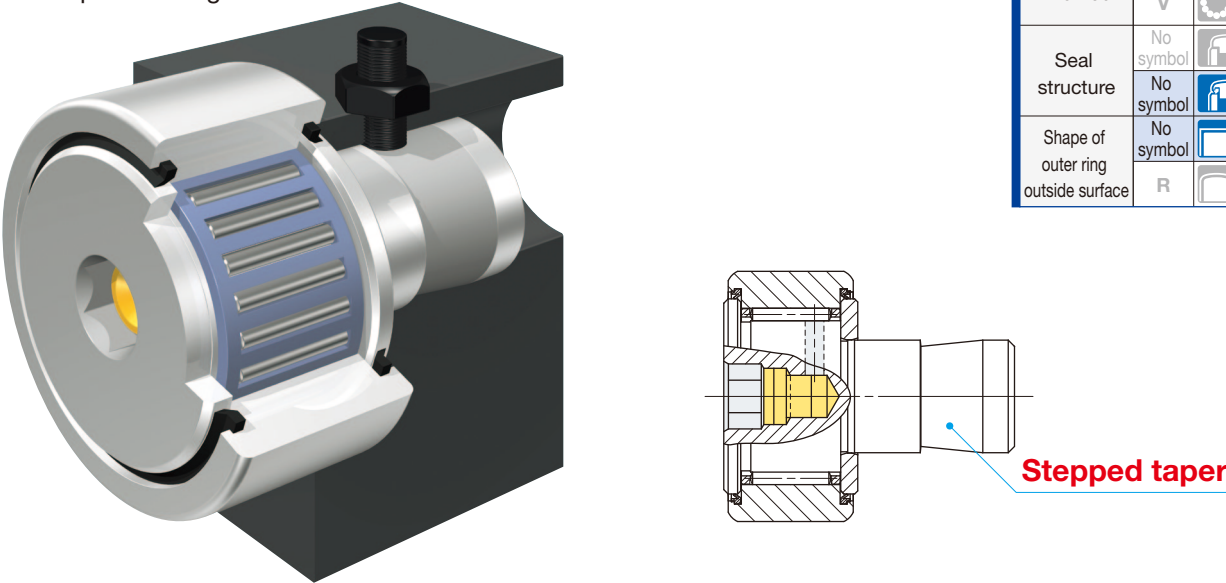
59 page

Easy Mounting Type Cam Followers

Stud diameter mm  
6 to 20

CF-SFU...B

These bearings have a stepped tapered portion on the stud, making mounting easy by fixing a set screw to the stepped portion: thus they are optimal for applications such as pallet change.



Selectable product specifications

|                                     |           |  |                        |
|-------------------------------------|-----------|--|------------------------|
| Type of material                    | No symbol |  | High carbon steel      |
|                                     | F         |  | Stainless steel        |
| Roller guide method                 | No symbol |  | With cage              |
|                                     | V         |  | Full complement        |
| Seal structure                      | No symbol |  | Shield type            |
|                                     | No symbol |  | Sealed type            |
| Shape of outer ring outside surface | No symbol |  | Cylindrical outer ring |
|                                     | R         |  | Crowned outer ring     |

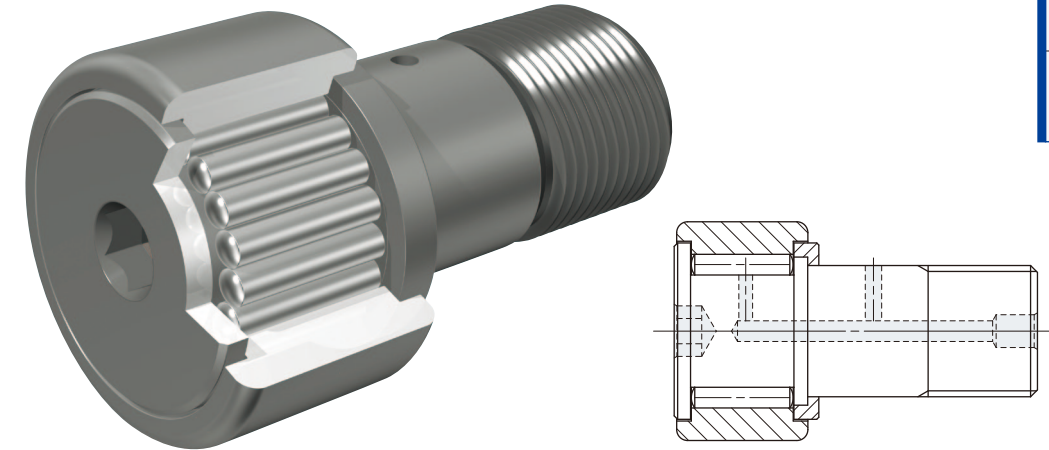
57 page

Inch Series Cam Followers

Stud diameter inch  
4.826 to 50.800

CR...B, CRH...B

2 types of Inch Series Cam Followers are available: CR and CRH. CRH has large load rating and is a heavy duty type with black oxide film treatment.



Selectable product specifications

|                                     |           |  |                        |
|-------------------------------------|-----------|--|------------------------|
| Type of material                    | No symbol |  | High carbon steel      |
|                                     | F         |  | Stainless steel        |
| Roller guide method                 | No symbol |  | With cage              |
|                                     | V         |  | Full complement        |
| Seal structure                      | No symbol |  | Shield type            |
|                                     | UU        |  | Sealed type            |
| Shape of outer ring outside surface | No symbol |  | Cylindrical outer ring |
|                                     | R         |  | Crowned outer ring     |

61 page



2 Wide selection of product specifications for your use

IKO Cam Follower product series

| Model of bearing                                         | Type of material       | Roller guide method | Seal structure | Shape of outer ring outside surface | Identification Number | Stud diameter (mm) | Dimension Table |
|----------------------------------------------------------|------------------------|---------------------|----------------|-------------------------------------|-----------------------|--------------------|-----------------|
| Miniature Type Cam Followers CFS                         | High carbon steel made | With cage           | Shield type    | Cylindrical outer ring              | CFS                   | 2 - 6              | Page 31         |
|                                                          |                        | Full complement     | Shield type    | Cylindrical outer ring              | CFS...V               | 2 - 6              | Page 31         |
|                                                          | Stainless steel made   | With cage           | Shield type    | Cylindrical outer ring              | CFS...F               | 2 - 6              | Page 31         |
|                                                          |                        | Full complement     | Shield type    | Cylindrical outer ring              | CFS...FV              | 2 - 6              | Page 31         |
| Thrust Disk Type Miniature Cam Followers CFS...W         | High carbon steel made | With cage           | Shield type    | Cylindrical outer ring              | CFS...W               | 2 - 6              | Page 33         |
|                                                          |                        | Full complement     | Shield type    | Cylindrical outer ring              | CFS...WV              | 1.4                | Page 33         |
|                                                          | Stainless steel made   | With cage           | Shield type    | Cylindrical outer ring              | CFS...FW              | 2 - 6              | Page 33         |
| Standard Type Cam Followers CF...B                       | High carbon steel made | With cage           | Shield type    | Crowned outer ring                  | CF...BR               | 3 - 30             | Page 35         |
|                                                          |                        |                     | Shield type    | Cylindrical outer ring              | CF...B                | 3 - 30             | Page 35         |
|                                                          |                        |                     | Sealed type    | Crowned outer ring                  | CF...BUUR             | 3 - 30             | Page 35         |
|                                                          |                        |                     | Sealed type    | Cylindrical outer ring              | CF...BUU              | 3 - 30             | Page 35         |
|                                                          |                        | Full complement     | Shield type    | Crowned outer ring                  | CF...VBR              | 6 - 30             | Page 37         |
|                                                          |                        |                     | Shield type    | Cylindrical outer ring              | CF...VB               | 6 - 30             | Page 37         |
|                                                          |                        |                     | Sealed type    | Crowned outer ring                  | CF...VBUUR            | 6 - 30             | Page 37         |
|                                                          |                        |                     | Sealed type    | Cylindrical outer ring              | CF...VBUU             | 6 - 30             | Page 37         |
|                                                          | Stainless steel made   | With cage           | Shield type    | Crowned outer ring                  | CF...FBR              | 3 - 20             | Page 35         |
|                                                          |                        |                     | Shield type    | Cylindrical outer ring              | CF...FB               | 3 - 20             | Page 35         |
|                                                          |                        |                     | Sealed type    | Crowned outer ring                  | CF...FBUUR            | 3 - 20             | Page 35         |
|                                                          |                        |                     | Sealed type    | Cylindrical outer ring              | CF...FBUU             | 3 - 20             | Page 35         |
|                                                          |                        | Full complement     | Shield type    | Crowned outer ring                  | CF...G                | 6 - 20             | Page 43         |
|                                                          |                        |                     | Shield type    | Cylindrical outer ring              | CF...G                | 6 - 20             | Page 43         |
|                                                          |                        |                     | Sealed type    | Crowned outer ring                  | CF...G                | 6 - 20             | Page 43         |
|                                                          |                        |                     | Sealed type    | Cylindrical outer ring              | CF...G                | 6 - 20             | Page 43         |
| Double Hex Hole Cam Followers CFKR                       | High carbon steel made | With cage           | Shield type    | Crowned outer ring                  | CFKR...R              | 10 - 30            | Page 39         |
|                                                          |                        |                     | Shield type    | Cylindrical outer ring              | CFKR                  | 10 - 30            | Page 39         |
|                                                          |                        |                     | Sealed type    | Crowned outer ring                  | CFKR...UUR            | 10 - 30            | Page 39         |
|                                                          |                        |                     | Sealed type    | Cylindrical outer ring              | CFKR...UU             | 10 - 30            | Page 39         |
|                                                          |                        | Full complement     | Shield type    | Crowned outer ring                  | CFKR...VR             | 10 - 30            | Page 41         |
|                                                          |                        |                     | Shield type    | Cylindrical outer ring              | CFKR...V              | 10 - 30            | Page 41         |
|                                                          |                        |                     | Sealed type    | Crowned outer ring                  | CFKR...VUUR           | 10 - 30            | Page 41         |
|                                                          |                        |                     | Sealed type    | Cylindrical outer ring              | CFKR...VUU            | 10 - 30            | Page 41         |
| Thrust Disk Type Cam Followers CF...WB                   | High carbon steel made | With cage           | Shield type    | Crowned outer ring                  | CF...WBR              | 3 - 20             | Page 45         |
|                                                          |                        |                     | Sealed type    | Crowned outer ring                  | CF...WBUUR            | 3 - 20             | Page 45         |
|                                                          | Stainless steel made   | With cage           | Shield type    | Crowned outer ring                  | CF...FWBR             | 3 - 5              | Page 45         |
|                                                          |                        |                     | Sealed type    | Crowned outer ring                  | CF...FWBUUR           | 3 - 5              | Page 45         |
| C-Lube Cam Followers CF...WB.../SG                       | High carbon steel made | With cage           | Sealed type    | Crowned outer ring                  | CF...WBUUR/SG         | 5 - 20             | Page 47         |
| Solid Eccentric Stud Type Cam Followers CFES...B         | High carbon steel made | With cage           | Shield type    | Crowned outer ring                  | CFES...BR             | 6 - 18             | Page 49         |
|                                                          |                        |                     | Shield type    | Cylindrical outer ring              | CFES...B              | 6 - 18             | Page 49         |
|                                                          |                        |                     | Sealed type    | Crowned outer ring                  | CFES...BUUR           | 6 - 18             | Page 49         |
|                                                          |                        |                     | Sealed type    | Cylindrical outer ring              | CFES...BUU            | 6 - 18             | Page 49         |
| Eccentric Type Cam Followers CFE...B                     | High carbon steel made | With cage           | Shield type    | Crowned outer ring                  | CFE...BR              | 6 - 30             | Page 51         |
|                                                          |                        |                     | Shield type    | Cylindrical outer ring              | CFE...B               | 6 - 30             | Page 51         |
|                                                          |                        |                     | Sealed type    | Crowned outer ring                  | CFE...BUUR            | 6 - 30             | Page 51         |
|                                                          |                        |                     | Sealed type    | Cylindrical outer ring              | CFE...BUU             | 6 - 30             | Page 51         |
|                                                          |                        | Full complement     | Shield type    | Crowned outer ring                  | CFE...VBR             | 6 - 30             | Page 53         |
|                                                          |                        |                     | Shield type    | Cylindrical outer ring              | CFE...VB              | 6 - 30             | Page 53         |
|                                                          |                        |                     | Sealed type    | Crowned outer ring                  | CFE...VBUUR           | 6 - 30             | Page 53         |
|                                                          |                        |                     | Sealed type    | Cylindrical outer ring              | CFE...VBUU            | 6 - 30             | Page 53         |
| Centralized Lubrication Type Cam Followers CF-RU1 CF-FU1 | High carbon steel made | With cage           | Sealed type    | Crowned outer ring                  | CF-RU1                | 6 - 30             | Page 55         |
|                                                          |                        |                     | Sealed type    | Cylindrical outer ring              | CF-FU1                | 6 - 30             | Page 55         |
| Easy Mounting Type Cam Followers CF-SFU...B              | High carbon steel made | With cage           | Sealed type    | Cylindrical outer ring              | CF-SFU...B            | 6 - 20             | Page 57         |
| Cylindrical Roller Cam Followers NUCF...B                | High carbon steel made | Full complement     | Shield type    | Crowned outer ring                  | NUCF...BR             | 10 - 30            | Page 59         |

\* The product series of Inch Series Cam Followers can be found on the tables from page 61 to page 72.

Type of material

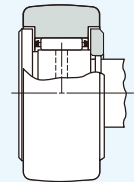
In addition to high carbon steel products, stainless steel products are also available. Stainless steel products are suited for applications where oil should be avoided, water is spattering, or it is used in a clean room.



Roller guide method

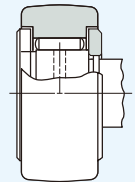
As caged type has smaller friction coefficient, it is suited for high-speed rotation. Full complement type is suited for sections where low-speed rotation, oscillatory movement or heavy load exists.

For sections with high-speed rotation...



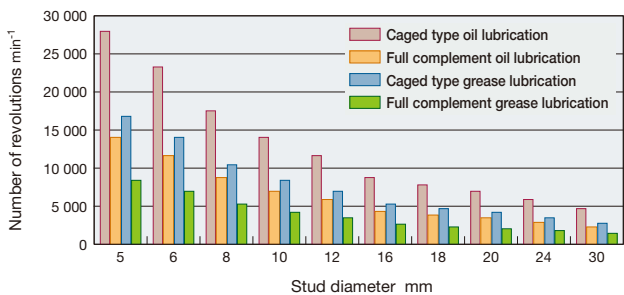
<With cage>

For sections with low-speed rotation or heavy load...

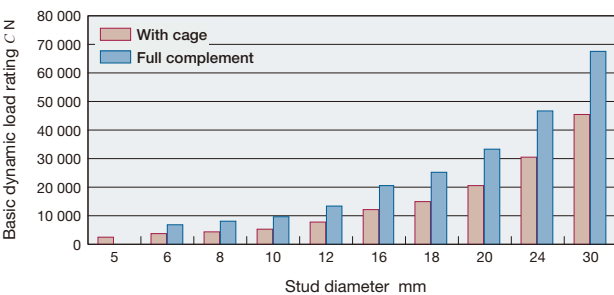


<Full complement>

Maximum revolution comparison



Dynamic load rating comparison

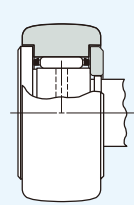


Seal structure

Shield type is shaped so that clearance between the outer ring and stud flange and between the outer ring and side plate become smaller and labyrinth is formed.

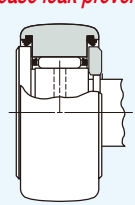
Sealed type incorporates the seal structure, which can prevent foreign substances from entering.

For general use...



<Shield type>

For dust prevention and grease leak prevention...



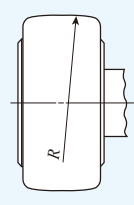
<Sealed type>

Shape of outer ring outside surface

Crowned outer ring is effective for mitigation of edge load generated due to mounting errors.

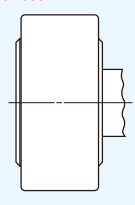
Cylindrical outer ring is suited if the applied load is large or hardness of cam guide surface is low.

For reducing mounting errors...



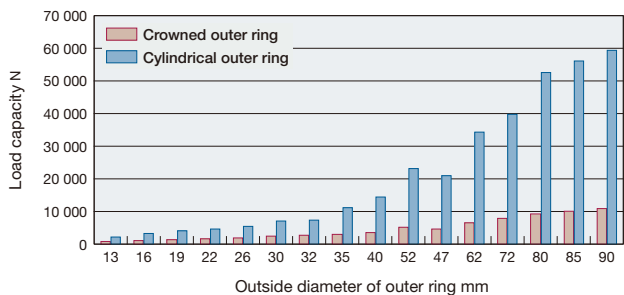
<Crowned outer ring>

For sections with high applied load... For cam guide surfaces without enough hardness...



<Cylindrical outer ring>

Track surface load capacity comparison

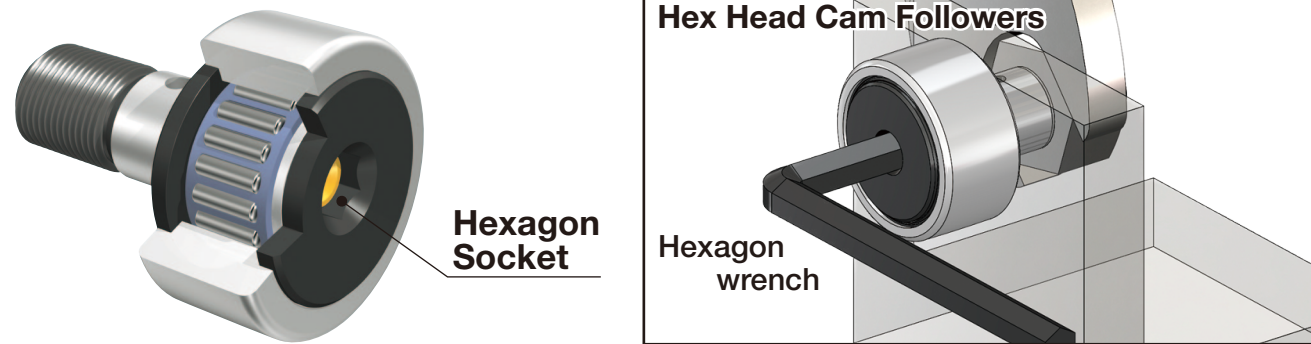




### 3 Hexagon Socket for easy mounting

**Easily secure stud**

**with the help of a hexagon wrench!**

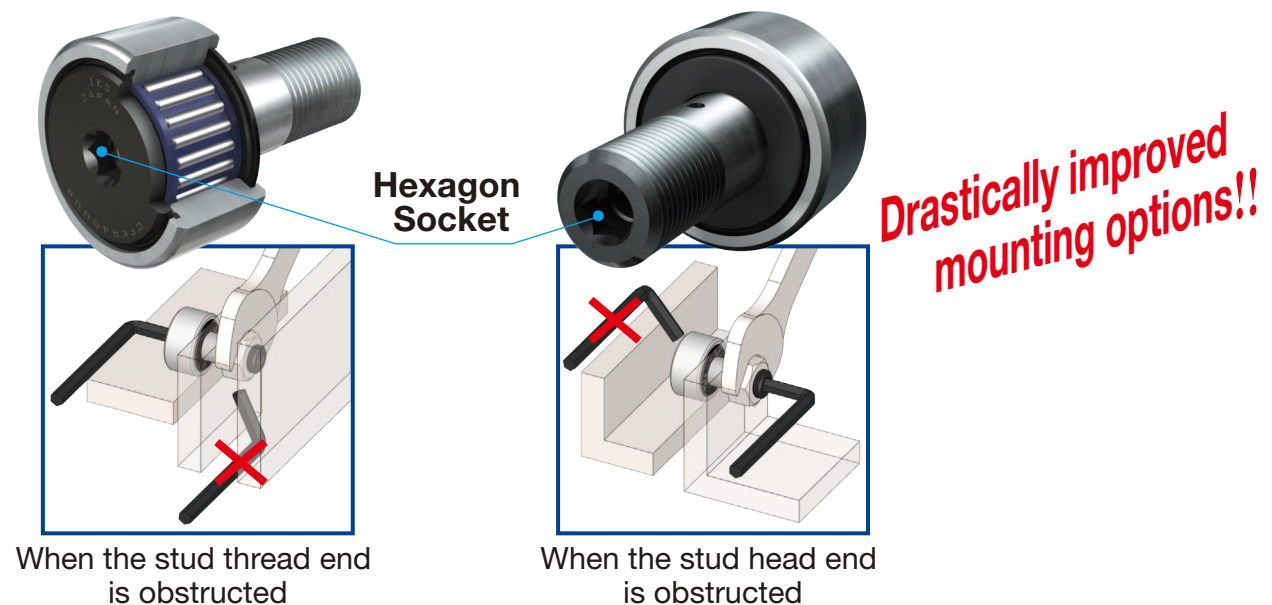


Hexagon socket is available in the following series

| Series name                              | Model           | Stud diameter (mm) |
|------------------------------------------|-----------------|--------------------|
| Miniature Type Cam Followers             | CFS             | 2 to 6             |
| Thrust Disk Type Miniature Cam Followers | CFS...W         | 1.4 to 6           |
| Standard Type Cam Followers              | CF...B          | 3 to 30            |
| Double Hex Hole Cam Followers            | CFKR            | 10 to 30           |
| Thrust Disk Type Cam Followers           | CF...WB         | 3 to 20            |
| C-Lube Cam Followers                     | CF...WB.../SG   | 5 to 20            |
| Solid Eccentric Stud Type Cam Followers  | CFES...B        | 6 to 18            |
| Eccentric Type Cam Followers             | CFE...B         | 6 to 30            |
| Easy Mounting Type Cam Followers         | CF-SFU...B      | 6 to 20            |
| Cylindrical Roller Cam Followers         | NUCF...B        | 10 to 30           |
| Inch Series Cam Followers                | CR...B, CRH...B | 4.826 to 50.800    |

\* Centralized Lubrication Type Cam Followers come with a screwdriver slot.

**CFKR is designed with hexagon sockets at each end of the stud, allowing for use in any mounting location!**



### 4 IKO Original Lubricating Structure which allows for lubrication from the stud head

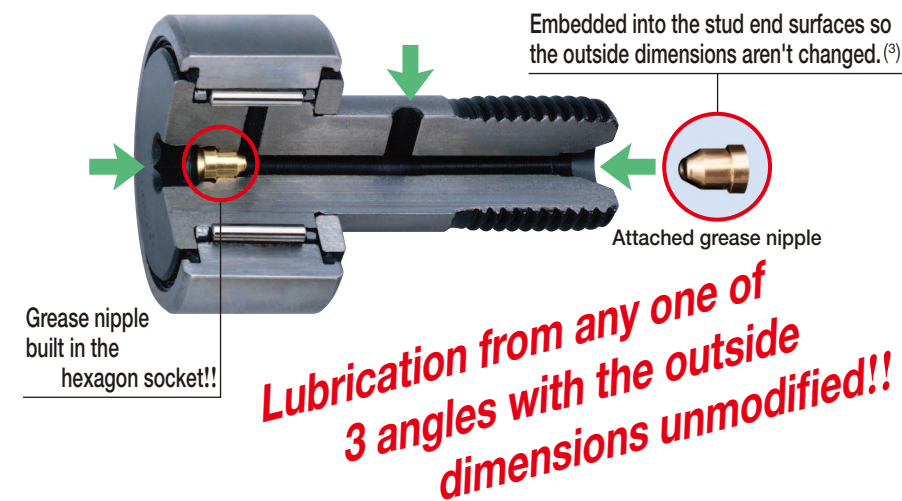
#### Original lubricating structure

Hex Head Cam Followers allow lubrication from the stud head.<sup>(1)</sup>

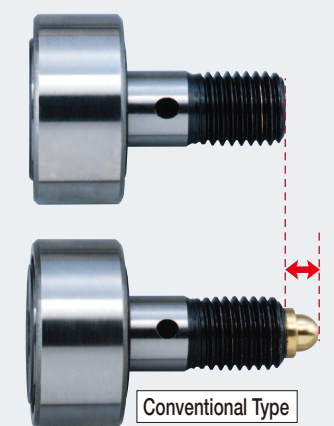


#### 3 Way Type

Stud dia. 12 to 30 mm<sup>(2)</sup>



Innovative design where the stud end nipple doesn't protrude.

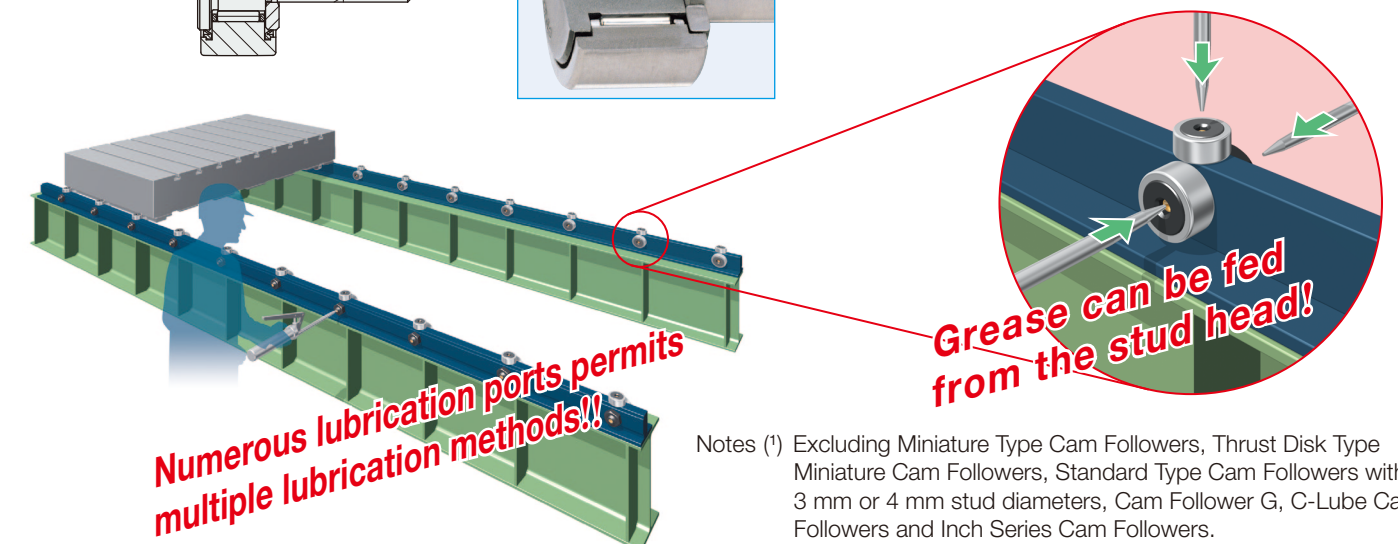
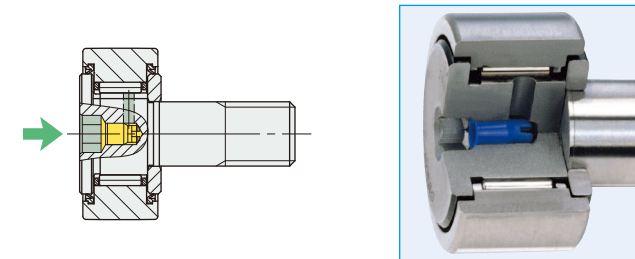


Furthermore, there is no need to differentiate between the use of a plug or a grease nipple depending on the lubrication direction.



#### 1 Way Type

Stud dia. 5 to 10 mm<sup>(4)</sup>



Notes (1) Excluding Miniature Type Cam Followers, Thrust Disk Type Miniature Cam Followers, Standard Type Cam Followers with 3 mm or 4 mm stud diameters, Cam Follower G, C-Lube Cam Followers and Inch Series Cam Followers.

(2) Eccentric Type Cam Followers have a stud thread diameter G as shown in the dimension table.

Furthermore, all Easy Mounting Type have a 1way port.

(3) Grease nipple for stud end is included as an accessory.

(4) Oil holes are provided at the head part and the stud end for Double Hex Hole Cam Followers only. (2 Way Type) Also, for Double Hex Hole Cam Followers only, a grease nipple is built into the stud head.

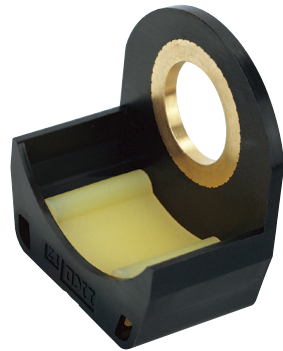
1N=0.102kgf=0.2248lbs.  
1mm=0.03937inch



## 5 New Innovation of C-Lube Unit for Cam Followers

### IKO C-Lube Unit for Cam Followers

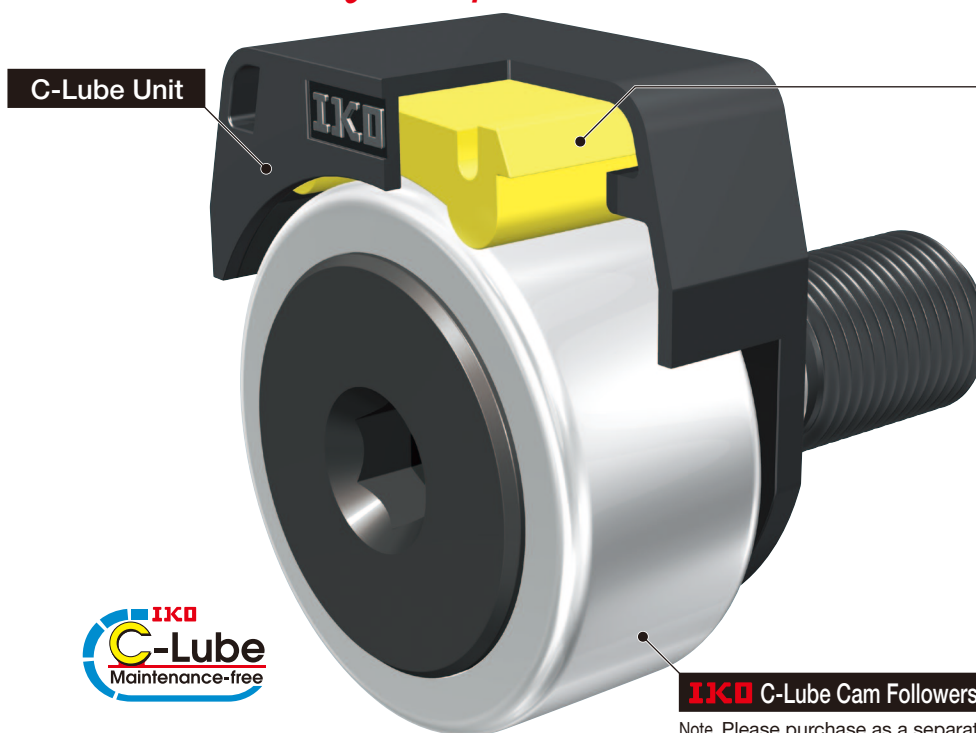
# CL



IKO C-Lube Unit for Cam Followers is a lubrication component that mounts on Cam Followers. Frequent lubrication is not required since oil is administered to the outer ring and track surfaces.

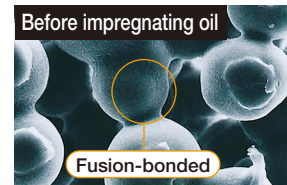
19 page

*Long-term operation without the need for costly frequent lubrication!*

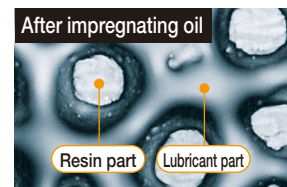


#### Capillary lubricating element

Constructed by sintering a fine resin powder into a porous mold. The porous mold is then saturated with a large amount of lubrication oil.



Before impregnating oil  
Fusion-bonded  
Resin particles are firmly fused together with numerous empty spaces.



After impregnating oil  
Resin part Lubricant part  
Lubricant is retained in cavities amongst resin particles.

#### IKO C-Lube Cam Followers

Note Please purchase as a separate addition to the IKO C-Lube Unit.

### Are you struggling with problems like this?

When lubrication maintenance of cam guide surfaces is not right...

Lubrication oil runs low allowing wear and reddish-brown rust to appear!

Too much grease causes it to scatter, thus contaminating the surrounding environment!



*Occurrence of reddish-brown rust due to wear!*



*Filthy surroundings due to grease!*

### C-Lube Unit CL

If so, problem solved!!

*Lubrication oil is continuously applied for a long period of time!*



*Prevents contamination to the surrounding environment!*

### IKO C-Lube Unit For Cam Follower CL Applications

*Achieves long term maintenance free cam guide surfaces!!*

#### Conventional Cam Followers

Mounting dimensions, structure as-is <sup>(1)</sup>

#### When combined with CL

Lubrication maintenance not required over long term use!!

Notes <sup>(1)</sup> Cam Followers only need to be offset by a few mm in the axial directions to cater for the CL resin cover thickness.

### CL properties are underpinned by extensive durability testing!

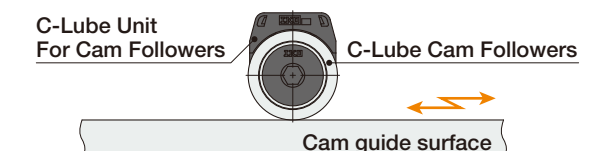
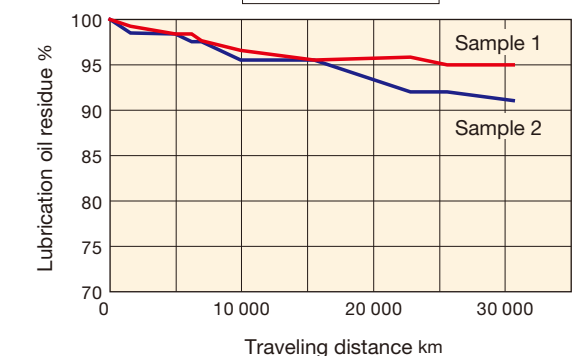
#### <Durability test>

##### Test conditions <sup>(2)</sup>

|                              |                                                                                  |
|------------------------------|----------------------------------------------------------------------------------|
| Test portion                 | CL12 C-Lube Unit For Cam Followers<br>CF12 WBUUR/SG C-Lube Cam Followers         |
| Lubrication conditions       | C-Lube Unit only, no pre-packed grease                                           |
| Maximum speed                | 2000 mm/s                                                                        |
| Stroke length                | 300 mm                                                                           |
| Track surface specifications | Material SKD11<br>Hardness HRC58 or more<br>Surface Roughness Rz: 6.3 μm or less |
| Ambient temperature          | Room temperature                                                                 |

Notes <sup>(2)</sup> Uses a ground cam guide surface with verified durability.  
If using under different conditions, please confirm with your actual machine.

##### Test Result



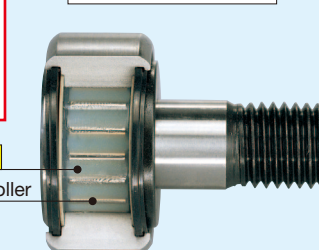
### Ideal for use in combination with IKO C-Lube Cam Followers!!

The combination of IKO Cam Followers CF...WB.../SG with the IKO C-Lube Unit for Cam Followers provides for maintenance-free operation both inside and outside the Cam Follower as well as the track surface.

*Completely maintenance free!*

Filled with a solid type lubricant for sustained lubrication performance over long periods of time!

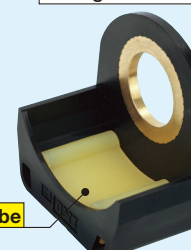
#### Cam Follower interior



C-Lube  
Needle roller

IKO C-Lube Cam Followers  
CF...WB.../SG

#### Cam guide surface



C-Lube

IKO C-Lube Unit for Cam Followers  
CL

Remark C-Lube Unit can be used in combination with Standard Type Cam Followers, Double Hex Hole Cam Followers, Cam Follower G, Thrust Disk Type Cam Followers, Centralized Lubrication Type Cam Followers, C-Lube Cam Followers and Cylindrical Roller Cam Followers.

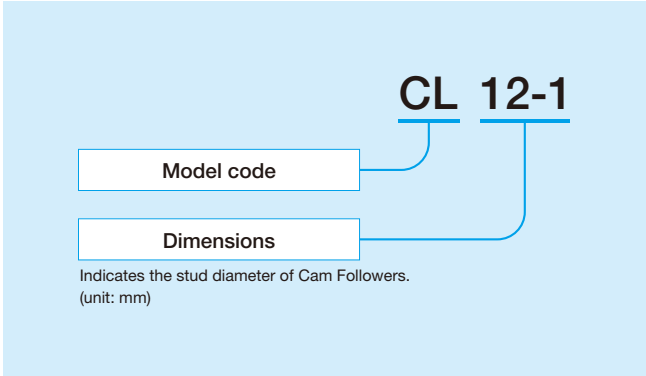
1N=0.102kgf=0.2248lbs.  
1mm=0.03937inch



# C-Lube Unit for Cam Followers

## 1 Identification Number

An example of the identification number of C-Lube Unit for Cam Followers is shown below.



## 2 Allowable Rotational Speed

For Cam Followers with C-Lube Unit mounted, use 10,000 or lower as reference for the  $d_1n$  value.

$$d_1n \text{ value} = d_1 \times n$$

where  $d_1$  : Stud diameter of Cam Follower mm  
 $n$  : Rotational speed  $\text{min}^{-1}$

## 3 Minimum Rotational Angle

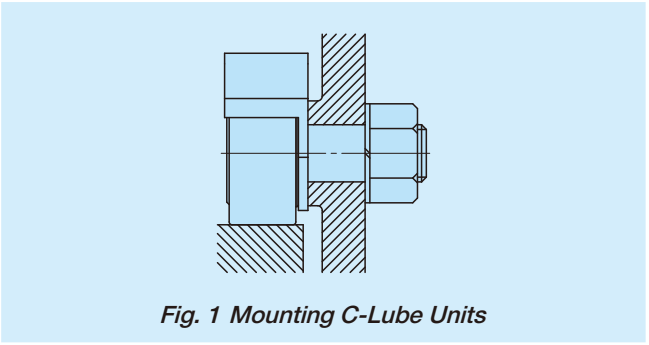
Lubrication oil is supplied to the whole outside diameter surface of the outer ring. Accordingly, when the C-Lube Unit is mounted, use the product in conditions under which the outer ring makes one or more turns.

## 4 Operating Temperature Range

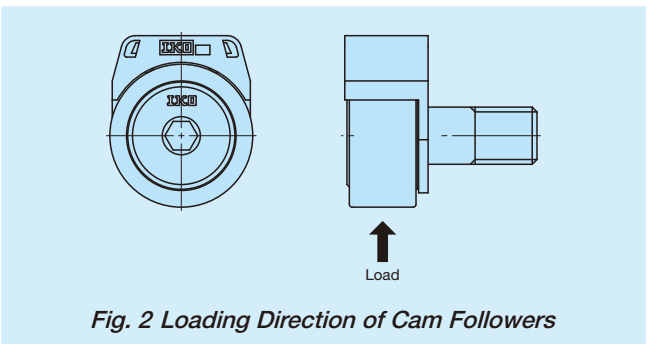
Use the C-Lube Unit within the temperature range between  $-15^{\circ}\text{C}$  and  $80^{\circ}\text{C}$ .

## 5 Mounting

- Set the C-Lube Unit perpendicularly to a center line of the Cam Follower stud and fix it along with the Cam Follower with a nut. (See Fig. 1)



- C-Lube Unit must be positioned avoiding loading direction. In addition, the C-Lube Unit has no baffle, so fix it while adjusting the C-Lube Unit position in mounting. (See Fig. 2)



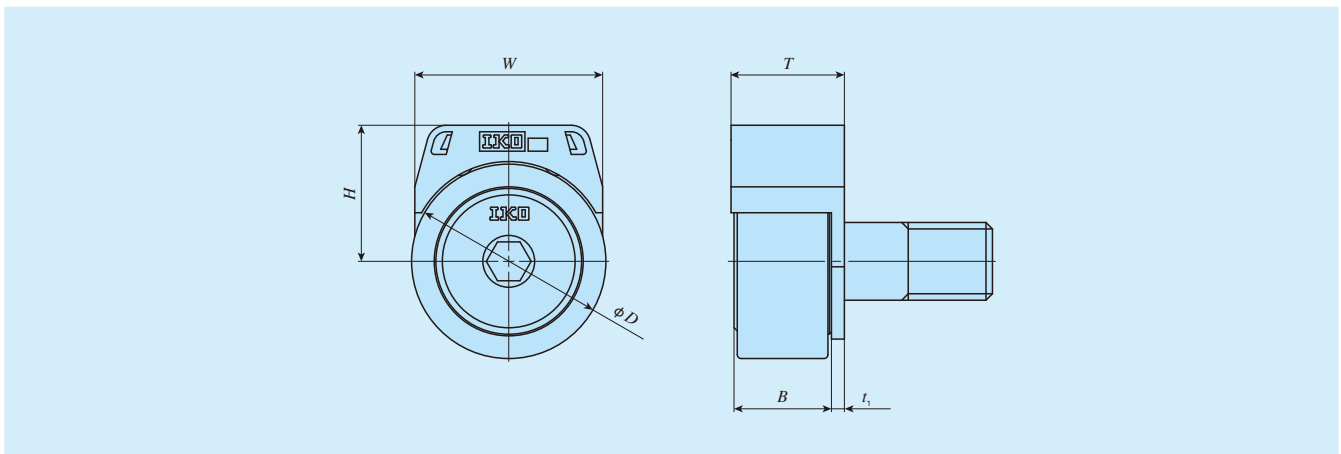
- Tighten the nut to fix the C-Lube Unit and Cam Followers together to the extent not exceeding the maximum tightening torque specified in the Cam Followers dimension table.
- In case loosening of the nut is predicted due to vibration, using lock nut, spring washer and other self-locking nut are recommended.

## 6 Precautions for Use

- Never clean up a C-Lube Unit with organic solvent or white kerosene with property of removing fat.
- To avoid damage and lubrication function failure, do not directly apply load onto the C-Lube Unit.
- To rotate the Cam Followers normally with the C-Lube Unit mounted, apply load of 1% or more of the basic dynamic load rating to the Cam Followers.
- Load applied to the Cam Follower with the C-Lube Unit equipped must be 80% or less of the maximum allowable static load of the Cam Follower to be combined. Excessive load may deform the C-Lube Unit mounting surface, loosen the Cam Follower fixed nut, or dislodge the C-Lube Unit, preventing normal operation.

- Before operation, ensure that lubrication oil is supplied between the Cam Followers outer ring outside surface and the cam guide surface. Lubrication performance of the C-Lube Unit is largely affected by conditions of the cam guide surface.
- Avoid operating the C-Lube Unit in any environment where capillary lubricating elements may be damaged or foreign substances or liquid substance may enter into it.
- As additional oil feeding to the C-Lube Unit is not allowed, replace it with new one when lubrication effect is lost.

## 7 Dimension Table



| Identification number | Boundary dimensions mm |      |      |       | Applicable Cam Followers |                        |          |
|-----------------------|------------------------|------|------|-------|--------------------------|------------------------|----------|
|                       | $W$                    | $H$  | $T$  | $t_1$ | Identification number    | Boundary dimensions mm |          |
|                       |                        |      |      |       |                          | $D$                    | $B$      |
| CL 5                  | 12.4                   | 10.7 | 12.1 | 1.5   | CF 5 B                   | 13                     | 10       |
| CL 6                  | 15.4                   | 12.6 | 14   | 1.5   | CF 6 B                   | 16                     | 12.2 max |
| CL 8                  | 18.4                   | 14.2 | 14   | 1.5   | CF 8 B                   | 19                     | 12.2 max |
| CL 10                 | 21                     | 17   | 15.5 | 2     | CF 10 B<br>CFKR 22       | 22                     | 13.2 max |
| CL 10-1               | 21                     | 19.2 | 15.5 | 2     | CF 10-1 B<br>CFKR 26     | 26                     | 13.2 max |
| CL 12                 | 29                     | 21   | 17.5 | 2     | CF 12 B<br>CFKR 30       | 30                     | 15.2 max |
| CL 12-1               | 29                     | 22   | 17.5 | 2     | CF 12-1 B<br>CFKR 32     | 32                     | 15.2 max |
| CL 16                 | 33.8                   | 27.4 | 23.4 | 2.5   | CF 16 B<br>CFKR 35       | 35                     | 19.6 max |
| CL 18                 | 38.8                   | 30.4 | 25.4 | 2.5   | CF 18 B<br>CFKR 40       | 40                     | 21.6 max |
| CL 20                 | 45.8                   | 38.4 | 29.9 | 3     | CF 20 B<br>CFKR 52       | 52                     | 25.6 max |
| CL 20-1               | 45.8                   | 35.4 | 29.9 | 3     | CF 20-1 B<br>CFKR 47     | 47                     | 25.6 max |

Note (!) Only representative types are shown in the table, but this table is applicable to the same size of Standard Type Cam Followers, Double Hex Hole Cam Followers, Cam Follower G, Thrust Disk Type Cam Followers, Centralized Lubrication Type Cam Followers, C-Lube Cam Followers and Cylindrical Roller Cam Followers.

Use in combination with C-Lube Cam Followers is strongly recommended for full maintenance free effect.  
 Remark Load applied to the Cam Follower with the C-Lube Unit equipped must be 80% or less of the maximum allowable static load of the Cam Follower to be combined. For the maximum allowable static load of each Cam Follower, please see the dimension tables of respective models.



Identification Number

Examples of the identification number of Cam Followers are shown below. In addition, for application of material type, roller guide method, seal structure and shape of outer ring outside surface to each model, refer to the dimension table.

Example of Identification Number

Example 1

Example 2

Example 3

Example 4

CFS

CF

CF

CF

3

10

5

8

F

F

V

V

W

W

B

B

B

UU

UU

UU

R

R

R

P6

/SG

Model code

CFS

CFS···W

CF···B

CFKR

CF···G

CF···WB

CF···WB···/SG

CFES···B

CFE···B

CF-RU1

CF-FU1

CF-SFU···B

NUCF···B

CR···B

CR

CRH···B

CRH

Miniature Type Cam Followers

Thrust Disk Type Miniature Cam Followers

Standard Type Cam Followers

Double Hex Hole Cam Followers

Cam Follower G

Thrust Disk Type Cam Followers

C-Lube Cam Followers

Solid Eccentric Stud Type Cam Followers

Eccentric Type Cam Followers

Centralized Lubrication Type Cam Follower (Crowned Outer Ring)

Centralized Lubrication Type Cam Follower (Cylindrical Outer Ring)

Easy Mounting Type Cam Followers

Cylindrical Roller Cam Followers

Inch Series Cam Followers (With Hexagon Socket)

Inch Series Cam Followers (With Screwdriver Slot)

Inch Series Cam Followers (With Hexagon Socket)

Inch Series Cam Followers (With Screwdriver Slot)

Dimensions

The value indicates the stud diameter. (unit: mm)

(The outside diameter of the outer ring is indicated for Double Hex Hole Cam Followers only.)

For Inch Series Cam Followers, outer ring outside diameter dimensions are indicated in 1/16 inch.

Type of material

No symbol

F

High carbon steel made

Stainless steel made

Roller guide method (1)

No symbol

V

With cage

Full complement

Note (1) Cylindrical Roller Cam Followers are full complement type with no symbol.

Seal structure (1)

No symbol

UU

Shield type

Sealed type

Note (1) Centralized Lubrication Type and Easy Mounting Type Cam Followers are sealed type with no symbol.

Shape of outer ring outside surface

No symbol

R

Cylindrical outer ring

Crowned outer ring

Accuracy class

No symbol

P6

P5

P4

Accuracy class 0

Accuracy class 6

Accuracy class 5

Accuracy class 4

Applicable to Miniature Type Cam Followers CFS and CFS···W.

Load Rating and Life

Basic dynamic load rating C

Basic dynamic load rating refers to a static radial load with a certain direction and size with which 90% of a group of the same Cam Followers can run one million rotations without material damages due to rolling contact fatigue when they are operated in the same conditions.

Basic static load rating C<sub>0</sub>

Basic static load rating refers to a static radial load with a certain direction and size with a certain contact stress at the center of contact parts of the rolling elements and a raceway under maximum load.

Life

The basic rating life calculation formulas are shown below.

$$L_{10} = \left(\frac{C}{P_r}\right)^{10/3} \dots\dots\dots (1)$$

Where,  $L_{10}$  : Basic rating life 10<sup>6</sup> rev.  
 $C$  : Basic dynamic load rating N  
 $P_r$  : Dynamic equivalent radial load N

Therefore, life time can be calculated by applying the rotational speed to the formula below.

$$L_h = \frac{10^6 L_{10}}{60n} \dots\dots\dots (2)$$

Where,  $L_h$  : Basic rating life represented by service hours h  
 $n$  : Rotational speed min<sup>-1</sup>

Static Safety Factor

Static safety factor can be obtained by the following equation and typical values are shown in Table 1.

$$f_s = \frac{C_0}{P_{or}} \dots\dots\dots (3)$$

Where,  $f_s$  : Static safety factor  
 $C_0$  : Basic static load rating N  
 $P_{or}$  : Static equivalent radial load (maximum load) N

Table 1 Static safety factor

| Operating conditions of the bearing                                                             | $f_s$ |
|-------------------------------------------------------------------------------------------------|-------|
| When high rotational accuracy is required                                                       | ≥3    |
| For ordinary operation conditions                                                               | ≥1.5  |
| For normal operating conditions not requiring very smooth rotation<br>When it is rarely rotated | ≥1    |

Load factor

Load actually applied on the Cam Followers becomes larger than load theoretically calculated from vibration and shock. Therefore, multiply the load by the load factor shown in Table 2.

Table 2 Load factor

| Operating conditions             | $f_w$      |
|----------------------------------|------------|
| Smooth operation free from shock | 1 to 1.2   |
| Normal operation                 | 1.2 to 1.5 |
| Operation with shock load        | 1.5 to 3   |

Maximum Allowable Static Load

The applicable load on Cam Followers is, in some cases, limited by the bending strength and shear strength of the stud and the strength of the outer ring instead of the load rating of the needle roller bearing. Therefore, the maximum allowable static load that is limited by these strengths is specified.



Accuracy

The accuracy of Cam Followers is shown in Table 3, Table 4.1, Table 4.2, and Table 4.3. We also provide special accuracy class products. For details, please contact **IKO**.

Table 3 Tolerances

unit:  $\mu\text{m}$

| Item                           | Series | Miniature Type Cam Followers<br>CFS, CFS···W |  | Standard Type Cam Followers <sup>(1)</sup> |                        | Inch Series Cam Followers |                        |
|--------------------------------|--------|----------------------------------------------|--|--------------------------------------------|------------------------|---------------------------|------------------------|
|                                |        |                                              |  | Crowned outer ring                         | Cylindrical outer ring | Crowned outer ring        | Cylindrical outer ring |
| Outside dia. of outer ring $D$ |        | See Table 4.1                                |  | 0<br>−50                                   | See Table 4.2          | 0<br>−50                  | See Table 4.3          |
| Stud diameter $d_1$            |        | h6                                           |  | h7                                         |                        | + 25<br>0                 |                        |
| Width of outer ring $C$        |        | 0<br>−120                                    |  | 0<br>−120                                  |                        | 0<br>−130                 |                        |

Note <sup>(1)</sup> Applicable for Cam Followers other than Miniature Type Cam Followers and Inch Series Cam Followers.

Table 4.1 Tolerance and allowance of outer ring (Miniature Type Cam Followers CFS and CFS···W)

unit:  $\mu\text{m}$

| $\Delta D_{mp}$<br>Deviation of mean outside diameter in a single plane |     |         |     |         |     |         |     | $K_{ca}$<br>Radial runout of outer ring of assembled bearing<br>(Maximum) |         |         |         |
|-------------------------------------------------------------------------|-----|---------|-----|---------|-----|---------|-----|---------------------------------------------------------------------------|---------|---------|---------|
| Class 0                                                                 |     | Class 6 |     | Class 5 |     | Class 4 |     | Class 0                                                                   | Class 6 | Class 5 | Class 4 |
| High                                                                    | Low | High    | Low | High    | Low | High    | Low |                                                                           |         |         |         |
| 0                                                                       | −8  | 0       | −7  | 0       | −5  | 0       | −4  | 15                                                                        | 8       | 5       | 4       |

Table 4.2 Tolerance and allowance of outer ring (Standard Type Cam Followers, Cylindrical outer ring)

unit:  $\mu\text{m}$

| $D$<br>Nominal outside diameter of<br>outer ring<br>mm |       | $\Delta D_{mp}$<br>Deviation of mean outside<br>diameter in a single plane |     | $V_{Dsp}$<br>Variation of outside<br>diameter in a single plane<br>(Maximum) | $V_{Dmp}$<br>Variation of mean<br>outside diameter<br>(Maximum) | $K_{ca}$<br>Radial runout of outer ring<br>of assembled bearing<br>(Maximum) |
|--------------------------------------------------------|-------|----------------------------------------------------------------------------|-----|------------------------------------------------------------------------------|-----------------------------------------------------------------|------------------------------------------------------------------------------|
| Over                                                   | Incl. | High                                                                       | Low |                                                                              |                                                                 |                                                                              |
| 6                                                      | 18    | 0                                                                          | − 8 | 10                                                                           | 6                                                               | 15                                                                           |
| 18                                                     | 30    | 0                                                                          | − 9 | 12                                                                           | 7                                                               | 15                                                                           |
| 30                                                     | 50    | 0                                                                          | −11 | 14                                                                           | 8                                                               | 20                                                                           |
| 50                                                     | 80    | 0                                                                          | −13 | 16                                                                           | 10                                                              | 25                                                                           |
| 80                                                     | 120   | 0                                                                          | −15 | 19                                                                           | 11                                                              | 35                                                                           |

Table 4.3 Tolerance and allowance of outer ring (Inch series Cam Followers, Cylindrical outer ring)

unit:  $\mu\text{m}$

| $D$<br>Nominal outside diameter of<br>outer ring<br>mm |       | $\Delta D_{mp}$<br>Deviation of mean outside<br>diameter in a single plane |     | $V_{Dsp}$<br>Variation of outside<br>diameter in a single plane<br>(Maximum) | $V_{Dmp}$<br>Variation of mean<br>outside diameter<br>(Maximum) | $K_{ca}$<br>Radial runout of outer ring<br>of assembled bearing<br>(Maximum) |
|--------------------------------------------------------|-------|----------------------------------------------------------------------------|-----|------------------------------------------------------------------------------|-----------------------------------------------------------------|------------------------------------------------------------------------------|
| Over                                                   | Incl. | High                                                                       | Low |                                                                              |                                                                 |                                                                              |
| 6                                                      | 18    | 0                                                                          | −25 | 10                                                                           | 6                                                               | 15                                                                           |
| 18                                                     | 30    |                                                                            |     | 12                                                                           | 7                                                               | 15                                                                           |
| 30                                                     | 50    |                                                                            |     | 14                                                                           | 8                                                               | 20                                                                           |
| 50                                                     | 80    |                                                                            |     | 16                                                                           | 10                                                              | 25                                                                           |
| 80                                                     | 120   |                                                                            |     | 19                                                                           | 11                                                              | 35                                                                           |

Radial Internal Clearance

Radial internal clearance of Cam Followers is shown in Table 5.

Table 5 Radial internal clearance

unit:  $\mu\text{m}$

| Identification number                        |                                               |                                     |                              | Radial internal clearance |      |
|----------------------------------------------|-----------------------------------------------|-------------------------------------|------------------------------|---------------------------|------|
| Miniature Type Cam Followers<br>CFS, CFS···W | Standard Type<br>Cam Followers <sup>(1)</sup> | Cylindrical Roller<br>Cam Followers | Inch Series Cam Followers    | Min.                      | Max. |
| CFS1.4 to CFS5                               | CF 3B to CF 5 B                               | —                                   | CR 8, CR 8-1, CRH 8-1, CRH 9 | 3                         | 17   |
| CFS6                                         | CF 6B                                         | —                                   | CR10, CR10-1, CRH10-1, CRH11 | 5                         | 20   |
| —                                            | CF 8 to CF 12-1<br>CFKR30 to CFKR32           | —                                   | CR12 to CR22, CRH12 to CRH22 | 5                         | 25   |
| —                                            | CF 16 to CF 20-1<br>CFKR22 to CFKR52          | —                                   | CR24 to CR36, CRH24 to CRH36 | 10                        | 30   |
| —                                            | CF 24 to CF 30-2<br>CFKR62 to CFKR90          | —                                   | CR48, CRH40 to CRH56         | 10                        | 40   |
| —                                            | —                                             | —                                   | CRH64                        | 15                        | 50   |
| —                                            | —                                             | NUCF10 B to NUCF24 B                | —                            | 20                        | 45   |
| —                                            | —                                             | NUCF24-1B to NUCF30-2B              | —                            | 25                        | 50   |

Note <sup>(1)</sup> Applicable for all Cam Followers other than Miniature Type Cam Followers, Cylindrical Roller Cam Followers and Inch Series Cam Followers.

Fit

Recommended fit of the Cam Followers stud and mounting hole is shown in Table 6 and dimensional tolerances of mounting hole are shown in Table 7, respectively. Since the Cam Follower is supported in a cantilever position, the mounting hole diameter should be prepared without play between the stud and the hole especially when heavy shock loads are applied.

Table 6 Recommended fit

| Model of bearing                           | Tolerance class of mounting hole for stud |
|--------------------------------------------|-------------------------------------------|
| Miniature Type Cam Followers CFS, CFS···W  | H6                                        |
| Standard Type Cam Followers <sup>(1)</sup> | H7                                        |
| Inch Series Cam Followers                  | F7                                        |

Note <sup>(1)</sup> Applicable for Cam Followers other than Miniature Type Cam Followers and Inch Series Cam Followers.

Table 7 Dimensional tolerances of mounting hole

unit:  $\mu\text{m}$

| Classification of diameter<br>mm |       | F7   |     | H6   |     | H7   |     |
|----------------------------------|-------|------|-----|------|-----|------|-----|
| Over                             | Incl. | High | Low | High | Low | High | Low |
| —                                | 3     | +16  | + 6 | + 6  | 0   | +10  | 0   |
| 3                                | 6     | +22  | +10 | + 8  | 0   | +12  | 0   |
| 6                                | 10    | +28  | +13 | + 9  | 0   | +15  | 0   |
| 10                               | 18    | +34  | +16 | +11  | 0   | +18  | 0   |
| 18                               | 30    | +41  | +20 | +13  | 0   | +21  | 0   |
| 30                               | 40    | +50  | +25 | +16  | 0   | +25  | 0   |
| 40                               | 50    |      |     |      |     |      |     |



where  $d_1$  : Stud diameter of Cam Follower mm  
 $n$  : Rotational speed  $\text{min}^{-1}$

| <b>Lubrication</b><br><b>Model of bearing</b> | <b>Grease lubrication</b> | <b>Oil lubrication</b> |
|-----------------------------------------------|---------------------------|------------------------|
| With cage                                     | 84 000                    | 140 000                |
| Full complement                               | 42 000                    | 70 000                 |
| Cylindrical Roller Cam Followers              | 66 000                    | 110 000                |

Bearings with pre-packed grease are shown in Table 10. ALVANIA GREASE S2 (SHOWA SHELL SEKIYU K.K.) is pre-packed as lubrication grease.

For bearings without pre-packed grease, grease should be packed through the oil hole in the stud for use. Operating without lubrication will increase the wear on the rolling contact surfaces and lead to short bearing life.

| Model of bearing<br>Stud dia. $d_1$ ( $^{\circ}$ ) mm |                                                              | Type                 | With cage   |             | Full complement |
|-------------------------------------------------------|--------------------------------------------------------------|----------------------|-------------|-------------|-----------------|
|                                                       |                                                              |                      | Shield type | Sealed type |                 |
| Miniature Type Cam Followers                          | CFS                                                          |                      |             |             |                 |
| Thrust Disk Type                                      |                                                              |                      | ○           | —           | ○               |
| Miniature Cam Followers                               | CFS···W                                                      |                      |             |             |                 |
| Standard Type Cam Followers                           | CF···B                                                       | $d_1 \leq 5$         | ○           | ○           | —               |
| Double Hex Hole Cam Followers                         | CFKR                                                         |                      |             |             |                 |
| Thrust Disk Type Cam Followers                        | CF···WB                                                      | $6 \leq d_1 \leq 10$ |             |             | ○               |
| Solid Eccentric Stud Type Cam Followers               | CFES···B                                                     |                      | ×           |             | ○               |
| Eccentric Type Cam Followers                          | CFE···B                                                      | $12 \leq d_1$        |             |             |                 |
| Cam Follower G                                        | CF···G                                                       |                      | ○           | —           | —               |
| C-Lube Cam Followers                                  | CF···WB···/SG ( $^{\circ}$ )                                 |                      | —           | ×           | —               |
| Centralized Lubrication Type Cam Followers            | CF-RU1<br>CF-FU1                                             |                      | —           | ○           | —               |
| Easy Mounting Type Cam Followers                      | CF-SFU···B                                                   |                      | —           | ○           | —               |
| Cylindrical Roller Cam Followers                      | NUCF···B                                                     |                      | —           | —           | ○               |
| Inch Series Cam Followers                             | CR···B (With hexagon socket)<br>CR (With screwdriver slot)   |                      | ○           | ○           | ○               |
| Inch Series Cam Followers                             | CRH···B (With hexagon socket)<br>CRH (With screwdriver slot) |                      | —           | —           | ○               |

(2) C-Lube, a thermosetting solid-type lubricant, fills the inner space of the bearing.

The position of oil hole is shown in Table 11.

Perform greasing quietly by fitting a lubrication nozzle shown in Table 12 to a straight type grease gun in JIS B 9808 and pressing the nozzle against the grease nipple or re-greasing fitting.

When the NPT type grease nipple of the special specifications shown in Table 19 and NPB type grease nipple shown in Table 15 are mounted, you may also fill grease by pressing the grease gun without using a supply nozzle specified in Table 12.

In addition, oil cannot be fed for those without oil hole described in Table 11.

|                                                                               |                      | O: With oil hole   |                                        |                  |
|-------------------------------------------------------------------------------|----------------------|--------------------|----------------------------------------|------------------|
| Model of bearing<br>Stud dia. $d_1$ ( <sup>1</sup> ) mm                       |                      | ①<br>Head          | ②<br>Stud outer<br>diameter<br>section | ③<br>Stud<br>end |
| Miniature Type Cam Followers                                                  | CFS                  | —                  | —                                      | —                |
| Thrust Disk Type<br>Miniature Cam Followers                                   | CFS···W              | —                  | —                                      | —                |
| Standard Type Cam Followers CF···B                                            | $d_1 \leq 4$         | —                  | —                                      | —                |
| Double Hex Hole<br>Cam Followers CFKR                                         |                      | —                  | —                                      | —                |
| Thrust Disk Type<br>Cam Followers CF···WB                                     | $5 \leq d_1 \leq 10$ | O ( <sup>2</sup> ) | —                                      | —                |
| Solid Eccentric Stud Type<br>Cam Followers CFES···B                           |                      | —                  | —                                      | —                |
| Eccentric Type<br>Cam Followers CFE···B                                       | $10 < d_1$           | O ( <sup>3</sup> ) | O                                      | O                |
| Cylindrical Roller<br>Cam Followers NU CF···B                                 |                      | —                  | —                                      | —                |
| Cam Follower G                                                                | CF···G               | —                  | —                                      | —                |
| C-Lube Cam Followers CF···WB···/SG                                            |                      | —                  | —                                      | —                |
| Centralized Lubrication Type Cam Followers ( <sup>4</sup> )<br>CF-RU1, CF-FU1 | $d_1 \leq 12$        | O                  | —                                      | —                |
|                                                                               | $12 < d_1$           | O                  | O                                      | O                |
| Easy Mounting Type Cam Followers<br>CF-SFU···B                                | $d_1 \leq 10$        | O ( <sup>2</sup> ) | —                                      | —                |
|                                                                               | $10 < d_1$           | O ( <sup>5</sup> ) | —                                      | —                |
| Inch Series Cam Followers<br>CR···B (With hexagon socket)                     | $d_1 \leq 6.35$      | —                  | —                                      | —                |
|                                                                               | $6.35 < d_1$         | —                  | O                                      | O                |
| Inch Series Cam Followers<br>CR (With screwdriver slot)                       | $d_1 \leq 6.35$      | O                  | —                                      | —                |
|                                                                               | $6.35 < d_1$         | O                  | O                                      | O                |
| Inch Series Cam Followers<br>CRH···B (With hexagon socket)                    | $d_1 \leq 7.938$     | —                  | —                                      | —                |
|                                                                               | $7.938 < d_1$        | —                  | O                                      | O                |
| Inch Series Cam Followers<br>CRH (With screwdriver slot)                      | $d_1 \leq 7.938$     | O                  | —                                      | —                |
|                                                                               | $7.938 < d_1$        | O                  | O                                      | O                |

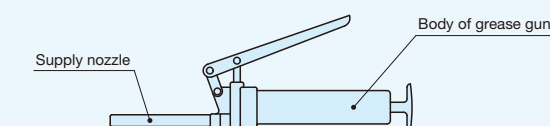
- (2) Grease can be fed from the re-greasing fitting located inside the hexagon socket on the head.
- (3) A grease nipple is incorporated in the hexagon socket at the head. Re-greasing can be done from the stud head and the stud end by press fitting a supplied grease nipple into the oil hole on the stud end.
- (4) Head and stud end have a tapped hole for piping.
- (5) Grease can be fed from the grease nipple located inside the hexagon socket on the head.
- (6) Lubrication from the head part and the stud end is possible for Double Hex Hole Cam Followers (CFKR) only.

| Model   | Dimension | Applicable grease nipple and re-greasing fitting                |
|---------|-----------|-----------------------------------------------------------------|
| A-5126T |           | NPF3 (1)<br>NPF4-1 (1)<br>NPF6-1 (1)<br>Re-greasing fitting (1) |
| A-5120R |           | NPF4-1 (1)<br>NPF6-1 (1)                                        |
| B-5120R |           |                                                                 |
| A-5120V |           |                                                                 |
| A-5240V |           | NPT4-1<br>NPT6-1<br>NPB2<br>NPB3<br>NPB3-1<br>NPB4              |
| B-5120V |           |                                                                 |
| B-5240V |           |                                                                 |

Note (1)  
Remark

HSP-3 of YAMADA CORPORATION can also be used.  
The supply nozzles shown in the table can be mounted on the main body of a common grease gun available on the market shown below.  
If needed, specify the supply nozzle model and contact

**IKO**





## Accessories

Accessories for Cam Followers are shown in Table 13. Grease nipple dimensions are shown in Table 14 and Table 15. Dimensions of plug for unused oil hole and dimensions of plug inserter are shown in Table 16.

Table 13 Accessories

O: Supplied

| Model of bearing<br>Stud dia. $d_1$ (') mm        |  | Accessories    | Grease nipple | Plug | Nut | Spring washer |
|---------------------------------------------------|--|----------------|---------------|------|-----|---------------|
| Miniature Type Cam Followers                      |  | CFS            | —             | —    | O   | —             |
| Thrust Disk Type Miniature Cam Followers          |  | CFS...W        | —             | —    | O   | —             |
| Standard Type Cam Followers                       |  | CF...B         | — (°)         | —    | O   | —             |
| Double Hex Hole Cam Followers                     |  | CFKR           |               |      |     |               |
| Thrust Disk Type Cam Followers                    |  | CF...WB        | O             | —    | O   | —             |
| Solid Eccentric Stud Type Cam Followers           |  | CFES...B       |               |      |     |               |
| Cylindrical Roller Cam Followers                  |  | NUCF...B       |               |      |     |               |
| Cam Follower G                                    |  | CF...G         | —             | —    | O   | —             |
| C-Lube Cam Followers                              |  | CF...WB.../SG  | —             | —    | O   | —             |
| Eccentric Type Cam Followers                      |  | CFE...B        | —             | —    | O   | O             |
|                                                   |  |                | O             | —    | O   | O             |
| Centralized Lubrication Type Cam Followers        |  | CF-RU1, CF-FU1 | —             | —    | O   | —             |
| Easy Mounting Type Cam Followers                  |  | CF-SFU...B     | —             | —    | —   | —             |
| Inch Series Cam Followers (With Hexagon Socket)   |  | CR...B         | —             | —    | O   | —             |
|                                                   |  |                | O             | O    | O   | —             |
| Inch Series Cam Followers (With Screwdriver Slot) |  | CR             | O             | O    | O   | —             |
| Inch Series Cam Followers (With Hexagon Socket)   |  | CRH...B        | —             | —    | O   | —             |
|                                                   |  |                | O             | O    | O   | —             |
| Inch Series Cam Followers (With Screwdriver Slot) |  | CRH            | O             | O    | O   | —             |

Note (') For Eccentric Type Cam Followers (CFE), thread diameter  $G$  as shown in the dimension table is applicable.

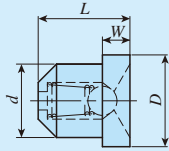
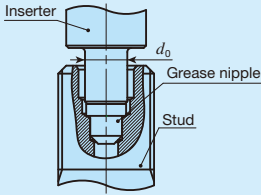
(°) For Double Hex Hole Cam Followers (CFKR) only, a grease nipple is included for the thread side.

Remark The standard grease nipple (brass) is included in the Stainless Steel Made Cam Follower.

We also have the stainless steel grease nipple. Please contact **IKO** and request the product.

Table 14 Dimensions of grease nipple for Standard Type Cam Followers (')

| Identification number | Dimensions of grease nipple mm |     |     |     | Stud dia. $d_1$ (°) mm | Dimension of inserter mm |
|-----------------------|--------------------------------|-----|-----|-----|------------------------|--------------------------|
|                       | $d$                            | $D$ | $L$ | $W$ |                        |                          |
| NPF3(°)               | 3                              | 4   | 4.5 | 1.3 | 10                     | $d_0^{+0.05}_{-0.05}$    |
| NPF4-1                | 4                              | 5   | 5   | 1.5 | 12~16                  | 4.1                      |
| NPF6-1                | 6                              | 7   | 8   | 2   | 18~30                  | 7.3                      |

Note (') Applicable to Cam Followers other than Inch Series Cam Followers.

(°) For Eccentric Type Cam Followers, thread diameter  $G$  as shown in the dimension table is applicable.

(°) Only Double Hex Hole Cam Followers (CFKR) sizes 22 and 26 are applicable.

Remark The same grease nipple as the accessory is integrated in the hexagon socket on the head.

Table 15 Dimensions of grease nipple for Inch Series Cam Followers

| Identification number | Dimensions of grease nipple mm |     |       |      |       |      | Applicable bearing             |
|-----------------------|--------------------------------|-----|-------|------|-------|------|--------------------------------|
|                       | $d$                            | $D$ | $D_1$ | $L$  | $L_1$ | $W$  |                                |
| NPB2                  | 3.18                           | 7.5 | 6     | 9    | 5.5   | 1.5  | CR8 to CR10-1, CRH8-1 to CRH11 |
| NPB3                  | 4.76                           | 7.5 | 6     | 10   | 5.5   | 1.5  | CR12 to CR22, CRH12 to CRH22   |
| NPB3-1                | 4.76                           | 7.5 | 6     | 12.5 | 5.5   | 1.55 | CR24 to CR36, CRH24 to CRH44   |
| NPB4                  | 6.35                           | 8   | 6     | 13   | 6     | 2    | CR48, CRH48 to CRH64           |

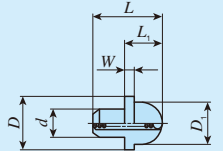


Table 16 Dimensions of plug for Inch Series Cam Followers

| Identification number | Dimensions of plug mm |     |     | Dimension of inserter mm | Applicable bearing           |
|-----------------------|-----------------------|-----|-----|--------------------------|------------------------------|
|                       | $D$                   | $t$ | $B$ |                          |                              |
| USB2F                 | 3.18                  | 0.3 | 3.3 | 2.3                      | CR 8 to CR10-1               |
| USB3F                 | 4.76                  | 0.4 | 4.3 | 3.7                      | CR12 to CR36, CRH12 to CRH44 |
| USB4F                 | 6.35                  | 0.5 | 4.8 | 5.2                      | CR48, CRH48 to CRH64         |

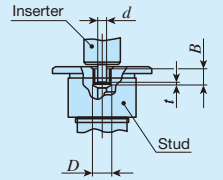
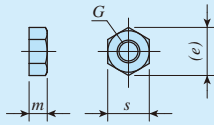


Table 17 Metric series nut dimensions

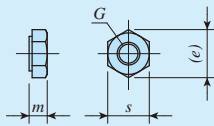


| Model of bearing                                                                                             | Stud dia. $d_1$ (') | Nut dimensions mm        |     |     |      |
|--------------------------------------------------------------------------------------------------------------|---------------------|--------------------------|-----|-----|------|
|                                                                                                              |                     | $G$                      | $m$ | $s$ | $e$  |
| CF<br>CFKR<br>CFES<br>CFE<br>CF...W<br>CF-RU1<br>CF-FU1<br>CF...G<br>CF...WB.../SG<br>CFS<br>CFS...W<br>NUCF | 1.4                 | M 1.4×0.3                | 1.1 | 3   | 3.25 |
|                                                                                                              | 2                   | M 2 ×0.4                 | 1.6 | 4   | 4.6  |
|                                                                                                              | 2.5                 | M 2.5×0.45               | 2   | 5   | 5.8  |
|                                                                                                              | 3                   | M 3 ×0.5                 | 2.4 | 5.5 | 6.4  |
|                                                                                                              | 4                   | M 4 ×0.7                 | 3.2 | 7   | 8.1  |
|                                                                                                              | 5                   | M 5 ×0.8                 | 4   | 8   | 9.2  |
|                                                                                                              | 6                   | M 6 ×1                   | 5   | 10  | 11.5 |
|                                                                                                              | 8                   | M 8 ×1.25                | 6.5 | 13  | 15   |
|                                                                                                              | 10                  | M10 ×1.0(°)<br>M10 ×1.25 | 8   | 17  | 19.6 |
|                                                                                                              | 12                  | M12 ×1.5                 | 10  | 19  | 21.9 |
|                                                                                                              | 16                  | M16 ×1.5                 | 13  | 24  | 27.7 |
|                                                                                                              | 18                  | M18 ×1.5                 | 15  | 27  | 31.2 |
|                                                                                                              | 20                  | M20 ×1.5                 | 16  | 30  | 34.6 |
|                                                                                                              | 24                  | M24 ×1.5                 | 19  | 36  | 41.6 |
|                                                                                                              | 30                  | M30 ×1.5                 | 24  | 46  | 53.1 |

Note (') For Eccentric Type Cam Followers (CFE), thread diameter  $G$  as shown in the dimension table is applicable.

