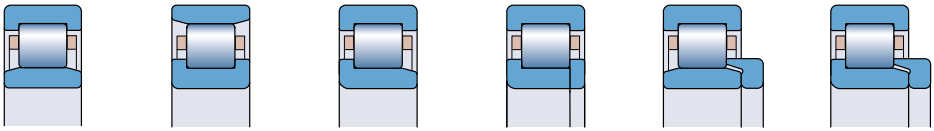
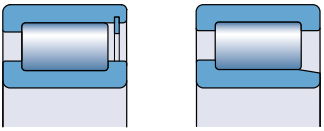

SKF

# Cylindrical roller bearings

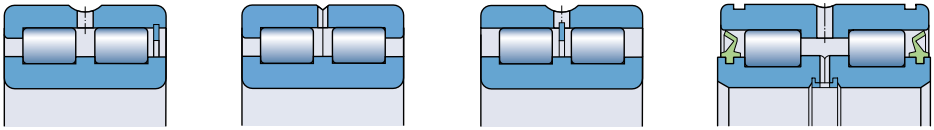












SKF produces cylindrical roller bearings in many designs, dimension series and sizes. The majority are single row bearings with a cage, shown in this catalogue. Single and double row full complement bearings (without cage) complete the SKF standard assortment for general engineering. Bearings with a cage can accommodate heavy radial loads and operate at high speeds. Full complement bearings are suitable for very heavy radial loads at moderate speeds.

The rollers of SKF cylindrical roller bearings are a key component. Their geometry, the so-called logarithmic profile, provides an optimum stress distribution in the contact zones in the bearing. Their surface finish maximizes lubricant film formation and optimizes rolling motion of the rollers. The benefits derived from this compared with traditional designs include enhanced operational reliability and a greater insensitivity to misalignment.

In addition to the standard assortment the comprehensive SKF range of cylindrical roller bearings consists of

- single row high-precision all-steel or hybrid cylindrical roller bearings (→ **fig. 1**)
- double row high-precision all-steel or hybrid cylindrical roller bearings (→ **fig. 2**)
- cylindrical roller bearings and bearing units for railway axleboxes (→ **fig. 3**)
- single row cylindrical roller bearings for traction motors for railway applications
- open and sealed multi-row cylindrical roller bearings for rolling mills (→ **fig. 4**)
- backing bearings for cold rolling mills of the cluster type (→ **fig. 5**)
- indexing roller units for continuous furnaces (→ **fig. 6**).

Details of these bearings can be found in the "SKF Interactive Engineering Catalogue" available online at www.skf.com.

**Fig. 1**

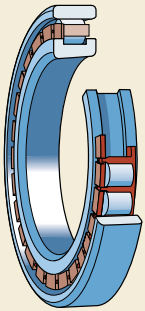


**Fig. 2**

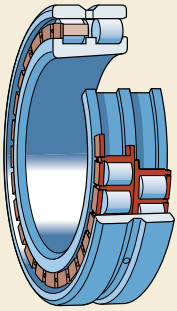


**Fig. 3**

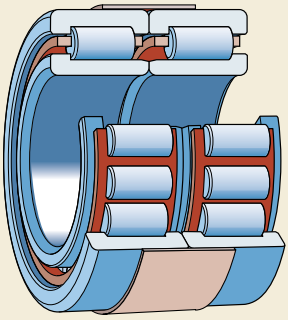


Fig. 4

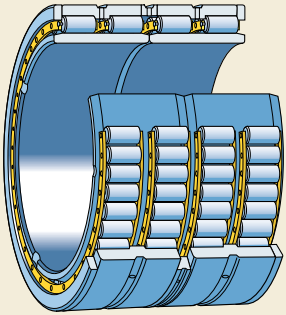


Fig. 5

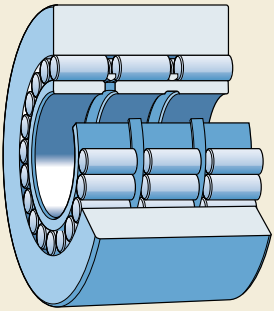
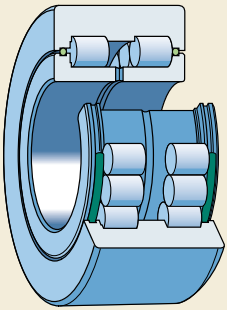


Fig. 6



Other cylindrical roller bearings for special applications include a special electrical insulated coating, called INSOCOAT. Details of these bearings can be found in this catalogue in the section “Engineering products”, starting on **page 893**.


SKF

# Single row cylindrical roller bearings

# Designs

## Standard designs

The rollers in a single row cylindrical roller bearing are always guided between the integral "open" flanges on one of the rings (→ **fig. 1**). These "open" flanges combined with the specially designed and surface finished roller ends, provide improved lubrication, reduced friction and consequently lower operating temperature.

The ring with the integral flanges together with the cylindrical roller and cage assembly can be separated from the other ring. This results in easy mounting and dismounting, particularly where the load conditions are such that interference fits are required for both rings.

SKF single row cylindrical roller bearings can accommodate heavy radial loads and high speeds. They are manufactured in several different designs, the main difference being in the configuration of the flanges. The most popular designs (→ **fig. 2**) are described below and listed in the product table starting on **page 522.**

### NU design

The outer ring of an NU design bearing has two integral flanges while the inner ring has no flanges (**a**). Axial displacement of the shaft with respect to the housing can be accommodated in both directions.

### N design

The inner ring of an N design bearing has two integral flanges while the outer ring has no flanges (**b**). Axial displacement of the shaft with respect to the housing can be accommodated in both directions.

### NJ design

The outer ring of an NJ design bearing has two integral flanges and the inner ring has one integral flange (**c**). These bearings can locate the shaft axially in one direction.

### NUP design

The outer ring of an NUP design bearing has two integral flanges and the inner ring has one integral flange and one non-integral flange in the form of a loose flange ring (**d**). These bearings can be used as locating bearings to locate the shaft axially in both directions.

Fig. 1

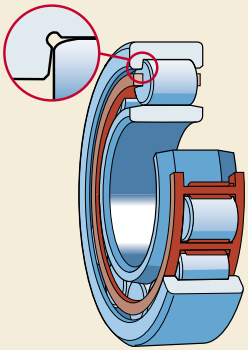
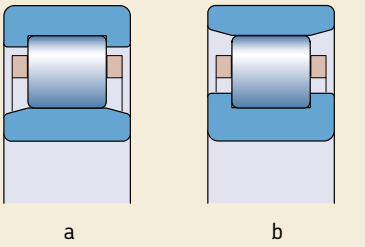


Fig. 2




## Angle rings

Angle rings, series designation HJ, are designed to stabilize NU and NJ design cylindrical roller bearings in the axial direction (**e** and **f**). There can be several reasons to incorporate them in designs:

- NJ or NUP design locating bearings are not available.
- To provide a more stable seat in heavily loaded locating bearing arrangements with NJ design bearings, having a full width inner ring, instead of using an NUP design bearing, that has a shorter inner ring and a loose flange.
- To simplify the design and/or mounting/dismounting procedures.

SKF angle rings, manufactured from carbon chromium steel are hardened and ground. The maximum permissible side face runout conforms to the SKF Normal tolerance class for the appropriate bearing. The HJ angle rings, where available, are listed in the product table with their designation and dimensions together with the relevant bearing.

**NU design + HJ angle ring**
An NU design bearing combined with an HJ angle ring (**e**) can be used to locate the shaft axially in one direction. SKF recommends not to fit standard angle rings on both sides of an NU design bearing as this can lead to axial compression of the rollers.

**NJ design + HJ angle ring**
An NJ design bearing combined with an HJ angle ring (**f**) can be used to locate the shaft axially in both directions.

## Special designs

The SKF assortment also includes a selection of NU design cylindrical roller bearings without an inner ring (→ **fig. 3**) – designation prefix RNU – and N design bearings without an outer ring (→ **fig. 4**) – designation prefix RN. These bearings provide a solution for applications where hardened and ground raceways are provided on the shaft or in the housing bore (→ section "Raceways on shafts and in housings" on **page 198**). Because RNU bearings, for example, do not need an inner ring, the shaft diameter can be larger to provide a stronger, stiffer arrangement. Additionally, the possible axial displacement of the shaft relative to the housing is only limited by the width of the raceway on the shaft for the RNU design or in the housing bore for the RN design.

Other single row cylindrical roller bearings included in the SKF assortment are bearings with a wide inner ring and bearings with flange configurations that differ from the standard bearing designs (→ **fig. 5**) and drawing number bearings with non-standard dimensions. Details of these bearings can be found in the "SKF Interactive Engineering Catalogue" available online at www.skf.com.

**Fig. 3**

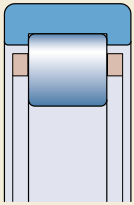


**Fig. 4**

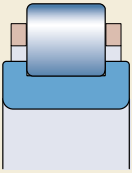
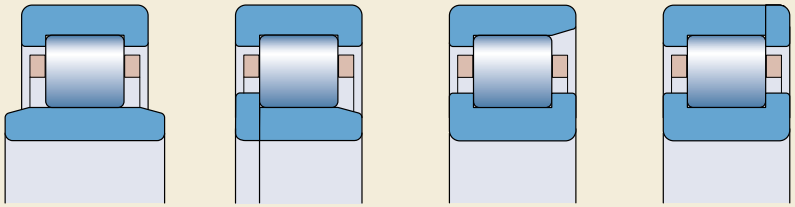


**Fig. 5**



### Bearings with a tapered bore

SKF single row cylindrical roller bearings are generally produced with a cylindrical bore. However, some bearings with a tapered bore 1:12 can be supplied (→ **fig. 6**). Bearings with a tapered bore have a somewhat larger radial internal clearance than corresponding bearings with a cylindrical bore and are identified by the designation suffix K. Contact SKF for availability.

### Bearings with a snap ring groove

Some single row cylindrical roller bearings are also produced with a snap ring groove in the outer ring (→ **fig. 7**). These bearings are identified by the designation suffix N. Because they can be located axially in the housing bore by a retaining or snap ring, the arrangement design can be simplified and made more compact. Contact SKF for availability before ordering. The dimensions of the snap ring groove and of the chamfer adjacent to the groove are in accordance with ISO 464:1995, which also specifies suitable snap ring dimensions.

### Bearings with locating slots

In some applications where it is essential that mounting and dismounting can be done easily, outer rings have to be mounted with clearance fits in the housing. To restrain the outer ring from turning in the circumferential direction, some single row cylindrical roller bearings are also produced with

- one locating slot, designation suffix N1, or
- two locating slots positioned 180° apart, designation suffix N2,

in one outer ring side face (→ **fig. 8**). Please contact SKF for availability before ordering. The dimensions of the locating slots are in accordance with DIN 5412-1:2000.

**Fig. 6**

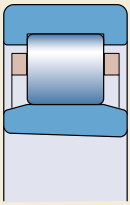


**Fig. 7**

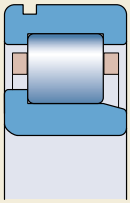
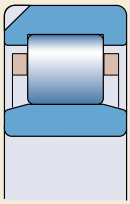


**Fig. 8**



# SKF Explorer class bearings

High performance SKF Explorer cylindrical roller bearings are shown with an asterisk in the product table. SKF Explorer bearings retain the designation of earlier standard bearings, e.g. NU 216 ECP. However, each bearing and its box are marked with the name "EXPLORER".

# Bearing data – general

## Dimensions

The dimensions of SKF single row cylindrical roller bearings are in accordance with ISO 15:1998.

The dimensions of the HJ angle rings correspond to those specified in ISO 246: 1995.

## Tolerances

SKF single row cylindrical roller bearings are manufactured to Normal tolerances for dimensional accuracy and to P6 tolerances for running accuracy as standard.

The tolerances are in accordance with ISO 492: 2002 and can be found in **tables 3** and **4** on **pages 125** and **126**.

## Radial internal clearance

SKF single row cylindrical roller bearings are manufactured with Normal radial internal clearance as standard and most of the bearings are also available with C3 radial internal clearance. Some of the bearings can even be supplied with the smaller C2 or the appreciably greater C4 clearance. In addition, some bearings are produced with special reduced clearances. This special clearance corresponds to a section of a standard clearance range or to sections of two adjacent clearance ranges.

Bearings with non-standard clearance or with the special reduced clearances can be supplied to special order.

The actual clearance limits for bearings with a cylindrical bore are provided in **table 1** and are in accordance with ISO 5753: 1991. They are valid for unmounted bearings under zero measuring load.

The separable components of all SKF bearings with standard clearance as well as those with reduced clearance are interchangeable.

## Axial internal clearance

NUP-design cylindrical roller bearings, which can locate a shaft axially in both directions, are manufactured with an axial internal clearance as shown in **table 2**. The axial internal clearance of NJ-design bearings when combined with an HJ angle ring is specified in **table 3**.

The clearance limits quoted in **tables 2** and **3** should be considered as guideline values. When axial internal clearance is measured, the rollers may tilt, causing an enlargement of the axial clearance, which may be as much as

- the radial internal clearance of bearings in the 2, 3 and 4 series or
- 2/3 of the radial internal clearance for bearings in the 22 and 23 series, for example.

## Misalignment

The ability of single row cylindrical roller bearings to accommodate angular misalignment of the inner ring with respect to the outer ring is limited to a few minutes of arc. The actual values are

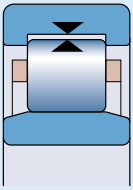
- 4 minutes of arc for bearings in the 10, 12, 2, 3 and 4 series
- 3 minutes of arc for bearings in the 20, 22 and 23 series.

These guideline values apply to non-locating bearings, provided the positions of the shaft and housing axes remain constant. Larger misalignments may be possible but may result in shorter bearing service life. In such cases, it is advisable to contact the SKF application engineering service.

When the bearings are used to locate the shaft axially, guideline values must be reduced, as uneven flange loading can lead to increased wear and possibly even to flange fracture.

The maximum values for misalignment do not apply to bearings of the NUP design or bearings of the NJ design with an HJ angle ring. Because these bearings have two inner and two outer ring flanges and the axial internal clearance is relatively small, axial stresses may be induced in the bearing. In case of doubt, it is advisable to contact the SKF application engineering service.

**Radial internal clearance of cylindrical roller bearings with a cylindrical bore**

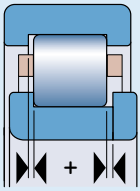


| Bore diameter d | | Radial internal clearance C2 | | Normal | | C3 | | C4 | | C5 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| over | incl. | min | max | min | max | min | max | min | max | min | max |
| mm | | µm | | | | | | | | | |
| – | **24** | 0 | 25 | 20 | 45 | 35 | 60 | 50 | 75 | 65 | 90 |
| **24** | **30** | 0 | 25 | 20 | 45 | 35 | 60 | 50 | 75 | 70 | 95 |
| **30** | **40** | 5 | 30 | 25 | 50 | 45 | 70 | 60 | 85 | 80 | 105 |
| **40** | **50** | 5 | 35 | 30 | 60 | 50 | 80 | 70 | 100 | 95 | 125 |
| **50** | **65** | 10 | 40 | 40 | 70 | 60 | 90 | 80 | 110 | 110 | 140 |
| **65** | **80** | 10 | 45 | 40 | 75 | 65 | 100 | 90 | 125 | 130 | 165 |
| **80** | **100** | 15 | 50 | 50 | 85 | 75 | 110 | 105 | 140 | 155 | 190 |
| **100** | **120** | 15 | 55 | 50 | 90 | 85 | 125 | 125 | 165 | 180 | 220 |
| **120** | **140** | 15 | 60 | 60 | 105 | 100 | 145 | 145 | 190 | 200 | 245 |
| **140** | **160** | 20 | 70 | 70 | 120 | 115 | 165 | 165 | 215 | 225 | 275 |
| **160** | **180** | 25 | 75 | 75 | 125 | 120 | 170 | 170 | 220 | 250 | 300 |
| **180** | **200** | 35 | 90 | 90 | 145 | 140 | 195 | 195 | 250 | 275 | 330 |
| **200** | **225** | 45 | 105 | 105 | 165 | 160 | 220 | 220 | 280 | 305 | 365 |
| **225** | **250** | 45 | 110 | 110 | 175 | 170 | 235 | 235 | 300 | 330 | 395 |
| **250** | **280** | 55 | 125 | 125 | 195 | 190 | 260 | 260 | 330 | 370 | 440 |
| **280** | **315** | 55 | 130 | 130 | 205 | 200 | 275 | 275 | 350 | 410 | 485 |
| **315** | **355** | 65 | 145 | 145 | 225 | 225 | 305 | 305 | 385 | 455 | 535 |
| **355** | **400** | 100 | 190 | 190 | 280 | 280 | 370 | 370 | 460 | 510 | 600 |
| **400** | **450** | 110 | 210 | 210 | 310 | 310 | 410 | 410 | 510 | 565 | 665 |
| **450** | **500** | 110 | 220 | 220 | 330 | 330 | 440 | 440 | 550 | 625 | 735 |
| **500** | **560** | 120 | 240 | 240 | 360 | 360 | 480 | 480 | 600 | 690 | 810 |
| **560** | **630** | 140 | 260 | 260 | 380 | 380 | 500 | 500 | 620 | 780 | 900 |
| **630** | **710** | 145 | 285 | 285 | 425 | 425 | 565 | 565 | 705 | 865 | 1 005 |
| **710** | **800** | 150 | 310 | 310 | 470 | 470 | 630 | 630 | 790 | 975 | 1 135 |
| **800** | **900** | 180 | 350 | 350 | 520 | 520 | 690 | 690 | 860 | 1 095 | 1 265 |

Please refer to **page 137** for the definition of radial internal clearance

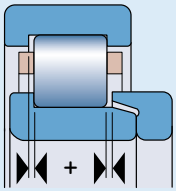
Table 2

**Axial internal clearance of NUP cylindrical roller bearings**



| Bearing Bore diameter | Size code | Axial internal clearance of bearings of series NUP 2 min | NUP 2 max | NUP 3 min | NUP 3 max | NUP 22 min | NUP 22 max | NUP 23 min | NUP 23 max |
|---|---|---|---|---|---|---|---|---|---|
| mm | – | µm | | | | | | | |
| **15** | **02** | – | – | – | – | – | – | – | – |
| **17** | **03** | 37 | 140 | 37 | 140 | 37 | 140 | 47 | 155 |
| **20** | **04** | 37 | 140 | 37 | 140 | 47 | 155 | 47 | 155 |
| **25** | **05** | 37 | 140 | 47 | 155 | 47 | 155 | 47 | 155 |
| **30** | **06** | 37 | 140 | 47 | 155 | 47 | 155 | 47 | 155 |
| **35** | **07** | 47 | 155 | 47 | 155 | 47 | 155 | 62 | 180 |
| **40** | **08** | 47 | 155 | 47 | 155 | 47 | 155 | 62 | 180 |
| **45** | **09** | 47 | 155 | 47 | 155 | 47 | 155 | 62 | 180 |
| **50** | **10** | 47 | 155 | 47 | 155 | 47 | 155 | 62 | 180 |
| **55** | **11** | 47 | 155 | 62 | 180 | 47 | 155 | 62 | 180 |
| **60** | **12** | 47 | 155 | 62 | 180 | 62 | 180 | 87 | 230 |
| **65** | **13** | 47 | 155 | 62 | 180 | 62 | 180 | 87 | 230 |
| **70** | **14** | 47 | 155 | 62 | 180 | 62 | 180 | 87 | 230 |
| **75** | **15** | 47 | 155 | 62 | 180 | 62 | 180 | 87 | 230 |
| **80** | **16** | 47 | 155 | 62 | 180 | 62 | 180 | 87 | 230 |
| **85** | **17** | 62 | 180 | 62 | 180 | 62 | 180 | 87 | 230 |
| **90** | **18** | 62 | 180 | 62 | 180 | 62 | 180 | 87 | 230 |
| **95** | **19** | 62 | 180 | 62 | 180 | 62 | 180 | 87 | 230 |
| **100** | **20** | 62 | 180 | 87 | 230 | 87 | 230 | 120 | 315 |
| **105** | **21** | 62 | 180 | – | – | – | – | – | – |
| **110** | **22** | 62 | 180 | 87 | 230 | 87 | 230 | 120 | 315 |
| **120** | **24** | 62 | 180 | 87 | 230 | 87 | 230 | 120 | 315 |
| **130** | **26** | 62 | 180 | 87 | 230 | 87 | 230 | 120 | 315 |
| **140** | **28** | 62 | 180 | 87 | 230 | 87 | 230 | 120 | 315 |
| **150** | **30** | 62 | 180 | – | – | 87 | 230 | 120 | 315 |
| **160** | **32** | 87 | 230 | – | – | – | – | – | – |
| **170** | **34** | 87 | 230 | – | – | – | – | – | – |
| **180** | **36** | 87 | 230 | – | – | – | – | – | – |
| **190** | **38** | 87 | 230 | – | – | – | – | – | – |
| **200** | **40** | 87 | 230 | – | – | – | – | – | – |
| **220** | **44** | 95 | 230 | – | – | – | – | – | – |
| **240** | **48** | 95 | 250 | – | – | – | – | – | – |
| **260** | **52** | 95 | 250 | – | – | – | – | – | – |

**Axial internal clearance of NJ + HJ cylindrical roller bearings**

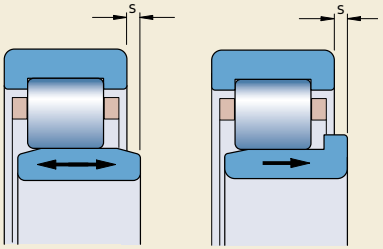


| Bearing Bore diameter | Size code | Axial internal clearance of bearings of series NJ 2+HJ 2 min | NJ 2+HJ 2 max | NJ 3+HJ 3 min | NJ 3+HJ 3 max | NJ 4+HJ 4 min | NJ 4+HJ 4 max | NJ 22+HJ 22 min | NJ 22+HJ 22 max | NJ 23+HJ 23 min | NJ 23+HJ 23 max |
|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | – | µm | | | | | | | | | |
| **15** | **02** | 42 | 165 | 42 | 165 | – | – | – | – | – | – |
| **17** | **03** | 42 | 165 | 42 | 165 | – | – | 42 | 165 | 52 | 183 |
| **20** | **04** | 42 | 165 | 42 | 165 | – | – | 52 | 185 | 52 | 183 |
| **25** | **05** | 42 | 165 | 52 | 185 | – | – | 52 | 185 | 52 | 183 |
| **30** | **06** | 42 | 165 | 52 | 185 | 60 | 200 | 52 | 185 | 52 | 183 |
| **35** | **07** | 52 | 185 | 52 | 185 | 60 | 200 | 52 | 185 | 72 | 215 |
| **40** | **08** | 52 | 185 | 52 | 185 | 60 | 200 | 52 | 185 | 72 | 215 |
| **45** | **09** | 52 | 185 | 52 | 185 | 60 | 200 | 52 | 185 | 72 | 215 |
| **50** | **10** | 52 | 185 | 52 | 185 | 80 | 235 | 52 | 185 | 72 | 215 |
| **55** | **11** | 52 | 185 | 72 | 215 | 80 | 235 | 52 | 185 | 72 | 215 |
| **60** | **12** | 52 | 185 | 72 | 215 | 80 | 235 | 72 | 215 | 102 | 275 |
| **65** | **13** | 52 | 185 | 72 | 215 | 80 | 235 | 72 | 215 | 102 | 275 |
| **70** | **14** | 52 | 185 | 72 | 215 | 80 | 235 | 72 | 215 | 102 | 275 |
| **75** | **15** | 52 | 185 | 72 | 215 | 80 | 235 | 72 | 215 | 102 | 275 |
| **80** | **16** | 52 | 185 | 72 | 215 | 80 | 235 | 72 | 215 | 102 | 275 |
| **85** | **17** | 72 | 215 | 72 | 215 | 110 | 290 | 72 | 215 | 102 | 275 |
| **90** | **18** | 72 | 215 | 72 | 215 | 110 | 290 | 72 | 215 | 102 | 275 |
| **95** | **19** | 72 | 215 | 72 | 215 | 110 | 290 | 72 | 215 | 102 | 275 |
| **100** | **20** | 72 | 215 | 102 | 275 | 110 | 290 | 102 | 275 | 140 | 375 |
| **105** | **21** | 72 | 215 | 102 | 275 | 110 | 290 | 102 | 275 | 140 | 375 |
| **110** | **22** | 72 | 215 | 102 | 275 | 110 | 290 | 102 | 275 | 140 | 375 |
| **120** | **24** | 72 | 215 | 102 | 275 | 110 | 310 | 102 | 275 | 140 | 375 |
| **130** | **26** | 72 | 215 | 102 | 275 | 110 | 310 | 102 | 275 | 140 | 375 |
| **140** | **28** | 72 | 215 | 102 | 275 | 140 | 385 | 102 | 275 | 140 | 375 |
| **150** | **30** | 72 | 215 | 102 | 275 | 140 | 385 | 102 | 275 | 140 | 375 |
| **160** | **32** | 102 | 275 | 102 | 275 | – | – | 140 | 375 | 140 | 375 |
| **170** | **34** | 102 | 275 | – | – | – | – | 140 | 375 | – | – |
| **180** | **36** | 102 | 275 | – | – | – | – | 140 | 375 | – | – |
| **190** | **38** | 102 | 275 | – | – | – | – | – | – | – | – |
| **200** | **40** | 102 | 275 | – | – | – | – | – | – | – | – |
| **220** | **44** | 110 | 290 | – | – | – | – | – | – | – | – |
| **240** | **48** | 110 | 310 | – | – | – | – | – | – | – | – |
| **260** | **52** | 110 | 310 | – | – | – | – | – | – | – | – |
| **280** | **56** | 110 | 310 | – | – | – | – | – | – | – | – |

## Axial displacement

Cylindrical roller bearings with a flangeless inner or outer ring, NU and N designs, and NJ-design bearings with one integral flange at the inner ring can accommodate axial displacement of the shaft with respect to the housing as a result of thermal expansion within certain limits (→ **fig. 9**). As the axial displacement takes place within the bearing and not between the bearing and shaft or housing bore, there is practically no increase in friction as the bearing rotates. Values for the permissible axial displacement "s" from the normal position of one bearing ring relative to the other are provided in the product table.

Fig. 9




## Influence of operating temperature on bearing material

SKF cylindrical roller bearings undergo a special heat treatment. When equipped with a steel, brass or PEEK cage, they can operate at temperatures of up to +150 °C.

## Cages

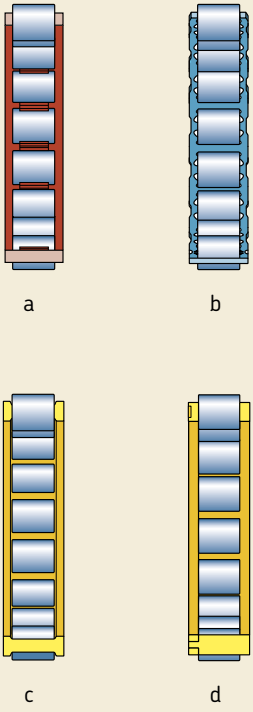
Depending on the bearing series, size and design, SKF single row cylindrical roller bearings are fitted as standard with one of the following cages (→ **fig. 10**)

- an injection moulded window-type cage of glass fibre reinforced polyamide 6,6, roller centred, designation suffix P (**a**)
- a pressed window-type cage of unhardened steel, roller centred, designation suffix J (**b**)
- a one-piece machined window-type brass cage, inner or outer ring centred, depending on bearing size, designation suffixes ML or MP (**c**)
- a two-piece machined brass cage, roller centred, designation suffix M, or outer ring centred, designation suffix MA, or inner ring centred, designation suffix MB (**d**).

A large number of bearings included in the SKF standard assortment are available as standard with more than one cage design so that bearings with cages appropriate to the operating conditions can be chosen (→ product table).

For demanding applications, like compressors, the use of SKF bearings with an injection moulded cage of glass fibre reinforced polyetheretherketone (PEEK) has become more common. The exceptional properties of PEEK are superior

Fig. 10



combination of strength and flexibillity, high operating temperature range, high chemical and wear resistance and good processability. If bearings with a PEEK cage are required, please consult the SKF application engineering service.

**Note**
Single row cylindrical roller bearings with polyamide 6,6 cages can be operated at operating temperatures up to +120 °C. The lubricants generally used for rolling bearings do not have a detrimental effect on cage properties, with the exception for a few synthetic oils and greases with synthetic base oil as well as some lubricants containing a high proportion of EP additives when used at elevated temperatures.

For bearing arrangements, which are to operate at continuously high temperatures or under difficult conditions, the use of bearings with a metallic cage is recommended. For applications in equipment using refrigerants such as ammonia or freon replacements, bearings with a polyamide cage can be used for operating temperatures up to 70 °C. At higher operating temperatures bearings incorporating a brass, steel or PEEK cage should be used.

For detailed information about the temperature resistance and the applicability of cages, please refer to the section “Cage materials”, starting on **page 140**.

## Speed ratings

The limiting speeds are determined by certain criteria that include the form stability and the strength of the cage (→ section “Limiting speeds” on **page 114**). The values listed in the product table are valid for the standard cage. To facilitate the estimation of the limiting speed for bearings with an alternative cage or vice-versa, **table 4** provides the appropriate conversion factors.

**Table 4**

**Conversion factors for limiting speeds**

| **Bearing with standard cage** | **alternative standard cage** P, J, M, MR | MA, MB | ML, MP |
|---|---|---|---|
| **P, J, M, MR** | 1 | 1,3 | 1,5 |
| **MA, MB** | 0,75 | 1 | 1,2 |
| **ML, MP** | 0,65 | 0,85 | 1 |

## Minimum load

In order to provide satisfactory operation, single row cylindrical roller bearings, like all ball and roller bearings, must always be subjected to a given minimum load, particularly if they are to operate at high speeds or are subjected to high accelerations or rapid changes in the direction of load. Under such conditions, the inertia forces of the rollers and cage, and the friction in the lubricant, can have a detrimental influence on the rolling conditions in the bearing arrangement and may cause damaging sliding movements to occur between the rollers and raceways.

The requisite minimum load to be applied to single row cylindrical roller bearings can be estimated using

$$F_{rm} = k_r \left(6 + \frac{4\,n}{n_r}\right)\left(\frac{d_m}{100}\right)^2$$

where
$F_{rm}$ = minimum radial load, kN
$k_r$ = minimum load factor (→ product table)
$n$ = rotational speed, r/min
$n_r$ = reference speed, r/min (→ product table)
$d_m$ = bearing mean diameter = 0,5 (d + D), mm

When starting up at low temperatures or when the lubricant is highly viscous, even greater minimum loads may be required.The weight of the components supported by the bearing, together with external forces, generally exceeds the requisite minimum load. If this is not the case, the single row cylindrical roller bearing must be subjected to an additional radial load.

## Dynamic axial load carrying capacity

Single row cylindrical roller bearings with flanges on both inner and outer rings can support axial loads in addition to radial loads. Their axial load carrying capacity is primarily determined by the ability of the sliding surfaces of the roller end/flange contact to support loads. Factors having the greatest effect on this ability are the lubrication, operating temperature and heat dissipation from the bearing.

Assuming the conditions cited below, the permissible axial load can be calculated with sufficient accuracy from

$$F_{ap} = \frac{k_1 C_0 10^4}{n (d + D)} - k_2 F_r$$

where
$F_{ap}$ = permissible axial load, kN
$C_0$ = basic static load rating, kN
$F_r$ = actual radial bearing load, kN
$n$ = rotational speed, r/min
$d$ = bearing bore diameter, mm
$D$ = bearing outside diameter, mm
$k_1$ = a factor
1,5 for oil lubrication
1 for grease lubrication
$k_2$ = a factor
0,15 for oil lubrication
0,1 for grease lubrication

The above equation is based on conditions that are considered typical for normal bearing operation, i.e.

- a difference of 60 °C between the bearing operating temperature and the ambient temperature
- a specific heat loss from the bearing of 0,5 mW/mm$^2$ °C; with reference to the bearing outside diameter surface (π D B)
- a viscosity ratio $\kappa \geq 2$.

For grease lubrication the viscosity of the base oil in the grease may be used. If $\kappa$ is less than 2, the friction will increase and there will be more wear. These effects can be reduced at low speeds, for example, by using oils with AW (anti-wear) and/or EP (extreme pressure) additives.

Where axial loads act for longer periods and the bearings are grease lubricated, it is advisable to use grease that has good oil bleeding properties at the operating temperatures (> 3 % according to DIN 51 817). Frequent relubrication is also recommended.

The values of the permissible load $F_{ap}$ obtained from the heat balance equation are valid for a continuously acting constant axial load and adequate lubricant supply to the roller end/flange contacts. Where axial loads act only for short periods, the values may be multiplied by a factor of 2, or for shock loads by a factor of 3, provided the limits given in the following with regard to flange strength are not exceeded.

To avoid any risk of flange breakage, the constantly acting axial load applied to the bearings should never exceed

$F_{a\,max} = 0{,}0045\ D^{1,5}$ (bearings in the 2 Diameter Series)

or

$F_{a\,max} = 0{,}0023\ D^{1,7}$ (bearings in other series)

When acting only occasionally and for brief periods, the axial load applied to the bearings should never exceed

$F_{a\,max} = 0{,}013\ D^{1,5}$ (bearings in the 2 Diameter Series)

or

$F_{a\,max} = 0{,}007\ D^{1,7}$ (bearings in other series)

where
$F_{a\,max}$ = maximum constantly or occasionally acting axial load, kN
$D$ = bearing outside diameter, mm

To obtain an even flange load and provide sufficient running accuracy of the shaft when single row cylindrical roller bearings are subjected to heavy axial loads, axial runout and the size of the abutment surfaces of adjacent components become particularly important. For the axial runout see the recommendations provided in the section “Dimensional, form and running accuracy of bearing seats and abutments” on **page 194**. As to the diameter of the abutment surfaces, SKF recommends supporting the inner ring at a height corresponding to half of the flange height (**→ fig. 11**). For the inner ring

flange, for example, the abutment diameter can be obtained using

$d_{as} = 0,5 (d_1 + F)$

where
$d_{as}$ = shaft abutment diameter, mm
$d_1$ = inner ring flange diameter, mm
F = inner ring raceway diameter, mm

Where the misalignment between the inner and outer rings exceeds 1 minute of arc, the action of the load on the flange changes considerably. The safety factors included in the guideline values may be inadequate. In these cases, please contact the SKF application engineering service.

## Equivalent dynamic bearing load

For non-locating bearing

$P = F_r$

If bearings with flanges on both inner and outer rings are used to locate a shaft in one or both directions, the equivalent dynamic bearing load should be calculated using

$P = F_r$ when $F_a/F_r \leq e$
$P = 0,92 F_r + Y F_a$ when $F_a/F_r > e$

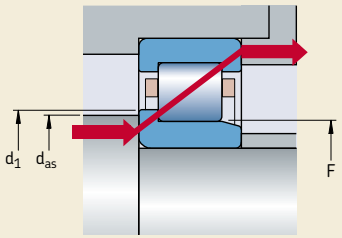
where
e = limiting value
= 0,2 for bearings in the 10, 2, 3 and 4 series
= 0,3 for bearings in other series
Y = axial load factor
= 0,6 for bearings in the 10, 2, 3 and 4 series
= 0,4 for bearings in other series

Since axially loaded cylindrical roller bearings only operate satisfactorily when they are subjected to a simultaneously acting radial load, the ratio $F_a/F_r$ should not exceed 0,5.

## Equivalent static bearing load

$P_0 = F_r$

**Fig. 11**



## Supplementary designations

The designation suffixes used to identify certain features of SKF single row cylindrical roller bearings are explained in the following.