(°) Applicable to Double Hex Hole Cam Followers (CFKR).

Table 18 Inch series nut dimensions



| Model of bearing | Stud dia. $d_1$ (inch) | Nut dimensions mm |     |     |      |
|------------------|------------------------|-------------------|-----|-----|------|
|                  |                        | $G$ UNF           | $m$ | $s$ | $e$  |
| CR<br>CRH        | 4.826                  | No.10-32          | 4   | 8   | 9.2  |
|                  | 6.35 ( 1/4 )           | 1/4-28            | 5.5 | 10  | 11.5 |
|                  | 7.938 ( 5/16 )         | 5/16-24           | 6.5 | 12  | 13.8 |
|                  | 9.525 ( 3/8 )          | 3/8-24            | 8   | 14  | 16.2 |
|                  | 11.112 ( 7/16 )        | 7/16-20           | 10  | 17  | 19.5 |
|                  | 12.7 ( 1/2 )           | 1/2-20            | 11  | 19  | 21.9 |
|                  | 15.875 ( 5/8 )         | 5/8-18            | 14  | 23  | 26.5 |
|                  | 19.05 ( 3/4 )          | 3/4-16            | 16  | 26  | 30   |
|                  | 22.225 ( 7/8 )         | 7/8-14            | 19  | 32  | 37   |
|                  | 25.4 ( 1 )             | 1 -14UNS          | 22  | 36  | 41.4 |
|                  | 28.575 ( 1 1/8 )       | 1 1/8-12          | 24  | 41  | 47.1 |
|                  | 31.75 ( 1 1/4 )        | 1 1/4-12          | 27  | 46  | 53.5 |
|                  | 38.1 ( 1 1/2 )         | 1 1/2-12          | 33  | 55  | 63.5 |
|                  | 44.45 ( 1 3/4 )        | 1 3/4-12UN        | 38  | 65  | 75.1 |
|                  | 50.8 ( 2 )             | 2 -12UN           | 44  | 75  | 86.6 |

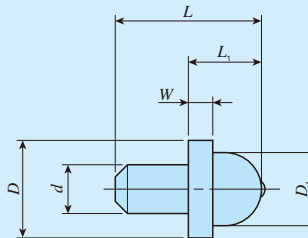
## Special Specification

Grease nipple supplied as an accessory can be replaced with the grease nipple shown in Table 19 upon request. With this grease nipple, you may fill grease by pressing the JIS B 9808 straight type grease gun directly onto it without using the supply nozzle in Table 12. When you request it, indicate the identification number with /NP at the end. Note that it is not applicable to Double Hex Hole Cam Followers CFKR.

Example of Identification Number

**CF 12 BUUR / NP**

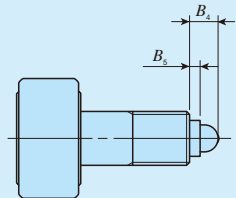
Table 19 Dimensions of NPT type grease nipple



| Identification number | Dimensions of grease nipple mm |     |       |     |       |     | Stud dia. $d_1$ (') mm |
|-----------------------|--------------------------------|-----|-------|-----|-------|-----|------------------------|
|                       | $d$                            | $D$ | $D_1$ | $L$ | $L_1$ | $W$ |                        |
| NPT4-1                | 4                              | 8   | 6     | 12  | 6     | 2   | 12 to 16               |
| NPT6-1                | 6                              | 8   | 6     | 14  | 8     | 4   | 18 to 30               |

Note (') For Eccentric Type Cam Followers, thread diameter  $G$  as shown in the dimension table is applicable.

Table 20 Dimensions with NPT type grease nipple mounted



| Identification number | Dimensions mm |       | Stud dia. $d_1$ (') mm |
|-----------------------|---------------|-------|------------------------|
|                       | $B_4$         | $B_5$ |                        |
| NPT4-1                | 6             | 2     | 12 to 16               |
| NPT6-1                | 8             | 4     | 18 to 30               |

Note (') For Eccentric Type Cam Followers, thread diameter  $G$  as shown in the dimension table is applicable.



## Operating Temperature Range

Operating temperature range of Cam Followers is -20°C to +120°C. However, note that the maximum allowable temperature varies in models shown in Table 21.

Table 21 Limitation of operating temperature range

| Model<br>Stud dia. $d_1$ mm                                                                                                  | Type                 | With cage          |                   |
|------------------------------------------------------------------------------------------------------------------------------|----------------------|--------------------|-------------------|
|                                                                                                                              |                      | Shield type        | Sealed type       |
| Miniature Type Cam Followers CFS<br>Thrust Disk Type Miniature Cam Followers CFS...W                                         | $d_1=2$              | -20°C to 110°C (1) | —                 |
| Standard Type Cam Followers CF...B<br>Thrust Disk Type Cam Followers CF...WB                                                 | $d_1=3, 4$           | -20°C to 110°C (1) | -20°C to 80°C     |
|                                                                                                                              | $d_1=5$              | -20°C to 120°C     | -20°C to 80°C     |
| Standard Type Cam Followers / Stainless Steel Made CF...FB<br>Thrust Disk Type Cam Followers / Stainless Steel Made CF...FWB | $3 \leq d_1 \leq 5$  | -20°C to 110°C (1) | -20°C to 80°C     |
| C-Lube Cam Followers CF...WB.../SG                                                                                           | $5 \leq d_1 \leq 20$ | —                  | -15°C to 80°C (2) |

Note (1) 100°C when used continuously.  
(2) Below 60°C is recommended for long use.

## Mounting

### Notes about mounts

Make the center axis of the mounting hole perpendicular to the moving direction of the Cam Follower and match the side shoulder accurately with the seating surface indicated by dimension  $f$  in the table of dimensions. (See Fig. 3)  
The chamfered mounting hole should be as small as possible (C0.5 or so).  
When mounting Cam Followers, do not hit the flange head of the Cam Follower directly with a hammer, etc. This may lead to a bearing failure such as irregular rotation or cracking.  
If the Cam Follower outer ring is not in good contact with the mating running surface then we recommend use of a crowned outer ring type.

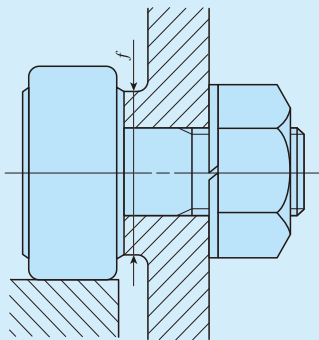


Fig. 3 Height of side face of mounting hole

### Notes about oil hole position and loading direction

The  mark on the flange head of the stud indicates the position of the oil hole on the raceway. Avoid locating the oil hole within the loading zone. Otherwise, product life may become shorter. (See Fig. 4.) The hole located in the middle part of the stud perpendicular to the stud center axis is used for greasing or locking.

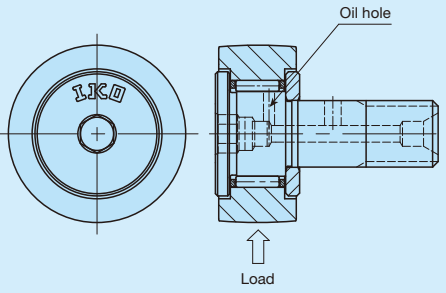


Fig. 4 Oil hole location and loading direction

### Notes about mounting methods

- When mounting Cam Followers, fix in place by holding the hexagon socket or screwdriver slot with a hex wrench or slotted screwdriver and use a wrench to tighten on a nut. (See Fig. 5)  
If mounting by turning the hexagon socket or screwdriver slot itself, the hexagon socket or screwdriver slot of the Cam Follower may become damaged.

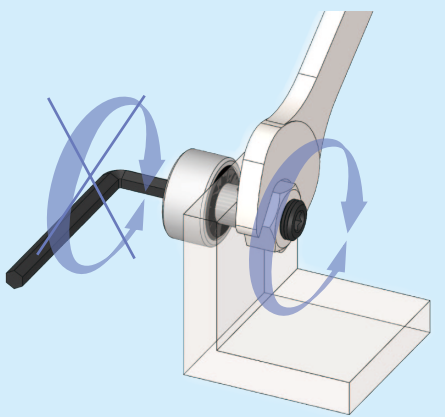


Fig. 5 Methods of mounting

- When tightening the nut, the tightening torque should not exceed the values shown in the table of dimensions. If the tightening torque is too large, it is possible that the threaded portion of the stud will be broken. When there is a possibility of loosening, a special nut such as a lock nut, spring washer, or self-locking nut should be used.

- When direct-fixing the Cam Follower without nuts for mounting as shown in Fig. 6, it may be difficult to achieve sufficient tightening torque. If the screw then loosens, stress may concentrate on the thread, causing the stud to break. Such a method is not recommended.

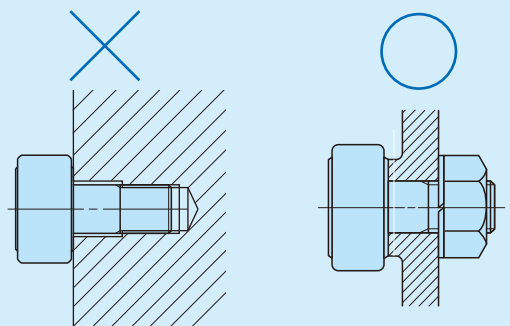


Fig. 6 Methods of mounting

### Mounting methods for Solid Eccentric Stud Type Cam Followers

- For Solid Eccentric Stud Type Cam Followers and Eccentric Type Cam Followers, a reference position for adjustment is defined as the  mark at the side face of stud collar located in the position specified in Fig. 7. Use this as a reference. Adjust the outer ring position by rotating it using the hexagon socket on the stud head. The stud is fixed with a nut and a spring washer, etc. The tightening torque should not exceed the values of maximum tightening torque shown in the table of dimensions.  
When shock loads are applied and the adjusted eccentricity has to be ensured, it is recommended to make holes in the housing, stud and eccentric collar, and fix the stud with a dowel pin as shown in Fig. 8. However, studs with diameter 8 mm (eccentric collar diameter: 11 mm) or less are quench-hardened.

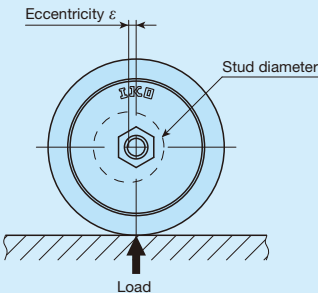


Fig. 7 Reference position for adjusting of Solid Eccentric Stud Type Cam Followers and Eccentric Type Cam Followers

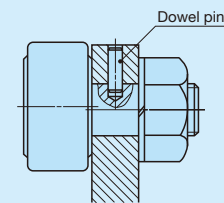


Fig. 8 Mounting examples of Solid Eccentric Stud Type Cam Followers

- The length of a mounting hole for Eccentric Type Cam Followers must be 0.5 mm or more longer than the  $B_3$  dimensions (eccentric collar width) specified in the dimension table. (See Fig.9)

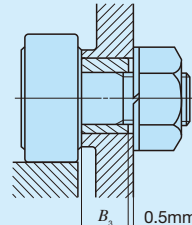


Fig. 9 Length of mounting hole for Eccentric Type Cam Followers

### Mounting methods for Easy Mounting Type Cam Followers

For mounting Easy Mounting Type Cam Followers, it is recommended to fix the fixing screw from the upper side to the stepped portion of the stud. (See Fig. 10)  
While M5 to M6 screws are generally used as fixing screws, adjust the size used depending on the usage criteria.

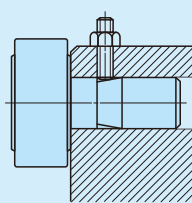


Fig. 10 Mounting examples of Easy Mounting Type Cam Followers

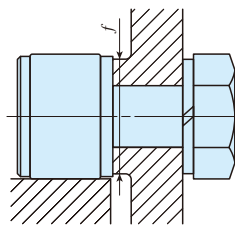
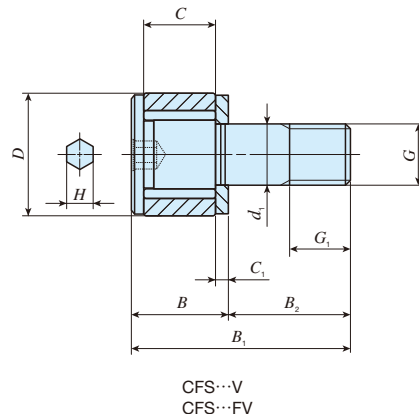
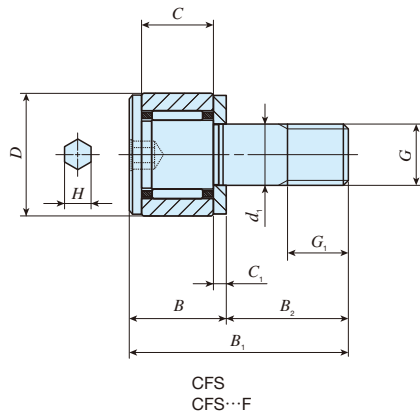
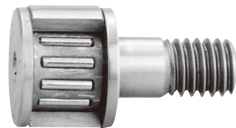
## Precautions for Use

- Never clean C-Lube Cam Followers with organic solvent or white kerosene with property of removing fat.
- To rotate the C-Lube Cam Followers normally, apply load of 1% or more of the basic dynamic load rating.



Selectable product specifications

|                                     |           |                        |
|-------------------------------------|-----------|------------------------|
| Type of material                    | No symbol | High carbon steel      |
|                                     | <b>F</b>  | Stainless steel        |
| Roller guide method                 | No symbol | With cage              |
|                                     | <b>V</b>  | Full complement        |
| Seal structure                      | No symbol | Shield type            |
|                                     | <b>UU</b> | Sealed type            |
| Shape of outer ring outside surface | No symbol | Cylindrical outer ring |
|                                     | <b>R</b>  | Crowned outer ring     |



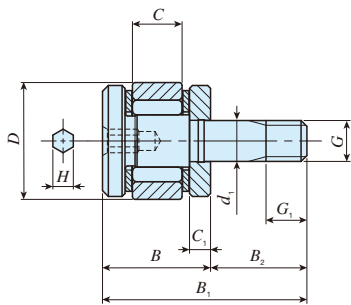
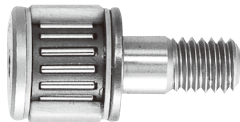
| Stud diameter<br>mm | Identification number |                 | Mass<br>(Ref.)<br>g | Boundary dimensions mm |     |                |           |                |     |  |                |                |                |     | Mounting dimensions<br><br>f<br>Min.<br>mm | Maximum tightening torque<br><br>N·cm | Basic dynamic load rating | Basic static load rating | Maximum allowable static load | Track capacity |
|---------------------|-----------------------|-----------------|---------------------|------------------------|-----|----------------|-----------|----------------|-----|--|----------------|----------------|----------------|-----|--------------------------------------------|---------------------------------------|---------------------------|--------------------------|-------------------------------|----------------|
|                     | With cage             | Full complement |                     | D                      | C   | d <sub>1</sub> | G         | G <sub>1</sub> | B   |  | B <sub>1</sub> | B <sub>2</sub> | C <sub>1</sub> | H   |                                            |                                       | C<br>N                    | C <sub>0</sub><br>N      | N                             | N              |
| 2                   | CFS 2<br>—            | —<br>CFS 2 V    | 0.6                 | 4.5                    | 2.5 | 2              | M2 ×0.4   | 2              | 4   |  | 8              | 4              | 0.7            | 0.9 | 4.3                                        | 9.1                                   | 288<br>768                | 202<br>734               | 202<br>229                    | 220            |
|                     | CFS 2 F<br>—          | —<br>CFS 2 FV   |                     |                        |     |                |           |                |     |  |                |                |                |     |                                            |                                       | 230<br>614                | 161<br>587               | 161<br>229                    |                |
| 2.5                 | CFS 2.5<br>—          | —<br>CFS 2.5 V  | 1                   | 5                      | 3   | 2.5            | M2.5×0.45 | 2.5            | 4.5 |  | 9.5            | 5              | 0.7            | 0.9 | 4.8                                        | 18.7                                  | 428<br>1 000              | 351<br>1 080             | 351<br>360                    | 298            |
|                     | CFS 2.5 F<br>—        | —<br>CFS 2.5 FV |                     |                        |     |                |           |                |     |  |                |                |                |     |                                            |                                       | 342<br>800                | 281<br>862               | 281<br>360                    |                |
| 3                   | CFS 3<br>—            | —<br>CFS 3 V    | 2                   | 6                      | 4   | 3              | M3 ×0.5   | 3              | 5.5 |  | 11.5           | 6              | 0.7            | 1.3 | 5.8                                        | 33.5                                  | 629<br>1 420              | 611<br>1 790             | 484<br>484                    | 485            |
|                     | CFS 3 F<br>—          | —<br>CFS 3 FV   |                     |                        |     |                |           |                |     |  |                |                |                |     |                                            |                                       | 504<br>1 140              | 488<br>1 430             | 484<br>484                    |                |
| 4                   | CFS 4<br>—            | —<br>CFS 4 V    | 4                   | 8                      | 5   | 4              | M4 ×0.7   | 4              | 7   |  | 15             | 8              | 1.0            | 1.5 | 7.7                                        | 77.7                                  | 1 120<br>2 370            | 1 120<br>3 000           | 919<br>919                    | 799            |
|                     | CFS 4 F<br>—          | —<br>CFS 4 FV   |                     |                        |     |                |           |                |     |  |                |                |                |     |                                            |                                       | 897<br>1 900              | 894<br>2 400             | 894<br>919                    |                |
| 5                   | CFS 5<br>—            | —<br>CFS 5 V    | 7                   | 10                     | 6   | 5              | M5 ×0.8   | 5              | 8   |  | 18             | 10             | 1.0            | 2   | 9.6                                        | 158                                   | 1 570<br>3 180            | 1 850<br>4 700           | 1 570<br>1 570                | 1 210          |
|                     | CFS 5 F<br>—          | —<br>CFS 5 FV   |                     |                        |     |                |           |                |     |  |                |                |                |     |                                            |                                       | 1 250<br>2 540            | 1 480<br>3 760           | 1 480<br>1 570                |                |
| 6                   | CFS 6<br>—            | —<br>CFS 6 V    | 13                  | 12                     | 7   | 6              | M6 ×1     | 6              | 9.5 |  | 21.5           | 12             | 1.2            | 2.5 | 11.6                                       | 268                                   | 2 090<br>4 610            | 2 200<br>6 250           | 2 150<br>2 150                | 1 680          |
|                     | CFS 6 F<br>—          | —<br>CFS 6 FV   |                     |                        |     |                |           |                |     |  |                |                |                |     |                                            |                                       | 1 670<br>3 690            | 1 760<br>5 000           | 1 760<br>2 150                |                |

Remarks 1. No oil hole is provided.  
2. Provided with pre-packed grease.

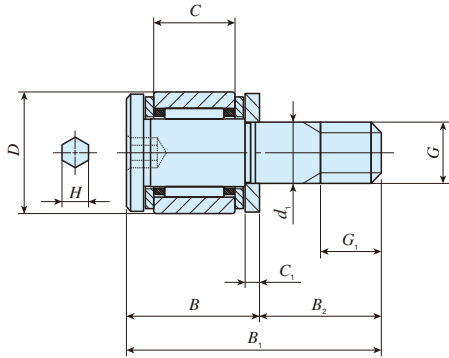


Selectable product specifications

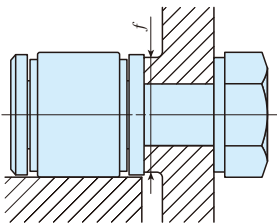
|                                     |           |                                                                                                          |
|-------------------------------------|-----------|----------------------------------------------------------------------------------------------------------|
| Type of material                    | No symbol |  High carbon steel      |
|                                     | <b>F</b>  |  Stainless steel        |
| Roller guide method                 | No symbol |  With cage              |
|                                     | <b>V</b>  |  Full complement        |
| Seal structure                      | No symbol |  Shield type            |
|                                     | <b>UU</b> |  Sealed type            |
| Shape of outer ring outside surface | No symbol |  Cylindrical outer ring |
|                                     | <b>R</b>  |  Crowned outer ring     |



CFS1.4 WV



CFS...W  
CFS...FW



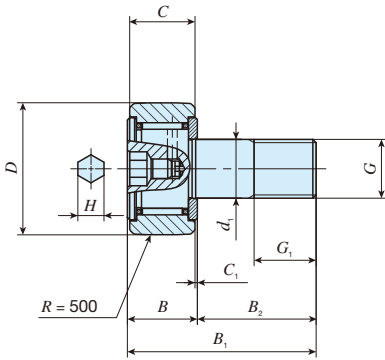
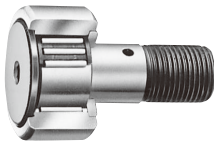
| Stud diameter<br><br>mm | Identification number |                 | Mass<br>(Ref.)<br><br>g | Boundary dimensions mm |     |       |           |       |      |  |       |       |       |     | Mounting<br>dimensions<br><br>$f$<br>Min.<br>mm | Maximum<br>tightening<br>torque<br><br>N·cm | Basic dynamic<br>load rating<br><br>C<br><br>N | Basic static<br>load rating<br><br>$C_0$<br><br>N | Maximum<br>allowable<br>static load<br><br>N | Track<br>capacity<br><br>N |
|-------------------------|-----------------------|-----------------|-------------------------|------------------------|-----|-------|-----------|-------|------|--|-------|-------|-------|-----|-------------------------------------------------|---------------------------------------------|------------------------------------------------|---------------------------------------------------|----------------------------------------------|----------------------------|
|                         | With cage             | Full complement |                         | $D$                    | $C$ | $d_1$ | $G$       | $G_1$ | $B$  |  | $B_1$ | $B_2$ | $C_1$ | $H$ |                                                 |                                             |                                                |                                                   |                                              |                            |
|                         |                       |                 |                         |                        |     |       |           |       |      |  |       |       |       |     |                                                 |                                             |                                                |                                                   |                                              |                            |
| 1.4                     | —                     | CFS 1.4 WV      | 0.35                    | 4                      | 1.7 | 1.4   | M1.4×0.3  | 1.4   | 3.7  |  | 7     | 3.3   | 0.7   | 0.9 | 3.8                                             | 3.0                                         | 481                                            | 385                                               | 105                                          | 128                        |
| 2                       | CFS 2 W               | —               | 0.6                     | 4.5                    | 2.5 | 2     | M2 ×0.4   | 2     | 4.5  |  | 8.5   | 4     | 0.7   | 0.9 | 4.3                                             | 9.1                                         | 288                                            | 202                                               | 194                                          | 220                        |
|                         | CFS 2 FW              | —               |                         |                        |     |       |           |       |      |  |       |       |       |     |                                                 |                                             | 230                                            | 161                                               | 161                                          |                            |
| 2.5                     | CFS 2.5 W             | —               | 1                       | 5                      | 3   | 2.5   | M2.5×0.45 | 2.5   | 5    |  | 10    | 5     | 0.7   | 0.9 | 4.8                                             | 18.7                                        | 428                                            | 351                                               | 313                                          | 298                        |
|                         | CFS 2.5 FW            | —               |                         |                        |     |       |           |       |      |  |       |       |       |     |                                                 |                                             | 342                                            | 281                                               | 281                                          |                            |
| 3                       | CFS 3 W               | —               | 2                       | 6                      | 4   | 3     | M3 ×0.5   | 3     | 6.5  |  | 12.5  | 6     | 0.7   | 1.3 | 5.8                                             | 33.5                                        | 629                                            | 611                                               | 399                                          | 485                        |
|                         | CFS 3 FW              | —               |                         |                        |     |       |           |       |      |  |       |       |       |     |                                                 |                                             | 504                                            | 488                                               | 399                                          |                            |
| 4                       | CFS 4 W               | —               | 4                       | 8                      | 5   | 4     | M4 ×0.7   | 4     | 8    |  | 16    | 8     | 1.0   | 1.5 | 7.7                                             | 77.7                                        | 1 120                                          | 1 120                                             | 785                                          | 799                        |
|                         | CFS 4 FW              | —               |                         |                        |     |       |           |       |      |  |       |       |       |     |                                                 |                                             | 897                                            | 894                                               | 785                                          |                            |
| 5                       | CFS 5 W               | —               | 7                       | 10                     | 6   | 5     | M5 ×0.8   | 5     | 9    |  | 19    | 10    | 1.0   | 2   | 9.6                                             | 158                                         | 1 570                                          | 1 850                                             | 1 370                                        | 1 210                      |
|                         | CFS 5 FW              | —               |                         |                        |     |       |           |       |      |  |       |       |       |     |                                                 |                                             | 1 250                                          | 1 480                                             | 1 370                                        |                            |
| 6                       | CFS 6 W               | —               | 13                      | 12                     | 7   | 6     | M6 ×1     | 6     | 10.5 |  | 22.5  | 12    | 1.2   | 2.5 | 11.6                                            | 268                                         | 2 090                                          | 2 200                                             | 1 920                                        | 1 680                      |
|                         | CFS 6 FW              | —               |                         |                        |     |       |           |       |      |  |       |       |       |     |                                                 |                                             | 1 670                                          | 1 760                                             | 1 760                                        |                            |

Remarks 1. No oil hole is provided.  
2. Provided with pre-packed grease.



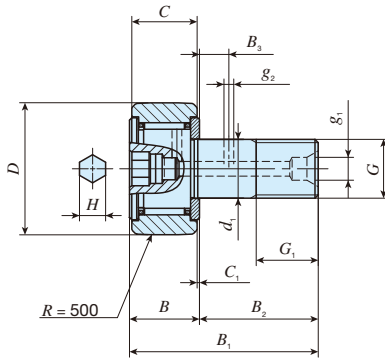
Selectable product specifications

|                                     |           |                        |
|-------------------------------------|-----------|------------------------|
| Type of material                    | No symbol | High carbon steel      |
|                                     | <b>F</b>  | Stainless steel        |
| Roller guide method                 | No symbol | With cage              |
|                                     | <b>V</b>  | Full complement        |
| Seal structure                      | No symbol | Shield type            |
|                                     | <b>UU</b> | Sealed type            |
| Shape of outer ring outside surface | No symbol | Cylindrical outer ring |
|                                     | <b>R</b>  | Crowned outer ring     |



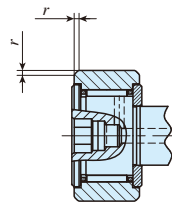
CF...F)BR

Stud dia.  $d_1$  3 to 10 mm <sup>(1)</sup>

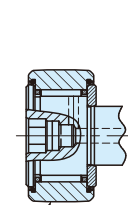


CF...F)BR

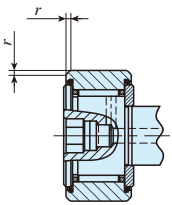
Stud dia.  $d_1$  12 to 30 mm <sup>(2)</sup>  
(12 to 20 mm) <sup>(3)</sup>



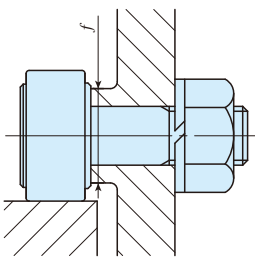
CF...F)B



CF...F)BUUR



CF...F)BUU

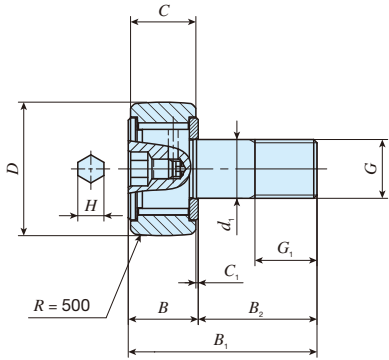


| Stud diameter<br><br>mm | Identification number |                        |                    |                        | Mass<br>(Ref.)<br><br>g | Boundary dimensions mm |     |       |          |       |  |         |         |       |       |       |       |       |     |                    |                    |                        | Mounting dimensions<br><br>$f$<br>Min. mm | Maximum tightening torque<br><br>N·m | Basic dynamic load rating<br><br>C<br><br>N | Basic static load rating<br><br>$C_0$<br><br>N | Maximum allowable static load<br><br>N | Track capacity |  |
|-------------------------|-----------------------|------------------------|--------------------|------------------------|-------------------------|------------------------|-----|-------|----------|-------|--|---------|---------|-------|-------|-------|-------|-------|-----|--------------------|--------------------|------------------------|-------------------------------------------|--------------------------------------|---------------------------------------------|------------------------------------------------|----------------------------------------|----------------|--|
|                         | Shield type           |                        | Sealed type        |                        |                         | $D$                    | $C$ | $d_1$ | $G$      | $G_1$ |  | $B$     | $B_1$   | $B_2$ | $B_3$ | $C_1$ | $g_1$ | $g_2$ | $H$ | $r_{s\ min}^{(3)}$ | Crowned outer ring | Cylindrical outer ring |                                           |                                      |                                             |                                                |                                        |                |  |
|                         | Crowned outer ring    | Cylindrical outer ring | Crowned outer ring | Cylindrical outer ring |                         |                        |     |       |          |       |  |         |         |       |       |       |       |       |     |                    |                    |                        |                                           |                                      |                                             |                                                |                                        |                |  |
| 3                       | CF 3 BR               | CF 3 B                 | CF 3 BUUR          | CF 3 BUU               | 4.3                     | 10                     | 7   | 3     | M 3×0.5  | 5     |  | 8       | 17      | 9     | —     | 0.5   | —     | —     | 2   | 0.2                | 6.8                | 0.34                   | 1 500                                     | 1 020                                | 384                                         | 542                                            | 1 360                                  |                |  |
|                         | CF 3 FBR              | CF 3 FB                | CF 3 FBUUR         | CF 3 FBUU              | 4.3                     | 10                     | 7   | 3     | M 3×0.5  | 5     |  | 8       | 17      | 9     | —     | 0.5   | —     | —     | 2   | 0.2                | 6.8                | 0.34                   | 1 200                                     | 813                                  | 384                                         | 542                                            | 1 360                                  |                |  |
| 4                       | CF 4 BR               | CF 4 B                 | CF 4 BUUR          | CF 4 BUU               | 7.4                     | 12                     | 8   | 4     | M 4×0.7  | 6     |  | 9       | 20      | 11    | —     | 0.5   | —     | —     | 2.5 | 0.3                | 8.3                | 0.78                   | 2 070                                     | 1 590                                | 834                                         | 712                                            | 1 790                                  |                |  |
|                         | CF 4 FBR              | CF 4 FB                | CF 4 FBUUR         | CF 4 FBUU              | 7.4                     | 12                     | 8   | 4     | M 4×0.7  | 6     |  | 9       | 20      | 11    | —     | 0.5   | —     | —     | 2.5 | 0.3                | 8.3                | 0.78                   | 1 650                                     | 1 270                                | 834                                         | 712                                            | 1 790                                  |                |  |
| 5                       | CF 5 BR               | CF 5 B                 | CF 5 BUUR          | CF 5 BUU               | 10.3                    | 13                     | 9   | 5     | M 5×0.8  | 7.5   |  | 10      | 23      | 13    | —     | 0.5   | —     | —     | 3   | 0.3                | 9.3                | 1.6                    | 2 520                                     | 2 140                                | 1 260                                       | 794                                            | 2 210                                  |                |  |
|                         | CF 5 FBR              | CF 5 FB                | CF 5 FBUUR         | CF 5 FBUU              | 10.3                    | 13                     | 9   | 5     | M 5×0.8  | 7.5   |  | 10      | 23      | 13    | —     | 0.5   | —     | —     | 3   | 0.3                | 9.3                | 1.6                    | 1 930                                     | 1 730                                | 1 260                                       | 794                                            | 2 210                                  |                |  |
| 6                       | CF 6 BR               | CF 6 B                 | CF 6 BUUR          | CF 6 BUU               | 18.5                    | 16                     | 11  | 6     | M 6×1    | 8     |  | 12.2max | 28.2max | 16    | —     | 0.6   | —     | —     | 3   | 0.3                | 11                 | 2.7                    | 3 660                                     | 3 650                                | 1 950                                       | 1 040                                          | 3 400                                  |                |  |
|                         | CF 6 FBR              | CF 6 FB                | CF 6 FBUUR         | CF 6 FBUU              | 18.5                    | 16                     | 11  | 6     | M 6×1    | 8     |  | 12.2max | 28.2max | 16    | —     | 0.6   | —     | —     | 3   | 0.3                | 11                 | 2.7                    | 2 930                                     | 2 920                                | 1 950                                       | 1 040                                          | 3 400                                  |                |  |
| 8                       | CF 8 BR               | CF 8 B                 | CF 8 BUUR          | CF 8 BUU               | 28.5                    | 19                     | 11  | 8     | M 8×1.25 | 10    |  | 12.2max | 32.2max | 20    | —     | 0.6   | —     | —     | 4   | 0.3                | 13                 | 6.5                    | 4 250                                     | 4 740                                | 4 620                                       | 1 330                                          | 4 040                                  |                |  |
|                         | CF 8 FBR              | CF 8 FB                | CF 8 FBUUR         | CF 8 FBUU              | 28.5                    | 19                     | 11  | 8     | M 8×1.25 | 10    |  | 12.2max | 32.2max | 20    | —     | 0.6   | —     | —     | 4   | 0.3                | 13                 | 6.5                    | 3 400                                     | 3 790                                | 3 790                                       | 1 330                                          | 4 040                                  |                |  |
| 10                      | CF 10 BR              | CF 10 B                | CF 10 BUUR         | CF 10 BUU              | 45                      | 22                     | 12  | 10    | M10×1.25 | 12    |  | 13.2max | 36.2max | 23    | —     | 0.6   | —     | —     | 4   | 0.3                | 16                 | 13.8                   | 5 430                                     | 6 890                                | 6 890                                       | 1 610                                          | 4 680                                  |                |  |
|                         | CF 10 FBR             | CF 10 FB               | CF 10 FBUUR        | CF 10 FBUU             | 45                      | 22                     | 12  | 10    | M10×1.25 | 12    |  | 13.2max | 36.2max | 23    | —     | 0.6   | —     | —     | 5   | 0.3                | 16                 | 13.8                   | 4 340                                     | 5 510                                | 5 510                                       | 1 610                                          | 4 680                                  |                |  |
|                         | CF 10-1 BR            | CF 10-1 B              | CF 10-1 BUUR       | CF 10-1 BUU            | 60                      | 26                     | 12  | 10    | M10×1.25 | 12    |  | 13.2max | 36.2max | 23    | —     | 0.6   | —     | —     | 4   | 0.3                | 16                 | 13.8                   | 5 430                                     | 6 890                                | 6 890                                       | 2 030                                          | 5 530                                  |                |  |
|                         | CF 10-1FBR            | CF 10-1FB              | CF 10-1FBUUR       | CF 10-1FBUU            | 60                      | 26                     | 12  | 10    | M10×1.25 | 12    |  | 13.2max | 36.2max | 23    | —     | 0.6   | —     | —     | 5   | 0.3                | 16                 | 13.8                   | 4 340                                     | 5 510                                | 5 510                                       | 2 030                                          | 5 530                                  |                |  |
| 12                      | CF 12 BR              | CF 12 B                | CF 12 BUUR         | CF 12 BUU              | 95                      | 30                     | 14  | 12    | M12×1.5  | 13    |  | 15.2max | 40.2max | 25    | 6     | 0.6   | 4     | 3     | 6   | 0.6                | 21                 | 21.9                   | 7 910                                     | 9 790                                | 9 790                                       | 2 470                                          | 7 010                                  |                |  |
|                         | CF 12 FBR             | CF 12 FB               | CF 12 FBUUR        | CF 12 FBUU             | 95                      | 30                     | 14  | 12    | M12×1.5  | 13    |  | 15.2max | 40.2max | 25    | 6     | 0.6   | 4     | 3     | 6   | 0.6                | 21                 | 21.9                   | 6 330                                     | 7 830                                | 7 830                                       | 2 470                                          | 7 010                                  |                |  |
|                         | CF 12-1 BR            | CF 12-1 B              | CF 12-1 BUUR       | CF 12-1 BUU            | 105                     | 32                     | 14  | 12    | M12×1.5  | 13    |  | 15.2max | 40.2max | 25    | 6     | 0.6   | 4     | 3     | 6   | 0.6                | 21                 | 21.9                   | 7 910                                     | 9 790                                | 9 790                                       | 2 710                                          | 7 480                                  |                |  |
|                         | CF 12-1FBR            | CF 12-1FB              | CF 12-1FBUUR       | CF 12-1FBUU            | 105                     | 32                     | 14  | 12    | M12×1.5  | 13    |  | 15.2max | 40.2max | 25    | 6     | 0.6   | 4     | 3     | 6   | 0.6                | 21                 | 21.9                   | 6 330                                     | 7 830                                | 7 830                                       | 2 710                                          | 7 480                                  |                |  |
| 16                      | CF 16 BR              | CF 16 B                | CF 16 BUUR         | CF 16 BUU              | 170                     | 35                     | 18  | 16    | M16×1.5  | 17    |  | 19.6max | 52.1max | 32.5  | 8     | 0.8   | 4     | 3     | 6   | 0.6                | 26                 | 58.5                   | 12 000                                    | 18 300                               | 18 300                                      | 3 060                                          | 11 200                                 |                |  |
|                         | CF 16 FBR             | CF 16 FB               | CF 16 FBUUR        | CF 16 FBUU             | 170                     | 35                     | 18  | 16    | M16×1.5  | 17    |  | 19.6max | 52.1max | 32.5  | 8     | 0.8   | 4     | 3     | 6   | 0.6                | 26                 | 58.5                   | 9 620                                     | 14 700                               | 14 700                                      | 3 060                                          | 11 200                                 |                |  |
| 18                      | CF 18 BR              | CF 18 B                | CF 18 BUUR         | CF 18 BUU              | 250                     | 40                     | 20  | 18    | M18×1.5  | 19    |  | 21.6max | 58.1max | 36.5  | 8     | 0.8   | 6     | 3     | 8   | 1                  | 29                 | 86.2                   | 14 800                                    | 25 200                               | 25 200                                      | 3 660                                          | 14 500                                 |                |  |
|                         | CF 18 FBR             | CF 18 FB               | CF 18 FBUUR        | CF 18 FBUU             | 250                     | 40                     | 20  | 18    | M18×1.5  | 19    |  | 21.6max | 58.1max | 36.5  | 8     | 0.8   | 6     | 3     | 8   | 1                  | 29                 | 86.2                   | 11 800                                    | 20 200                               | 20 200                                      | 3 660                                          | 14 500                                 |                |  |
| 20                      | CF 20 BR              | CF 20 B                | CF 20 BUUR         | CF 20 BUU              | 460                     | 52                     | 24  | 20    | M20×1.5  | 21    |  | 25.6max | 66.1max | 40.5  | 9     | 0.8   | 6     | 4     | 8   | 1                  | 34                 | 119                    | 20 700                                    | 34 600                               | 34 600                                      | 5 190                                          | 23 200                                 |                |  |
|                         | CF 20 FBR             | CF 20 FB               | CF 20 FBUUR        | CF 20 FBUU             | 460                     | 52                     | 24  | 20    | M20×1.5  | 21    |  | 25.6max | 66.1max | 40.5  | 9     | 0.8   | 6     | 4     | 8   | 1                  | 34                 | 119                    | 16 500                                    | 27 700                               | 27 700                                      | 5 190                                          | 23 200                                 |                |  |
|                         | CF 20-1 BR            | CF 20-1 B              | CF 20-1 BUUR       | CF 20-1 BUU            | 385                     | 47                     | 24  | 20    | M20×1.5  | 21    |  | 25.6max | 66.1max | 40.5  | 9     | 0.8   | 6     | 4     | 8   | 1                  | 34                 | 119                    | 20 700                                    | 34 600                               | 34 600                                      | 4 530                                          | 21 000                                 |                |  |
|                         | CF 20-1FBR            | CF 20-1FB              | CF 20-1FBUUR       | CF 20-1FBUU            | 385                     | 47                     | 24  | 20    | M20×1.5  | 21    |  | 25.6max | 66.1max | 40.5  | 9     | 0.8   | 6     | 4     | 8   | 1                  | 34                 | 119                    | 16 500                                    | 27 700                               | 27 700                                      | 4 530                                          | 21 000                                 |                |  |
| 24                      | CF 24 BR              | CF 24 B                | CF 24 BUUR         | CF 24 BUU              | 815                     | 62                     | 29  | 24    | M24×1.5  | 25    |  | 30.6max | 80.1max | 49.5  | 11    | 0.8   | 6     | 4     | 12  | 1                  | 40                 | 215                    | 30 500                                    | 52 600                               | 52 000                                      | 6 580                                          | 34 300                                 |                |  |
|                         | CF 24-1 BR            | CF 24-1 B              | CF 24-1 BUUR       | CF 24-1 BUU            | 1 140                   | 72                     | 29  | 24    | M24×1.5  | 25    |  | 30.6max | 80.1max | 49.5  | 11    | 0.8   | 6     | 4     | 12  | 1                  | 40                 | 215                    | 30 500                                    | 52 600                               | 52 000                                      | 8 020                                          | 39 800                                 |                |  |
| 30                      | CF 30 BR              | CF 30 B                | CF 30 BUUR         | CF 30 BUU              | 1 870                   | 80                     | 35  | 30    | M30×1.5  | 32    |  | 37 max  | 100 max | 63    | 15    | 1     | 6     | 4     | 17  | 1                  | 49                 | 438                    | 45 400                                    | 85 100                               | 85 100                                      | 9 220                                          | 52 700                                 |                |  |
|                         | CF 30-1 BR            | CF 30-1 B              | CF 30-1 BUUR       | CF 30-1 BUU            | 2 030                   | 85                     | 35  | 30    | M30×1.5  | 32    |  | 37 max  | 100 max | 63    | 15    | 1     | 6     | 4     | 17  | 1                  | 49                 | 438                    | 45 400                                    | 85 100                               | 85 100                                      | 9 990                                          | 56 000                                 |                |  |
|                         | CF 30-2 BR            | CF 30-2 B              | CF 30-2 BUUR       | CF 30-2 BUU            | 2 220                   | 90                     | 35  | 30    | M30×1.5  | 32    |  | 37 max  | 100 max | 63    | 15    | 1     | 6     | 4     | 17  | 1                  | 49                 | 438                    | 45 400                                    | 85 100                               | 85 100                                      | 10 800                                         | 59 300                                 |                |  |

Note <sup>(1)</sup> No oil hole is provided if the stud diameter  $d_1$  is 4 mm or less. An oil hole (re-greasing fitting) is provided for the head if the stud diameter  $d_1$  is between 5 and 10 mm.  
<sup>(2)</sup> An oil hole (grease nipple) is provided for the stud head and an oil hole is provided for the outside surface and the end of the stud.  
<sup>(3)</sup> Minimum allowable value of chamfer dimension  $r$ .  
Remark Grease is pre-packed if the stud diameter  $d_1$  of the shield type is 10 mm or less or if the seal structure is the sealed type. Other models are not provided with pre-packed grease. Perform proper lubrication for use.

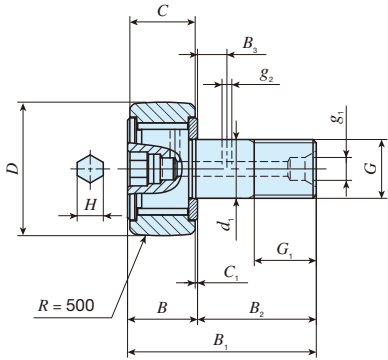
Selectable product specifications

|                                     |           |                        |
|-------------------------------------|-----------|------------------------|
| Type of material                    | No symbol | High carbon steel      |
|                                     | F         | Stainless steel        |
| Roller guide method                 | No symbol | With cage              |
|                                     | V         | Full complement        |
| Seal structure                      | No symbol | Shield type            |
|                                     | UU        | Sealed type            |
| Shape of outer ring outside surface | No symbol | Cylindrical outer ring |
|                                     | R         | Crowned outer ring     |



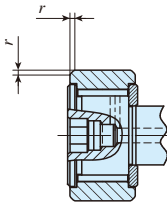
CF...VBR

Stud dia.  $d_1$  6 to 10 mm <sup>(1)</sup>

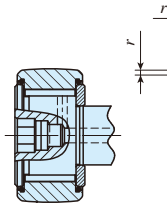


CF...VBR

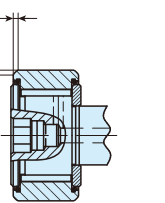
Stud dia.  $d_1$  12 to 30 mm <sup>(2)</sup>



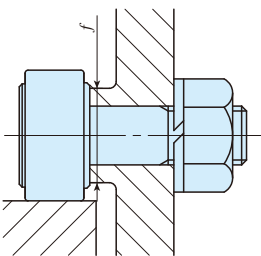
CF...VB



CF...VBUUR



CF...VBUU



| Stud diameter<br><br>mm | Identification number |                        |                    |                        | Mass<br>(Ref.)<br><br>g | Boundary dimensions mm |     |       |          |       |  |           |             |       |       |       |       |       |     |                    |                    | Mounting dimensions<br><br>$f$<br>Min. mm | Maximum tightening torque<br><br>N·m | Basic dynamic load rating<br><br>C | Basic static load rating<br><br>$C_0$ | Maximum allowable static load<br><br>N | Track capacity         |  |
|-------------------------|-----------------------|------------------------|--------------------|------------------------|-------------------------|------------------------|-----|-------|----------|-------|--|-----------|-------------|-------|-------|-------|-------|-------|-----|--------------------|--------------------|-------------------------------------------|--------------------------------------|------------------------------------|---------------------------------------|----------------------------------------|------------------------|--|
|                         | Shield type           |                        | Sealed type        |                        |                         | $D$                    | $C$ | $d_1$ | $G$      | $G_1$ |  | $B_{max}$ | $B_1_{max}$ | $B_2$ | $B_3$ | $C_1$ | $g_1$ | $g_2$ | $H$ | $r_{s\ min}^{(3)}$ | N                  |                                           |                                      |                                    |                                       |                                        |                        |  |
|                         | Crowned outer ring    | Cylindrical outer ring | Crowned outer ring | Cylindrical outer ring |                         |                        |     |       |          |       |  |           |             |       |       |       |       |       |     |                    | Crowned outer ring |                                           |                                      |                                    |                                       |                                        | Cylindrical outer ring |  |
| 6                       | CF 6 VBR              | CF 6 VB                | CF 6 VBUUR         | CF 6 VBUU              | 19                      | 16                     | 11  | 6     | M 6×1    | 8     |  | 12.2      | 28.2        | 16    | —     | 0.6   | —     | —     | 3   | 0.3                | 11                 | 2.7                                       | 6 980                                | 8 500                              | 1 950                                 | 1 040                                  | 3 400                  |  |
| 8                       | CF 8 VBR              | CF 8 VB                | CF 8 VBUUR         | CF 8 VBUU              | 29                      | 19                     | 11  | 8     | M 8×1.25 | 10    |  | 12.2      | 32.2        | 20    | —     | 0.6   | —     | —     | 4   | 0.3                | 13                 | 6.5                                       | 8 170                                | 11 200                             | 4 620                                 | 1 330                                  | 4 040                  |  |
| 10                      | CF 10 VBR             | CF 10 VB               | CF 10 VBUUR        | CF 10 VBUU             | 46                      | 22                     | 12  | 10    | M10×1.25 | 12    |  | 13.2      | 36.2        | 23    | —     | 0.6   | —     | —     | 4   | 0.3                | 16                 | 13.8                                      | 9 570                                | 14 500                             | 8 650                                 | 1 610                                  | 4 680                  |  |
|                         | CF 10-1 VBR           | CF 10-1 VB             | CF 10-1 VBUUR      | CF 10-1 VBUU           | 61                      | 26                     | 12  | 10    | M10×1.25 | 12    |  | 13.2      | 36.2        | 23    | —     | 0.6   | —     | —     | 4   | 0.3                | 16                 | 13.8                                      | 9 570                                | 14 500                             | 8 650                                 | 2 030                                  | 5 530                  |  |
| 12                      | CF 12 VBR             | CF 12 VB               | CF 12 VBUUR        | CF 12 VBUU             | 97                      | 30                     | 14  | 12    | M12×1.5  | 13    |  | 15.2      | 40.2        | 25    | 6     | 0.6   | 4     | 3     | 6   | 0.6                | 21                 | 21.9                                      | 13 500                               | 19 700                             | 13 200                                | 2 470                                  | 7 010                  |  |
|                         | CF 12-1 VBR           | CF 12-1 VB             | CF 12-1 VBUUR      | CF 12-1 VBUU           | 107                     | 32                     | 14  | 12    | M12×1.5  | 13    |  | 15.2      | 40.2        | 25    | 6     | 0.6   | 4     | 3     | 6   | 0.6                | 21                 | 21.9                                      | 13 500                               | 19 700                             | 13 200                                | 2 710                                  | 7 480                  |  |
| 16                      | CF 16 VBR             | CF 16 VB               | CF 16 VBUUR        | CF 16 VBUU             | 173                     | 35                     | 18  | 16    | M16×1.5  | 17    |  | 19.6      | 52.1        | 32.5  | 8     | 0.8   | 4     | 3     | 6   | 0.6                | 26                 | 58.5                                      | 20 700                               | 37 600                             | 23 200                                | 3 060                                  | 11 200                 |  |
| 18                      | CF 18 VBR             | CF 18 VB               | CF 18 VBUUR        | CF 18 VBUU             | 255                     | 40                     | 20  | 18    | M18×1.5  | 19    |  | 21.6      | 58.1        | 36.5  | 8     | 0.8   | 6     | 3     | 8   | 1                  | 29                 | 86.2                                      | 25 300                               | 51 300                             | 31 100                                | 3 660                                  | 14 500                 |  |
| 20                      | CF 20 VBR             | CF 20 VB               | CF 20 VBUUR        | CF 20 VBUU             | 465                     | 52                     | 24  | 20    | M20×1.5  | 21    |  | 25.6      | 66.1        | 40.5  | 9     | 0.8   | 6     | 4     | 8   | 1                  | 34                 | 119                                       | 33 200                               | 64 500                             | 37 500                                | 5 190                                  | 23 200                 |  |
|                         | CF 20-1 VBR           | CF 20-1 VB             | CF 20-1 VBUUR      | CF 20-1 VBUU           | 390                     | 47                     | 24  | 20    | M20×1.5  | 21    |  | 25.6      | 66.1        | 40.5  | 9     | 0.8   | 6     | 4     | 8   | 1                  | 34                 | 119                                       | 33 200                               | 64 500                             | 37 500                                | 4 530                                  | 21 000                 |  |
| 24                      | CF 24 VBR             | CF 24 VB               | CF 24 VBUUR        | CF 24 VBUU             | 820                     | 62                     | 29  | 24    | M24×1.5  | 25    |  | 30.6      | 80.1        | 49.5  | 11    | 0.8   | 6     | 4     | 12  | 1                  | 40                 | 215                                       | 46 600                               | 92 000                             | 52 000                                | 6 580                                  | 34 300                 |  |
|                         | CF 24-1 VBR           | CF 24-1 VB             | CF 24-1 VBUUR      | CF 24-1 VBUU           | 1 140                   | 72                     | 29  | 24    | M24×1.5  | 25    |  | 30.6      | 80.1        | 49.5  | 11    | 0.8   | 6     | 4     | 12  | 1                  | 40                 | 215                                       | 46 600                               | 92 000                             | 52 000                                | 8 020                                  | 39 800                 |  |
| 30                      | CF 30 VBR             | CF 30 VB               | CF 30 VBUUR        | CF 30 VBUU             | 1 870                   | 80                     | 35  | 30    | M30×1.5  | 32    |  | 37        | 100         | 63    | 15    | 1     | 6     | 4     | 17  | 1                  | 49                 | 438                                       | 67 700                               | 144 000                            | 85 900                                | 9 220                                  | 52 700                 |  |
|                         | CF 30-1 VBR           | CF 30-1 VB             | CF 30-1 VBUUR      | CF 30-1 VBUU           | 2 030                   | 85                     | 35  | 30    | M30×1.5  | 32    |  | 37        | 100         | 63    | 15    | 1     | 6     | 4     | 17  | 1                  | 49                 | 438                                       | 67 700                               | 144 000                            | 85 900                                | 9 990                                  | 56 000                 |  |
|                         | CF 30-2 VBR           | CF 30-2 VB             | CF 30-2 VBUUR      | CF 30-2 VBUU           | 2 220                   | 90                     | 35  | 30    | M30×1.5  | 32    |  | 37        | 100         | 63    | 15    | 1     | 6     | 4     | 17  | 1                  | 49                 | 438                                       | 67 700                               | 144 000                            | 85 900                                | 10 800                                 | 59 300                 |  |

Note <sup>(1)</sup> An oil hole (re-greasing fitting) is provided for the stud head.

<sup>(2)</sup> An oil hole (grease nipple) is provided for the stud head and an oil hole is provided for the outside surface and the end of the stud.

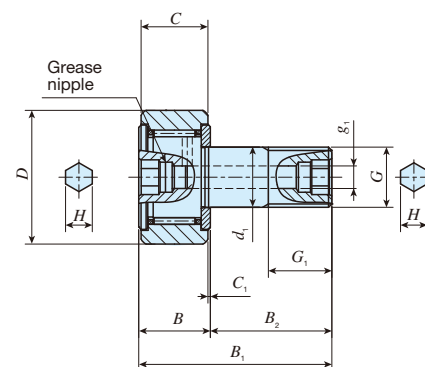
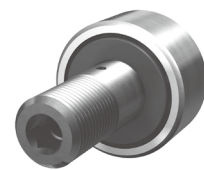
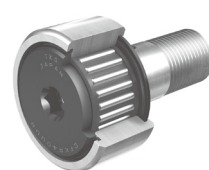
<sup>(3)</sup> Minimum allowable value of chamfer dimension  $r$ .

Remark Provided with pre-packed grease.

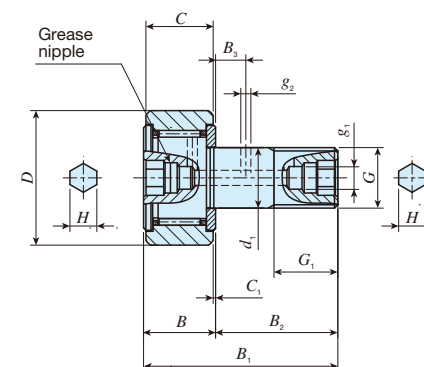


## Selectable product specifications

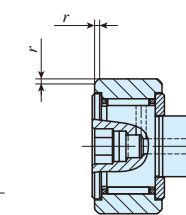
|                                     |           |                        |
|-------------------------------------|-----------|------------------------|
| Type of material                    | No symbol | High carbon steel      |
|                                     | F         | Stainless steel        |
| Roller guide method                 | No symbol | With cage              |
|                                     | V         | Full complement        |
| Seal structure                      | No symbol | Shield type            |
|                                     | UU        | Sealed type            |
| Shape of outer ring outside surface | No symbol | Cylindrical outer ring |
|                                     | R         | Crowned outer ring     |



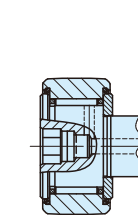
Outside diameter of outer ring D 22, 26mm



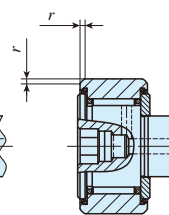
Outside diameter of outer ring D 30 to 90mm



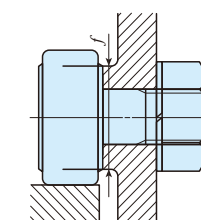
CFKR



CFKR...UUR



CFKR...UU



| Stud<br>diameter | Identification number <sup>(1)</sup> |                               |                                           |                                        | Mass<br>(Ref.)<br><br>g | Boundary dimensions mm |          |                       |          |                       |  |                 |                              |                       |                       |                       |                       |                       |          |                                          |    | Mounting<br>dimensions<br><i>f</i><br><br>Min.<br>mm | Maximum<br>tightening<br>torque<br><br>N·m | Basic<br>dynamic<br>load rating<br><i>C</i><br><br>N | Basic<br>static<br>load rating<br><i>C</i> <sub>0</sub><br><br>N | Maximum<br>allowable<br>static load<br><br>N | Track<br>capacity          |                          |
|------------------|--------------------------------------|-------------------------------|-------------------------------------------|----------------------------------------|-------------------------|------------------------|----------|-----------------------|----------|-----------------------|--|-----------------|------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----------|------------------------------------------|----|------------------------------------------------------|--------------------------------------------|------------------------------------------------------|------------------------------------------------------------------|----------------------------------------------|----------------------------|--------------------------|
|                  | Shield type                          |                               | Sealed type                               |                                        |                         | <i>D</i>               | <i>C</i> | <i>d</i> <sub>1</sub> | <i>G</i> | <i>G</i> <sub>1</sub> |  | <i>B</i><br>max | <i>B</i> <sub>1</sub><br>max | <i>B</i> <sub>2</sub> | <i>B</i> <sub>3</sub> | <i>C</i> <sub>1</sub> | <i>g</i> <sub>1</sub> | <i>g</i> <sub>2</sub> | <i>H</i> | <i>r</i> <sub>s min</sub> <sup>(2)</sup> |    |                                                      |                                            |                                                      |                                                                  |                                              | Crowned<br>outer ring      | Cylindrica<br>outer ring |
|                  | Crowned<br>outer ring                | Cylindrical<br>outer ring     | Crowned<br>outer ring                     | Cylindrical<br>outer ring              |                         |                        |          |                       |          |                       |  |                 |                              |                       |                       |                       |                       |                       |          |                                          |    |                                                      |                                            |                                                      |                                                                  |                                              |                            |                          |
| mm               |                                      |                               |                                           |                                        |                         |                        |          |                       |          |                       |  |                 |                              |                       |                       |                       |                       |                       |          |                                          |    |                                                      |                                            |                                                      |                                                                  |                                              |                            |                          |
| 10               | CFKR 22 R<br>CFKR 26 R               | CFKR 22<br>CFKR 26            | CFKR 22 UUR<br>CFKR 26 UUR                | CFKR 22 UU<br>CFKR 26 UU               | 43<br>58                | 22<br>26               | 12       | 10                    | M10×1.0  | 12                    |  | 13.2            | 36.2                         | 23                    | —                     | 0.6                   | 3                     | —                     | 5        | 0.3                                      | 16 | 13.0                                                 | 5 430                                      | 6 890                                                | 6 890                                                            | 1 610<br>2 030                               | 4 680<br>5 530             |                          |
| 12               | CFKR 30 R<br>CFKR 32 R               | CFKR 30<br>CFKR 32            | CFKR 30 UUR<br>CFKR 32 UUR                | CFKR 30 UU<br>CFKR 32 UU               | 94<br>104               | 30<br>32               | 14       | 12                    | M12×1.5  | 13                    |  | 15.2            | 40.2                         | 25                    | 6                     | 0.6                   | 4                     | 3                     | 6        | 0.6                                      | 21 | 21.9                                                 | 7 910                                      | 9 790                                                | 9 790                                                            | 2 470<br>2 710                               | 7 010<br>7 480             |                          |
| 16               | CFKR 35 R                            | CFKR 35                       | CFKR 35 UUR                               | CFKR 35 UU                             | 165                     | 35                     | 18       | 16                    | M16×1.5  | 17                    |  | 19.6            | 52.1                         | 32.5                  | 8                     | 0.8                   | 4                     | 3                     | 8        | 0.6                                      | 26 | 58.5                                                 | 12 000                                     | 18 300                                               | 18 300                                                           | 3 060                                        | 11 200                     |                          |
| 18               | CFKR 40 R                            | CFKR 40                       | CFKR 40 UUR                               | CFKR 40 UU                             | 248                     | 40                     | 20       | 18                    | M18×1.5  | 19                    |  | 21.6            | 58.1                         | 36.5                  | 8                     | 0.8                   | 6                     | 3                     | 8        | 1                                        | 29 | 86.2                                                 | 14 800                                     | 25 200                                               | 25 200                                                           | 3 660                                        | 14 500                     |                          |
| 20               | CFKR 47 R<br>CFKR 52 R               | CFKR 47<br>CFKR 52            | CFKR 47 UUR<br>CFKR 52 UUR                | CFKR 47 UU<br>CFKR 52 UU               | 378<br>453              | 47<br>52               | 24       | 20                    | M20×1.5  | 21                    |  | 25.6            | 66.1                         | 40.5                  | 9                     | 0.8                   | 6                     | 4                     | 10       | 1                                        | 34 | 119                                                  | 20 700                                     | 34 600                                               | 34 600                                                           | 4 530<br>5 190                               | 21 000<br>23 200           |                          |
| 24               | CFKR 62 R<br>CFKR 72 R               | CFKR 62<br>CFKR 72            | CFKR 62 UUR<br>CFKR 72 UUR                | CFKR 62 UU<br>CFKR 72 UU               | 795<br>1 120            | 62<br>72               | 29       | 24                    | M24×1.5  | 25                    |  | 30.6            | 80.1                         | 49.5                  | 11                    | 0.8                   | 6                     | 4                     | 14       | 1                                        | 40 | 215                                                  | 30 500                                     | 52 600                                               | 52 000                                                           | 6 580<br>8 020                               | 34 300<br>39 800           |                          |
| 30               | CFKR 80 R<br>CFKR 85 R<br>CFKR 90 R  | CFKR 80<br>CFKR 85<br>CFKR 90 | CFKR 80 UUR<br>CFKR 85 UUR<br>CFKR 90 UUR | CFKR 80 UU<br>CFKR 85 UU<br>CFKR 90 UU | 1 860<br>2 020<br>2 210 | 80<br>85<br>90         | 35       | 30                    | M30×1.5  | 32                    |  | 37              | 100                          | 63                    | 15                    | 1                     | 6                     | 4                     | 14       | 1                                        | 49 | 438                                                  | 45 400                                     | 85 100                                               | 85 100                                                           | 9 220<br>9 990<br>10 800                     | 52 700<br>56 000<br>59 300 |                          |

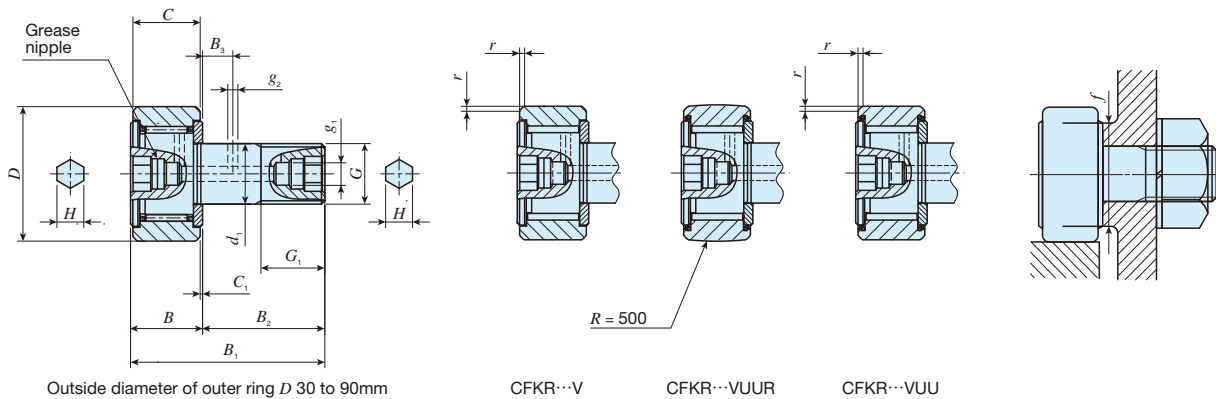
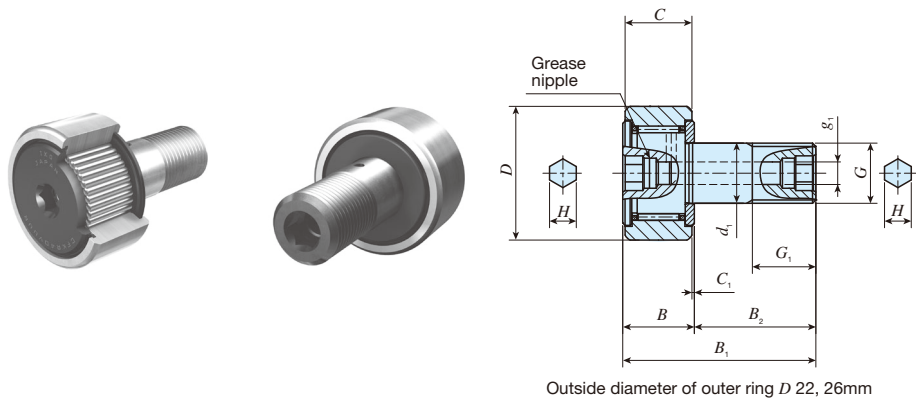
Note <sup>(1)</sup> The identification number indicates the outer ring outside diameter.

<sup>(2)</sup> Minimum allowable value of chamfer dimension *r*.

Remark Grease is pre-packed if the stud diameter *d*<sub>1</sub> of the shield type is 10 mm or less or if the seal structure is the sealed type. Other models are not provided with pre-packed grease. Perform proper lubrication for use.

Selectable product specifications

|                                     |           |                        |
|-------------------------------------|-----------|------------------------|
| Type of material                    | No symbol | High carbon steel      |
|                                     | F         | Stainless steel        |
| Roller guide method                 | No symbol | With cage              |
|                                     | V         | Full complement        |
| Seal structure                      | No symbol | Shield type            |
|                                     | UU        | Sealed type            |
| Shape of outer ring outside surface | No symbol | Cylindrical outer ring |
|                                     | R         | Crowned outer ring     |



| Stud<br>diameter | Identification number <sup>(1)</sup>   |                                     |                                              |                                           | Mass<br>(Ref.)          | Boundary dimensions mm |          |                       |          |                       |  |                 |                              |                       |                       |                       |                       |                       |          |                                          |                       | Mounting<br>dimensions<br><br><i>f</i><br>Min.<br>mm | Maximum<br>tightening<br>torque<br><br>N·m | Basic<br>dynamic<br>load rating<br><i>C</i><br><br>N | Basic<br>static<br>load rating<br><i>C</i> <sub>0</sub><br><br>N | Maximum<br>allowable<br>static load<br><br>N | Track<br>capacity          |  |
|------------------|----------------------------------------|-------------------------------------|----------------------------------------------|-------------------------------------------|-------------------------|------------------------|----------|-----------------------|----------|-----------------------|--|-----------------|------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----------|------------------------------------------|-----------------------|------------------------------------------------------|--------------------------------------------|------------------------------------------------------|------------------------------------------------------------------|----------------------------------------------|----------------------------|--|
|                  | Shield type                            |                                     | Sealed type                                  |                                           |                         | <i>D</i>               | <i>C</i> | <i>d</i> <sub>1</sub> | <i>G</i> | <i>G</i> <sub>1</sub> |  | <i>B</i><br>max | <i>B</i> <sub>1</sub><br>max | <i>B</i> <sub>2</sub> | <i>B</i> <sub>3</sub> | <i>C</i> <sub>1</sub> | <i>g</i> <sub>1</sub> | <i>g</i> <sub>2</sub> | <i>H</i> | <i>r</i> <sub>s min</sub> <sup>(2)</sup> | N                     |                                                      |                                            |                                                      |                                                                  |                                              |                            |  |
|                  | Crowned<br>outer ring                  | Cylindrical<br>outer ring           | Crowned<br>outer ring                        | Cylindrical<br>outer ring                 |                         |                        |          |                       |          |                       |  |                 |                              |                       |                       |                       |                       |                       |          |                                          | Crowned<br>outer ring |                                                      |                                            |                                                      |                                                                  |                                              | Cylindrical<br>outer ring  |  |
| mm               |                                        |                                     |                                              |                                           | g                       |                        |          |                       |          |                       |  |                 |                              |                       |                       |                       |                       |                       |          |                                          |                       |                                                      |                                            |                                                      |                                                                  |                                              |                            |  |
| 10               | CFKR 22 VR<br>CFKR 26 VR               | CFKR 22 V<br>CFKR 26 V              | CFKR 22 VUUR<br>CFKR 26 VUUR                 | CFKR 22 VUU<br>CFKR 26 VUU                | 44<br>59                | 22<br>26               | 12       | 10                    | M10×1.0  | 12                    |  | 13.2            | 36.2                         | 23                    | —                     | 0.6                   | 3                     | —                     | 5        | 0.3                                      | 16                    | 13.0                                                 | 9 570                                      | 14 500                                               | 7 920                                                            | 1 610<br>2 030                               | 4 680<br>5 530             |  |
| 12               | CFKR 30 VR<br>CFKR 32 VR               | CFKR 30 V<br>CFKR 32 V              | CFKR 30 VUUR<br>CFKR 32 VUUR                 | CFKR 30 VUU<br>CFKR 32 VUU                | 96<br>106               | 30<br>32               | 14       | 12                    | M12×1.5  | 13                    |  | 15.2            | 40.2                         | 25                    | 6                     | 0.6                   | 4                     | 3                     | 6        | 0.6                                      | 21                    | 21.9                                                 | 13 500                                     | 19 700                                               | 13 200                                                           | 2 470<br>2 710                               | 7 010<br>7 480             |  |
| 16               | CFKR 35 VR                             | CFKR 35 V                           | CFKR 35 VUUR                                 | CFKR 35 VUU                               | 168                     | 35                     | 18       | 16                    | M16×1.5  | 17                    |  | 19.6            | 52.1                         | 32.5                  | 8                     | 0.8                   | 4                     | 3                     | 8        | 0.6                                      | 26                    | 58.5                                                 | 20 700                                     | 37 600                                               | 23 200                                                           | 3 060                                        | 11 200                     |  |
| 18               | CFKR 40 VR                             | CFKR 40 V                           | CFKR 40 VUUR                                 | CFKR 40 VUU                               | 253                     | 40                     | 20       | 18                    | M18×1.5  | 19                    |  | 21.6            | 58.1                         | 36.5                  | 8                     | 0.8                   | 6                     | 3                     | 8        | 1                                        | 29                    | 86.2                                                 | 25 300                                     | 51 300                                               | 31 100                                                           | 3 660                                        | 14 500                     |  |
| 20               | CFKR 47 VR<br>CFKR 52 VR               | CFKR 47 V<br>CFKR 52 V              | CFKR 47 VUUR<br>CFKR 52 VUUR                 | CFKR 47 VUU<br>CFKR 52 VUU                | 383<br>458              | 47<br>52               | 24       | 20                    | M20×1.5  | 21                    |  | 25.6            | 66.1                         | 40.5                  | 9                     | 0.8                   | 6                     | 4                     | 10       | 1                                        | 34                    | 119                                                  | 33 200                                     | 64 500                                               | 37 500                                                           | 4 530<br>5 190                               | 21 000<br>23 200           |  |
| 24               | CFKR 62 VR<br>CFKR 72 VR               | CFKR 62 V<br>CFKR 72 V              | CFKR 62 VUUR<br>CFKR 72 VUUR                 | CFKR 62 VUU<br>CFKR 72 VUU                | 800<br>1 120            | 62<br>72               | 29       | 24                    | M24×1.5  | 25                    |  | 30.6            | 80.1                         | 49.5                  | 11                    | 0.8                   | 6                     | 4                     | 14       | 1                                        | 40                    | 215                                                  | 46 600                                     | 92 000                                               | 52 000                                                           | 6 580<br>8 020                               | 34 300<br>39 800           |  |
| 30               | CFKR 80 VR<br>CFKR 85 VR<br>CFKR 90 VR | CFKR 80 V<br>CFKR 85 V<br>CFKR 90 V | CFKR 80 VUUR<br>CFKR 85 VUUR<br>CFKR 90 VUUR | CFKR 80 VUU<br>CFKR 85 VUU<br>CFKR 90 VUU | 1 860<br>2 020<br>2 210 | 80<br>85<br>90         | 35       | 30                    | M30×1.5  | 32                    |  | 37              | 100                          | 63                    | 15                    | 1                     | 6                     | 4                     | 14       | 1                                        | 49                    | 438                                                  | 67 700                                     | 144 000                                              | 85 900                                                           | 9 220<br>9 990<br>10 800                     | 52 700<br>56 000<br>59 300 |  |

Note <sup>(1)</sup> The identification number indicates the outer ring outside diameter.

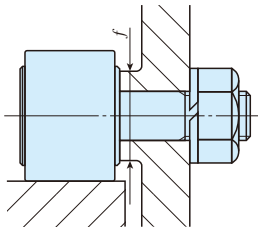
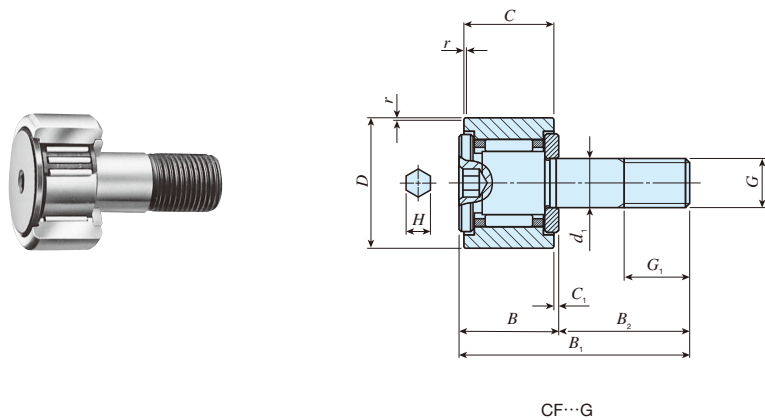
<sup>(2)</sup> Minimum allowable value of chamfer dimension r.

Remark Provided with pre-packed grease.