**CN** Normal radial internal clearance; normally only used together with an additional letter that identifies a reduced or displaced clearance range
- H Reduced clearance range corresponding to the upper half of the actual clearance range
- L Reduced clearance range corresponding to the lower half of the actual clearance range

The above letters are also used together with the clearance class suffixes C2, C3, C4 and C5

**C2** Radial internal clearance smaller than Normal

**C3** Radial internal clearance greater than Normal

**C4** Radial internal clearance greater than C3

**C5** Radial internal clearance greater than C4

**EC** Optimized internal design incorporating more and/or larger rollers and with modified roller end/flange contact

**HA3** Case-hardened inner ring

**HB1** Bainite hardened inner and outer rings

**HN1** Inner and outer rings with special surface heat treatment

**J** Pressed steel cage, roller centred, unhardened

**K** Tapered bore, taper 1:12

**M** Two-piece machined brass cage, roller centred

**MA** Two-piece machined brass cage, outer ring centred

**MB** Two-piece machined brass cage, inner ring centred

**ML** One-piece form-turned window-type brass cage, inner or outer ring centred, depending on bearing size

**MP** One-piece window-type brass cage with milled, reamed or broached pockets, inner or outer ring centred, depending on bearing size

**MR** One-piece form-turned window-type brass cage, roller centred

**N** Snap ring groove in the outer ring

**NR** Snap ring groove in the outer ring, with appropriate snap ring

**N1** One locating slot (notch) in one outer ring side face

**N2** Two locating slots 180° apart in one outer ring side face

**P** Injection moulded cage of glass fibre reinforced polyamide 6,6, roller centred

**PH** Injection moulded cage of glass fibre reinforced polyetheretherketone (PEEK), roller centred

**PHA** Injection moulded cage of glass fibre reinforced polyetheretherketone (PEEK), outer ring centred

**S1** Rings dimensionally stabilized for operating temperatures up to +200 °C

**S2** Rings dimensionally stabilized for operating temperatures up to +250 °C

**VA301** Bearing for railway vehicle traction motors

**VA305** VA301 + special inspection routines

**VA350** Bearing for railway axleboxes

**VA380** Bearing for railway axleboxes according to EN 12080:1998, class 1

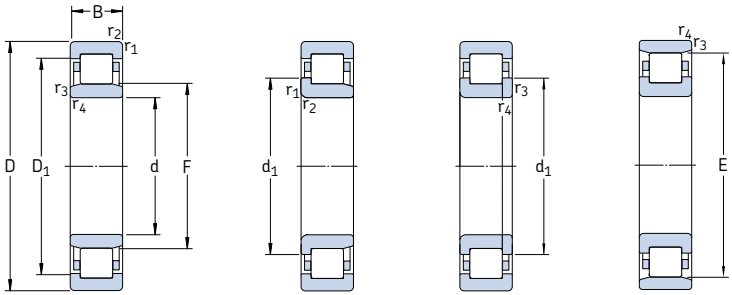
**VA3091** VA301 + VL0241

**VC025** Bearing with specially wear-resistant raceways for applications in heavily contaminated environments

**VL0241** Aluminium-oxide coated outside surface of the outer ring for electrical resistance up to 1 000 V DC

**VL2071** Aluminium-oxide coated outside surface of the inner ring for electrical resistance up to 1 000 V DC

**VQ015** Inner ring with crowned raceway for increased permissible misalignment

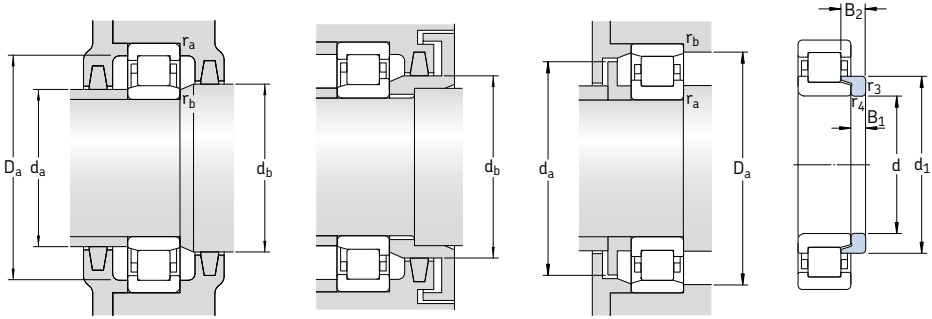



NU NJ NUP N

| Principal dimensions | | | Basic load ratings dynamic | static | Fatigue load limit | Speed ratings Reference speed | Limiting speed | Mass Bearing with standard cage | Designations Bearing with standard cage | Alternative standard cage designs[1] |
|---|---|---|---|---|---|---|---|---|---|---|
| d | D | B | C | $C_0$ | $P_u$ | | | | | |
| mm | | | kN | | kN | r/min | | kg | – | |
| **15** | 35 | 11 | 12,5 | 10,2 | 1,22 | 22 000 | 26 000 | 0,047 | **NU 202 ECP** | **–** |
| | 35 | 11 | 12,5 | 10,2 | 1,22 | 22 000 | 26 000 | 0,048 | **NJ 202 ECP** | **–** |
| **17** | 40 | 12 | 17,2 | 14,3 | 1,73 | 19 000 | 22 000 | 0,068 | **NU 203 ECP** | **ML** |
| | 40 | 12 | 17,2 | 14,3 | 1,73 | 19 000 | 22 000 | 0,070 | **NJ 203 ECP** | **ML** |
| | 40 | 12 | 17,2 | 14,3 | 1,73 | 19 000 | 22 000 | 0,073 | **NUP 203 ECP** | **ML** |
| | 40 | 12 | 17,2 | 14,3 | 1,73 | 19 000 | 22 000 | 0,066 | **N 203 ECP** | **–** |
| | 40 | 16 | 23,8 | 21,6 | 2,65 | 19 000 | 22 000 | 0,087 | **NU 2203 ECP** | **–** |
| | 40 | 16 | 23,8 | 21,6 | 2,65 | 19 000 | 22 000 | 0,093 | **NJ 2203 ECP** | **–** |
| | 40 | 16 | 23,8 | 21,6 | 2,65 | 19 000 | 22 000 | 0,097 | **NUP 2203 ECP** | **–** |
| | 47 | 14 | 24,6 | 20,4 | 2,55 | 15 000 | 20 000 | 0,12 | **NU 303 ECP** | **–** |
| | 47 | 14 | 24,6 | 20,4 | 2,55 | 15 000 | 20 000 | 0,12 | **NJ 303 ECP** | **–** |
| | 47 | 14 | 24,6 | 20,4 | 2,55 | 15 000 | 20 000 | 0,12 | **N 303 ECP** | **–** |
| **20** | 47 | 14 | 25,1 | 22 | 2,75 | 16 000 | 19 000 | 0,11 | **NU 204 ECP** | **ML** |
| | 47 | 14 | 25,1 | 22 | 2,75 | 16 000 | 19 000 | 0,11 | **NJ 204 ECP** | **ML** |
| | 47 | 14 | 25,1 | 22 | 2,75 | 16 000 | 19 000 | 0,12 | **NUP 204 ECP** | **ML** |
| | 47 | 14 | 25,1 | 22 | 2,75 | 16 000 | 19 000 | 0,11 | **N 204 ECP** | **–** |
| | 47 | 18 | 29,7 | 27,5 | 3,45 | 16 000 | 19 000 | 0,14 | **NU 2204 ECP** | **–** |
| | 47 | 18 | 29,7 | 27,5 | 3,45 | 16 000 | 19 000 | 0,14 | **NJ 2204 ECP** | **–** |
| | 52 | 15 | 35,5 | 26 | 3,25 | 15 000 | 18 000 | 0,15 | *** NU 304 ECP** | **–** |
| | 52 | 15 | 35,5 | 26 | 3,25 | 15 000 | 18 000 | 0,15 | *** NJ 304 ECP** | **–** |
| | 52 | 15 | 35,5 | 26 | 3,25 | 15 000 | 18 000 | 0,16 | *** NUP 304 ECP** | **–** |
| | 52 | 15 | 35,5 | 26 | 3,25 | 15 000 | 18 000 | 0,15 | *** N 304 ECP** | **–** |
| | 52 | 21 | 47,5 | 38 | 4,8 | 14 000 | 18 000 | 0,21 | *** NU 2304 ECP** | **–** |
| | 52 | 21 | 47,5 | 38 | 4,8 | 14 000 | 18 000 | 0,22 | *** NJ 2304 ECP** | **–** |
| | 52 | 21 | 47,5 | 38 | 4,8 | 14 000 | 18 000 | 0,23 | *** NUP 2304 ECP** | **–** |
| **25** | 47 | 12 | 14,2 | 13,2 | 1,4 | 18 000 | 18 000 | 0,083 | **NU 1005** | **–** |
| | 52 | 15 | 28,6 | 27 | 3,35 | 14 000 | 16 000 | 0,13 | **NU 205 ECP** | **J, ML** |
| | 52 | 15 | 28,6 | 27 | 3,35 | 14 000 | 16 000 | 0,14 | **NJ 205 ECP** | **J, ML** |
| | 52 | 15 | 28,6 | 27 | 3,35 | 14 000 | 16 000 | 0,14 | **NUP 205 ECP** | **ML** |
| | 52 | 15 | 28,6 | 27 | 3,35 | 14 000 | 16 000 | 0,13 | **N 205 ECP** | **–** |

***** SKF Explorer bearing

[1] When ordering bearings with an alternative standard cage the suffix of the standard cage has to be replaced by the suffix of the cage in question, e.g. NU 203 ECP becomes NU 203 ECML (for speed ratings → **page 517**)

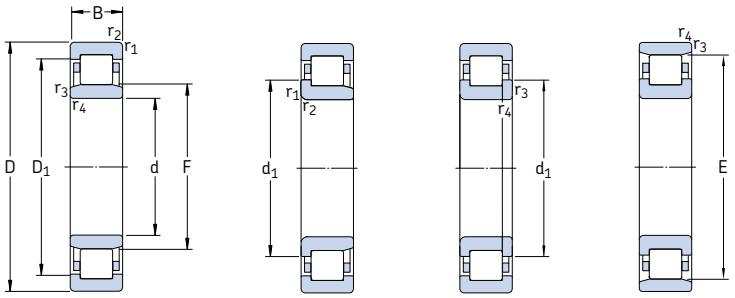



Angle ring

| Dimensions | | | | | | | Abutment and fillet dimensions | | | | | | Calculation factor | Angle ring Designation | Mass | Dimensions | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d | $d_1$ ~ | $D_1$ ~ | F, E | $r_{1,2}$ min | $r_{3,4}$ min | s[1] | $d_a$ min | $d_a$ max | $d_b$, $D_a$ min | $D_a$ max | $r_a$ max | $r_b$ max | $k_r$ | | | $B_1$ | $B_2$ |
| mm | | | | | | | mm | | | | | | – | – | kg | mm | |
| **15** | – | 27,9 | 19,3 | 0,6 | 0,3 | 1 | 17,4 | 18,5 | 21 | 30,8 | 0,6 | 0,3 | 0,15 | – | | | |
| | 21,9 | 27,9 | 19,3 | 0,6 | 0,3 | 1 | 18,5 | 18,5 | 23 | 30,8 | 0,6 | 0,3 | 0,15 | – | | | |
| **17** | – | 32,4 | 22,1 | 0,6 | 0,3 | 1 | 19,4 | 21 | 24 | 35,8 | 0,6 | 0,3 | 0,15 | – | | | |
| | 25 | 32,4 | 22,1 | 0,6 | 0,3 | 1 | 21 | 21 | 27 | 35,8 | 0,6 | 0,3 | 0,15 | – | | | |
| | 25 | 32,4 | 22,1 | 0,6 | 0,3 | – | 21,2 | – | 27 | 35,8 | 0,6 | 0,3 | 0,15 | – | | | |
| | 25 | – | 35,1 | 0,6 | 0,3 | 1 | 21,2 | 33 | 37 | 37,6 | 0,6 | 0,3 | 0,15 | – | | | |
| | – | 32,4 | 22,1 | 0,6 | 0,3 | 1,5 | 19,4 | 21 | 24 | 35,8 | 0,6 | 0,3 | 0,20 | – | | | |
| | 25 | 32,4 | 22,1 | 0,6 | 0,3 | 1,5 | 21 | 21 | 27 | 35,8 | 0,6 | 0,3 | 0,20 | – | | | |
| | 25 | 32,4 | 22,1 | 0,6 | 0,3 | – | 21,2 | – | 27 | 35,8 | 0,6 | 0,3 | 0,20 | – | | | |
| | – | 37 | 24,2 | 1 | 0,6 | 1 | 21,2 | 23 | 26 | 41,4 | 1 | 0,6 | 0,15 | – | | | |
| | 27,7 | 37 | 24,2 | 1 | 0,6 | 1 | 22,6 | 23 | 29 | 41,4 | 1 | 0,6 | 0,15 | – | | | |
| | 27,7 | – | 40,2 | 1 | 0,6 | 1 | 22,6 | 38 | 42 | 42,8 | 1 | 0,6 | 0,15 | – | | | |
| **20** | – | 38,8 | 26,5 | 1 | 0,6 | 1 | 24,2 | 25 | 28 | 41,4 | 1 | 0,6 | 0,15 | – | | | |
| | 29,7 | 38,8 | 26,5 | 1 | 0,6 | 1 | 25 | 25 | 31 | 41,4 | 1 | 0,6 | 0,15 | – | | | |
| | 29,7 | 38,8 | 26,5 | 1 | 0,6 | – | 25,6 | – | 31 | 41,4 | 1 | 0,6 | 0,15 | – | | | |
| | 29,7 | – | 41,5 | 1 | 0,6 | 1 | 25,6 | 40 | 43 | 42,8 | 1 | 0,6 | 0,15 | – | | | |
| | – | 38,8 | 26,5 | 1 | 0,6 | 2 | 24,2 | 25 | 28 | 41,4 | 1 | 0,6 | 0,20 | – | | | |
| | 29,7 | 38,8 | 26,5 | 1 | 0,6 | 2 | 25 | 25 | 31 | 41,4 | 1 | 0,6 | 0,20 | – | | | |
| | 31,2 | 42,4 | 27,5 | 1,1 | 0,6 | 0,9 | 24,2 | 26 | 29 | 45 | 1 | 0,6 | 0,15 | **HJ 304 EC** | 0,017 | 4 | 6,5 |
| | 31,2 | 42,4 | 27,5 | 1,1 | 0,6 | 0,9 | 27 | 29 | 33 | 45 | 1 | 0,6 | 0,15 | **HJ 304 EC** | 0,017 | 4 | 6,5 |
| | 31,2 | 42,4 | 27,5 | 1,1 | 0,6 | – | 27 | – | 33 | 45 | 1 | 0,6 | 0,15 | – | | | |
| | 31,2 | – | 45,5 | 1,1 | 0,6 | 0,9 | 27 | 44 | 47 | 47,8 | 1 | 0,6 | 0,15 | – | | | |
| | – | 42,4 | 27,5 | 1,1 | 0,6 | 1,9 | 24,2 | 26 | 29 | 45 | 1 | 0,6 | 0,29 | – | | | |
| | 31,2 | 42,4 | 27,5 | 1,1 | 0,6 | 1,9 | 26 | 26 | 33 | 45 | 1 | 0,6 | 0,29 | – | | | |
| | 31,2 | 42,4 | 27,5 | 1,1 | 0,6 | – | 27 | – | 33 | 45 | 1 | 0,6 | 0,29 | – | | | |
| **25** | – | 38,8 | 30,5 | 0,6 | 0,3 | 2 | 27 | 29 | 32 | 43,8 | 0,6 | 0,3 | 0,1 | – | | | |
| | 34,7 | 43,8 | 31,5 | 1 | 0,6 | 1,3 | 29,2 | 30 | 33 | 46,4 | 1 | 0,6 | 0,15 | **HJ 205 EC** | 0,014 | 3 | 6 |
| | 34,7 | 43,8 | 31,5 | 1 | 0,6 | 1,3 | 30 | 30 | 36 | 46,4 | 1 | 0,6 | 0,15 | **HJ 205 EC** | 0,014 | 3 | 6 |
| | 34,7 | 43,8 | 31,5 | 1 | 0,6 | – | 30,6 | – | 36 | 46,4 | 1 | 0,6 | 0,15 | – | | | |
| | 34,7 | – | 46,5 | 1 | 0,6 | 1,3 | 30,6 | 45 | 48 | 47,8 | 1 | 0,6 | 0,15 | – | | | |

[1] Permissible axial displacement from the normal position of one bearing ring in relation to the other

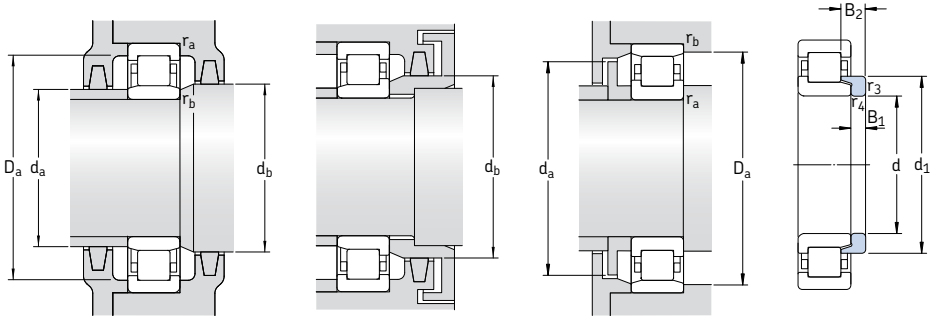
## Single row cylindrical roller bearings
d **25 – 30** mm