Selectable product specifications

|                                     |           |                        |
|-------------------------------------|-----------|------------------------|
| Type of material                    | No symbol | High carbon steel      |
|                                     | F         | Stainless steel        |
| Roller guide method                 | No symbol | With cage              |
|                                     | V         | Full complement        |
| Seal structure                      | No symbol | Shield type            |
|                                     | UU        | Sealed type            |
| Shape of outer ring outside surface | No symbol | Cylindrical outer ring |
|                                     | R         | Crowned outer ring     |



| Stud diameter<br><br>mm | Identification number | Mass<br>(Ref.) | Boundary dimensions mm |    |                |           |                |                  |                   |  |                |                |   |                                   | Mounting dimensions | Maximum tightening torque | Basic dynamic load rating | Basic static load rating | Maximum allowable static load | Track capacity |
|-------------------------|-----------------------|----------------|------------------------|----|----------------|-----------|----------------|------------------|-------------------|--|----------------|----------------|---|-----------------------------------|---------------------|---------------------------|---------------------------|--------------------------|-------------------------------|----------------|
|                         | With cage             | g              | D                      | C  | d <sub>i</sub> | G         | G <sub>1</sub> | B <sub>max</sub> | B <sub>1max</sub> |  | B <sub>2</sub> | C <sub>1</sub> | H | r <sub>s min</sub> <sup>(1)</sup> | f<br>Min.<br>mm     | N·m                       | C<br>N                    | C <sub>0</sub><br>N      | N                             | N              |
|                         |                       |                |                        |    |                |           |                |                  |                   |  |                |                |   |                                   |                     |                           |                           |                          |                               |                |
| 6                       | CF 6 G                | 19.5           | 16                     | 11 | 6              | M 6 ×1    | 8              | 12.2             | 28.2              |  | 16             | 0.6            | 3 | 0.3                               | 11                  | 2.7                       | 3 660                     | 3 650                    | 1 950                         | 3 400          |
| 8                       | CF 8 G                | 29.5           | 19                     | 11 | 8              | M 8 ×1.25 | 10             | 12.2             | 32.2              |  | 20             | 0.6            | 4 | 0.3                               | 13                  | 6.5                       | 4 250                     | 4 740                    | 4 620                         | 4 040          |
| 10                      | CF 10 G               | 47.5           | 22                     | 12 | 10             | M10 ×1.25 | 12             | 13.2             | 36.2              |  | 23             | 0.6            | 4 | 0.3                               | 16                  | 13.8                      | 5 430                     | 6 890                    | 6 890                         | 4 680          |
|                         | CF 10-1 G             | 61.5           | 26                     | 12 | 10             | M10 ×1.25 | 12             | 13.2             | 36.2              |  | 23             | 0.6            | 4 | 0.3                               | 16                  | 13.8                      | 5 430                     | 6 890                    | 6 890                         | 5 530          |
| 12                      | CF 12 G               | 95.0           | 30                     | 14 | 12             | M12 ×1.5  | 13             | 15.2             | 40.2              |  | 25             | 0.6            | 6 | 0.6                               | 21                  | 23.9                      | 7 910                     | 9 790                    | 9 790                         | 7 010          |
|                         | CF 12-1 G             | 105            | 32                     | 14 | 12             | M12 ×1.5  | 13             | 15.2             | 40.2              |  | 25             | 0.6            | 6 | 0.6                               | 21                  | 23.9                      | 7 910                     | 9 790                    | 9 790                         | 7 480          |
| 16                      | CF 16 G               | 175            | 35                     | 18 | 16             | M16 ×1.5  | 17             | 19.6             | 52.1              |  | 32.5           | 0.8            | 6 | 0.6                               | 26                  | 61.1                      | 12 000                    | 18 300                   | 18 300                        | 11 200         |
| 18                      | CF 18 G               | 255            | 40                     | 20 | 18             | M18 ×1.5  | 19             | 21.6             | 58.1              |  | 36.5           | 0.8            | 8 | 1                                 | 29                  | 89.2                      | 14 800                    | 25 200                   | 25 200                        | 14 500         |
| 20                      | CF 20 G               | 470            | 52                     | 24 | 20             | M20 ×1.5  | 21             | 25.6             | 66.1              |  | 40.5           | 0.8            | 8 | 1                                 | 34                  | 125                       | 20 700                    | 34 600                   | 34 600                        | 23 200         |
|                         | CF 20-1 G             | 400            | 47                     | 24 | 20             | M20 ×1.5  | 21             | 25.6             | 66.1              |  | 40.5           | 0.8            | 8 | 1                                 | 34                  | 125                       | 20 700                    | 34 600                   | 34 600                        | 21 000         |

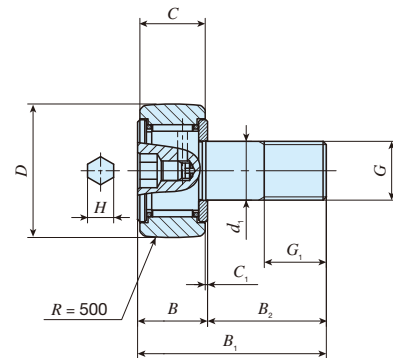
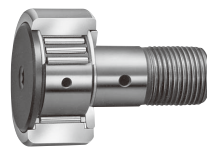
Note (1) Minimum allowable value of chamfer dimension *r*.

Remarks 1. This bearing cannot be re-lubricated due to its structure. If re-lubrication is necessary, please use **IKO** Standard Type Cam Followers.

2. Provided with pre-packed grease.

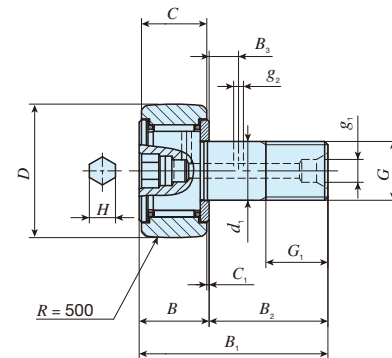
## Selectable product specifications

|                                     |           |                        |
|-------------------------------------|-----------|------------------------|
| Type of material                    | No symbol | High carbon steel      |
|                                     | <b>F</b>  | Stainless steel        |
| Roller guide method                 | No symbol | With cage              |
|                                     | <b>V</b>  | Full complement        |
| Seal structure                      | No symbol | Shield type            |
|                                     | <b>UU</b> | Sealed type            |
| Shape of outer ring outside surface | No symbol | Cylindrical outer ring |
|                                     | <b>R</b>  | Crowned outer ring     |



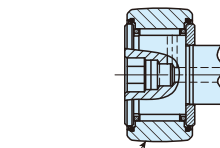
CF...WBR

Stud dia.  $d_1$  3 to 10 mm <sup>(1)</sup>  
(3 to 5 mm) <sup>(1)</sup>

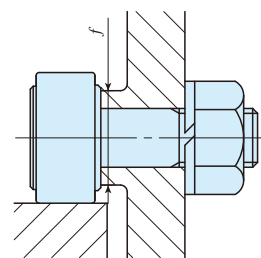


CF...WBR

Stud dia.  $d_1$  12 to 20 mm <sup>(2)</sup>



CF...WBUUR



| Stud<br>diameter | Identification number |               | Mass<br>(Ref.) | Boundary dimensions mm |     |       |          |       |  |         |         |       |       |       |       |       |     |                   |      | Mounting<br>dimensions | Maximum<br>tightening<br>torque | Basic<br>dynamic<br>load rating | Basic<br>static<br>load rating | Maximum<br>allowable<br>static load | Track<br>capacity |
|------------------|-----------------------|---------------|----------------|------------------------|-----|-------|----------|-------|--|---------|---------|-------|-------|-------|-------|-------|-----|-------------------|------|------------------------|---------------------------------|---------------------------------|--------------------------------|-------------------------------------|-------------------|
|                  |                       |               |                |                        |     |       |          |       |  |         |         |       |       |       |       |       |     |                   |      |                        |                                 |                                 |                                |                                     |                   |
|                  | Shield type           | Sealed type   |                | $D$                    | $C$ | $d_1$ | $G$      | $G_1$ |  | $B$     | $B_1$   | $B_2$ | $B_3$ | $C_1$ | $g_1$ | $g_2$ | $H$ | $f$<br>Min.<br>mm | N·m  |                        |                                 |                                 |                                |                                     |                   |
| mm               |                       |               | g              |                        |     |       |          |       |  |         |         |       |       |       |       |       |     |                   |      |                        |                                 |                                 |                                |                                     |                   |
| 3                | CF 3 WBR              | CF 3 WBUUR    | 4.3            | 10                     | 7   | 3     | M 3×0.5  | 5     |  | 8       | 17      | 9     | —     | 0.5   | —     | —     | 2   | 6.8               | 0.34 | 1 500                  | 1 020                           | 384                             | 542                            |                                     |                   |
|                  | CF 3 FWBR             | CF 3 FWBUUR   | 4.3            | 10                     | 7   | 3     | M 3×0.5  | 5     |  | 8       | 17      | 9     | —     | 0.5   | —     | —     | 2   | 6.8               | 0.34 | 1 200                  | 813                             | 384                             | 542                            |                                     |                   |
| 4                | CF 4 WBR              | CF 3 WBUUR    | 7.4            | 12                     | 8   | 4     | M 4×0.7  | 6     |  | 9       | 20      | 11    | —     | 0.5   | —     | —     | 2.5 | 8.3               | 0.78 | 2 070                  | 1 590                           | 834                             | 712                            |                                     |                   |
|                  | CF 4 FWBR             | CF 3 FWBUUR   | 7.4            | 12                     | 8   | 4     | M 4×0.7  | 6     |  | 9       | 20      | 11    | —     | 0.5   | —     | —     | 2.5 | 8.3               | 0.78 | 1 650                  | 1 270                           | 834                             | 712                            |                                     |                   |
| 5                | CF 5 WBR              | CF 5 WBUUR    | 10.3           | 13                     | 9   | 5     | M 5×0.8  | 7.5   |  | 10      | 23      | 13    | —     | 0.5   | —     | —     | 3   | 9.3               | 1.6  | 2 520                  | 2 140                           | 1 260                           | 794                            |                                     |                   |
|                  | CF 5 FWBR             | CF 5 FWBUUR   | 10.3           | 13                     | 9   | 5     | M 5×0.8  | 7.5   |  | 10      | 23      | 13    | —     | 0.5   | —     | —     | 3   | 9.3               | 1.6  | 1 930                  | 1 730                           | 1 260                           | 794                            |                                     |                   |
| 6                | CF 6 WBR              | CF 6 WBUUR    | 18.5           | 16                     | 11  | 6     | M 6×1    | 8     |  | 12.2max | 28.2max | 16    | —     | 0.6   | —     | —     | 3   | 11                | 2.7  | 3 660                  | 3 650                           | 1 950                           | 1 040                          |                                     |                   |
| 8                | CF 8 WBR              | CF 8 WBUUR    | 28.5           | 19                     | 11  | 8     | M 8×1.25 | 10    |  | 12.2max | 32.2max | 20    | —     | 0.6   | —     | —     | 4   | 13                | 6.5  | 4 250                  | 4 740                           | 4 620                           | 1 330                          |                                     |                   |
| 10               | CF 10 WBR             | CF 10 WBUUR   | 45             | 22                     | 12  | 10    | M10×1.25 | 12    |  | 13.2max | 36.2max | 23    | —     | 0.6   | —     | —     | 4   | 16                | 13.8 | 5 430                  | 6 890                           | 6 890                           | 1 610                          |                                     |                   |
|                  | CF 10-1 WBR           | CF 10-1 WBUUR | 60             | 26                     | 12  | 10    | M10×1.25 | 12    |  | 13.2max | 36.2max | 23    | —     | 0.6   | —     | —     | 4   | 16                | 13.8 | 5 430                  | 6 890                           | 6 890                           | 2 030                          |                                     |                   |
| 12               | CF 12 WBR             | CF 12 WBUUR   | 95             | 30                     | 14  | 12    | M12×1.5  | 13    |  | 15.2max | 40.2max | 25    | 6     | 0.6   | 4     | 3     | 6   | 21                | 21.9 | 7 910                  | 9 790                           | 9 790                           | 2 470                          |                                     |                   |
|                  | CF 12-1 WBR           | CF 12-1 WBUUR | 105            | 32                     | 14  | 12    | M12×1.5  | 13    |  | 15.2max | 40.2max | 25    | 6     | 0.6   | 4     | 3     | 6   | 21                | 21.9 | 7 910                  | 9 790                           | 9 790                           | 2 710                          |                                     |                   |
| 16               | CF 16 WBR             | CF 16 WBUUR   | 170            | 35                     | 18  | 16    | M16×1.5  | 17    |  | 19.6max | 52.1max | 32.5  | 8     | 0.8   | 4     | 3     | 6   | 26                | 58.5 | 12 000                 | 18 300                          | 18 300                          | 3 060                          |                                     |                   |
| 18               | CF 18 WBR             | CF 18 WBUUR   | 250            | 40                     | 20  | 18    | M18×1.5  | 19    |  | 21.6max | 58.1max | 36.5  | 8     | 0.8   | 6     | 3     | 8   | 29                | 86.2 | 14 800                 | 25 200                          | 25 200                          | 3 660                          |                                     |                   |
| 20               | CF 20 WBR             | CF 20 WBUUR   | 460            | 52                     | 24  | 20    | M20×1.5  | 21    |  | 25.6max | 66.1max | 40.5  | 9     | 0.8   | 6     | 4     | 8   | 34                | 119  | 20 700                 | 34 600                          | 34 600                          | 5 190                          |                                     |                   |
|                  | CF 20-1 WBR           | CF 20-1 WBUUR | 385            | 47                     | 24  | 20    | M20×1.5  | 21    |  | 25.6max | 66.1max | 40.5  | 9     | 0.8   | 6     | 4     | 8   | 34                | 119  | 20 700                 | 34 600                          | 34 600                          | 4 530                          |                                     |                   |

Note <sup>(1)</sup> No oil hole is provided if the stud diameter  $d_1$  is 4 mm or less. An oil hole (re-greasing fitting) is provided for the head if the stud diameter  $d_1$  is between 5 and 10 mm.

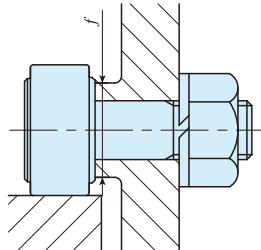
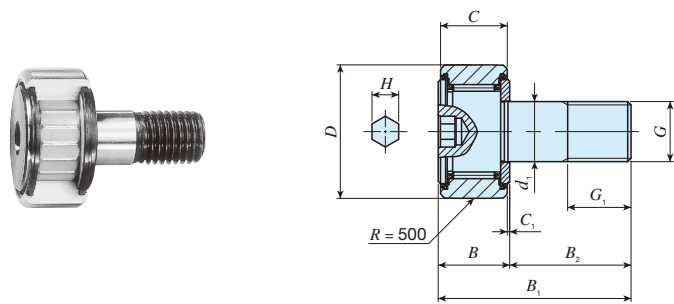
<sup>(2)</sup> An oil hole (grease nipple) is provided for the stud head and an oil hole is provided for the outside surface and the end of the stud.

Remark Grease is pre-packed if the stud diameter  $d_1$  of the shield type is 10 mm or less or if the seal structure is the sealed type. Other models are not provided with pre-packed grease. Perform proper lubrication for use.



Selectable product specifications

|                                     |           |                        |
|-------------------------------------|-----------|------------------------|
| Type of material                    | No symbol | High carbon steel      |
|                                     | F         | Stainless steel        |
| Roller guide method                 | No symbol | With cage              |
|                                     | V         | Full complement        |
| Seal structure                      | No symbol | Shield type            |
|                                     | UU        | Sealed type            |
| Shape of outer ring outside surface | No symbol | Cylindrical outer ring |
|                                     | R         | Crowned outer ring     |

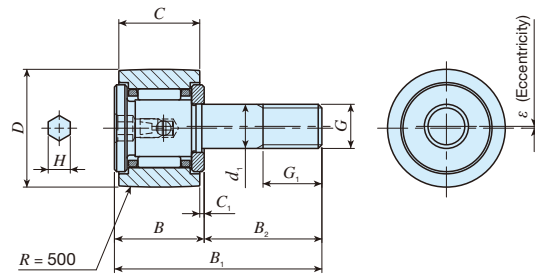
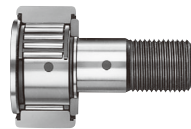


| Stud<br>diameter | Identification number | Mass<br>(Ref.) | Boundary dimensions mm |     |       |          |       |          |          |  |       |       |     | Mounting<br>dimensions | Maximum<br>tightening<br>torque | Basic dynamic<br>load rating | Basic static<br>load rating | Maximum<br>allowable<br>static load | Track<br>capacity |
|------------------|-----------------------|----------------|------------------------|-----|-------|----------|-------|----------|----------|--|-------|-------|-----|------------------------|---------------------------------|------------------------------|-----------------------------|-------------------------------------|-------------------|
|                  |                       |                | $D$                    | $C$ | $d_1$ | $G$      | $G_1$ | $B$      | $B_1$    |  | $B_2$ | $C_1$ | $H$ |                        |                                 |                              |                             |                                     |                   |
|                  |                       |                | mm                     | g   |       |          |       |          |          |  |       |       |     |                        |                                 |                              |                             |                                     |                   |
| 5                | CF 5 WBUUR/SG         | 10.3           | 13                     | 9   | 5     | M 5×0.8  | 7.5   | 10       | 23       |  | 13    | 0.5   | 3   | 9.3                    | 1.6                             | 2 520                        | 2 140                       | 1 260                               | 794               |
| 6                | CF 6 WBUUR/SG         | 18.5           | 16                     | 11  | 6     | M 6×1    | 8     | 12.2 max | 28.2 max |  | 16    | 0.6   | 3   | 11                     | 2.7                             | 3 660                        | 3 650                       | 1 950                               | 1 040             |
| 8                | CF 8 WBUUR/SG         | 28.5           | 19                     | 11  | 8     | M 8×1.25 | 10    | 12.2 max | 32.2 max |  | 20    | 0.6   | 4   | 13                     | 6.5                             | 4 250                        | 4 740                       | 4 620                               | 1 330             |
| 10               | CF 10 WBUUR/SG        | 45             | 22                     | 12  | 10    | M10×1.25 | 12    | 13.2 max | 36.2 max |  | 23    | 0.6   | 4   | 16                     | 13.8                            | 5 430                        | 6 890                       | 6 890                               | 1 610             |
|                  | CF 10-1 WBUUR/SG      | 60             | 26                     | 12  | 10    | M10×1.25 | 12    | 13.2 max | 36.2 max |  | 23    | 0.6   | 4   | 16                     | 13.8                            | 5 430                        | 6 890                       | 6 890                               | 2 030             |
| 12               | CF 12 WBUUR/SG        | 95             | 30                     | 14  | 12    | M12×1.5  | 13    | 15.2 max | 40.2 max |  | 25    | 0.6   | 6   | 21                     | 21.9                            | 7 910                        | 9 790                       | 9 790                               | 2 470             |
|                  | CF 12-1 WBUUR/SG      | 105            | 32                     | 14  | 12    | M12×1.5  | 13    | 15.2 max | 40.2 max |  | 25    | 0.6   | 6   | 21                     | 21.9                            | 7 910                        | 9 790                       | 9 790                               | 2 710             |
| 16               | CF 16 WBUUR/SG        | 170            | 35                     | 18  | 16    | M16×1.5  | 17    | 19.6 max | 52.1 max |  | 32.5  | 0.8   | 6   | 26                     | 58.5                            | 12 000                       | 18 300                      | 18 300                              | 3 060             |
| 18               | CF 18 WBUUR/SG        | 250            | 40                     | 20  | 18    | M18×1.5  | 19    | 21.6 max | 58.1 max |  | 36.5  | 0.8   | 8   | 29                     | 86.2                            | 14 800                       | 25 200                      | 25 200                              | 3 660             |
| 20               | CF 20 WBUUR/SG        | 460            | 52                     | 24  | 20    | M20×1.5  | 21    | 25.6 max | 66.1 max |  | 40.5  | 0.8   | 8   | 34                     | 119                             | 20 700                       | 34 600                      | 34 600                              | 5 190             |
|                  | CF 20-1 WBUUR/SG      | 385            | 47                     | 24  | 20    | M20×1.5  | 21    | 25.6 max | 66.1 max |  | 40.5  | 0.8   | 8   | 34                     | 119                             | 20 700                       | 34 600                      | 34 600                              | 4 530             |

Remark This bearing cannot be re-lubricated as thermosetting solid-type lubricant C-Lube fills its inner space.

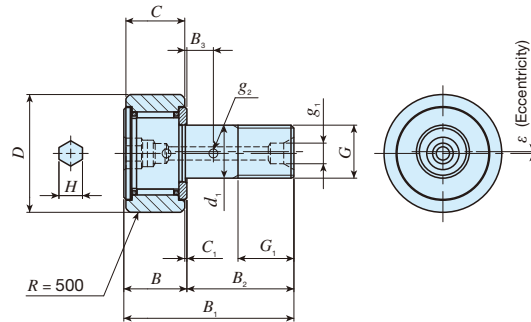
Selectable product specifications

|                                     |           |                                                                                                          |
|-------------------------------------|-----------|----------------------------------------------------------------------------------------------------------|
| Type of material                    | No symbol |  High carbon steel      |
|                                     | F         |  Stainless steel        |
| Roller guide method                 | No symbol |  With cage              |
|                                     | V         |  Full complement        |
| Seal structure                      | No symbol |  Shield type            |
|                                     | UU        |  Sealed type            |
| Shape of outer ring outside surface | No symbol |  Cylindrical outer ring |
|                                     | R         |  Crowned outer ring     |



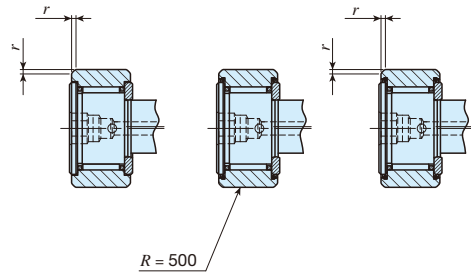
CFES...BR

Stud dia.  $d_1$  6 to 10 mm <sup>(1)</sup>

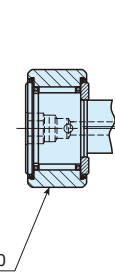


CFES...BR

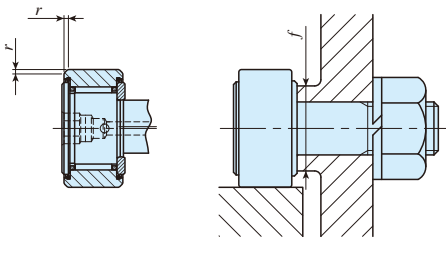
Stud dia.  $d_1$  12 to 18 mm <sup>(2)</sup>



CFES...B



CFES...BUUR



CFES...BUU

| Stud<br>diameter | Identification number |                           |                       |                           | Mass<br>(Ref.) | Boundary dimensions mm |     |       |          |       |           |           |           |       |       |       |       |       |                  |                  |                   |                   | Mounting<br>dimensions | Maximum<br>tightening<br>torque | Basic<br>dynamic<br>load rating | Basic<br>static<br>load rating | Maximum<br>allowable<br>static load | Track<br>capacity         |   |   |                       |                           |
|------------------|-----------------------|---------------------------|-----------------------|---------------------------|----------------|------------------------|-----|-------|----------|-------|-----------|-----------|-----------|-------|-------|-------|-------|-------|------------------|------------------|-------------------|-------------------|------------------------|---------------------------------|---------------------------------|--------------------------------|-------------------------------------|---------------------------|---|---|-----------------------|---------------------------|
|                  | Shield type           |                           | Sealed type           |                           |                | $D$                    | $C$ | $d_1$ | $G$      | $G_1$ | $B_{max}$ | $B_{max}$ | $B_2$     | $B_3$ | $C_1$ | $g_1$ | $g_2$ | $H$   | $r_{smin}^{(3)}$ | $\varepsilon$    | $f$<br>Min.<br>mm | N·m               |                        |                                 |                                 |                                |                                     | N                         | N | N | N                     |                           |
|                  |                       |                           |                       |                           |                |                        |     |       |          |       |           |           |           |       |       |       |       |       |                  |                  |                   |                   |                        |                                 |                                 |                                |                                     |                           |   |   | Crowned<br>outer ring | Cylindrical<br>outer ring |
| mm               | Crowned<br>outer ring | Cylindrical<br>outer ring | Crowned<br>outer ring | Cylindrical<br>outer ring | g              | $D$                    | $C$ | $d_1$ | $G$      | $G_1$ |           | $B_{max}$ | $B_{max}$ | $B_2$ | $B_3$ | $C_1$ | $g_1$ | $g_2$ | $H$              | $r_{smin}^{(3)}$ | $\varepsilon$     | $f$<br>Min.<br>mm | N·m                    | N                               | N                               | N                              | Crowned<br>outer ring               | Cylindrical<br>outer ring |   |   |                       |                           |
| 6                | CFES 6 BR             | CFES 6 B                  | CFES 6 BUUR           | CFES 6 BUU                | 18.5           | 16                     | 11  | 6     | M 6×1    | 8     |           | 12.2      | 28.2      | 16    | —     | 0.6   | —     | —     | 3                | 0.3              | 0.25              | 11                | 2.7                    | 3 660                           | 3 650                           | 1 980                          | 1 040                               | 3 400                     |   |   |                       |                           |
| 8                | CFES 8 BR             | CFES 8 B                  | CFES 8 BUUR           | CFES 8 BUU                | 28.5           | 19                     | 11  | 8     | M 8×1.25 | 10    |           | 12.2      | 32.2      | 20    | —     | 0.6   | —     | —     | 4                | 0.3              | 0.25              | 13                | 6.5                    | 4 250                           | 4 740                           | 4 670                          | 1 330                               | 4 040                     |   |   |                       |                           |
| 10               | CFES 10 BR            | CFES 10 B                 | CFES 10 BUUR          | CFES 10 BUU               | 45             | 22                     | 12  | 10    | M10×1.25 | 12    |           | 13.2      | 36.2      | 23    | —     | 0.6   | —     | —     | 4                | 0.3              | 0.3               | 16                | 13.8                   | 5 430                           | 6 890                           | 6 890                          | 1 610                               | 4 680                     |   |   |                       |                           |
|                  | CFES 10-1 BR          | CFES 10-1 B               | CFES 10-1 BUUR        | CFES 10-1 BUU             | 60             | 26                     | 12  | 10    | M10×1.25 | 12    |           | 13.2      | 36.2      | 23    | —     | 0.6   | —     | —     | 4                | 0.3              | 0.3               | 16                | 13.8                   | 5 430                           | 6 890                           | 6 890                          | 2 030                               | 5 530                     |   |   |                       |                           |
| 12               | CFES 12 BR            | CFES 12 B                 | CFES 12 BUUR          | CFES 12 BUU               | 95             | 30                     | 14  | 12    | M12×1.5  | 13    |           | 15.2      | 40.2      | 25    | 6     | 0.6   | 4     | 3     | 6                | 0.6              | 0.4               | 21                | 21.9                   | 7 910                           | 9 790                           | 9 790                          | 2 470                               | 7 010                     |   |   |                       |                           |
|                  | CFES 12-1 BR          | CFES 12-1 B               | CFES 12-1 BUUR        | CFES 12-1 BUU             | 105            | 32                     | 14  | 12    | M12×1.5  | 13    |           | 15.2      | 40.2      | 25    | 6     | 0.6   | 4     | 3     | 6                | 0.6              | 0.4               | 21                | 21.9                   | 7 910                           | 9 790                           | 9 790                          | 2 710                               | 7 480                     |   |   |                       |                           |
| 16               | CFES 16 BR            | CFES 16 B                 | CFES 16 BUUR          | CFES 16 BUU               | 170            | 35                     | 18  | 16    | M16×1.5  | 17    |           | 19.6      | 52.1      | 32.5  | 8     | 0.8   | 4     | 3     | 6                | 0.6              | 0.5               | 26                | 58.5                   | 12 000                          | 18 300                          | 18 300                         | 3 060                               | 11 200                    |   |   |                       |                           |
| 18               | CFES 18 BR            | CFES 18 B                 | CFES 18 BUUR          | CFES 18 BUU               | 250            | 40                     | 20  | 18    | M18×1.5  | 19    |           | 21.6      | 58.1      | 36.5  | 8     | 0.8   | 6     | 3     | 8                | 1                | 0.6               | 29                | 86.2                   | 14 800                          | 25 200                          | 25 200                         | 3 660                               | 14 500                    |   |   |                       |                           |

Note <sup>(1)</sup> An oil hole (re-greasing fitting) is provided for the stud head.

Note <sup>(2)</sup> An oil hole (grease nipple) is provided for the stud head and an oil hole is provided for the outside surface and the end of the stud.

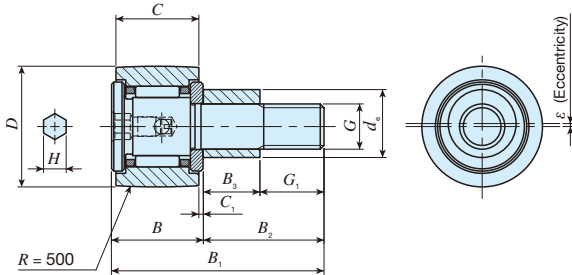
Note <sup>(3)</sup> Minimum allowable value of chamfer dimension  $r$ .

Remark Grease is pre-packed if the stud diameter  $d_1$  of the shield type is 10 mm or less or if the seal structure is the sealed type. Other models are not provided with pre-packed grease. Perform proper lubrication for use.



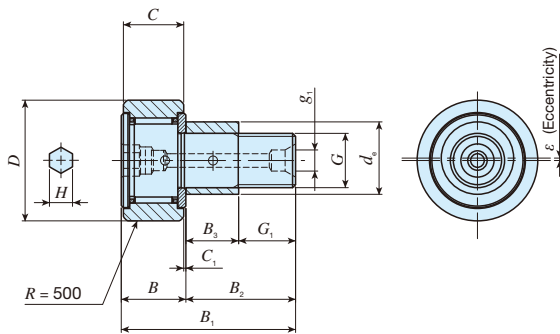
Selectable product specifications

|                                     |           |                        |
|-------------------------------------|-----------|------------------------|
| Type of material                    | No symbol | High carbon steel      |
|                                     | F         | Stainless steel        |
| Roller guide method                 | No symbol | With cage              |
|                                     | V         | Full complement        |
| Seal structure                      | No symbol | Shield type            |
|                                     | UU        | Sealed type            |
| Shape of outer ring outside surface | No symbol | Cylindrical outer ring |
|                                     | R         | Crowned outer ring     |



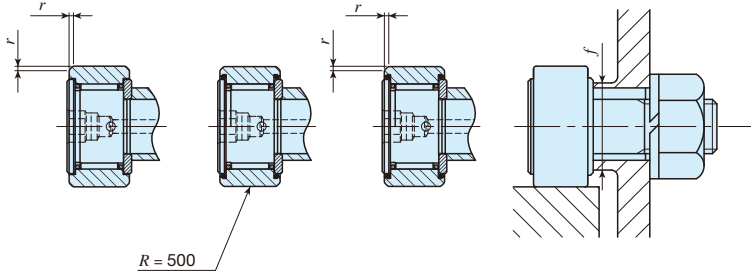
CFE...BR

Outside diameter of eccentric collar  $d_e$  9 to 13 mm <sup>(1)</sup>



CFE...BR

Outside diameter of eccentric collar  $d_e$  16 to 41 mm <sup>(2)</sup>



CFE...B

CFE...BUUR

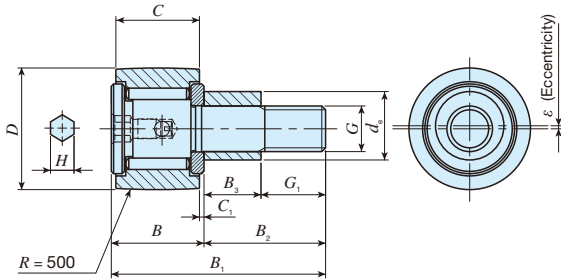
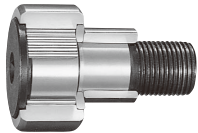
CFE...BUU

| Outside diameter of eccentric collar mm | Identification number |                        |                    |                        | Mass (Ref.)<br><br>g | Boundary dimensions mm |    |                |          |                |                  |                   |                |                |                |                |      |                                   |     |                    | Eccentricity<br><br>$\varepsilon$ | Mounting dimensions<br><br>$f$ Min. mm | Maximum tightening torque<br><br>N·m | Basic dynamic load rating<br><br>C<br><br>N | Basic static load rating<br><br>C <sub>0</sub><br><br>N | Maximum allowable static load<br><br>N | Track capacity         |  |
|-----------------------------------------|-----------------------|------------------------|--------------------|------------------------|----------------------|------------------------|----|----------------|----------|----------------|------------------|-------------------|----------------|----------------|----------------|----------------|------|-----------------------------------|-----|--------------------|-----------------------------------|----------------------------------------|--------------------------------------|---------------------------------------------|---------------------------------------------------------|----------------------------------------|------------------------|--|
|                                         | Shield type           |                        | Sealed type        |                        |                      | D                      | C  | d <sub>e</sub> | G        | B <sub>3</sub> | B <sub>max</sub> | B <sub>1max</sub> | B <sub>2</sub> | C <sub>1</sub> | g <sub>1</sub> | G <sub>1</sub> | H    | r <sub>s min</sub> <sup>(3)</sup> | N   | Crowned outer ring |                                   |                                        |                                      |                                             |                                                         |                                        | Cylindrical outer ring |  |
|                                         | Crowned outer ring    | Cylindrical outer ring | Crowned outer ring | Cylindrical outer ring |                      |                        |    |                |          |                |                  |                   |                |                |                |                |      |                                   |     |                    |                                   |                                        |                                      |                                             |                                                         |                                        |                        |  |
|                                         |                       |                        |                    |                        |                      |                        |    |                |          |                |                  |                   |                |                |                |                |      |                                   |     |                    |                                   |                                        |                                      |                                             |                                                         |                                        |                        |  |
| 9                                       | CFE 6 BR              | CFE 6 B                | CFE 6 BUUR         | CFE 6 BUU              | 20.5                 | 16                     | 11 | 9              | M 6×1    | 7.5            |                  | 12.2              | 28.2           | 16             | 0.6            | —              | 8.5  | 3                                 | 0.3 | 0.4                | 11                                | 2.7                                    | 3 660                                | 3 650                                       | 1 950                                                   | 1 040                                  | 3 400                  |  |
| 11                                      | CFE 8 BR              | CFE 8 B                | CFE 8 BUUR         | CFE 8 BUU              | 32                   | 19                     | 11 | 11             | M 8×1.25 | 9.5            |                  | 12.2              | 32.2           | 20             | 0.6            | —              | 10.5 | 4                                 | 0.3 | 0.4                | 13                                | 6.5                                    | 4 250                                | 4 740                                       | 4 620                                                   | 1 330                                  | 4 040                  |  |
| 13                                      | CFE 10 BR             | CFE 10 B               | CFE 10 BUUR        | CFE 10 BUU             | 49.5                 | 22                     | 12 | 13             | M10×1.25 | 10.5           |                  | 13.2              | 36.2           | 23             | 0.6            | —              | 12.5 | 4                                 | 0.3 | 0.4                | 16                                | 13.8                                   | 5 430                                | 6 890                                       | 6 890                                                   | 1 610                                  | 4 680                  |  |
|                                         | CFE 10-1 BR           | CFE 10-1 B             | CFE 10-1 BUUR      | CFE 10-1 BUU           | 65                   | 26                     | 12 | 13             | M10×1.25 | 10.5           |                  | 13.2              | 36.2           | 23             | 0.6            | —              | 12.5 | 4                                 | 0.3 | 0.4                | 16                                | 13.8                                   | 5 430                                | 6 890                                       | 6 890                                                   | 2 030                                  | 5 530                  |  |
| 16                                      | CFE 12 BR             | CFE 12 B               | CFE 12 BUUR        | CFE 12 BUU             | 105                  | 30                     | 14 | 16             | M12×1.5  | 11.5           |                  | 15.2              | 40.2           | 25             | 0.6            | 4              | 13.5 | 6                                 | 0.6 | 0.8                | 21                                | 21.9                                   | 7 910                                | 9 790                                       | 9 790                                                   | 2 470                                  | 7 010                  |  |
|                                         | CFE 12-1 BR           | CFE 12-1 B             | CFE 12-1 BUUR      | CFE 12-1 BUU           | 115                  | 32                     | 14 | 16             | M12×1.5  | 11.5           |                  | 15.2              | 40.2           | 25             | 0.6            | 4              | 13.5 | 6                                 | 0.6 | 0.8                | 21                                | 21.9                                   | 7 910                                | 9 790                                       | 9 790                                                   | 2 710                                  | 7 480                  |  |
| 22                                      | CFE 16 BR             | CFE 16 B               | CFE 16 BUUR        | CFE 16 BUU             | 190                  | 35                     | 18 | 22             | M16×1.5  | 15.5           |                  | 19.6              | 52.1           | 32.5           | 0.8            | 4              | 17   | 6                                 | 0.6 | 0.8                | 26                                | 58.5                                   | 12 000                               | 18 300                                      | 18 300                                                  | 3 060                                  | 11 200                 |  |
| 24                                      | CFE 18 BR             | CFE 18 B               | CFE 18 BUUR        | CFE 18 BUU             | 280                  | 40                     | 20 | 24             | M18×1.5  | 17.5           |                  | 21.6              | 58.1           | 36.5           | 0.8            | 6              | 19   | 8                                 | 1   | 0.8                | 29                                | 86.2                                   | 14 800                               | 25 200                                      | 25 200                                                  | 3 660                                  | 14 500                 |  |
| 27                                      | CFE 20 BR             | CFE 20 B               | CFE 20 BUUR        | CFE 20 BUU             | 500                  | 52                     | 24 | 27             | M20×1.5  | 19.5           |                  | 25.6              | 66.1           | 40.5           | 0.8            | 6              | 21   | 8                                 | 1   | 0.8                | 34                                | 119                                    | 20 700                               | 34 600                                      | 34 600                                                  | 5 190                                  | 23 200                 |  |
|                                         | CFE 20-1 BR           | CFE 20-1 B             | CFE 20-1 BUUR      | CFE 20-1 BUU           | 425                  | 47                     | 24 | 27             | M20×1.5  | 19.5           |                  | 25.6              | 66.1           | 40.5           | 0.8            | 6              | 21   | 8                                 | 1   | 0.8                | 34                                | 119                                    | 20 700                               | 34 600                                      | 34 600                                                  | 4 530                                  | 21 000                 |  |
| 33                                      | CFE 24 BR             | CFE 24 B               | CFE 24 BUUR        | CFE 24 BUU             | 895                  | 62                     | 29 | 33             | M24×1.5  | 25.5           |                  | 30.6              | 80.1           | 49.5           | 0.8            | 6              | 24   | 12                                | 1   | 0.8                | 40                                | 215                                    | 30 500                               | 52 600                                      | 52 000                                                  | 6 580                                  | 34 300                 |  |
|                                         | CFE 24-1 BR           | CFE 24-1 B             | CFE 24-1 BUUR      | CFE 24-1 BUU           | 1 220                | 72                     | 29 | 33             | M24×1.5  | 25.5           |                  | 30.6              | 80.1           | 49.5           | 0.8            | 6              | 24   | 12                                | 1   | 0.8                | 40                                | 215                                    | 30 500                               | 52 600                                      | 52 000                                                  | 8 020                                  | 39 800                 |  |
| 41                                      | CFE 30 BR             | CFE 30 B               | CFE 30 BUUR        | CFE 30 BUU             | 2 030                | 80                     | 35 | 41             | M30×1.5  | 32.5           |                  | 37                | 100            | 63             | 1              | 6              | 30.5 | 17                                | 1   | 1.5                | 49                                | 438                                    | 45 400                               | 85 100                                      | 85 100                                                  | 9 220                                  | 52 700                 |  |
|                                         | CFE 30-1 BR           | CFE 30-1 B             | CFE 30-1 BUUR      | CFE 30-1 BUU           | 2 190                | 85                     | 35 | 41             | M30×1.5  | 32.5           |                  | 37                | 100            | 63             | 1              | 6              | 30.5 | 17                                | 1   | 1.5                | 49                                | 438                                    | 45 400                               | 85 100                                      | 85 100                                                  | 9 990                                  | 56 000                 |  |
|                                         | CFE 30-2 BR           | CFE 30-2 B             | CFE 30-2 BUUR      | CFE 30-2 BUU           | 2 380                | 90                     | 35 | 41             | M30×1.5  | 32.5           |                  | 37                | 100            | 63             | 1              | 6              | 30.5 | 17                                | 1   | 1.5                | 49                                | 438                                    | 45 400                               | 85 100                                      | 85 100                                                  | 10 800                                 | 59 300                 |  |

Note <sup>(1)</sup> An oil hole (re-greasing fitting) is provided for the stud head.  
<sup>(2)</sup> An oil hole (grease nipple) is provided for the stud head and an oil hole is provided for the outside surface and the end of the stud.  
<sup>(3)</sup> Minimum allowable value of chamfer dimension  $r$ .  
Remark Grease is pre-packed if the stud thread diameter  $G$  of the shield type is 10 mm or less or if the seal structure is the sealed type. Other models are not provided with pre-packed grease. Perform proper lubrication for use.

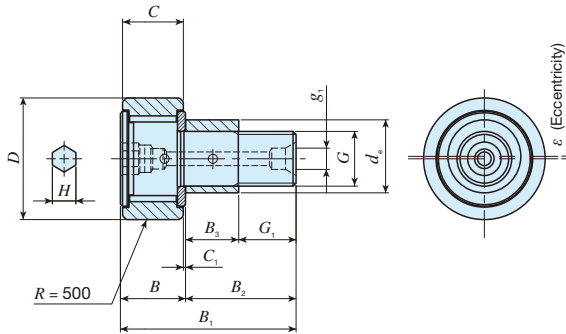
Selectable product specifications

|                                     |           |                        |
|-------------------------------------|-----------|------------------------|
| Type of material                    | No symbol | High carbon steel      |
|                                     | F         | Stainless steel        |
| Roller guide method                 | No symbol | With cage              |
|                                     | V         | Full complement        |
| Seal structure                      | No symbol | Shield type            |
|                                     | UU        | Sealed type            |
| Shape of outer ring outside surface | No symbol | Cylindrical outer ring |
|                                     | R         | Crowned outer ring     |



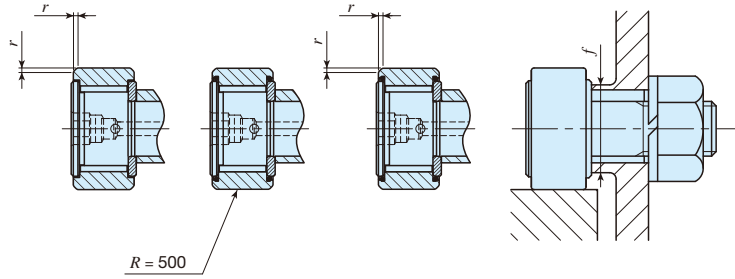
CFE...VBR

Outside diameter of eccentric collar  $d_e$  9 to 13 mm <sup>(1)</sup>



CFE...VBR

Outside diameter of eccentric collar  $d_e$  16 to 41 mm <sup>(2)</sup>



CFE...VB

CFE...VBUUR

CFE...VBUU

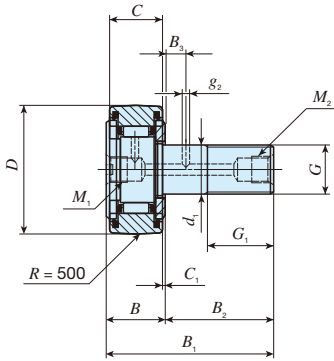
| Outside diameter of eccentric collar mm | Identification number |             |                |               | Mass (Ref.)<br><br>g | Boundary dimensions mm |    |                |          |                |  |                  |                   |                |                |                |                |    |                                   |     | Eccentricity<br><br>$\varepsilon$ | Mounting dimensions<br><br>$f$ Min. mm | Maximum tightening torque<br><br>N·m | Basic dynamic load rating<br><br>C<br><br>N | Basic static load rating<br><br>C <sub>0</sub><br><br>N | Maximum allowable static load<br><br>N | Track capacity     |                        |
|-----------------------------------------|-----------------------|-------------|----------------|---------------|----------------------|------------------------|----|----------------|----------|----------------|--|------------------|-------------------|----------------|----------------|----------------|----------------|----|-----------------------------------|-----|-----------------------------------|----------------------------------------|--------------------------------------|---------------------------------------------|---------------------------------------------------------|----------------------------------------|--------------------|------------------------|
|                                         | Shield type           |             | Sealed type    |               |                      | D                      | C  | d <sub>e</sub> | G        | B <sub>3</sub> |  | B <sub>max</sub> | B <sub>1max</sub> | B <sub>2</sub> | C <sub>1</sub> | g <sub>1</sub> | G <sub>1</sub> | H  | r <sub>s min</sub> <sup>(3)</sup> | N   |                                   |                                        |                                      |                                             |                                                         |                                        | Crowned outer ring | Cylindrical outer ring |
|                                         |                       |             |                |               |                      |                        |    |                |          |                |  |                  |                   |                |                |                |                |    |                                   |     |                                   |                                        |                                      |                                             |                                                         |                                        |                    |                        |
|                                         |                       |             |                |               |                      |                        |    |                |          |                |  |                  |                   |                |                |                |                |    |                                   |     |                                   |                                        |                                      |                                             |                                                         |                                        |                    |                        |
| 9                                       | CFE 6 VBR             | CFE 6 VB    | CFE 6 VBUUR    | CFE 6 VBUU    | 21                   | 16                     | 11 | 9              | M 6×1    | 7.5            |  | 12.2             | 28.2              | 16             | 0.6            | —              | 8.5            | 3  | 0.3                               | 0.4 | 11                                | 2.7                                    | 6 980                                | 8 500                                       | 1 950                                                   | 1 040                                  | 3 400              |                        |
| 11                                      | CFE 8 VBR             | CFE 8 VB    | CFE 8 VBUUR    | CFE 8 VBUU    | 32.5                 | 19                     | 11 | 11             | M 8×1.25 | 9.5            |  | 12.2             | 32.2              | 20             | 0.6            | —              | 10.5           | 4  | 0.3                               | 0.4 | 13                                | 6.5                                    | 8 170                                | 11 200                                      | 4 620                                                   | 1 330                                  | 4 040              |                        |
| 13                                      | CFE 10 VBR            | CFE 10 VB   | CFE 10 VBUUR   | CFE 10 VBUU   | 50.5                 | 22                     | 12 | 13             | M10×1.25 | 10.5           |  | 13.2             | 36.2              | 23             | 0.6            | —              | 12.5           | 4  | 0.3                               | 0.4 | 16                                | 13.8                                   | 9 570                                | 14 500                                      | 8 650                                                   | 1 610                                  | 4 680              |                        |
|                                         | CFE 10-1 VBR          | CFE 10-1 VB | CFE 10-1 VBUUR | CFE 10-1 VBUU | 66                   | 26                     | 12 | 13             | M10×1.25 | 10.5           |  | 13.2             | 36.2              | 23             | 0.6            | —              | 12.5           | 4  | 0.3                               | 0.4 | 16                                | 13.8                                   | 9 570                                | 14 500                                      | 8 650                                                   | 2 030                                  | 5 530              |                        |
| 16                                      | CFE 12 VBR            | CFE 12 VB   | CFE 12 VBUUR   | CFE 12 VBUU   | 107                  | 30                     | 14 | 16             | M12×1.5  | 11.5           |  | 15.2             | 40.2              | 25             | 0.6            | 4              | 13.5           | 6  | 0.6                               | 0.4 | 21                                | 21.9                                   | 13 500                               | 19 700                                      | 13 200                                                  | 2 470                                  | 7 010              |                        |
|                                         | CFE 12-1 VBR          | CFE 12-1 VB | CFE 12-1 VBUUR | CFE 12-1 VBUU | 117                  | 32                     | 14 | 16             | M12×1.5  | 11.5           |  | 15.2             | 40.2              | 25             | 0.6            | 4              | 13.5           | 6  | 0.6                               | 0.4 | 21                                | 21.9                                   | 13 500                               | 19 700                                      | 13 200                                                  | 2 710                                  | 7 480              |                        |
| 22                                      | CFE 16 VBR            | CFE 16 VB   | CFE 16 VBUUR   | CFE 16 VBUU   | 193                  | 35                     | 18 | 22             | M16×1.5  | 15.5           |  | 19.6             | 52.1              | 32.5           | 0.8            | 4              | 17             | 6  | 0.6                               | 0.8 | 26                                | 58.5                                   | 20 700                               | 37 600                                      | 23 200                                                  | 3 060                                  | 11 200             |                        |
| 24                                      | CFE 18 VBR            | CFE 18 VB   | CFE 18 VBUUR   | CFE 18 VBUU   | 285                  | 40                     | 20 | 24             | M18×1.5  | 17.5           |  | 21.6             | 58.1              | 36.5           | 0.8            | 6              | 19             | 8  | 1                                 | 0.8 | 29                                | 86.2                                   | 25 300                               | 51 300                                      | 31 100                                                  | 3 660                                  | 14 500             |                        |
| 27                                      | CFE 20 VBR            | CFE 20 VB   | CFE 20 VBUUR   | CFE 20 VBUU   | 505                  | 52                     | 24 | 27             | M20×1.5  | 19.5           |  | 25.6             | 66.1              | 40.5           | 0.8            | 6              | 21             | 8  | 1                                 | 0.8 | 34                                | 119                                    | 33 200                               | 64 500                                      | 37 500                                                  | 5 190                                  | 23 200             |                        |
|                                         | CFE 20-1 VBR          | CFE 20-1 VB | CFE 20-1 VBUUR | CFE 20-1 VBUU | 430                  | 47                     | 24 | 27             | M20×1.5  | 19.5           |  | 25.6             | 66.1              | 40.5           | 0.8            | 6              | 21             | 8  | 1                                 | 0.8 | 34                                | 119                                    | 33 200                               | 64 500                                      | 37 500                                                  | 4 530                                  | 21 000             |                        |
| 33                                      | CFE 24 VBR            | CFE 24 VB   | CFE 24 VBUUR   | CFE 24 VBUU   | 900                  | 62                     | 29 | 33             | M24×1.5  | 25.5           |  | 30.6             | 80.1              | 49.5           | 0.8            | 6              | 24             | 12 | 1                                 | 0.8 | 40                                | 215                                    | 46 600                               | 92 000                                      | 52 000                                                  | 6 580                                  | 34 300             |                        |
|                                         | CFE 24-1 VBR          | CFE 24-1 VB | CFE 24-1 VBUUR | CFE 24-1 VBUU | 1 220                | 72                     | 29 | 33             | M24×1.5  | 25.5           |  | 30.6             | 80.1              | 49.5           | 0.8            | 6              | 24             | 12 | 1                                 | 0.8 | 40                                | 215                                    | 46 600                               | 92 000                                      | 52 000                                                  | 8 020                                  | 39 800             |                        |
| 41                                      | CFE 30 VBR            | CFE 30 VB   | CFE 30 VBUUR   | CFE 30 VBUU   | 2 030                | 80                     | 35 | 41             | M30×1.5  | 32.5           |  | 37               | 100               | 63             | 1              | 6              | 30.5           | 17 | 1                                 | 1.5 | 49                                | 438                                    | 67 700                               | 144 000                                     | 85 900                                                  | 9 220                                  | 52 700             |                        |
|                                         | CFE 30-1 VBR          | CFE 30-1 VB | CFE 30-1 VBUUR | CFE 30-1 VBUU | 2 190                | 85                     | 35 | 41             | M30×1.5  | 32.5           |  | 37               | 100               | 63             | 1              | 6              | 30.5           | 17 | 1                                 | 1.5 | 49                                | 438                                    | 67 700                               | 144 000                                     | 85 900                                                  | 9 990                                  | 56 000             |                        |
|                                         | CFE 30-2 VBR          | CFE 30-2 VB | CFE 30-2 VBUUR | CFE 30-2 VBUU | 2 380                | 90                     | 35 | 41             | M30×1.5  | 32.5           |  | 37               | 100               | 63             | 1              | 6              | 30.5           | 17 | 1                                 | 1.5 | 49                                | 438                                    | 67 700                               | 144 000                                     | 85 900                                                  | 10 800                                 | 59 300             |                        |

Note <sup>(1)</sup> An oil hole (re-greasing fitting) is provided for the stud head.  
<sup>(2)</sup> An oil hole (grease nipple) is provided for the stud head and an oil hole is provided for the outside surface and the end of the stud.  
<sup>(3)</sup> Minimum allowable value of chamfer dimension  $r$ .  
 Remark Provided with pre-packed grease.

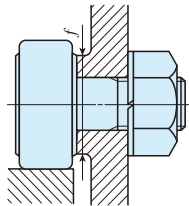
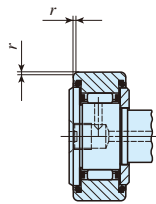


Selectable product specifications

|                                     |           |                        |
|-------------------------------------|-----------|------------------------|
| Type of material                    | No symbol | High carbon steel      |
|                                     | F         | Stainless steel        |
| Roller guide method                 | No symbol | With cage              |
|                                     | V         | Full complement        |
| Seal structure                      | No symbol | Shield type            |
|                                     | No symbol | Sealed type            |
| Shape of outer ring outside surface | FU1       | Cylindrical outer ring |
|                                     | RU1       | Crowned outer ring     |



CF-RU1



CF-FU1

| Stud diameter<br><br>mm | Identification number |                           | Mass<br>(Ref.)<br><br>g | Boundary dimensions mm |    |                |          |                |                  |                   |  |                |                |                |                |                |                |                                   |                       | Mounting<br>dimensions<br><br>$f$<br>Min.<br>mm | Maximum<br>tightening<br>torque<br><br>N·m | Basic<br>dynamic<br>load rating<br><br>C | Basic<br>static<br>load rating<br><br>C <sub>0</sub> | Maximum<br>allowable<br>static load<br><br>N | Track<br>capacity         |       |        |
|-------------------------|-----------------------|---------------------------|-------------------------|------------------------|----|----------------|----------|----------------|------------------|-------------------|--|----------------|----------------|----------------|----------------|----------------|----------------|-----------------------------------|-----------------------|-------------------------------------------------|--------------------------------------------|------------------------------------------|------------------------------------------------------|----------------------------------------------|---------------------------|-------|--------|
|                         | Crowned<br>outer ring | Cylindrical<br>outer ring |                         | D                      | C  | d <sub>1</sub> | G        | G <sub>1</sub> | B <sub>max</sub> | B <sub>1max</sub> |  | B <sub>2</sub> | B <sub>3</sub> | C <sub>1</sub> | g <sub>2</sub> | M <sub>1</sub> | M <sub>2</sub> | r <sub>s min</sub> <sup>(1)</sup> | N                     |                                                 |                                            |                                          |                                                      |                                              |                           |       |        |
|                         |                       |                           |                         |                        |    |                |          |                |                  |                   |  |                |                |                |                |                |                |                                   | Crowned<br>outer ring |                                                 |                                            |                                          |                                                      |                                              | Cylindrical<br>outer ring |       |        |
| 6                       | CF-RU1- 6             | CF-FU1- 6                 | 18.5                    | 16                     | 11 | 6              | M 6×1    | 8              | 12.2             | 28.2              |  | 16             | —              | 0.6            | —              | M6×0.75        | —              | 0.3                               | 11                    | 2.7                                             | 3 660                                      | 3 650                                    | 1 950                                                | 1 040                                        | 3 400                     |       |        |
| 8                       | CF-RU1- 8             | CF-FU1- 8                 | 28.5                    | 19                     | 11 | 8              | M 8×1.25 | 10             | 12.2             | 32.2              |  | 20             | —              | 0.6            | —              |                |                | 0.3                               | 13                    | 6.5                                             | 4 250                                      | 4 740                                    | 4 620                                                | 1 330                                        | 4 040                     |       |        |
| 10                      | CF-RU1-10             | CF-FU1-10                 | 45                      | 22                     | 12 | 10             | M10×1.25 | 12             | 13.2             | 36.2              |  | 23             | —              | 0.6            | —              |                |                | 0.3                               | 16                    | 13.8                                            | 5 430                                      | 6 890                                    | 6 890                                                | 1 610                                        | 4 680                     |       |        |
|                         | CF-RU1-10-1           | CF-FU1-10-1               | 60                      | 26                     | 12 | 10             | M10×1.25 | 12             | 13.2             | 36.2              |  | 23             | —              | 0.6            | —              |                |                | 0.3                               | 16                    | 13.8                                            | 5 430                                      | 6 890                                    | 6 890                                                | 2 030                                        | 5 530                     |       |        |
| 12                      | CF-RU1-12             | CF-FU1-12                 | 95                      | 30                     | 14 | 12             | M12×1.5  | 13             | 15.2             | 40.2              |  | 25             | —              | 0.6            | —              | PT 1/8         | PT 1/8         | 0.6                               | 21                    | 23.9                                            | 7 910                                      | 9 790                                    | 9 790                                                | 2 470                                        | 7 010                     |       |        |
|                         | CF-RU1-12-1           | CF-FU1-12-1               | 105                     | 32                     | 14 | 12             | M12×1.5  | 13             | 15.2             | 40.2              |  | 25             | —              | 0.6            | —              |                |                | 0.6                               | 21                    | 23.9                                            | 7 910                                      | 9 790                                    | 9 790                                                | 2 710                                        | 7 480                     |       |        |
| 16                      | CF-RU1-16             | CF-FU1-16                 | 170                     | 35                     | 18 | 16             | M16×1.5  | 17             | 19.6             | 52.1              |  | 32.5           | 8              | 0.8            | 3              |                |                | PT 1/8                            | PT 1/8                | 0.6                                             | 26                                         | 58.5                                     | 12 000                                               | 18 300                                       | 18 300                    | 3 060 | 11 200 |
| 18                      | CF-RU1-18             | CF-FU1-18                 | 250                     | 40                     | 20 | 18             | M18×1.5  | 19             | 21.6             | 58.1              |  | 36.5           | 8              | 0.8            | 3              |                |                |                                   |                       | 1                                               | 29                                         | 86.2                                     | 14 800                                               | 25 200                                       | 25 200                    | 3 660 | 14 500 |
| 20                      | CF-RU1-20             | CF-FU1-20                 | 460                     | 52                     | 24 | 20             | M20×1.5  | 21             | 25.6             | 66.1              |  | 40.5           | 9              | 0.8            | 4              | 1              | 34             |                                   |                       | 119.0                                           | 20 700                                     | 34 600                                   | 34 600                                               | 5 190                                        | 23 200                    |       |        |
|                         | CF-RU1-20-1           | CF-FU1-20-1               | 385                     | 47                     | 24 | 20             | M20×1.5  | 21             | 25.6             | 66.1              |  | 40.5           | 9              | 0.8            | 4              | 1              | 34             |                                   |                       | 119                                             | 20 700                                     | 34 600                                   | 34 600                                               | 4 530                                        | 21 000                    |       |        |
| 24                      | CF-RU1-24             | CF-FU1-24                 | 815                     | 62                     | 29 | 24             | M24×1.5  | 25             | 30.6             | 80.1              |  | 49.5           | 11             | 0.8            | 4              | PT 1/8         | PT 1/8         | 1                                 | 40                    | 215                                             | 30 500                                     | 52 600                                   | 52 000                                               | 6 580                                        | 34 300                    |       |        |
|                         | CF-RU1-24-1           | CF-FU1-24-1               | 1 140                   | 72                     | 29 | 24             | M24×1.5  | 25             | 30.6             | 80.1              |  | 49.5           | 11             | 0.8            | 4              |                |                | 1                                 | 40                    | 215                                             | 30 500                                     | 52 600                                   | 52 000                                               | 8 020                                        | 39 800                    |       |        |
| 30                      | CF-RU1-30             | CF-FU1-30                 | 1 870                   | 80                     | 35 | 30             | M30×1.5  | 32             | 37               | 100               |  | 63             | 15             | 1              | 4              |                |                | PT 1/8                            | PT 1/8                | 1                                               | 49                                         | 438                                      | 45 400                                               | 85 100                                       | 85 100                    | 9 220 | 52 700 |
|                         | CF-RU1-30-1           | CF-FU1-30-1               | 2 030                   | 85                     | 35 | 30             | M30×1.5  | 32             | 37               | 100               |  | 63             | 15             | 1              | 4              |                |                |                                   |                       | 1                                               | 49                                         | 438                                      | 45 400                                               | 85 100                                       | 85 100                    | 9 990 | 56 000 |
|                         | CF-RU1-30-2           | CF-FU1-30-2               | 2 220                   | 90                     | 35 | 30             | M30×1.5  | 32             | 37               | 100               |  | 63             | 15             | 1              | 4              | 1              | 49             |                                   |                       | 438                                             | 45 400                                     | 85 100                                   | 85 100                                               | 10 800                                       | 59 300                    |       |        |

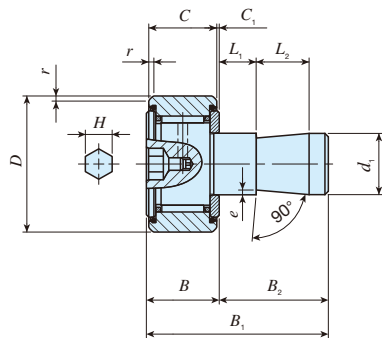
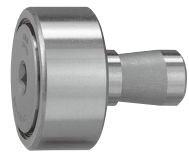
Note (1) Minimum allowable value of chamfer dimension r.

Remarks 1. A tapped hole for piping is provided only for the stud head if the stud diameter d<sub>1</sub> is 12 mm or less. As for the others, a tapped hole for piping is provided for the stud head and the end.

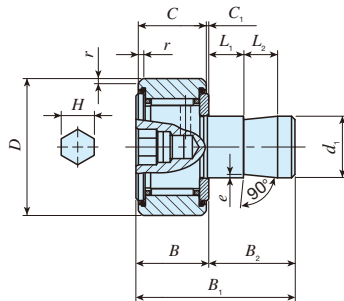
2. Provided with pre-packed grease.

Selectable product specifications

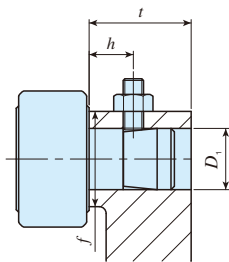
|                                     |           |                        |
|-------------------------------------|-----------|------------------------|
| Type of material                    | No symbol | High carbon steel      |
|                                     | F         | Stainless steel        |
| Roller guide method                 | No symbol | With cage              |
|                                     | V         | Full complement        |
| Seal structure                      | No symbol | Shield type            |
|                                     | No symbol | Sealed type            |
| Shape of outer ring outside surface | No symbol | Cylindrical outer ring |
|                                     | R         | Crowned outer ring     |



Stud dia.  $d_1$  6 to 10 mm <sup>(1)</sup>



Stud dia.  $d_1$  12 to 20 mm <sup>(2)</sup>



| Stud diameter<br>mm | Identification number          | Mass<br>(Ref.)<br>g | Boundary dimensions mm |          |          |              |              |              |            |          |  |          |        |            |                   | Mounting dimensions mm |             |             |             |               | Basic<br>dynamic<br>load rating<br>$C$<br>N | Basic<br>static<br>load rating<br>$C_0$<br>N | Maximum<br>allowable<br>static load<br>N | Track<br>capacity<br>N |
|---------------------|--------------------------------|---------------------|------------------------|----------|----------|--------------|--------------|--------------|------------|----------|--|----------|--------|------------|-------------------|------------------------|-------------|-------------|-------------|---------------|---------------------------------------------|----------------------------------------------|------------------------------------------|------------------------|
|                     | With cage                      |                     | $D$                    | $C$      | $d_1$    | $B_{\max}$   | $B_{1\max}$  | $B_2$        | $C_1$      | $L_1$    |  | $L_2$    | $H$    | $e$        | $r_{s\min}^{(3)}$ | $D_2$                  | Tolerance   | $t$<br>Min. | $f$<br>Min. | $h$<br>(Ref.) |                                             |                                              |                                          |                        |
| 6                   | CF-SFU- 6 B                    | 19.5                | 16                     | 11       | 6        | 12.2         | 32           | 19.8         | 0.6        | 5        |  | 10       | 3      | 0.3        | 0.3               | 6                      | +0.012<br>0 | 20          | 11          | 10            | 3 660                                       | 3 650                                        | 1 950                                    | 3 400                  |
| 8                   | CF-SFU- 8 B                    | 29                  | 19                     | 11       | 8        | 12.2         | 32           | 19.8         | 0.6        | 5        |  | 10       | 4      | 0.5        | 0.3               | 8                      | +0.015<br>0 | 20          | 13          | 10            | 4 250                                       | 4 740                                        | 4 620                                    | 4 040                  |
| 10                  | CF-SFU- 10 B<br>CF-SFU- 10-1 B | 44<br>59            | 22<br>26               | 12<br>12 | 10<br>10 | 13.2<br>13.2 | 33<br>33     | 19.8<br>19.8 | 0.6<br>0.6 | 5<br>5   |  | 10<br>10 | 4<br>4 | 0.5<br>0.5 | 0.3<br>0.3        | 10<br>10               |             | 20<br>20    | 16<br>16    | 10<br>10      | 5 430<br>5 430                              | 6 890<br>6 890                               | 6 890<br>6 890                           | 4 680<br>5 530         |
| 12                  | CF-SFU- 12 B<br>CF-SFU- 12-1 B | 94<br>104           | 30<br>32               | 14<br>14 | 12<br>12 | 15.2<br>15.2 | 35<br>35     | 19.8<br>19.8 | 0.6<br>0.6 | 5<br>5   |  | 10<br>10 | 6<br>6 | 1<br>1     | 0.6<br>0.6        | 12<br>12               | +0.018<br>0 | 20<br>20    | 21<br>21    | 10<br>10      | 7 910<br>7 910                              | 9 790<br>9 790                               | 9 790<br>9 790                           | 7 010<br>7 480         |
| 16                  | CF-SFU- 16 B                   | 164                 | 35                     | 18       | 16       | 19.6         | 44.5         | 24.9         | 0.8        | 10       |  | 10       | 6      | 1          | 0.6               | 16                     |             | 25          | 26          | 15            | 12 000                                      | 18 300                                       | 18 300                                   | 11 200                 |
| 18                  | CF-SFU- 18 B                   | 235                 | 40                     | 20       | 18       | 21.6         | 46.5         | 24.9         | 0.8        | 10       |  | 10       | 8      | 1          | 1                 | 18                     |             | 25          | 29          | 15            | 14 800                                      | 25 200                                       | 25 200                                   | 14 500                 |
| 20                  | CF-SFU- 20 B<br>CF-SFU- 20-1 B | 435<br>360          | 52<br>47               | 24<br>24 | 20<br>20 | 25.6<br>25.6 | 50.5<br>50.5 | 24.9<br>24.9 | 0.8<br>0.8 | 10<br>10 |  | 10<br>10 | 8<br>8 | 1<br>1     | 1<br>1            | 20<br>20               | +0.021<br>0 | 25<br>25    | 34<br>34    | 15<br>15      | 20 700<br>20 700                            | 34 600<br>34 600                             | 34 600<br>34 600                         | 23 200<br>21 000       |

Note <sup>(1)</sup> An oil hole (re-greasing fitting) is provided for the stud head.

<sup>(2)</sup> An oil hole (grease nipple) is provided for the stud head.

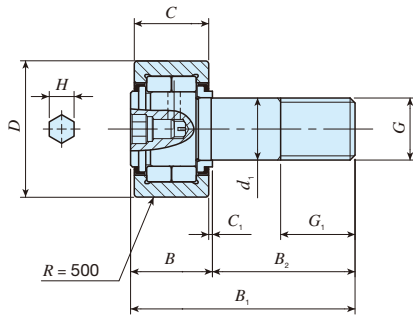
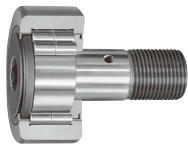
<sup>(3)</sup> Minimum allowable value of chamfer dimension  $r$ .

Remark Provided with pre-packed grease.

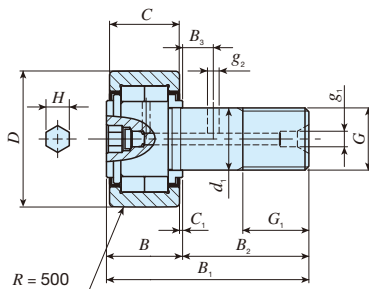


Selectable product specifications

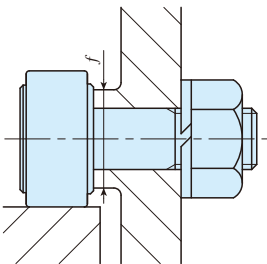
|                                     |           |                        |
|-------------------------------------|-----------|------------------------|
| Type of material                    | No symbol | High carbon steel      |
|                                     | F         | Stainless steel        |
| Roller guide method                 | No symbol | With cage              |
|                                     | No symbol | Full complement        |
| Seal structure                      | No symbol | Shield type            |
|                                     | UU        | Sealed type            |
| Shape of outer ring outside surface | No symbol | Cylindrical outer ring |
|                                     | R         | Crowned outer ring     |



Stud dia.  $d_1$  10 mm <sup>(1)</sup>



Stud dia.  $d_1$  12 to 30 mm <sup>(2)</sup>



| Stud diameter<br>mm | Identification number | Mass<br>(Ref.)<br>g | Boundary dimensions mm |     |       |          |       |           |           |       |  |       |       |       |       |     | Mounting dimensions<br>$f$<br>Min.<br>mm | Maximum tightening torque<br>N·m | Basic dynamic load rating<br>$C$<br>N | Basic static load rating<br>$C_0$<br>N | Maximum allowable static load<br>N | Track capacity<br>N |
|---------------------|-----------------------|---------------------|------------------------|-----|-------|----------|-------|-----------|-----------|-------|--|-------|-------|-------|-------|-----|------------------------------------------|----------------------------------|---------------------------------------|----------------------------------------|------------------------------------|---------------------|
|                     |                       |                     | $D$                    | $C$ | $d_1$ | $G$      | $G_1$ | $B_{max}$ | $B_{max}$ | $B_2$ |  | $B_3$ | $C_1$ | $g_1$ | $g_2$ | $H$ |                                          |                                  |                                       |                                        |                                    |                     |
| 10                  | NUCF 10 BR            | 44                  | 22                     | 12  | 10    | M10×1.25 | 12    | 13.2      | 36.2      | 23    |  | —     | 0.6   | —     | —     | 4   | 12                                       | 13.8                             | 10 400                                | 11 500                                 | 5 300                              | 1 610               |
|                     | NUCF 10-1 BR          | 58                  | 26                     | 12  | 10    | M10×1.25 | 12    | 13.2      | 36.2      | 23    |  | —     | 0.6   | —     | —     | 4   | 12                                       | 13.8                             | 10 400                                | 11 500                                 | 9 210                              | 2 030               |
| 12                  | NUCF 12 BR            | 86                  | 30                     | 14  | 12    | M12×1.5  | 13    | 15.2      | 40.2      | 25    |  | 6     | 0.6   | 4     | 3     | 6   | 17                                       | 21.9                             | 14 000                                | 13 400                                 | 5 650                              | 2 470               |
|                     | NUCF 12-1 BR          | 97                  | 32                     | 14  | 12    | M12×1.5  | 13    | 15.2      | 40.2      | 25    |  | 6     | 0.6   | 4     | 3     | 6   | 17                                       | 21.9                             | 14 000                                | 13 400                                 | 9 040                              | 2 710               |
| 16                  | NUCF 16 BR            | 167                 | 35                     | 18  | 16    | M16×1.5  | 17    | 19.6      | 52.1      | 32.5  |  | 8     | 0.8   | 4     | 3     | 6   | 20                                       | 58.5                             | 23 400                                | 27 300                                 | 11 800                             | 3 060               |
| 18                  | NUCF 18 BR            | 244                 | 40                     | 20  | 18    | M18×1.5  | 19    | 21.6      | 58.1      | 36.5  |  | 8     | 0.8   | 6     | 3     | 8   | 22                                       | 86.2                             | 25 200                                | 30 900                                 | 20 300                             | 3 660               |
| 20                  | NUCF 20 BR            | 457                 | 52                     | 24  | 20    | M20×1.5  | 21    | 25.6      | 66.1      | 40.5  |  | 9     | 0.8   | 6     | 4     | 8   | 31                                       | 119                              | 43 100                                | 58 100                                 | 30 000                             | 5 190               |
|                     | NUCF 20-1 BR          | 384                 | 47                     | 24  | 20    | M20×1.5  | 21    | 25.6      | 66.1      | 40.5  |  | 9     | 0.8   | 6     | 4     | 8   | 27                                       | 119                              | 38 900                                | 49 000                                 | 27 200                             | 4 530               |
| 24                  | NUCF 24 BR            | 789                 | 62                     | 29  | 24    | M24×1.5  | 25    | 30.6      | 80.1      | 49.5  |  | 11    | 0.8   | 6     | 4     | 12  | 38                                       | 215                              | 58 200                                | 75 300                                 | 35 200                             | 6 580               |
|                     | NUCF 24-1 BR          | 1 020               | 72                     | 29  | 24    | M24×1.5  | 25    | 30.6      | 80.1      | 49.5  |  | 11    | 0.8   | 6     | 4     | 12  | 44                                       | 215                              | 63 900                                | 88 800                                 | 57 000                             | 8 020               |
| 30                  | NUCF 30 BR            | 1 600               | 80                     | 35  | 30    | M30×1.5  | 32    | 37        | 100       | 63    |  | 15    | 1     | 6     | 4     | 17  | 45                                       | 438                              | 90 300                                | 121 000                                | 98 300                             | 9 220               |
|                     | NUCF 30-2 BR          | 1 970               | 90                     | 35  | 30    | M30×1.5  | 32    | 37        | 100       | 63    |  | 15    | 1     | 6     | 4     | 17  | 45                                       | 438                              | 90 300                                | 121 000                                | 98 300                             | 10 800              |

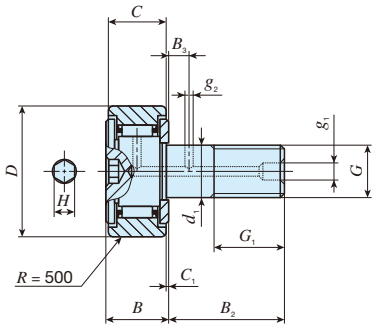
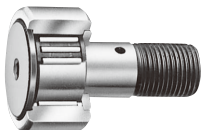
Note <sup>(1)</sup> An oil hole (re-greasing fitting) is provided for the stud head.

Note <sup>(2)</sup> An oil hole (grease nipple) is provided for the stud head and an oil hole is provided for the outside surface and the end of the stud.

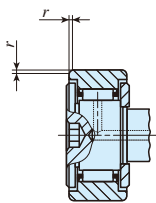
Remark Provided with pre-packed grease.

Selectable product specifications

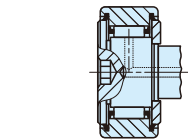
|                                     |           |                        |
|-------------------------------------|-----------|------------------------|
| Type of material                    | No symbol | High carbon steel      |
|                                     | F         | Stainless steel        |
| Roller guide method                 | No symbol | With cage              |
|                                     | V         | Full complement        |
| Seal structure                      | No symbol | Shield type            |
|                                     | UU        | Sealed type            |
| Shape of outer ring outside surface | No symbol | Cylindrical outer ring |
|                                     | R         | Crowned outer ring     |



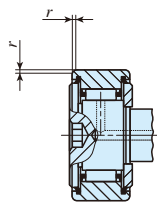
CR···BR



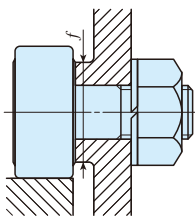
CR···B



CR···BUUR



CR···BUU



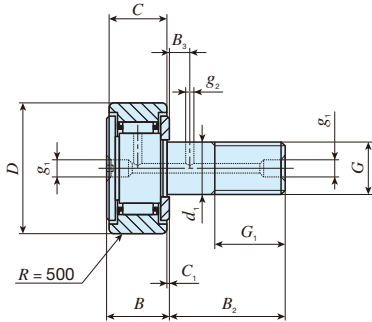
| Stud diameter<br><br>mm<br>(inch) | Identification number |                           |                       |                           | Mass<br>(Ref.)<br><br>g | Boundary dimensions    mm (inch) |                            |                           |                     |                          |                 |                            |                           |                          |                          |                          |                           |                          |                              |                           | Mounting<br>dimensions<br><br><i>f</i><br>Min.<br>mm (inch) | Maximum<br>tightening<br>torque<br><br>N·m | Basic<br>dynamic<br>load rating<br><br><i>C</i><br><br>N | Basic<br>static<br>load rating<br><br><i>C</i> <sub>0</sub><br><br>N | Track<br>capacity |  |
|-----------------------------------|-----------------------|---------------------------|-----------------------|---------------------------|-------------------------|----------------------------------|----------------------------|---------------------------|---------------------|--------------------------|-----------------|----------------------------|---------------------------|--------------------------|--------------------------|--------------------------|---------------------------|--------------------------|------------------------------|---------------------------|-------------------------------------------------------------|--------------------------------------------|----------------------------------------------------------|----------------------------------------------------------------------|-------------------|--|
|                                   | Shield type           |                           | Sealed type           |                           |                         | <i>D</i>                         | <i>C</i>                   | <i>d</i> <sub>1</sub>     | <i>G</i><br>UNF     | <i>G</i> <sub>1</sub>    | <i>B</i><br>max | <i>B</i> <sub>2</sub>      | <i>B</i> <sub>3</sub>     | <i>C</i> <sub>1</sub>    | <i>g</i> <sub>1</sub>    | <i>g</i> <sub>2</sub>    | <i>H</i>                  | <i>r</i>                 | Crowned<br>outer ring        | Cylindrical<br>outer ring |                                                             |                                            |                                                          |                                                                      |                   |  |
|                                   | Crowned<br>outer ring | Cylindrical<br>outer ring | Crowned<br>outer ring | Cylindrical<br>outer ring |                         |                                  |                            |                           |                     |                          |                 |                            |                           |                          |                          |                          |                           |                          |                              |                           |                                                             |                                            |                                                          |                                                                      |                   |  |
| 4.826                             | CR 8 BR               | CR 8 B                    | CR 8 BUUR             | CR 8 BUU                  | 9                       | 12.700 ( $\frac{1}{2}$ )         | 8.731 ( $\frac{11}{32}$ )  | 4.826                     | No.10-32            | 6.350 ( $\frac{1}{4}$ )  | 10.2 (0.40)     | 12.700 ( $\frac{1}{2}$ )   | — (—)                     | 0.794 ( $\frac{1}{32}$ ) | — (—)                    | — (—)                    | 3.175 ( $\frac{1}{8}$ )   | 0.397 ( $\frac{1}{64}$ ) | 8.334 ( $\frac{21}{64}$ )    | 1.4                       | 2 520                                                       | 2 140                                      | 770                                                      | 2 140                                                                |                   |  |
|                                   | CR 8-1 BR             | CR 8-1 B                  | CR 8-1 BUUR           | CR 8-1 BUU                | 10                      | 12.700 ( $\frac{1}{2}$ )         | 8.525 ( $\frac{3}{8}$ )    | 4.826                     | No.10-32            | 6.350 ( $\frac{1}{4}$ )  | 10.9 (0.43)     | 15.875 ( $\frac{5}{8}$ )   | — (—)                     | 0.794 ( $\frac{1}{32}$ ) | — (—)                    | — (—)                    | 3.175 ( $\frac{1}{8}$ )   | 0.397 ( $\frac{1}{64}$ ) | 8.334 ( $\frac{21}{64}$ )    | 1.4                       | 2 520                                                       | 2 140                                      | 770                                                      | 2 360                                                                |                   |  |
| 6.350<br>( $\frac{1}{4}$ )        | CR 10 BR              | CR 10 B                   | CR 10 BUUR            | CR 10 BUU                 | 19                      | 15.875 ( $\frac{5}{8}$ )         | 10.319 ( $\frac{13}{32}$ ) | 6.350 ( $\frac{1}{4}$ )   | $\frac{1}{4}$ - 28  | 7.938 ( $\frac{5}{16}$ ) | 11.8 (0.46)     | 15.875 ( $\frac{5}{8}$ )   | — (—)                     | 0.794 ( $\frac{1}{32}$ ) | — (—)                    | — (—)                    | 3.175 ( $\frac{1}{8}$ )   | 0.397 ( $\frac{1}{64}$ ) | 11.509 ( $\frac{29}{64}$ )   | 3.4                       | 3 650                                                       | 3 670                                      | 1 030                                                    | 3 210                                                                |                   |  |
|                                   | CR 10-1 BR            | CR 10-1 B                 | CR 10-1 BUUR          | CR 10-1 BUU               | 21                      | 15.875 ( $\frac{5}{8}$ )         | 11.112 ( $\frac{7}{16}$ )  | 6.350 ( $\frac{1}{4}$ )   | $\frac{1}{4}$ - 28  | 7.938 ( $\frac{5}{16}$ ) | 12.5 (0.49)     | 19.050 ( $\frac{3}{4}$ )   | — (—)                     | 0.794 ( $\frac{1}{32}$ ) | — (—)                    | — (—)                    | 3.175 ( $\frac{1}{8}$ )   | 0.397 ( $\frac{1}{64}$ ) | 11.509 ( $\frac{29}{64}$ )   | 3.4                       | 3 650                                                       | 3 670                                      | 1 030                                                    | 3 480                                                                |                   |  |
| 9.525<br>( $\frac{3}{8}$ )        | CR 12 BR              | CR 12 B                   | CR 12 BUUR            | CR 12 BUU                 | 35                      | 19.050 ( $\frac{3}{4}$ )         | 12.700 ( $\frac{1}{2}$ )   | 9.525 ( $\frac{3}{8}$ )   | $\frac{3}{8}$ - 24  | 9.525 ( $\frac{3}{8}$ )  | 14.2 (0.56)     | 22.225 ( $\frac{7}{8}$ )   | 6.350 ( $\frac{1}{4}$ )   | 0.794 ( $\frac{1}{32}$ ) | 4.762 ( $\frac{3}{16}$ ) | 2.381 ( $\frac{3}{32}$ ) | 4.762 ( $\frac{3}{16}$ )  | 0.794 ( $\frac{1}{32}$ ) | 13.494 ( $\frac{17}{32}$ )   | 10.8                      | 4 420                                                       | 5 110                                      | 1 340                                                    | 4 500                                                                |                   |  |
|                                   | CR 14 BR              | CR 14 B                   | CR 14 BUUR            | CR 14 BUU                 | 46                      | 22.225 ( $\frac{7}{8}$ )         | 12.700 ( $\frac{1}{2}$ )   | 9.525 ( $\frac{3}{8}$ )   | $\frac{3}{8}$ - 24  | 9.525 ( $\frac{3}{8}$ )  | 14.2 (0.56)     | 22.225 ( $\frac{7}{8}$ )   | 6.350 ( $\frac{1}{4}$ )   | 0.794 ( $\frac{1}{32}$ ) | 4.762 ( $\frac{3}{16}$ ) | 2.381 ( $\frac{3}{32}$ ) | 4.762 ( $\frac{3}{16}$ )  | 0.794 ( $\frac{1}{32}$ ) | 15.081 ( $\frac{19}{32}$ )   | 10.8                      | 4 790                                                       | 5 810                                      | 1 630                                                    | 5 250                                                                |                   |  |
| 11.112<br>( $\frac{7}{16}$ )      | CR 16 BR              | CR 16 B                   | CR 16 BUUR            | CR 16 BUU                 | 73                      | 25.400 ( 1 )                     | 15.875 ( $\frac{5}{8}$ )   | 11.112 ( $\frac{7}{16}$ ) | $\frac{7}{16}$ - 20 | 12.700 ( $\frac{1}{2}$ ) | 17.3 (0.68)     | 25.400 ( 1 )               | 6.350 ( $\frac{1}{4}$ )   | 0.794 ( $\frac{1}{32}$ ) | 4.762 ( $\frac{3}{16}$ ) | 3.175 ( $\frac{1}{8}$ )  | 6.350 ( $\frac{1}{4}$ )   | 1.191 ( $\frac{3}{64}$ ) | 17.859 ( $\frac{45}{64}$ )   | 17.4                      | 8 810                                                       | 10 800                                     | 1 970                                                    | 7 280                                                                |                   |  |
|                                   | CR 18 BR              | CR 18 B                   | CR 18 BUUR            | CR 18 BUU                 | 88                      | 28.575 ( 1 $\frac{1}{8}$ )       | 15.875 ( $\frac{5}{8}$ )   | 11.112 ( $\frac{7}{16}$ ) | $\frac{7}{16}$ - 20 | 12.700 ( $\frac{1}{2}$ ) | 17.3 (0.68)     | 25.400 ( 1 )               | 6.350 ( $\frac{1}{4}$ )   | 0.794 ( $\frac{1}{32}$ ) | 4.762 ( $\frac{3}{16}$ ) | 3.175 ( $\frac{1}{8}$ )  | 6.350 ( $\frac{1}{4}$ )   | 1.588 ( $\frac{1}{16}$ ) | 19.050 ( $\frac{3}{4}$ )     | 17.4                      | 9 180                                                       | 11 600                                     | 2 300                                                    | 7 710                                                                |                   |  |
| 12.700<br>( $\frac{1}{2}$ )       | CR 20 BR              | CR 20 B                   | CR 20 BUUR            | CR 20 BUU                 | 132                     | 31.750 ( 1 $\frac{1}{4}$ )       | 19.050 ( $\frac{3}{4}$ )   | 12.700 ( $\frac{1}{2}$ )  | $\frac{1}{2}$ - 20  | 15.875 ( $\frac{5}{8}$ ) | 20.4 (0.80)     | 31.750 ( 1 $\frac{1}{4}$ ) | 7.938 ( $\frac{5}{16}$ )  | 0.794 ( $\frac{1}{32}$ ) | 4.762 ( $\frac{3}{16}$ ) | 3.175 ( $\frac{1}{8}$ )  | 6.350 ( $\frac{1}{4}$ )   | 1.588 ( $\frac{1}{16}$ ) | 21.828 ( $\frac{55}{64}$ )   | 27.7                      | 14 200                                                      | 16 000                                     | 2 680                                                    | 10 700                                                               |                   |  |
|                                   | CR 22 BR              | CR 22 B                   | CR 22 BUUR            | CR 22 BUU                 | 157                     | 34.925 ( 1 $\frac{3}{8}$ )       | 19.050 ( $\frac{3}{4}$ )   | 12.700 ( $\frac{1}{2}$ )  | $\frac{1}{2}$ - 20  | 15.875 ( $\frac{5}{8}$ ) | 20.4 (0.80)     | 31.750 ( 1 $\frac{1}{4}$ ) | 7.938 ( $\frac{5}{16}$ )  | 0.794 ( $\frac{1}{32}$ ) | 4.762 ( $\frac{3}{16}$ ) | 3.175 ( $\frac{1}{8}$ )  | 6.350 ( $\frac{1}{4}$ )   | 1.588 ( $\frac{1}{16}$ ) | 21.828 ( $\frac{55}{64}$ )   | 27.7                      | 14 200                                                      | 16 000                                     | 3 050                                                    | 11 800                                                               |                   |  |
| 15.875<br>( $\frac{5}{8}$ )       | CR 24 BR              | CR 24 B                   | CR 24 BUUR            | CR 24 BUU                 | 225                     | 38.100 ( 1 $\frac{1}{2}$ )       | 22.225 ( $\frac{7}{8}$ )   | 15.875 ( $\frac{5}{8}$ )  | $\frac{5}{8}$ - 18  | 19.050 ( $\frac{3}{4}$ ) | 23.6 (0.93)     | 38.100 ( 1 $\frac{1}{2}$ ) | 9.525 ( $\frac{3}{8}$ )   | 0.794 ( $\frac{1}{32}$ ) | 4.762 ( $\frac{3}{16}$ ) | 3.969 ( $\frac{5}{32}$ ) | 7.938 ( $\frac{3}{16}$ )  | 1.588 ( $\frac{1}{16}$ ) | 26.196 ( 1 $\frac{3}{64}$ )  | 55.7                      | 18 600                                                      | 24 300                                     | 3 410                                                    | 15 400                                                               |                   |  |
|                                   | CR 26 BR              | CR 26 B                   | CR 26 BUUR            | CR 26 BUU                 | 260                     | 41.275 ( 1 $\frac{5}{8}$ )       | 22.225 ( $\frac{7}{8}$ )   | 15.875 ( $\frac{5}{8}$ )  | $\frac{5}{8}$ - 18  | 19.050 ( $\frac{3}{4}$ ) | 23.6 (0.93)     | 38.100 ( 1 $\frac{1}{2}$ ) | 9.525 ( $\frac{3}{8}$ )   | 0.794 ( $\frac{1}{32}$ ) | 4.762 ( $\frac{3}{16}$ ) | 3.969 ( $\frac{5}{32}$ ) | 7.938 ( $\frac{3}{16}$ )  | 1.588 ( $\frac{1}{16}$ ) | 26.196 ( 1 $\frac{3}{64}$ )  | 55.7                      | 18 900                                                      | 24 300                                     | 3 820                                                    | 16 700                                                               |                   |  |
| 19.050<br>( $\frac{3}{4}$ )       | CR 28 BR              | CR 28 B                   | CR 28 BUUR            | CR 28 BUU                 | 365                     | 44.450 ( 1 $\frac{3}{4}$ )       | 25.400 ( 1 )               | 19.050 ( $\frac{3}{4}$ )  | $\frac{3}{4}$ - 16  | 22.225 ( $\frac{7}{8}$ ) | 26.8 (1.06)     | 44.450 ( 1 $\frac{3}{4}$ ) | 11.112 ( $\frac{7}{16}$ ) | 0.794 ( $\frac{1}{32}$ ) | 4.762 ( $\frac{3}{16}$ ) | 3.969 ( $\frac{5}{32}$ ) | 7.938 ( $\frac{3}{16}$ )  | 1.588 ( $\frac{1}{16}$ ) | 32.543 ( 1 $\frac{9}{32}$ )  | 100                       | 25 100                                                      | 38 200                                     | 4 210                                                    | 21 000                                                               |                   |  |
|                                   | CR 30 BR              | CR 30 B                   | CR 30 BUUR            | CR 30 BUU                 | 410                     | 47.625 ( 1 $\frac{7}{8}$ )       | 25.400 ( 1 )               | 19.050 ( $\frac{3}{4}$ )  | $\frac{3}{4}$ - 16  | 22.225 ( $\frac{7}{8}$ ) | 26.8 (1.06)     | 44.450 ( 1 $\frac{3}{4}$ ) | 11.112 ( $\frac{7}{16}$ ) | 0.794 ( $\frac{1}{32}$ ) | 4.762 ( $\frac{3}{16}$ ) | 3.969 ( $\frac{5}{32}$ ) | 7.938 ( $\frac{3}{16}$ )  | 1.588 ( $\frac{1}{16}$ ) | 32.543 ( 1 $\frac{9}{32}$ )  | 100                       | 25 100                                                      | 38 200                                     | 4 610                                                    | 22 500                                                               |                   |  |
| 22.225<br>( $\frac{7}{8}$ )       | CR 32 BR              | CR 32 B                   | CR 32 BUUR            | CR 32 BUU                 | 615                     | 50.800 ( 2 )                     | 31.750 ( 1 $\frac{1}{4}$ ) | 22.225 ( $\frac{7}{8}$ )  | $\frac{7}{8}$ - 14  | 25.400 ( 1 )             | 33.5 (1.32)     | 50.800 ( 2 )               | 12.700 ( $\frac{1}{2}$ )  | 0.794 ( $\frac{1}{32}$ ) | 4.762 ( $\frac{3}{16}$ ) | 4.762 ( $\frac{3}{16}$ ) | 11.112 ( $\frac{7}{16}$ ) | 1.588 ( $\frac{1}{16}$ ) | 37.306 ( 1 $\frac{15}{32}$ ) | 162                       | 32 500                                                      | 63 900                                     | 5 050                                                    | 30 900                                                               |                   |  |
|                                   | CR 36 BR              | CR 36 B                   | CR 36 BUUR            | CR 36 BUU                 | 750                     | 57.150 ( 2 $\frac{1}{4}$ )       | 31.750 ( 1 $\frac{1}{4}$ ) | 22.225 ( $\frac{7}{8}$ )  | $\frac{7}{8}$ - 14  | 25.400 ( 1 )             | 33.5 (1.32)     | 50.800 ( 2 )               | 12.700 ( $\frac{1}{2}$ )  | 0.794 ( $\frac{1}{32}$ ) | 4.762 ( $\frac{3}{16}$ ) | 4.762 ( $\frac{3}{16}$ ) | 11.112 ( $\frac{7}{16}$ ) | 1.588 ( $\frac{1}{16}$ ) | 37.306 ( 1 $\frac{15}{32}$ ) | 162                       | 32 500                                                      | 63 900                                     | 5 900                                                    | 34 700                                                               |                   |  |

Remarks 1. No oil hole is provided if the stud diameter *d*<sub>1</sub> is 6.35 mm or less. As for the others, an oil hole is provided for the head, the outside surface, and the end of the stud.  
2. Provided with pre-packed grease.  
3. Contact **IKO** for the information on the maximum allowable static load.

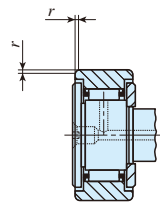


Selectable product specifications

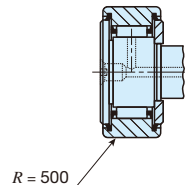
|                                     |           |                        |
|-------------------------------------|-----------|------------------------|
| Type of material                    | No symbol | High carbon steel      |
|                                     | F         | Stainless steel        |
| Roller guide method                 | No symbol | With cage              |
|                                     | V         | Full complement        |
| Seal structure                      | No symbol | Shield type            |
|                                     | UU        | Sealed type            |
| Shape of outer ring outside surface | No symbol | Cylindrical outer ring |
|                                     | R         | Crowned outer ring     |



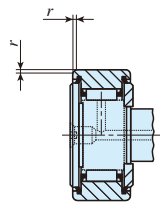
CR···R



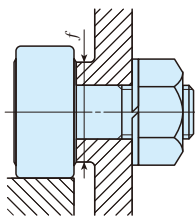
CR



CR···UUR



CR···UU

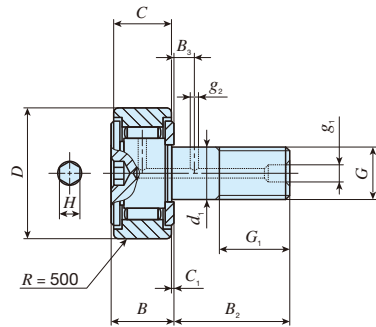


| Stud diameter<br><br>mm (inch) | Identification number |                        |                    |                        | Mass (Ref.)<br><br>g | Boundary dimensions mm (inch) |                            |                           |                     |                          |             |  |                            |                           |                          |                          |                          |                          |                              |                        | Mounting dimensions<br><br>$f$ Min.<br>mm (inch) | Maximum tightening torque<br><br>N·m | Basic dynamic load rating<br><br>C<br><br>N | Basic static load rating<br><br>$C_0$<br><br>N | Track capacity |  |
|--------------------------------|-----------------------|------------------------|--------------------|------------------------|----------------------|-------------------------------|----------------------------|---------------------------|---------------------|--------------------------|-------------|--|----------------------------|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|------------------------------|------------------------|--------------------------------------------------|--------------------------------------|---------------------------------------------|------------------------------------------------|----------------|--|
|                                | Shield type           |                        | Sealed type        |                        |                      | $D$                           | $C$                        | $d_1$                     | $G$ UNF             | $G_1$                    | $B$ max     |  | $B_2$                      | $B_3$                     | $C_1$                    | $g_1$                    | $g_2$                    | $r$                      | Crowned outer ring           | Cylindrical outer ring |                                                  |                                      |                                             |                                                |                |  |
|                                | Crowned outer ring    | Cylindrical outer ring | Crowned outer ring | Cylindrical outer ring |                      |                               |                            |                           |                     |                          |             |  |                            |                           |                          |                          |                          |                          |                              |                        |                                                  |                                      |                                             |                                                |                |  |
| 4.826                          | CR 8 R                | CR 8                   | CR 8 UUR           | CR 8 UU                | 9                    | 12.700 ( $\frac{1}{2}$ )      | 8.731 ( $\frac{11}{32}$ )  | 4.826                     | No.10-32            | 6.350 ( $\frac{1}{4}$ )  | 10.2 (0.40) |  | 12.700 ( $\frac{1}{2}$ )   | — (—)                     | 0.794 ( $\frac{1}{32}$ ) | 3.175 ( $\frac{1}{8}$ )  | — (—)                    | 0.397 ( $\frac{1}{64}$ ) | 8.334 ( $\frac{21}{64}$ )    | 1.4                    | 2 520                                            | 2 140                                | 770                                         | 2 140                                          |                |  |
|                                | CR 8-1 R              | CR 8-1                 | CR 8-1 UUR         | CR 8-1 UU              | 10                   | 12.700 ( $\frac{1}{2}$ )      | 9.525 ( $\frac{3}{8}$ )    | 4.826                     | No.10-32            | 6.350 ( $\frac{1}{4}$ )  | 10.9 (0.43) |  | 15.875 ( $\frac{5}{8}$ )   | — (—)                     | 0.794 ( $\frac{1}{32}$ ) | 3.175 ( $\frac{1}{8}$ )  | — (—)                    | 0.397 ( $\frac{1}{64}$ ) | 8.334 ( $\frac{21}{64}$ )    | 1.4                    | 2 520                                            | 2 140                                | 770                                         | 2 360                                          |                |  |
| 6.350<br>( $\frac{1}{4}$ )     | CR 10 R               | CR 10                  | CR 10 UUR          | CR 10 UU               | 19                   | 15.875 ( $\frac{5}{8}$ )      | 10.319 ( $\frac{13}{32}$ ) | 6.350 ( $\frac{1}{4}$ )   | $\frac{1}{4}$ - 28  | 7.938 ( $\frac{5}{16}$ ) | 11.8 (0.46) |  | 15.875 ( $\frac{5}{8}$ )   | — (—)                     | 0.794 ( $\frac{1}{32}$ ) | 3.175 ( $\frac{1}{8}$ )  | — (—)                    | 0.397 ( $\frac{1}{64}$ ) | 11.509 ( $\frac{29}{64}$ )   | 3.4                    | 3 650                                            | 3 670                                | 1 030                                       | 3 210                                          |                |  |
|                                | CR 10-1 R             | CR 10-1                | CR 10-1 UUR        | CR 10-1 UU             | 21                   | 15.875 ( $\frac{5}{8}$ )      | 11.112 ( $\frac{7}{16}$ )  | 6.350 ( $\frac{1}{4}$ )   | $\frac{1}{4}$ - 28  | 7.938 ( $\frac{5}{16}$ ) | 12.5 (0.49) |  | 19.050 ( $\frac{3}{4}$ )   | — (—)                     | 0.794 ( $\frac{1}{32}$ ) | 3.175 ( $\frac{1}{8}$ )  | — (—)                    | 0.397 ( $\frac{1}{64}$ ) | 11.509 ( $\frac{29}{64}$ )   | 3.4                    | 3 650                                            | 3 670                                | 1 030                                       | 3 480                                          |                |  |
| 9.525<br>( $\frac{3}{8}$ )     | CR 12 R               | CR 12                  | CR 12 UUR          | CR 12 UU               | 35                   | 19.050 ( $\frac{3}{4}$ )      | 12.700 ( $\frac{1}{2}$ )   | 9.525 ( $\frac{3}{8}$ )   | $\frac{3}{8}$ - 24  | 9.525 ( $\frac{3}{8}$ )  | 14.2 (0.56) |  | 22.225 ( $\frac{7}{8}$ )   | 6.350 ( $\frac{1}{4}$ )   | 0.794 ( $\frac{1}{32}$ ) | 4.762 ( $\frac{3}{16}$ ) | 2.381 ( $\frac{3}{32}$ ) | 0.794 ( $\frac{1}{32}$ ) | 13.494 ( $\frac{17}{32}$ )   | 10.8                   | 4 420                                            | 5 110                                | 1 340                                       | 4 500                                          |                |  |
|                                | CR 14 R               | CR 14                  | CR 14 UUR          | CR 14 UU               | 46                   | 22.225 ( $\frac{7}{8}$ )      | 12.700 ( $\frac{1}{2}$ )   | 9.525 ( $\frac{3}{8}$ )   | $\frac{3}{8}$ - 24  | 9.525 ( $\frac{3}{8}$ )  | 14.2 (0.56) |  | 22.225 ( $\frac{7}{8}$ )   | 6.350 ( $\frac{1}{4}$ )   | 0.794 ( $\frac{1}{32}$ ) | 4.762 ( $\frac{3}{16}$ ) | 2.381 ( $\frac{3}{32}$ ) | 0.794 ( $\frac{1}{32}$ ) | 15.081 ( $\frac{19}{32}$ )   | 10.8                   | 4 420                                            | 5 810                                | 1 630                                       | 5 250                                          |                |  |
| 11.112<br>( $\frac{7}{16}$ )   | CR 16 R               | CR 16                  | CR 16 UUR          | CR 16 UU               | 73                   | 25.400 ( 1 )                  | 15.875 ( $\frac{5}{8}$ )   | 11.112 ( $\frac{7}{16}$ ) | $\frac{7}{16}$ - 20 | 12.700 ( $\frac{1}{2}$ ) | 17.3 (0.68) |  | 25.400 ( 1 )               | 6.350 ( $\frac{1}{4}$ )   | 0.794 ( $\frac{1}{32}$ ) | 4.762 ( $\frac{3}{16}$ ) | 3.175 ( $\frac{1}{8}$ )  | 1.191 ( $\frac{3}{64}$ ) | 17.859 ( $\frac{45}{64}$ )   | 17.4                   | 8 810                                            | 10 800                               | 1 970                                       | 7 280                                          |                |  |
|                                | CR 18 R               | CR 18                  | CR 18 UUR          | CR 18 UU               | 88                   | 28.575 ( 1 $\frac{1}{8}$ )    | 15.875 ( $\frac{5}{8}$ )   | 11.112 ( $\frac{7}{16}$ ) | $\frac{7}{16}$ - 20 | 12.700 ( $\frac{1}{2}$ ) | 17.3 (0.68) |  | 25.400 ( 1 )               | 6.350 ( $\frac{1}{4}$ )   | 0.794 ( $\frac{1}{32}$ ) | 4.762 ( $\frac{3}{16}$ ) | 3.175 ( $\frac{1}{8}$ )  | 1.588 ( $\frac{1}{16}$ ) | 19.050 ( $\frac{3}{4}$ )     | 17.4                   | 9 180                                            | 11 600                               | 2 300                                       | 7 710                                          |                |  |
| 12.700<br>( $\frac{1}{2}$ )    | CR 20 R               | CR 20                  | CR 20 UUR          | CR 20 UU               | 132                  | 31.750 ( 1 $\frac{1}{4}$ )    | 19.050 ( $\frac{3}{4}$ )   | 12.700 ( $\frac{1}{2}$ )  | $\frac{1}{2}$ - 20  | 15.875 ( $\frac{5}{8}$ ) | 20.4 (0.80) |  | 31.750 ( 1 $\frac{1}{4}$ ) | 7.938 ( $\frac{5}{16}$ )  | 0.794 ( $\frac{1}{32}$ ) | 4.762 ( $\frac{3}{16}$ ) | 3.175 ( $\frac{1}{8}$ )  | 1.588 ( $\frac{1}{16}$ ) | 21.828 ( $\frac{55}{64}$ )   | 27.7                   | 14 200                                           | 16 000                               | 2 680                                       | 10 700                                         |                |  |
|                                | CR 22 R               | CR 22                  | CR 22 UUR          | CR 22 UU               | 157                  | 34.925 ( 1 $\frac{3}{8}$ )    | 19.050 ( $\frac{3}{4}$ )   | 12.700 ( $\frac{1}{2}$ )  | $\frac{1}{2}$ - 20  | 15.875 ( $\frac{5}{8}$ ) | 20.4 (0.80) |  | 31.750 ( 1 $\frac{1}{4}$ ) | 7.938 ( $\frac{5}{16}$ )  | 0.794 ( $\frac{1}{32}$ ) | 4.762 ( $\frac{3}{16}$ ) | 3.175 ( $\frac{1}{8}$ )  | 1.588 ( $\frac{1}{16}$ ) | 21.828 ( $\frac{55}{64}$ )   | 27.7                   | 14 200                                           | 16 000                               | 3 050                                       | 11 800                                         |                |  |
| 15.875<br>( $\frac{5}{8}$ )    | CR 24 R               | CR 24                  | CR 24 UUR          | CR 24 UU               | 225                  | 38.100 ( 1 $\frac{1}{2}$ )    | 22.225 ( $\frac{7}{8}$ )   | 15.875 ( $\frac{5}{8}$ )  | $\frac{5}{8}$ - 18  | 19.050 ( $\frac{3}{4}$ ) | 23.6 (0.93) |  | 38.100 ( 1 $\frac{1}{2}$ ) | 9.525 ( $\frac{3}{8}$ )   | 0.794 ( $\frac{1}{32}$ ) | 4.762 ( $\frac{3}{16}$ ) | 3.969 ( $\frac{5}{32}$ ) | 1.588 ( $\frac{1}{16}$ ) | 26.196 ( 1 $\frac{3}{64}$ )  | 55.7                   | 18 600                                           | 24 300                               | 3 410                                       | 15 400                                         |                |  |
|                                | CR 26 R               | CR 26                  | CR 26 UUR          | CR 26 UU               | 260                  | 41.275 ( 1 $\frac{5}{8}$ )    | 22.225 ( $\frac{7}{8}$ )   | 15.875 ( $\frac{5}{8}$ )  | $\frac{5}{8}$ - 18  | 19.050 ( $\frac{3}{4}$ ) | 23.6 (0.93) |  | 38.100 ( 1 $\frac{1}{2}$ ) | 9.525 ( $\frac{3}{8}$ )   | 0.794 ( $\frac{1}{32}$ ) | 4.762 ( $\frac{3}{16}$ ) | 3.969 ( $\frac{5}{32}$ ) | 1.588 ( $\frac{1}{16}$ ) | 26.196 ( 1 $\frac{3}{64}$ )  | 55.7                   | 18 900                                           | 24 300                               | 3 820                                       | 16 700                                         |                |  |
| 19.050<br>( $\frac{3}{4}$ )    | CR 28 R               | CR 28                  | CR 28 UUR          | CR 28 UU               | 365                  | 44.450 ( 1 $\frac{3}{4}$ )    | 25.400 ( 1 )               | 19.050 ( $\frac{3}{4}$ )  | $\frac{3}{4}$ - 16  | 22.225 ( $\frac{7}{8}$ ) | 26.8 (1.06) |  | 44.450 ( 1 $\frac{3}{4}$ ) | 11.112 ( $\frac{7}{16}$ ) | 0.794 ( $\frac{1}{32}$ ) | 4.762 ( $\frac{3}{16}$ ) | 3.969 ( $\frac{5}{32}$ ) | 1.588 ( $\frac{1}{16}$ ) | 32.543 ( 1 $\frac{9}{32}$ )  | 100                    | 25 100                                           | 38 200                               | 4 210                                       | 21 000                                         |                |  |
|                                | CR 30 R               | CR 30                  | CR 30 UUR          | CR 30 UU               | 410                  | 47.625 ( 1 $\frac{7}{8}$ )    | 25.400 ( 1 )               | 19.050 ( $\frac{3}{4}$ )  | $\frac{3}{4}$ - 16  | 22.225 ( $\frac{7}{8}$ ) | 26.8 (1.06) |  | 44.450 ( 1 $\frac{3}{4}$ ) | 11.112 ( $\frac{7}{16}$ ) | 0.794 ( $\frac{1}{32}$ ) | 4.762 ( $\frac{3}{16}$ ) | 3.969 ( $\frac{5}{32}$ ) | 1.588 ( $\frac{1}{16}$ ) | 32.543 ( 1 $\frac{9}{32}$ )  | 100                    | 25 100                                           | 38 200                               | 4 610                                       | 22 500                                         |                |  |
| 22.225<br>( $\frac{7}{8}$ )    | CR 32 R               | CR 32                  | CR 32 UUR          | CR 32 UU               | 615                  | 50.800 ( 2 )                  | 31.750 ( 1 $\frac{1}{4}$ ) | 22.225 ( $\frac{7}{8}$ )  | $\frac{7}{8}$ - 14  | 25.400 ( 1 )             | 33.5 (1.32) |  | 50.800 ( 2 )               | 12.700 ( $\frac{1}{2}$ )  | 0.794 ( $\frac{1}{32}$ ) | 4.762 ( $\frac{3}{16}$ ) | 4.762 ( $\frac{3}{16}$ ) | 1.588 ( $\frac{1}{16}$ ) | 37.306 ( 1 $\frac{15}{32}$ ) | 162                    | 32 500                                           | 63 900                               | 5 050                                       | 30 900                                         |                |  |
|                                | CR 36 R               | CR 36                  | CR 36 UUR          | CR 36 UU               | 750                  | 57.150 ( 2 $\frac{1}{4}$ )    | 31.750 ( 1 $\frac{1}{4}$ ) | 22.225 ( $\frac{7}{8}$ )  | $\frac{7}{8}$ - 14  | 25.400 ( 1 )             | 33.5 (1.32) |  | 50.800 ( 2 )               | 12.700 ( $\frac{1}{2}$ )  | 0.794 ( $\frac{1}{32}$ ) | 4.762 ( $\frac{3}{16}$ ) | 4.762 ( $\frac{3}{16}$ ) | 1.588 ( $\frac{1}{16}$ ) | 37.306 ( 1 $\frac{15}{32}$ ) | 162                    | 32 500                                           | 63 900                               | 5 900                                       | 34 700                                         |                |  |

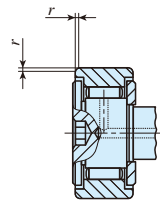
Remarks 1. An oil hole is provided only for the stud head if the stud diameter *d*<sub>1</sub> is 6.35 mm or less. As for the others, an oil hole is provided for the head, the outside surface, and the end of the stud.  
2. Provided with pre-packed grease.  
3. Contact **IKO** for the information on the maximum allowable static load.

Selectable product specifications

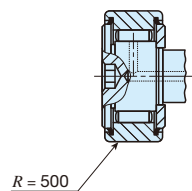
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|-------------------------------------|-----------|------------------------|
| Type of material                    | No symbol | High carbon steel      |
|                                     | F         | Stainless steel        |
| Roller guide method                 | No symbol | With cage              |
|                                     | V         | Full complement        |
| Seal structure                      | No symbol | Shield type            |
|                                     | UU        | Sealed type            |
| Shape of outer ring outside surface | No symbol | Cylindrical outer ring |
|                                     | R         | Crowned outer ring     |



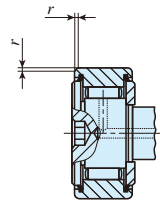
CR···VBR



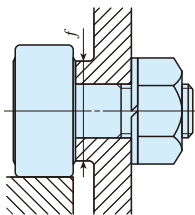
CR···VB



CR···VBUUR



CR···VBUU



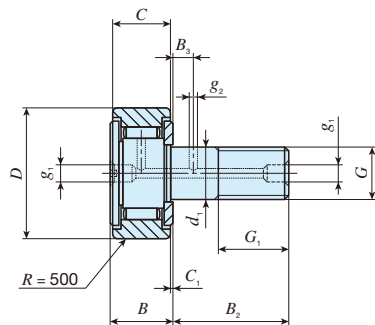
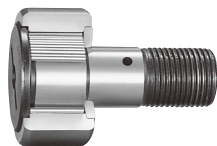
| Stud diameter<br><br>mm<br>(inch) | Identification number |                           |                       |                           | Mass<br>(Ref.)<br><br>g | Boundary dimensions   mm (inch) |                            |                           |                     |                          |                 |                       |                            |                           |                          |                          |                          |                           |                          |                              |      | Mounting<br>dimensions<br><br><i>f</i><br>Min.<br>mm (inch) | Maximum<br>tightening<br>torque<br><br>N·m | Basic<br>dynamic<br>load rating<br><br><i>C</i><br><br>N | Basic<br>static<br>load rating<br><br><i>C</i> <sub>0</sub><br><br>N | Track<br>capacity |  |
|-----------------------------------|-----------------------|---------------------------|-----------------------|---------------------------|-------------------------|---------------------------------|----------------------------|---------------------------|---------------------|--------------------------|-----------------|-----------------------|----------------------------|---------------------------|--------------------------|--------------------------|--------------------------|---------------------------|--------------------------|------------------------------|------|-------------------------------------------------------------|--------------------------------------------|----------------------------------------------------------|----------------------------------------------------------------------|-------------------|--|
|                                   | Shield type           |                           | Sealed type           |                           |                         | <i>D</i>                        | <i>C</i>                   | <i>d</i> <sub>1</sub>     | <i>G</i><br>UNF     | <i>G</i> <sub>1</sub>    | <i>B</i><br>max | <i>B</i> <sub>2</sub> | <i>B</i> <sub>3</sub>      | <i>C</i> <sub>1</sub>     | <i>g</i> <sub>1</sub>    | <i>g</i> <sub>2</sub>    | <i>H</i>                 | <i>r</i>                  | Crowned<br>outer ring    | Cylindrical<br>outer ring    |      |                                                             |                                            |                                                          |                                                                      |                   |  |
|                                   | Crowned<br>outer ring | Cylindrical<br>outer ring | Crowned<br>outer ring | Cylindrical<br>outer ring |                         |                                 |                            |                           |                     |                          |                 |                       |                            |                           |                          |                          |                          |                           |                          |                              |      |                                                             |                                            |                                                          |                                                                      |                   |  |
| 4.826                             | CR 8 VBR              | CR 8 VB                   | CR 8 VBUUR            | CR 8 VBUU                 | 9                       | 12.700 ( $\frac{1}{2}$ )        | 8.731 ( $\frac{11}{32}$ )  | 4.826                     | No.10-32            | 6.350 ( $\frac{1}{4}$ )  | 10.2 (0.40)     |                       | 12.700 ( $\frac{1}{2}$ )   | — (—)                     | 0.794 ( $\frac{1}{32}$ ) | — (—)                    | — (—)                    | 3.175 ( $\frac{1}{8}$ )   | 0.397 ( $\frac{1}{64}$ ) | 8.334 ( $\frac{21}{64}$ )    | 1.4  | 4 260                                                       | 4 750                                      | 770                                                      | 2 140                                                                |                   |  |
|                                   | CR 8-1 VBR            | CR 8-1 VB                 | CR 8-1 VBUUR          | CR 8-1 VBUU               | 10                      | 12.700 ( $\frac{1}{2}$ )        | 8.525 ( $\frac{3}{8}$ )    | 4.826                     | No.10-32            | 6.350 ( $\frac{1}{4}$ )  | 10.9 (0.43)     |                       | 15.875 ( $\frac{5}{8}$ )   | — (—)                     | 0.794 ( $\frac{1}{32}$ ) | — (—)                    | — (—)                    | 3.175 ( $\frac{1}{8}$ )   | 0.397 ( $\frac{1}{64}$ ) | 8.334 ( $\frac{21}{64}$ )    | 1.4  | 4 710                                                       | 5 410                                      | 770                                                      | 2 360                                                                |                   |  |
| 6.350<br>( $\frac{1}{4}$ )        | CR 10 VBR             | CR 10 VB                  | CR 10 VBUUR           | CR 10 VBUU                | 19                      | 15.875 ( $\frac{5}{8}$ )        | 10.319 ( $\frac{13}{32}$ ) | 6.350 ( $\frac{1}{4}$ )   | $\frac{1}{4}$ - 28  | 7.938 ( $\frac{5}{16}$ ) | 11.8 (0.46)     |                       | 15.875 ( $\frac{5}{8}$ )   | — (—)                     | 0.794 ( $\frac{1}{32}$ ) | — (—)                    | — (—)                    | 3.175 ( $\frac{1}{8}$ )   | 0.397 ( $\frac{1}{64}$ ) | 11.509 ( $\frac{29}{64}$ )   | 3.4  | 5 830                                                       | 7 660                                      | 1 030                                                    | 3 210                                                                |                   |  |
|                                   | CR 10-1 VBR           | CR 10-1 VB                | CR 10-1 VBUUR         | CR 10-1 VBUU              | 21                      | 15.875 ( $\frac{5}{8}$ )        | 11.112 ( $\frac{7}{16}$ )  | 6.350 ( $\frac{1}{4}$ )   | $\frac{1}{4}$ - 28  | 7.938 ( $\frac{5}{16}$ ) | 12.5 (0.49)     |                       | 19.050 ( $\frac{3}{4}$ )   | — (—)                     | 0.794 ( $\frac{1}{32}$ ) | — (—)                    | — (—)                    | 3.175 ( $\frac{1}{8}$ )   | 0.397 ( $\frac{1}{64}$ ) | 11.509 ( $\frac{29}{64}$ )   | 3.4  | 6 340                                                       | 8 530                                      | 1 030                                                    | 3 480                                                                |                   |  |
| 9.525<br>( $\frac{3}{8}$ )        | CR 12 VBR             | CR 12 VB                  | CR 12 VBUUR           | CR 12 VBUU                | 36                      | 19.050 ( $\frac{3}{4}$ )        | 12.700 ( $\frac{1}{2}$ )   | 9.525 ( $\frac{3}{8}$ )   | $\frac{3}{8}$ - 24  | 9.525 ( $\frac{3}{8}$ )  | 14.2 (0.56)     |                       | 22.225 ( $\frac{7}{8}$ )   | 6.350 ( $\frac{1}{4}$ )   | 0.794 ( $\frac{1}{32}$ ) | 4.762 ( $\frac{3}{16}$ ) | 2.381 ( $\frac{3}{32}$ ) | 4.762 ( $\frac{3}{16}$ )  | 0.794 ( $\frac{1}{32}$ ) | 13.494 ( $\frac{17}{32}$ )   | 10.8 | 8 710                                                       | 12 300                                     | 1 340                                                    | 4 500                                                                |                   |  |
|                                   | CR 14 VBR             | CR 14 VB                  | CR 14 VBUUR           | CR 14 VBUU                | 47                      | 22.225 ( $\frac{7}{8}$ )        | 12.700 ( $\frac{1}{2}$ )   | 9.525 ( $\frac{3}{8}$ )   | $\frac{3}{8}$ - 24  | 9.525 ( $\frac{3}{8}$ )  | 14.2 (0.56)     |                       | 22.225 ( $\frac{7}{8}$ )   | 6.350 ( $\frac{1}{4}$ )   | 0.794 ( $\frac{1}{32}$ ) | 4.762 ( $\frac{3}{16}$ ) | 2.381 ( $\frac{3}{32}$ ) | 4.762 ( $\frac{3}{16}$ )  | 0.794 ( $\frac{1}{32}$ ) | 15.081 ( $\frac{19}{32}$ )   | 10.8 | 8 710                                                       | 12 300                                     | 1 630                                                    | 5 250                                                                |                   |  |
| 11.112<br>( $\frac{7}{16}$ )      | CR 16 VBR             | CR 16 VB                  | CR 16 VBUUR           | CR 16 VBUU                | 74                      | 25.400 ( 1 )                    | 15.875 ( $\frac{5}{8}$ )   | 11.112 ( $\frac{7}{16}$ ) | $\frac{7}{16}$ - 20 | 12.700 ( $\frac{1}{2}$ ) | 17.3 (0.68)     |                       | 25.400 ( 1 )               | 6.350 ( $\frac{1}{4}$ )   | 0.794 ( $\frac{1}{32}$ ) | 4.762 ( $\frac{3}{16}$ ) | 3.175 ( $\frac{1}{8}$ )  | 6.350 ( $\frac{1}{4}$ )   | 1.191 ( $\frac{3}{64}$ ) | 17.859 ( $\frac{45}{64}$ )   | 17.4 | 13 100                                                      | 22 700                                     | 1 970                                                    | 7 280                                                                |                   |  |
|                                   | CR 18 VBR             | CR 18 VB                  | CR 18 VBUUR           | CR 18 VBUU                | 85                      | 28.575 ( 1 $\frac{1}{8}$ )      | 15.875 ( $\frac{5}{8}$ )   | 11.112 ( $\frac{7}{16}$ ) | $\frac{7}{16}$ - 20 | 12.700 ( $\frac{1}{2}$ ) | 17.3 (0.68)     |                       | 25.400 ( 1 )               | 6.350 ( $\frac{1}{4}$ )   | 0.794 ( $\frac{1}{32}$ ) | 4.762 ( $\frac{3}{16}$ ) | 3.175 ( $\frac{1}{8}$ )  | 6.350 ( $\frac{1}{4}$ )   | 1.588 ( $\frac{1}{16}$ ) | 19.050 ( $\frac{3}{4}$ )     | 17.4 | 13 100                                                      | 22 700                                     | 2 300                                                    | 7 710                                                                |                   |  |
| 12.700<br>( $\frac{1}{2}$ )       | CR 20 VBR             | CR 20 VB                  | CR 20 VBUUR           | CR 20 VBUU                | 137                     | 31.750 ( 1 $\frac{1}{4}$ )      | 19.050 ( $\frac{3}{4}$ )   | 12.700 ( $\frac{1}{2}$ )  | $\frac{1}{2}$ - 20  | 15.875 ( $\frac{5}{8}$ ) | 20.4 (0.80)     |                       | 31.750 ( 1 $\frac{1}{4}$ ) | 7.938 ( $\frac{5}{16}$ )  | 0.794 ( $\frac{1}{32}$ ) | 4.762 ( $\frac{3}{16}$ ) | 3.175 ( $\frac{1}{8}$ )  | 6.350 ( $\frac{1}{4}$ )   | 1.588 ( $\frac{1}{16}$ ) | 21.828 ( $\frac{55}{64}$ )   | 27.7 | 23 600                                                      | 31 700                                     | 2 680                                                    | 10 700                                                               |                   |  |
|                                   | CR 22 VBR             | CR 22 VB                  | CR 22 VBUUR           | CR 22 VBUU                | 160                     | 34.925 ( 1 $\frac{3}{8}$ )      | 19.050 ( $\frac{3}{4}$ )   | 12.700 ( $\frac{1}{2}$ )  | $\frac{1}{2}$ - 20  | 15.875 ( $\frac{5}{8}$ ) | 20.4 (0.80)     |                       | 31.750 ( 1 $\frac{1}{4}$ ) | 7.938 ( $\frac{5}{16}$ )  | 0.794 ( $\frac{1}{32}$ ) | 4.762 ( $\frac{3}{16}$ ) | 3.175 ( $\frac{1}{8}$ )  | 6.350 ( $\frac{1}{4}$ )   | 1.588 ( $\frac{1}{16}$ ) | 21.828 ( $\frac{55}{64}$ )   | 27.7 | 23 600                                                      | 31 700                                     | 3 050                                                    | 11 800                                                               |                   |  |
| 15.875<br>( $\frac{5}{8}$ )       | CR 24 VBR             | CR 24 VB                  | CR 24 VBUUR           | CR 24 VBUU                | 230                     | 38.100 ( 1 $\frac{1}{2}$ )      | 22.225 ( $\frac{7}{8}$ )   | 15.875 ( $\frac{5}{8}$ )  | $\frac{5}{8}$ - 18  | 19.050 ( $\frac{3}{4}$ ) | 23.6 (0.93)     |                       | 38.100 ( 1 $\frac{1}{2}$ ) | 9.525 ( $\frac{3}{8}$ )   | 0.794 ( $\frac{1}{32}$ ) | 4.762 ( $\frac{3}{16}$ ) | 3.969 ( $\frac{5}{32}$ ) | 7.938 ( $\frac{5}{16}$ )  | 1.588 ( $\frac{1}{16}$ ) | 26.196 ( 1 $\frac{3}{64}$ )  | 55.7 | 28 200                                                      | 40 100                                     | 3 410                                                    | 15 400                                                               |                   |  |
|                                   | CR 26 VBR             | CR 26 VB                  | CR 26 VBUUR           | CR 26 VBUU                | 265                     | 41.275 ( 1 $\frac{5}{8}$ )      | 22.225 ( $\frac{7}{8}$ )   | 15.875 ( $\frac{5}{8}$ )  | $\frac{5}{8}$ - 18  | 19.050 ( $\frac{3}{4}$ ) | 23.6 (0.93)     |                       | 38.100 ( 1 $\frac{1}{2}$ ) | 9.525 ( $\frac{3}{8}$ )   | 0.794 ( $\frac{1}{32}$ ) | 4.762 ( $\frac{3}{16}$ ) | 3.969 ( $\frac{5}{32}$ ) | 7.938 ( $\frac{5}{16}$ )  | 1.588 ( $\frac{1}{16}$ ) | 26.196 ( 1 $\frac{3}{64}$ )  | 55.7 | 28 200                                                      | 40 100                                     | 3 820                                                    | 16 700                                                               |                   |  |
| 19.050<br>( $\frac{3}{4}$ )       | CR 28 VBR             | CR 28 VB                  | CR 28 VBUUR           | CR 28 VBUU                | 372                     | 44.450 ( 1 $\frac{3}{4}$ )      | 25.400 ( 1 )               | 19.050 ( $\frac{3}{4}$ )  | $\frac{3}{4}$ - 16  | 22.225 ( $\frac{7}{8}$ ) | 26.8 (1.06)     |                       | 44.450 ( 1 $\frac{3}{4}$ ) | 11.112 ( $\frac{7}{16}$ ) | 0.794 ( $\frac{1}{32}$ ) | 4.762 ( $\frac{3}{16}$ ) | 3.969 ( $\frac{5}{32}$ ) | 7.938 ( $\frac{5}{16}$ )  | 1.588 ( $\frac{1}{16}$ ) | 32.543 ( 1 $\frac{9}{32}$ )  | 100  | 35 300                                                      | 55 600                                     | 4 210                                                    | 21 000                                                               |                   |  |
|                                   | CR 30 VBR             | CR 30 VB                  | CR 30 VBUUR           | CR 30 VBUU                | 418                     | 47.625 ( 1 $\frac{7}{8}$ )      | 25.400 ( 1 )               | 19.050 ( $\frac{3}{4}$ )  | $\frac{3}{4}$ - 16  | 22.225 ( $\frac{7}{8}$ ) | 26.8 (1.06)     |                       | 44.450 ( 1 $\frac{3}{4}$ ) | 11.112 ( $\frac{7}{16}$ ) | 0.794 ( $\frac{1}{32}$ ) | 4.762 ( $\frac{3}{16}$ ) | 3.969 ( $\frac{5}{32}$ ) | 7.938 ( $\frac{5}{16}$ )  | 1.588 ( $\frac{1}{16}$ ) | 32.543 ( 1 $\frac{9}{32}$ )  | 100  | 35 300                                                      | 55 600                                     | 4 610                                                    | 22 500                                                               |                   |  |
| 22.225<br>( $\frac{7}{8}$ )       | CR 32 VBR             | CR 32 VB                  | CR 32 VBUUR           | CR 32 VBUU                | 627                     | 50.800 ( 2 )                    | 31.750 ( 1 $\frac{1}{4}$ ) | 22.225 ( $\frac{7}{8}$ )  | $\frac{7}{8}$ - 14  | 25.400 ( 1 )             | 33.5 (1.32)     |                       | 50.800 ( 2 )               | 12.700 ( $\frac{1}{2}$ )  | 0.794 ( $\frac{1}{32}$ ) | 4.762 ( $\frac{3}{16}$ ) | 4.762 ( $\frac{3}{16}$ ) | 11.112 ( $\frac{7}{16}$ ) | 1.588 ( $\frac{1}{16}$ ) | 37.306 ( 1 $\frac{15}{32}$ ) | 162  | 45 700                                                      | 80 600                                     | 5 050                                                    | 30 900                                                               |                   |  |
|                                   | CR 36 VBR             | CR 36 VB                  | CR 36 VBUUR           | CR 36 VBUU                | 759                     | 57.150 ( 2 $\frac{1}{4}$ )      | 31.750 ( 1 $\frac{1}{4}$ ) | 22.225 ( $\frac{7}{8}$ )  | $\frac{7}{8}$ - 14  | 25.400 ( 1 )             | 33.5 (1.32)     |                       | 50.800 ( 2 )               | 12.700 ( $\frac{1}{2}$ )  | 0.794 ( $\frac{1}{32}$ ) | 4.762 ( $\frac{3}{16}$ ) | 4.762 ( $\frac{3}{16}$ ) | 11.112 ( $\frac{7}{16}$ ) | 1.588 ( $\frac{1}{16}$ ) | 37.306 ( 1 $\frac{15}{32}$ ) | 162  | 45 700                                                      | 80 600                                     | 5 900                                                    | 34 700                                                               |                   |  |

Remarks 1. No oil hole is provided if the stud diameter  $d_1$  is 6.35 mm or less. As for the others, an oil hole is provided for the head, the outside surface, and the end of the stud.  
2. Provided with pre-packed grease.  
3. Contact **IKO** for the information on the maximum allowable static load.

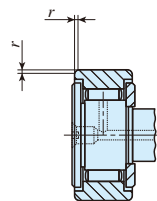


Selectable product specifications

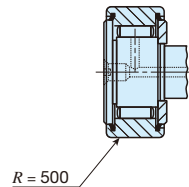
|                                     |           |                        |
|-------------------------------------|-----------|------------------------|
| Type of material                    | No symbol | High carbon steel      |
|                                     | F         | Stainless steel        |
| Roller guide method                 | No symbol | With cage              |
|                                     | V         | Full complement        |
| Seal structure                      | No symbol | Shield type            |
|                                     | UU        | Sealed type            |
| Shape of outer ring outside surface | No symbol | Cylindrical outer ring |
|                                     | R         | Crowned outer ring     |



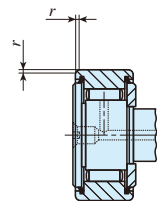
CR···VR



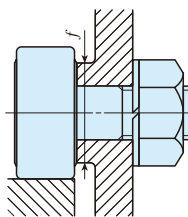
CR···V



CR···VUUR



CR···VUU

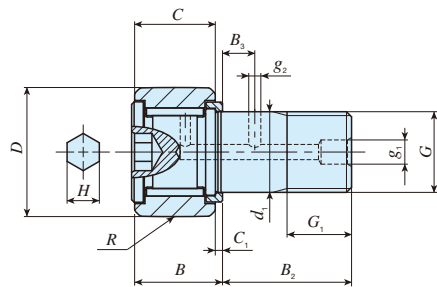
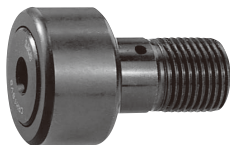


| Stud diameter<br><br>mm<br>(inch) | Identification number |                           |                       |                           | Mass<br>(Ref.)<br><br>g | Boundary dimensions    mm (inch) |                            |                           |                      |                           |                 |                       |                           |                           |                          |                          |                          |                          |                             |      | Mounting<br>dimensions<br><br><i>f</i><br>Min.<br>mm (inch) | Maximum<br>tightening<br>torque<br><br>N·m | Basic<br>dynamic<br>load rating<br><br><i>C</i><br><br>N | Basic<br>static<br>load rating<br><br><i>C</i> <sub>0</sub><br><br>N | Track<br>capacity |  |
|-----------------------------------|-----------------------|---------------------------|-----------------------|---------------------------|-------------------------|----------------------------------|----------------------------|---------------------------|----------------------|---------------------------|-----------------|-----------------------|---------------------------|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------------------------|------|-------------------------------------------------------------|--------------------------------------------|----------------------------------------------------------|----------------------------------------------------------------------|-------------------|--|
|                                   | Shield type           |                           | Sealed type           |                           |                         | <i>D</i>                         | <i>C</i>                   | <i>d</i> <sub>1</sub>     | <i>G</i><br>UNF      | <i>G</i> <sub>1</sub>     | <i>B</i><br>max | <i>B</i> <sub>2</sub> | <i>B</i> <sub>3</sub>     | <i>C</i> <sub>1</sub>     | <i>g</i> <sub>1</sub>    | <i>g</i> <sub>2</sub>    | <i>r</i>                 | Crowned<br>outer ring    | Cylindrical<br>outer ring   |      |                                                             |                                            |                                                          |                                                                      |                   |  |
|                                   | Crowned<br>outer ring | Cylindrical<br>outer ring | Crowned<br>outer ring | Cylindrical<br>outer ring |                         |                                  |                            |                           |                      |                           |                 |                       |                           |                           |                          |                          |                          |                          |                             |      |                                                             |                                            |                                                          |                                                                      |                   |  |
| 4.826                             | CR 8 VR               | CR 8 V                    | CR 8 VUUR             | CR 8 VUU                  | 9                       | 12.700 ( $\frac{1}{2}$ )         | 8.731 ( $\frac{11}{32}$ )  | 4.826                     | No.10-32             | 6.350 ( $\frac{1}{4}$ )   | 10.2 (0.40)     |                       | 12.700 ( $\frac{1}{2}$ )  | — (—)                     | 0.794 ( $\frac{1}{32}$ ) | 3.175 ( $\frac{1}{8}$ )  | — (—)                    | 0.397 ( $\frac{1}{64}$ ) | 8.334 ( $\frac{21}{64}$ )   | 1.4  | 4 260                                                       | 4 750                                      | 770                                                      | 2 140                                                                |                   |  |
|                                   | CR 8-1 VR             | CR 8-1 V                  | CR 8-1 VUUR           | CR 8-1 VUU                | 10                      | 12.700 ( $\frac{1}{2}$ )         | 9.525 ( $\frac{3}{8}$ )    | 4.826                     | No.10-32             | 6.350 ( $\frac{1}{4}$ )   | 10.9 (0.43)     |                       | 15.875 ( $\frac{5}{8}$ )  | — (—)                     | 0.794 ( $\frac{1}{32}$ ) | 3.175 ( $\frac{1}{8}$ )  | — (—)                    | 0.397 ( $\frac{1}{64}$ ) | 8.334 ( $\frac{21}{64}$ )   | 1.4  | 4 710                                                       | 5 410                                      | 770                                                      | 2 360                                                                |                   |  |
| 6.350<br>( $\frac{1}{4}$ )        | CR 10 VR              | CR 10 V                   | CR 10 VUUR            | CR 10 VUU                 | 19                      | 15.875 ( $\frac{5}{8}$ )         | 10.319 ( $\frac{13}{32}$ ) | 6.350 ( $\frac{1}{4}$ )   | $\frac{1}{4}$ - 28   | 7.938 ( $\frac{5}{16}$ )  | 11.8 (0.46)     |                       | 15.875 ( $\frac{5}{8}$ )  | — (—)                     | 0.794 ( $\frac{1}{32}$ ) | 3.175 ( $\frac{1}{8}$ )  | — (—)                    | 0.397 ( $\frac{1}{64}$ ) | 11.509 ( $\frac{29}{64}$ )  | 3.4  | 5 830                                                       | 7 660                                      | 1 030                                                    | 3 210                                                                |                   |  |
|                                   | CR 10-1 VR            | CR 10-1 V                 | CR 10-1 VUUR          | CR 10-1 VUU               | 21                      | 15.875 ( $\frac{5}{8}$ )         | 11.112 ( $\frac{7}{16}$ )  | 6.350 ( $\frac{1}{4}$ )   | $\frac{1}{4}$ - 28   | 7.938 ( $\frac{5}{16}$ )  | 12.5 (0.49)     |                       | 19.050 ( $\frac{3}{4}$ )  | — (—)                     | 0.794 ( $\frac{1}{32}$ ) | 3.175 ( $\frac{1}{8}$ )  | — (—)                    | 0.397 ( $\frac{1}{64}$ ) | 11.509 ( $\frac{29}{64}$ )  | 3.4  | 6 340                                                       | 8 530                                      | 1 030                                                    | 3 480                                                                |                   |  |
| 9.525<br>( $\frac{3}{8}$ )        | CR 12 VR              | CR 12 V                   | CR 12 VUUR            | CR 12 VUU                 | 36                      | 19.050 ( $\frac{3}{4}$ )         | 12.700 ( $\frac{1}{2}$ )   | 9.525 ( $\frac{3}{8}$ )   | $\frac{3}{8}$ - 24   | 9.525 ( $\frac{3}{8}$ )   | 14.2 (0.56)     |                       | 22.225 ( $\frac{7}{8}$ )  | 6.350 ( $\frac{1}{4}$ )   | 0.794 ( $\frac{1}{32}$ ) | 4.762 ( $\frac{3}{16}$ ) | 2.381 ( $\frac{3}{32}$ ) | 0.794 ( $\frac{1}{32}$ ) | 13.494 ( $\frac{17}{32}$ )  | 10.8 | 8 710                                                       | 12 300                                     | 1 340                                                    | 4 500                                                                |                   |  |
|                                   | CR 14 VR              | CR 14 V                   | CR 14 VUUR            | CR 14 VUU                 | 47                      | 22.225 ( $\frac{7}{8}$ )         | 12.700 ( $\frac{1}{2}$ )   | 9.525 ( $\frac{3}{8}$ )   | $\frac{3}{8}$ - 24   | 9.525 ( $\frac{3}{8}$ )   | 14.2 (0.56)     |                       | 22.225 ( $\frac{7}{8}$ )  | 6.350 ( $\frac{1}{4}$ )   | 0.794 ( $\frac{1}{32}$ ) | 4.762 ( $\frac{3}{16}$ ) | 2.381 ( $\frac{3}{32}$ ) | 0.794 ( $\frac{1}{32}$ ) | 15.081 ( $\frac{19}{32}$ )  | 10.8 | 8 710                                                       | 12 300                                     | 1 630                                                    | 5 250                                                                |                   |  |
| 11.112<br>( $\frac{7}{16}$ )      | CR 16 VR              | CR 16 V                   | CR 16 VUUR            | CR 16 VUU                 | 74                      | 25.400 (1 )                      | 15.875 ( $\frac{5}{8}$ )   | 11.112 ( $\frac{7}{16}$ ) | $\frac{7}{16}$ - 20  | 12.700 ( $\frac{1}{2}$ )  | 17.3 (0.68)     |                       | 25.400 (1 )               | 6.350 ( $\frac{1}{4}$ )   | 0.794 ( $\frac{1}{32}$ ) | 4.762 ( $\frac{3}{16}$ ) | 3.175 ( $\frac{1}{8}$ )  | 1.191 ( $\frac{3}{64}$ ) | 17.859 ( $\frac{45}{64}$ )  | 17.4 | 13 100                                                      | 22 700                                     | 1 970                                                    | 7 280                                                                |                   |  |
|                                   | CR 18 VR              | CR 18 V                   | CR 18 VUUR            | CR 18 VUU                 | 85                      | 28.575 (1 $\frac{1}{8}$ )        | 15.875 ( $\frac{5}{8}$ )   | 11.112 ( $\frac{7}{16}$ ) | $\frac{7}{16}$ - 20  | 12.700 ( $\frac{1}{2}$ )  | 17.3 (0.68)     |                       | 25.400 (1 )               | 6.350 ( $\frac{1}{4}$ )   | 0.794 ( $\frac{1}{32}$ ) | 4.762 ( $\frac{3}{16}$ ) | 3.175 ( $\frac{1}{8}$ )  | 1.588 ( $\frac{1}{16}$ ) | 19.050 ( $\frac{3}{4}$ )    | 17.4 | 13 100                                                      | 22 700                                     | 2 300                                                    | 7 710                                                                |                   |  |
| 12.700<br>( $\frac{1}{2}$ )       | CR 20 VR              | CR 20 V                   | CR 20 VUUR            | CR 20 VUU                 | 137                     | 31.750 (1 $\frac{1}{4}$ )        | 19.050 ( $\frac{3}{4}$ )   | 12.700 ( $\frac{1}{2}$ )  | $\frac{1}{2}$ - 20   | 15.875 ( $\frac{5}{8}$ )  | 20.4 (0.80)     |                       | 31.750 (1 $\frac{1}{4}$ ) | 7.938 ( $\frac{5}{16}$ )  | 0.794 ( $\frac{1}{32}$ ) | 4.762 ( $\frac{3}{16}$ ) | 3.175 ( $\frac{1}{8}$ )  | 1.588 ( $\frac{1}{16}$ ) | 21.828 ( $\frac{55}{64}$ )  | 27.7 | 23 600                                                      | 31 700                                     | 2 680                                                    | 10 700                                                               |                   |  |
|                                   | CR 22 VR              | CR 22 V                   | CR 22 VUUR            | CR 22 VUU                 | 160                     | 34.925 (1 $\frac{3}{8}$ )        | 19.050 ( $\frac{3}{4}$ )   | 12.700 ( $\frac{1}{2}$ )  | $\frac{1}{2}$ - 20   | 15.875 ( $\frac{5}{8}$ )  | 20.4 (0.80)     |                       | 31.750 (1 $\frac{1}{4}$ ) | 7.938 ( $\frac{5}{16}$ )  | 0.794 ( $\frac{1}{32}$ ) | 4.762 ( $\frac{3}{16}$ ) | 3.175 ( $\frac{1}{8}$ )  | 1.588 ( $\frac{1}{16}$ ) | 21.828 ( $\frac{55}{64}$ )  | 27.7 | 23 600                                                      | 31 700                                     | 3 050                                                    | 11 800                                                               |                   |  |
| 15.875<br>( $\frac{5}{8}$ )       | CR 24 VR              | CR 24 V                   | CR 24 VUUR            | CR 24 VUU                 | 230                     | 38.100 (1 $\frac{1}{2}$ )        | 22.225 ( $\frac{7}{8}$ )   | 15.875 ( $\frac{5}{8}$ )  | $\frac{5}{8}$ - 18   | 19.050 ( $\frac{3}{4}$ )  | 23.6 (0.93)     |                       | 38.100 (1 $\frac{1}{2}$ ) | 9.525 ( $\frac{3}{8}$ )   | 0.794 ( $\frac{1}{32}$ ) | 4.762 ( $\frac{3}{16}$ ) | 3.969 ( $\frac{5}{32}$ ) | 1.588 ( $\frac{1}{16}$ ) | 26.196 (1 $\frac{3}{64}$ )  | 55.7 | 28 200                                                      | 40 100                                     | 3 410                                                    | 15 400                                                               |                   |  |
|                                   | CR 26 VR              | CR 26 V                   | CR 26 VUUR            | CR 26 VUU                 | 265                     | 41.275 (1 $\frac{3}{8}$ )        | 22.225 ( $\frac{7}{8}$ )   | 15.875 ( $\frac{5}{8}$ )  | $\frac{5}{8}$ - 18   | 19.050 ( $\frac{3}{4}$ )  | 23.6 (0.93)     |                       | 38.100 (1 $\frac{1}{2}$ ) | 9.525 ( $\frac{3}{8}$ )   | 0.794 ( $\frac{1}{32}$ ) | 4.762 ( $\frac{3}{16}$ ) | 3.969 ( $\frac{5}{32}$ ) | 1.588 ( $\frac{1}{16}$ ) | 26.196 (1 $\frac{3}{64}$ )  | 55.7 | 28 200                                                      | 40 100                                     | 3 820                                                    | 16 700                                                               |                   |  |
| 19.050<br>( $\frac{3}{4}$ )       | CR 28 VR              | CR 28 V                   | CR 28 VUUR            | CR 28 VUU                 | 372                     | 44.450 (1 $\frac{3}{4}$ )        | 25.400 (1 )                | 19.050 ( $\frac{3}{4}$ )  | $\frac{3}{4}$ - 16   | 22.225 ( $\frac{7}{8}$ )  | 26.8 (1.06)     |                       | 44.450 (1 $\frac{3}{4}$ ) | 11.112 ( $\frac{7}{16}$ ) | 0.794 ( $\frac{1}{32}$ ) | 4.762 ( $\frac{3}{16}$ ) | 3.969 ( $\frac{5}{32}$ ) | 1.588 ( $\frac{1}{16}$ ) | 32.543 (1 $\frac{9}{32}$ )  | 100  | 35 300                                                      | 55 600                                     | 4 210                                                    | 21 000                                                               |                   |  |
|                                   | CR 30 VR              | CR 30 V                   | CR 30 VUUR            | CR 30 VUU                 | 418                     | 47.625 (1 $\frac{7}{8}$ )        | 25.400 (1 )                | 19.050 ( $\frac{3}{4}$ )  | $\frac{3}{4}$ - 16   | 22.225 ( $\frac{7}{8}$ )  | 26.8 (1.06)     |                       | 44.450 (1 $\frac{3}{4}$ ) | 11.112 ( $\frac{7}{16}$ ) | 0.794 ( $\frac{1}{32}$ ) | 4.762 ( $\frac{3}{16}$ ) | 3.969 ( $\frac{5}{32}$ ) | 1.588 ( $\frac{1}{16}$ ) | 32.543 (1 $\frac{9}{32}$ )  | 100  | 35 300                                                      | 55 600                                     | 4 610                                                    | 22 500                                                               |                   |  |
| 22.225<br>( $\frac{7}{8}$ )       | CR 32 VR              | CR 32 V                   | CR 32 VUUR            | CR 32 VUU                 | 627                     | 50.800 (2 )                      | 31.750 (1 $\frac{1}{4}$ )  | 22.225 ( $\frac{7}{8}$ )  | $\frac{7}{8}$ - 14   | 25.400 (1 )               | 33.5 (1.32)     |                       | 50.800 (2 )               | 12.700 ( $\frac{1}{2}$ )  | 0.794 ( $\frac{1}{32}$ ) | 4.762 ( $\frac{3}{16}$ ) | 4.762 ( $\frac{3}{16}$ ) | 1.588 ( $\frac{1}{16}$ ) | 37.306 (1 $\frac{15}{32}$ ) | 162  | 45 700                                                      | 80 600                                     | 5 050                                                    | 30 900                                                               |                   |  |
|                                   | CR 36 VR              | CR 36 V                   | CR 36 VUUR            | CR 36 VUU                 | 759                     | 57.150 (2 $\frac{1}{4}$ )        | 31.750 (1 $\frac{1}{4}$ )  | 22.225 ( $\frac{7}{8}$ )  | $\frac{7}{8}$ - 14   | 25.400 (1 )               | 33.5 (1.32)     |                       | 50.800 (2 )               | 12.700 ( $\frac{1}{2}$ )  | 0.794 ( $\frac{1}{32}$ ) | 4.762 ( $\frac{3}{16}$ ) | 4.762 ( $\frac{3}{16}$ ) | 1.588 ( $\frac{1}{16}$ ) | 37.306 (1 $\frac{15}{32}$ ) | 162  | 45 700                                                      | 80 600                                     | 5 900                                                    | 34 700                                                               |                   |  |
| 31.750<br>(1 $\frac{1}{4}$ )      | —                     | —                         | —                     | CR 48 VUU                 | 1 960                   | 76.200 (3 )                      | 44.450 (1 $\frac{3}{4}$ )  | 31.750 (1 $\frac{1}{4}$ ) | 1 $\frac{3}{4}$ - 12 | 31.750 (1 $\frac{1}{4}$ ) | 46.4 (1.83)     |                       | 63.500 (2 $\frac{1}{2}$ ) | 15.875 ( $\frac{5}{8}$ )  | 1.588 ( $\frac{1}{16}$ ) | 6.350 ( $\frac{1}{4}$ )  | 4.762 ( $\frac{3}{16}$ ) | 2.381 ( $\frac{3}{32}$ ) | 51.991 (2 $\frac{3}{64}$ )  | 500  | 77 600                                                      | 172 000                                    | —                                                        | 64 300                                                               |                   |  |

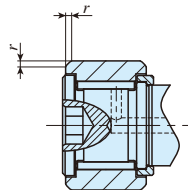
Remarks 1. An oil hole is provided only for the stud head if the stud diameter  $d_1$  is 6.35 mm or less. As for the others, an oil hole is provided for the head, the outside surface, and the end of the stud.  
2. Provided with pre-packed grease.  
3. Contact **IKO** for the information on the maximum allowable static load.