NU NJ NUP N

| Principal dimensions | | | Basic load ratings dynamic | static | Fatigue load limit | Speed ratings Reference speed | Limiting speed | Mass Bearing with standard cage | Designations Bearing with standard cage | Alternative standard cage designs[1] |
|---|---|---|---|---|---|---|---|---|---|---|
| d | D | B | C | $C_0$ | $P_u$ | | | | | |
| mm | | | kN | | kN | r/min | | kg | – | |
| **25** | 52 | 18 | 34,1 | 34 | 4,25 | 14 000 | 16 000 | 0,16 | **NU 2205 ECP** | **ML** |
| cont. | 52 | 18 | 34,1 | 34 | 4,25 | 14 000 | 16 000 | 0,17 | **NJ 2205 ECP** | **ML** |
| | 52 | 18 | 34,1 | 34 | 4,25 | 14 000 | 16 000 | 0,17 | **NUP 2205 ECP** | **ML** |
| | 62 | 17 | 46,5 | 36,5 | 4,55 | 12 000 | 15 000 | 0,24 | * **NU 305 ECP** | **J, ML** |
| | 62 | 17 | 46,5 | 36,5 | 4,55 | 12 000 | 15 000 | 0,24 | * **NJ 305 ECP** | **J, ML** |
| | 62 | 17 | 46,5 | 36,5 | 4,55 | 12 000 | 15 000 | 0,25 | * **NUP 305 ECP** | **J, ML** |
| | 62 | 17 | 46,5 | 36,5 | 4,55 | 12 000 | 15 000 | 0,24 | * **N 305 ECP** | **–** |
| | 62 | 24 | 64 | 55 | 6,95 | 12 000 | 15 000 | 0,34 | * **NU 2305 ECP** | **J, ML** |
| | 62 | 24 | 64 | 55 | 6,95 | 12 000 | 15 000 | 0,35 | * **NJ 2305 ECP** | **ML** |
| | 62 | 24 | 64 | 55 | 6,95 | 12 000 | 15 000 | 0,36 | * **NUP 2305 ECP** | **ML** |
| **30** | 55 | 13 | 17,9 | 17,3 | 1,86 | 14 000 | 15 000 | 0,12 | **NU 1006** | **–** |
| | 62 | 16 | 44 | 36,5 | 4,55 | 13 000 | 14 000 | 0,20 | * **NU 206 ECP** | **J, ML** |
| | 62 | 16 | 44 | 36,5 | 4,55 | 13 000 | 14 000 | 0,20 | * **NJ 206 ECP** | **J, ML** |
| | 62 | 16 | 44 | 36,5 | 4,55 | 13 000 | 14 000 | 0,21 | * **NUP 206 ECP** | **ML** |
| | 62 | 16 | 44 | 36,5 | 4,55 | 13 000 | 14 000 | 0,20 | * **N 206 ECP** | **–** |
| | 62 | 20 | 55 | 49 | 6,1 | 13 000 | 14 000 | 0,26 | * **NU 2206 ECP** | **J, ML** |
| | 62 | 20 | 55 | 49 | 6,1 | 13 000 | 14 000 | 0,26 | * **NJ 2206 ECP** | **J, ML** |
| | 62 | 20 | 55 | 49 | 6,1 | 13 000 | 14 000 | 0,27 | * **NUP 2206 ECP** | **ML** |
| | 72 | 19 | 58,5 | 48 | 6,2 | 11 000 | 12 000 | 0,36 | * **NU 306 ECP** | **J, M, ML** |
| | 72 | 19 | 58,5 | 48 | 6,2 | 11 000 | 12 000 | 0,36 | * **NJ 306 ECP** | **J, M, ML** |
| | 72 | 19 | 58,5 | 48 | 6,2 | 11 000 | 12 000 | 0,38 | * **NUP 306 ECP** | **J, M, ML** |
| | 72 | 19 | 58,5 | 48 | 6,2 | 11 000 | 12 000 | 0,36 | * **N 306 ECP** | **–** |
| | 72 | 27 | 83 | 75 | 9,65 | 11 000 | 12 000 | 0,53 | * **NU 2306 ECP** | **ML** |
| | 72 | 27 | 83 | 75 | 9,65 | 11 000 | 12 000 | 0,54 | * **NJ 2306 ECP** | **ML** |
| | 72 | 27 | 83 | 75 | 9,65 | 11 000 | 12 000 | 0,55 | * **NUP 2306 ECP** | **ML** |
| | 90 | 23 | 60,5 | 53 | 6,8 | 9 000 | 11 000 | 0,75 | **NU 406** | **–** |
| | 90 | 23 | 60,5 | 53 | 6,8 | 9 000 | 11 000 | 0,79 | **NJ 406** | **–** |

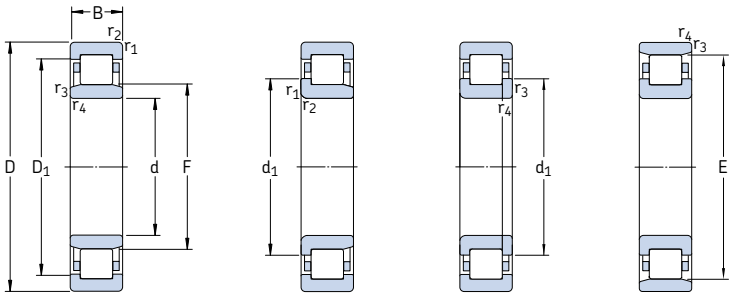
* SKF Explorer bearing
[1] When ordering bearings with an alternative standard cage the suffix of the standard cage has to be replaced by the suffix of the cage in question, e.g. NU 2205 ECP becomes NU 2205 ECML (for speed ratings → **page 517**)




Angle ring

| Dimensions | | | | | | | Abutment and fillet dimensions | | | | | | Calculation factor | Angle ring Designation | Mass | Dimensions | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d | $d_1$ ~ | $D_1$ ~ | F, E | $r_{1,2}$ min | $r_{3,4}$ min | s[1] | $d_a$ min | $d_a$ max | $d_b$, $D_a$ min | $D_a$ max | $r_a$ max | $r_b$ max | $k_r$ | | | $B_1$ | $B_2$ |
| mm | | | | | | | mm | | | | | | – | – | kg | mm | |
| **25** | 34,7 | 43,8 | 31,5 | 1 | 0,6 | 1,8 | 29,2 | 30 | 33 | 46,4 | 1 | 0,6 | 0,20 | **HJ 2205 EC** | 0,014 | 3 | 6,5 |
| cont. | 34,7 | 43,8 | 31,5 | 1 | 0,6 | 1,8 | 30 | 30 | 36 | 46,4 | 1 | 0,6 | 0,20 | **HJ 2205 EC** | 0,014 | 3 | 6,5 |
| | 34,7 | 43,8 | 31,5 | 1 | 0,6 | – | 30,6 | – | 36 | 46,4 | 1 | 0,6 | 0,20 | – | | | |
| | 38,1 | 50,7 | 34 | 1,1 | 1,1 | 1,3 | 32 | 32 | 36 | 55 | 1 | 1 | 0,15 | **HJ 305 EC** | 0,023 | 4 | 7 |
| | 38,1 | 50,7 | 34 | 1,1 | 1,1 | 1,3 | 32 | 32 | 40 | 55 | 1 | 1 | 0,15 | **HJ 305 EC** | 0,023 | 4 | 7 |
| | 38,1 | 50,7 | 34 | 1,1 | 1,1 | – | 32 | – | 40 | 55 | 1 | 1 | 0,15 | – | | | |
| | 38,1 | – | 54 | 1,1 | 1,1 | 1,3 | 32 | 52 | 56 | 55 | 1 | 1 | 0,15 | – | | | |
| | 38,1 | 50,7 | 34 | 1,1 | 1,1 | 2,3 | 32 | 32 | 36 | 55 | 1 | 1 | 0,25 | **HJ 2305 EC** | 0,025 | 4 | 8 |
| | 38,1 | 50,7 | 34 | 1,1 | 1,1 | 2,3 | 32 | 32 | 40 | 55 | 1 | 1 | 0,25 | **HJ 2305 EC** | 0,025 | 4 | 8 |
| | 38,1 | 50,7 | 34 | 1,1 | 1,1 | – | 32 | – | 40 | 55 | 1 | 1 | 0,25 | – | | | |
| **30** | – | 45,6 | 36,5 | 1 | 0,6 | 2,1 | 33,2 | 35 | 38 | 50,4 | 1 | 0,6 | 0,1 | – | | | |
| | 41,2 | 52,5 | 37,5 | 1 | 0,6 | 1,3 | 34,2 | 36 | 39 | 56,4 | 1 | 0,6 | 0,15 | **HJ 206 EC** | 0,025 | 4 | 7 |
| | 41,2 | 52,5 | 37,5 | 1 | 0,6 | 1,3 | 35,6 | 36 | 43 | 56,4 | 1 | 0,6 | 0,15 | **HJ 206 EC** | 0,025 | 4 | 7 |
| | 41,2 | 52,5 | 37,5 | 1 | 0,6 | – | 35,6 | – | 43 | 56,4 | 1 | 0,6 | 0,15 | – | | | |
| | 41,2 | – | 55,5 | 1 | 0,6 | 1,3 | 35,6 | 54 | 57 | 57,8 | 1 | 0,6 | 0,15 | – | | | |
| | – | 52,5 | 37,5 | 1 | 0,6 | 1,8 | 34 | 36 | 39 | 57 | 1 | 0,6 | 0,2 | – | | | |
| | 41,2 | 52,5 | 37,5 | 1 | 0,6 | 1,8 | 34 | 36 | 43 | 57 | 1 | 0,6 | 0,2 | – | | | |
| | 41,2 | 52,5 | 37,5 | 1 | 0,6 | – | 34 | – | 43 | 57 | 1 | 0,6 | 0,2 | – | | | |
| | 45 | 58,9 | 40,5 | 1,1 | 1,1 | 1,4 | 37 | 39 | 42 | 65 | 1 | 1 | 0,15 | **HJ 306 EC** | 0,042 | 5 | 8,5 |
| | 45 | 58,9 | 40,5 | 1,1 | 1,1 | 1,4 | 37 | 39 | 47 | 65 | 1 | 1 | 0,15 | **HJ 306 EC** | 0,042 | 5 | 8,5 |
| | 45 | 58,9 | 40,5 | 1,1 | 1,1 | – | 37 | – | 47 | 65 | 1 | 1 | 0,15 | – | | | |
| | 45 | – | 62,5 | 1,1 | 1,1 | 1,4 | 37 | 60 | 64 | 65 | 1 | 1 | 0,15 | – | | | |
| | – | 58,9 | 40,5 | 1,1 | 1,1 | 2,4 | 37 | 39 | 42 | 65 | 1 | 1 | 0,25 | – | | | |
| | 45 | 58,9 | 40,5 | 1,1 | 1,1 | 2,4 | 37 | 39 | 47 | 65 | 1 | 1 | 0,25 | – | | | |
| | 45 | 58,9 | 40,5 | 1,1 | 1,1 | – | 37 | – | 47 | 65 | 1 | 1 | 0,25 | – | | | |
| | 50,5 | 66,6 | 45 | 1,5 | 1,5 | 1,6 | 41 | 43 | 47 | 79 | 1,5 | 1,5 | 0,15 | **HJ 406** | 0,080 | 7 | 11,5 |
| | 50,5 | 66,6 | 45 | 1,5 | 1,5 | 1,6 | 41 | 43 | 47 | 79 | 1,5 | 1,5 | 0,15 | **HJ 406** | 0,080 | 7 | 11,5 |

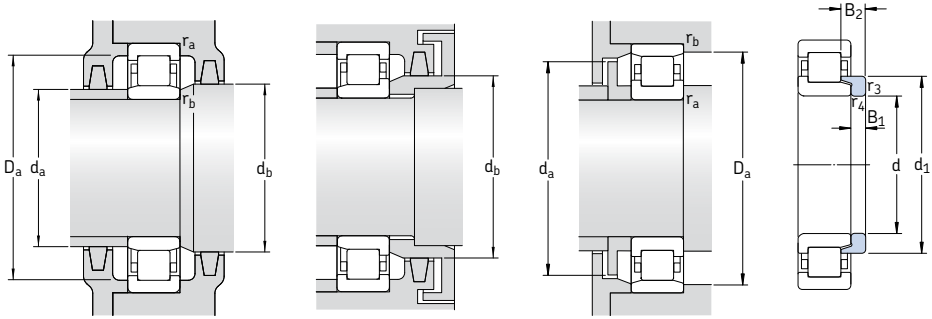
[1] Permissible axial displacement from the normal position of one bearing ring in relation to the other




NU NJ NUP N

| Principal dimensions | | | Basic load ratings dynamic | static | Fatigue load limit | Speed ratings Reference speed | Limiting speed | Mass Bearing with standard cage | Designations Bearing with standard cage | Alternative standard cage designs[1] |
|---|---|---|---|---|---|---|---|---|---|---|
| d | D | B | C | $C_0$ | $P_u$ | | | | | |
| mm | | | kN | | kN | r/min | | kg | – | |
| **35** | 62 | 14 | 35,8 | 38 | 4,55 | 12 000 | 13 000 | 0,16 | **NU 1007 ECP** | **–** |
| | 72 | 17 | 56 | 48 | 6,1 | 11 000 | 12 000 | 0,29 | *** NU 207 ECP** | **J, M, ML** |
| | 72 | 17 | 56 | 48 | 6,1 | 11 000 | 12 000 | 0,30 | *** NJ 207 ECP** | **J, M, ML** |
| | 72 | 17 | 56 | 48 | 6,1 | 11 000 | 12 000 | 0,31 | *** NUP 207 ECP** | **J, M, ML** |
| | 72 | 17 | 56 | 48 | 6,1 | 11 000 | 12 000 | 0,30 | *** N 207 ECP** | **–** |
| | 72 | 23 | 69,5 | 63 | 8,15 | 11 000 | 12 000 | 0,40 | *** NU 2207 ECP** | **J, ML** |
| | 72 | 23 | 69,5 | 63 | 8,15 | 11 000 | 12 000 | 0,41 | *** NJ 2207 ECP** | **J, ML** |
| | 72 | 23 | 69,5 | 63 | 8,15 | 11 000 | 12 000 | 0,42 | *** NUP 2207 ECP** | **ML** |
| | 80 | 21 | 75 | 63 | 8,15 | 9 500 | 11 000 | 0,47 | *** NU 307 ECP** | **J, M, ML** |
| | 80 | 21 | 75 | 63 | 8,15 | 9 500 | 11 000 | 0,49 | *** NJ 307 ECP** | **J, M, ML** |
| | 80 | 21 | 75 | 63 | 8,15 | 9 500 | 11 000 | 0,50 | *** NUP 307 ECP** | **J, M, ML** |
| | 80 | 21 | 75 | 63 | 8,15 | 9 500 | 11 000 | 0,48 | *** N 307 ECP** | **–** |
| | 80 | 31 | 106 | 98 | 12,7 | 9 500 | 11 000 | 0,72 | *** NU 2307 ECP** | **J** |
| | 80 | 31 | 106 | 98 | 12,7 | 9 500 | 11 000 | 0,73 | *** NJ 2307 ECP** | **–** |
| | 80 | 31 | 106 | 98 | 12,7 | 9 500 | 11 000 | 0,76 | *** NUP 2307 ECP** | **–** |
| | 100 | 25 | 76,5 | 69,5 | 9 | 8 000 | 9 500 | 1,00 | **NU 407** | **–** |
| | 100 | 25 | 76,5 | 69,5 | 9 | 8 000 | 9 500 | 1,05 | **NJ 407** | **–** |
| **40** | 68 | 15 | 25,1 | 26 | 3 | 11 000 | 18 000 | 0,23 | **NU 1008 ML** | **–** |
| | 80 | 18 | 62 | 53 | 6,7 | 9 500 | 11 000 | 0,37 | *** NU 208 ECP** | **J, M, ML** |
| | 80 | 18 | 62 | 53 | 6,7 | 9 500 | 11 000 | 0,39 | *** NJ 208 ECP** | **J, M, ML** |
| | 80 | 18 | 62 | 53 | 6,7 | 9 500 | 11 000 | 0,40 | *** NUP 208 ECP** | **J, M, ML** |
| | 80 | 18 | 62 | 53 | 6,7 | 9 500 | 11 000 | 0,37 | *** N 208 ECP** | **–** |
| | 80 | 23 | 81,5 | 75 | 9,65 | 9 500 | 11 000 | 0,49 | *** NU 2208 ECP** | **J, ML** |
| | 80 | 23 | 81,5 | 75 | 9,65 | 9 500 | 11 000 | 0,50 | *** NJ 2208 ECP** | **J, ML** |
| | 80 | 23 | 81,5 | 75 | 9,65 | 9 500 | 11 000 | 0,51 | *** NUP 2208 ECP** | **J, ML** |
| | 90 | 23 | 93 | 78 | 10,2 | 8 000 | 9 500 | 0,65 | *** NU 308 ECP** | **J, M, ML** |
| | 90 | 23 | 93 | 78 | 10,2 | 8 000 | 9 500 | 0,67 | *** NJ 308 ECP** | **J, M, ML** |
| | 90 | 23 | 93 | 78 | 10,2 | 8 000 | 9 500 | 0,68 | *** NUP 308 ECP** | **M, ML** |
| | 90 | 23 | 93 | 78 | 10,2 | 8 000 | 9 500 | 0,65 | *** N 308 ECP** | **–** |

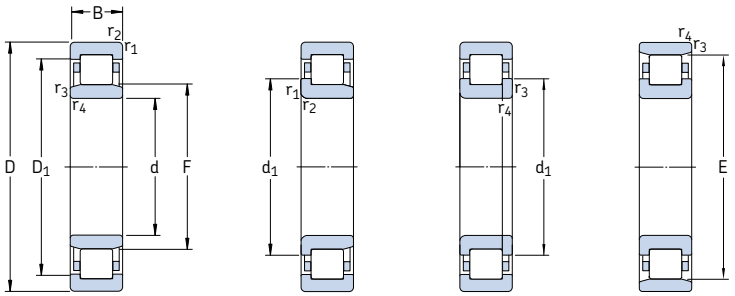
***** SKF Explorer bearing
[1] When ordering bearings with an alternative standard cage the suffix of the standard cage has to be replaced by the suffix of the cage in question, e.g. NU 207 ECP becomes NU 207 ECML (for speed ratings → **page 517**)