Selectable product specifications

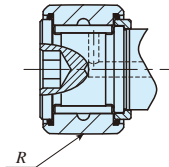
|                                     |           |                        |
|-------------------------------------|-----------|------------------------|
| Type of material                    | No symbol | High carbon steel      |
|                                     | F         | Stainless steel        |
| Roller guide method                 | No symbol | With cage              |
|                                     | V         | Full complement        |
| Seal structure                      | No symbol | Shield type            |
|                                     | UU        | Sealed type            |
| Shape of outer ring outside surface | No symbol | Cylindrical outer ring |
|                                     | R         | Crowned outer ring     |



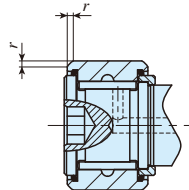
CRH...VBR



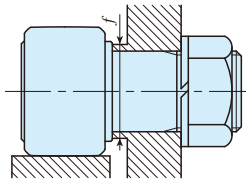
CRH...VB



CRH...VBUUR



CRH...VBUU

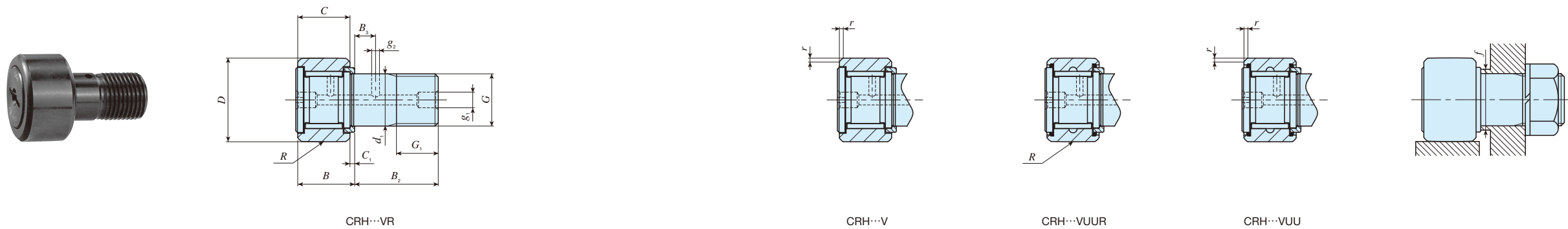


| Stud diameter<br><br>mm<br>(inch)           | Identification number |                           |                       |                           | Mass<br>(Ref.)<br><br>g | Boundary dimensions    mm (inch)         |                                          |                                          |                                      |                                          |                 |                       |                                          |                                         |                                        |                                        |                                        |                                         |           |                                        |                                            |       |         |         | Mounting<br>dimensions<br><br><i>f</i><br>Min.<br>mm (inch) | Maximum<br>tightening<br>torque<br><br>N·m | Basic<br>dynamic<br>load rating<br><br><i>C</i><br><br>N | Basic<br>static<br>load rating<br><br><i>C</i> <sub>0</sub><br><br>N | Track<br>capacity |  |
|---------------------------------------------|-----------------------|---------------------------|-----------------------|---------------------------|-------------------------|------------------------------------------|------------------------------------------|------------------------------------------|--------------------------------------|------------------------------------------|-----------------|-----------------------|------------------------------------------|-----------------------------------------|----------------------------------------|----------------------------------------|----------------------------------------|-----------------------------------------|-----------|----------------------------------------|--------------------------------------------|-------|---------|---------|-------------------------------------------------------------|--------------------------------------------|----------------------------------------------------------|----------------------------------------------------------------------|-------------------|--|
|                                             | Shield type           |                           | Sealed type           |                           |                         | <i>D</i>                                 | <i>C</i>                                 | <i>d</i> <sub>1</sub>                    | <i>G</i><br>UNF                      | <i>G</i> <sub>1</sub>                    | <i>B</i><br>max | <i>B</i> <sub>2</sub> | <i>B</i> <sub>3</sub>                    | <i>C</i> <sub>1</sub>                   | <i>g</i> <sub>1</sub>                  | <i>g</i> <sub>2</sub>                  | <i>H</i>                               | <i>R</i>                                | <i>r</i>  | N                                      |                                            |       |         |         |                                                             |                                            |                                                          |                                                                      |                   |  |
|                                             | Crowned<br>outer ring | Cylindrical<br>outer ring | Crowned<br>outer ring | Cylindrical<br>outer ring |                         |                                          |                                          |                                          |                                      |                                          |                 |                       |                                          |                                         |                                        |                                        |                                        |                                         |           | Crowned<br>outer ring                  | Cylindrical<br>outer ring                  |       |         |         |                                                             |                                            |                                                          |                                                                      |                   |  |
| 6.350<br>( <sup>1</sup> / <sub>4</sub> )    | CRH 8-1 VBR           | CRH 8-1 VB                | CRH 8-1 VBUUR         | CRH 8-1 VBUU              | 12                      | 12.700 ( <sup>1</sup> / <sub>2</sub> )   | 9.525 ( <sup>3</sup> / <sub>8</sub> )    | 6.350 ( <sup>1</sup> / <sub>4</sub> )    | <sup>1</sup> / <sub>4</sub> - 28     | 6.350 ( <sup>1</sup> / <sub>4</sub> )    | 11.0 (0.44)     |                       | 15.875 ( <sup>5</sup> / <sub>8</sub> )   | — ( — )                                 | 0.794 ( <sup>1</sup> / <sub>32</sub> ) | — ( — )                                | — ( — )                                | 3.175 ( <sup>1</sup> / <sub>8</sub> )   | 180 ( 7 ) | 0.397 ( <sup>1</sup> / <sub>64</sub> ) | 8.334 ( <sup>2</sup> / <sub>64</sub> )     | 3.4   | 4 710   | 5 410   | 401                                                         | 2 360                                      |                                                          |                                                                      |                   |  |
|                                             | CRH 9 VBR             | CRH 9 VB                  | CRH 9 VBUUR           | CRH 9 VBUU                | 15                      | 14.288 ( <sup>9</sup> / <sub>16</sub> )  | 9.525 ( <sup>3</sup> / <sub>8</sub> )    | 6.350 ( <sup>1</sup> / <sub>4</sub> )    | <sup>1</sup> / <sub>4</sub> - 28     | 6.350 ( <sup>1</sup> / <sub>4</sub> )    | 11.1 (0.44)     |                       | 15.875 ( <sup>5</sup> / <sub>8</sub> )   | — ( — )                                 | 0.794 ( <sup>1</sup> / <sub>32</sub> ) | — ( — )                                | — ( — )                                | 3.175 ( <sup>1</sup> / <sub>8</sub> )   | 180 ( 7 ) | 0.397 ( <sup>1</sup> / <sub>64</sub> ) | 8.334 ( <sup>2</sup> / <sub>64</sub> )     | 3.4   | 4 710   | 5 410   | 469                                                         | 2 650                                      |                                                          |                                                                      |                   |  |
| 7.938<br>( <sup>5</sup> / <sub>16</sub> )   | CRH 10-1 VBR          | CRH 10-1 VB               | CRH 10-1 VBUUR        | CRH 10-1 VBUU             | 23                      | 15.875 ( <sup>5</sup> / <sub>8</sub> )   | 11.112 ( <sup>7</sup> / <sub>16</sub> )  | 7.938 ( <sup>5</sup> / <sub>16</sub> )   | <sup>5</sup> / <sub>16</sub> - 24    | 7.938 ( <sup>5</sup> / <sub>16</sub> )   | 12.8 (0.50)     |                       | 19.050 ( <sup>3</sup> / <sub>4</sub> )   | — ( — )                                 | 0.794 ( <sup>1</sup> / <sub>32</sub> ) | — ( — )                                | — ( — )                                | 3.175 ( <sup>1</sup> / <sub>8</sub> )   | 200 ( 8 ) | 0.397 ( <sup>1</sup> / <sub>64</sub> ) | 11.112 ( <sup>7</sup> / <sub>16</sub> )    | 6.8   | 6 340   | 8 530   | 579                                                         | 3 480                                      |                                                          |                                                                      |                   |  |
|                                             | CRH 11 VBR            | CRH 11 VB                 | CRH 11 VBUUR          | CRH 11 VBUU               | 27                      | 17.462 ( <sup>1</sup> / <sub>16</sub> )  | 11.112 ( <sup>7</sup> / <sub>16</sub> )  | 7.938 ( <sup>5</sup> / <sub>16</sub> )   | <sup>5</sup> / <sub>16</sub> - 24    | 7.938 ( <sup>5</sup> / <sub>16</sub> )   | 12.8 (0.50)     |                       | 19.050 ( <sup>3</sup> / <sub>4</sub> )   | — ( — )                                 | 0.794 ( <sup>1</sup> / <sub>32</sub> ) | — ( — )                                | — ( — )                                | 3.175 ( <sup>1</sup> / <sub>8</sub> )   | 200 ( 8 ) | 0.397 ( <sup>1</sup> / <sub>64</sub> ) | 11.112 ( <sup>7</sup> / <sub>16</sub> )    | 6.8   | 6 340   | 8 530   | 658                                                         | 3 830                                      |                                                          |                                                                      |                   |  |
| 11.112<br>( <sup>7</sup> / <sub>16</sub> )  | CRH 12 VBR            | CRH 12 VB                 | CRH 12 VBUUR          | CRH 12 VBUU               | 39                      | 19.050 ( <sup>3</sup> / <sub>4</sub> )   | 12.700 ( <sup>1</sup> / <sub>2</sub> )   | 11.112 ( <sup>7</sup> / <sub>16</sub> )  | <sup>7</sup> / <sub>16</sub> - 20    | 9.525 ( <sup>3</sup> / <sub>8</sub> )    | 14.6 (0.57)     |                       | 22.225 ( <sup>7</sup> / <sub>8</sub> )   | 6.350 ( <sup>1</sup> / <sub>4</sub> )   | 0.794 ( <sup>1</sup> / <sub>32</sub> ) | 4.762 ( <sup>3</sup> / <sub>16</sub> ) | 2.381 ( <sup>3</sup> / <sub>32</sub> ) | 4.762 ( <sup>3</sup> / <sub>16</sub> )  | 250 (10)  | 0.794 ( <sup>1</sup> / <sub>32</sub> ) | 13.494 ( <sup>1</sup> / <sub>32</sub> )    | 17.6  | 8 710   | 12 300  | 853                                                         | 4 500                                      |                                                          |                                                                      |                   |  |
|                                             | CRH 14 VBR            | CRH 14 VB                 | CRH 14 VBUUR          | CRH 14 VBUU               | 49                      | 22.225 ( <sup>7</sup> / <sub>8</sub> )   | 12.700 ( <sup>1</sup> / <sub>2</sub> )   | 11.112 ( <sup>7</sup> / <sub>16</sub> )  | <sup>7</sup> / <sub>16</sub> - 20    | 9.525 ( <sup>3</sup> / <sub>8</sub> )    | 14.6 (0.57)     |                       | 22.225 ( <sup>7</sup> / <sub>8</sub> )   | 6.350 ( <sup>1</sup> / <sub>4</sub> )   | 0.794 ( <sup>1</sup> / <sub>32</sub> ) | 4.762 ( <sup>3</sup> / <sub>16</sub> ) | 2.381 ( <sup>3</sup> / <sub>32</sub> ) | 4.762 ( <sup>3</sup> / <sub>16</sub> )  | 250 (10)  | 0.794 ( <sup>1</sup> / <sub>32</sub> ) | 13.494 ( <sup>1</sup> / <sub>32</sub> )    | 17.6  | 8 710   | 12 300  | 1 050                                                       | 5 250                                      |                                                          |                                                                      |                   |  |
| 15.875<br>( <sup>5</sup> / <sub>8</sub> )   | CRH 16 VBR            | CRH 16 VB                 | CRH 16 VBUUR          | CRH 16 VBUU               | 93                      | 25.400 ( 1 )                             | 15.875 ( <sup>5</sup> / <sub>8</sub> )   | 15.875 ( <sup>5</sup> / <sub>8</sub> )   | <sup>5</sup> / <sub>8</sub> - 18     | 12.700 ( <sup>1</sup> / <sub>2</sub> )   | 17.9 (0.70)     |                       | 25.400 ( 1 )                             | 6.350 ( <sup>1</sup> / <sub>4</sub> )   | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 4.762 ( <sup>3</sup> / <sub>16</sub> ) | 2.381 ( <sup>3</sup> / <sub>32</sub> ) | 6.350 ( <sup>1</sup> / <sub>4</sub> )   | 300 (12)  | 1.191 ( <sup>1</sup> / <sub>64</sub> ) | 18.256 ( <sup>2</sup> / <sub>32</sub> )    | 57.8  | 13 100  | 22 700  | 1 420                                                       | 7 280                                      |                                                          |                                                                      |                   |  |
|                                             | CRH 18 VBR            | CRH 18 VB                 | CRH 18 VBUUR          | CRH 18 VBUU               | 109                     | 28.575 ( 1 <sup>1</sup> / <sub>8</sub> ) | 15.875 ( <sup>5</sup> / <sub>8</sub> )   | 15.875 ( <sup>5</sup> / <sub>8</sub> )   | <sup>5</sup> / <sub>8</sub> - 18     | 12.700 ( <sup>1</sup> / <sub>2</sub> )   | 17.9 (0.70)     |                       | 25.400 ( 1 )                             | 6.350 ( <sup>1</sup> / <sub>4</sub> )   | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 4.762 ( <sup>3</sup> / <sub>16</sub> ) | 2.381 ( <sup>3</sup> / <sub>32</sub> ) | 6.350 ( <sup>1</sup> / <sub>4</sub> )   | 300 (12)  | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 18.256 ( <sup>2</sup> / <sub>32</sub> )    | 57.8  | 13 100  | 22 700  | 1 660                                                       | 7 710                                      |                                                          |                                                                      |                   |  |
| 19.050<br>( <sup>3</sup> / <sub>4</sub> )   | CRH 20 VBR            | CRH 20 VB                 | CRH 20 VBUUR          | CRH 20 VBUU               | 176                     | 31.750 ( 1 <sup>1</sup> / <sub>4</sub> ) | 19.050 ( <sup>3</sup> / <sub>4</sub> )   | 19.050 ( <sup>3</sup> / <sub>4</sub> )   | <sup>3</sup> / <sub>4</sub> - 16     | 15.875 ( <sup>5</sup> / <sub>8</sub> )   | 21.0 (0.83)     |                       | 31.750 ( 1 <sup>1</sup> / <sub>4</sub> ) | 7.938 ( <sup>5</sup> / <sub>16</sub> )  | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 4.762 ( <sup>3</sup> / <sub>16</sub> ) | 2.381 ( <sup>3</sup> / <sub>32</sub> ) | 6.350 ( <sup>1</sup> / <sub>4</sub> )   | 360 (14)  | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 24.209 ( <sup>6</sup> / <sub>64</sub> )    | 103   | 23 600  | 31 700  | 2 160                                                       | 10 700                                     |                                                          |                                                                      |                   |  |
|                                             | CRH 22 VBR            | CRH 22 VB                 | CRH 22 VBUUR          | CRH 22 VBUU               | 200                     | 34.925 ( 1 <sup>3</sup> / <sub>8</sub> ) | 19.050 ( <sup>3</sup> / <sub>4</sub> )   | 19.050 ( <sup>3</sup> / <sub>4</sub> )   | <sup>3</sup> / <sub>4</sub> - 16     | 15.875 ( <sup>5</sup> / <sub>8</sub> )   | 21.0 (0.83)     |                       | 31.750 ( 1 <sup>1</sup> / <sub>4</sub> ) | 7.938 ( <sup>5</sup> / <sub>16</sub> )  | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 4.762 ( <sup>3</sup> / <sub>16</sub> ) | 2.381 ( <sup>3</sup> / <sub>32</sub> ) | 6.350 ( <sup>1</sup> / <sub>4</sub> )   | 360 (14)  | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 24.209 ( <sup>6</sup> / <sub>64</sub> )    | 103   | 23 600  | 31 700  | 2 450                                                       | 11 800                                     |                                                          |                                                                      |                   |  |
| 22.225<br>( <sup>7</sup> / <sub>8</sub> )   | CRH 24 VBR            | CRH 24 VB                 | CRH 24 VBUUR          | CRH 24 VBUU               | 296                     | 38.100 ( 1 <sup>1</sup> / <sub>2</sub> ) | 22.225 ( <sup>7</sup> / <sub>8</sub> )   | 22.225 ( <sup>7</sup> / <sub>8</sub> )   | <sup>7</sup> / <sub>8</sub> - 14     | 19.050 ( <sup>3</sup> / <sub>4</sub> )   | 24.3 (0.96)     |                       | 38.100 ( 1 <sup>1</sup> / <sub>2</sub> ) | 9.525 ( <sup>3</sup> / <sub>8</sub> )   | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 4.762 ( <sup>3</sup> / <sub>16</sub> ) | 2.381 ( <sup>3</sup> / <sub>32</sub> ) | 7.938 ( <sup>5</sup> / <sub>16</sub> )  | 500 (20)  | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 26.988 ( 1 <sup>1</sup> / <sub>16</sub> )  | 162   | 28 200  | 40 100  | 3 410                                                       | 15 400                                     |                                                          |                                                                      |                   |  |
|                                             | CRH 26 VBR            | CRH 26 VB                 | CRH 26 VBUUR          | CRH 26 VBUU               | 329                     | 41.275 ( 1 <sup>5</sup> / <sub>8</sub> ) | 22.225 ( <sup>7</sup> / <sub>8</sub> )   | 22.225 ( <sup>7</sup> / <sub>8</sub> )   | <sup>7</sup> / <sub>8</sub> - 14     | 19.050 ( <sup>3</sup> / <sub>4</sub> )   | 24.3 (0.96)     |                       | 38.100 ( 1 <sup>1</sup> / <sub>2</sub> ) | 9.525 ( <sup>3</sup> / <sub>8</sub> )   | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 4.762 ( <sup>3</sup> / <sub>16</sub> ) | 2.381 ( <sup>3</sup> / <sub>32</sub> ) | 7.938 ( <sup>5</sup> / <sub>16</sub> )  | 500 (20)  | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 26.988 ( 1 <sup>1</sup> / <sub>16</sub> )  | 162   | 28 200  | 40 100  | 3 820                                                       | 16 700                                     |                                                          |                                                                      |                   |  |
| 25.400<br>( 1 )                             | CRH 28 VBR            | CRH 28 VB                 | CRH 28 VBUUR          | CRH 28 VBUU               | 463                     | 44.450 ( 1 <sup>3</sup> / <sub>4</sub> ) | 25.400 ( 1 )                             | 25.400 ( 1 )                             | 1 - 14UNS                            | 22.225 ( <sup>7</sup> / <sub>8</sub> )   | 27.4 (1.08)     |                       | 44.450 ( 1 <sup>3</sup> / <sub>4</sub> ) | 11.112 ( <sup>7</sup> / <sub>16</sub> ) | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 4.762 ( <sup>3</sup> / <sub>16</sub> ) | 2.381 ( <sup>3</sup> / <sub>32</sub> ) | 7.938 ( <sup>5</sup> / <sub>16</sub> )  | 500 (20)  | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 32.941 ( 1 <sup>19</sup> / <sub>64</sub> ) | 258   | 35 300  | 55 600  | 4 210                                                       | 21 000                                     |                                                          |                                                                      |                   |  |
|                                             | CRH 30 VBR            | CRH 30 VB                 | CRH 30 VBUUR          | CRH 30 VBUU               | 508                     | 47.625 ( 1 <sup>7</sup> / <sub>8</sub> ) | 25.400 ( 1 )                             | 25.400 ( 1 )                             | 1 - 14UNS                            | 22.225 ( <sup>7</sup> / <sub>8</sub> )   | 27.4 (1.08)     |                       | 44.450 ( 1 <sup>3</sup> / <sub>4</sub> ) | 11.112 ( <sup>7</sup> / <sub>16</sub> ) | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 4.762 ( <sup>3</sup> / <sub>16</sub> ) | 2.381 ( <sup>3</sup> / <sub>32</sub> ) | 7.938 ( <sup>5</sup> / <sub>16</sub> )  | 500 (20)  | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 32.941 ( 1 <sup>19</sup> / <sub>64</sub> ) | 258   | 35 300  | 55 600  | 4 610                                                       | 22 500                                     |                                                          |                                                                      |                   |  |
| 28.575<br>( 1 <sup>1</sup> / <sub>8</sub> ) | CRH 32 VBR            | CRH 32 VB                 | CRH 32 VBUUR          | CRH 32 VBUU               | 722                     | 50.800 ( 2 )                             | 31.750 ( 1 <sup>1</sup> / <sub>4</sub> ) | 28.575 ( 1 <sup>1</sup> / <sub>8</sub> ) | 1 <sup>1</sup> / <sub>8</sub> - 12   | 25.400 ( 1 )                             | 34.2 (1.35)     |                       | 50.800 ( 2 )                             | 12.700 ( <sup>1</sup> / <sub>2</sub> )  | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 4.762 ( <sup>3</sup> / <sub>16</sub> ) | 3.175 ( <sup>1</sup> / <sub>8</sub> )  | 11.112 ( <sup>7</sup> / <sub>16</sub> ) | 600 (24)  | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 37.306 ( 1 <sup>15</sup> / <sub>32</sub> ) | 356   | 45 700  | 80 600  | 5 690                                                       | 30 900                                     |                                                          |                                                                      |                   |  |
|                                             | CRH 36 VBR            | CRH 36 VB                 | CRH 36 VBUUR          | CRH 36 VBUU               | 858                     | 57.150 ( 2 <sup>1</sup> / <sub>4</sub> ) | 31.750 ( 1 <sup>1</sup> / <sub>4</sub> ) | 28.575 ( 1 <sup>1</sup> / <sub>8</sub> ) | 1 <sup>1</sup> / <sub>8</sub> - 12   | 25.400 ( 1 )                             | 34.2 (1.35)     |                       | 50.800 ( 2 )                             | 12.700 ( <sup>1</sup> / <sub>2</sub> )  | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 4.762 ( <sup>3</sup> / <sub>16</sub> ) | 3.175 ( <sup>1</sup> / <sub>8</sub> )  | 11.112 ( <sup>7</sup> / <sub>16</sub> ) | 600 (24)  | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 37.306 ( 1 <sup>15</sup> / <sub>32</sub> ) | 356   | 45 700  | 80 600  | 6 640                                                       | 34 700                                     |                                                          |                                                                      |                   |  |
| 31.750<br>( 1 <sup>1</sup> / <sub>4</sub> ) | CRH 40 VBR            | CRH 40 VB                 | CRH 40 VBUUR          | CRH 40 VBUU               | 1 260                   | 63.500 ( 2 <sup>1</sup> / <sub>2</sub> ) | 38.100 ( 1 <sup>1</sup> / <sub>2</sub> ) | 31.750 ( 1 <sup>1</sup> / <sub>4</sub> ) | 1 <sup>1</sup> / <sub>4</sub> - 12   | 28.575 ( 1 <sup>1</sup> / <sub>8</sub> ) | 40.0 (1.57)     |                       | 57.150 ( 2 <sup>1</sup> / <sub>4</sub> ) | 14.288 ( <sup>9</sup> / <sub>16</sub> ) | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 4.762 ( <sup>3</sup> / <sub>16</sub> ) | 3.175 ( <sup>1</sup> / <sub>8</sub> )  | 12.700 ( <sup>1</sup> / <sub>2</sub> )  | 760 (30)  | 2.381 ( <sup>3</sup> / <sub>32</sub> ) | 40.878 ( 1 <sup>39</sup> / <sub>64</sub> ) | 500   | 61 400  | 116 000 | 8 970                                                       | 45 000                                     |                                                          |                                                                      |                   |  |
|                                             | CRH 44 VBR            | CRH 44 VB                 | CRH 44 VBUUR          | CRH 44 VBUU               | 1 460                   | 69.850 ( 2 <sup>3</sup> / <sub>4</sub> ) | 38.100 ( 1 <sup>1</sup> / <sub>2</sub> ) | 31.750 ( 1 <sup>1</sup> / <sub>4</sub> ) | 1 <sup>1</sup> / <sub>4</sub> - 12   | 28.575 ( 1 <sup>1</sup> / <sub>8</sub> ) | 40.0 (1.57)     |                       | 57.150 ( 2 <sup>1</sup> / <sub>4</sub> ) | 14.288 ( <sup>9</sup> / <sub>16</sub> ) | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 4.762 ( <sup>3</sup> / <sub>16</sub> ) | 3.175 ( <sup>1</sup> / <sub>8</sub> )  | 12.700 ( <sup>1</sup> / <sub>2</sub> )  | 760 (30)  | 2.381 ( <sup>3</sup> / <sub>32</sub> ) | 40.878 ( 1 <sup>39</sup> / <sub>64</sub> ) | 500   | 61 400  | 116 000 | 10 200                                                      | 49 500                                     |                                                          |                                                                      |                   |  |
| 38.100<br>( 1 <sup>1</sup> / <sub>2</sub> ) | CRH 48 VBR            | CRH 48 VB                 | CRH 48 VBUUR          | CRH 48 VBUU               | 2 100                   | 76.200 ( 3 )                             | 44.450 ( 1 <sup>3</sup> / <sub>4</sub> ) | 38.100 ( 1 <sup>1</sup> / <sub>2</sub> ) | 1 <sup>1</sup> / <sub>2</sub> - 12   | 31.750 ( 1 <sup>1</sup> / <sub>4</sub> ) | 46.4 (1.83)     |                       | 63.500 ( 2 <sup>1</sup> / <sub>2</sub> ) | 15.875 ( <sup>5</sup> / <sub>8</sub> )  | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 6.350 ( <sup>1</sup> / <sub>4</sub> )  | 3.175 ( <sup>1</sup> / <sub>8</sub> )  | 19.050 ( <sup>3</sup> / <sub>4</sub> )  | 760 (30)  | 2.381 ( <sup>3</sup> / <sub>32</sub> ) | 51.991 ( 2 <sup>3</sup> / <sub>64</sub> )  | 892   | 77 600  | 172 000 | 11 400                                                      | 64 300                                     |                                                          |                                                                      |                   |  |
|                                             | CRH 52 VBR            | CRH 52 VB                 | CRH 52 VBUUR          | CRH 52 VBUU               | 2 380                   | 82.500 ( 3 <sup>1</sup> / <sub>4</sub> ) | 44.450 ( 1 <sup>3</sup> / <sub>4</sub> ) | 38.100 ( 1 <sup>1</sup> / <sub>2</sub> ) | 1 <sup>1</sup> / <sub>2</sub> - 12   | 31.750 ( 1 <sup>1</sup> / <sub>4</sub> ) | 46.4 (1.83)     |                       | 63.500 ( 2 <sup>1</sup> / <sub>2</sub> ) | 15.875 ( <sup>5</sup> / <sub>8</sub> )  | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 6.350 ( <sup>1</sup> / <sub>4</sub> )  | 3.175 ( <sup>1</sup> / <sub>8</sub> )  | 19.050 ( <sup>3</sup> / <sub>4</sub> )  | 760 (30)  | 2.381 ( <sup>3</sup> / <sub>32</sub> ) | 51.991 ( 2 <sup>3</sup> / <sub>64</sub> )  | 892   | 77 600  | 172 000 | 12 700                                                      | 69 600                                     |                                                          |                                                                      |                   |  |
| 44.450<br>( 1 <sup>3</sup> / <sub>4</sub> ) | CRH 56 VBR            | CRH 56 VB                 | CRH 56 VBUUR          | CRH 56 VBUU               | 3 240                   | 88.900 ( 3 <sup>1</sup> / <sub>2</sub> ) | 50.800 ( 2 )                             | 44.450 ( 1 <sup>3</sup> / <sub>4</sub> ) | 1 <sup>3</sup> / <sub>4</sub> - 12UN | 34.925 ( 1 <sup>3</sup> / <sub>8</sub> ) | 52.8 (2.08)     |                       | 69.850 ( 2 <sup>3</sup> / <sub>4</sub> ) | 17.462 ( <sup>1</sup> / <sub>16</sub> ) | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 6.350 ( <sup>1</sup> / <sub>4</sub> )  | 3.175 ( <sup>1</sup> / <sub>8</sub> )  | 19.050 ( <sup>3</sup> / <sub>4</sub> )  | 760 (30)  | 2.381 ( <sup>3</sup> / <sub>32</sub> ) | 59.928 ( 2 <sup>23</sup> / <sub>64</sub> ) | 1 450 | 111 000 | 239 000 | 14 100                                                      | 87 000                                     |                                                          |                                                                      |                   |  |
| 50.800<br>( 2 )                             | CRH 64 VBR            | CRH 64 VB                 | CRH 64 VBUUR          | CRH 64 VBUU               | 4 960                   | 101.600 ( 4 )                            | 57.150 ( 2 <sup>1</sup> / <sub>4</sub> ) | 50.800 ( 2 )                             | 2 - 12UN                             | 38.100 ( 1 <sup>1</sup> / <sub>2</sub> ) | 59.4 (2.34)     |                       | 88.900 ( 3 <sup>1</sup> / <sub>2</sub> ) | 19.050 ( <sup>3</sup> / <sub>4</sub> )  | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 6.350 ( <sup>1</sup> / <sub>4</sub> )  | 3.175 ( <sup>1</sup> / <sub>8</sub> )  | 19.050 ( <sup>3</sup> / <sub>4</sub> )  | 760 (30)  | 2.381 ( <sup>3</sup> / <sub>32</sub> ) | 64.691 ( 2 <sup>35</sup> / <sub>64</sub> ) | 2 190 | 142 000 | 317 000 | 16 800                                                      | 113 000                                    |                                                          |                                                                      |                   |  |



Selectable product specifications

|                                     |           |                        |
|-------------------------------------|-----------|------------------------|
| Type of material                    | No symbol | High carbon steel      |
|                                     | F         | Stainless steel        |
| Roller guide method                 | No symbol | With cage              |
|                                     | V         | Full complement        |
| Seal structure                      | No symbol | Shield type            |
|                                     | UU        | Sealed type            |
| Shape of outer ring outside surface | No symbol | Cylindrical outer ring |
|                                     | R         | Crowned outer ring     |



| Stud diameter<br><br>mm (inch)              | Identification number |                        |                    |                        | Mass (Ref.)<br><br>g | Boundary dimensions mm (inch)            |                                          |                                          |                                      |                                          |              |                                          |                                         |                                        |                                        |                                        |           |                                        |                                            | Mounting dimensions<br><br><i>f</i> Min.<br>mm (inch) | Maximum tightening torque<br><br>N·m | Basic dynamic load rating<br><br><i>C</i><br><br>N | Basic static load rating<br><br><i>C</i> <sub>0</sub><br><br>N | Track capacity<br><br>N |  |
|---------------------------------------------|-----------------------|------------------------|--------------------|------------------------|----------------------|------------------------------------------|------------------------------------------|------------------------------------------|--------------------------------------|------------------------------------------|--------------|------------------------------------------|-----------------------------------------|----------------------------------------|----------------------------------------|----------------------------------------|-----------|----------------------------------------|--------------------------------------------|-------------------------------------------------------|--------------------------------------|----------------------------------------------------|----------------------------------------------------------------|-------------------------|--|
|                                             | Shield type           |                        | Sealed type        |                        |                      | <i>D</i>                                 | <i>C</i>                                 | <i>d</i> <sub>1</sub>                    | <i>G</i> UNF                         | <i>G</i> <sub>1</sub>                    | <i>B</i> max | <i>B</i> <sub>2</sub>                    | <i>B</i> <sub>3</sub>                   | <i>C</i> <sub>1</sub>                  | <i>g</i> <sub>1</sub>                  | <i>g</i> <sub>2</sub>                  | <i>R</i>  | <i>r</i>                               | Crowned outer ring                         |                                                       |                                      |                                                    |                                                                | Cylindrical outer ring  |  |
|                                             | Crowned outer ring    | Cylindrical outer ring | Crowned outer ring | Cylindrical outer ring |                      |                                          |                                          |                                          |                                      |                                          |              |                                          |                                         |                                        |                                        |                                        |           |                                        |                                            |                                                       |                                      |                                                    |                                                                |                         |  |
| 6.350<br>( <sup>1</sup> / <sub>4</sub> )    | CRH 8-1 VR            | CRH 8-1 V              | CRH 8-1 VUUR       | CRH 8-1 VUU            | 12                   | 12.700 ( <sup>1</sup> / <sub>2</sub> )   | 9.525 ( <sup>3</sup> / <sub>8</sub> )    | 6.350 ( <sup>1</sup> / <sub>4</sub> )    | <sup>1</sup> / <sub>4</sub> - 28     | 6.350 ( <sup>1</sup> / <sub>4</sub> )    | 11.0 (0.44)  | 15.875 ( <sup>5</sup> / <sub>8</sub> )   | — ( — )                                 | 0.794 ( <sup>1</sup> / <sub>32</sub> ) | 3.175 ( <sup>1</sup> / <sub>8</sub> )  | — ( — )                                | 180 ( 7 ) | 0.397 ( <sup>1</sup> / <sub>64</sub> ) | 8.334 ( <sup>2</sup> / <sub>64</sub> )     | 3.4                                                   | 4 710                                | 5 410                                              | 401                                                            | 2 360                   |  |
|                                             | CRH 9 VR              | CRH 9 V                | CRH 9 VUUR         | CRH 9 VUU              | 15                   | 14.288 ( <sup>9</sup> / <sub>16</sub> )  | 9.525 ( <sup>3</sup> / <sub>8</sub> )    | 6.350 ( <sup>1</sup> / <sub>4</sub> )    | <sup>1</sup> / <sub>4</sub> - 28     | 6.350 ( <sup>1</sup> / <sub>4</sub> )    | 11.1 (0.44)  | 15.875 ( <sup>5</sup> / <sub>8</sub> )   | — ( — )                                 | 0.794 ( <sup>1</sup> / <sub>32</sub> ) | 3.175 ( <sup>1</sup> / <sub>8</sub> )  | — ( — )                                | 180 ( 7 ) | 0.397 ( <sup>1</sup> / <sub>64</sub> ) | 8.334 ( <sup>2</sup> / <sub>64</sub> )     | 3.4                                                   | 4 710                                | 5 410                                              | 469                                                            | 2 650                   |  |
| 7.938<br>( <sup>5</sup> / <sub>16</sub> )   | CRH 10-1 VR           | CRH 10-1 V             | CRH 10-1 VUUR      | CRH 10-1 VUU           | 23                   | 15.875 ( <sup>5</sup> / <sub>8</sub> )   | 11.112 ( <sup>7</sup> / <sub>16</sub> )  | 7.938 ( <sup>5</sup> / <sub>16</sub> )   | <sup>5</sup> / <sub>16</sub> - 24    | 7.938 ( <sup>5</sup> / <sub>16</sub> )   | 12.8 (0.50)  | 19.050 ( <sup>3</sup> / <sub>4</sub> )   | — ( — )                                 | 0.794 ( <sup>1</sup> / <sub>32</sub> ) | 3.175 ( <sup>1</sup> / <sub>8</sub> )  | — ( — )                                | 200 ( 8 ) | 0.397 ( <sup>1</sup> / <sub>64</sub> ) | 11.112 ( <sup>7</sup> / <sub>16</sub> )    | 6.8                                                   | 6 340                                | 8 530                                              | 579                                                            | 3 480                   |  |
|                                             | CRH 11 VR             | CRH 11 V               | CRH 11 VUUR        | CRH 11 VUU             | 27                   | 17.462 ( <sup>1</sup> / <sub>2</sub> )   | 11.112 ( <sup>7</sup> / <sub>16</sub> )  | 7.938 ( <sup>5</sup> / <sub>16</sub> )   | <sup>5</sup> / <sub>16</sub> - 24    | 7.938 ( <sup>5</sup> / <sub>16</sub> )   | 12.8 (0.50)  | 19.050 ( <sup>3</sup> / <sub>4</sub> )   | — ( — )                                 | 0.794 ( <sup>1</sup> / <sub>32</sub> ) | 3.175 ( <sup>1</sup> / <sub>8</sub> )  | — ( — )                                | 200 ( 8 ) | 0.397 ( <sup>1</sup> / <sub>64</sub> ) | 11.112 ( <sup>7</sup> / <sub>16</sub> )    | 6.8                                                   | 6 340                                | 8 530                                              | 658                                                            | 3 830                   |  |
| 11.112<br>( <sup>7</sup> / <sub>16</sub> )  | CRH 12 VR             | CRH 12 V               | CRH 12 VUUR        | CRH 12 VUU             | 39                   | 19.050 ( <sup>3</sup> / <sub>4</sub> )   | 12.700 ( <sup>1</sup> / <sub>2</sub> )   | 11.112 ( <sup>7</sup> / <sub>16</sub> )  | <sup>7</sup> / <sub>16</sub> - 20    | 9.525 ( <sup>3</sup> / <sub>8</sub> )    | 14.6 (0.57)  | 22.225 ( <sup>7</sup> / <sub>8</sub> )   | 6.350 ( <sup>1</sup> / <sub>4</sub> )   | 0.794 ( <sup>1</sup> / <sub>32</sub> ) | 4.762 ( <sup>3</sup> / <sub>16</sub> ) | 2.381 ( <sup>3</sup> / <sub>32</sub> ) | 250 (10)  | 0.794 ( <sup>1</sup> / <sub>32</sub> ) | 13.494 ( <sup>1</sup> / <sub>2</sub> )     | 17.6                                                  | 8 710                                | 12 300                                             | 853                                                            | 4 500                   |  |
|                                             | CRH 14 VR             | CRH 14 V               | CRH 14 VUUR        | CRH 14 VUU             | 49                   | 22.225 ( <sup>7</sup> / <sub>8</sub> )   | 12.700 ( <sup>1</sup> / <sub>2</sub> )   | 11.112 ( <sup>7</sup> / <sub>16</sub> )  | <sup>7</sup> / <sub>16</sub> - 20    | 9.525 ( <sup>3</sup> / <sub>8</sub> )    | 14.6 (0.57)  | 22.225 ( <sup>7</sup> / <sub>8</sub> )   | 6.350 ( <sup>1</sup> / <sub>4</sub> )   | 0.794 ( <sup>1</sup> / <sub>32</sub> ) | 4.762 ( <sup>3</sup> / <sub>16</sub> ) | 2.381 ( <sup>3</sup> / <sub>32</sub> ) | 250 (10)  | 0.794 ( <sup>1</sup> / <sub>32</sub> ) | 13.494 ( <sup>1</sup> / <sub>2</sub> )     | 17.6                                                  | 8 710                                | 12 300                                             | 1 050                                                          | 5 250                   |  |
| 15.875<br>( <sup>5</sup> / <sub>8</sub> )   | CRH 16 VR             | CRH 16 V               | CRH 16 VUUR        | CRH 16 VUU             | 93                   | 25.400 ( 1 )                             | 15.875 ( <sup>5</sup> / <sub>8</sub> )   | 15.875 ( <sup>5</sup> / <sub>8</sub> )   | <sup>5</sup> / <sub>8</sub> - 18     | 12.700 ( <sup>1</sup> / <sub>2</sub> )   | 17.9 (0.70)  | 25.400 ( 1 )                             | 6.350 ( <sup>1</sup> / <sub>4</sub> )   | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 4.762 ( <sup>3</sup> / <sub>16</sub> ) | 2.381 ( <sup>3</sup> / <sub>32</sub> ) | 300 (12)  | 1.191 ( <sup>3</sup> / <sub>64</sub> ) | 18.256 ( <sup>2</sup> / <sub>32</sub> )    | 57.8                                                  | 13 100                               | 22 700                                             | 1 420                                                          | 7 280                   |  |
|                                             | CRH 18 VR             | CRH 18 V               | CRH 18 VUUR        | CRH 18 VUU             | 109                  | 28.575 ( 1 <sup>1</sup> / <sub>8</sub> ) | 15.875 ( <sup>5</sup> / <sub>8</sub> )   | 15.875 ( <sup>5</sup> / <sub>8</sub> )   | <sup>5</sup> / <sub>8</sub> - 18     | 12.700 ( <sup>1</sup> / <sub>2</sub> )   | 17.9 (0.70)  | 25.400 ( 1 )                             | 6.350 ( <sup>1</sup> / <sub>4</sub> )   | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 4.762 ( <sup>3</sup> / <sub>16</sub> ) | 2.381 ( <sup>3</sup> / <sub>32</sub> ) | 300 (12)  | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 18.256 ( <sup>2</sup> / <sub>32</sub> )    | 57.8                                                  | 13 100                               | 22 700                                             | 1 660                                                          | 7 710                   |  |
| 19.050<br>( <sup>3</sup> / <sub>4</sub> )   | CRH 20 VR             | CRH 20 V               | CRH 20 VUUR        | CRH 20 VUU             | 176                  | 31.750 ( 1 <sup>1</sup> / <sub>4</sub> ) | 19.050 ( <sup>3</sup> / <sub>4</sub> )   | 19.050 ( <sup>3</sup> / <sub>4</sub> )   | <sup>3</sup> / <sub>4</sub> - 16     | 15.875 ( <sup>5</sup> / <sub>8</sub> )   | 21.0 (0.83)  | 31.750 ( 1 <sup>1</sup> / <sub>4</sub> ) | 7.938 ( <sup>5</sup> / <sub>16</sub> )  | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 4.762 ( <sup>3</sup> / <sub>16</sub> ) | 2.381 ( <sup>3</sup> / <sub>32</sub> ) | 360 (14)  | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 24.209 ( <sup>6</sup> / <sub>64</sub> )    | 103                                                   | 23 600                               | 31 700                                             | 2 160                                                          | 10 700                  |  |
|                                             | CRH 22 VR             | CRH 22 V               | CRH 22 VUUR        | CRH 22 VUU             | 200                  | 34.925 ( 1 <sup>3</sup> / <sub>8</sub> ) | 19.050 ( <sup>3</sup> / <sub>4</sub> )   | 19.050 ( <sup>3</sup> / <sub>4</sub> )   | <sup>3</sup> / <sub>4</sub> - 16     | 15.875 ( <sup>5</sup> / <sub>8</sub> )   | 21.0 (0.83)  | 31.750 ( 1 <sup>1</sup> / <sub>4</sub> ) | 7.938 ( <sup>5</sup> / <sub>16</sub> )  | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 4.762 ( <sup>3</sup> / <sub>16</sub> ) | 2.381 ( <sup>3</sup> / <sub>32</sub> ) | 360 (14)  | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 24.209 ( <sup>6</sup> / <sub>64</sub> )    | 103                                                   | 23 600                               | 31 700                                             | 2 450                                                          | 11 800                  |  |
| 22.225<br>( <sup>7</sup> / <sub>8</sub> )   | CRH 24 VR             | CRH 24 V               | CRH 24 VUUR        | CRH 24 VUU             | 296                  | 38.100 ( 1 <sup>1</sup> / <sub>2</sub> ) | 22.225 ( <sup>7</sup> / <sub>8</sub> )   | 22.225 ( <sup>7</sup> / <sub>8</sub> )   | <sup>7</sup> / <sub>8</sub> - 14     | 19.050 ( <sup>3</sup> / <sub>4</sub> )   | 24.3 (0.96)  | 38.100 ( 1 <sup>1</sup> / <sub>2</sub> ) | 9.525 ( <sup>3</sup> / <sub>8</sub> )   | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 4.762 ( <sup>3</sup> / <sub>16</sub> ) | 2.381 ( <sup>3</sup> / <sub>32</sub> ) | 500 (20)  | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 26.988 ( 1 <sup>1</sup> / <sub>16</sub> )  | 162                                                   | 28 200                               | 40 100                                             | 3 410                                                          | 15 400                  |  |
|                                             | CRH 26 VR             | CRH 26 V               | CRH 26 VUUR        | CRH 26 VUU             | 329                  | 41.275 ( 1 <sup>5</sup> / <sub>8</sub> ) | 22.225 ( <sup>7</sup> / <sub>8</sub> )   | 22.225 ( <sup>7</sup> / <sub>8</sub> )   | <sup>7</sup> / <sub>8</sub> - 14     | 19.050 ( <sup>3</sup> / <sub>4</sub> )   | 24.3 (0.96)  | 38.100 ( 1 <sup>1</sup> / <sub>2</sub> ) | 9.525 ( <sup>3</sup> / <sub>8</sub> )   | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 4.762 ( <sup>3</sup> / <sub>16</sub> ) | 2.381 ( <sup>3</sup> / <sub>32</sub> ) | 500 (20)  | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 26.988 ( 1 <sup>1</sup> / <sub>16</sub> )  | 162                                                   | 28 200                               | 40 100                                             | 3 820                                                          | 16 700                  |  |
| 25.400<br>( 1 )                             | CRH 28 VR             | CRH 28 V               | CRH 28 VUUR        | CRH 28 VUU             | 463                  | 44.450 ( 1 <sup>3</sup> / <sub>4</sub> ) | 25.400 ( 1 )                             | 25.400 ( 1 )                             | 1 - 14UNS                            | 22.225 ( <sup>7</sup> / <sub>8</sub> )   | 27.4 (1.08)  | 44.450 ( 1 <sup>3</sup> / <sub>4</sub> ) | 11.112 ( <sup>7</sup> / <sub>16</sub> ) | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 4.762 ( <sup>3</sup> / <sub>16</sub> ) | 2.381 ( <sup>3</sup> / <sub>32</sub> ) | 500 (20)  | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 32.941 ( 1 <sup>19</sup> / <sub>64</sub> ) | 258                                                   | 35 300                               | 55 600                                             | 4 210                                                          | 21 000                  |  |
|                                             | CRH 30 VR             | CRH 30 V               | CRH 30 VUUR        | CRH 30 VUU             | 508                  | 47.625 ( 1 <sup>7</sup> / <sub>8</sub> ) | 25.400 ( 1 )                             | 25.400 ( 1 )                             | 1 - 14UNS                            | 22.225 ( <sup>7</sup> / <sub>8</sub> )   | 27.4 (1.08)  | 44.450 ( 1 <sup>3</sup> / <sub>4</sub> ) | 11.112 ( <sup>7</sup> / <sub>16</sub> ) | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 4.762 ( <sup>3</sup> / <sub>16</sub> ) | 2.381 ( <sup>3</sup> / <sub>32</sub> ) | 500 (20)  | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 32.941 ( 1 <sup>19</sup> / <sub>64</sub> ) | 258                                                   | 35 300                               | 55 600                                             | 4 610                                                          | 22 500                  |  |
| 28.575<br>( 1 <sup>1</sup> / <sub>8</sub> ) | CRH 32 VR             | CRH 32 V               | CRH 32 VUUR        | CRH 32 VUU             | 722                  | 50.800 ( 2 )                             | 31.750 ( 1 <sup>1</sup> / <sub>4</sub> ) | 28.575 ( 1 <sup>1</sup> / <sub>8</sub> ) | 1 <sup>1</sup> / <sub>8</sub> - 12   | 25.400 ( 1 )                             | 34.2 (1.35)  | 50.800 ( 2 )                             | 12.700 ( <sup>1</sup> / <sub>2</sub> )  | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 4.762 ( <sup>3</sup> / <sub>16</sub> ) | 3.175 ( <sup>1</sup> / <sub>8</sub> )  | 600 (24)  | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 37.306 ( 1 <sup>15</sup> / <sub>32</sub> ) | 356                                                   | 45 700                               | 80 600                                             | 5 690                                                          | 30 900                  |  |
|                                             | CRH 36 VR             | CRH 36 V               | CRH 36 VUUR        | CRH 36 VUU             | 858                  | 57.150 ( 2 <sup>1</sup> / <sub>4</sub> ) | 31.750 ( 1 <sup>1</sup> / <sub>4</sub> ) | 28.575 ( 1 <sup>1</sup> / <sub>8</sub> ) | 1 <sup>1</sup> / <sub>8</sub> - 12   | 25.400 ( 1 )                             | 34.2 (1.35)  | 50.800 ( 2 )                             | 12.700 ( <sup>1</sup> / <sub>2</sub> )  | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 4.762 ( <sup>3</sup> / <sub>16</sub> ) | 3.175 ( <sup>1</sup> / <sub>8</sub> )  | 600 (24)  | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 37.306 ( 1 <sup>15</sup> / <sub>32</sub> ) | 356                                                   | 45 700                               | 80 600                                             | 6 640                                                          | 34 700                  |  |
| 31.750<br>( 1 <sup>1</sup> / <sub>4</sub> ) | CRH 40 VR             | CRH 40 V               | CRH 40 VUUR        | CRH 40 VUU             | 1 260                | 63.500 ( 2 <sup>1</sup> / <sub>2</sub> ) | 38.100 ( 1 <sup>1</sup> / <sub>2</sub> ) | 31.750 ( 1 <sup>1</sup> / <sub>4</sub> ) | 1 <sup>1</sup> / <sub>4</sub> - 12   | 28.575 ( 1 <sup>1</sup> / <sub>8</sub> ) | 40.0 (1.57)  | 57.150 ( 2 <sup>1</sup> / <sub>4</sub> ) | 14.288 ( <sup>9</sup> / <sub>16</sub> ) | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 4.762 ( <sup>3</sup> / <sub>16</sub> ) | 3.175 ( <sup>1</sup> / <sub>8</sub> )  | 760 (30)  | 2.381 ( <sup>3</sup> / <sub>32</sub> ) | 40.878 ( 1 <sup>39</sup> / <sub>64</sub> ) | 500                                                   | 61 400                               | 116 000                                            | 8 970                                                          | 45 000                  |  |
|                                             | CRH 44 VR             | CRH 44 V               | CRH 44 VUUR        | CRH 44 VUU             | 1 460                | 69.850 ( 2 <sup>3</sup> / <sub>4</sub> ) | 38.100 ( 1 <sup>1</sup> / <sub>2</sub> ) | 31.750 ( 1 <sup>1</sup> / <sub>4</sub> ) | 1 <sup>1</sup> / <sub>4</sub> - 12   | 28.575 ( 1 <sup>1</sup> / <sub>8</sub> ) | 40.0 (1.57)  | 57.150 ( 2 <sup>1</sup> / <sub>4</sub> ) | 14.288 ( <sup>9</sup> / <sub>16</sub> ) | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 4.762 ( <sup>3</sup> / <sub>16</sub> ) | 3.175 ( <sup>1</sup> / <sub>8</sub> )  | 760 (30)  | 2.381 ( <sup>3</sup> / <sub>32</sub> ) | 40.878 ( 1 <sup>39</sup> / <sub>64</sub> ) | 500                                                   | 61 400                               | 116 000                                            | 10 200                                                         | 49 500                  |  |
| 38.100<br>( 1 <sup>1</sup> / <sub>2</sub> ) | CRH 48 VR             | CRH 48 V               | CRH 48 VUUR        | CRH 48 VUU             | 2 100                | 76.200 ( 3 )                             | 44.450 ( 1 <sup>3</sup> / <sub>4</sub> ) | 38.100 ( 1 <sup>1</sup> / <sub>2</sub> ) | 1 <sup>1</sup> / <sub>2</sub> - 12   | 31.750 ( 1 <sup>1</sup> / <sub>8</sub> ) | 46.4 (1.83)  | 63.500 ( 2 <sup>1</sup> / <sub>2</sub> ) | 15.875 ( <sup>5</sup> / <sub>8</sub> )  | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 6.350 ( <sup>1</sup> / <sub>4</sub> )  | 3.175 ( <sup>1</sup> / <sub>8</sub> )  | 760 (30)  | 2.381 ( <sup>3</sup> / <sub>32</sub> ) | 51.991 ( 2 <sup>3</sup> / <sub>64</sub> )  | 892                                                   | 77 600                               | 172 000                                            | 11 400                                                         | 64 300                  |  |
|                                             | CRH 52 VR             | CRH 52 V               | CRH 52 VUUR        | CRH 52 VUU             | 2 380                | 82.500 ( 3 <sup>1</sup> / <sub>4</sub> ) | 44.450 ( 1 <sup>3</sup> / <sub>4</sub> ) | 38.100 ( 1 <sup>1</sup> / <sub>2</sub> ) | 1 <sup>1</sup> / <sub>2</sub> - 12   | 31.750 ( 1 <sup>1</sup> / <sub>8</sub> ) | 46.4 (1.83)  | 63.500 ( 2 <sup>1</sup> / <sub>2</sub> ) | 15.875 ( <sup>5</sup> / <sub>8</sub> )  | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 6.350 ( <sup>1</sup> / <sub>4</sub> )  | 3.175 ( <sup>1</sup> / <sub>8</sub> )  | 760 (30)  | 2.381 ( <sup>3</sup> / <sub>32</sub> ) | 51.991 ( 2 <sup>3</sup> / <sub>64</sub> )  | 892                                                   | 77 600                               | 172 000                                            | 12 700                                                         | 69 600                  |  |
| 44.450<br>( 1 <sup>3</sup> / <sub>4</sub> ) | CRH 56 VR             | CRH 56 V               | CRH 56 VUUR        | CRH 56 VUU             | 3 240                | 88.900 ( 3 <sup>1</sup> / <sub>2</sub> ) | 50.800 ( 2 )                             | 44.450 ( 1 <sup>3</sup> / <sub>4</sub> ) | 1 <sup>3</sup> / <sub>4</sub> - 12UN | 34.925 ( 1 <sup>3</sup> / <sub>8</sub> ) | 52.8 (2.08)  | 69.850 ( 2 <sup>3</sup> / <sub>4</sub> ) | 17.462 ( <sup>1</sup> / <sub>16</sub> ) | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 6.350 ( <sup>1</sup> / <sub>4</sub> )  | 3.175 ( <sup>1</sup> / <sub>8</sub> )  | 760 (30)  | 2.381 ( <sup>3</sup> / <sub>32</sub> ) | 59.928 ( 2 <sup>23</sup> / <sub>64</sub> ) | 1 450                                                 | 111 000                              | 239 000                                            | 14 100                                                         | 87 000                  |  |
| 50.800<br>( 2 )                             | CRH 64 VR             | CRH 64 V               | CRH 64 VUUR        | CRH 64 VUU             | 4 960                | 101.600 ( 4 )                            | 57.150 ( 2 <sup>1</sup> / <sub>4</sub> ) | 50.800 ( 2 )                             | 2 - 12UN                             | 38.100 ( 1 <sup>1</sup> / <sub>2</sub> ) | 59.4 (2.34)  | 88.900 ( 3 <sup>1</sup> / <sub>2</sub> ) | 19.050 ( <sup>3</sup> / <sub>4</sub> )  | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 6.350 ( <sup>1</sup> / <sub>4</sub> )  | 3.175 ( <sup>1</sup> / <sub>8</sub> )  | 760 (30)  | 2.381 ( <sup>3</sup> / <sub>32</sub> ) | 64.691 ( 2 <sup>35</sup> / <sub>64</sub> ) | 2 190                                                 | 142 000                              | 317 000                                            | 16 800                                                         | 113 000                 |  |

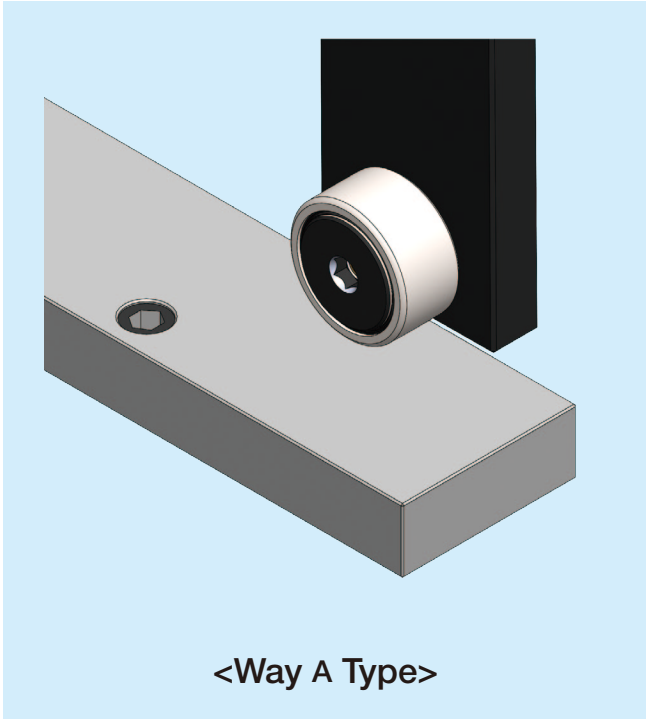
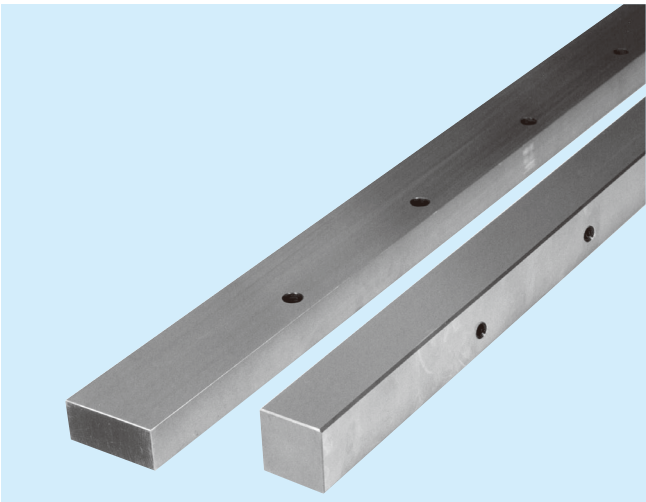
Remarks 1. An oil hole is provided only for the stud head if the stud diameter *d<sub>i</sub>* is 7.938 mm or less. As for the others, an oil hole is provided for the head, the outside surface, and the end of the stud.

2. Provided with pre-packed grease.

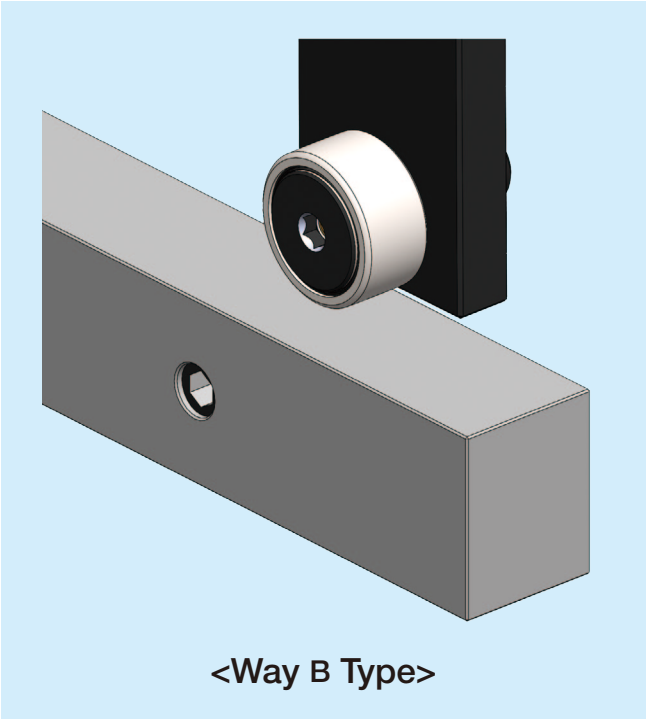
3. Contact **IKO** for the information on the maximum allowable static load.

Way for Cam Follower

The accuracy of the mating cam guide that comes in contact with the outer ring of Cam Followers has a large influence on the guide performance of Cam Followers and machinery.  
A specially designed high-precision Way for Cam Follower should be used in order to achieve sufficient performance from the Cam Followers. Fixed with bolts for simple assembly and available in 2 models - A type or B type - depending on the mounting direction.



<Way A Type>



<Way B Type>

1 Identification Number  
Example of the identification number of Way for Cam Follower is shown below.

TRLA - 800 - 49 - 22

Model code

TRLA (Way A Type)  
TRLB (Way B Type)

Overall length

mm

Width

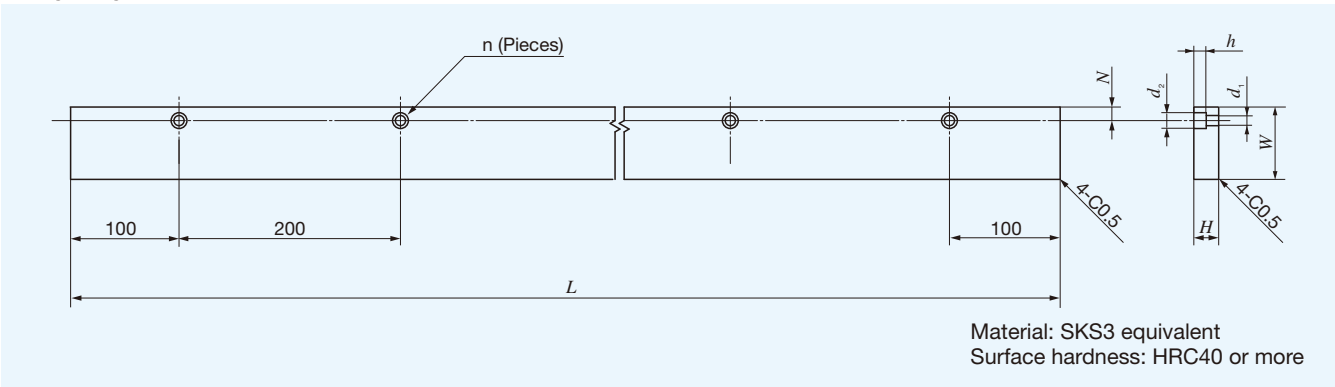
mm

Height

mm

2 Dimension Table

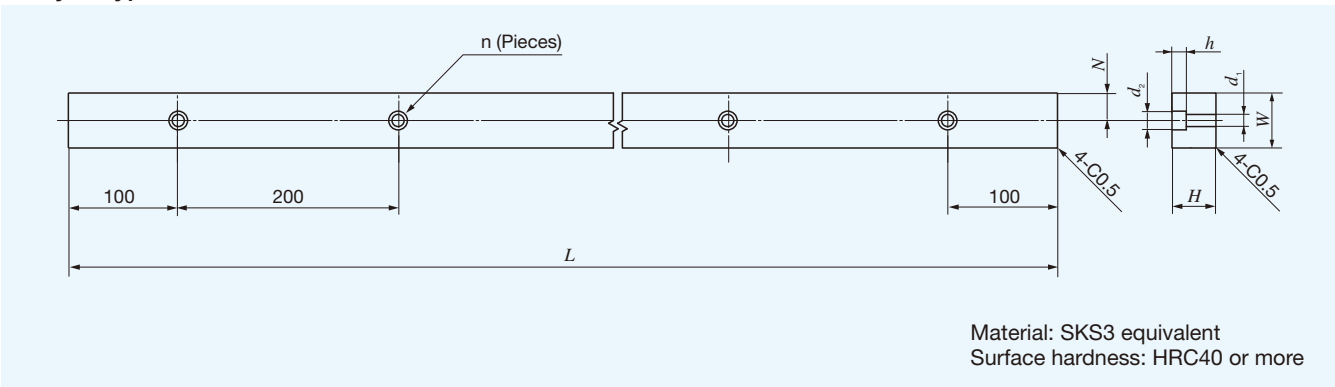
<Way A Type>



| Identification number | Boundary dimensions mm |     |     |     |       |       |     | Applicable Cam Followers |    |   |    |    |                       |    |   |    |    |                       |
|-----------------------|------------------------|-----|-----|-----|-------|-------|-----|--------------------------|----|---|----|----|-----------------------|----|---|----|----|-----------------------|
|                       | $L^{(n)}$              | $W$ | $H$ | $N$ | $d_1$ | $d_2$ | $h$ |                          |    |   |    |    |                       |    |   |    |    |                       |
| TRLA- 600-40-22       | 600 (3)                | 40  | 22  | 12  | 9     | 14    | 11  | Stud dia. 3 to 8 mm      |    |   |    |    |                       |    |   |    |    |                       |
| TRLA- 800-40-22       | 800 (4)                |     |     |     |       |       |     |                          |    |   |    |    |                       |    |   |    |    |                       |
| TRLA-1000-40-22       | 1000 (5)               |     |     |     |       |       |     |                          |    |   |    |    |                       |    |   |    |    |                       |
| TRLA- 600-49-22       | 600 (3)                | 49  |     |     |       |       |     | 22                       | 12 | 9 | 14 | 11 | Stud dia. 10 to 18 mm |    |   |    |    |                       |
| TRLA- 800-49-22       | 800 (4)                |     |     |     |       |       |     |                          |    |   |    |    |                       |    |   |    |    |                       |
| TRLA-1000-49-22       | 1000 (5)               |     |     |     |       |       |     |                          |    |   |    |    |                       |    |   |    |    |                       |
| TRLA- 600-64-22       | 600 (3)                | 64  |     |     |       |       |     |                          |    |   |    |    | 22                    | 12 | 9 | 14 | 11 | Stud dia. 20 to 30 mm |
| TRLA- 800-64-22       | 800 (4)                |     |     |     |       |       |     |                          |    |   |    |    |                       |    |   |    |    |                       |
| TRLA-1000-64-22       | 1000 (5)               |     |     |     |       |       |     |                          |    |   |    |    |                       |    |   |    |    |                       |

Remark For other dimensions, please contact IKO.

<Way B Type>



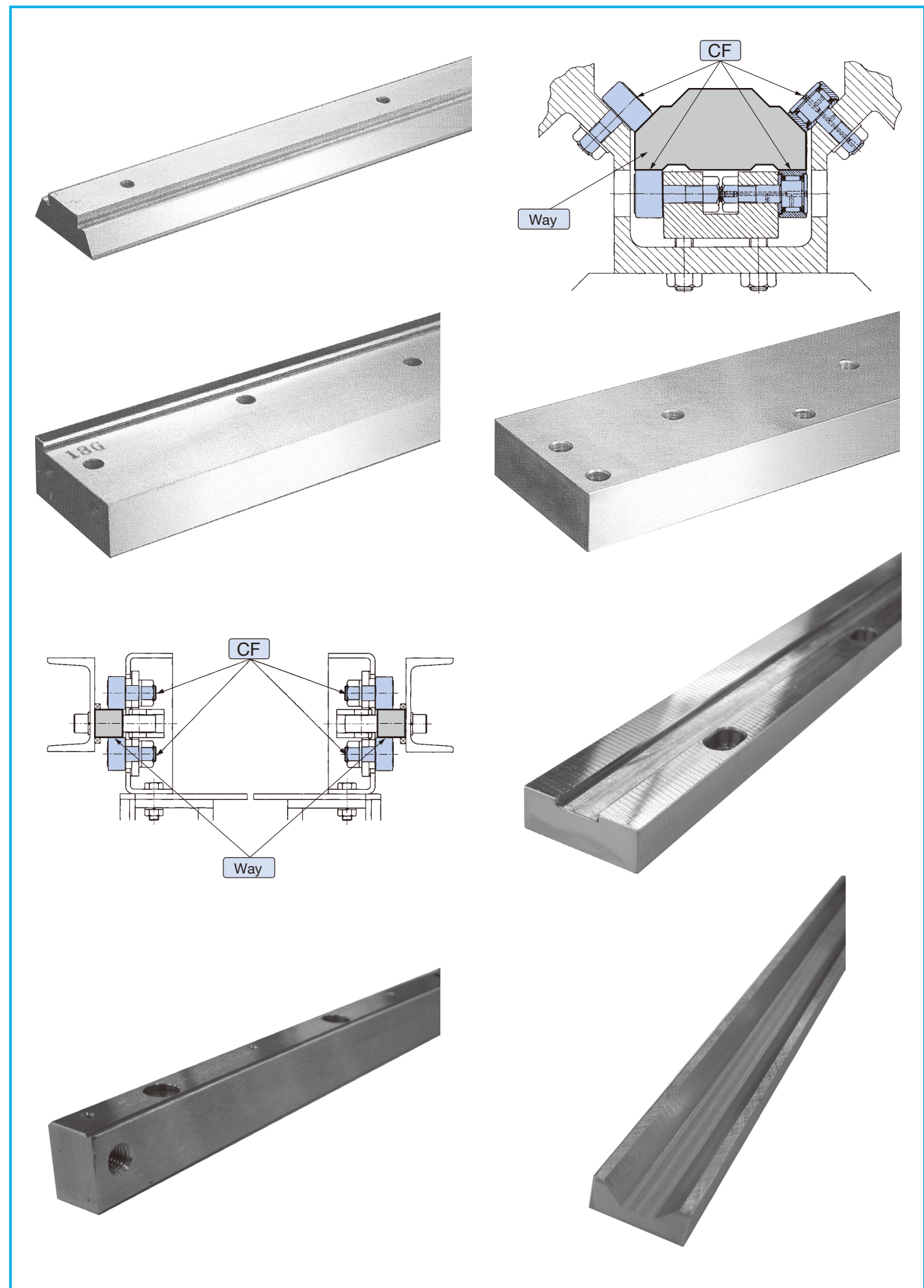
| Identification number | Boundary dimensions mm |     |     |     |       |       |     | Applicable Cam Followers |
|-----------------------|------------------------|-----|-----|-----|-------|-------|-----|--------------------------|
|                       | $L^{(n)}$              | $W$ | $H$ | $N$ | $d_1$ | $d_2$ | $h$ |                          |
| TRLB- 600-34-22       | 600 (3)                | 34  | 22  | 17  | 9     | 14    | 11  | Stud dia. 3 to 12 mm     |
| TRLB- 800-34-22       | 800 (4)                |     |     |     |       |       |     |                          |
| TRLB-1000-34-22       | 1000 (5)               |     |     |     |       |       |     |                          |
| TRLB- 600-50-40       | 600 (3)                | 50  | 40  | 25  | 11    | 17    | 13  | Stud dia. 16 to 30 mm    |
| TRLB- 800-50-40       | 800 (4)                |     |     |     |       |       |     |                          |
| TRLB-1000-50-40       | 1000 (5)               |     |     |     |       |       |     |                          |

Remark For other dimensions, please contact IKO.



# Introduction of Special Support Examples

Introducing special support examples of Way for Cam Follower.  
A variety of shapes are supported. For details, please contact **IKO**.



# ROLLER FOLLOWERS



## Roller Follower Series

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IKO Roller Followers European RoHS Compliant Products

**IKO** Roller Followers are bearings with needle rollers in the thick outer ring and designed for rotation of the outer ring.

There are separable/non-separable models, Cylindrical Roller Followers, and other models. Roller Followers are widely used as follower bearings of various cam mechanisms and guide rollers for linear motion of conveying equipment.

**Side plate**  
Quench-hardened for increased wear resistance.

**Inner ring**  
The outer peripheral faces of the needle rollers are finished with high accuracy that contributes to a long life.

**Outer ring**  
Adopts a thick shape and realizes resistance to shock loads.

**Needle roller**  
Adopts a crowning roller contributing to resistance to shock loads.

**Cage**  
Separable types use a needle roller cage for excellent high-speed rotation.

**Seal**  
Completely sealed to prevent foreign substances entering the bearing.

**Roller Followers**

C-Lube Roller Followers

NART.../SG

The space inside **IKO** the bearings of Non-separable Roller Followers is filled with C-Lube, a unique thermal setting solid lubricant, achieving a maintenance free product.

**Outer ring**

**Side plate**

**Inner ring**

**Cage**

**Seal**

**Needle roller**

**C-Lube**

**Features**

**1. Less lubrication oil used**  
Periodic lubrication is not required, leading to a reduction in the amount of lubrication oil used. This simultaneously reduces the number of lubrication mechanisms.

**2. Ideal for oil-free applications**  
Lubrication oil is retained within the bearing without leakage, preventing oil from being scattered and dirtying the surrounding environment.

**3. Lubrication device cost reduction**  
Lubrication devices are not necessary, eliminating the device installation and running costs. Furthermore, the space otherwise occupied with lubrication devices can be utilized effectively.

**Selectable product specifications**

|                                     |           |                        |
|-------------------------------------|-----------|------------------------|
| Type of material                    | No symbol | High carbon steel      |
|                                     | F         | Stainless steel        |
| Roller guide method                 | No symbol | With cage              |
|                                     | V         | Full complement        |
| Seal structure                      | No symbol | Shield type            |
|                                     | UU        | Sealed type            |
| Shape of outer ring outside surface | No symbol | Cylindrical outer ring |
|                                     | R         | Crowned outer ring     |

Separable Roller Followers

NAST

This type has a structure combining the outer ring, the inner ring, and the needle roller cage and offers excellent high-speed rotation performance. In addition, each part is separable and easily handled. There are two types: type without inner ring RNAS and type with inner ring NAST.

**Outer ring**

**Needle roller**

**Cage**  
(Needle Roller Cages)

**Inner ring**

**Side plate**

**Seal**

**Selectable product specifications**

|                                     |           |                        |
|-------------------------------------|-----------|------------------------|
| Type of material                    | No symbol | High carbon steel      |
|                                     | F         | Stainless steel        |
| Roller guide method                 | No symbol | With cage              |
|                                     | V         | Full complement        |
| Seal structure                      | No symbol | Open type              |
|                                     | ZZ        | Shield type            |
|                                     | ZZUU      | Sealed type            |
| Shape of outer ring outside surface | No symbol | Cylindrical outer ring |
|                                     | R         | Crowned outer ring     |

Non-separable Roller Followers

NART

High carbon steel made  
Stainless steel made

These non-separable type bearings have side plates fixed on both sides of the inner ring. Caged type and full complement type are available for your use. Materials can be selected and the stainless steel Roller Followers are superior in corrosion resistance and suitable for applications in environments where oil cannot be used or where water splashes, and in clean-rooms.

**Outer ring**

**Needle roller**

**Cage**

**Side plate**

**Inner ring**

**Seal**

**Selectable product specifications**

|                                     |           |                        |
|-------------------------------------|-----------|------------------------|
| Type of material                    | No symbol | High carbon steel      |
|                                     | F         | Stainless steel        |
| Roller guide method                 | No symbol | With cage              |
|                                     | V         | Full complement        |
| Seal structure                      | No symbol | Shield type            |
|                                     | UU        | Sealed type            |
| Shape of outer ring outside surface | No symbol | Cylindrical outer ring |
|                                     | R         | Crowned outer ring     |

Cylindrical Roller Followers

NURT

These bearings are full complement type bearings incorporating double rows of full complement cylindrical rollers in the outer ring, and can withstand large radial loads and some axial loads.

**Outer ring**

**Side plate**

**Shield plate**

**Inner ring**

**Cylindrical roller**

**Selectable product specifications**

|                                     |           |                        |
|-------------------------------------|-----------|------------------------|
| Type of material                    | No symbol | High carbon steel      |
|                                     | F         | Stainless steel        |
| Roller guide method                 | No symbol | Full complement        |
| Seal structure                      | No symbol | Shield type            |
|                                     | UU        | Sealed type            |
| Shape of outer ring outside surface | No symbol | Cylindrical outer ring |
|                                     | R         | Crowned outer ring     |

Inch Series Roller Followers

CRY

These are NART Inch Series Roller Followers with black oxide film treatment.