Angle ring

| Dimensions | | | | | | | Abutment and fillet dimensions | | | | | | Calculation factor | Angle ring Designation | Mass | Dimensions | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d | $d_1$ ~ | $D_1$ ~ | F, E | $r_{1,2}$ min | $r_{3,4}$ min | s[1] | $d_a$ min | $d_a$ max | $d_b$, $D_a$ min | $D_a$ max | $r_a$ max | $r_b$ max | $k_r$ | | | $B_1$ | $B_2$ |
| mm | | | | | | | mm | | | | | | – | – | kg | mm | |
| **35** | – | 54,5 | 42 | 1 | 0,6 | 1 | 38,2 | 41 | 44 | 56 | 1 | 0,6 | 0,1 | **–** | | | |
| | 48,1 | 60,7 | 44 | 1,1 | 0,6 | 1,3 | 39,2 | 42 | 46 | 65 | 1 | 0,6 | 0,15 | **HJ 207 EC** | 0,033 | 4 | 7 |
| | 48,1 | 60,7 | 44 | 1,1 | 0,6 | 1,3 | 42 | 42 | 50 | 65 | 1 | 0,6 | 0,15 | **HJ 207 EC** | 0,033 | 4 | 7 |
| | 48,1 | 60,7 | 44 | 1,1 | 0,6 | – | 42 | – | 50 | 65 | 1 | 0,6 | 0,15 | **–** | | | |
| | 48,1 | – | 64 | 1,1 | 0,6 | 1,3 | 42 | 62 | 66 | 67,8 | 1 | 0,6 | 0,15 | **–** | | | |
| | – | 60,7 | 44 | 1,1 | 0,6 | 2,8 | 39,2 | 42 | 46 | 65 | 1 | 0,6 | 0,2 | **–** | | | |
| | 48,1 | 60,7 | 44 | 1,1 | 0,6 | 2,8 | 42 | 42 | 50 | 65 | 1 | 0,6 | 0,2 | **–** | | | |
| | 48,1 | 60,7 | 44 | 1,1 | 0,6 | – | 42 | – | 48 | 65 | 1 | 0,6 | 0,2 | **–** | | | |
| | 51 | 66,3 | 46,2 | 1,5 | 1,1 | 1,2 | 42 | 44 | 48 | 71 | 1,5 | 1 | 0,15 | **HJ 307 EC** | 0,058 | 6 | 9,5 |
| | 51 | 66,3 | 46,2 | 1,5 | 1,1 | 1,2 | 44 | 44 | 53 | 71 | 1,5 | 1 | 0,15 | **HJ 307 EC** | 0,058 | 6 | 9,5 |
| | 51 | 66,3 | 46,2 | 1,5 | 1,1 | – | 44 | – | 53 | 71 | 1,5 | 1 | 0,15 | **–** | | | |
| | 51 | – | 70,2 | 1,5 | 1,1 | 1,2 | 44 | 68 | 72 | 73 | 1,5 | 1 | 0,15 | **–** | | | |
| | – | 66,3 | 46,2 | 1,5 | 1,1 | 2,7 | 42 | 44 | 48 | 71 | 1,5 | 1 | 0,25 | **–** | | | |
| | 51 | 66,3 | 46,2 | 1,5 | 1,1 | 2,7 | 44 | 44 | 53 | 71 | 1,5 | 1 | 0,25 | **–** | | | |
| | 51 | 66,3 | 46,2 | 1,5 | 1,1 | – | 44 | – | 53 | 71 | 1,5 | 1 | 0,25 | **–** | | | |
| | – | 76,1 | 53 | 1,5 | 1,5 | 1,7 | 46 | 50 | 55 | 89 | 1,5 | 1,5 | 0,15 | **–** | | | |
| | 59 | 76,1 | 53 | 1,5 | 1,5 | 1,7 | 46 | 50 | 61 | 89 | 1,5 | 1,5 | 0,15 | **–** | | | |
| **40** | – | 57,6 | 47 | 1 | 0,6 | 2,4 | 43,2 | 45 | 49 | 63,4 | 1 | 0,6 | 0,1 | **–** | | | |
| | 54 | 67,9 | 49,5 | 1,1 | 1,1 | 1,4 | 47 | 48 | 51 | 73 | 1 | 1 | 0,15 | **HJ 208 EC** | 0,047 | 5 | 8,5 |
| | 54 | 67,9 | 49,5 | 1,1 | 1,1 | 1,4 | 47 | 48 | 56 | 73 | 1 | 1 | 0,15 | **HJ 208 EC** | 0,047 | 5 | 8,5 |
| | 54 | 67,9 | 49,5 | 1,1 | 1,1 | – | 47 | – | 56 | 73 | 1 | 1 | 0,15 | **–** | | | |
| | 54 | – | 71,5 | 1,1 | 1,1 | 1,4 | 47 | 69 | 73 | 73 | 1 | 1 | 0,15 | **–** | | | |
| | 54 | 67,9 | 49,5 | 1,1 | 1,1 | 1,9 | 47 | 48 | 51 | 73 | 1 | 1 | 0,2 | **HJ 2208 EC** | 0,048 | 5 | 9 |
| | 54 | 67,9 | 49,5 | 1,1 | 1,1 | 1,9 | 47 | 48 | 56 | 73 | 1 | 1 | 0,2 | **HJ 2208 EC** | 0,048 | 5 | 9 |
| | 54 | 67,9 | 49,5 | 1,1 | 1,1 | – | 47 | – | 56 | 73 | 1 | 1 | 0,2 | **–** | | | |
| | 57,5 | 75,6 | 52 | 1,5 | 1,5 | 1,4 | 49 | 50 | 54 | 81 | 1,5 | 1,5 | 0,15 | **HJ 308 EC** | 0,084 | 7 | 11 |
| | 57,5 | 75,6 | 52 | 1,5 | 1,5 | 1,4 | 49 | 50 | 60 | 81 | 1,5 | 1,5 | 0,15 | **HJ 308 EC** | 0,084 | 7 | 11 |
| | 57,5 | 75,6 | 52 | 1,5 | 1,5 | – | 49 | – | 60 | 81 | 1,5 | 1,5 | 0,15 | **–** | | | |
| | 57,5 | – | 80 | 1,5 | 1,5 | 1,4 | 49 | 78 | 82 | 81 | 1,5 | 1,5 | 0,15 | **–** | | | |

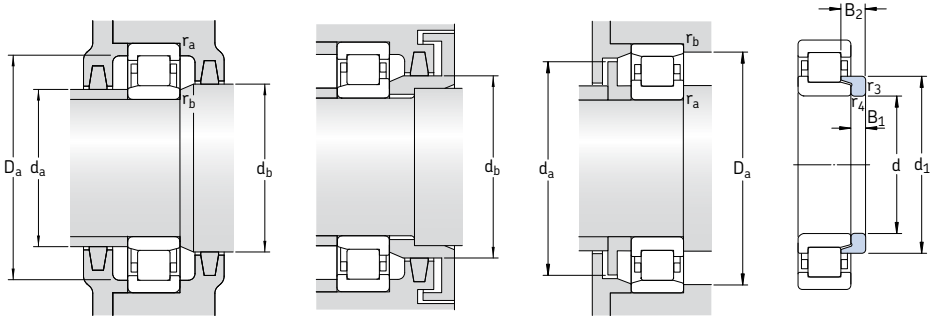
[1] Permissible axial displacement from the normal position of one bearing ring in relation to the other




NU NJ NUP N

| Principal dimensions | | | Basic load ratings dynamic | static | Fatigue load limit | Speed ratings Reference speed | Limiting speed | Mass Bearing with standard cage | Designations Bearing with standard cage | Alternative standard cage designs[1] |
|---|---|---|---|---|---|---|---|---|---|---|
| d | D | B | C | $C_0$ | $P_u$ | | | | – | |
| mm | | | kN | | kN | r/min | | kg | – | |
| **40** | 90 | 33 | 129 | 120 | 15,3 | 8 000 | 9 500 | 0,94 | ✱ **NU 2308 ECP** | **J, M, ML** |
| cont. | 90 | 33 | 129 | 120 | 15,3 | 8 000 | 9 500 | 0,95 | ✱ **NJ 2308 ECP** | **J, M, ML** |
| | 90 | 33 | 129 | 120 | 15,3 | 8 000 | 9 500 | 0,98 | ✱ **NUP 2308 ECP** | **M, ML** |
| | 110 | 27 | 96,8 | 90 | 11,6 | 7 000 | 8 500 | 1,25 | **NU 408** | **–** |
| | 110 | 27 | 96,8 | 90 | 11,6 | 7 000 | 8 500 | 1,30 | **NJ 408** | **–** |
| **45** | 75 | 16 | 44,6 | 52 | 6,3 | 9 500 | 11 000 | 0,26 | **NU 1009 ECP** | **–** |
| | 85 | 19 | 69,5 | 64 | 8,15 | 9 000 | 9 500 | 0,43 | ✱ **NU 209 ECP** | **J, M, ML** |
| | 85 | 19 | 69,5 | 64 | 8,15 | 9 000 | 9 500 | 0,44 | ✱ **NJ 209 ECP** | **J, M, ML** |
| | 85 | 19 | 69,5 | 64 | 8,15 | 9 000 | 9 500 | 0,45 | ✱ **NUP 209 ECP** | **J, M, ML** |
| | 85 | 19 | 69,5 | 64 | 8,15 | 9 000 | 9 500 | 0,43 | ✱ **N 209 ECP** | **–** |
| | 85 | 23 | 85 | 81,5 | 10,6 | 9 000 | 9 500 | 0,52 | ✱ **NU 2209 ECP** | **J** |
| | 85 | 23 | 85 | 81,5 | 10,6 | 9 000 | 9 500 | 0,54 | ✱ **NJ 2209 ECP** | **J** |
| | 85 | 23 | 85 | 81,5 | 10,6 | 9 000 | 9 500 | 0,55 | ✱ **NUP 2209 ECP** | **–** |
| | 100 | 25 | 112 | 100 | 12,9 | 7 500 | 8 500 | 0,90 | ✱ **NU 309 ECP** | **J, M, ML** |
| | 100 | 25 | 112 | 100 | 12,9 | 7 500 | 8 500 | 0,92 | ✱ **NJ 309 ECP** | **J, M, ML** |
| | 100 | 25 | 112 | 100 | 12,9 | 7 500 | 8 500 | 0,95 | ✱ **NUP 309 ECP** | **J, ML** |
| | 100 | 25 | 112 | 100 | 12,9 | 7 500 | 8 500 | 0,88 | ✱ **N 309 ECP** | **–** |
| | 100 | 36 | 160 | 153 | 20 | 7 500 | 8 500 | 1,30 | ✱ **NU 2309 ECP** | **ML** |
| | 100 | 36 | 160 | 153 | 20 | 7 500 | 8 500 | 1,33 | ✱ **NJ 2309 ECP** | **ML** |
| | 100 | 36 | 160 | 153 | 20 | 7 500 | 8 500 | 1,36 | ✱ **NUP 2309 ECP** | **ML** |
| | 120 | 29 | 106 | 102 | 13,4 | 6 700 | 7 500 | 1,64 | **NU 409** | **–** |
| | 120 | 29 | 106 | 102 | 13,4 | 6 700 | 7 500 | 1,67 | **NJ 409** | **–** |
| **50** | 80 | 16 | 46,8 | 56 | 6,7 | 9 000 | 9 500 | 0,27 | **NU 1010 ECP** | **–** |
| | 90 | 20 | 73,5 | 69,5 | 8,8 | 8 500 | 9 000 | 0,48 | ✱ **NU 210 ECP** | **J, M, ML** |
| | 90 | 20 | 73,5 | 69,5 | 8,8 | 8 500 | 9 000 | 0,49 | ✱ **NJ 210 ECP** | **J, M, ML** |
| | 90 | 20 | 73,5 | 69,5 | 8,8 | 8 500 | 9 000 | 0,51 | ✱ **NUP 210 ECP** | **J, ML** |
| | 90 | 20 | 73,5 | 69,5 | 8,8 | 8 500 | 9 000 | 0,48 | ✱ **N 210 ECP** | **–** |

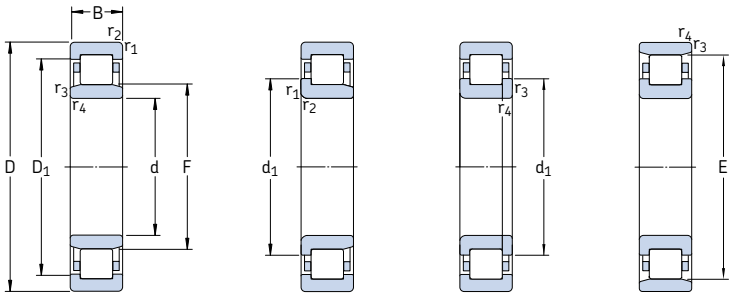
✱ SKF Explorer bearing
[1] When ordering bearings with an alternative standard cage the suffix of the standard cage has to be replaced by the suffix of the cage in question, e.g. NU 2308 ECP becomes NU 2308 ECML (for speed ratings → **page 517**)




Angle ring

| Dimensions | | | | | | | Abutment and fillet dimensions | | | | | | Calculation factor | Angle ring Designation | Mass | Dimensions | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d | $d_1$ ~ | $D_1$ ~ | F, E | $r_{1,2}$ min | $r_{3,4}$ min | s[1] | $d_a$ min | $d_a$ max | $d_b$, $D_a$ min | $D_a$ max | $r_a$ max | $r_b$ max | $k_r$ | | | $B_1$ | $B_2$ |
| mm | | | | | | | mm | | | | | | – | – | kg | mm | |
| **40** | – | 75,6 | 52 | 1,5 | 1,5 | 2,9 | 49 | 50 | 54 | 81 | 1,5 | 1,5 | 0,25 | **–** | | | |
| cont. | 57,5 | 75,6 | 52 | 1,5 | 1,5 | 2,9 | 49 | 50 | 60 | 81 | 1,5 | 1,5 | 0,25 | **–** | | | |
| | 57,5 | 75,6 | 52 | 1,5 | 1,5 | – | 49 | – | 60 | 81 | 1,5 | 1,5 | 0,25 | **–** | | | |
| | – | 84,2 | 58 | 2 | 2 | 2,5 | 53 | 56 | 60 | 97 | 2 | 2 | 0,15 | **–** | | | |
| | 64,8 | 84,2 | 58 | 2 | 2 | 2,5 | 53 | 56 | 67 | 97 | 2 | 2 | 0,15 | **–** | | | |
| **45** | – | 65,3 | 52,5 | 1 | 0,6 | 0,9 | 48,2 | 51 | 54 | 70,4 | 1 | 0,6 | 0,1 | **–** | | | |
| | 59 | 73 | 54,5 | 1,1 | 1,1 | 1,2 | 52 | 53 | 56 | 78 | 1 | 1 | 0,15 | **HJ 209 EC** | 0,052 | 5 | 8,5 |
| | 59 | 73 | 54,5 | 1,1 | 1,1 | 1,2 | 52 | 53 | 61 | 78 | 1 | 1 | 0,15 | **HJ 209 EC** | 0,052 | 5 | 8,5 |
| | 59 | 73 | 54,5 | 1,1 | 1,1 | – | 52 | – | 61 | 78 | 1 | 1 | 0,15 | **–** | | | |
| | 59 | – | 76,5 | 1,1 | 1,1 | 1,2 | 52 | 74 | 78 | 78 | 1 | 1 | 0,15 | **–** | | | |
| | – | 73 | 54,5 | 1,1 | 1,1 | 1,7 | 52 | 53 | 56 | 78 | 1 | 1 | 0,2 | **–** | | | |
| | 59 | 73 | 54,5 | 1,1 | 1,1 | 1,7 | 52 | 53 | 56 | 78 | 1 | 1 | 0,2 | | | | |
| | 59 | 73 | 54,5 | 1,1 | 1,1 | – | 52 | – | 61 | 78 | 1 | 1 | 0,2 | **–** | | | |
| | 64,4 | 83,8 | 58,5 | 1,5 | 1,5 | 1,7 | 54 | 56 | 61 | 91 | 1,5 | 1,5 | 0,15 | **HJ 309 EC** | 0,11 | 7 | 11,5 |
| | 64,4 | 83,8 | 58,5 | 1,5 | 1,5 | 1,7 | 54 | 56 | 67 | 91 | 1,5 | 1,5 | 0,15 | **HJ 309 EC** | 0,11 | 7 | 11,5 |
| | 64,4 | 83,8 | 58,5 | 1,5 | 1,5 | – | 54 | – | 67 | 91 | 1,5 | 1,5 | 0,15 | **–** | | | |
| | 64,4 | – | 88,5 | 1,5 | 1,5 | 1,7 | 54 | 86 | 91 | 91 | 1,5 | 1,5 | 0,15 | **–** | | | |
| | – | 83,8 | 58,5 | 1,5 | 1,5 | 3,2 | 54 | 56 | 61 | 91 | 1,5 | 1,5 | 0,25 | **–** | | | |
| | 64,4 | 83,8 | 58,5 | 1,5 | 1,5 | 3,2 | 54 | 56 | 67 | 91 | 1,5 | 1,5 | 0,25 | **–** | | | |
| | 64,4 | 83,8 | 58,5 | 1,5 | 1,5 | – | 54 | – | 67 | 91 | 1,5 | 1,5 | 0,25 | **–** | | | |
| | 71,8 | 92,2 | 64,5 | 2 | 2 | 2,5 | 58 | 62 | 67 | 107 | 2 | 2 | 0,15 | **HJ 409** | 0,18 | 8 | 13,5 |
| | 71,8 | 92,2 | 64,5 | 2 | 2 | 2,5 | 58 | 62 | 74 | 107 | 2 | 2 | 0,15 | **HJ 409** | 0,18 | 8 | 13,5 |
| **50** | – | 70 | 57,5 | 1 | 0,6 | 1 | 53,2 | 56 | 60 | 75,4 | 1 | 0,6 | 0,1 | **–** | | | |
| | 64 | 78 | 59,5 | 1,1 | 1,1 | 1,5 | 57 | 57 | 62 | 83 | 1 | 1 | 0,15 | **HJ 210 EC** | 0,058 | 5 | 9 |
| | 64 | 78 | 59,5 | 1,1 | 1,1 | 1,5 | 57 | 57 | 66 | 83 | 1 | 1 | 0,15 | **HJ 210 EC** | 0,058 | 5 | 9 |
| | 64 | 78 | 59,5 | 1,1 | 1,1 | – | 57 | – | 66 | 83 | 1 | 1 | 0,15 | **–** | | | |
| | 64 | – | 81,5 | 1,1 | 1,1 | 1,5 | 57 | 79 | 83 | 83 | 1 | 1 | 0,15 | **–** | | | |