**Outer ring**

**Side plate**

**Inner ring**

**Needle roller**

**Seal**

**Selectable product specifications**

|                                     |           |                        |
|-------------------------------------|-----------|------------------------|
| Type of material                    | No symbol | High carbon steel      |
|                                     | F         | Stainless steel        |
| Roller guide method                 | No symbol | With cage              |
|                                     | V         | Full complement        |
| Seal structure                      | No symbol | Shield type            |
|                                     | UU        | Sealed type            |
| Shape of outer ring outside surface | No symbol | Cylindrical outer ring |
|                                     | R         | Crowned outer ring     |

Identification Number

Examples of the identification number of Roller Followers are shown below. In addition, for application of roller guide method, seal structure and shape of outer ring outside surface to each model, refer to the dimension table.

Example of Identification Number

Example 1

Example 2

Example 3

Example 4

NA

ST

10

ZZ

UU

R

NA

ST

10

V

UU

R

NA

ST

15

UU

R

/SG

NA

ST

12

F

UU

R

| Model code    |          |                                |                    |
|---------------|----------|--------------------------------|--------------------|
| Metric series | RNAST    | Separable Roller Followers     | Without inner ring |
|               | NA       |                                | With inner ring    |
|               | ST       | Non-separable Roller Followers |                    |
|               | NA.../SG | C-Lube Roller Followers        |                    |
|               | URT      | Cylindrical Roller Followers   |                    |
| Inch series   | CRY      | Non-separable Roller Followers |                    |

| Dimensions                                                                                                                                                         |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| The size indicates the bore diameter of the inner ring. (unit: mm)<br>In the inch series, the outer diameter of the outer ring is indicated in units of 1/16 inch. |  |

| Type of material |                        |
|------------------|------------------------|
| No symbol        | High carbon steel made |
| F(1)             | Stainless steel made   |

| Roller guide method |                 |
|---------------------|-----------------|
| No symbol           | With cage       |
| V                   | Full complement |

| Seal Structure (Separable Roller Follower) |             |
|--------------------------------------------|-------------|
| No symbol                                  | Open type   |
| ZZ                                         | Shield type |
| ZZUU                                       | Sealed type |

| Seal Structure (Other Roller Followers) |             |
|-----------------------------------------|-------------|
| No symbol                               | Shield type |
| UU                                      | Sealed type |

| Shape of outer ring outside surface |                        |
|-------------------------------------|------------------------|
| R                                   | Crowned outer ring     |
| No symbol                           | Cylindrical outer ring |

Note (1) Applicable to Non-separable Roller Followers only

Load Rating and Life

Basic dynamic load rating C

Basic dynamic load rating refers to a static radial load with a certain direction and size with which 90% of a group of the same Roller Followers can run one million rotations without material damages due to rolling contact fatigue when they are operated in the same conditions.

Basic static load rating C0

Basic static load rating refers to a static radial load with a certain direction and size with a certain contact stress at the center of contact parts of the rolling elements and a raceway under maximum load.

Life

The basic rating life calculation formulas are shown below.

$$L_{10} = \left(\frac{C}{P_r}\right)^{10/3} \dots\dots\dots (1)$$

Where,  $L_{10}$  : Basic rating life  $10^6$  rev.  
 $C$  : Basic dynamic load rating N  
 $P_r$  : Dynamic equivalent radial load N

Therefore, life time can be calculated by applying the rotational speed to the formula below.

$$L_h = \frac{10^6 L_{10}}{60n} \dots\dots\dots (2)$$

Where,  $L_h$  : Basic rating life represented by service hours h  
 $n$  : Rotational speed  $\text{min}^{-1}$

Static Safety Factor

Static safety factor can be obtained by the following equation and typical values are shown in Table 1.

$$f_s = \frac{C_0}{P_{or}} \dots\dots\dots (3)$$

Where,  $f_s$  : Static safety factor  
 $C_0$  : Basic static load rating N  
 $P_{or}$  : Static equivalent radial load (maximum load) N

Table 1 Static safety factor

| Bearing use conditions                                                                                                      | $f_s$      |
|-----------------------------------------------------------------------------------------------------------------------------|------------|
| When high rotational accuracy is required                                                                                   | $\geq 3$   |
| For ordinary operation conditions                                                                                           | $\geq 1.5$ |
| When smooth operations are not required with a high priority under normal operating conditions<br>When it is rarely rotated | $\geq 1$   |

Load factor

Actual load applied on the Roller Followers becomes larger than load theoretically calculated from vibration and shock. Therefore, multiply the load by the load factor shown in Table 2.

Table 2 Load factor

| Degree of load                   | $f_w$      |
|----------------------------------|------------|
| Smooth operation free from shock | 1 to 1.2   |
| Normal operation                 | 1.2 to 1.5 |
| Operation with shock load        | 1.5 to 3   |

Maximum Allowable Static Load

The applicable load on Roller Followers is, in some cases, limited by the strength of the outer ring instead of the load rating of the needle roller bearing. Therefore, the maximum allowable static load that is limited by these strengths is specified.



Accuracy

The accuracy of Roller Followers is shown in Table 3, Table 4.1, Table 4.2, and Table 4.3.  
Tolerances for the smallest single roller set bore diameter of Separable Roller Followers are shown in Table 5.  
We also provide special accuracy class product. For details, please contact **IKO**.

Table 3 Tolerances

unit:  $\mu\text{m}$

| Item                           |                                | Series      | Metric series      |                        | Inch series        |                        |
|--------------------------------|--------------------------------|-------------|--------------------|------------------------|--------------------|------------------------|
|                                |                                |             | Crowned outer ring | Cylindrical outer ring | Crowned outer ring | Cylindrical outer ring |
| Bore dia. of inner ring $d$    | $d \leq 19.05$                 |             | See Table 4.1      |                        | + 5<br>− 10        | + 5<br>− 10            |
|                                | $19.05 < d$                    |             |                    |                        | + 2<br>− 12        |                        |
| Outside dia. of outer ring $D$ |                                |             | 0<br>− 50          | See Table 4.2          | 0<br>− 50          | See Table 4.3          |
| Width of outer ring $C$        |                                |             | 0<br>− 120         |                        | 0<br>− 130         |                        |
| Width of inner ring $B$        | Separable Roller Followers     |             | 0<br>− 120         |                        | −                  |                        |
| Width of bearing $B$           | Non-separable Roller Followers | h12         | −                  | +130<br>− 250          |                    |                        |
|                                | Cylindrical Roller Followers   |             | h12                |                        |                    |                        |
| Roller set bore dia. $F_w$     | Separable Roller Followers     | See Table 5 |                    |                        | −                  |                        |

Table 4.1 Tolerance and allowance of inner ring (Metric series)

unit:  $\mu\text{m}$

| $d$<br>Nominal bore diameter<br>mm |       | $\Delta d_{mp}$<br>Deviation of mean bore diameter in a single plane |      | $V_{dsp}$<br>Variation of bore diameter in a single plane<br>(Maximum) | $V_{dmp}$<br>Variation of mean bore diameter<br>(Maximum) | $K'_{ia}$<br>Radial runout of inner ring of assembled bearing<br>(Maximum) | $V_{Bs}$<br>Variation of inner ring width<br>(Maximum) |
|------------------------------------|-------|----------------------------------------------------------------------|------|------------------------------------------------------------------------|-----------------------------------------------------------|----------------------------------------------------------------------------|--------------------------------------------------------|
| Over                               | Incl. | High                                                                 | Low  |                                                                        |                                                           |                                                                            |                                                        |
| 2.5                                | 10    | 0                                                                    | − 8  | 10                                                                     | 6                                                         | 10                                                                         | 15                                                     |
| 10                                 | 18    | 0                                                                    | − 8  | 10                                                                     | 6                                                         | 10                                                                         | 20                                                     |
| 18                                 | 30    | 0                                                                    | − 10 | 13                                                                     | 8                                                         | 13                                                                         | 20                                                     |
| 30                                 | 50    | 0                                                                    | − 12 | 15                                                                     | 9                                                         | 15                                                                         | 20                                                     |

Table 4.2 Tolerance and allowance of outer ring (Metric series, Cylindrical outer ring)

unit:  $\mu\text{m}$

| $D$<br>Nominal outside diameter of<br>outer ring<br>mm |       | $\Delta D_{mp}$<br>Deviation of mean outside<br>diameter in a single plane |      | $V_{Dsp}$<br>Variation of<br>outside diameter<br>in a single plane<br>(Maximum) | $V_{Dmp}$<br>Variation of<br>mean outside<br>diameter<br>(Maximum) | $K_{ca}$<br>Radial runout of<br>outer ring of<br>assembled bearing<br>(Maximum) | $V_{Cs}$<br>Variation of<br>outer ring width<br>(Maximum)         |
|--------------------------------------------------------|-------|----------------------------------------------------------------------------|------|---------------------------------------------------------------------------------|--------------------------------------------------------------------|---------------------------------------------------------------------------------|-------------------------------------------------------------------|
| Over                                                   | Incl. | High                                                                       | Low  |                                                                                 |                                                                    |                                                                                 |                                                                   |
| 6                                                      | 18    | 0                                                                          | − 8  | 10                                                                              | 6                                                                  | 15                                                                              | See the<br>allowance of<br>$V_{Bs}$ for the same<br>bearing $d$ . |
| 18                                                     | 30    | 0                                                                          | − 9  | 12                                                                              | 7                                                                  | 15                                                                              |                                                                   |
| 30                                                     | 50    | 0                                                                          | − 11 | 14                                                                              | 8                                                                  | 20                                                                              |                                                                   |
| 50                                                     | 80    | 0                                                                          | − 13 | 16                                                                              | 10                                                                 | 25                                                                              |                                                                   |
| 80                                                     | 120   | 0                                                                          | − 15 | 19                                                                              | 11                                                                 | 35                                                                              |                                                                   |

Table 4.3 Tolerance and allowance of outer ring (Inch series, Cylindrical outer ring)

unit:  $\mu\text{m}$

| $D$<br>Nominal outside diameter of<br>outer ring<br>mm |       | $\Delta D_{mp}$<br>Deviation of mean outside diameter<br>in a single plane |     | $V_{Dsp}$<br>Variation of outside<br>diameter in a single<br>plane<br>(Maximum) | $V_{Dmp}$<br>Variation of mean<br>outside diameter<br>(Maximum) | $K_{ca}$<br>Radial runout of<br>outer ring of<br>assembled bearing<br>(Maximum) |
|--------------------------------------------------------|-------|----------------------------------------------------------------------------|-----|---------------------------------------------------------------------------------|-----------------------------------------------------------------|---------------------------------------------------------------------------------|
| Over                                                   | Incl. | High                                                                       | Low |                                                                                 |                                                                 |                                                                                 |
| 6                                                      | 18    | 0                                                                          | −25 | 10                                                                              | 6                                                               | 15                                                                              |
| 18                                                     | 30    |                                                                            |     | 12                                                                              | 7                                                               | 15                                                                              |
| 30                                                     | 50    |                                                                            |     | 14                                                                              | 8                                                               | 20                                                                              |
| 50                                                     | 80    |                                                                            |     | 16                                                                              | 10                                                              | 25                                                                              |
| 80                                                     | 120   |                                                                            |     | 19                                                                              | 11                                                              | 35                                                                              |

Table 5 Tolerances of smallest single roller set bore diameter  $F_{ws\min}$ 

unit:  $\mu\text{m}$

| $F_w$<br>Nominal roller set bore diameter<br>mm |       | $\Delta F_{ws\min}$<br>Deviation of smallest single roller set bore diameter |     |
|-------------------------------------------------|-------|------------------------------------------------------------------------------|-----|
|                                                 |       | High                                                                         | Low |
| Over                                            | Incl. |                                                                              |     |
| 6                                               | 10    | +22                                                                          | +13 |
| 10                                              | 18    | +27                                                                          | +16 |
| 18                                              | 30    | +33                                                                          | +20 |
| 30                                              | 50    | +41                                                                          | +25 |
| 50                                              | 80    | +49                                                                          | +30 |

Radial Internal Clearance

Radial internal clearance of Roller Followers is shown in Table 6.

Table 6 Radial internal clearance

unit:  $\mu\text{m}$

| Identification number <sup>(1)</sup> |                                               |                              |                                | Radial internal clearance |      |
|--------------------------------------|-----------------------------------------------|------------------------------|--------------------------------|---------------------------|------|
| Metric series                        |                                               |                              | Inch series                    | Min.                      | Max. |
| Separable Roller Followers           | Non-separable Roller Followers <sup>(2)</sup> | Cylindrical Roller Followers | Non-separable Roller Followers |                           |      |
| NAST 6R                              | NART 5R                                       | −                            | −                              | 5                         | 20   |
| NAST 8R to NAST12R                   | NART 6R to NART12R                            | −                            | −                              | 5                         | 25   |
| NAST15R to NAST25R                   | NART15R to NART20R                            | −                            | −                              | 10                        | 30   |
| NAST30R to NAST40R                   | NART25R to NART40R                            | −                            | −                              | 10                        | 40   |
| NAST45R, NAST50R                     | NART45R, NART50R                              | −                            | −                              | 15                        | 50   |
| −                                    | −                                             | NURT15R to NURT30-1R         | −                              | 20                        | 45   |
| −                                    | −                                             | NURT35R to NURT40-1R         | −                              | 25                        | 50   |
| −                                    | −                                             | NURT45R to NURT50-1R         | −                              | 30                        | 60   |
| −                                    | −                                             | −                            | CRY12R to CRY56R               | 35                        | 60   |
| −                                    | −                                             | −                            | CRY64R                         | 45                        | 70   |

Note <sup>(1)</sup> Also applicable to the type with full complement, the shield and sealed types, and the cylindrical outer ring.  
Note <sup>(2)</sup> Also applicable to C-Lube Roller Followers.

## Fit

Roller Followers are generally used for outer ring rotation load. A recommended fit with a shaft is shown in Table 7. Those for the inch series are shown in the dimension table.

Table 7 Recommended fit (metric series)

| Model of bearing                   | Tolerance class of shaft     |
|------------------------------------|------------------------------|
| Separable Roller Followers         | Without inner ring<br>k5, k6 |
| Non-separable Roller Followers (1) | With inner ring<br>g6, h6    |
| Cylindrical Roller Followers       |                              |

Note (1) Also applicable to C-Lube Roller Followers.

## Track Capacity

Track capacity is defined as the load which can be continuously applied on a Roller Follower placed on a steel cam guide surface without causing deformation or indentation on the cam guide surface when the outer ring of the Roller Follower makes contact with the mating cam guide surface (plane). Track capacities shown in the dimension table are values on the assumption that hardness of the mating member material is 40HRC (tensile strength: 1250 N/mm<sup>2</sup>) and if hardness is not 40HRC, these values must be multiplied by track capacity factors shown in Table 8. If lubrication between the outer ring and the mating cam guide surface is insufficient, seizure and/or wear may occur depending on the operating conditions. Therefore, attention must be paid to lubrication and surface roughness of the mating cam guide especially for high-speed rotations such as cam mechanisms.

Table 8 Track capacity factor

| Hardness<br>HRC | Tensile strength<br>N/mm <sup>2</sup> | Track capacity factor |                           |
|-----------------|---------------------------------------|-----------------------|---------------------------|
|                 |                                       | Crowned<br>outer ring | Cylindrical<br>outer ring |
| 20              | 760                                   | 0.22                  | 0.37                      |
| 25              | 840                                   | 0.31                  | 0.46                      |
| 30              | 950                                   | 0.45                  | 0.58                      |
| 35              | 1 080                                 | 0.65                  | 0.75                      |
| 38              | 1 180                                 | 0.85                  | 0.89                      |
| 40              | 1 250                                 | 1.00                  | 1.00                      |
| 42              | 1 340                                 | 1.23                  | 1.15                      |
| 44              | 1 435                                 | 1.52                  | 1.32                      |
| 46              | 1 530                                 | 1.85                  | 1.51                      |
| 48              | 1 635                                 | 2.27                  | 1.73                      |
| 50              | 1 760                                 | 2.80                  | 1.99                      |
| 52              | 1 880                                 | 3.46                  | 2.29                      |
| 54              | 2 015                                 | 4.21                  | 2.61                      |
| 56              | 2 150                                 | 5.13                  | 2.97                      |
| 58              | 2 290                                 | 6.26                  | 3.39                      |

## Allowable Rotational Speed

The allowable rotational speed of Roller Followers is affected by mounting and operating conditions. For  $dn$  value with only pure radial load applied, use values in Table 9 or lower as references. Under actual use conditions, it is recommended to use  $dn$ , one tenth of indicated values, taking into account the effect of axial load. C-Lube Roller Followers, use 8,000 or lower as reference for the  $dn$  value.

Table 9 Roller Follower  $dn$  value (1)

| Model of bearing             | Lubrication        |                 |
|------------------------------|--------------------|-----------------|
|                              | Grease lubrication | Oil lubrication |
| With cage                    | 84 000             | 140 000         |
| Full complement              | 42 000             | 70 000          |
| Cylindrical Roller Followers | 72 000             | 120 000         |

Note (1)  $dn$  value =  $d \times n$   
where,  $d$ : Bearing inner diameter mm  
 $n$ : Rotational speed min<sup>-1</sup>

## Lubrication

In Sealed Type Roller Followers, Cylindrical Roller Followers and Inch Series Roller Followers, ALVANIA GREASE S2 (SHOWA SHELL SEKIYU K.K.) is pre-packed as the lubrication grease.

For bearings without pre-packed grease, grease or oil should be supplied through the oil hole of the inner ring for use. Operating without lubrication will increase the wear on the rolling contact surfaces and lead to short bearing life.

## Oil Hole

Open Type Separable Roller Followers have no oil hole. Inner rings of other types of Metric series Roller Followers have an oil hole. Inch series inner rings have an oil groove and an oil hole.

## Operating Temperature Range

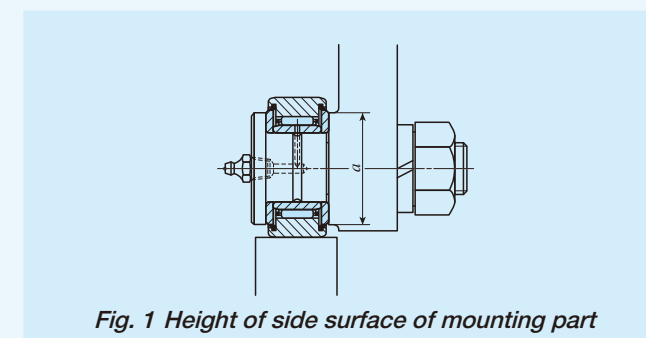
Operating temperature range of Roller Followers is -20°C to +120°C.

Please use C-Lube Roller Followers at a bearing temperature between -15°C and +80°C. For continuous operation, the recommended operating temperature is +60°C or less.

## Mounting

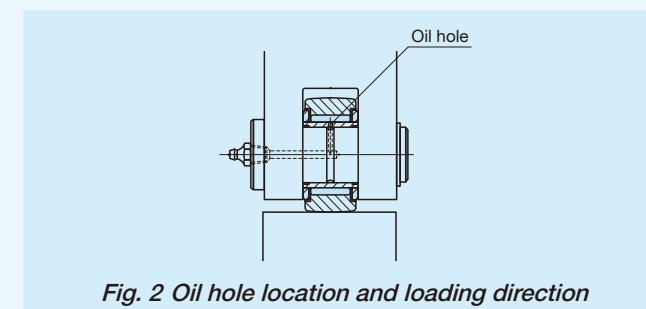
### Notes about mounts

In case of shield and sealed types, match the side surface correctly to the mating seating surface indicated by the dimension  $a$  shown in the dimension table, and fix them. (See Fig. 1)



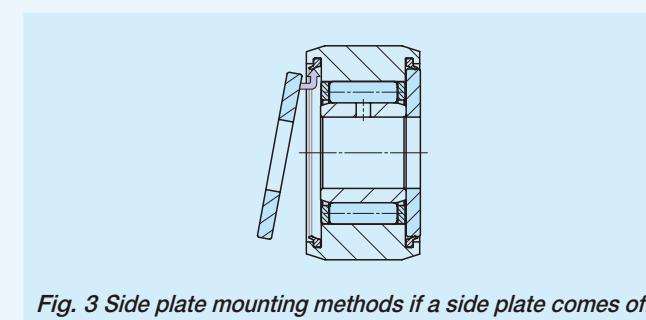
### Notes about oil hole position and loading direction

When mounting Roller Followers, pay special attention to avoid locating the oil hole of the inner ring within the loading zone. Otherwise, product life may become shorter. (See Fig. 2)



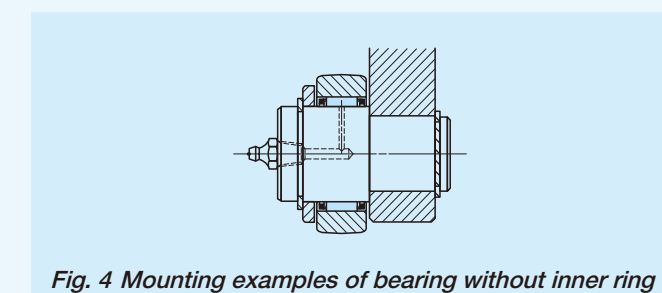
### Mounting methods for Separable Roller Followers

When mounting Sealed Type Separable Roller Followers, do not cause the side plates to come off. If they come off, set the seal lip into the side plate again, taking care to avoid damaging the seal lips. (See Fig. 3)



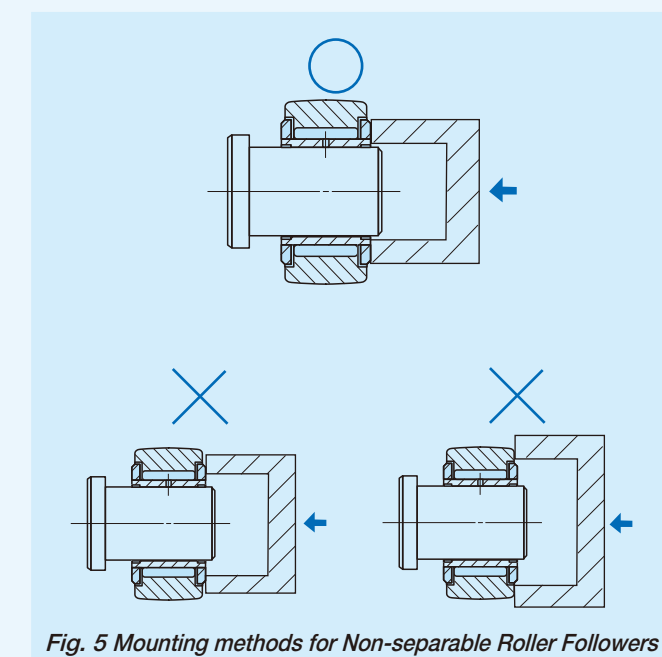
### Mounting methods for bearings without inner rings

In case of Roller Followers without inner ring, the shaft requires heat treatment and grinding finish. At this time, the shaft surface hardness of 58 to 64 HRC and the shaft surface roughness of 0.2  $\mu$ mR<sub>a</sub> or less is recommended. Also, the outer ring and cage are guided by side surfaces of the mounting parts. Therefore, it is recommended that the side surfaces of the mounting parts be finished by grinding or at least by machining. (See Fig. 4)



### Mounting methods for Non-Separable Roller Followers

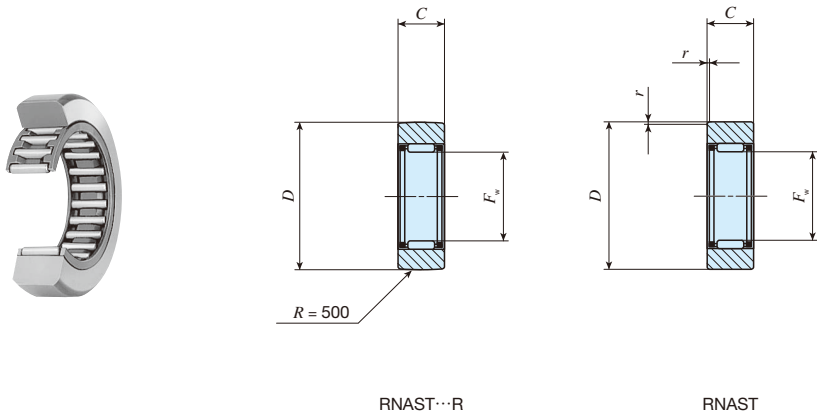
Mount in accordance with Fig. 5 when inserting Non-Separable Roller Followers into the shaft. Pushing on the side plates or outer rings may cause unsatisfactory product performance.





Selectable product specifications

|                                     |           |                                                                                                          |
|-------------------------------------|-----------|----------------------------------------------------------------------------------------------------------|
| Type of material                    | No symbol |  High carbon steel      |
|                                     | F         |  Stainless steel        |
| Roller guide method                 | No symbol |  With cage              |
|                                     | V         |  Full complement        |
| Seal structure                      | No symbol |  Open type              |
|                                     | ZZ        |  Shield type            |
|                                     | ZZUU      |  Sealed type            |
| Shape of outer ring outside surface | No symbol |  Cylindrical outer ring |
|                                     | R         |  Crowned outer ring     |

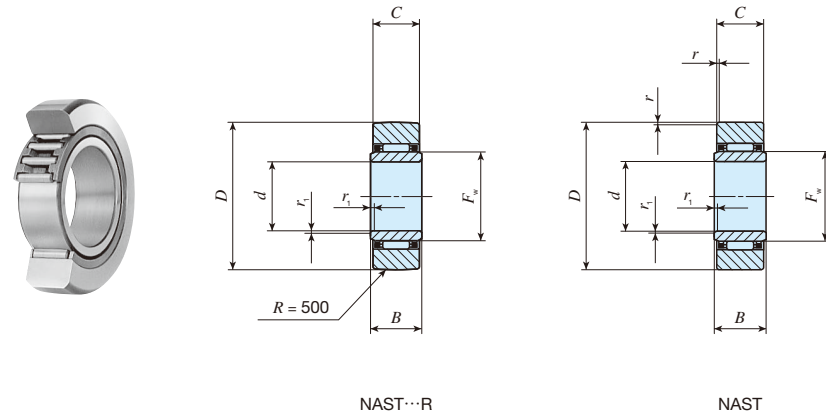


| Shaft diameter | Identification number |                        | Mass (Ref.) | Boundary dimensions mm |     |      |                   | Basic dynamic load rating | Basic static load rating | Track capacity     |                        |
|----------------|-----------------------|------------------------|-------------|------------------------|-----|------|-------------------|---------------------------|--------------------------|--------------------|------------------------|
|                | Open type             |                        |             | $F_w$                  | $D$ | $C$  | $r_{s\min}^{(1)}$ |                           |                          | N                  |                        |
|                | Crowned outer ring    | Cylindrical outer ring |             |                        |     |      |                   |                           |                          | Crowned outer ring | Cylindrical outer ring |
| mm             |                       |                        | g           |                        |     |      |                   | N                         | N                        |                    |                        |
| 7              | RNAST 5 R             | RNAST 5                | 8.9         | 7                      | 16  | 7.8  | 0.3               | 2 710                     | 2 390                    | 1 040              | 2 310                  |
| 10             | RNAST 6 R             | RNAST 6                | 13.9        | 10                     | 19  | 9.8  | 0.3               | 4 160                     | 4 550                    | 1 330              | 3 550                  |
| 12             | RNAST 8 R             | RNAST 8                | 23.5        | 12                     | 24  | 9.8  | 0.6               | 5 650                     | 5 890                    | 1 850              | 3 980                  |
| 14             | RNAST 10 R            | RNAST 10               | 42.5        | 14                     | 30  | 11.8 | 1                 | 9 790                     | 9 680                    | 2 470              | 5 610                  |
| 16             | RNAST 12 R            | RNAST 12               | 49.5        | 16                     | 32  | 11.8 | 1                 | 10 500                    | 10 900                   | 2 710              | 5 990                  |
| 20             | RNAST 15 R            | RNAST 15               | 50          | 20                     | 35  | 11.8 | 1                 | 12 400                    | 14 300                   | 3 060              | 6 550                  |
| 22             | RNAST 17 R            | RNAST 17               | 90          | 22                     | 40  | 15.8 | 1                 | 17 600                    | 20 900                   | 3 660              | 10 900                 |
| 25             | RNAST 20 R            | RNAST 20               | 135         | 25                     | 47  | 15.8 | 1                 | 19 400                    | 24 500                   | 4 530              | 12 800                 |
| 30             | RNAST 25 R            | RNAST 25               | 152         | 30                     | 52  | 15.8 | 1                 | 20 800                    | 28 400                   | 5 190              | 14 100                 |
| 38             | RNAST 30 R            | RNAST 30               | 255         | 38                     | 62  | 19.8 | 1                 | 30 500                    | 45 400                   | 6 580              | 22 100                 |
| 42             | RNAST 35 R            | RNAST 35               | 375         | 42                     | 72  | 19.8 | 1                 | 32 400                    | 50 600                   | 8 020              | 25 700                 |
| 50             | RNAST 40 R            | RNAST 40               | 420         | 50                     | 80  | 19.8 | 1.5               | 35 900                    | 61 100                   | 9 220              | 26 900                 |
| 55             | RNAST 45 R            | RNAST 45               | 460         | 55                     | 85  | 19.8 | 1.5               | 37 400                    | 66 400                   | 9 990              | 28 500                 |
| 60             | RNAST 50 R            | RNAST 50               | 500         | 60                     | 90  | 19.8 | 1.5               | 38 900                    | 71 700                   | 10 800             | 30 200                 |

Note (1) Minimum allowable value of the chamfer dimension  $r$ .  
 Remark 1. No oil hole is provided.  
 2. Not provided with pre-packed grease. Perform proper lubrication for use.

Selectable product specifications

|                                     |           |                                                                                                            |
|-------------------------------------|-----------|------------------------------------------------------------------------------------------------------------|
| Type of material                    | No symbol |  High carbon steel      |
|                                     | F         |  Stainless steel        |
| Roller guide method                 | No symbol |  With cage              |
|                                     | V         |  Full complement        |
| Seal structure                      | No symbol |  Open type              |
|                                     | ZZ        |  Shield type            |
|                                     | ZZUU      |  Sealed type            |
| Shape of outer ring outside surface | No symbol |  Cylindrical outer ring |
|                                     | R         |  Crowned outer ring     |



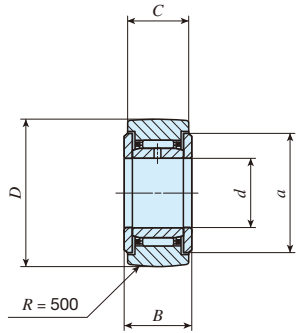
| Shaft<br>diameter<br><br>mm | Identification number |                           | Mass<br>(Ref.)<br><br>g | Boundary dimensions mm |     |     |      |                   |                   |       | Basic<br>dynamic<br>load rating<br>$C$<br><br>N | Basic<br>static<br>load rating<br>$C_0$<br><br>N | Built-in<br>inner ring | Track<br>capacity     |                           |
|-----------------------------|-----------------------|---------------------------|-------------------------|------------------------|-----|-----|------|-------------------|-------------------|-------|-------------------------------------------------|--------------------------------------------------|------------------------|-----------------------|---------------------------|
|                             | Open type             |                           |                         | $d$                    | $D$ | $B$ | $C$  | $r_{s\min}^{(1)}$ | $r_{s\min}^{(1)}$ | $F_w$ |                                                 |                                                  |                        | N                     |                           |
|                             | Crowned<br>outer ring | Cylindrical<br>outer ring |                         |                        |     |     |      |                   |                   |       |                                                 |                                                  |                        | Crowned<br>outer ring | Cylindrical<br>outer ring |
| 6                           | NAST 6 R              | NAST 6                    | 17.8                    | 6                      | 19  | 10  | 9.8  | 0.3               | 0.3               | 10    | 4 160                                           | 4 550                                            | LRT 61010 S            | 1 330                 | 3 550                     |
| 8                           | NAST 8 R              | NAST 8                    | 28                      | 8                      | 24  | 10  | 9.8  | 0.6               | 0.3               | 12    | 5 650                                           | 5 890                                            | LRT 81210 S            | 1 850                 | 3 980                     |
| 10                          | NAST 10 R             | NAST 10                   | 49.5                    | 10                     | 30  | 12  | 11.8 | 1                 | 0.3               | 14    | 9 790                                           | 9 680                                            | LRT 101412 S           | 2 470                 | 5 610                     |
| 12                          | NAST 12 R             | NAST 12                   | 58                      | 12                     | 32  | 12  | 11.8 | 1                 | 0.3               | 16    | 10 500                                          | 10 900                                           | LRT 121612 S           | 2 710                 | 5 990                     |
| 15                          | NAST 15 R             | NAST 15                   | 62                      | 15                     | 35  | 12  | 11.8 | 1                 | 0.3               | 20    | 12 400                                          | 14 300                                           | LRT 152012 S           | 3 060                 | 6 550                     |
| 17                          | NAST 17 R             | NAST 17                   | 109                     | 17                     | 40  | 16  | 15.8 | 1                 | 0.3               | 22    | 17 600                                          | 20 900                                           | LRT 172216 S           | 3 660                 | 10 900                    |
| 20                          | NAST 20 R             | NAST 20                   | 157                     | 20                     | 47  | 16  | 15.8 | 1                 | 0.3               | 25    | 19 400                                          | 24 500                                           | LRT 202516 S           | 4 530                 | 12 800                    |
| 25                          | NAST 25 R             | NAST 25                   | 180                     | 25                     | 52  | 16  | 15.8 | 1                 | 0.3               | 30    | 20 800                                          | 28 400                                           | LRT 253016 S           | 5 190                 | 14 100                    |
| 30                          | NAST 30 R             | NAST 30                   | 320                     | 30                     | 62  | 20  | 19.8 | 1                 | 0.6               | 38    | 30 500                                          | 45 400                                           | LRT 303820 S           | 6 580                 | 22 100                    |
| 35                          | NAST 35 R             | NAST 35                   | 440                     | 35                     | 72  | 20  | 19.8 | 1                 | 0.6               | 42    | 32 400                                          | 50 600                                           | LRT 354220 S           | 8 020                 | 25 700                    |
| 40                          | NAST 40 R             | NAST 40                   | 530                     | 40                     | 80  | 20  | 19.8 | 1.5               | 1                 | 50    | 35 900                                          | 61 100                                           | LRT 405020 S           | 9 220                 | 26 900                    |
| 45                          | NAST 45 R             | NAST 45                   | 580                     | 45                     | 85  | 20  | 19.8 | 1.5               | 1                 | 55    | 37 400                                          | 66 400                                           | LRT 455520 S           | 9 990                 | 28 500                    |
| 50                          | NAST 50 R             | NAST 50                   | 635                     | 50                     | 90  | 20  | 19.8 | 1.5               | 1                 | 60    | 38 900                                          | 71 700                                           | LRT 506020 S           | 10 800                | 30 200                    |

Note (1) Minimum allowable value of chamfer dimension  $r$  or  $r_1$ .  
 Remark 1. No oil hole is provided  
 2. Not provided with pre-packed grease. Perform proper lubrication for use.

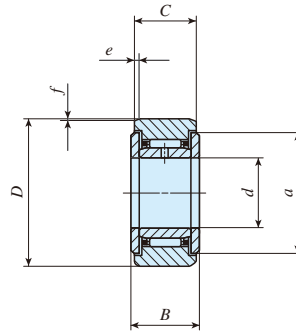
IKO Separable Roller Followers / Shield Type / With Inner Ring  
Separable Roller Followers / Sealed Type / With Inner Ring

Selectable product specifications

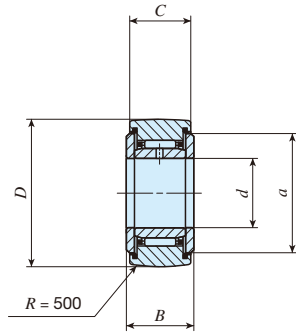
|                                     |           |                        |
|-------------------------------------|-----------|------------------------|
| Type of material                    | No symbol | High carbon steel      |
|                                     | F         | Stainless steel        |
| Roller guide method                 | No symbol | With cage              |
|                                     | V         | Full complement        |
| Seal structure                      | No symbol | Open type              |
|                                     | ZZ        | Shield type            |
|                                     | ZZUU      | Sealed type            |
| Shape of outer ring outside surface | No symbol | Cylindrical outer ring |
|                                     | R         | Crowned outer ring     |



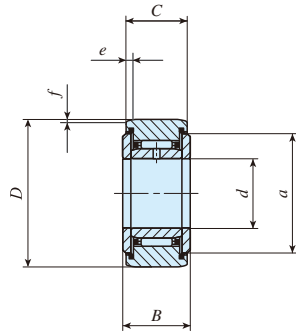
NAST...ZZR



NAST...ZZ



NAST...ZZUUR



NAST...ZZUU

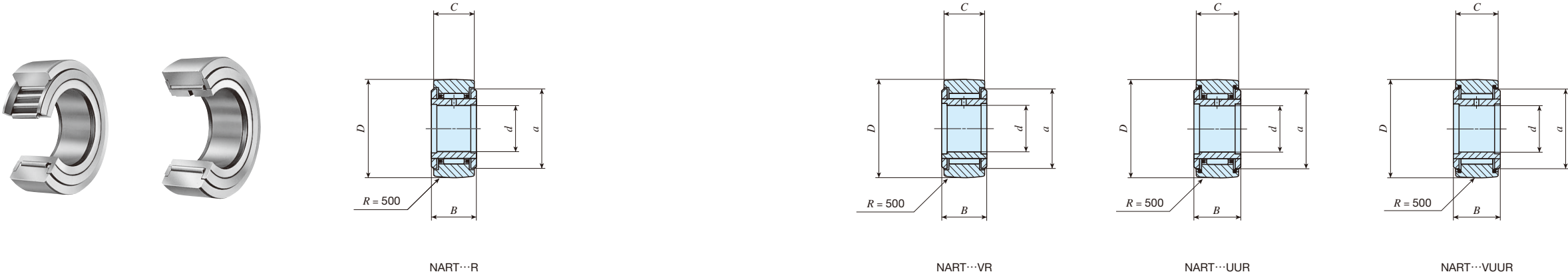
| Shaft<br>diameter | Identification number |                        |                    |                        | Mass<br>(Ref.) |  | Boundary dimensions mm |     |     |      |      |     |     | Basic dynamic<br>load rating<br>$C$ | Basic static<br>load rating<br>$C_0$ | Track<br>capacity<br>$N$ |                           |
|-------------------|-----------------------|------------------------|--------------------|------------------------|----------------|--|------------------------|-----|-----|------|------|-----|-----|-------------------------------------|--------------------------------------|--------------------------|---------------------------|
|                   | Shield type           |                        | Sealed type        |                        |                |  | $d$                    | $D$ | $B$ | $C$  | $a$  | $e$ | $f$ |                                     |                                      | Crowned<br>outer ring    | Cylindrical<br>outer ring |
|                   | Crowned outer ring    | Cylindrical outer ring | Crowned outer ring | Cylindrical outer ring |                |  |                        |     |     |      |      |     |     |                                     |                                      |                          |                           |
| mm                |                       |                        |                    |                        | g              |  |                        |     |     |      |      |     | N   | N                                   |                                      |                          |                           |
| 6                 | NAST 6 ZZR            | NAST 6 ZZ              | NAST 6 ZZUUR       | NAST 6 ZZUU            | 24.5           |  | 6                      | 19  | 14  | 13.8 | 14   | 2.5 | 0.8 | 4 160                               | 4 550                                | 1 330                    | 3 550                     |
| 8                 | NAST 8 ZZR            | NAST 8 ZZ              | NAST 8 ZZUUR       | NAST 8 ZZUU            | 39             |  | 8                      | 24  | 14  | 13.8 | 17.5 | 2.5 | 0.8 | 5 650                               | 5 890                                | 1 850                    | 4 490                     |
| 10                | NAST 10 ZZR           | NAST 10 ZZ             | NAST 10 ZZUUR      | NAST 10 ZZUU           | 65             |  | 10                     | 30  | 16  | 15.8 | 23.5 | 2.5 | 0.8 | 9 790                               | 9 680                                | 2 470                    | 6 890                     |
| 12                | NAST 12 ZZR           | NAST 12 ZZ             | NAST 12 ZZUUR      | NAST 12 ZZUU           | 75             |  | 12                     | 32  | 16  | 15.8 | 25.5 | 2.5 | 0.8 | 10 500                              | 10 900                               | 2 710                    | 7 350                     |
| 15                | NAST 15 ZZR           | NAST 15 ZZ             | NAST 15 ZZUUR      | NAST 15 ZZUU           | 83             |  | 15                     | 35  | 16  | 15.8 | 29   | 2.5 | 0.8 | 12 400                              | 14 300                               | 3 060                    | 8 030                     |
| 17                | NAST 17 ZZR           | NAST 17 ZZ             | NAST 17 ZZUUR      | NAST 17 ZZUU           | 135            |  | 17                     | 40  | 20  | 19.8 | 32.5 | 3   | 1   | 17 600                              | 20 900                               | 3 660                    | 11 700                    |
| 20                | NAST 20 ZZR           | NAST 20 ZZ             | NAST 20 ZZUUR      | NAST 20 ZZUU           | 195            |  | 20                     | 47  | 20  | 19.8 | 38   | 3   | 1   | 19 400                              | 24 500                               | 4 530                    | 13 800                    |
| 25                | NAST 25 ZZR           | NAST 25 ZZ             | NAST 25 ZZUUR      | NAST 25 ZZUU           | 225            |  | 25                     | 52  | 20  | 19.8 | 43   | 3   | 1   | 20 800                              | 28 400                               | 5 190                    | 15 300                    |
| 30                | NAST 30 ZZR           | NAST 30 ZZ             | NAST 30 ZZUUR      | NAST 30 ZZUU           | 400            |  | 30                     | 62  | 25  | 24.8 | 50.5 | 4   | 1.2 | 30 500                              | 45 400                               | 6 580                    | 22 100                    |
| 35                | NAST 35 ZZR           | NAST 35 ZZ             | NAST 35 ZZUUR      | NAST 35 ZZUU           | 550            |  | 35                     | 72  | 25  | 24.8 | 53.5 | 4   | 1.2 | 32 400                              | 50 600                               | 8 020                    | 25 700                    |
| 40                | NAST 40 ZZR           | NAST 40 ZZ             | NAST 40 ZZUUR      | NAST 40 ZZUU           | 710            |  | 40                     | 80  | 26  | 25.8 | 61.5 | 4   | 1.2 | 35 900                              | 61 100                               | 9 220                    | 30 300                    |
| 45                | NAST 45 ZZR           | NAST 45 ZZ             | NAST 45 ZZUUR      | NAST 45 ZZUU           | 760            |  | 45                     | 85  | 26  | 25.8 | 66.5 | 4   | 1.2 | 37 400                              | 66 400                               | 9 990                    | 32 200                    |
| 50                | NAST 50 ZZR           | NAST 50 ZZ             | NAST 50 ZZUUR      | NAST 50 ZZUU           | 830            |  | 50                     | 90  | 26  | 25.8 | 76   | 4   | 1.2 | 38 900                              | 71 700                               | 10 800                   | 34 000                    |

Remark 1. The inner ring has an oil hole.  
2. Grease is pre-packed for the sealed type. Shield type is not provided with pre-packed grease. Perform proper lubrication for use.



Selectable product specifications

|                                     |           |                        |
|-------------------------------------|-----------|------------------------|
| Type of material                    | No symbol | High carbon steel      |
|                                     | F         | Stainless steel        |
| Roller guide method                 | No symbol | With cage              |
|                                     | V         | Full complement        |
| Seal structure                      | No symbol | Shield type            |
|                                     | UU        | Sealed type            |
| Shape of outer ring outside surface | No symbol | Cylindrical outer ring |
|                                     | R         | Crowned outer ring     |

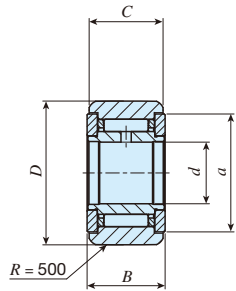


| Shaft<br>diameter | Identification number             |            |                                   |              | Mass<br>(Ref.) |  | Boundary dimensions mm |          |          |          |          | Basic dynamic<br>load rating<br><i>C</i> | Basic static<br>load rating<br><i>C</i> <sub>0</sub> | Maximum allowable<br>static load | Track<br>capacity |
|-------------------|-----------------------------------|------------|-----------------------------------|--------------|----------------|--|------------------------|----------|----------|----------|----------|------------------------------------------|------------------------------------------------------|----------------------------------|-------------------|
|                   | Shield type<br>Crowned outer ring |            | Sealed type<br>Crowned outer ring |              |                |  | <i>d</i>               | <i>D</i> | <i>B</i> | <i>C</i> | <i>a</i> |                                          |                                                      |                                  |                   |
|                   | mm                                | With cage  | Full complement                   | With cage    |                |  |                        |          |          |          |          | Full complement                          | g                                                    |                                  |                   |
| 5                 | NART 5 R                          | —          | NART 5 UUR                        | —            | 14.5           |  | 5                      | 16       | 12       | 11       | 12       | 3 650                                    | 3 680                                                | 3 680                            | 1 040             |
|                   | —                                 | NART 5 VR  | —                                 | NART 5 VUUR  | 15.1           |  | 5                      | 16       | 12       | 11       | 12       | 6 810                                    | 8 370                                                | 7 310                            | 1 040             |
| 6                 | NART 6 R                          | —          | NART 6 UUR                        | —            | 20.5           |  | 6                      | 19       | 12       | 11       | 14       | 4 250                                    | 4 740                                                | 4 740                            | 1 330             |
|                   | —                                 | NART 6 VR  | —                                 | NART 6 VUUR  | 21.5           |  | 6                      | 19       | 12       | 11       | 14       | 7 690                                    | 10 300                                               | 10 300                           | 1 330             |
| 8                 | NART 8 R                          | —          | NART 8 UUR                        | —            | 41.5           |  | 8                      | 24       | 15       | 14       | 17.5     | 5 640                                    | 5 900                                                | 5 900                            | 1 850             |
|                   | —                                 | NART 8 VR  | —                                 | NART 8 VUUR  | 42.5           |  | 8                      | 24       | 15       | 14       | 17.5     | 11 800                                   | 15 600                                               | 15 600                           | 1 850             |
| 10                | NART 10 R                         | —          | NART 10 UUR                       | —            | 64.5           |  | 10                     | 30       | 15       | 14       | 23.5     | 8 030                                    | 7 540                                                | 7 540                            | 2 470             |
|                   | —                                 | NART 10 VR | —                                 | NART 10 VUUR | 66.5           |  | 10                     | 30       | 15       | 14       | 23.5     | 15 600                                   | 18 100                                               | 17 500                           | 2 470             |
| 12                | NART 12 R                         | —          | NART 12 UUR                       | —            | 71             |  | 12                     | 32       | 15       | 14       | 25.5     | 8 580                                    | 8 470                                                | 8 470                            | 2 710             |
|                   | —                                 | NART 12 VR | —                                 | NART 12 VUUR | 73             |  | 12                     | 32       | 15       | 14       | 25.5     | 16 800                                   | 20 500                                               | 18 600                           | 2 710             |
| 15                | NART 15 R                         | —          | NART 15 UUR                       | —            | 102            |  | 15                     | 35       | 19       | 18       | 29       | 13 700                                   | 16 400                                               | 16 400                           | 3 060             |
|                   | —                                 | NART 15 VR | —                                 | NART 15 VUUR | 106            |  | 15                     | 35       | 19       | 18       | 29       | 25 200                                   | 36 400                                               | 24 000                           | 3 060             |
| 17                | NART 17 R                         | —          | NART 17 UUR                       | —            | 149            |  | 17                     | 40       | 21       | 20       | 32.5     | 17 600                                   | 21 000                                               | 21 000                           | 3 660             |
|                   | —                                 | NART 17 VR | —                                 | NART 17 VUUR | 155            |  | 17                     | 40       | 21       | 20       | 32.5     | 32 000                                   | 46 300                                               | 33 100                           | 3 660             |
| 20                | NART 20 R                         | —          | NART 20 UUR                       | —            | 250            |  | 20                     | 47       | 25       | 24       | 38       | 23 000                                   | 30 700                                               | 30 700                           | 4 530             |
|                   | —                                 | NART 20 VR | —                                 | NART 20 VUUR | 255            |  | 20                     | 47       | 25       | 24       | 38       | 41 600                                   | 67 300                                               | 67 300                           | 4 530             |
| 25                | NART 25 R                         | —          | NART 25 UUR                       | —            | 285            |  | 25                     | 52       | 25       | 24       | 43       | 24 700                                   | 35 400                                               | 35 400                           | 5 190             |
|                   | —                                 | NART 25 VR | —                                 | NART 25 VUUR | 295            |  | 25                     | 52       | 25       | 24       | 43       | 45 500                                   | 79 100                                               | 79 100                           | 5 190             |
| 30                | NART 30 R                         | —          | NART 30 UUR                       | —            | 470            |  | 30                     | 62       | 29       | 28       | 50.5     | 33 600                                   | 51 400                                               | 51 400                           | 6 580             |
|                   | —                                 | NART 30 VR | —                                 | NART 30 VUUR | 485            |  | 30                     | 62       | 29       | 28       | 50.5     | 59 900                                   | 110 000                                              | 92 500                           | 6 580             |
| 35                | NART 35 R                         | —          | NART 35 UUR                       | —            | 640            |  | 35                     | 72       | 29       | 28       | 53.5     | 35 700                                   | 57 400                                               | 57 400                           | 8 020             |
|                   | —                                 | NART 35 VR | —                                 | NART 35 VUUR | 655            |  | 35                     | 72       | 29       | 28       | 53.5     | 63 100                                   | 121 000                                              | 121 000                          | 8 020             |
| 40                | NART 40 R                         | —          | NART 40 UUR                       | —            | 845            |  | 40                     | 80       | 32       | 30       | 61.5     | 44 900                                   | 81 500                                               | 81 500                           | 9 220             |
|                   | —                                 | NART 40 VR | —                                 | NART 40 VUUR | 865            |  | 40                     | 80       | 32       | 30       | 61.5     | 76 300                                   | 164 000                                              | 164 000                          | 9 220             |
| 45                | NART 45 R                         | —          | NART 45 UUR                       | —            | 915            |  | 45                     | 85       | 32       | 30       | 66.5     | 46 800                                   | 88 600                                               | 88 600                           | 9 990             |
|                   | —                                 | NART 45 VR | —                                 | NART 45 VUUR | 935            |  | 45                     | 85       | 32       | 30       | 66.5     | 80 300                                   | 181 000                                              | 181 000                          | 9 990             |
| 50                | NART 50 R                         | —          | NART 50 UUR                       | —            | 980            |  | 50                     | 90       | 32       | 30       | 76       | 48 600                                   | 95 600                                               | 95 600                           | 10 800            |
|                   | —                                 | NART 50 VR | —                                 | NART 50 VUUR | 1 010          |  | 50                     | 90       | 32       | 30       | 76       | 84 300                                   | 198 000                                              | 198 000                          | 10 800            |

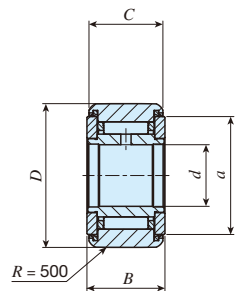
Remark 1. The inner ring has an oil hole.  
2. Grease is pre-packed for the sealed type. Shield type is not provided with pre-packed grease. Perform proper lubrication for use.

Selectable product specifications

|                                     |           |                        |
|-------------------------------------|-----------|------------------------|
| Type of material                    | No symbol | High carbon steel      |
|                                     | F         | Stainless steel        |
| Roller guide method                 | No symbol | With cage              |
|                                     | V         | Full complement        |
| Seal structure                      | No symbol | Shield type            |
|                                     | UU        | Sealed type            |
| Shape of outer ring outside surface | No symbol | Cylindrical outer ring |
|                                     | R         | Crowned outer ring     |



NART...FR



NART...FUUR

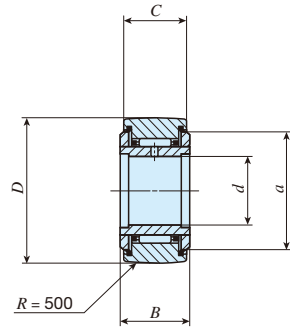
| Shaft<br>diameter | Identification number |              | Mass<br>(Ref.) | Boundary dimensions mm |     |     |     |      |  | Basic dynamic<br>load rating<br>$C$ | Basic static<br>load rating<br>$C_0$ | Maximum allowable<br>static load | Track<br>capacity |
|-------------------|-----------------------|--------------|----------------|------------------------|-----|-----|-----|------|--|-------------------------------------|--------------------------------------|----------------------------------|-------------------|
|                   | Shield type           | Sealed type  |                |                        | $d$ | $D$ | $B$ | $C$  |  |                                     |                                      |                                  |                   |
| mm                |                       |              | g              |                        |     |     |     |      |  | N                                   | N                                    | N                                | N                 |
| 5                 | NART 5 FR             | NART 5 FUUR  | 13             | 5                      | 16  | 12  | 11  | 12   |  | 2 930                               | 2 920                                | 2 920                            | 1 040             |
| 6                 | NART 6 FR             | NART 6 FUUR  | 19             | 6                      | 19  | 12  | 11  | 14   |  | 3 400                               | 3 790                                | 3 790                            | 1 330             |
| 8                 | NART 8 FR             | NART 8 FUUR  | 39             | 8                      | 24  | 15  | 14  | 17.5 |  | 4 340                               | 5 510                                | 5 510                            | 1 850             |
| 10                | NART 10 FR            | NART 10 FUUR | 61             | 10                     | 30  | 15  | 14  | 22.5 |  | 6 330                               | 7 830                                | 7 830                            | 2 470             |
| 12                | NART 12 FR            | NART 12 FUUR | 67             | 12                     | 32  | 15  | 14  | 25.5 |  | 6 510                               | 8 400                                | 8 400                            | 2 710             |
| 15                | NART 15 FR            | NART 15 FUUR | 99             | 15                     | 35  | 19  | 18  | 27.5 |  | 9 620                               | 14 700                               | 14 700                           | 3 060             |
| 17                | NART 17 FR            | NART 17 FUUR | 146            | 17                     | 40  | 21  | 20  | 31   |  | 11 800                              | 20 200                               | 20 200                           | 3 660             |
| 20                | NART 20 FR            | NART 20 FUUR | 241            | 20                     | 47  | 25  | 24  | 36.5 |  | 16 500                              | 27 700                               | 27 700                           | 4 530             |
| 25                | NART 25 FR            | NART 25 FUUR | 269            | 25                     | 52  | 25  | 24  | 43   |  | 19 800                              | 28 300                               | 28 300                           | 5 190             |
| 30                | NART 30 FR            | NART 30 FUUR | 447            | 30                     | 62  | 29  | 28  | 50   |  | 26 900                              | 41 200                               | 41 200                           | 6 580             |

Remark 1. The inner ring has an oil hole.

2. Grease is pre-packed for the sealed type. Shield type is not provided with pre-packed grease. Perform proper lubrication for use.

Selectable product specifications

|                                     |           |                                                                                                          |
|-------------------------------------|-----------|----------------------------------------------------------------------------------------------------------|
| Type of material                    | No symbol |  High carbon steel      |
|                                     | F         |  Stainless steel        |
| Roller guide method                 | No symbol |  With cage              |
|                                     | V         |  Full complement        |
| Seal structure                      | No symbol |  Shield type            |
|                                     | UU        |  Sealed type            |
| Shape of outer ring outside surface | No symbol |  Cylindrical outer ring |
|                                     | R         |  Crowned outer ring     |



NART...UUR/SG

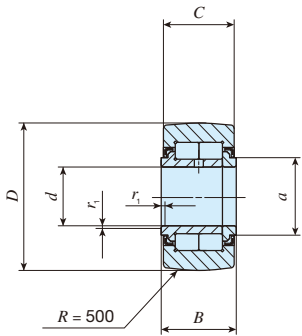
| Shaft diameter<br>mm | Identification number | Mass<br>(Ref.)<br>g | Boundary dimensions mm |     |     |     |      | Basic dynamic<br>load rating<br>$C$<br>N | Basic static<br>load rating<br>$C_0$<br>N | Maximum allowable<br>static load<br>N | Track<br>capacity<br>N |
|----------------------|-----------------------|---------------------|------------------------|-----|-----|-----|------|------------------------------------------|-------------------------------------------|---------------------------------------|------------------------|
|                      | Sealed type           |                     | $d$                    | $D$ | $B$ | $C$ | $a$  |                                          |                                           |                                       |                        |
| 5                    | NART 5 UUR / SG       | 14.5                | 5                      | 16  | 12  | 11  | 12   | 3 650                                    | 3 680                                     | 3 680                                 | 1 040                  |
| 6                    | NART 6 UUR / SG       | 20.5                | 6                      | 19  | 12  | 11  | 14   | 4 250                                    | 4 740                                     | 4 740                                 | 1 330                  |
| 8                    | NART 8 UUR / SG       | 41.5                | 8                      | 24  | 15  | 14  | 17.5 | 5 640                                    | 5 900                                     | 5 900                                 | 1 850                  |
| 10                   | NART 10 UUR / SG      | 64.5                | 10                     | 30  | 15  | 14  | 23.5 | 8 030                                    | 7 540                                     | 7 540                                 | 2 470                  |
| 12                   | NART 12 UUR / SG      | 71                  | 12                     | 32  | 15  | 14  | 25.5 | 8 580                                    | 8 470                                     | 8 470                                 | 2 710                  |
| 15                   | NART 15 UUR / SG      | 102                 | 15                     | 35  | 19  | 18  | 29   | 13 700                                   | 16 400                                    | 16 400                                | 3 060                  |
| 17                   | NART 17 UUR / SG      | 149                 | 17                     | 40  | 21  | 20  | 32.5 | 17 600                                   | 21 000                                    | 21 000                                | 3 660                  |
| 20                   | NART 20 UUR / SG      | 250                 | 20                     | 47  | 25  | 24  | 38   | 23 000                                   | 30 700                                    | 30 700                                | 4 530                  |

Remark This bearing cannot be re-lubricated as thermosetting solid-type lubricant C-Lube fills its inner space.

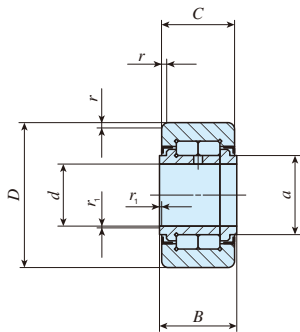


Selectable product specifications

|                                     |           |                                                                                                          |
|-------------------------------------|-----------|----------------------------------------------------------------------------------------------------------|
| Type of material                    | No symbol |  High carbon steel      |
|                                     | F         |  Stainless steel        |
| Roller guide method                 | No symbol |  Full complement        |
| Seal structure                      | No symbol |  Shield type            |
|                                     | UU        |  Sealed type            |
| Shape of outer ring outside surface | No symbol |  Cylindrical outer ring |
|                                     | R         |  Crowned outer ring     |



NURT...R



NURT

| Shaft<br>diameter<br><br>mm | Identification number |                        | Mass<br>(Ref.)<br><br>g | Boundary dimensions mm |          |          |          |          |  |                                          |                                           | Basic dynamic<br>load rating<br><i>C</i><br><br>N | Basic static<br>load rating<br><i>C</i> <sub>0</sub><br><br>N | Maximum allowable<br>static load<br><br>N | Track<br>capacity<br>N |                           |
|-----------------------------|-----------------------|------------------------|-------------------------|------------------------|----------|----------|----------|----------|--|------------------------------------------|-------------------------------------------|---------------------------------------------------|---------------------------------------------------------------|-------------------------------------------|------------------------|---------------------------|
|                             | Crowned outer ring    | Cylindrical outer ring |                         | <i>d</i>               | <i>D</i> | <i>B</i> | <i>C</i> | <i>a</i> |  | <i>r</i> <sub>s min</sub> <sup>(1)</sup> | <i>r</i> <sub>1s min</sub> <sup>(1)</sup> |                                                   |                                                               |                                           | Crowned<br>outer ring  | Cylindrical<br>outer ring |
|                             |                       |                        |                         |                        |          |          |          |          |  |                                          |                                           |                                                   |                                                               |                                           |                        |                           |
| 15                          | NURT 15 R             | NURT 15                | 100                     | 15                     | 35       | 19       | 18       | 20       |  | 0.6                                      | 0.3                                       | 23 400                                            | 27 300                                                        | 11 800                                    | 3 060                  | 11 500                    |
|                             | NURT 15-1 R           | NURT 15-1              | 160                     | 15                     | 42       | 19       | 18       | 20       |  | 0.6                                      | 0.3                                       | 23 400                                            | 27 300                                                        | 27 300                                    | 3 910                  | 13 700                    |
| 17                          | NURT 17 R             | NURT 17                | 147                     | 17                     | 40       | 21       | 20       | 22       |  | 1                                        | 0.3                                       | 25 200                                            | 30 900                                                        | 20 300                                    | 3 660                  | 13 600                    |
|                             | NURT 17-1 R           | NURT 17-1              | 222                     | 17                     | 47       | 21       | 20       | 22       |  | 1                                        | 0.3                                       | 25 200                                            | 30 900                                                        | 30 900                                    | 4 530                  | 16 000                    |
| 20                          | NURT 20 R             | NURT 20                | 245                     | 20                     | 47       | 25       | 24       | 27       |  | 1                                        | 0.3                                       | 38 900                                            | 49 000                                                        | 27 200                                    | 4 530                  | 20 000                    |
|                             | NURT 20-1 R           | NURT 20-1              | 321                     | 20                     | 52       | 25       | 24       | 27       |  | 1                                        | 0.3                                       | 38 900                                            | 49 000                                                        | 49 000                                    | 5 190                  | 22 100                    |
| 25                          | NURT 25 R             | NURT 25                | 281                     | 25                     | 52       | 25       | 24       | 31       |  | 1                                        | 0.3                                       | 43 100                                            | 58 100                                                        | 30 000                                    | 5 190                  | 22 100                    |
|                             | NURT 25-1 R           | NURT 25-1              | 450                     | 25                     | 62       | 25       | 24       | 31       |  | 1                                        | 0.3                                       | 43 100                                            | 58 100                                                        | 58 100                                    | 6 580                  | 26 400                    |
| 30                          | NURT 30 R             | NURT 30                | 466                     | 30                     | 62       | 29       | 28       | 38       |  | 1                                        | 0.3                                       | 58 200                                            | 75 300                                                        | 35 200                                    | 6 580                  | 31 600                    |
|                             | NURT 30-1 R           | NURT 30-1              | 697                     | 30                     | 72       | 29       | 28       | 38       |  | 1                                        | 0.3                                       | 58 200                                            | 75 300                                                        | 75 300                                    | 8 020                  | 36 700                    |
| 35                          | NURT 35 R             | NURT 35                | 630                     | 35                     | 72       | 29       | 28       | 44       |  | 1                                        | 0.6                                       | 63 900                                            | 88 800                                                        | 57 000                                    | 8 020                  | 36 700                    |
|                             | NURT 35-1 R           | NURT 35-1              | 840                     | 35                     | 80       | 29       | 28       | 44       |  | 1                                        | 0.6                                       | 63 900                                            | 88 800                                                        | 88 800                                    | 9 220                  | 40 800                    |
| 40                          | NURT 40 R             | NURT 40                | 817                     | 40                     | 80       | 32       | 30       | 49       |  | 1                                        | 0.6                                       | 86 500                                            | 122 000                                                       | 75 300                                    | 9 220                  | 44 200                    |
|                             | NURT 40-1 R           | NURT 40-1              | 1 130                   | 40                     | 90       | 32       | 30       | 49       |  | 1                                        | 0.6                                       | 86 500                                            | 122 000                                                       | 122 000                                   | 10 800                 | 49 700                    |
| 45                          | NURT 45 R             | NURT 45                | 883                     | 45                     | 85       | 32       | 30       | 53       |  | 1                                        | 0.6                                       | 91 500                                            | 135 000                                                       | 78 700                                    | 9 990                  | 47 000                    |
|                             | NURT 45-1 R           | NURT 45-1              | 1 400                   | 45                     | 100      | 32       | 30       | 53       |  | 1                                        | 0.6                                       | 91 500                                            | 135 000                                                       | 135 000                                   | 12 400                 | 55 300                    |
| 50                          | NURT 50 R             | NURT 50                | 950                     | 50                     | 90       | 32       | 30       | 58       |  | 1                                        | 0.6                                       | 96 300                                            | 148 000                                                       | 82 100                                    | 10 800                 | 49 700                    |
|                             | NURT 50-1 R           | NURT 50-1              | 1 690                   | 50                     | 110      | 32       | 30       | 58       |  | 1                                        | 0.6                                       | 96 300                                            | 148 000                                                       | 148 000                                   | 14 000                 | 60 800                    |

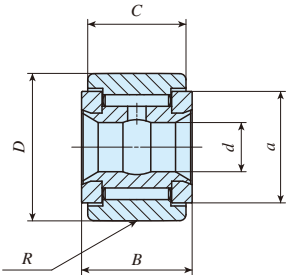
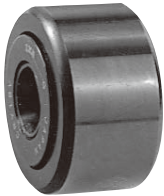
 Note (1) Minimum allowable value of chamfer dimension *r* or *r*<sub>1</sub>.

Remark 1. The inner ring has an oil hole.

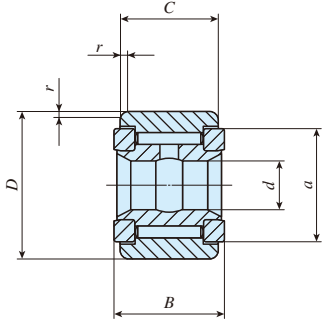
2. Provided with pre-packed grease.

Selectable product specifications

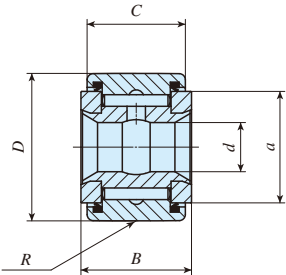
|                                     |           |                                                                                                          |
|-------------------------------------|-----------|----------------------------------------------------------------------------------------------------------|
| Type of material                    | No symbol |  High carbon steel      |
|                                     | F         |  Stainless steel        |
| Roller guide method                 | No symbol |  With cage              |
|                                     | V         |  Full complement        |
| Seal structure                      | No symbol |  Shield type            |
|                                     | UU        |  Sealed type            |
| Shape of outer ring outside surface | No symbol |  Cylindrical outer ring |
|                                     | R         |  Crowned outer ring     |



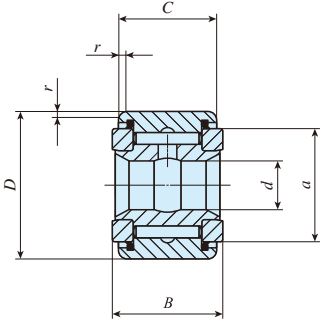
CRY...VR



CRY...V



CRY...VUUR



CRY...VUU

| Shaft diameter                              | Identification number |                        |                    |                        | Mass (Ref.) | Boundary dimensions mm (inch)            |                                          |                 |                                          |  |              |          |                                        | Shaft diameter mm |        |                |        |                  |        | Basic dynamic load rating<br><i>C</i> | Basic static load rating<br><i>C</i> <sub>0</sub> | Track              |                        |
|---------------------------------------------|-----------------------|------------------------|--------------------|------------------------|-------------|------------------------------------------|------------------------------------------|-----------------|------------------------------------------|--|--------------|----------|----------------------------------------|-------------------|--------|----------------|--------|------------------|--------|---------------------------------------|---------------------------------------------------|--------------------|------------------------|
|                                             | Shield type           |                        | Sealed type        |                        |             | <i>d</i>                                 | <i>D</i>                                 | <i>B</i>        | <i>C</i>                                 |  | <i>a</i>     | <i>R</i> | <i>r</i>                               | Clearance fit     |        | Transition fit |        | Interference fit |        |                                       |                                                   | Crowned outer ring | Cylindrical outer ring |
|                                             | Crowned outer ring    | Cylindrical outer ring | Crowned outer ring | Cylindrical outer ring |             |                                          |                                          |                 |                                          |  |              |          |                                        | Min.              | Max.   | Min.           | Max.   | Min.             | Max.   |                                       |                                                   |                    |                        |
| mm (inch)                                   |                       |                        |                    |                        | g           |                                          |                                          |                 |                                          |  |              |          |                                        |                   |        |                |        |                  |        | N                                     | N                                                 |                    |                        |
| 6.350<br>( <sup>1</sup> / <sub>4</sub> )    | CRY 12 VR             | CRY 12 V               | CRY 12 VUUR        | CRY 12 VUU             | 27          | 6.350 ( <sup>1</sup> / <sub>4</sub> )    | 19.050 ( <sup>3</sup> / <sub>4</sub> )   | 14.288 (0.5625) | 12.700 ( <sup>1</sup> / <sub>2</sub> )   |  | 14.4 (0.567) | 250 (10) | 0.794 ( <sup>1</sup> / <sub>32</sub> ) | 6.332             | 6.342  | 6.348          | 6.358  | 6.353            | 6.363  | 8 710                                 | 12 300                                            | 853                | 4 490                  |
|                                             | CRY 14 VR             | CRY 14 V               | CRY 14 VUUR        | CRY 14 VUU             | 36          | 6.350 ( <sup>1</sup> / <sub>4</sub> )    | 22.225 ( <sup>7</sup> / <sub>8</sub> )   | 14.288 (0.5625) | 12.700 ( <sup>1</sup> / <sub>2</sub> )   |  | 14.4 (0.567) | 250 (10) | 0.794 ( <sup>1</sup> / <sub>32</sub> ) | 6.332             | 6.342  | 6.348          | 6.358  | 6.353            | 6.363  | 8 710                                 | 12 300                                            | 1 050              | 5 240                  |
| 7.938<br>( <sup>5</sup> / <sub>16</sub> )   | CRY 16 VR             | CRY 16 V               | CRY 16 VUUR        | CRY 16 VUU             | 68          | 7.938 ( <sup>5</sup> / <sub>16</sub> )   | 25.400 ( 1 )                             | 17.463 (0.6875) | 15.875 ( <sup>5</sup> / <sub>8</sub> )   |  | 19.6 (0.772) | 300 (12) | 1.191 ( <sup>3</sup> / <sub>16</sub> ) | 7.920             | 7.930  | 7.935          | 7.945  | 7.940            | 7.950  | 13 100                                | 22 700                                            | 1 420              | 7 270                  |
|                                             | CRY 18 VR             | CRY 18 V               | CRY 18 VUUR        | CRY 18 VUU             | 77          | 7.938 ( <sup>5</sup> / <sub>16</sub> )   | 28.575 ( 1 <sup>1</sup> / <sub>8</sub> ) | 17.463 (0.6875) | 15.875 ( <sup>5</sup> / <sub>8</sub> )   |  | 19.6 (0.772) | 300 (12) | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 7.920             | 7.930  | 7.935          | 7.945  | 7.940            | 7.950  | 13 100                                | 22 700                                            | 1 660              | 7 700                  |
| 9.525<br>( <sup>3</sup> / <sub>8</sub> )    | CRY 20 VR             | CRY 20 V               | CRY 20 VUUR        | CRY 20 VUU             | 109         | 9.525 ( <sup>3</sup> / <sub>8</sub> )    | 31.750 ( 1 <sup>1</sup> / <sub>4</sub> ) | 20.638 (0.8125) | 19.050 ( <sup>3</sup> / <sub>4</sub> )   |  | 25.0 (0.984) | 360 (14) | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 9.507             | 9.517  | 9.523          | 9.533  | 9.528            | 9.538  | 23 600                                | 31 700                                            | 2 160              | 10 700                 |
|                                             | CRY 22 VR             | CRY 22 V               | CRY 22 VUUR        | CRY 22 VUU             | 136         | 9.525 ( <sup>3</sup> / <sub>8</sub> )    | 34.925 ( 1 <sup>3</sup> / <sub>8</sub> ) | 20.638 (0.8125) | 19.050 ( <sup>3</sup> / <sub>4</sub> )   |  | 25.0 (0.984) | 360 (14) | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 9.507             | 9.517  | 9.523          | 9.533  | 9.528            | 9.538  | 23 600                                | 31 700                                            | 2 450              | 11 800                 |
| 11.112<br>( <sup>7</sup> / <sub>16</sub> )  | CRY 24 VR             | CRY 24 V               | CRY 24 VUUR        | CRY 24 VUU             | 186         | 11.112 ( <sup>7</sup> / <sub>16</sub> )  | 38.100 ( 1 <sup>1</sup> / <sub>2</sub> ) | 23.813 (0.9375) | 22.225 ( <sup>7</sup> / <sub>8</sub> )   |  | 28.8 (1.134) | 500 (20) | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 11.095            | 11.105 | 11.110         | 11.120 | 11.115           | 11.125 | 28 200                                | 40 100                                            | 3 410              | 15 400                 |
|                                             | CRY 26 VR             | CRY 26 V               | CRY 26 VUUR        | CRY 26 VUU             | 227         | 11.112 ( <sup>7</sup> / <sub>16</sub> )  | 41.275 ( 1 <sup>5</sup> / <sub>8</sub> ) | 23.813 (0.9375) | 22.225 ( <sup>7</sup> / <sub>8</sub> )   |  | 28.8 (1.134) | 500 (20) | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 11.095            | 11.105 | 11.110         | 11.120 | 11.115           | 11.125 | 28 200                                | 40 100                                            | 3 820              | 16 700                 |
| 12.700<br>( <sup>1</sup> / <sub>2</sub> )   | CRY 28 VR             | CRY 28 V               | CRY 28 VUUR        | CRY 28 VUU             | 290         | 12.700 ( <sup>1</sup> / <sub>2</sub> )   | 44.450 ( 1 <sup>3</sup> / <sub>4</sub> ) | 26.988 (1.0625) | 25.400 ( 1 )                             |  | 32.7 (1.287) | 500 (20) | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 12.682            | 12.692 | 12.698         | 12.708 | 12.708           | 12.718 | 35 300                                | 55 600                                            | 4 210              | 21 000                 |
|                                             | CRY 30 VR             | CRY 30 V               | CRY 30 VUUR        | CRY 30 VUU             | 363         | 12.700 ( <sup>1</sup> / <sub>2</sub> )   | 47.625 ( 1 <sup>7</sup> / <sub>8</sub> ) | 26.988 (1.0625) | 25.400 ( 1 )                             |  | 32.7 (1.287) | 500 (20) | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 12.682            | 12.692 | 12.698         | 12.708 | 12.708           | 12.718 | 35 300                                | 55 600                                            | 4 610              | 22 500                 |
| 15.875<br>( <sup>5</sup> / <sub>8</sub> )   | CRY 32 VR             | CRY 32 V               | CRY 32 VUUR        | CRY 32 VUU             | 476         | 15.875 ( <sup>5</sup> / <sub>8</sub> )   | 50.800 ( 2 )                             | 33.338 (1.3125) | 31.750 ( 1 <sup>1</sup> / <sub>4</sub> ) |  | 36.0 (1.417) | 600 (24) | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 15.857            | 15.867 | 15.873         | 15.883 | 15.883           | 15.893 | 45 700                                | 80 600                                            | 5 690              | 30 800                 |
|                                             | CRY 36 VR             | CRY 36 V               | CRY 36 VUUR        | CRY 36 VUU             | 599         | 15.875 ( <sup>5</sup> / <sub>8</sub> )   | 57.150 ( 2 <sup>1</sup> / <sub>4</sub> ) | 33.338 (1.3125) | 31.750 ( 1 <sup>1</sup> / <sub>4</sub> ) |  | 36.0 (1.417) | 600 (24) | 1.588 ( <sup>1</sup> / <sub>16</sub> ) | 15.857            | 15.867 | 15.873         | 15.883 | 15.883           | 15.893 | 45 700                                | 80 600                                            | 6 640              | 34 700                 |
| 19.050<br>( <sup>3</sup> / <sub>4</sub> )   | CRY 40 VR             | CRY 40 V               | CRY 40 VUUR        | CRY 40 VUU             | 816         | 19.050 ( <sup>3</sup> / <sub>4</sub> )   | 63.500 ( 2 <sup>1</sup> / <sub>2</sub> ) | 39.688 (1.5625) | 38.100 ( 1 <sup>1</sup> / <sub>2</sub> ) |  | 43.3 (1.705) | 760 (30) | 2.381 ( <sup>3</sup> / <sub>32</sub> ) | 19.032            | 19.042 | 19.048         | 19.058 | 19.058           | 19.068 | 61 400                                | 116 000                                           | 8 970              | 44 900                 |
|                                             | CRY 44 VR             | CRY 44 V               | CRY 44 VUUR        | CRY 44 VUU             | 1 020       | 19.050 ( <sup>3</sup> / <sub>4</sub> )   | 69.850 ( 2 <sup>3</sup> / <sub>4</sub> ) | 39.688 (1.5625) | 38.100 ( 1 <sup>1</sup> / <sub>2</sub> ) |  | 43.3 (1.705) | 760 (30) | 2.381 ( <sup>3</sup> / <sub>32</sub> ) | 19.032            | 19.042 | 19.048         | 19.058 | 19.058           | 19.068 | 61 400                                | 116 000                                           | 10 200             | 49 400                 |
| 25.400<br>( 1 )                             | CRY 48 VR             | CRY 48 V               | CRY 48 VUUR        | CRY 48 VUU             | 1 410       | 25.400 ( 1 )                             | 76.200 ( 3 )                             | 46.038 (1.8125) | 44.450 ( 1 <sup>3</sup> / <sub>4</sub> ) |  | 54.0 (2.125) | 760 (30) | 2.381 ( <sup>3</sup> / <sub>32</sub> ) | 25.377            | 25.390 | 25.397         | 25.410 | 25.408           | 25.420 | 77 600                                | 172 000                                           | 11 400             | 64 300                 |
|                                             | CRY 52 VR             | CRY 52 V               | CRY 52 VUUR        | CRY 52 VUU             | 1 640       | 25.400 ( 1 )                             | 82.550 ( 3 <sup>1</sup> / <sub>4</sub> ) | 46.038 (1.8125) | 44.450 ( 1 <sup>3</sup> / <sub>4</sub> ) |  | 54.0 (2.125) | 760 (30) | 2.381 ( <sup>3</sup> / <sub>32</sub> ) | 25.377            | 25.390 | 25.397         | 25.410 | 25.408           | 25.420 | 77 600                                | 172 000                                           | 12 700             | 69 600                 |
| 28.575<br>( 1 <sup>1</sup> / <sub>8</sub> ) | CRY 56 VR             | CRY 56 V               | CRY 56 VUUR        | CRY 56 VUU             | 2 250       | 28.575 ( 1 <sup>1</sup> / <sub>8</sub> ) | 88.900 ( 3 <sup>1</sup> / <sub>2</sub> ) | 52.388 (2.0625) | 50.800 ( 2 )                             |  | 61.9 (2.437) | 760 (30) | 2.381 ( <sup>3</sup> / <sub>32</sub> ) | 28.522            | 28.565 | 28.572         | 28.585 | 28.583           | 28.595 | 111 000                               | 239 000                                           | 14 100             | 87 000                 |
| 31.750<br>( 1 <sup>1</sup> / <sub>4</sub> ) | CRY 64 VR             | CRY 64 V               | CRY 64 VUUR        | CRY 64 VUU             | 3 200       | 31.750 ( 1 <sup>1</sup> / <sub>4</sub> ) | 101.600 ( 4 )                            | 58.738 (2.3125) | 57.150 ( 2 <sup>1</sup> / <sub>4</sub> ) |  | 71.0 (2.797) | 760 (30) | 2.381 ( <sup>3</sup> / <sub>32</sub> ) | 31.727            | 31.740 | 31.747         | 31.760 | 31.758           | 31.770 | 142 000                               | 317 000                                           | 16 800             | 113 000                |

Remark 1. The inner ring has an oil groove and an oil hole.  
2. Provided with pre-packed grease.

**Application Examples**  
**Customized Products**  
**Model Comparison Table**  
**Miscellaneous Tables**

Introduction of Application Examples ..... 101

Introduction of Customized Products ..... 115

Model Comparison Table for Cam Followers ..... 117

Model Comparison Table for Roller Followers ..... 118

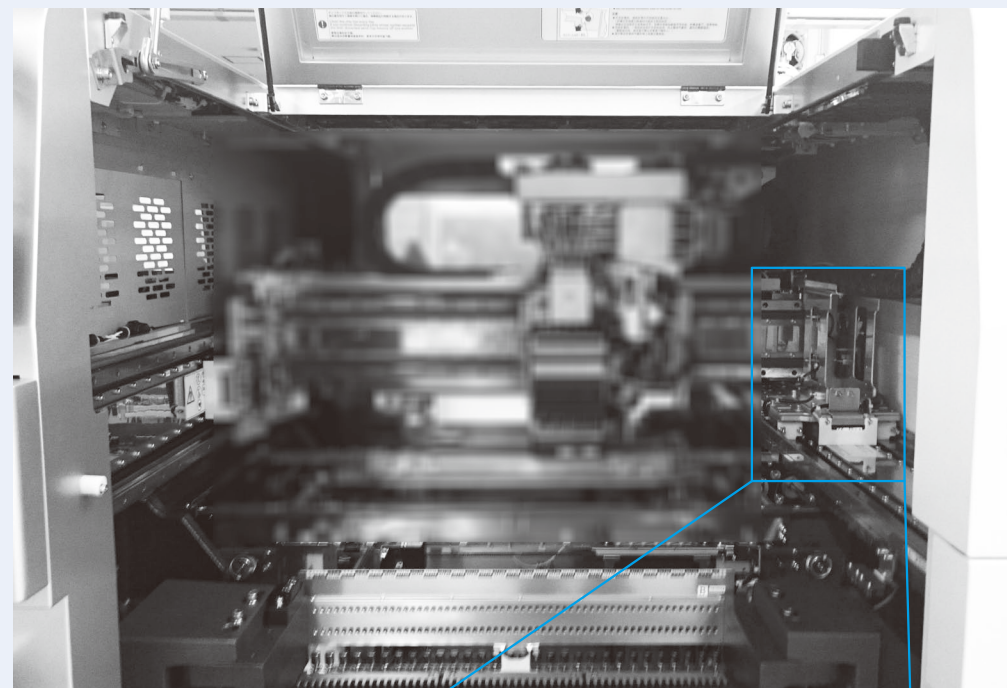
Miscellaneous Tables ..... 119

Introduction of **IKO** Technical Service Site ..... 127

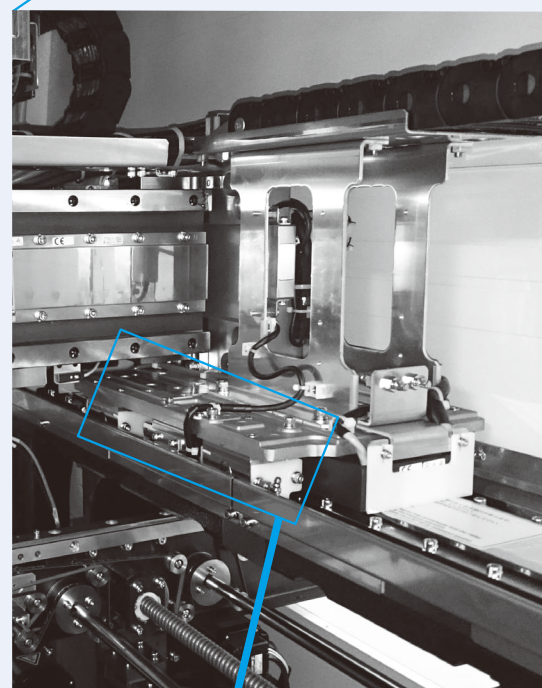
Introduction of **IKO** Products ..... 129



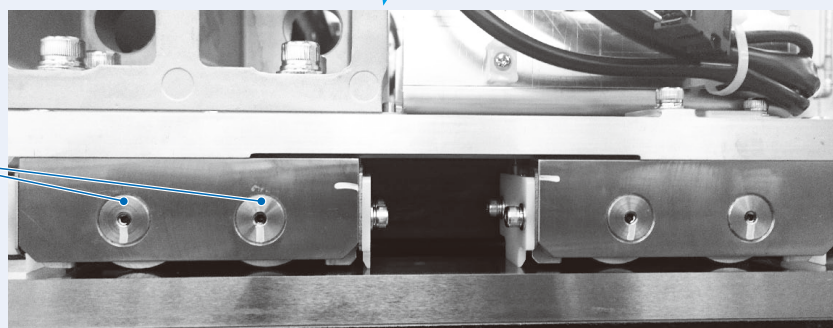
## Chip mounter shaft mover



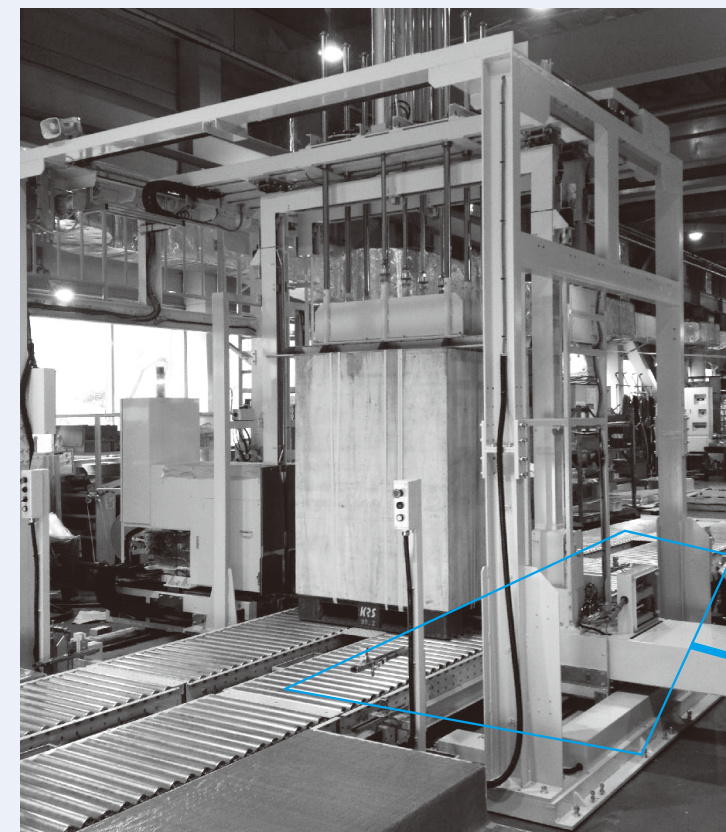
Device interior



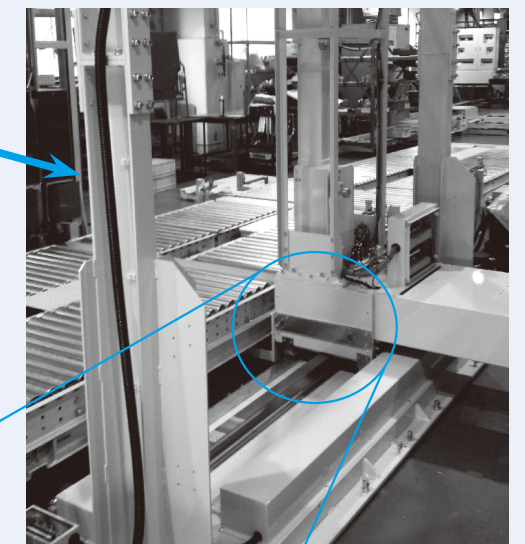
NURT



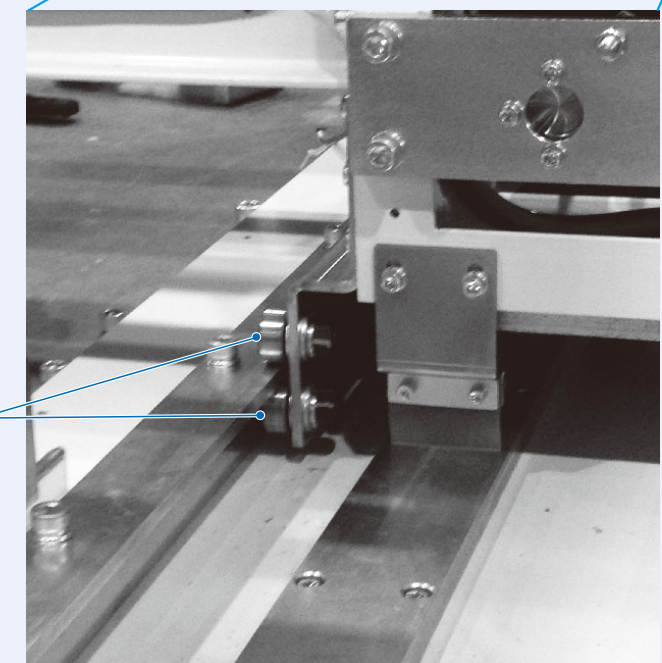
## Automatic packager position adjuster



Entire device

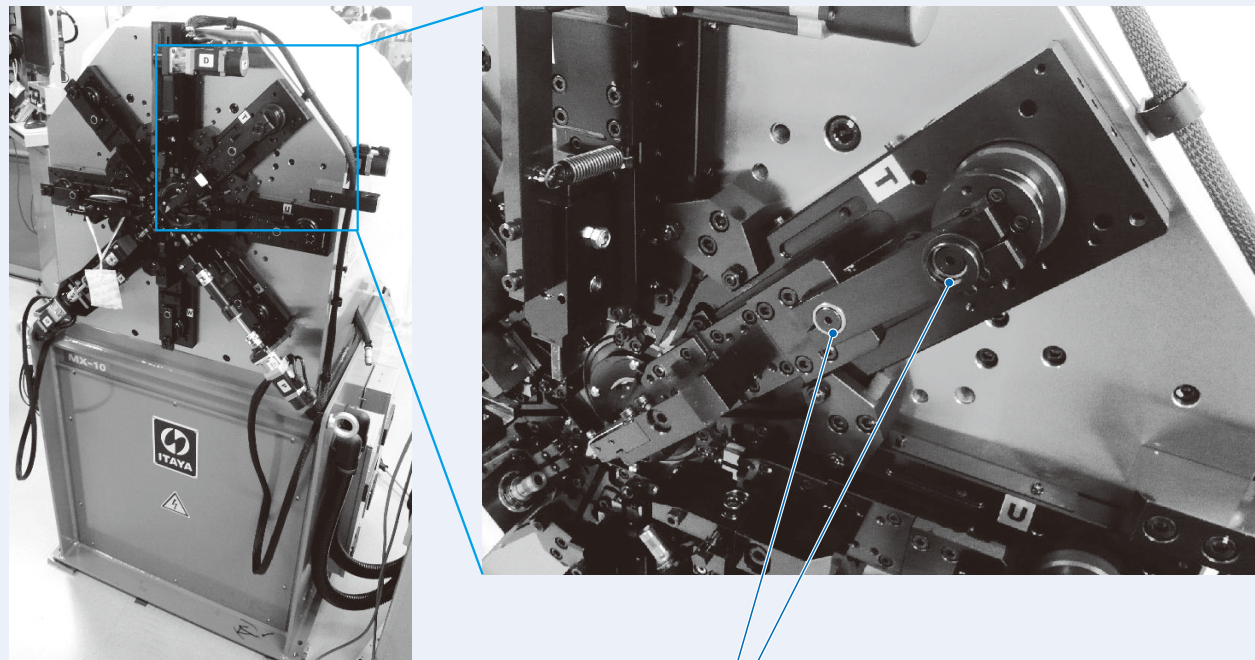


CF...WBUUR



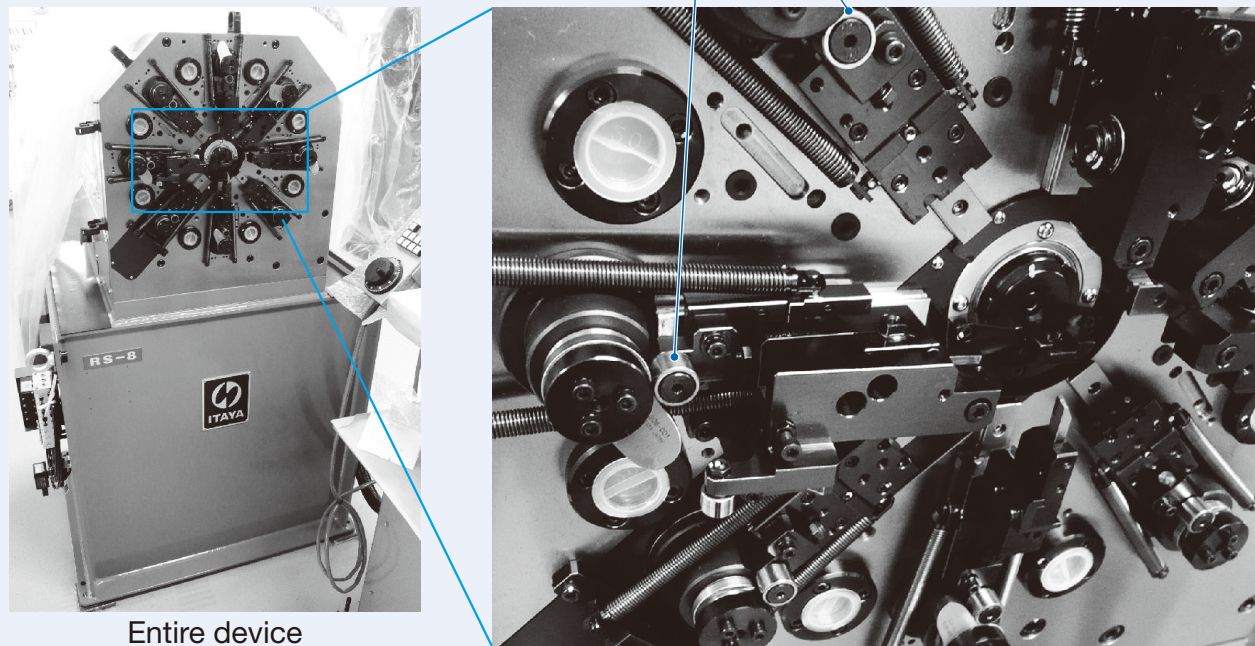


## Cam mechanism with spring structure



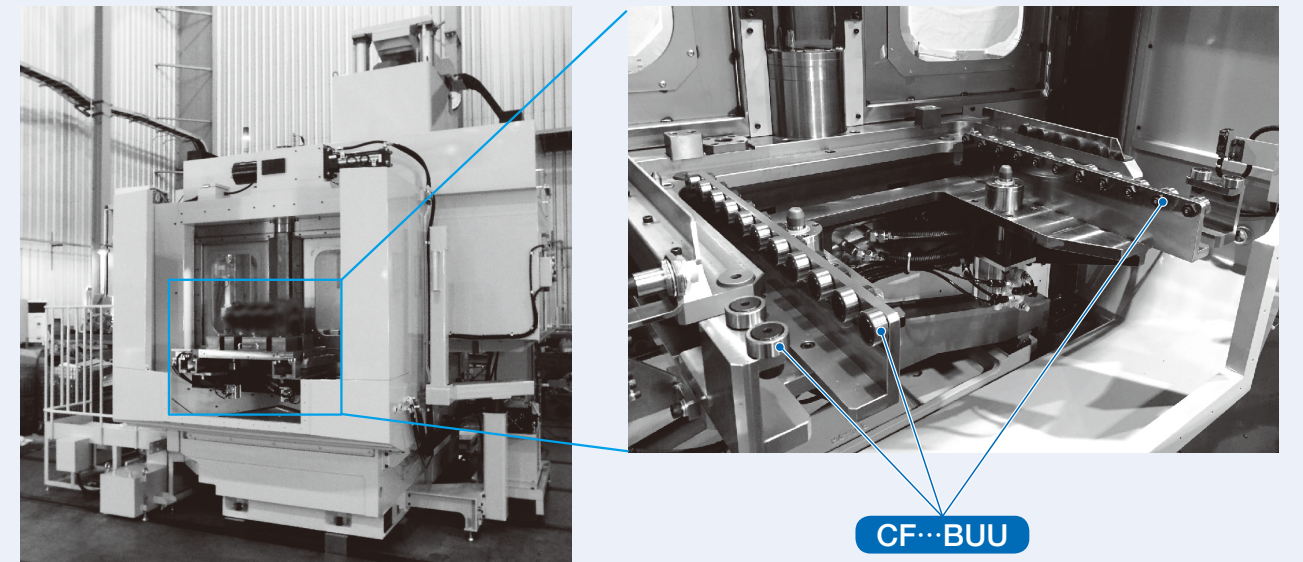
Entire device

CF...VB



Entire device

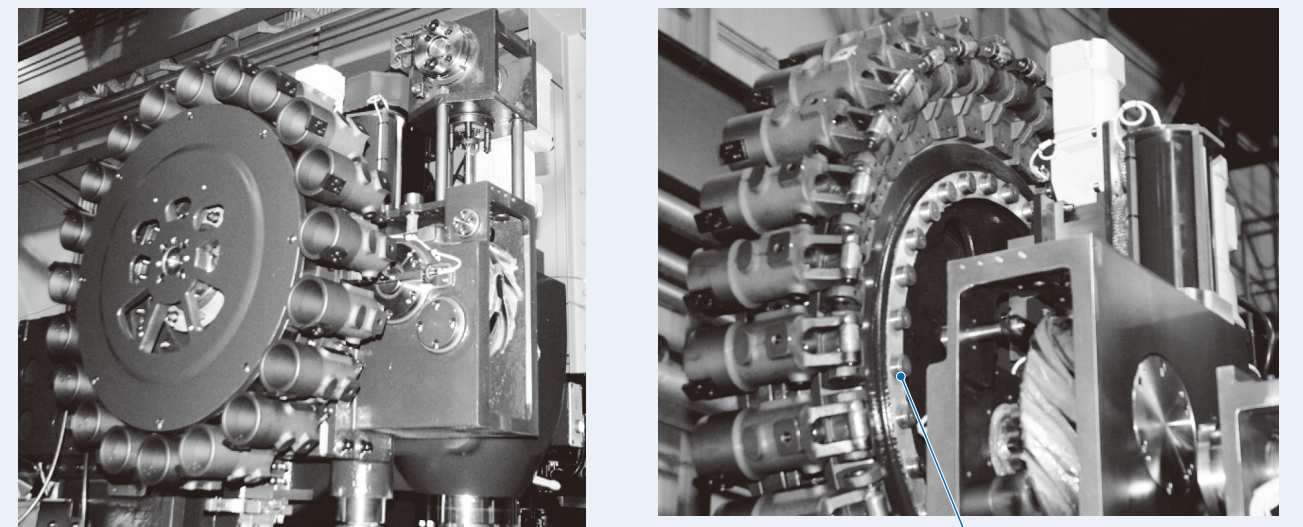
## Machine tool pallet conveyor



Entire device

CF...BUU

## Machine tool automatic tool changer

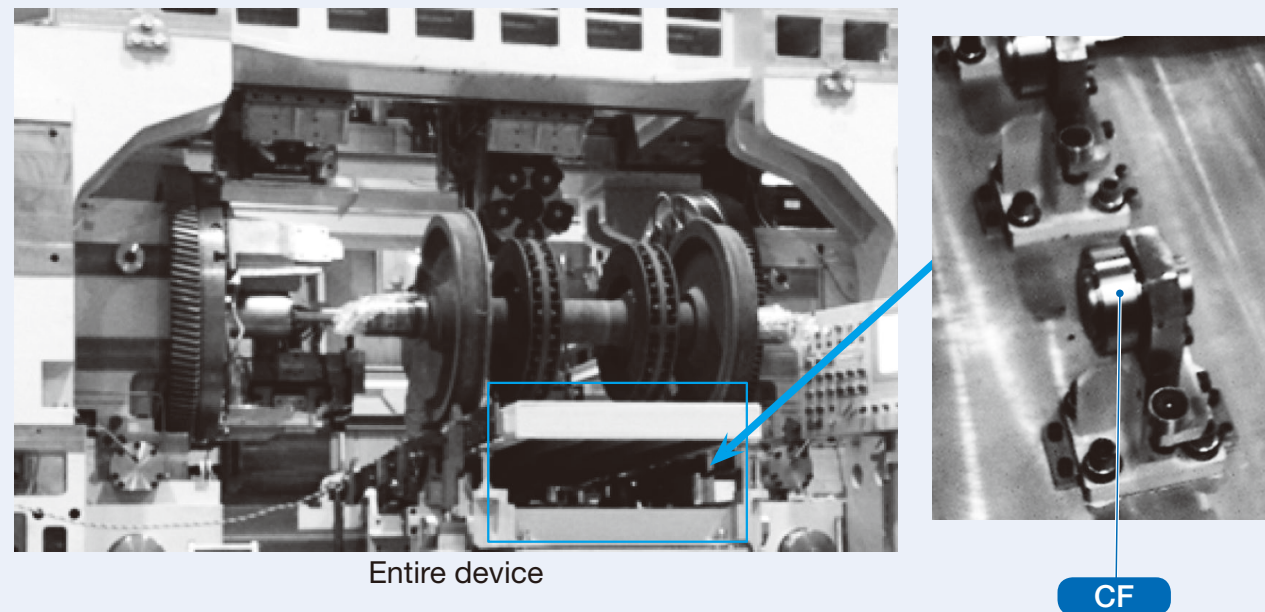


Entire device

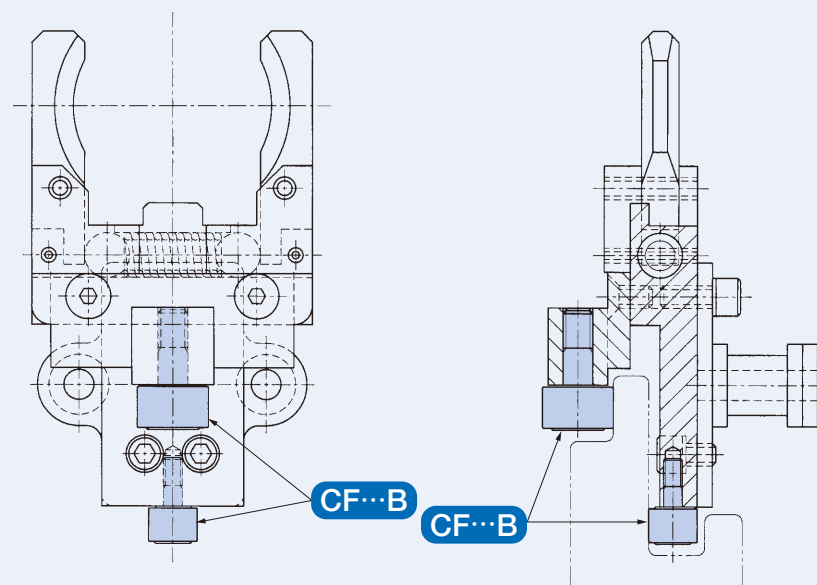
CF



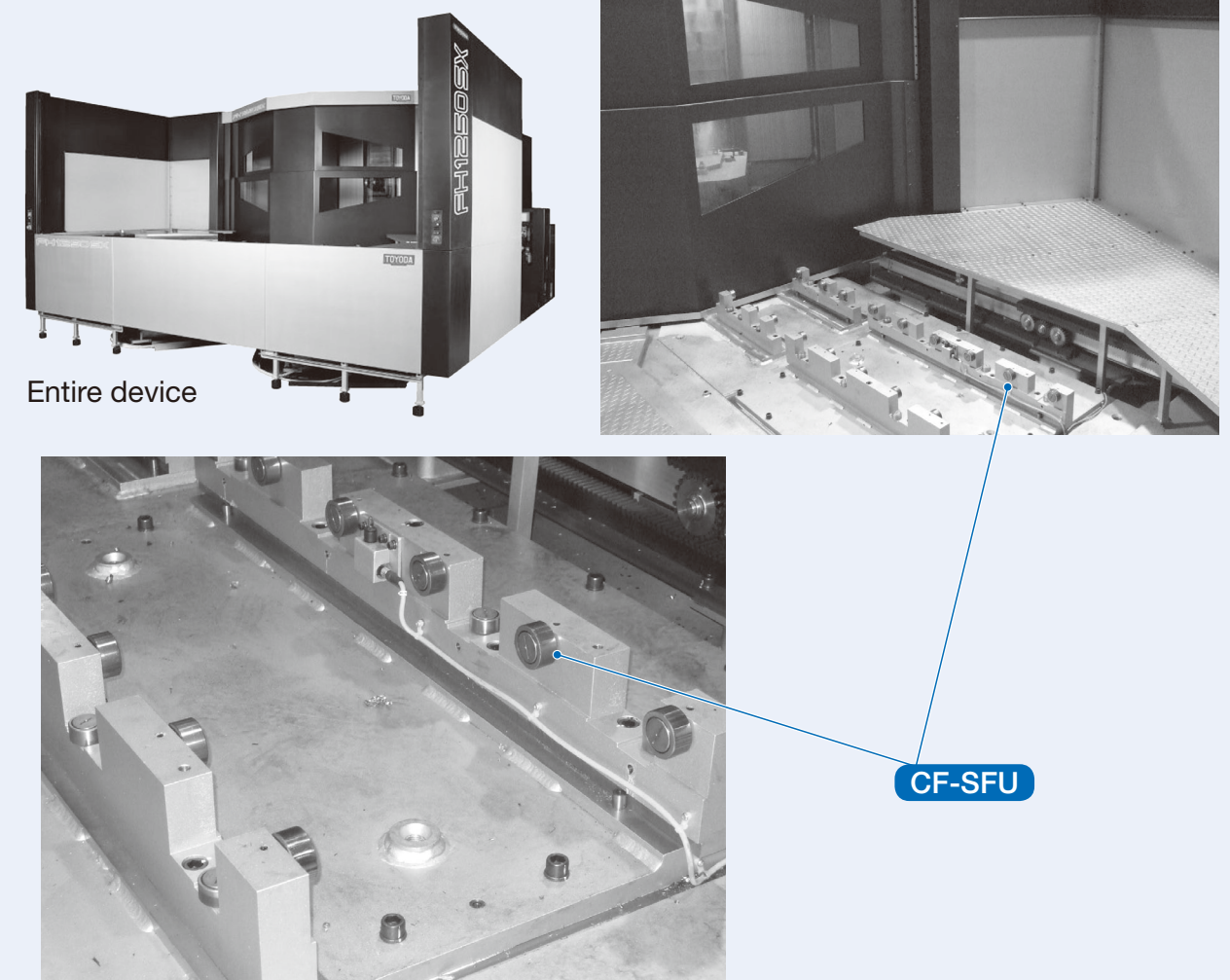
## Machine tool workpiece conveyor



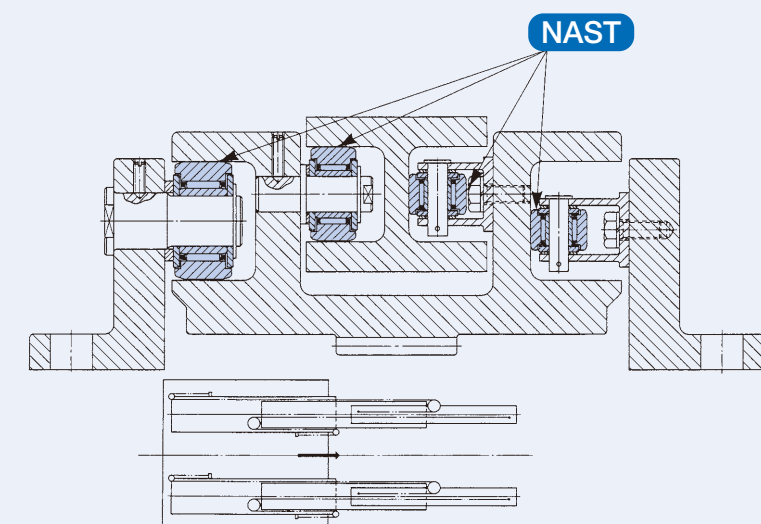
## ATC guide



## Machine tool pallet guide

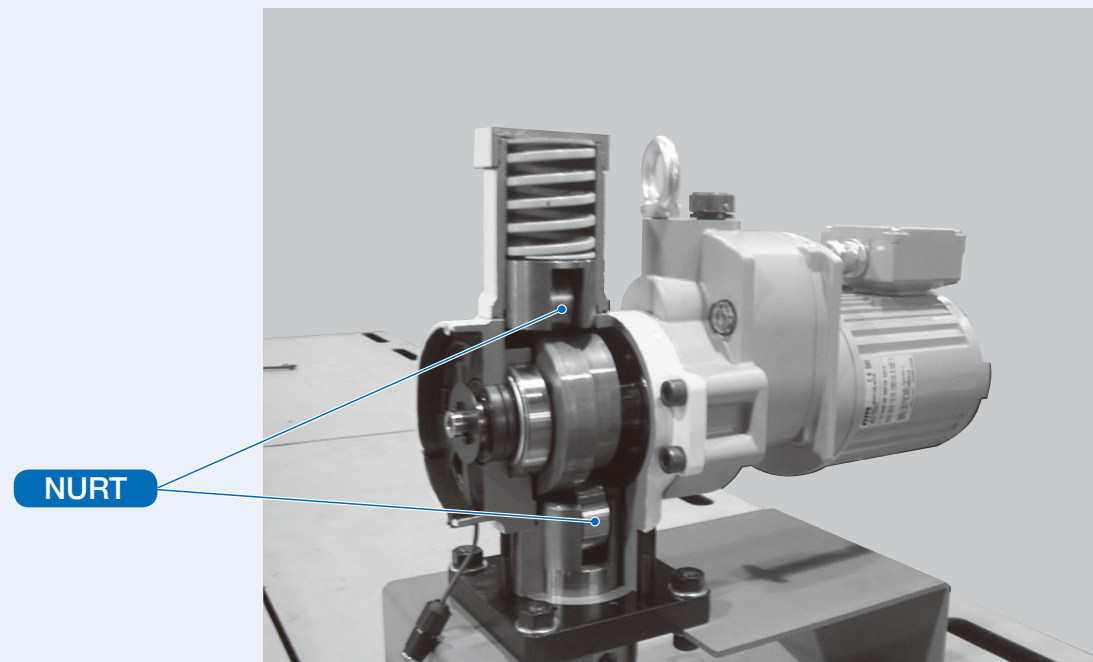


## Shuttle fork

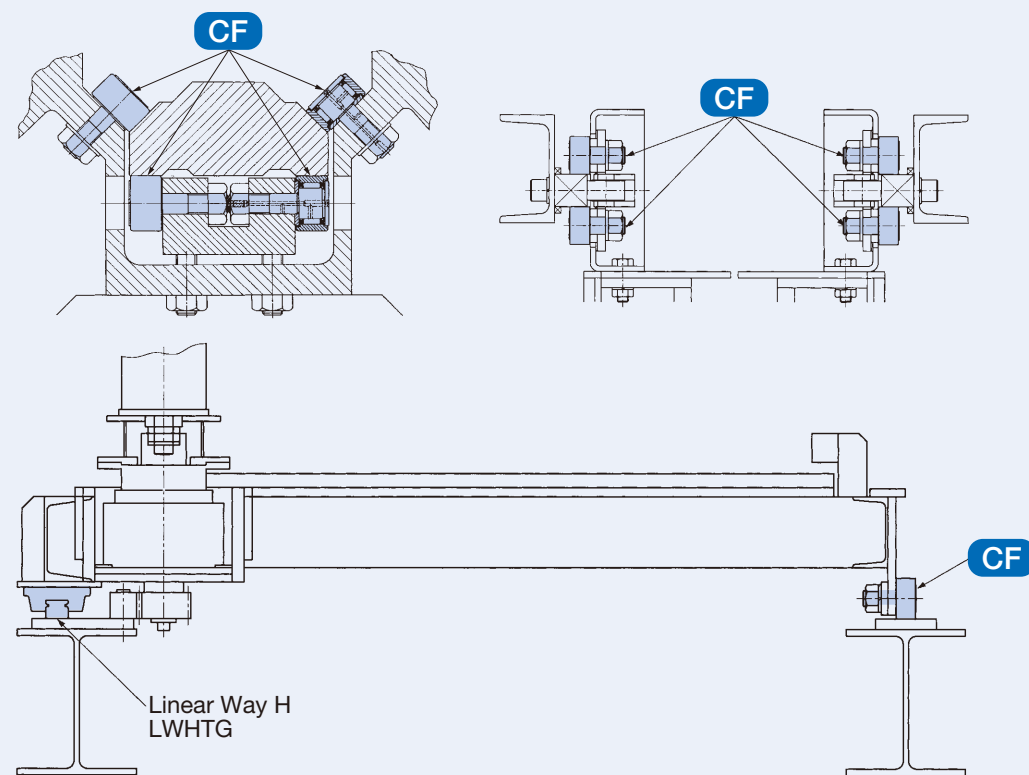




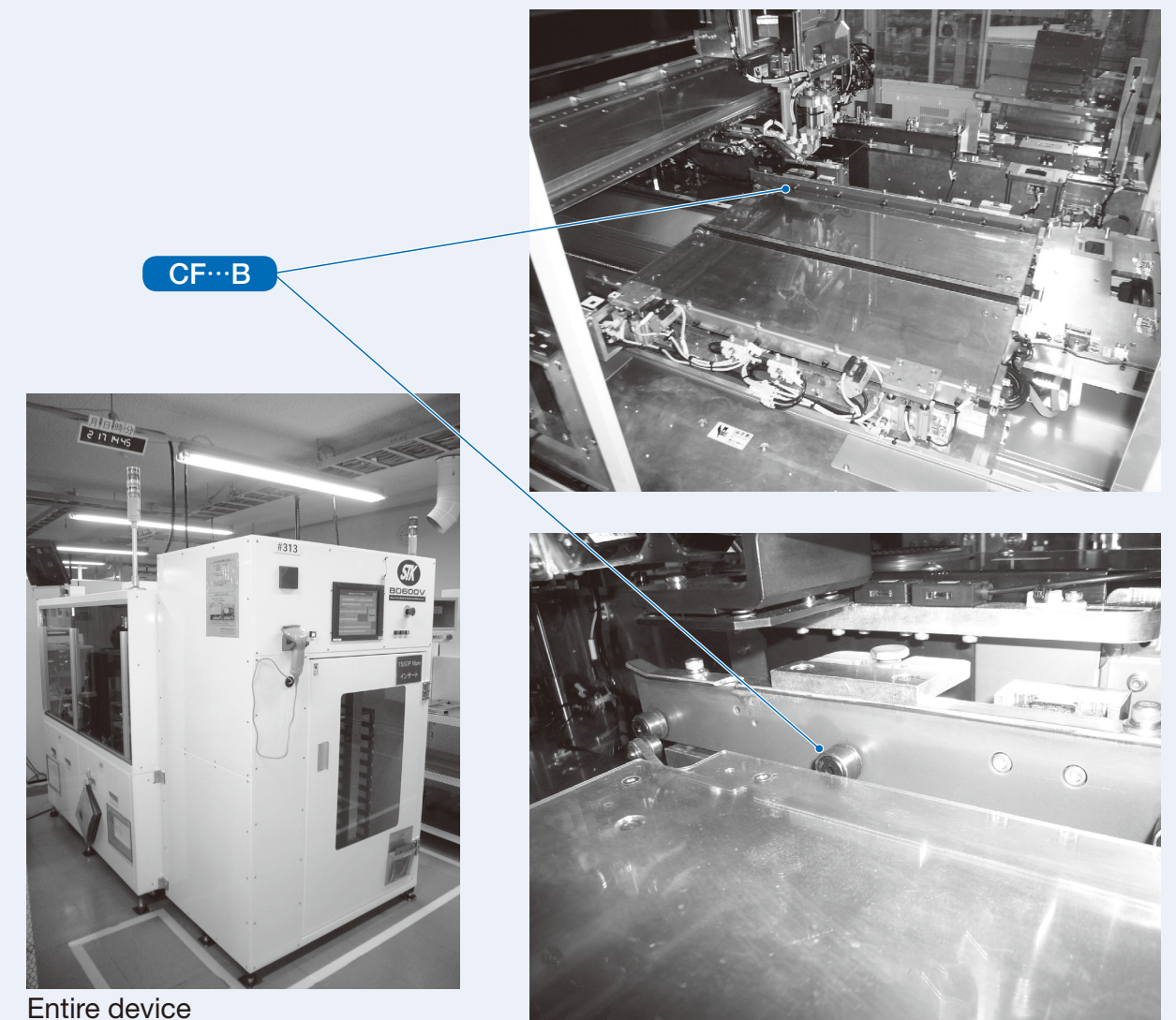
Machine tool unclamping device



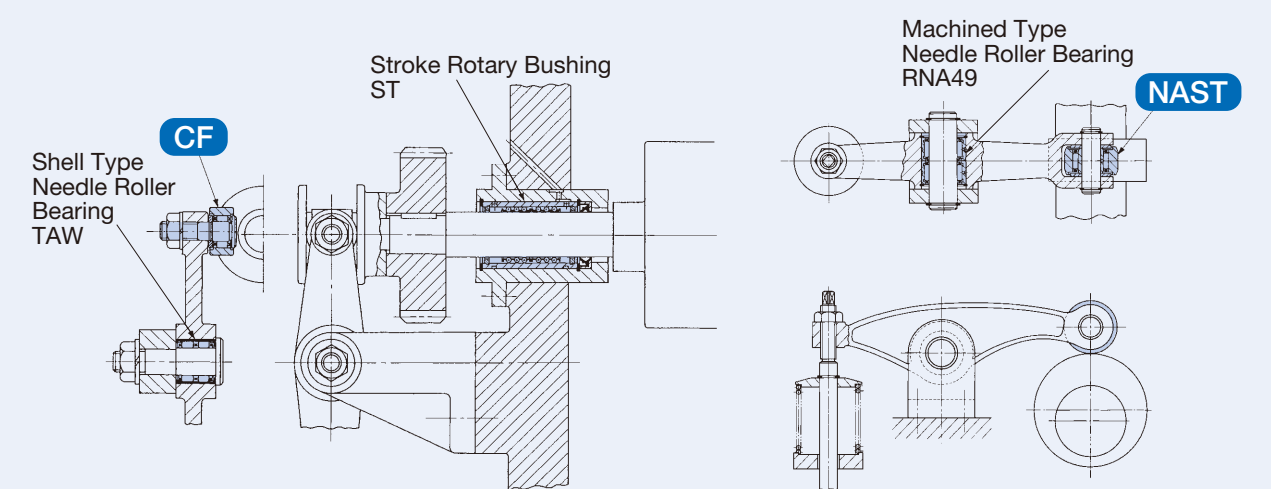
Conveying equipment guide



Semiconductor device manufacturing equipment workpiece supply conveyor

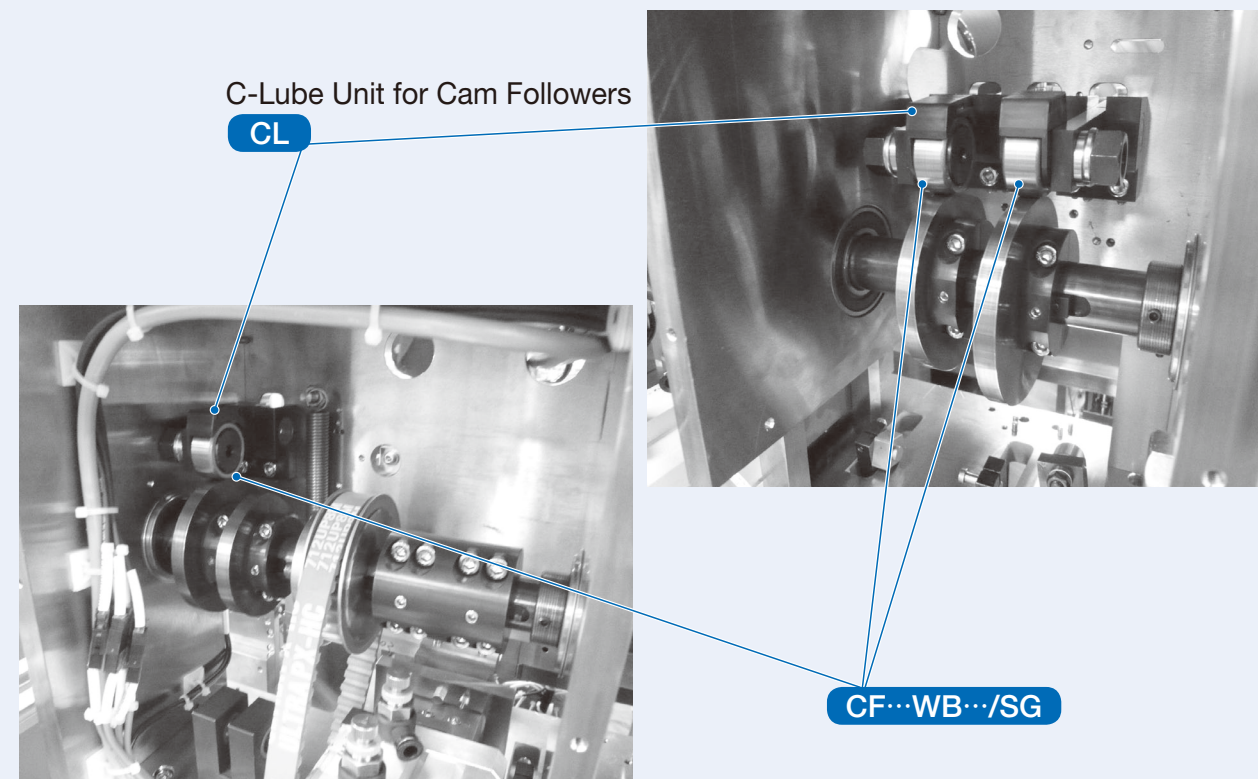


Printer cam mechanism

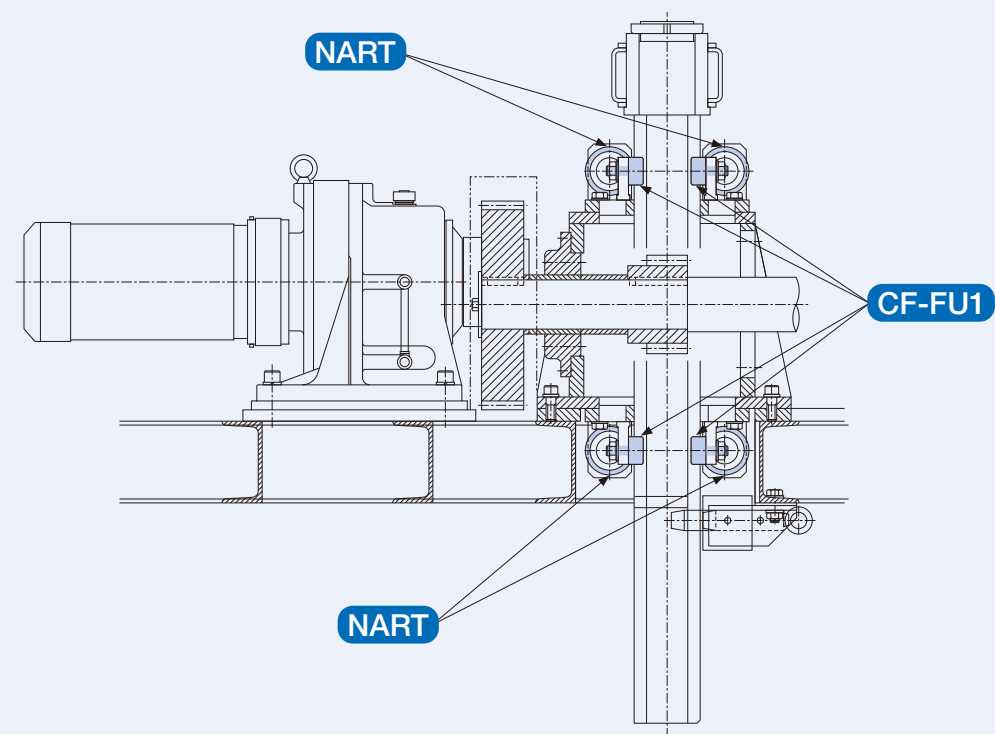


# Introduction of Application Examples

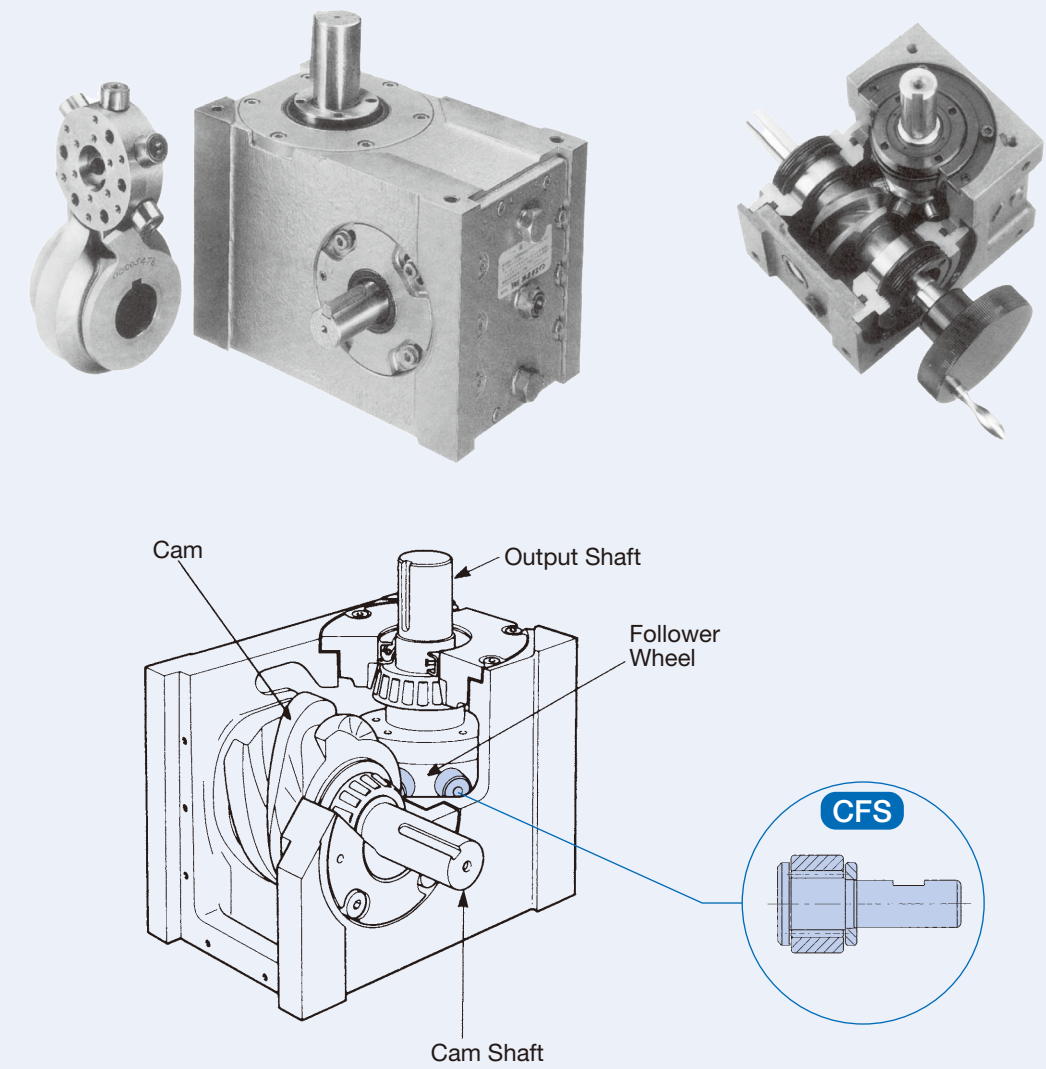
## Connector manufacturing equipment cam mechanism



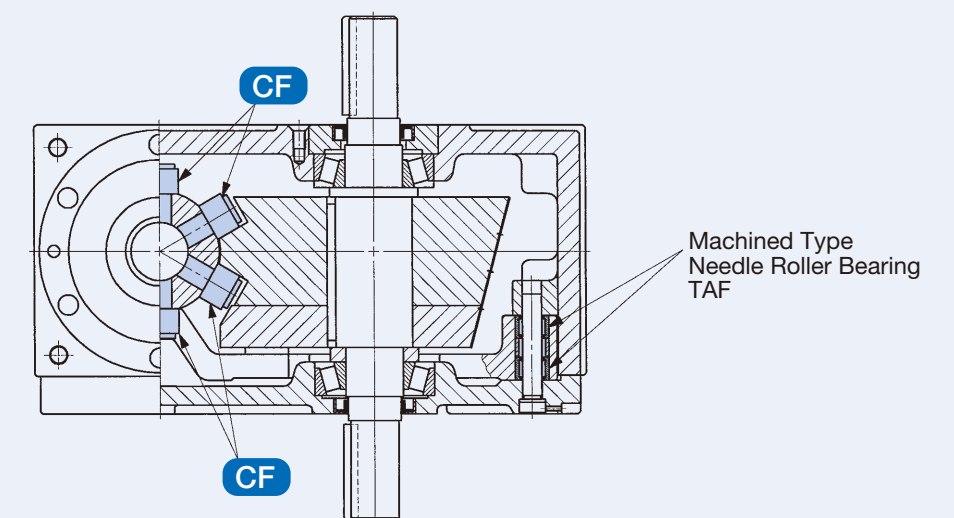
## Production line hoist



## Indexing machine

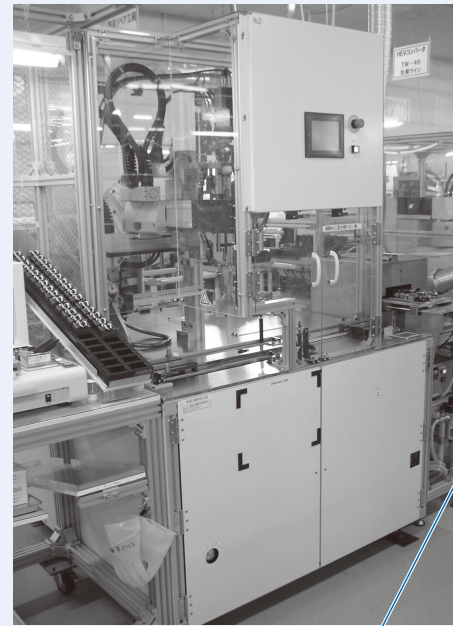


## Swivel type pick and place unit

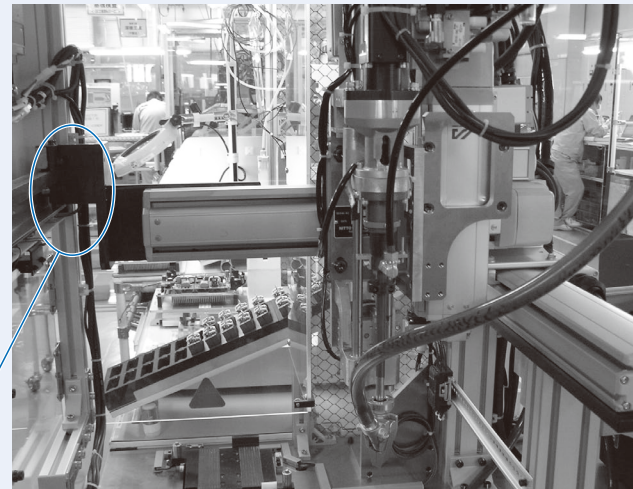




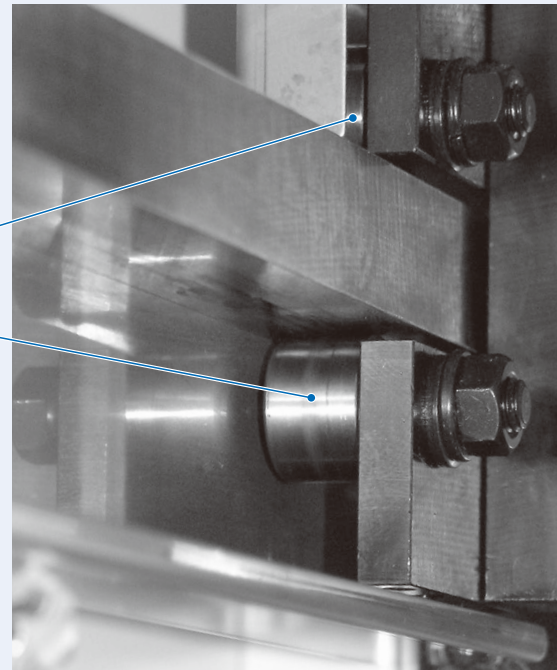
## Thread fastener shaft guide



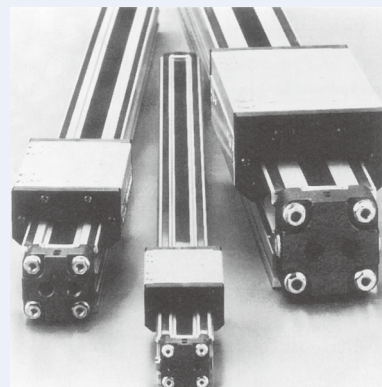
Entire device



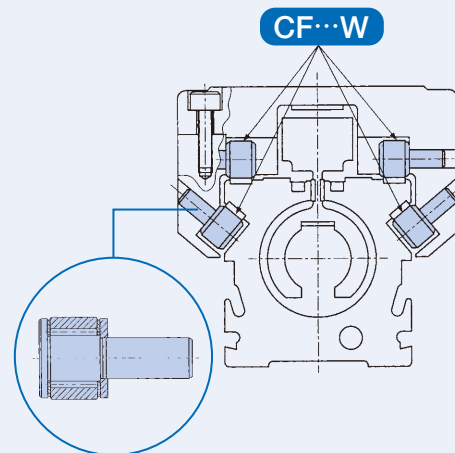
CF...B



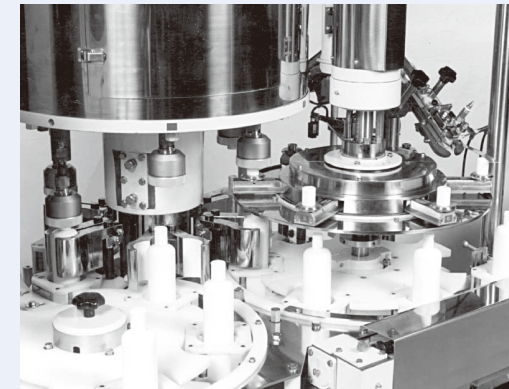
## Rodless cylinder



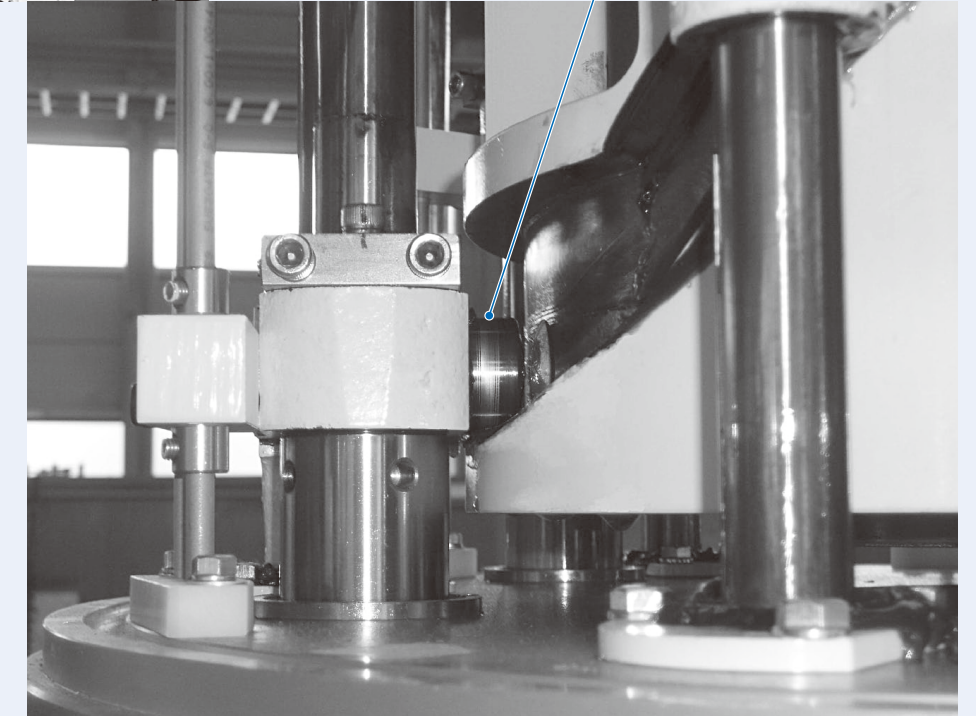
CF...W



## Bottling system (capper)

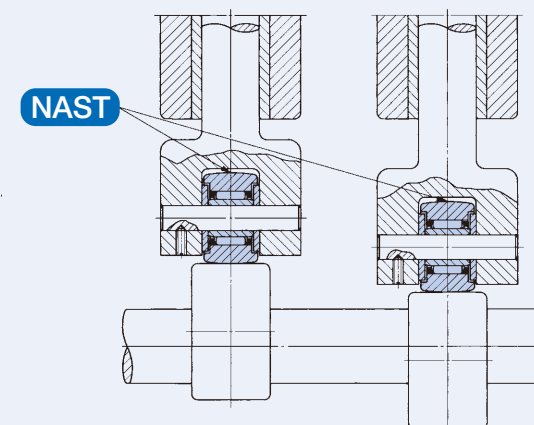


CF...B

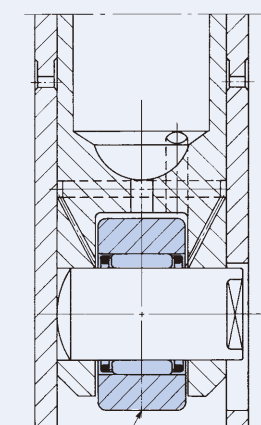


## Diesel engine

Cam Shaft Valve Lifter



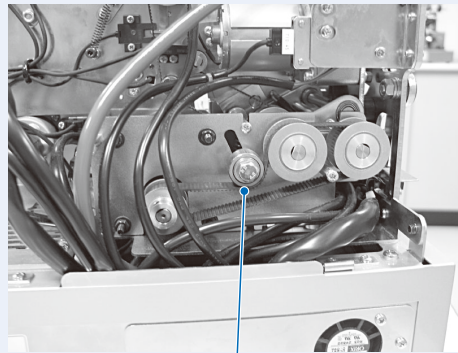
Cam Roller



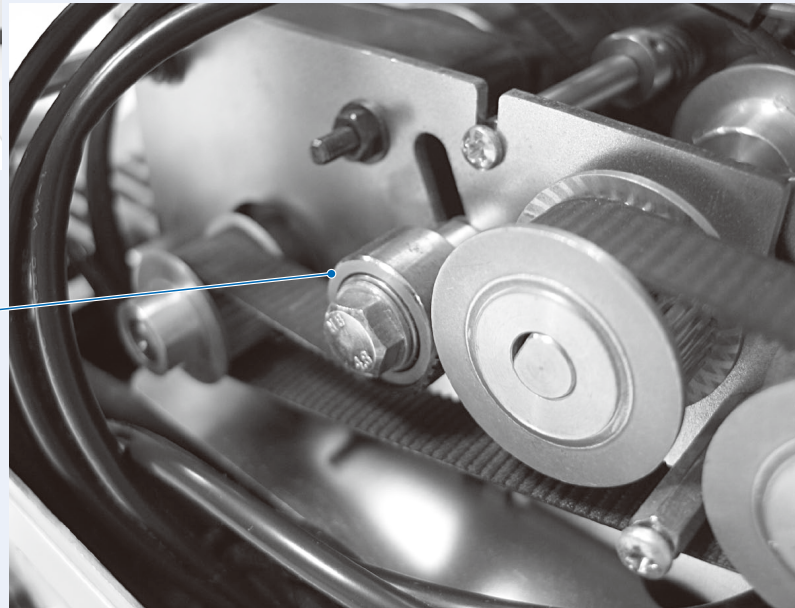
RNAS



## Printing device timing belt tensioner



NART

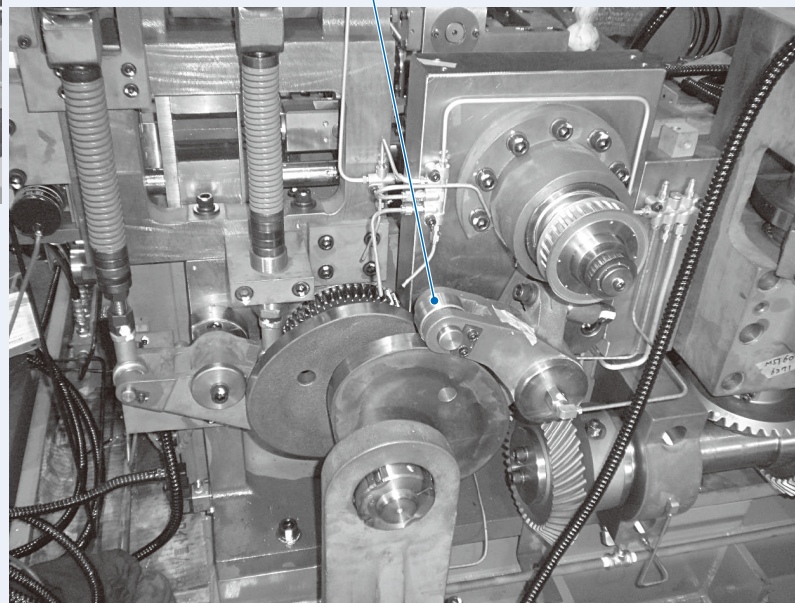


## Thread header processor cam mechanism

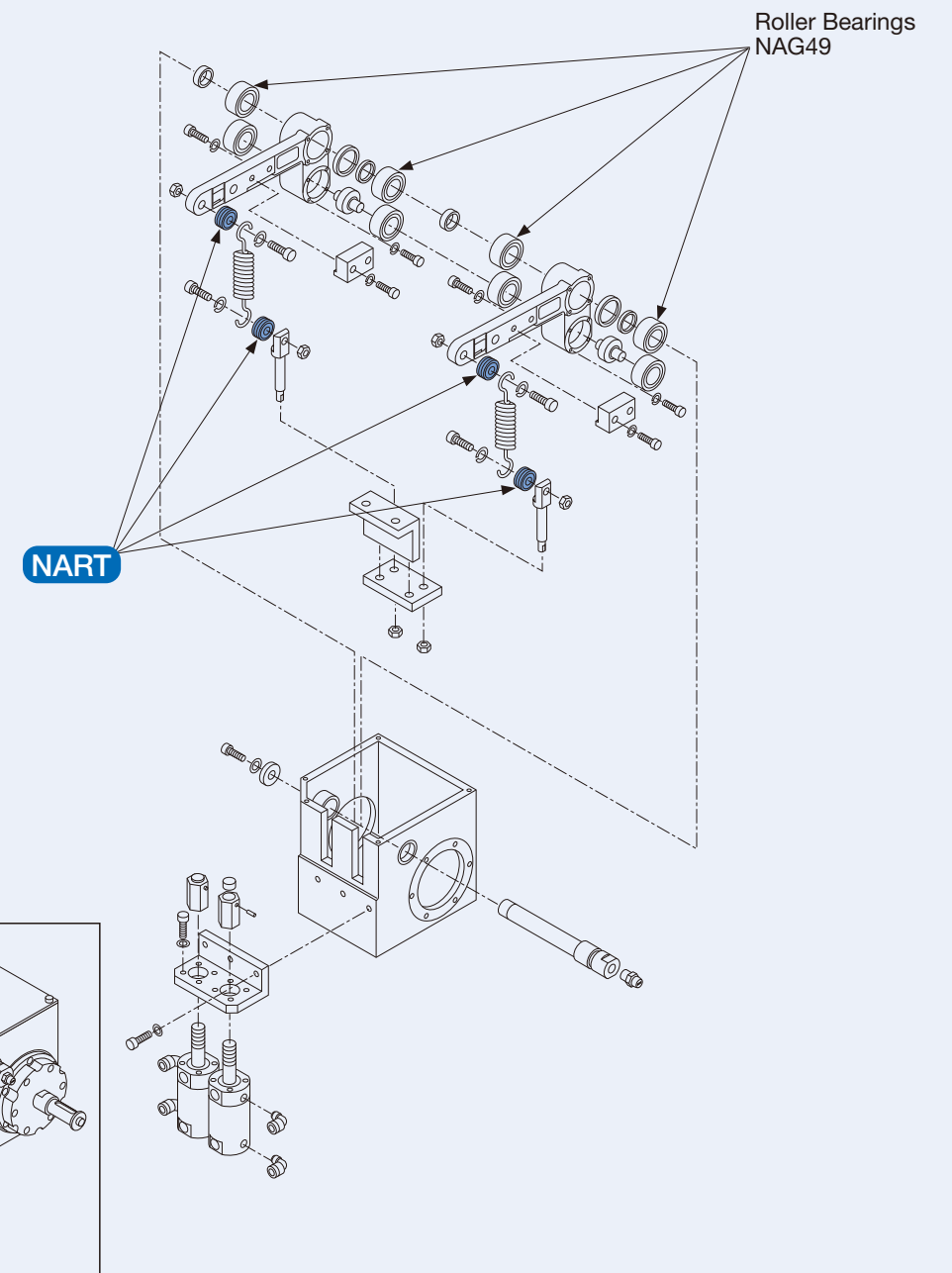


Entire device

NART



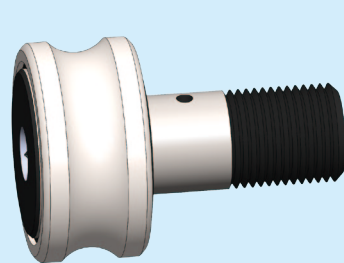
## High-speed chip mouter cam box



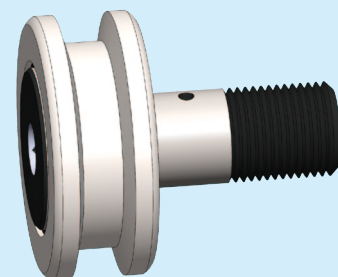
## Introduction of Customized Products

**IKO** can also manufacture products with special specifications to suit the customer's requirements, in addition to the products listed in the catalog. This section introduces examples of customized products.

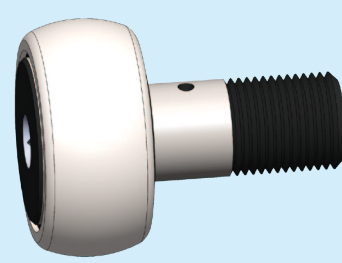
### Special Outer Ring Products



R-Groove Shaped Outer Ring



Pulley-Groove Shaped Outer Ring

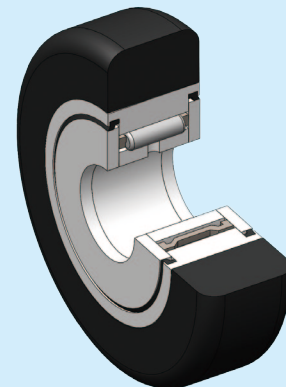
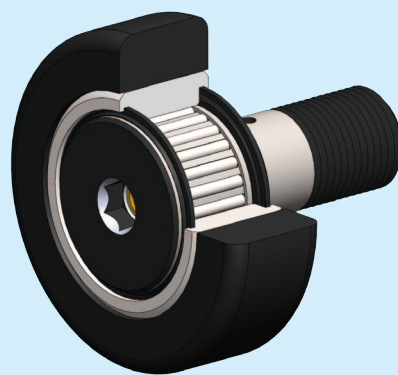


Spherical Shaped Outer Wheel

#### Overview / Applications

A special product with the grooved shape of the outer ring to match the surface of the mating cam guide. Use as a guide roller for the following circumstances.

- Steel wire or steel tube guides
- Rope guides for rope winders
- Belt tension guides



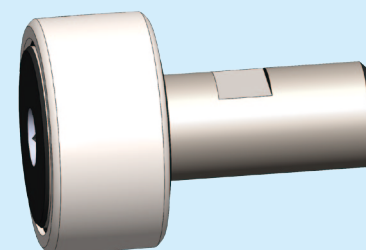
Urethane Rubber Attachments (CF, NAST)

#### Overview / Applications

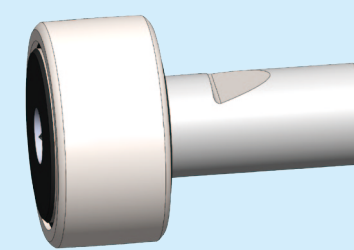
The outer ring has a urethane rubber ring attached to allow for use in the following circumstances.