[1] Permissible axial displacement from the normal position of one bearing ring in relation to the other

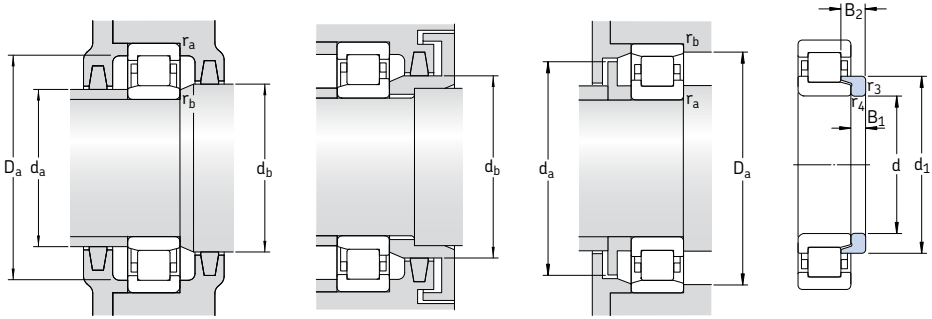



NU NJ NUP N

| Principal dimensions | | | Basic load ratings dynamic | static | Fatigue load limit | Speed ratings Reference speed | Limiting speed | Mass Bearing with standard cage | Designations Bearing with standard cage cage | Alternative standard cage designs[1] |
|---|---|---|---|---|---|---|---|---|---|---|
| d | D | B | C | $C_0$ | $P_u$ | | | | | |
| mm | | | kN | | kN | r/min | | kg | – | |
| **50** | 90 | 23 | 90 | 88 | 11,4 | 8 500 | 9 000 | 0,56 | *** NU 2210 ECP** | **J, M, ML** |
| cont. | 90 | 23 | 90 | 88 | 11,4 | 8 500 | 9 000 | 0,57 | *** NJ 2210 ECP** | **J, M, ML** |
| | 90 | 23 | 90 | 88 | 11,4 | 8 500 | 9 000 | 0,59 | *** NUP 2210 ECP** | **J, ML** |
| | 110 | 27 | 127 | 112 | 15 | 6 700 | 8 000 | 1,14 | *** NU 310 ECP** | **J, M, ML** |
| | 110 | 27 | 127 | 112 | 15 | 6 700 | 8 000 | 1,17 | *** NJ 310 ECP** | **J, M, ML** |
| | 110 | 27 | 127 | 112 | 15 | 6 700 | 8 000 | 1,20 | *** NUP 310 ECP** | **J, M, ML** |
| | 110 | 27 | 127 | 112 | 15 | 6 700 | 8 000 | 1,14 | *** N 310 ECP** | **M** |
| | 110 | 40 | 186 | 186 | 24,5 | 6 700 | 8 000 | 1,73 | *** NU 2310 ECP** | **ML** |
| | 110 | 40 | 186 | 186 | 24,5 | 6 700 | 8 000 | 1,77 | *** NJ 2310 ECP** | **ML** |
| | 110 | 40 | 186 | 186 | 24,5 | 6 700 | 8 000 | 1,80 | *** NUP 2310 ECP** | **ML** |
| | 130 | 31 | 130 | 127 | 16,6 | 6 000 | 7 000 | 2,00 | **NU 410** | **–** |
| | 130 | 31 | 130 | 127 | 16,6 | 6 000 | 7 000 | 2,05 | **NJ 410** | **–** |
| **55** | 90 | 18 | 57,2 | 69,5 | 8,3 | 8 000 | 8 500 | 0,39 | **NU 1011 ECP** | **–** |
| | 100 | 21 | 96,5 | 95 | 12,2 | 7 500 | 8 000 | 0,66 | *** NU 211 ECP** | **J, M, ML** |
| | 100 | 21 | 96,5 | 95 | 12,2 | 7 500 | 8 000 | 0,67 | *** NJ 211 ECP** | **J, M, ML** |
| | 100 | 21 | 96,5 | 95 | 12,2 | 7 500 | 8 000 | 0,69 | *** NUP 211 ECP** | **J, M, ML** |
| | 100 | 21 | 96,5 | 95 | 12,2 | 7 500 | 8 000 | 0,66 | *** N 211 ECP** | **M** |
| | 100 | 25 | 114 | 118 | 15,3 | 7 500 | 8 000 | 0,79 | *** NU 2211 ECP** | **J, M, ML** |
| | 100 | 25 | 114 | 118 | 15,3 | 7 500 | 8 000 | 0,81 | *** NJ 2211 ECP** | **J, M, ML** |
| | 100 | 25 | 114 | 118 | 15,3 | 7 500 | 8 000 | 0,82 | *** NUP 2211 ECP** | **J, ML** |
| | 120 | 29 | 156 | 143 | 18,6 | 6 000 | 7 000 | 1,45 | *** NU 311 ECP** | **J, M, ML** |
| | 120 | 29 | 156 | 143 | 18,6 | 6 000 | 7 000 | 1,50 | *** NJ 311 ECP** | **J, M, ML** |
| | 120 | 29 | 156 | 143 | 18,6 | 6 000 | 7 000 | 1,55 | *** NUP 311 ECP** | **J, M, ML** |
| | 120 | 29 | 156 | 143 | 18,6 | 6 000 | 7 000 | 1,45 | *** N 311 ECP** | **M** |
| | 120 | 43 | 232 | 232 | 30,5 | 6 000 | 7 000 | 2,20 | *** NU 2311 ECP** | **ML** |
| | 120 | 43 | 232 | 232 | 30,5 | 6 000 | 7 000 | 2,25 | *** NJ 2311 ECP** | **ML** |
| | 120 | 43 | 232 | 232 | 30,5 | 6 000 | 7 000 | 2,30 | *** NUP 2311 ECP** | **ML** |
| | 140 | 33 | 142 | 140 | 18,6 | 5 600 | 6 300 | 2,50 | **NU 411** | **–** |
| | 140 | 33 | 142 | 140 | 18,6 | 5 600 | 6 300 | 2,55 | **NJ 411** | **–** |

***** SKF Explorer bearing

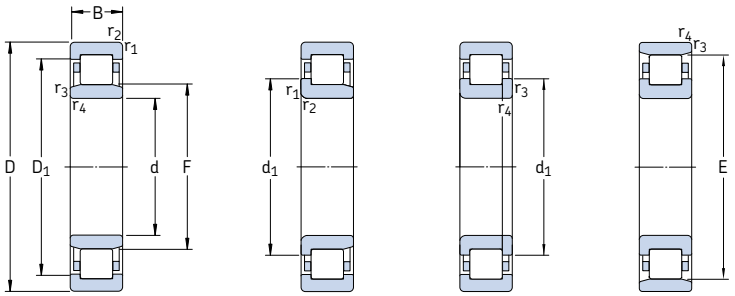
[1] When ordering bearings with an alternative standard cage the suffix of the standard cage has to be replaced by the suffix of the cage in question, e.g. NU 2210 ECP becomes NU 2210 ECML (for speed ratings → **page 517**)




Angle ring

| Dimensions | | | | | | | Abutment and fillet dimensions | | | | | | Calculation factor | Angle ring Designation | Mass | Dimensions | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d | $d_1$ ~ | $D_1$ ~ | F, E | $r_{1,2}$ min | $r_{3,4}$ min | $s^{1)}$ | $d_a$ min | $d_a$ max | $d_b$ min | $D_a$ max | $r_a$ max | $r_b$ max | $k_r$ | | | $B_1$ | $B_2$ |
| mm | | | | | | | mm | | | | | | – | – | kg | mm | |
| **50** | – | 78 | 59,5 | 1,1 | 1,1 | 1,5 | 57 | 57 | 62 | 83 | 1 | 1 | 0,2 | **–** | | | |
| cont. | 64 | 78 | 59,5 | 1,1 | 1,1 | 1,5 | 57 | 57 | 66 | 83 | 1 | 1 | 0,2 | **–** | | | |
| | 64 | 78 | 59,5 | 1,1 | 1,1 | – | 57 | – | 66 | 83 | 1 | 1 | 0,2 | **–** | | | |
| | 71,2 | 92,1 | 65 | 2 | 2 | 1,9 | 61 | 63 | 67 | 99 | 2 | 2 | 0,15 | **HJ 310 EC** | 0,14 | 8 | 13 |
| | 71,2 | 92,1 | 65 | 2 | 2 | 1,9 | 61 | 63 | 73 | 99 | 2 | 2 | 0,15 | **HJ 310 EC** | 0,14 | 8 | 13 |
| | 71,2 | 92,1 | 65 | 2 | 2 | – | 61 | – | 73 | 99 | 2 | 2 | 0,15 | **–** | | | |
| | 71,2 | – | 97 | 2 | 2 | 1,9 | 61 | 95 | 99 | 99 | 2 | 2 | 0,15 | **–** | | | |
| | – | 92,1 | 65 | 2 | 2 | 3,4 | 61 | 63 | 67 | 99 | 2 | 2 | 0,25 | **–** | | | |
| | 71,2 | 92,1 | 65 | 2 | 2 | 3,4 | 61 | 63 | 73 | 99 | 2 | 2 | 0,25 | **–** | | | |
| | 71,2 | 92,1 | 65 | 2 | 2 | – | 61 | – | 73 | 99 | 2 | 2 | 0,25 | **–** | | | |
| | 78,8 | 102 | 70,8 | 2,1 | 2,1 | 2,6 | 64 | 68 | 73 | 116 | 2 | 2 | 0,15 | **HJ 410** | 0,23 | 9 | 14,5 |
| | 78,8 | 102 | 70,8 | 2,1 | 2,1 | 2,6 | 64 | 68 | 81 | 116 | 2 | 2 | 0,15 | **HJ 410** | 0,23 | 9 | 14,5 |
| **55** | – | 79 | 64,5 | 1,1 | 1 | 0,5 | 59,6 | 63 | 67 | 84 | 1 | 1 | 0,1 | **–** | | | |
| | 70,8 | 86,3 | 66 | 1,5 | 1,1 | 1 | 62 | 64 | 68 | 91 | 1,5 | 1 | 0,15 | **HJ 211 EC** | 0,083 | 6 | 9,5 |
| | 70,8 | 86,3 | 66 | 1,5 | 1,1 | 1 | 64 | 64 | 73 | 91 | 1,5 | 1 | 0,15 | **HJ 211 EC** | 0,083 | 6 | 9,5 |
| | 70,8 | 86,3 | 66 | 1,5 | 1,1 | – | 64 | – | 73 | 91 | 1,5 | 1 | 0,15 | **–** | | | |
| | 70,8 | – | 90 | 1,5 | 1,1 | 1 | 64 | 88 | 92 | 93 | 1,5 | 1 | 0,15 | **–** | | | |
| | 70,8 | 86,3 | 66 | 1,5 | 1,1 | 1,5 | 62 | 64 | 68 | 91 | 1,5 | 1 | 0,2 | **HJ 2211 EC** | 0,085 | 6 | 10 |
| | 70,8 | 86,3 | 66 | 1,5 | 1,1 | 1,5 | 64 | 64 | 73 | 91 | 1,5 | 1 | 0,2 | **HJ 2211 EC** | 0,085 | 6 | 10 |
| | 70,8 | 86,3 | 66 | 1,5 | 1,1 | – | 64 | – | 73 | 91 | 1,5 | 1 | 0,2 | **–** | | | |
| | 77,5 | 101 | 70,5 | 2 | 2 | 2 | 66 | 68 | 73 | 109 | 2 | 2 | 0,15 | **HJ 311 EC** | 0,19 | 9 | 14 |
| | 77,5 | 101 | 70,5 | 2 | 2 | 2 | 66 | 68 | 80 | 109 | 2 | 2 | 0,15 | **HJ 311 EC** | 0,19 | 9 | 14 |
| | 77,5 | 101 | 70,5 | 2 | 2 | – | 66 | – | 80 | 109 | 2 | 2 | 0,15 | **–** | | | |
| | 77,5 | – | 106,5 | 2 | 2 | 2 | 66 | 104 | 109 | 109 | 2 | 2 | 0,15 | **–** | | | |
| | 77,5 | 101 | 70,5 | 2 | 2 | 3,5 | 66 | 68 | 73 | 109 | 2 | 2 | 0,25 | **HJ 2311 EC** | 0,20 | 9 | 15,5 |
| | 77,5 | 101 | 70,5 | 2 | 2 | 3,5 | 66 | 68 | 80 | 109 | 2 | 2 | 0,25 | **HJ 2311 EC** | 0,20 | 9 | 15,5 |
| | 77,5 | 101 | 70,5 | 2 | 2 | – | 66 | – | 80 | 109 | 2 | 2 | 0,25 | **–** | | | |
| | 85,2 | 108 | 77,2 | 2,1 | 2,1 | 2,6 | 69 | 74 | 79 | 126 | 2 | 2 | 0,15 | **–** | | | |
| | 85,2 | 108 | 77,2 | 2,1 | 2,1 | 2,6 | 69 | 74 | 88 | 126 | 2 | 2 | 0,15 | **–** | | | |

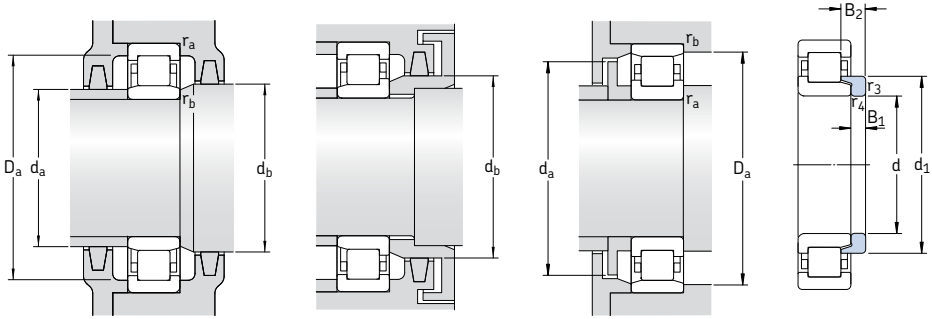
[1)] Permissible axial displacement from the normal position of one bearing ring in relation to the other




NU NJ NUP N

| Principal dimensions | | | Basic load ratings | | Fatigue load limit | Speed ratings | | Mass | Designations | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | dynamic | static | | Reference speed | Limiting speed | Bearing with standard cage | Bearing with standard cage | Alternative standard cage designs[1] |
| d | D | B | C | $C_0$ | $P_u$ | | | | | |
| mm | | | kN | | kN | r/min | | kg | – | |
| **60** | 95 | 18 | 37,4 | 44 | 5,3 | 8 000 | 11 000 | 0,48 | **NU 1012 ML** | **–** |
| | 110 | 22 | 108 | 102 | 13,4 | 6 700 | 7 500 | 0,80 | *** NU 212 ECP** | **J, M, ML** |
| | 110 | 22 | 108 | 102 | 13,4 | 6 700 | 7 500 | 0,83 | *** NJ 212 ECP** | **J, M, ML** |
| | 110 | 22 | 108 | 102 | 13,4 | 6 700 | 7 500 | 0,86 | *** NUP 212 ECP** | **J, ML** |
| | 110 | 22 | 108 | 102 | 13,4 | 6 700 | 7 500 | 0,80 | *** N 212 ECP** | **M** |
| | 110 | 28 | 146 | 153 | 20 | 6 700 | 7 500 | 1,05 | *** NU 2212 ECP** | **J, M, ML** |
| | 110 | 28 | 146 | 153 | 20 | 6 700 | 7 500 | 1,10 | *** NJ 2212 ECP** | **J, M, ML** |
| | 110 | 28 | 146 | 153 | 20 | 6 700 | 7 500 | 1,15 | *** NUP 2212 ECP** | **J, ML** |
| | 130 | 31 | 173 | 160 | 20,8 | 5 600 | 6 700 | 1,77 | *** NU 312 ECP** | **J, M, ML** |
| | 130 | 31 | 173 | 160 | 20,8 | 5 600 | 6 700 | 1,83 | *** NJ 312 ECP** | **J, M, ML** |
| | 130 | 31 | 173 | 160 | 20,8 | 5 600 | 6 700 | 1,90 | *** NUP 312 ECP** | **J, M, ML** |
| | 130 | 31 | 173 | 160 | 20,8 | 5 600 | 6 700 | 1,80 | *** N 312 ECP** | **M** |
| | 130 | 46 | 260 | 265 | 34,5 | 5 600 | 6 700 | 2,75 | *** NU 2312 ECP** | **ML** |
| | 130 | 46 | 260 | 265 | 34,5 | 5 600 | 6 700 | 2,80 | *** NJ 2312 ECP** | **ML** |
| | 130 | 46 | 260 | 265 | 34,5 | 5 600 | 6 700 | 2,85 | *** NUP 2312 ECP** | **ML** |
| | 150 | 35 | 168 | 173 | 22 | 5 000 | 6 000 | 3,00 | **NU 412** | **–** |
| | 150 | 35 | 168 | 173 | 22 | 5 000 | 6 000 | 3,10 | **NJ 412** | **–** |
| **65** | 100 | 18 | 62,7 | 81,5 | 9,8 | 7 000 | 7 500 | 0,45 | **NU 1013 ECP** | **–** |
| | 120 | 23 | 122 | 118 | 15,6 | 6 300 | 6 700 | 1,03 | *** NU 213 ECP** | **J, M, ML** |
| | 120 | 23 | 122 | 118 | 15,6 | 6 300 | 6 700 | 1,07 | *** NJ 213 ECP** | **J, M, ML** |
| | 120 | 23 | 122 | 118 | 15,6 | 6 300 | 6 700 | 1,10 | *** NUP 213 ECP** | **J, ML** |
| | 120 | 23 | 122 | 118 | 15,6 | 6 300 | 6 700 | 1,05 | *** N 213 ECP** | **–** |
| | 120 | 31 | 170 | 180 | 24 | 6 300 | 6 700 | 1,40 | *** NU 2213 ECP** | **J** |
| | 120 | 31 | 170 | 180 | 24 | 6 300 | 6 700 | 1,45 | *** NJ 2213 ECP** | **J** |
| | 120 | 31 | 170 | 180 | 24 | 6 300 | 6 700 | 1,50 | *** NUP 2213 ECP** | **–** |
| | 140 | 33 | 212 | 196 | 25,5 | 5 300 | 6 000 | 2,20 | *** NU 313 ECP** | **J, M, ML** |
| | 140 | 33 | 212 | 196 | 25,5 | 5 300 | 6 000 | 2,30 | *** NJ 313 ECP** | **J, M, ML** |
| | 140 | 33 | 212 | 196 | 25,5 | 5 300 | 6 000 | 2,35 | *** NUP 313 ECP** | **J, ML** |
| | 140 | 33 | 212 | 196 | 25,5 | 5 300 | 6 000 | 2,20 | *** N 313 ECP** | **M** |