- For insulation purposes such as when metal contact with the mating cam guide is prohibited
- For the purpose of preventing noise generated from metal contact
- In places when lubricant cannot be used on the mating cam guide surface

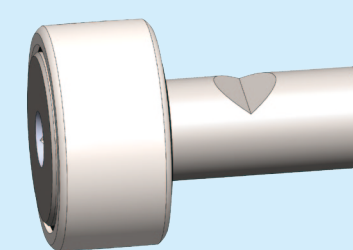
### Special Stud Products



Stud with D Cut



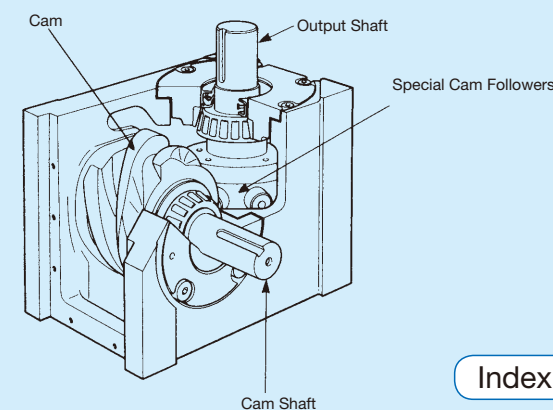
Stud with V Cut



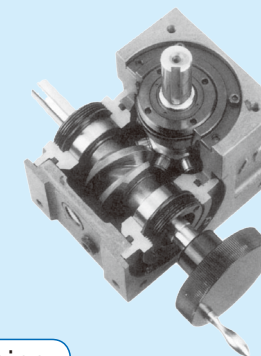
Stud with V Cut

#### Overview / Applications

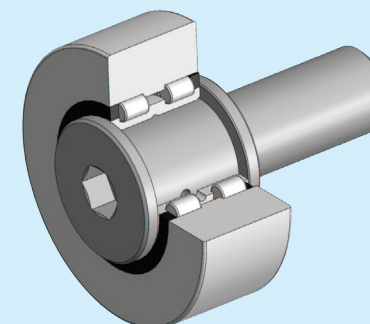
With position fixable by fixing screws, it can be easily mounted and is often used as the gear cam guide for indexing machines.



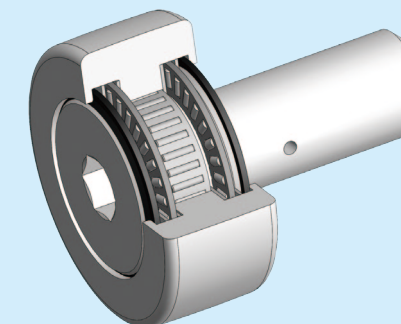
Indexing machine



### Special Shaped Products



Roller Bearings Built In



Thrust Bearings Built In

We also have a history of manufacturing many other special products. If you have any problems with special product applications, please contact **IKO**.



## Model Comparison Table for Cam Followers

| Model of bearing                                                      | <b>IKO</b>    | Dimen-<br>sions<br>Page | JNS / THK   | INA / SKF    | Mc.GILL     | KOYO<br>TORRINGTON | SMITH       |
|-----------------------------------------------------------------------|---------------|-------------------------|-------------|--------------|-------------|--------------------|-------------|
| Miniature Type<br>Cam Followers                                       | CFS           | 31                      | CFS...A     |              |             |                    |             |
|                                                                       | CFS...V       | 31                      | CFS...VA    |              |             |                    |             |
|                                                                       | CFS...F       | 31                      | CFS...MA    |              |             |                    |             |
|                                                                       | CFS...FV      | 31                      | CFS...VMA   |              |             |                    |             |
| Thrust Disk Type<br>Miniature Cam Followers                           | CFS...W       | 33                      |             |              |             |                    |             |
|                                                                       | CFS...WV      | 33                      |             |              |             |                    |             |
|                                                                       | CFS...FW      | 33                      |             |              |             |                    |             |
| Standard Type<br>Cam Followers                                        | CF...BR       | 35                      | CF...RA     | KR...SK      | MFCR...B    | KM...RHM           | MCR...B     |
|                                                                       | CF...B        | 35                      | CF...A      | KR...XSK     | MFCR...BX   | KM...HMM           | MCR...CB    |
|                                                                       | CF...BUUR     | 35                      | CF...UURA   | KR...PPSK    | MFCR...SB   | KM...UURHM         | MCR...SB    |
|                                                                       | CF...BUU      | 35                      | CF...UUA    | KR...PPXSK   | MFCR...SBX  | KM...UUHM          | MCR...SCB   |
| Standard Type<br>Cam Followers<br>(Full Complement Type)              | CF...VBR      | 37                      | CF...VUURA  | KRV...SK     | MCF...BA    | CM...RHM           | MCRV...B    |
|                                                                       | CF...VB       | 37                      | CF...VA     | KRV...XSK    | MCF...BXA   | CM...HM            | MCRV...CB   |
|                                                                       | CF...VBUUR    | 37                      | CF...VUURA  | KRV...PPSK   | MCF...SB    | CM...UURHM         | MCRV...SB   |
|                                                                       | CF...VBUU     | 37                      | CF...VUUA   | KRV...PPXSK  | MCF...SBX   | CM...UUHM          | MCRV...SCB  |
| Cam Follower G                                                        | CF...G        | 43                      |             |              |             |                    |             |
| Standard Type<br>Cam Followers<br>(Stainless Steel Made)              | CF...FBR      | 35                      | CF...MRA    |              |             |                    |             |
|                                                                       | CF...FB       | 35                      | CF...MA     |              |             |                    |             |
|                                                                       | CF...FBUUR    | 35                      | CF...MUURA  |              |             |                    |             |
|                                                                       | CF...FBUU     | 35                      | CF...MUUA   |              |             |                    |             |
| Double Hex Hole<br>Cam Followers                                      | CFKR          | 39                      | CF...AB     | KR...X       |             |                    |             |
|                                                                       | CFKR...R      | 39                      | CF...RAB    | KR           |             |                    |             |
|                                                                       | CFKR...UU     | 39                      | CF...UUAB   | KR...PPX     |             |                    |             |
|                                                                       | CFKR...UUR    | 39                      | CF...UURAB  | KR...PP      |             |                    |             |
| Double Hex Hole<br>Cam Followers<br>(Full Complement Type)            | CFKR...V      | 41                      | CF...VAB    | KRV...X      |             |                    |             |
|                                                                       | CFKR...VR     | 41                      | CF...VRAB   | KRV          |             |                    |             |
|                                                                       | CFKR...VUU    | 41                      | CF...VUUAB  | KRV...PPX    |             |                    |             |
|                                                                       | CFKR...VUUR   | 41                      | CF...VUURAB | KRV...PP     |             |                    |             |
| Thrust Disk Type<br>Cam Followers                                     | CF...WBR      | 45                      |             |              |             |                    |             |
|                                                                       | CF...WBUUR    | 45                      |             |              |             |                    |             |
|                                                                       | CF...FWBR     | 45                      |             |              |             |                    |             |
|                                                                       | CF...FWBUUR   | 45                      |             |              |             |                    |             |
| C-Lube Cam Followers                                                  | CF...WBUUR/SG | 47                      |             |              |             |                    |             |
| Solid Eccentric Stud Type<br>Cam Followers                            | CFES...BR     | 49                      | CFH...RA    |              |             |                    |             |
|                                                                       | CFES...B      | 49                      | CFH...A     |              |             |                    |             |
|                                                                       | CFES...BUUR   | 49                      | CFH...UURA  |              |             |                    |             |
|                                                                       | CFES...BUU    | 49                      | CFH...UUA   |              |             |                    |             |
| Eccentric Type<br>Cam Followers                                       | CFE...BR      | 51                      |             | KRE...SK     | MCFRE...B   |                    | MCR...BE    |
|                                                                       | CFE...B       | 51                      |             | KRE...XSK    | MCFRE...BX  |                    | MCR...CBE   |
|                                                                       | CFE...BUUR    | 51                      |             | KRE...PPSK   | MCFRE...SB  |                    | MCR...SBE   |
|                                                                       | CFE...BUU     | 51                      |             | KRE...PPXSK  | MCFRE...SBX |                    | MCR...SCBE  |
| Eccentric Type<br>Cam Followers<br>(Full Complement Type)             | CFE...VBR     | 53                      |             | KRVE...SK    | MCFE...B    |                    | MCRV...BE   |
|                                                                       | CFE...VB      | 53                      |             | KRVE...XSK   | MCFE...BX   |                    | MCRV...CBE  |
|                                                                       | CFE...VBUUR   | 53                      |             | KRVE...PPSK  | MCFE...SB   |                    | MCRV...SBE  |
|                                                                       | CFE...VBUU    | 53                      |             | KRVE...PPXSK | MCFE...SBX  |                    | MCRV...SCBE |
| Centralized Lubrication Type<br>Cam Followers (With Screwdriver Slot) | CF-RU1        | 55                      | CFT...UUR   |              |             |                    |             |
|                                                                       | CF-FU1        | 55                      | CFT...UU    |              |             |                    |             |
| Easy Mounting Type Cam Followers                                      | CF-SFU...B    | 57                      | CF-SFU...   |              |             |                    |             |
| Cylindrical Roller Cam Followers                                      | NUCF...BR     | 59                      | NUCF...AB   | NUKR         | MCFD        |                    | NUKR...B    |

Remark **IKO** Cam Followers have a hexagon socket for easy mounting and an original lubrication mechanism that allows lubrication from the stud head.

## Model Comparison Table for Inch Series Cam Followers

| Model of bearing                                                               | <b>IKO</b>  | Dimen-<br>sions<br>Page | JNS / THK | INA / SKF   | Mc.GILL   | KOYO<br>TORRINGTON | SMITH    | RBC     |
|--------------------------------------------------------------------------------|-------------|-------------------------|-----------|-------------|-----------|--------------------|----------|---------|
| Inch Series Cam Followers<br>(With Cage / With Hexagon Socket)                 | CR...BR     | 61                      |           | CFC...YSK   |           |                    |          |         |
|                                                                                | CR...B      | 61                      |           | CFC...SK    |           |                    |          |         |
|                                                                                | CR...BUUR   | 61                      |           | CFC...PPYSK |           |                    |          |         |
|                                                                                | CR...BUU    | 61                      |           | CFC...PPSK  |           |                    |          |         |
| Inch Series Cam Followers<br>(With Cage / With Screwdriver Slot)               | CR...R      | 63                      | CR...R    | CFC...Y     |           |                    |          |         |
|                                                                                | CR          | 63                      | CR...     | CFC         |           |                    |          |         |
|                                                                                | CR...UUR    | 63                      | CR...UUR  | CFC...PPPY  |           |                    |          |         |
|                                                                                | CR...UU     | 63                      | CR...UU   | CFC...PP    |           |                    |          |         |
| Inch Series Cam Followers<br>(Full Complement Type /<br>With Hexagon Socket)   | CR...VBR    | 65                      |           | CF...YSK    | CCF...B   | CRBC               | CR...BC  | CS...W  |
|                                                                                | CR...VB     | 65                      |           | CF...SK     | CF...B    | CRB                | CR...B   | S...W   |
|                                                                                | CR...VBUUR  | 65                      |           | CF...PPYSK  | CCF...SB  | CRSBC              | CR...XBC | CS...LW |
|                                                                                | CR...VBUU   | 65                      |           | CF...PPSK   | CF...SB   | CRSB               | CR...XB  | S...LW  |
| Inch Series Cam Followers<br>(Full Complement Type /<br>With Screwdriver Slot) | CR...VR     | 67                      |           | CF...Y      | CCF       | CRC                |          | CS      |
|                                                                                | CR...V      | 67                      |           | CF          | CF        | CR                 |          | S       |
|                                                                                | CR...VUUR   | 67                      |           | CF...PPY    | CCF...S   | CRSC               |          | CS...L  |
|                                                                                | CR...VUU    | 67                      |           | CF...PP     | CF...S    | CRS                |          | S...L   |
| Inch Series Cam Followers<br>(Full Complement Type /<br>With Hexagon Socket)   | CRH...VBR   | 69                      |           |             | CCFH...B  |                    | HR...BC  | CH...W  |
|                                                                                | CRH...VB    | 69                      |           |             | CFH...B   |                    | HR...B   | H...W   |
|                                                                                | CRH...VBUUR | 69                      |           |             | CCFH...SB |                    | HR...XBC | CH...LW |
|                                                                                | CRH...VBUU  | 69                      |           |             | CFH...SB  |                    | HR...XB  | H...LW  |
| Inch Series Cam Followers<br>(Full Complement Type /<br>With Screwdriver Slot) | CRH...VR    | 71                      |           |             | CCFH...B  |                    | HR...BC  | CH      |
|                                                                                | CRH...V     | 71                      |           |             | CFH...B   |                    | HR...B   | H       |
|                                                                                | CRH...VUUR  | 71                      |           |             | CCFH...SB |                    | HR...XBC | CH...L  |
|                                                                                | CRH...VUU   | 71                      |           |             | CFH...SB  |                    | HR...XB  | H...L   |

## Model Comparison Table for Roller Followers

| Model of bearing                                               | <b>IKO</b>    | Dimen-<br>sions<br>Page | JNS / THK    | INA / SKF        | Mc.GILL   | KOYO<br>TORRINGTON | SMITH |
|----------------------------------------------------------------|---------------|-------------------------|--------------|------------------|-----------|--------------------|-------|
| Separable Roller Followers<br>(Open Type / Without Inner Ring) | RNAST...R     | 85                      | RNAST...R    | RSTO             |           | RSTO...            |       |
|                                                                | RNAST         | 85                      | RNAST        | RSTO...X         |           | RSTO...DZ          |       |
| Separable Roller Followers<br>(Open Type / With Inner Ring)    | NAST...R      | 86                      | NAST...R     | STO              |           | STO...             |       |
|                                                                | NAST          | 86                      | NAST         | STO...X          |           | STO...DZ           |       |
| Separable Roller Followers<br>(Shield Type / With Inner Ring)  | NAST...ZZR    | 87                      | NAST...ZZR   | NAST...2Z (SKF)  |           | STO...ZZ           |       |
|                                                                | NAST...ZZ     | 87                      | NAST...ZZ    | NAST...P2Z (SKF) |           | STO...ZZDZ         |       |
| Separable Roller Followers<br>(Sealed Type / With Inner Ring)  | NAST...ZZUUR  | 87                      | NAST...ZZUUR |                  |           |                    |       |
|                                                                | NAST...ZZUU   | 87                      | NAST...ZZUU  |                  |           |                    |       |
| Non-separable<br>Roller Followers                              | NART...R      | 89                      | NART...R     | NATR             | MCYRR     | CXM...RM           |       |
|                                                                | NART...VR     | 89                      | NART...VR    | NATV             | MCYR      | CYM...RM           |       |
|                                                                | NART...UUR    | 89                      | NART...UUR   | NATR...PP        | MCYRR...S | CXM...UURM         |       |
|                                                                | NART...VUUR   | 89                      | NART...UUVR  | NATV...PP        | MCYR...S  | CYM...UURM         |       |
| Non-separable Roller Followers<br>(Stainless Steel)            | NART...FR     | 91                      | NART...MR    |                  |           |                    |       |
|                                                                | NART...FUUR   | 91                      | NART...MUUR  |                  |           |                    |       |
| C-Lube Roller Followers                                        | NART...UUR/SG | 93                      |              |                  |           |                    |       |
| Cylindrical<br>Roller Followers                                | NURT...R      | 95                      | NURT...R     | NUTR             | MYCRD     |                    |       |
|                                                                | NURT          | 95                      | NURT...X     |                  | MYCRD...X |                    |       |
| Inch Series Non-separable<br>Roller Followers                  | CRY...VR      | 97                      |              | RF...Y           | CCYR      |                    |       |
|                                                                | CRY...V       | 97                      |              | RF               | CYR       |                    |       |
|                                                                | CRY...VUUR    | 97                      |              | RF...PPY         | CCYR...S  |                    |       |
|                                                                | CRY...VUU     | 97                      |              | RF...PP          | CYR...S   |                    |       |

Miscellaneous Tables

Unit Conversion Rate Table

Comparison table between SI units, CGS units and gravitational system of units

| Item<br>System of units | Length | Mass                  | Time | Acceleration     | Force | Stress and pressure |
|-------------------------|--------|-----------------------|------|------------------|-------|---------------------|
| SI units                | m      | kg                    | s    | m/s <sup>2</sup> | N     | Pa                  |
| CGS units               | cm     | g                     | s    | Gal              | dyn   | dyn/cm <sup>2</sup> |
| Gravity units           | m      | kgf·s <sup>2</sup> /m | s    | m/s <sup>2</sup> | kgf   | kgf/m <sup>2</sup>  |

Conversion into SI units

| Item                    | Unit name                            | Symbol              | SI conversion rate                  | SI unit name             | Symbol           |
|-------------------------|--------------------------------------|---------------------|-------------------------------------|--------------------------|------------------|
| Angle                   | Degree                               | °                   | $\pi/180$                           | Radian                   | rad              |
|                         | Minute                               | '                   | $\pi/10\,800$                       |                          |                  |
|                         | Second                               | "                   | $\pi/648\,000$                      |                          |                  |
|                         |                                      |                     |                                     |                          |                  |
| Length                  | Meter                                | m                   | 1                                   | Meter                    | m                |
|                         | Micron                               | $\mu$               | $10^{-6}$                           |                          |                  |
|                         | Angstrom                             | Å                   | $10^{-10}$                          |                          |                  |
|                         | X ray unit                           |                     | $\approx 1.002\,08 \times 10^{-13}$ |                          |                  |
|                         | Nautical mile                        | n mile              | 1852                                |                          |                  |
| Area                    | Square meter                         | m <sup>2</sup>      | 1                                   | Square meter             | m <sup>2</sup>   |
|                         | Are                                  | a                   | $10^2$                              |                          |                  |
|                         | Hectare                              | ha                  | $10^4$                              |                          |                  |
|                         |                                      |                     |                                     |                          |                  |
| Volume                  | Cubic meter                          | m <sup>3</sup>      | 1                                   | Cubic meter              | m <sup>3</sup>   |
|                         | Liter                                | l, L                | $10^{-3}$                           |                          |                  |
| Mass                    | Kilogram                             | kg                  | 1                                   | Kilogram                 | kg               |
|                         | Ton                                  | t                   | $10^3$                              |                          |                  |
|                         | Atomic mass unit                     | u                   | $\approx 1.660\,57 \times 10^{-27}$ |                          |                  |
|                         |                                      |                     |                                     |                          |                  |
| Time                    | Second                               | s                   | 1                                   | Second                   | s                |
|                         | Minute                               | min                 | 60                                  |                          |                  |
|                         | Hour                                 | h                   | 3 600                               |                          |                  |
|                         | Day                                  | d                   | 86 400                              |                          |                  |
|                         |                                      |                     |                                     |                          |                  |
| Velocity                | Meter per second                     | m/s                 | 1                                   | Meter per second         | m/s              |
|                         | Knot                                 | kn                  | $1\,852/3\,600$                     |                          |                  |
| Frequency and vibration | Cycle                                | s <sup>-1</sup>     | 1                                   | Hertz                    | Hz               |
| Rotation speed          | Rotation per minute                  | rpm                 | 1/60                                | Per second               | s <sup>-1</sup>  |
| Angular velocity        | Radian per second                    | rad/s               | 1                                   | Radian per second        | rad/s            |
| Acceleration            | Meter per second squared             | m/s <sup>2</sup>    | 1                                   | Meter per second squared | m/s <sup>2</sup> |
|                         | G                                    | G                   | 9.806 65                            |                          |                  |
| Force                   | Kilogram force                       | kgf                 | 9.806 65                            | Newton                   | N                |
|                         | Ton force                            | tf                  | 9 806.65                            |                          |                  |
|                         | Dyne                                 | dyn                 | $10^{-5}$                           |                          |                  |
| Moment of force         | Kilogram force-meter                 | kgf·m               | 9.806 65                            | Newton-meter             | N·m              |
| Stress and pressure     | Kilogram force per square meter      | kgf/m <sup>2</sup>  | 9.806 65                            | Pascal                   | Pa               |
|                         | Kilogram force per square centimeter | kgf/cm <sup>2</sup> | $9.806\,65 \times 10^4$             |                          |                  |
|                         | Kilogram force per square millimeter | kgf/mm <sup>2</sup> | $9.806\,65 \times 10^6$             |                          |                  |

| Energy | Power   | Temperature | Viscosity            | Kinematic viscosity | Magnetic flux | Magnetic flux density | Magnetic field intensity |
|--------|---------|-------------|----------------------|---------------------|---------------|-----------------------|--------------------------|
| J      | W       | K           | Pa·s                 | m <sup>2</sup> /s   | Wb            | T                     | A/m                      |
| erg    | erg/s   | °C          | P                    | St                  | Mx            | Gs                    | Oe                       |
| kgf·m  | kgf·m/s | °C          | kgf·s/m <sup>2</sup> | m <sup>2</sup> /s   | —             | —                     | —                        |

| Item                                                                                                                                                     | Unit name                              | Symbol               | SI conversion rate                  | SI unit name                                                  | Symbol                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|----------------------|-------------------------------------|---------------------------------------------------------------|---------------------------------|
| Pressure                                                                                                                                                 | Hydro-column meter                     | mH <sub>2</sub> O    | 9 806.65                            | Pascal                                                        | Pa                              |
|                                                                                                                                                          | Mercury column millimeter              | mmHg                 | $101\,325/760$                      |                                                               |                                 |
|                                                                                                                                                          | Torr                                   | Torr                 | $101\,325/760$                      |                                                               |                                 |
|                                                                                                                                                          | Atmosphere                             | atm                  | 101 325                             |                                                               |                                 |
|                                                                                                                                                          | Bar                                    | bar                  | $10^5$                              |                                                               |                                 |
| Energy                                                                                                                                                   | Erg                                    | erg                  | $10^{-7}$                           | Joule                                                         | J                               |
|                                                                                                                                                          | IT calorie                             | cal <sub>IT</sub>    | 4.186 8                             |                                                               |                                 |
|                                                                                                                                                          | Kilogram force-meter                   | kgf·m                | 9.806 65                            |                                                               |                                 |
|                                                                                                                                                          | Kilowatt hour                          | kW·h                 | $3.600 \times 10^6$                 |                                                               |                                 |
|                                                                                                                                                          | Horse power hour (French)              | PS·h                 | $\approx 2.647\,79 \times 10^6$     |                                                               |                                 |
|                                                                                                                                                          | Electron volt                          | eV                   | $\approx 1.602\,19 \times 10^{-19}$ |                                                               |                                 |
| Power and motivity                                                                                                                                       | Watt                                   | W                    | 1                                   | Watt                                                          | W                               |
|                                                                                                                                                          | Horse power (French)                   | PS                   | $\approx 735.5$                     |                                                               |                                 |
|                                                                                                                                                          | Kilogram force-meter per second        | kgf·m/s              | 9.806 65                            |                                                               |                                 |
| Viscosity                                                                                                                                                | Poise                                  | P                    | $10^{-1}$                           | Pascal-second                                                 | Pa·s                            |
|                                                                                                                                                          | Centipoise                             | cP                   | $10^{-3}$                           |                                                               |                                 |
|                                                                                                                                                          | Kilogram force-second per square meter | kgf·s/m <sup>2</sup> | 9.806 65                            |                                                               |                                 |
| Kinematic viscosity                                                                                                                                      | Stokes                                 | St                   | $10^{-4}$                           | Square meter per second                                       | m <sup>2</sup> /s               |
|                                                                                                                                                          | Centistokes                            | cSt                  | $10^{-6}$                           |                                                               |                                 |
| Temperature                                                                                                                                              | degree                                 | °C                   | +273.15                             | Kelvin                                                        | K                               |
| Radioactivity<br>Exposure dose<br>Absorbed dose<br>Dose equivalent                                                                                       | Curie                                  | Ci                   | $3.7 \times 10^{10}$                | Becquerel<br>Coulomb per kilogram<br>Gray<br>Sievert          | Bq<br>C/kg<br>Gy<br>Sv          |
|                                                                                                                                                          | Roentgen                               | R                    | $2.58 \times 10^{-4}$               |                                                               |                                 |
|                                                                                                                                                          | Rad                                    | rad                  | $10^{-2}$                           |                                                               |                                 |
|                                                                                                                                                          | Rem                                    | rem                  | $10^{-2}$                           |                                                               |                                 |
| Magnetic flux                                                                                                                                            | Maxwell                                | Mx                   | $10^{-8}$                           | Weber                                                         | Wb                              |
| Magnetic flux density                                                                                                                                    | Gamma                                  | γ                    | $10^{-9}$                           | Tesla                                                         | T                               |
|                                                                                                                                                          | Gauss                                  | Gs                   | $10^{-4}$                           |                                                               |                                 |
| Magnetic field intensity                                                                                                                                 | Oersted                                | Oe                   | $10^3/4\pi$                         | Ampere per meter                                              | A/m                             |
| Electric quantity<br>Electric potential difference<br>Electrostatic capacity<br>(Electric) resistance<br>(Electric) conductance<br>Inductance<br>Current | Coulomb                                | C                    | 1                                   | Coulomb<br>Volt<br>Farad<br>Ohm<br>Siemens<br>Henry<br>Ampere | C<br>V<br>F<br>Ω<br>S<br>H<br>A |
|                                                                                                                                                          | Volt                                   | V                    | 1                                   |                                                               |                                 |
|                                                                                                                                                          | Farad                                  | F                    | 1                                   |                                                               |                                 |
|                                                                                                                                                          | Ohm                                    | Ω                    | 1                                   |                                                               |                                 |
|                                                                                                                                                          | Siemens                                | S                    | 1                                   |                                                               |                                 |
|                                                                                                                                                          | Henry                                  | H                    | 1                                   |                                                               |                                 |
|                                                                                                                                                          | Ampere                                 | A                    | 1                                   |                                                               |                                 |
|                                                                                                                                                          |                                        |                      |                                     |                                                               |                                 |
|                                                                                                                                                          |                                        |                      |                                     |                                                               |                                 |
|                                                                                                                                                          |                                        |                      |                                     |                                                               |                                 |



● Hardness Conversion Table (Reference)

| Rockwell<br>C scale hardness<br>Load 1471 N<br>HRC | Vickers hardness<br><br>HV | Brinell hardness |                          | Rockwell hardness                     |                                         | Shore hardness<br><br>HS |
|----------------------------------------------------|----------------------------|------------------|--------------------------|---------------------------------------|-----------------------------------------|--------------------------|
|                                                    |                            | Standard ball    | Tungsten<br>carbide ball | A scale                               | B scale                                 |                          |
|                                                    |                            |                  |                          | Load 588.4 N<br>Diamond circular cone | Load 980.7 N<br>Diameter 1/16 inch ball |                          |
| 68                                                 | 940                        | —                | —                        | 85.6                                  | —                                       | 97                       |
| 67                                                 | 900                        | —                | —                        | 85.0                                  | —                                       | 95                       |
| 66                                                 | 865                        | —                | —                        | 84.5                                  | —                                       | 92                       |
| 65                                                 | 832                        | —                | (739)                    | 83.9                                  | —                                       | 91                       |
| 64                                                 | 800                        | —                | (722)                    | 83.4                                  | —                                       | 88                       |
| 63                                                 | 772                        | —                | (705)                    | 82.8                                  | —                                       | 87                       |
| 62                                                 | 746                        | —                | (688)                    | 82.3                                  | —                                       | 85                       |
| 61                                                 | 720                        | —                | (670)                    | 81.8                                  | —                                       | 83                       |
| 60                                                 | 697                        | —                | (654)                    | 81.2                                  | —                                       | 81                       |
| 59                                                 | 674                        | —                | (634)                    | 80.7                                  | —                                       | 80                       |
| 58                                                 | 653                        | —                | 615                      | 80.1                                  | —                                       | 78                       |
| 57                                                 | 633                        | —                | 595                      | 79.6                                  | —                                       | 76                       |
| 56                                                 | 613                        | —                | 577                      | 79.0                                  | —                                       | 75                       |
| 55                                                 | 595                        | —                | 560                      | 78.5                                  | —                                       | 74                       |
| 54                                                 | 577                        | —                | 543                      | 78.0                                  | —                                       | 72                       |
| 53                                                 | 560                        | —                | 525                      | 77.4                                  | —                                       | 71                       |
| 52                                                 | 544                        | (500)            | 512                      | 76.8                                  | —                                       | 69                       |
| 51                                                 | 528                        | (487)            | 496                      | 76.3                                  | —                                       | 68                       |
| 50                                                 | 513                        | (475)            | 481                      | 75.9                                  | —                                       | 67                       |
| 49                                                 | 498                        | (464)            | 469                      | 75.2                                  | —                                       | 66                       |
| 48                                                 | 484                        | 451              | 455                      | 74.7                                  | —                                       | 64                       |
| 47                                                 | 471                        | 442              | 443                      | 74.1                                  | —                                       | 63                       |
| 46                                                 | 458                        | 432              | 432                      | 73.6                                  | —                                       | 62                       |
| 45                                                 | 446                        | 421              | 421                      | 73.1                                  | —                                       | 60                       |
| 44                                                 | 434                        | 409              | 409                      | 72.5                                  | —                                       | 58                       |
| 43                                                 | 423                        | 400              | 400                      | 72.0                                  | —                                       | 57                       |
| 42                                                 | 412                        | 390              | 390                      | 71.5                                  | —                                       | 56                       |
| 41                                                 | 402                        | 381              | 381                      | 70.9                                  | —                                       | 55                       |
| 40                                                 | 392                        | 371              | 371                      | 70.4                                  | —                                       | 54                       |
| 39                                                 | 382                        | 362              | 362                      | 69.9                                  | —                                       | 52                       |

| Rockwell<br>C scale hardness<br>Load 1471 N<br>HRC | Vickers hardness<br><br>HV | Brinell hardness |                          | Rockwell hardness                     |                                         | Shore hardness<br><br>HS |
|----------------------------------------------------|----------------------------|------------------|--------------------------|---------------------------------------|-----------------------------------------|--------------------------|
|                                                    |                            | Standard ball    | Tungsten<br>carbide ball | A scale                               | B scale                                 |                          |
|                                                    |                            |                  |                          | Load 588.4 N<br>Diamond circular cone | Load 980.7 N<br>Diameter 1/16 inch ball |                          |
| 38                                                 | 372                        | 353              | 353                      | 69.4                                  | —                                       | 51                       |
| 37                                                 | 363                        | 344              | 344                      | 68.9                                  | —                                       | 50                       |
| 36                                                 | 354                        | 336              | 336                      | 68.4                                  | (109.0)                                 | 49                       |
| 35                                                 | 345                        | 327              | 327                      | 67.9                                  | (108.5)                                 | 48                       |
| 34                                                 | 336                        | 319              | 319                      | 67.4                                  | (108.0)                                 | 47                       |
| 33                                                 | 327                        | 311              | 311                      | 66.8                                  | (107.5)                                 | 46                       |
| 32                                                 | 318                        | 301              | 301                      | 66.3                                  | (107.0)                                 | 44                       |
| 31                                                 | 310                        | 294              | 294                      | 65.8                                  | (106.0)                                 | 43                       |
| 30                                                 | 302                        | 286              | 286                      | 65.3                                  | (105.5)                                 | 42                       |
| 29                                                 | 294                        | 279              | 279                      | 64.7                                  | (104.5)                                 | 41                       |
| 28                                                 | 286                        | 271              | 271                      | 64.3                                  | (104.0)                                 | 41                       |
| 27                                                 | 279                        | 264              | 264                      | 63.8                                  | (103.0)                                 | 40                       |
| 26                                                 | 272                        | 258              | 258                      | 63.3                                  | (102.5)                                 | 38                       |
| 25                                                 | 266                        | 253              | 253                      | 62.8                                  | (101.5)                                 | 38                       |
| 24                                                 | 260                        | 247              | 247                      | 62.4                                  | (101.0)                                 | 37                       |
| 23                                                 | 254                        | 243              | 243                      | 62.0                                  | 100.0                                   | 36                       |
| 22                                                 | 248                        | 237              | 237                      | 61.5                                  | 99.0                                    | 35                       |
| 21                                                 | 243                        | 231              | 231                      | 61.0                                  | 98.5                                    | 35                       |
| 20                                                 | 238                        | 226              | 226                      | 60.5                                  | 97.8                                    | 34                       |
| (18)                                               | 230                        | 219              | 219                      | —                                     | 96.7                                    | 33                       |
| (16)                                               | 222                        | 212              | 212                      | —                                     | 95.5                                    | 32                       |
| (14)                                               | 213                        | 203              | 203                      | —                                     | 93.9                                    | 31                       |
| (12)                                               | 204                        | 194              | 194                      | —                                     | 92.3                                    | 29                       |
| (10)                                               | 196                        | 187              | 187                      | —                                     | 90.7                                    | 28                       |
| (8)                                                | 188                        | 179              | 179                      | —                                     | 89.5                                    | 27                       |
| (6)                                                | 180                        | 171              | 171                      | —                                     | 87.1                                    | 26                       |
| (4)                                                | 173                        | 165              | 165                      | —                                     | 85.5                                    | 25                       |
| (2)                                                | 166                        | 158              | 158                      | —                                     | 83.5                                    | 24                       |
| (0)                                                | 160                        | 152              | 152                      | —                                     | 81.7                                    | 24                       |

● Shaft Diameter Tolerance

| Classification of diameter<br>mm |       | b12  |       | c12  |       | d6   |      | e6   |      | e12  |      | f5   |     | f6   |      | g5   |     |
|----------------------------------|-------|------|-------|------|-------|------|------|------|------|------|------|------|-----|------|------|------|-----|
| Over                             | Incl. | High | Low   | High | Low   | High | Low  | High | Low  | High | Low  | High | Low | High | Low  | High | Low |
| —                                | 3     | -140 | -240  | -60  | -160  | -20  | -26  | -14  | -20  | -14  | -114 | -6   | -10 | -6   | -12  | -2   | -6  |
| 3                                | 6     | -140 | -260  | -70  | -190  | -30  | -38  | -20  | -28  | -20  | -140 | -10  | -15 | -10  | -18  | -4   | -9  |
| 6                                | 10    | -150 | -300  | -80  | -230  | -40  | -49  | -25  | -34  | -25  | -175 | -13  | -19 | -13  | -22  | -5   | -11 |
| 10                               | 18    | -150 | -330  | -95  | -275  | -50  | -61  | -32  | -43  | -32  | -212 | -16  | -24 | -16  | -27  | -6   | -14 |
| 18                               | 30    | -160 | -370  | -110 | -320  | -65  | -78  | -40  | -53  | -40  | -250 | -20  | -29 | -20  | -33  | -7   | -16 |
| 30                               | 40    | -170 | -420  | -120 | -370  | -80  | -96  | -50  | -66  | -50  | -300 | -25  | -36 | -25  | -41  | -9   | -20 |
| 40                               | 50    | -180 | -430  | -130 | -380  | -80  | -96  | -50  | -66  | -50  | -300 | -25  | -36 | -25  | -41  | -9   | -20 |
| 50                               | 65    | -190 | -490  | -140 | -440  | -100 | -119 | -60  | -79  | -60  | -360 | -30  | -43 | -30  | -49  | -10  | -23 |
| 65                               | 80    | -200 | -500  | -150 | -450  | -100 | -119 | -60  | -79  | -60  | -360 | -30  | -43 | -30  | -49  | -10  | -23 |
| 80                               | 100   | -220 | -570  | -170 | -520  | -120 | -142 | -72  | -94  | -72  | -422 | -36  | -51 | -36  | -58  | -12  | -27 |
| 100                              | 120   | -240 | -590  | -180 | -530  | -120 | -142 | -72  | -94  | -72  | -422 | -36  | -51 | -36  | -58  | -12  | -27 |
| 120                              | 140   | -260 | -660  | -200 | -600  | -145 | -170 | -85  | -110 | -85  | -485 | -43  | -61 | -43  | -68  | -14  | -32 |
| 140                              | 160   | -280 | -680  | -210 | -610  | -145 | -170 | -85  | -110 | -85  | -485 | -43  | -61 | -43  | -68  | -14  | -32 |
| 160                              | 180   | -310 | -710  | -230 | -630  | -145 | -170 | -85  | -110 | -85  | -485 | -43  | -61 | -43  | -68  | -14  | -32 |
| 180                              | 200   | -340 | -800  | -240 | -700  | -170 | -199 | -100 | -129 | -100 | -560 | -50  | -70 | -50  | -79  | -15  | -35 |
| 200                              | 225   | -380 | -840  | -260 | -720  | -170 | -199 | -100 | -129 | -100 | -560 | -50  | -70 | -50  | -79  | -15  | -35 |
| 225                              | 250   | -420 | -880  | -280 | -740  | -170 | -199 | -100 | -129 | -100 | -560 | -50  | -70 | -50  | -79  | -15  | -35 |
| 250                              | 280   | -480 | -1000 | -300 | -820  | -190 | -222 | -110 | -142 | -110 | -630 | -56  | -79 | -56  | -88  | -17  | -40 |
| 280                              | 315   | -540 | -1060 | -330 | -850  | -190 | -222 | -110 | -142 | -110 | -630 | -56  | -79 | -56  | -88  | -17  | -40 |
| 315                              | 355   | -600 | -1170 | -360 | -930  | -210 | -246 | -125 | -161 | -125 | -695 | -62  | -87 | -62  | -98  | -18  | -43 |
| 355                              | 400   | -680 | -1250 | -400 | -970  | -210 | -246 | -125 | -161 | -125 | -695 | -62  | -87 | -62  | -98  | -18  | -43 |
| 400                              | 450   | -760 | -1390 | -440 | -1070 | -230 | -270 | -135 | -175 | -135 | -765 | -68  | -95 | -68  | -108 | -20  | -47 |
| 450                              | 500   | -840 | -1470 | -480 | -1110 | -230 | -270 | -135 | -175 | -135 | -765 | -68  | -95 | -68  | -108 | -20  | -47 |

| Classification of diameter<br>mm |       | h12  |      | js5   |       | j5   |     | js6   |       | j6   |     | j7   |     | k5   |     | k6   |     |
|----------------------------------|-------|------|------|-------|-------|------|-----|-------|-------|------|-----|------|-----|------|-----|------|-----|
| Over                             | Incl. | High | Low  | High  | Low   | High | Low | High  | Low   | High | Low | High | Low | High | Low | High | Low |
| —                                | 3     | 0    | -100 | +2    | -2    | +2   | -2  | +3    | -3    | +4   | -2  | +6   | -4  | +4   | 0   | +6   | 0   |
| 3                                | 6     | 0    | -120 | +2.5  | -2.5  | +3   | -2  | +4    | -4    | +6   | -2  | +8   | -4  | +6   | +1  | +9   | +1  |
| 6                                | 10    | 0    | -150 | +3    | -3    | +4   | -2  | +4.5  | -4.5  | +7   | -2  | +10  | -5  | +7   | +1  | +10  | +1  |
| 10                               | 18    | 0    | -180 | +4    | -4    | +5   | -3  | +5.5  | -5.5  | +8   | -3  | +12  | -6  | +9   | +1  | +12  | +1  |
| 18                               | 30    | 0    | -210 | +4.5  | -4.5  | +5   | -4  | +6.5  | -6.5  | +9   | -4  | +13  | -8  | +11  | +2  | +15  | +2  |
| 30                               | 40    | 0    | -250 | +5.5  | -5.5  | +6   | -5  | +8    | -8    | +11  | -5  | +15  | -10 | +13  | +2  | +18  | +2  |
| 40                               | 50    | 0    | -250 | +5.5  | -5.5  | +6   | -5  | +8    | -8    | +11  | -5  | +15  | -10 | +13  | +2  | +18  | +2  |
| 50                               | 65    | 0    | -300 | +6.5  | -6.5  | +6   | -7  | +9.5  | -9.5  | +12  | -7  | +18  | -12 | +15  | +2  | +21  | +2  |
| 65                               | 80    | 0    | -300 | +6.5  | -6.5  | +6   | -7  | +9.5  | -9.5  | +12  | -7  | +18  | -12 | +15  | +2  | +21  | +2  |
| 80                               | 100   | 0    | -350 | +7.5  | -7.5  | +6   | -9  | +11   | -11   | +13  | -9  | +20  | -15 | +18  | +3  | +25  | +3  |
| 100                              | 120   | 0    | -350 | +7.5  | -7.5  | +6   | -9  | +11   | -11   | +13  | -9  | +20  | -15 | +18  | +3  | +25  | +3  |
| 120                              | 140   | 0    | -400 | +9    | -9    | +7   | -11 | +12.5 | -12.5 | +14  | -11 | +22  | -18 | +21  | +3  | +28  | +3  |
| 140                              | 160   | 0    | -400 | +9    | -9    | +7   | -11 | +12.5 | -12.5 | +14  | -11 | +22  | -18 | +21  | +3  | +28  | +3  |
| 160                              | 180   | 0    | -400 | +9    | -9    | +7   | -11 | +12.5 | -12.5 | +14  | -11 | +22  | -18 | +21  | +3  | +28  | +3  |
| 180                              | 200   | 0    | -460 | +10   | -10   | +7   | -13 | +14.5 | -14.5 | +16  | -13 | +25  | -21 | +24  | +4  | +33  | +4  |
| 200                              | 225   | 0    | -460 | +10   | -10   | +7   | -13 | +14.5 | -14.5 | +16  | -13 | +25  | -21 | +24  | +4  | +33  | +4  |
| 225                              | 250   | 0    | -460 | +10   | -10   | +7   | -13 | +14.5 | -14.5 | +16  | -13 | +25  | -21 | +24  | +4  | +33  | +4  |
| 250                              | 280   | 0    | -520 | +11.5 | -11.5 | +7   | -16 | +16   | -16   | +16  | -16 | +26  | -26 | +27  | +4  | +36  | +4  |
| 280                              | 315   | 0    | -520 | +11.5 | -11.5 | +7   | -16 | +16   | -16   | +16  | -16 | +26  | -26 | +27  | +4  | +36  | +4  |
| 315                              | 355   | 0    | -570 | +12.5 | -12.5 | +7   | -18 | +18   | -18   | +18  | -18 | +29  | -28 | +29  | +4  | +40  | +4  |
| 355                              | 400   | 0    | -570 | +12.5 | -12.5 | +7   | -18 | +18   | -18   | +18  | -18 | +29  | -28 | +29  | +4  | +40  | +4  |
| 400                              | 450   | 0    | -630 | +13.5 | -13.5 | +7   | -20 | +20   | -20   | +20  | -20 | +31  | -32 | +32  | +5  | +45  | +5  |
| 450                              | 500   | 0    | -630 | +13.5 | -13.5 | +7   | -20 | +20   | -20   | +20  | -20 | +31  | -32 | +32  | +5  | +45  | +5  |

unit:  $\mu\text{m}$

| g6   |     | h5   |     | h6   |     | h7   |     | h8   |     | h9   |      | h10  |      | h11  |      | Classification of diameter<br>mm |       |
|------|-----|------|-----|------|-----|------|-----|------|-----|------|------|------|------|------|------|----------------------------------|-------|
| High | Low | High | Low | High | Low | High | Low | High | Low | High | Low  | High | Low  | High | Low  | Over                             | Incl. |
| -2   | -8  | 0    | -4  | 0    | -6  | 0    | -10 | 0    | -14 | 0    | -25  | 0    | -40  | 0    | -60  | —                                | 3     |
| -4   | -12 | 0    | -5  | 0    | -8  | 0    | -12 | 0    | -18 | 0    | -30  | 0    | -48  | 0    | -75  | 3                                | 6     |
| -5   | -14 | 0    | -6  | 0    | -9  | 0    | -15 | 0    | -22 | 0    | -36  | 0    | -58  | 0    | -90  | 6                                | 10    |
| -6   | -17 | 0    | -8  | 0    | -11 | 0    | -18 | 0    | -27 | 0    | -43  | 0    | -70  | 0    | -110 | 10                               | 18    |
| -7   | -20 | 0    | -9  | 0    | -13 | 0    | -21 | 0    | -33 | 0    | -52  | 0    | -84  | 0    | -130 | 18                               | 30    |
| -9   | -25 | 0    | -11 | 0    | -16 | 0    | -25 | 0    | -39 | 0    | -62  | 0    | -100 | 0    | -160 | 30                               | 40    |
| -10  | -29 | 0    | -13 | 0    | -19 | 0    | -30 | 0    | -46 | 0    | -74  | 0    | -120 | 0    | -190 | 40                               | 50    |
| -12  | -34 | 0    | -15 | 0    | -22 | 0    | -35 | 0    | -54 | 0    | -87  | 0    | -140 | 0    | -220 | 50                               | 65    |
| -14  | -39 | 0    | -18 | 0    | -25 | 0    | -40 | 0    | -63 | 0    | -100 | 0    | -160 | 0    | -250 | 65                               | 80    |
| -15  | -44 | 0    | -20 | 0    | -29 | 0    | -46 | 0    | -72 | 0    | -115 | 0    | -185 | 0    | -290 | 80                               | 100   |
| -17  | -49 | 0    | -23 | 0    | -32 | 0    | -52 | 0    | -81 | 0    | -130 | 0    | -210 | 0    | -320 | 100                              | 120   |
| -18  | -54 | 0    | -25 | 0    | -36 | 0    | -57 | 0    | -89 | 0    | -140 | 0    | -230 | 0    | -360 | 120                              | 140   |
| -20  | -60 | 0    | -27 | 0    | -40 | 0    | -63 | 0    | -97 | 0    | -155 | 0    | -250 | 0    | -400 | 140                              | 160   |
| -20  | -60 | 0    | -27 | 0    | -40 | 0    | -63 | 0    | -97 | 0    | -155 | 0    | -250 | 0    | -400 | 160                              | 180   |
| -20  | -60 | 0    | -27 | 0    | -40 | 0    | -63 | 0    | -97 | 0    | -155 | 0    | -250 | 0    | -400 | 180                              | 200   |
| -20  | -60 | 0    | -27 | 0    | -40 | 0    | -63 | 0    | -97 | 0    | -155 | 0    | -250 | 0    | -400 | 200                              | 225   |
| -20  | -60 | 0    | -27 | 0    | -40 | 0    | -63 | 0    | -97 | 0    | -155 | 0    | -250 | 0    | -400 | 225                              | 250   |
| -20  | -60 | 0    | -27 | 0    | -40 | 0    | -63 | 0    | -97 | 0    | -155 | 0    | -250 | 0    | -400 | 250                              | 280   |
| -20  | -60 | 0    | -27 | 0    | -40 | 0    | -63 | 0    | -97 | 0    | -155 | 0    | -250 | 0    | -400 | 280                              | 315   |
| -20  | -60 | 0    | -27 | 0    | -40 | 0    | -63 | 0    | -97 | 0    | -155 | 0    | -250 | 0    | -400 | 315                              | 355   |
| -20  | -60 | 0    | -27 | 0    | -40 | 0    | -63 | 0    | -97 | 0    | -155 | 0    | -250 | 0    | -400 | 355                              | 400   |
| -20  | -60 | 0    | -27 | 0    | -40 | 0    | -63 | 0    | -97 | 0    | -155 | 0    | -250 | 0    | -400 | 400                              | 450   |
| -20  | -60 | 0    | -27 | 0    | -40 | 0    | -63 | 0    | -97 | 0    | -155 | 0    | -250 | 0    | -400 | 450                              | 500   |

unit:  $\mu\text{m}$

| m5   |     | m6   |     | n5   |     | n6   |     | p6   |     | Classification of diameter<br>mm |       |
|------|-----|------|-----|------|-----|------|-----|------|-----|----------------------------------|-------|
| High | Low | High | Low | High | Low | High | Low | High | Low | Over                             | Incl. |
| +6   | +2  | +8   | +2  | +8   | +4  | +10  | +4  | +12  | +6  | —                                | 3     |
| +9   | +4  | +12  | +4  | +13  | +8  | +16  | +8  | +20  | +12 | 3                                | 6     |
| +12  | +6  | +15  | +6  | +16  | +10 | +19  | +10 | +24  | +15 | 6                                | 10    |
| +15  | +7  | +18  | +7  | +20  | +12 | +23  | +12 | +29  | +18 | 10                               | 18    |
| +17  | +8  | +21  | +8  | +24  | +15 | +28  | +15 | +35  | +22 | 18                               | 30    |
| +20  | +9  | +25  | +9  | +28  | +17 | +33  | +17 | +42  | +26 | 30                               | 40    |
| +24  | +11 | +30  | +11 | +33  | +20 | +39  | +20 | +51  | +32 | 40                               | 50    |
| +28  | +13 | +35  | +13 | +38  | +23 | +45  | +23 | +59  | +37 | 50                               | 65    |
| +33  | +15 | +40  | +15 | +45  | +27 | +52  | +27 | +68  | +43 | 65                               | 80    |
| +37  | +17 | +46  | +17 | +51  | +31 | +60  | +31 | +79  | +50 | 80                               | 100   |
| +43  | +20 | +52  | +20 | +57  | +34 | +66  | +34 | +88  | +56 | 100                              | 120   |
| +46  | +21 | +57  | +21 | +62  | +37 | +73  | +37 | +98  | +62 | 120                              | 140   |
| +50  | +23 | +63  | +23 | +67  | +40 | +80  | +40 | +108 | +68 | 140                              | 160   |
| +50  | +23 | +63  | +23 | +67  | +40 | +80  | +40 | +108 | +68 | 160                              | 180   |
| +50  | +23 | +63  | +23 | +67  | +40 | +80  | +40 | +108 | +68 | 180                              | 200   |
| +50  | +23 | +63  | +23 | +67  | +40 | +80  | +40 | +108 | +68 | 200                              | 225   |
| +50  | +23 | +63  | +23 | +67  | +40 | +80  | +40 | +108 | +68 | 225                              | 250   |
| +50  | +23 | +63  | +23 | +67  | +40 | +80  | +40 | +108 | +68 | 250                              | 280   |
| +50  | +23 | +63  | +23 | +67  | +40 | +80  | +40 | +108 | +68 | 280                              | 315   |
| +50  | +23 | +63  | +23 | +67  | +40 | +80  | +40 | +108 | +68 | 315                              | 355   |



Housing Bore Diameter Tolerance

| Classification of diameter<br>mm |     | B12   |      | E7   |      | E11  |      | E12  |      | F6   |     | F7   |     | G6   |     | G7   |     |
|----------------------------------|-----|-------|------|------|------|------|------|------|------|------|-----|------|-----|------|-----|------|-----|
|                                  |     | High  | Low  | High | Low  | High | Low  | High | Low  | High | Low | High | Low | High | Low | High | Low |
| —                                | 3   | + 240 | +140 | + 24 | + 14 | + 74 | + 14 | +114 | + 14 | + 12 | + 6 | + 16 | + 6 | + 8  | + 2 | +12  | + 2 |
| 3                                | 6   | + 260 | +140 | + 32 | + 20 | + 95 | + 20 | +140 | + 20 | + 18 | +10 | + 22 | +10 | +12  | + 4 | +16  | + 4 |
| 6                                | 10  | + 300 | +150 | + 40 | + 25 | +115 | + 25 | +175 | + 25 | + 22 | +13 | + 28 | +13 | +14  | + 5 | +20  | + 5 |
| 10                               | 18  | + 330 | +150 | + 50 | + 32 | +142 | + 32 | +212 | + 32 | + 27 | +16 | + 34 | +16 | +17  | + 6 | +24  | + 6 |
| 18                               | 30  | + 370 | +160 | + 61 | + 40 | +170 | + 40 | +250 | + 40 | + 33 | +20 | + 41 | +20 | +20  | + 7 | +28  | + 7 |
| 30                               | 40  | + 420 | +170 | + 75 | + 50 | +210 | + 50 | +300 | + 50 | + 41 | +25 | + 50 | +25 | +25  | + 9 | +34  | + 9 |
| 40                               | 50  | + 430 | +180 |      |      |      |      |      |      |      |     |      |     |      |     |      |     |
| 50                               | 65  | + 490 | +190 | + 90 | + 60 | +250 | + 60 | +360 | + 60 | + 49 | +30 | + 60 | +30 | +29  | +10 | +40  | +10 |
| 65                               | 80  | + 500 | +200 |      |      |      |      |      |      |      |     |      |     |      |     |      |     |
| 80                               | 100 | + 570 | +220 | +107 | + 72 | +292 | + 72 | +422 | + 72 | + 58 | +36 | + 71 | +36 | +34  | +12 | +47  | +12 |
| 100                              | 120 | + 590 | +240 |      |      |      |      |      |      |      |     |      |     |      |     |      |     |
| 120                              | 140 | + 660 | +260 |      |      |      |      |      |      |      |     |      |     |      |     |      |     |
| 140                              | 160 | + 680 | +280 | +125 | + 85 | +335 | + 85 | +485 | + 85 | + 68 | +43 | + 83 | +43 | +39  | +14 | +54  | +14 |
| 160                              | 180 | + 710 | +310 |      |      |      |      |      |      |      |     |      |     |      |     |      |     |
| 180                              | 200 | + 800 | +340 |      |      |      |      |      |      |      |     |      |     |      |     |      |     |
| 200                              | 225 | + 840 | +380 | +146 | +100 | +390 | +100 | +560 | +100 | + 79 | +50 | + 96 | +50 | +44  | +15 | +61  | +15 |
| 225                              | 250 | + 880 | +420 |      |      |      |      |      |      |      |     |      |     |      |     |      |     |
| 250                              | 280 | +1000 | +480 | +162 | +110 | +430 | +110 | +630 | +110 | + 88 | +56 | +108 | +56 | +49  | +17 | +69  | +17 |
| 280                              | 315 | +1060 | +540 |      |      |      |      |      |      |      |     |      |     |      |     |      |     |
| 315                              | 355 | +1170 | +600 | +182 | +125 | +485 | +125 | +695 | +125 | + 98 | +62 | +119 | +62 | +54  | +18 | +75  | +18 |
| 355                              | 400 | +1250 | +680 |      |      |      |      |      |      |      |     |      |     |      |     |      |     |
| 400                              | 450 | +1390 | +760 | +198 | +135 | +535 | +135 | +765 | +135 | +108 | +68 | +131 | +68 | +60  | +20 | +83  | +20 |
| 450                              | 500 | +1470 | +840 |      |      |      |      |      |      |      |     |      |     |      |     |      |     |

| Classification of diameter<br>mm |     | JS7  |     | J7   |     | K5   |     | K6   |     | K7   |     | M6   |     | M7   |     | N6   |     |
|----------------------------------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|
|                                  |     | High | Low | High | Low | High | Low | High | Low | High | Low | High | Low | High | Low | High | Low |
| —                                | 3   | + 5  | − 5 | + 4  | − 6 | 0    | − 4 | 0    | − 6 | 0    | −10 | − 2  | − 8 | −2   | −12 | − 4  | −10 |
| 3                                | 6   | + 6  | − 6 | + 6  | − 6 | 0    | − 5 | +2   | − 6 | + 3  | − 9 | − 1  | − 9 | 0    | −12 | − 5  | −13 |
| 6                                | 10  | + 7  | − 7 | + 8  | − 7 | +1   | − 5 | +2   | − 7 | + 5  | −10 | − 3  | −12 | 0    | −15 | − 7  | −16 |
| 10                               | 18  | + 9  | − 9 | +10  | − 8 | +2   | − 6 | +2   | − 9 | + 6  | −12 | − 4  | −15 | 0    | −18 | − 9  | −20 |
| 18                               | 30  | +10  | −10 | +12  | − 9 | +1   | − 8 | +2   | −11 | + 6  | −15 | − 4  | −17 | 0    | −21 | −11  | −24 |
| 30                               | 40  | +12  | −12 | +14  | −11 | +2   | − 9 | +3   | −13 | + 7  | −18 | − 4  | −20 | 0    | −25 | −12  | −28 |
| 40                               | 50  |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |
| 50                               | 65  | +15  | −15 | +18  | −12 | +3   | −10 | +4   | −15 | + 9  | −21 | − 5  | −24 | 0    | −30 | −14  | −33 |
| 65                               | 80  |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |
| 80                               | 100 | +17  | −17 | +22  | −13 | +2   | −13 | +4   | −18 | +10  | −25 | − 6  | −28 | 0    | −35 | −16  | −38 |
| 100                              | 120 |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |
| 120                              | 140 | +20  | −20 | +26  | −14 | +3   | −15 | +4   | −21 | +12  | −28 | − 8  | −33 | 0    | −40 | −20  | −45 |
| 140                              | 160 |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |
| 160                              | 180 |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |
| 180                              | 200 | +23  | −23 | +30  | −16 | +2   | −18 | +5   | −24 | +13  | −33 | − 8  | −37 | 0    | −46 | −22  | −51 |
| 200                              | 225 |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |
| 225                              | 250 |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |
| 250                              | 280 | +26  | −26 | +36  | −16 | +3   | −20 | +5   | −27 | +16  | −36 | − 9  | −41 | 0    | −52 | −25  | −57 |
| 280                              | 315 |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |
| 315                              | 355 | +28  | −28 | +39  | −18 | +3   | −22 | +7   | −29 | +17  | −40 | −10  | −46 | 0    | −57 | −26  | −62 |
| 355                              | 400 |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |
| 400                              | 450 | +31  | −31 | +43  | −20 | +2   | −25 | +8   | −32 | +18  | −45 | −10  | −50 | 0    | −63 | −27  | −67 |
| 450                              | 500 |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |

unit: μm

| H6  |   | H7   |     | H8   |     | H9   |     | H10  |     | H11  |     | JS6   |       | J6   |     | Classification of diameter<br>mm |     |
|-----|---|------|-----|------|-----|------|-----|------|-----|------|-----|-------|-------|------|-----|----------------------------------|-----|
|     |   | High | Low | High | Low | High | Low | High | Low | High | Low | High  | Low   | High | Low |                                  |     |
| + 6 | 0 | +10  | 0   | +14  | 0   | + 25 | 0   | + 40 | 0   | + 60 | 0   | + 3   | − 3   | + 2  | −4  | —                                | 3   |
| + 8 | 0 | +12  | 0   | +18  | 0   | + 30 | 0   | + 48 | 0   | + 75 | 0   | + 4   | − 4   | + 5  | −3  | 3                                | 6   |
| + 9 | 0 | +15  | 0   | +22  | 0   | + 36 | 0   | + 58 | 0   | + 90 | 0   | + 4.5 | − 4.5 | + 5  | −4  | 6                                | 10  |
| +11 | 0 | +18  | 0   | +27  | 0   | + 43 | 0   | + 70 | 0   | +110 | 0   | + 5.5 | − 5.5 | + 6  | −5  | 10                               | 18  |
| +13 | 0 | +21  | 0   | +33  | 0   | + 52 | 0   | + 84 | 0   | +130 | 0   | + 6.5 | − 6.5 | + 8  | −5  | 18                               | 30  |
| +16 | 0 | +25  | 0   | +39  | 0   | + 62 | 0   | +100 | 0   | +160 | 0   | + 8   | − 8   | +10  | −6  | 30                               | 40  |
|     |   |      |     |      |     |      |     |      |     |      |     |       |       |      |     | 40                               | 50  |
| +19 | 0 | +30  | 0   | +46  | 0   | + 74 | 0   | +120 | 0   | +190 | 0   | + 9.5 | − 9.5 | +13  | −6  | 50                               | 65  |
|     |   |      |     |      |     |      |     |      |     |      |     |       |       |      |     | 65                               | 80  |
| +22 | 0 | +35  | 0   | +54  | 0   | + 87 | 0   | +140 | 0   | +220 | 0   | +11   | −11   | +16  | −6  | 80                               | 100 |
|     |   |      |     |      |     |      |     |      |     |      |     |       |       |      |     | 100                              | 120 |
| +25 | 0 | +40  | 0   | +63  | 0   | +100 | 0   | +160 | 0   | +250 | 0   | +12.5 | −12.5 | +18  | −7  | 120                              | 140 |
|     |   |      |     |      |     |      |     |      |     |      |     |       |       |      |     | 140                              | 160 |
|     |   |      |     |      |     |      |     |      |     |      |     |       |       |      |     | 160                              | 180 |
| +29 | 0 | +46  | 0   | +72  | 0   | +115 | 0   | +185 | 0   | +290 | 0   | +14.5 | −14.5 | +22  | −7  | 180                              | 200 |
|     |   |      |     |      |     |      |     |      |     |      |     |       |       |      |     | 200                              | 225 |
|     |   |      |     |      |     |      |     |      |     |      |     |       |       |      |     | 225                              | 250 |
| +32 | 0 | +52  | 0   | +81  | 0   | +130 | 0   | +210 | 0   | +320 | 0   | +16   | −16   | +25  | −7  | 250                              | 280 |
|     |   |      |     |      |     |      |     |      |     |      |     |       |       |      |     | 280                              | 315 |
| +36 | 0 | +57  | 0   | +89  | 0   | +140 | 0   | +230 | 0   | +360 | 0   | +18   | −18   | +29  | −7  | 315                              | 355 |
|     |   |      |     |      |     |      |     |      |     |      |     |       |       |      |     | 355                              | 400 |
| +40 | 0 | +63  | 0   | +97  | 0   | +155 | 0   | +250 | 0   | +400 | 0   | +20   | −20   | +33  | −7  | 400                              | 450 |
|     |   |      |     |      |     |      |     |      |     |      |     |       |       |      |     | 450                              | 500 |

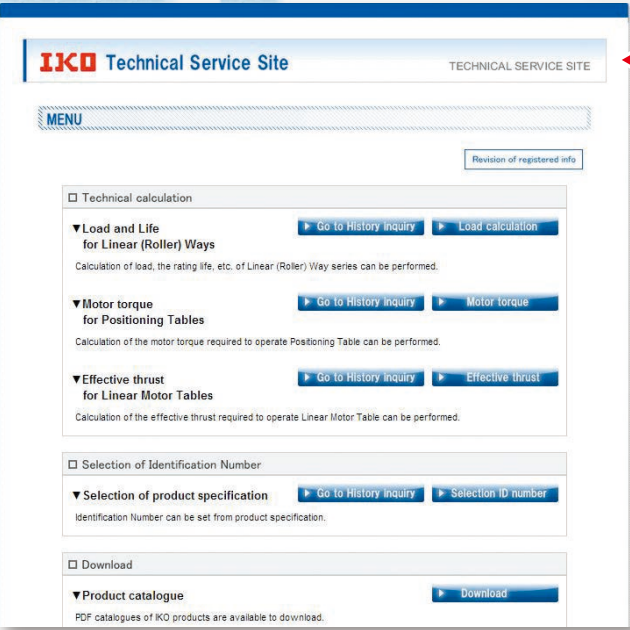
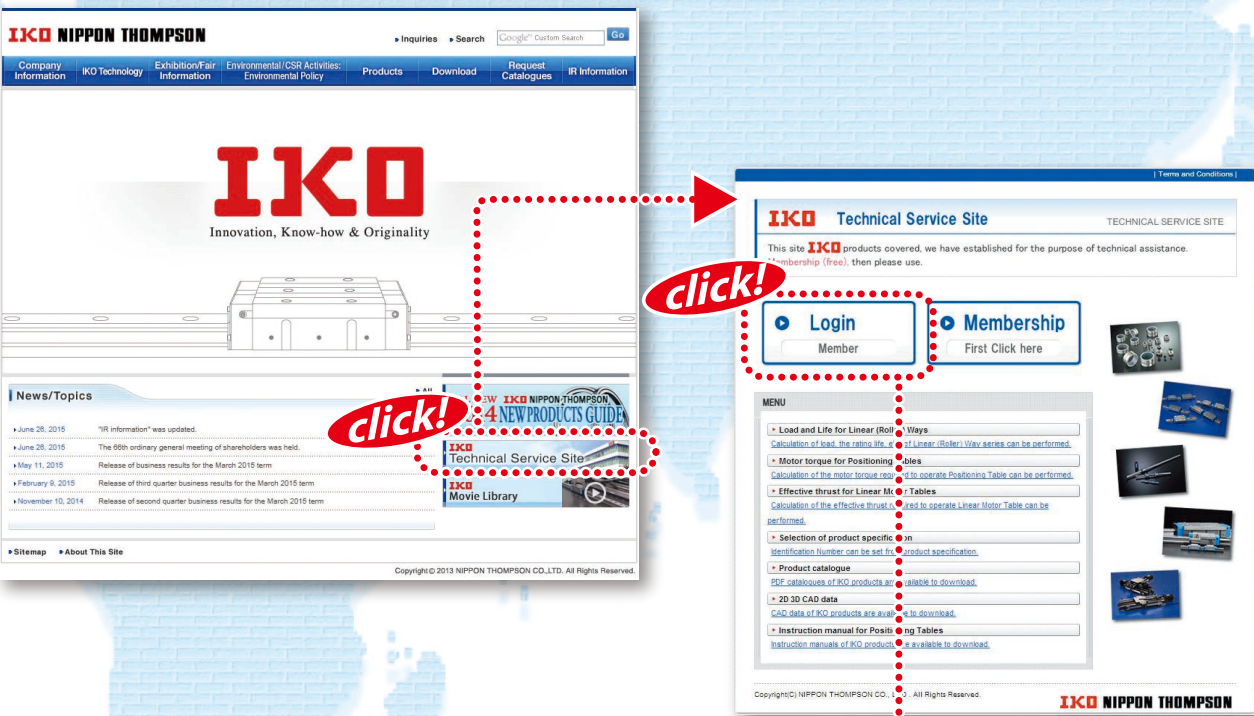
unit: μm

| N7  |     | P6   |     | P7   |      | R7   |      | S7   |      | Classification of diameter<br>mm |     |
|-----|-----|------|-----|------|------|------|------|------|------|----------------------------------|-----|
|     |     | High | Low | High | Low  | High | Low  | High | Low  |                                  |     |
| − 4 | −14 | − 6  | −12 | − 6  | − 16 | − 10 | − 20 | − 14 | − 24 | —                                | 3   |
| − 4 | −16 | − 9  | −17 | − 8  | − 20 | − 11 | − 23 | − 15 | − 27 | 3                                | 6   |
| − 4 | −19 | −12  | −21 | − 9  | − 24 | − 13 | − 28 | − 17 | − 32 | 6                                | 10  |
| − 5 | −23 | −15  | −26 | −11  | − 29 | − 16 | − 34 | − 21 | − 39 | 10                               | 18  |
| − 7 | −28 | −18  | −31 | −14  | − 35 | − 20 | − 41 | − 27 | − 48 | 18                               | 30  |
| − 8 | −33 | −21  | −37 | −17  | − 42 | − 25 | − 50 | − 34 | − 59 | 30                               | 40  |
|     |     |      |     |      |      |      |      |      |      | 40                               | 50  |
| − 9 | −39 | −26  | −45 | −21  | − 51 | − 30 | − 60 | − 42 | − 72 | 50                               | 65  |
|     |     |      |     |      |      | − 32 | − 62 | − 48 | − 78 | 65                               | 80  |
| −10 | −45 | −30  | −52 | −24  | − 59 | − 38 | − 73 | − 58 | − 93 | 80                               | 100 |
|     |     |      |     |      |      | − 41 | − 76 | − 66 | −101 | 100                              | 120 |
| −12 | −52 | −36  | −61 | −28  | − 68 | − 48 | − 88 | − 77 | −117 | 120                              | 140 |
|     |     |      |     |      |      | − 50 | − 90 | − 85 | −125 | 140                              | 160 |
|     |     |      |     |      |      | − 53 | − 93 | − 93 | −133 | 160                              | 180 |
| −14 | −60 | −41  | −70 | −33  | − 79 | − 60 | −106 | −105 | −151 | 180                              | 200 |
|     |     |      |     |      |      | − 63 | −109 | −113 | −159 | 200                              | 225 |
|     |     |      |     |      |      | − 67 | −113 | −123 | −169 | 225                              | 250 |
| −14 | −66 | −47  | −79 | −36  | − 88 | − 74 | −126 | −138 | −190 | 250                              | 280 |
|     |     |      |     |      |      | − 78 | −130 | −150 | −202 | 280                              | 315 |
| −16 | −73 | −51  | −87 | −41  | − 98 | − 87 | −144 | −169 | −226 | 315                              | 355 |
|     |     |      |     |      |      | − 93 | −150 | −187 | −244 | 355                              | 400 |
| −17 | −80 | −55  | −95 | −45  | −108 | −103 | −166 | −209 | −272 | 400                              | 450 |
|     |     |      |     |      |      | −109 | −172 | −229 | −292 | 450                              | 500 |

# Introduction of IKO Technical Service Site

"IKO Technical Service Site" can be accessed from our home page **IKO**. The site also distributes various tools, etc., to select Linear Ways/Linear Roller Ways, and please utilize the site for the assistance to select products. Additionally the site also provides CAD data and product catalog of needle series, linear motion rolling guide series and mechatronics series for you to download. Please consider to use for enhancing your design efficiency.

<http://www.ikont.co.jp/eg/>



## 1. Technical calculations

For Linear Way/Linear Roller Way load and life calculation, you can obtain the calculated load and the rating life by entering the operating conditions. Also you can derive the motor torque required for operation and the effective thrust force during operation in the sections of motor torque calculation and calculation of effective thrust force of linear motor tables respectively, and output the calculation results in PDF format, as well as save the histories.

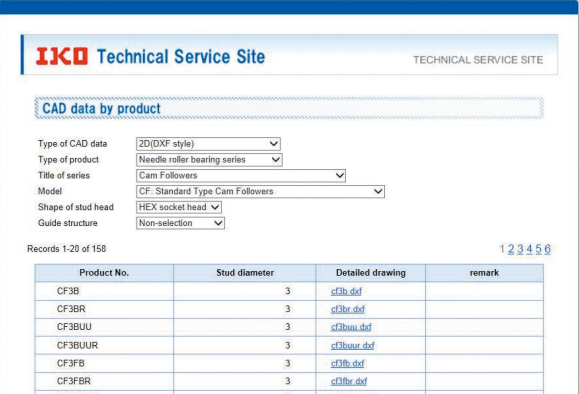
## 2. Selection of Identification Number

By selecting such specification as model code, dimensions, part code, material code, preload symbol, classification symbol, interchangeable code and supplemental code of Linear Ways/Linear Roller Ways, you can easily specify the identification number used for ordering. Also you can browse the CAD data of the selected products, calculate the load, and output the selection results in PDF format, as well as save the histories.

## 3. Downloading CAD data

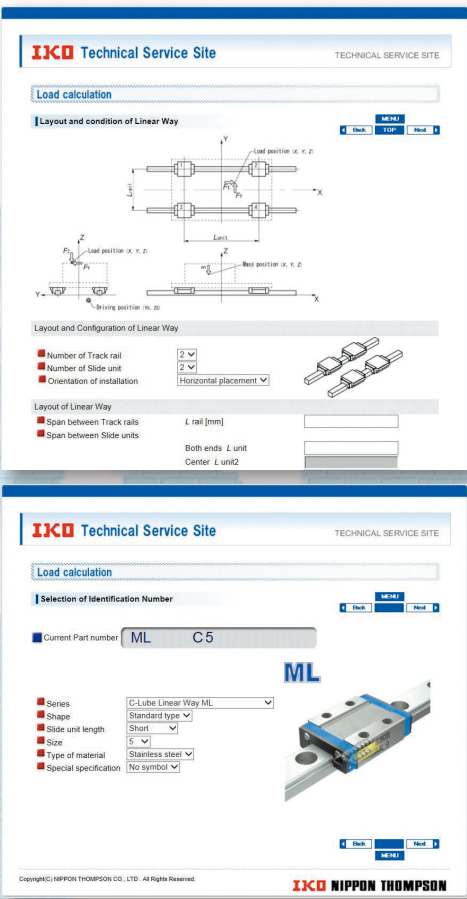
### 2-dimensional CAD data (DXF file)

There are two types of figures, brief figure and detailed figure. The brief figure shows only the external view lines, and the detailed figure shows the detailed lines. The drawing consists of three drawings: front view, side view and plain view. The scale shows only the original size (1:1), and it does not show dimension lines.



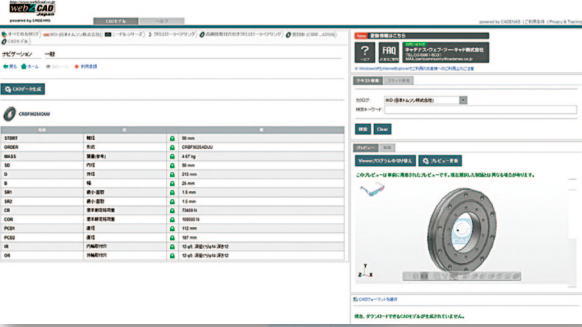
## 4. Downloading Catalog and Operation Manual

You can download product catalogs of needle series, linear motion rolling guide series and mechatronics series, operation manuals of precision positioning tables and various electrical components in PDF format, as well as support software for precision positioning tables. If you would like a copy of our catalog, please visit the **IKO** official website and apply for the catalog, or contact our regional office or sales office nearby.



### 3-dimensional CAD data

It is linked to the mechanical parts CAD library "PART community". Entering the rail dimension and option contents to the detail, you can view the 2D/3D CAD data suitable for the specification for free of charge.





# Oil Minimum

## IKO Gentle to The Earth

Nippon Thompson Co., Ltd. is working to develop global environment-friendly products.

It is committed to developing products that make its customers' machinery and equipment more reliable, thereby contributing to preserving the global environment.

This development stance manifests well in the keyword "Oil Minimum."

Our pursuit of Oil Minimum has led to the creation of  
**IKO's** proprietary family of lubricating parts as "C-Lube."

- **IKO** Linear Motion Rolling Guides are manufactured through a control system that alleviates their impact on the global environment to meet the quality requirements of ISO 14001 in compliance with the quality requirements level of ISO 9001 for quality improvement.
- The standard products listed in this catalog comply with the specifications of the six hazardous materials mentioned cited in the European RoHS Directive.

## IKO Products Underpin Sustain Technology Leaps

Nippon Thompson Co., Ltd. was the first Japanese manufacturer to develop needle bearings on its own and has since expanded into the arena of linear motion rolling guides (Linear Motion Series and Mechatro Series) on the support of its advanced expertise. The company now offers a vast assortment of ingenious products, including the world's first C-Lube maintenance-free series, to address increasingly diversified customer needs and thus sustain technology leaps.

## C-Lube Maintenance-Free Series Products Evolving from the "Oil Minimum" Concept

We have developed lubricating parts impregnated with a large amount of lubricant as C-Lube Series to save the customer's oiling management workload and built them into bearings and linear motion rolling guides.

The C-Lube Series not only keeps products maintenance-free for long by giving them an optimal and minimal amount of a lubricant for an extended period of time but also contributes greatly to preserving the global environment.