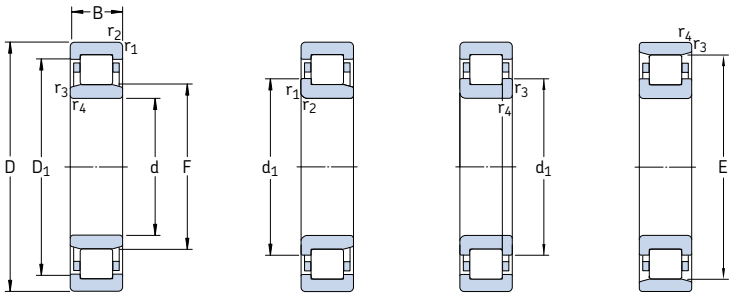
***** SKF Explorer bearing
[1] When ordering bearings with an alternative standard cage the suffix of the standard cage has to be replaced by the suffix of the cage in question, e.g. NU 212 ECP becomes NU 212 ECML (for speed ratings → **page 517**)




Angle ring

| Dimensions | | | | | | | Abutment and fillet dimensions | | | | | | Calculation factor | Angle ring Designation | Mass | Dimensions | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d | $d_1$ ~ | $D_1$ ~ | F, E | $r_{1,2}$ min | $r_{3,4}$ min | s[1] | $d_a$ min | $d_a$ max | $d_b$, $D_a$ min | $D_a$ max | $r_a$ max | $r_b$ max | $k_r$ | | | $B_1$ | $B_2$ |
| mm | | | | | | | mm | | | | | | – | – | kg | mm | |
| **60** | – | 81,6 | 69,5 | 1,1 | 1 | 2,9 | 64,6 | 68 | 72 | 89 | 1 | 1 | 0,1 | **–** | | | |
| | 77,5 | 95,7 | 72 | 1,5 | 1,5 | 1,4 | 69 | 70 | 74 | 101 | 1,5 | 1,5 | 0,15 | **HJ 212 EC** | 0,10 | 6 | 10 |
| | 77,5 | 95,7 | 72 | 1,5 | 1,5 | 1,4 | 69 | 70 | 80 | 101 | 1,5 | 1,5 | 0,15 | **HJ 212 EC** | 0,10 | 6 | 10 |
| | 77,5 | 95,7 | 72 | 1,5 | 1,5 | – | 69 | – | 80 | 101 | 1,5 | 1,5 | 0,15 | **–** | | | |
| | 77,5 | – | 100 | 1,5 | 1,5 | 1,4 | 69 | 98 | 101 | 101 | 1,5 | 1,5 | 0,15 | **–** | | | |
| | 77,5 | 95,7 | 72 | 1,5 | 1,5 | 1,4 | 69 | 70 | 74 | 101 | 1,5 | 1,5 | 0,2 | **HJ 212 EC** | 0,10 | 6 | 10 |
| | 77,5 | 95,7 | 72 | 1,5 | 1,5 | 1,4 | 69 | 70 | 80 | 101 | 1,5 | 1,5 | 0,2 | **HJ 212 EC** | 0,10 | 6 | 10 |
| | 77,5 | 95,7 | 72 | 1,5 | 1,5 | – | 69 | – | 80 | 101 | 1,5 | 1,5 | 0,2 | **–** | | | |
| | 84,3 | 110 | 77 | 2,1 | 2,1 | 2,1 | 72 | 74 | 79 | 118 | 2 | 2 | 0,15 | **HJ 312 EC** | 0,22 | 9 | 14,5 |
| | 84,3 | 110 | 77 | 2,1 | 2,1 | 2,1 | 72 | 74 | 87 | 118 | 2 | 2 | 0,15 | **HJ 312 EC** | 0,22 | 9 | 14,5 |
| | 84,3 | 110 | 77 | 2,1 | 2,1 | – | 72 | – | 87 | 118 | 2 | 2 | 0,15 | **–** | | | |
| | 84,3 | – | 115 | 2,1 | 2,1 | 2,1 | 72 | 112 | 118 | 118 | 2 | 2 | 0,15 | **–** | | | |
| | 84,3 | 110 | 77 | 2,1 | 2,1 | 3,6 | 72 | 74 | 79 | 118 | 2 | 2 | 0,25 | **HJ 2312 EC** | 0,24 | 9 | 16 |
| | 84,3 | 110 | 77 | 2,1 | 2,1 | 3,6 | 72 | 74 | 87 | 118 | 2 | 2 | 0,25 | **HJ 2312 EC** | 0,24 | 9 | 16 |
| | 84,3 | 110 | 77 | 2,1 | 2,1 | – | 72 | – | 87 | 118 | 2 | 2 | 0,25 | **–** | | | |
| | – | 117 | 83 | 2,1 | 2,1 | 2,5 | 74 | 80 | 85 | 136 | 2 | 2 | 0,15 | **–** | | | |
| | 91,8 | 117 | 83 | 2,1 | 2,1 | 2,5 | 74 | 80 | 94 | 136 | 2 | 2 | 0,15 | **–** | | | |
| **65** | – | 88,5 | 74 | 1,1 | 1 | 1 | 69,6 | 72 | 77 | 94 | 1 | 1 | 0,1 | **–** | | | |
| | 84,4 | 104 | 78,5 | 1,5 | 1,5 | 1,4 | 74 | 76 | 81 | 111 | 1,5 | 1,5 | 0,15 | **HJ 213 EC** | 0,12 | 6 | 10 |
| | 84,4 | 104 | 78,5 | 1,5 | 1,5 | 1,4 | 74 | 76 | 87 | 111 | 1,5 | 1,5 | 0,15 | **HJ 213 EC** | 0,12 | 6 | 10 |
| | 84,4 | 104 | 78,5 | 1,5 | 1,5 | – | 74 | – | 87 | 111 | 1,5 | 1,5 | 0,15 | **–** | | | |
| | 84,4 | – | 108,5 | 1,5 | 1,5 | 1,4 | 74 | 106 | 111 | 111 | 1,5 | 1,5 | 0,15 | **–** | | | |
| | 84,4 | 104 | 78,5 | 1,5 | 1,5 | 1,9 | 74 | 76 | 81 | 111 | 1,5 | 1,5 | 0,2 | **HJ 2213 EC** | 0,13 | 6 | 10,5 |
| | 84,4 | 104 | 78,5 | 1,5 | 1,5 | 1,9 | 74 | 76 | 87 | 111 | 1,5 | 1,5 | 0,2 | **HJ 2213 EC** | 0,13 | 6 | 10,5 |
| | 84,4 | 104 | 78,5 | 1,5 | 1,5 | – | 74 | – | 87 | 111 | 1,5 | 1,5 | 0,2 | **–** | | | |
| | 90,5 | 119 | 82,5 | 2,1 | 2,1 | 2,2 | 77 | 80 | 85 | 128 | 2 | 2 | 0,15 | **HJ 313 EC** | 0,27 | 10 | 15,5 |
| | 90,5 | 119 | 82,5 | 2,1 | 2,1 | 2,2 | 77 | 80 | 93 | 128 | 2 | 2 | 0,15 | **HJ 313 EC** | 0,27 | 10 | 15,5 |
| | 90,5 | 119 | 82,5 | 2,1 | 2,1 | – | 77 | – | 93 | 128 | 2 | 2 | 0,15 | **–** | | | |
| | 90,5 | – | 124,5 | 2,1 | 2,1 | 2,2 | 77 | 122 | 127 | 128 | 2 | 2 | 0,15 | **–** | | | |

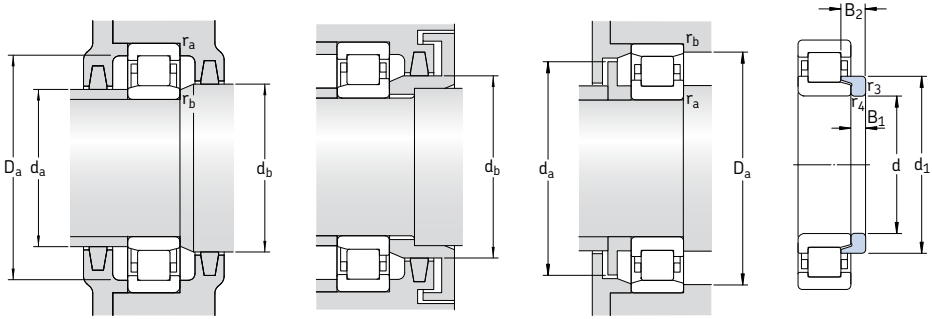
[1] Permissible axial displacement from the normal position of one bearing ring in relation to the other




NU NJ NUP N

| Principal dimensions | | | Basic load ratings dynamic | static | Fatigue load limit | Speed ratings Reference speed | Limiting speed | Mass Bearing with standard cage | Designations Bearing with standard cage | Alternative standard cage designs[1] |
|---|---|---|---|---|---|---|---|---|---|---|
| d | D | B | C | $C_0$ | $P_u$ | | | | – | |
| mm | | | kN | | kN | r/min | | kg | – | |
| **65** | 140 | 48 | 285 | 290 | 38 | 5 300 | 6 000 | 3,20 | * **NU 2313 ECP** | **ML** |
| cont. | 140 | 48 | 285 | 290 | 38 | 5 300 | 6 000 | 3,35 | * **NJ 2313 ECP** | **ML** |
| | 140 | 48 | 285 | 290 | 38 | 5 300 | 6 000 | 3,50 | * **NUP 2313 ECP** | **ML** |
| | 160 | 37 | 183 | 190 | 24 | 4 800 | 5 600 | 3,60 | **NU 413** | **–** |
| | 160 | 37 | 183 | 190 | 24 | 4 800 | 5 600 | 3,65 | **NJ 413** | **–** |
| **70** | 110 | 20 | 76,5 | 93 | 12 | 6 300 | 7 000 | 0,62 | **NU 1014 ECP** | **–** |
| | 125 | 24 | 137 | 137 | 18 | 6 000 | 6 300 | 1,15 | * **NU 214 ECP** | **J, M, ML** |
| | 125 | 24 | 137 | 137 | 18 | 6 000 | 6 300 | 1,15 | * **NJ 214 ECP** | **J, M, ML** |
| | 125 | 24 | 137 | 137 | 18 | 6 000 | 6 300 | 1,20 | * **NUP 214 ECP** | **M, ML** |
| | 125 | 24 | 137 | 137 | 18 | 6 000 | 6 300 | 1,15 | * **N 214 ECP** | **–** |
| | 125 | 31 | 180 | 193 | 25,5 | 6 000 | 6 300 | 1,50 | * **NU 2214 ECP** | **J, M, ML** |
| | 125 | 31 | 180 | 193 | 25,5 | 6 000 | 6 300 | 1,55 | * **NJ 2214 ECP** | **M, ML** |
| | 125 | 31 | 180 | 193 | 25,5 | 6 000 | 6 300 | 1,55 | * **NUP 2214 ECP** | **M, ML** |
| | 150 | 35 | 236 | 228 | 29 | 4 800 | 5 600 | 2,70 | * **NU 314 ECP** | **J, M, ML** |
| | 150 | 35 | 236 | 228 | 29 | 4 800 | 5 600 | 2,90 | * **NJ 314 ECP** | **J, M, ML** |
| | 150 | 35 | 236 | 228 | 29 | 4 800 | 5 600 | 2,85 | * **NUP 314 ECP** | **M, ML** |
| | 150 | 35 | 236 | 228 | 29 | 4 800 | 5 600 | 2,70 | * **N 314 ECP** | **M** |
| | 150 | 51 | 315 | 325 | 41,5 | 4 800 | 5 600 | 3,90 | * **NU 2314 ECP** | **ML** |
| | 150 | 51 | 315 | 325 | 41,5 | 4 800 | 5 600 | 4,00 | * **NJ 2314 ECP** | **ML** |
| | 150 | 51 | 315 | 325 | 41,5 | 4 800 | 5 600 | 4,10 | * **NUP 2314 ECP** | **ML** |
| | 180 | 42 | 229 | 240 | 30 | 4 300 | 5 000 | 5,35 | **NU 414** | **–** |
| | 180 | 42 | 229 | 240 | 30 | 4 300 | 5 000 | 5,45 | **NJ 414** | **–** |
| **75** | 115 | 20 | 58,3 | 71 | 8,5 | 6 700 | 10 000 | 0,75 | **NU 1015 ML** | **–** |
| | 130 | 25 | 150 | 156 | 20,4 | 5 600 | 6 000 | 1,25 | * **NU 215 ECP** | **J, M, ML** |
| | 130 | 25 | 150 | 156 | 20,4 | 5 600 | 6 000 | 1,30 | * **NJ 215 ECP** | **J, M, ML** |
| | 130 | 25 | 150 | 156 | 20,4 | 5 600 | 6 000 | 1,35 | * **NUP 215 ECP** | **M, ML** |
| | 130 | 25 | 150 | 156 | 20,4 | 5 600 | 6 000 | 1,20 | * **N 215 ECP** | **–** |

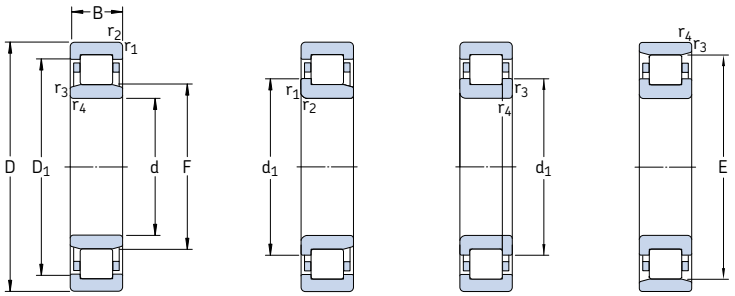
* SKF Explorer bearing
[1] When ordering bearings with an alternative standard cage the suffix of the standard cage has to be replaced by the suffix of the cage in question, e.g. NU 2313 ECP becomes NU 2313 ECML (for speed ratings → **page 517**)




Angle ring

| Dimensions | | | | | | | Abutment and fillet dimensions | | | | | | Calculation factor | Angle ring Designation | Mass | Dimensions | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d | $d_1$ ~ | $D_1$ ~ | F, E | $r_{1,2}$ min | $r_{3,4}$ min | s[1] | $d_a$ min | $d_a$ max | $d_b$, $D_a$ min | $D_a$ max | $r_a$ max | $r_b$ max | $k_r$ | | | $B_1$ | $B_2$ |
| mm | | | | | | | mm | | | | | | – | – | kg | mm | |
| **65** | 90,5 | 119 | 82,5 | 2,1 | 2,1 | 4,7 | 77 | 80 | 85 | 128 | 2 | 2 | 0,25 | **HJ 2313 EC** | 0,30 | 10 | 18 |
| cont. | 90,5 | 119 | 82,5 | 2,1 | 2,1 | 4,7 | 77 | 80 | 93 | 128 | 2 | 2 | 0,25 | **HJ 2313 EC** | 0,30 | 10 | 18 |
| | 90,5 | 119 | 82,5 | 2,1 | 2,1 | – | 77 | – | 93 | 128 | 2 | 2 | 0,25 | **–** | | | |
| | 98,5 | 125 | 89,3 | 2,1 | 2,1 | 2,6 | 79 | 86 | 92 | 146 | 2 | 2 | 0,15 | **HJ 413** | 0,42 | 11 | 18 |
| | 98,5 | 125 | 89,3 | 2,1 | 2,1 | 2,6 | 79 | 86 | 92 | 146 | 2 | 2 | 0,15 | **HJ 413** | 0,42 | 11 | 18 |
| **70** | 84 | 97,5 | 79,5 | 1,1 | 1 | 1,3 | 74,6 | 78 | 82 | 104 | 1 | 1 | 0,1 | **HJ 1014 EC** | 0,082 | 5 | 10 |
| | 89,4 | 109 | 83,5 | 1,5 | 1,5 | 1,2 | 79 | 81 | 86 | 116 | 1,5 | 1,5 | 0,15 | **HJ 214 EC** | 0,15 | 7 | 11 |
| | 89,4 | 109 | 83,5 | 1,5 | 1,5 | 1,2 | 79 | 81 | 92 | 116 | 1,5 | 1,5 | 0,15 | **HJ 214 EC** | 0,15 | 7 | 11 |
| | 89,4 | 109 | 83,5 | 1,5 | 1,5 | – | 79 | – | 92 | 116 | 1,5 | 1,5 | 0,15 | **–** | | | |
| | 89,4 | – | 113,5 | 1,5 | 1,5 | 1,2 | 79 | 111 | 116 | 116 | 1,5 | 1,5 | 0,15 | **–** | | | |
| | 89,4 | 109 | 83,5 | 1,5 | 1,5 | 1,7 | 79 | 81 | 86 | 116 | 1,5 | 1,5 | 0,2 | **HJ 2214 EC** | 0,16 | 7 | 11,5 |
| | 89,4 | 109 | 83,5 | 1,5 | 1,5 | 1,7 | 79 | 81 | 92 | 116 | 1,5 | 1,5 | 0,2 | **HJ 2214 EC** | 0,16 | 7 | 11,5 |
| | 89,4 | 109 | 83,5 | 1,5 | 1,5 | – | 79 | – | 92 | 116 | 1,5 | 1,5 | 0,2 | **–** | | | |
| | 97,3 | 127 | 89 | 2,1 | 2,1 | 1,8 | 82 | 86 | 91 | 138 | 2 | 2 | 0,15 | **HJ 314 EC** | 0,32 | 10 | 15,5 |
| | 97,3 | 127 | 89 | 2,1 | 2,1 | 1,8 | 82 | 86 | 100 | 138 | 2 | 2 | 0,15 | **HJ 314 EC** | 0,32 | 10 | 15,5 |
| | 97,3 | 127 | 89 | 2,1 | 2,1 | – | 82 | – | 100 | 138 | 2 | 2 | 0,15 | **–** | | | |
| | 97,3 | – | 133 | 2,1 | 2,1 | 1,8 | 82 | 130 | 136 | 138 | 2 | 2 | 0,15 | **–** | | | |
| | 97,3 | 127 | 89 | 2,1 | 2,1 | 4,8 | 82 | 86 | 91 | 138 | 2 | 2 | 0,25 | **HJ 2314 EC** | 0,34 | 10 | 18,5 |
| | 97,3 | 127 | 89 | 2,1 | 2,1 | 4,8 | 82 | 86 | 100 | 138 | 2 | 2 | 0,25 | **HJ 2314 EC** | 0,34 | 10 | 18,5 |
| | 97,3 | 127 | 89 | 2,1 | 2,1 | – | 82 | – | 100 | 138 | 2 | 2 | 0,25 | **–** | | | |
| | 110 | 140 | 100 | 3 | 3 | 3,5 | 86 | 97 | 102 | 164 | 2,5 | 2,5 | 0,15 | **HJ 414** | 0,61 | 12 | 20 |
| | 110 | 140 | 100 | 3 | 3 | 3,5 | 86 | 97 | 113 | 164 | 2,5 | 2,5 | 0,15 | **HJ 414** | 0,61 | 12 | 20 |
| **75** | – | 101 | 85 | 1,1 | 1 | 3 | 79,6 | 83 | 87 | 109 | 1 | 1 | 0,1 | **–** | | | |
| | 94,3 | 114 | 88,5 | 1,5 | 1,5 | 1,2 | 84 | 86 | 91 | 121 | 1,5 | 1,5 | 0,15 | **HJ 215 EC** | 0,16 | 7 | 11 |
| | 94,3 | 114 | 88,5 | 1,5 | 1,5 | 1,2 | 84 | 86 | 97 | 121 | 1,5 | 1,5 | 0,15 | **HJ 215 EC** | 0,16 | 7 | 11 |
| | 94,3 | 114 | 88,5 | 1,5 | 1,5 | – | 84 | – | 97 | 121 | 1,5 | 1,5 | 0,15 | **–** | | | |
| | 94,3 | – | 118,5 | 1,5 | 1,5 | 1,2 | 84 | 116 | 121 | 121 | 1,5 | 1,5 | 0,15 | **–** | | | |

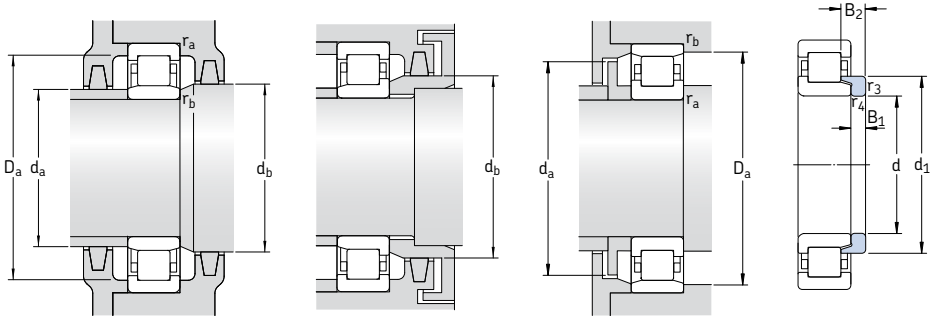
[1] Permissible axial displacement from the normal position of one bearing ring in relation to the other




NU NJ NUP N

| Principal dimensions | | | Basic load ratings dynamic | static | Fatigue load limit | Speed ratings Reference speed | Limiting speed | Mass Bearing with standard cage | Designations Bearing with standard cage | Alternative standard cage designs[1] |
|---|---|---|---|---|---|---|---|---|---|---|
| d | D | B | C | $C_0$ | $P_u$ | | | | | |
| mm | | | kN | | kN | r/min | | kg | – | |
| **75** | 130 | 31 | 186 | 208 | 27 | 5 600 | 6 000 | 1,60 | * **NU 2215 ECP** | **J, ML** |
| cont. | 130 | 31 | 186 | 208 | 27 | 5 600 | 6 000 | 1,60 | * **NJ 2215 ECP** | **J, ML** |
| | 130 | 31 | 186 | 208 | 27 | 5 600 | 6 000 | 1,65 | * **NUP 2215 ECP** | **J, ML** |
| | 160 | 37 | 280 | 265 | 33,5 | 4 500 | 5 300 | 3,30 | * **NU 315 ECP** | **J, M, ML** |
| | 160 | 37 | 280 | 265 | 33,5 | 4 500 | 5 300 | 3,35 | * **NJ 315 ECP** | **J, M, ML** |
| | 160 | 37 | 280 | 265 | 33,5 | 4 500 | 5 300 | 3,45 | * **NUP 315 ECP** | **M, ML** |
| | 160 | 37 | 280 | 265 | 33,5 | 4 500 | 5 300 | 3,30 | * **N 315 ECP** | **M** |
| | 160 | 55 | 380 | 400 | 50 | 4 500 | 5 300 | 4,80 | * **NU 2315 ECP** | **J, ML** |
| | 160 | 55 | 380 | 400 | 50 | 4 500 | 5 300 | 5,00 | * **NJ 2315 ECP** | **ML** |
| | 160 | 55 | 380 | 400 | 50 | 4 500 | 5 300 | 5,20 | * **NUP 2315 ECP** | **ML** |
| | 190 | 45 | 264 | 280 | 34 | 4 000 | 4 800 | 6,20 | **NU 415** | **–** |
| | 190 | 45 | 264 | 280 | 34 | 4 000 | 4 800 | 6,40 | **NJ 415** | **–** |
| **80** | 125 | 22 | 66 | 81,5 | 10,4 | 6 300 | 6 300 | 1,00 | **NU 1016** | **–** |
| | 125 | 22 | 99 | 127 | 16,3 | 5 600 | 9 500 | 1,10 | **NJ 1016 ECML** | **–** |
| | 140 | 26 | 160 | 166 | 21,2 | 5 300 | 5 600 | 1,55 | * **NU 216 ECP** | **J, M, ML** |
| | 140 | 26 | 160 | 166 | 21,2 | 5 300 | 5 600 | 1,60 | * **NJ 216 ECP** | **J, M, ML** |
| | 140 | 26 | 160 | 166 | 21,2 | 5 300 | 5 600 | 1,65 | * **NUP 216 ECP** | **ML** |
| | 140 | 26 | 160 | 166 | 21,2 | 5 300 | 5 600 | 1,55 | * **N 216 ECP** | **–** |
| | 140 | 33 | 212 | 245 | 31 | 5 300 | 5 600 | 2,00 | * **NU 2216 ECP** | **J, M, ML** |
| | 140 | 33 | 212 | 245 | 31 | 5 300 | 5 600 | 2,05 | * **NJ 2216 ECP** | **J, M, ML** |
| | 140 | 33 | 212 | 245 | 31 | 5 300 | 5 600 | 2,10 | * **NUP 2216 ECP** | **M, ML** |
| | 170 | 39 | 300 | 290 | 36 | 4 300 | 5 000 | 3,90 | * **NU 316 ECP** | **J, M, ML** |
| | 170 | 39 | 300 | 290 | 36 | 4 300 | 5 000 | 4,00 | * **NJ 316 ECP** | **J, M, ML** |
| | 170 | 39 | 300 | 290 | 36 | 4 300 | 5 000 | 4,10 | * **NUP 316 ECP** | **M, ML** |
| | 170 | 39 | 300 | 290 | 36 | 4 300 | 5 000 | 3,90 | * **N 316 ECP** | **M** |
| | 170 | 58 | 415 | 440 | 55 | 4 300 | 5 000 | 5,85 | * **NU 2316 ECP** | **M, ML** |
| | 170 | 58 | 415 | 440 | 55 | 4 300 | 5 000 | 5,95 | * **NJ 2316 ECP** | **M, ML** |
| | 170 | 58 | 415 | 440 | 55 | 4 300 | 5 000 | 6,05 | * **NUP 2316 ECP** | **M, ML** |
| | 200 | 48 | 303 | 320 | 39 | 3 800 | 4 500 | 7,30 | **NU 416** | **–** |
| | 200 | 48 | 303 | 320 | 39 | 3 800 | 4 500 | 8,05 | **NJ 416** | **–** |

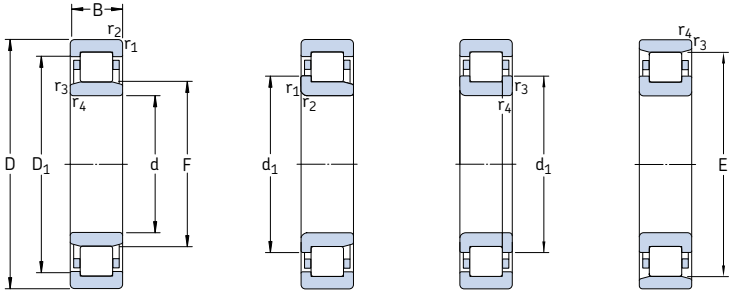
* SKF Explorer bearing
[1] When ordering bearings with an alternative standard cage the suffix of the standard cage has to be replaced by the suffix of the cage in question, e.g. NU 2215 ECP becomes NU 2215 ECML (for speed ratings → **page 517**)




Angle ring

| Dimensions | | | | | | | Abutment and fillet dimensions | | | | | | Calculation factor | Angle ring Designation | Mass | Dimensions | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d | $d_1$ ~ | $D_1$ ~ | F, E | $r_{1,2}$ min | $r_{3,4}$ min | s[1] | $d_a$ min | $d_a$ max | $d_b$, $D_a$ min | $D_a$ max | $r_a$ max | $r_b$ max | $k_r$ | | | $B_1$ | $B_2$ |
| mm | | | | | | | mm | | | | | | – | – | kg | mm | |
| **75** | – | 114 | 88,5 | 1,5 | 1,5 | 1,7 | 84 | 86 | 91 | 121 | 1,5 | 1,5 | 0,2 | **–** | | | |
| cont. | 94,3 | 114 | 88,5 | 1,5 | 1,5 | 1,7 | 84 | 86 | 97 | 121 | 1,5 | 1,5 | 0,2 | **–** | | | |
| | 94,3 | 114 | 88,5 | 1,5 | 1,5 | – | 84 | – | 97 | 121 | 1,5 | 1,5 | 0,2 | **–** | | | |
| | 104 | 136 | 95 | 2,1 | 2,1 | 1,8 | 87 | 92 | 97 | 148 | 2 | 2 | 0,15 | **HJ 315 EC** | 0,39 | 11 | 16,5 |
| | 104 | 136 | 95 | 2,1 | 2,1 | 1,8 | 87 | 92 | 107 | 148 | 2 | 2 | 0,15 | **HJ 315 EC** | 0,39 | 11 | 16,5 |
| | 104 | 136 | 95 | 2,1 | 2,1 | – | 87 | – | 107 | 148 | 2 | 2 | 0,15 | **–** | | | |
| | 104 | – | 143 | 2,1 | 2,1 | 1,8 | 87 | 140 | 146 | 148 | 2 | 2 | 0,15 | **–** | | | |
| | 104 | 136 | 95 | 2,1 | 2,1 | 4,8 | 87 | 92 | 97 | 148 | 2 | 2 | 0,25 | **HJ 2315 EC** | 0,42 | 11 | 19,5 |
| | 104 | 136 | 95 | 2,1 | 2,1 | 4,8 | 87 | 92 | 107 | 148 | 2 | 2 | 0,25 | **HJ 2315 EC** | 0,42 | 11 | 19,5 |
| | 104 | 136 | 95 | 2,1 | 2,1 | – | 87 | – | 107 | 148 | 2 | 2 | 0,25 | **–** | | | |
| | 116 | 148 | 104,5 | 3 | 3 | 3,8 | 91 | 101 | 107 | 174 | 2,5 | 2,5 | 0,15 | **HJ 415** | 0,71 | 13 | 21,5 |
| | 116 | 148 | 104,5 | 3 | 3 | 3,8 | 91 | 101 | 119 | 174 | 2,5 | 2,5 | 0,15 | **HJ 415** | 0,71 | 13 | 21,5 |
| **80** | – | 109 | 91,5 | 1,1 | 1 | 3,3 | 86 | 90 | 94 | 119 | 1 | 1 | 0,1 | **–** | | | |
| | 96,2 | 111 | 91,5 | 1,1 | 1 | 1,5 | 86 | 90 | 94 | 119 | 1 | 1 | 0,1 | **–** | | | |
| | 101 | 123 | 95,3 | 2 | 2 | 1,4 | 91 | 93 | 98 | 129 | 2 | 2 | 0,15 | **HJ 216 EC** | 0,21 | 8 | 12,5 |
| | 101 | 123 | 95,3 | 2 | 2 | 1,4 | 91 | 93 | 104 | 129 | 2 | 2 | 0,15 | **HJ 216 EC** | 0,21 | 8 | 12,5 |
| | 101 | 123 | 95,3 | 2 | 2 | – | 91 | – | 104 | 129 | 2 | 2 | 0,15 | **–** | | | |
| | 101 | – | 127,3 | 2 | 2 | 1,4 | 91 | 125 | 129 | 129 | 2 | 2 | 0,15 | **–** | | | |
| | 101 | 123 | 95,3 | 2 | 2 | 1,4 | 91 | 93 | 98 | 129 | 2 | 2 | 0,2 | **HJ 216 EC** | 0,21 | 8 | 12,5 |
| | 101 | 123 | 95,3 | 2 | 2 | 1,4 | 91 | 93 | 104 | 129 | 2 | 2 | 0,2 | **HJ 216 EC** | 0,21 | 8 | 12,5 |
| | 101 | 123 | 95,3 | 2 | 2 | – | 91 | – | 104 | 129 | 2 | 2 | 0,2 | **–** | | | |
| | 110 | 144 | 101 | 2,1 | 2,1 | 2,1 | 92 | 98 | 104 | 158 | 2 | 2 | 0,15 | **HJ 316 EC** | 0,44 | 11 | 17 |
| | 110 | 144 | 101 | 2,1 | 2,1 | 2,1 | 92 | 98 | 113 | 158 | 2 | 2 | 0,15 | **HJ 316 EC** | 0,44 | 11 | 17 |
| | 110 | 144 | 101 | 2,1 | 2,1 | – | 92 | – | 113 | 158 | 2 | 2 | 0,15 | **–** | | | |
| | 110 | – | 151 | 2,1 | 2,1 | 2,1 | 92 | 148 | 154 | 158 | 2 | 2 | 0,15 | **–** | | | |
| | 110 | 144 | 101 | 2,1 | 2,1 | 5,1 | 92 | 98 | 104 | 158 | 2 | 2 | 0,25 | **HJ 2316 EC** | 0,48 | 11 | 20 |
| | 110 | 144 | 101 | 2,1 | 2,1 | 5,1 | 92 | 98 | 113 | 158 | 2 | 2 | 0,25 | **HJ 2316 EC** | 0,48 | 11 | 20 |
| | 110 | 144 | 101 | 2,1 | 2,1 | – | 92 | – | 113 | 158 | 2 | 2 | 0,25 | | | | |
| | 122 | 157 | 110 | 3 | 3 | 3,7 | 96 | 106 | 113 | 184 | 2,5 | 2,5 | 0,15 | **HJ 416** | 0,78 | 13 | 22 |
| | 122 | 157 | 110 | 3 | 3 | 3,7 | 96 | 106 | 125 | 184 | 2,5 | 2,5 | 0,15 | **HJ 416** | 0,78 | 13 | 22 |

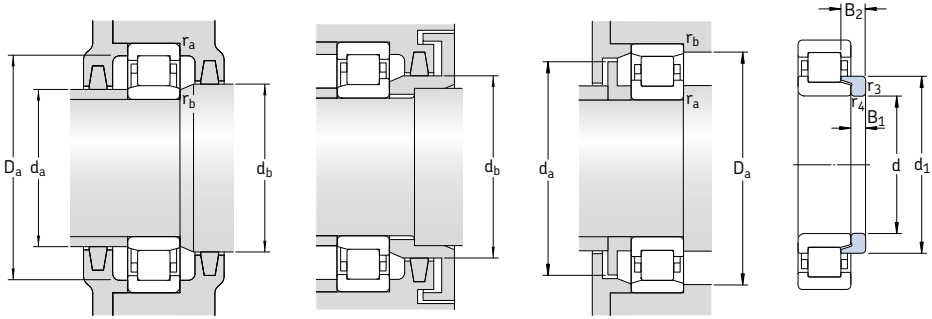
[1] Permissible axial displacement from the normal position of one bearing ring in relation to the other




NU NJ NUP N

| Principal dimensions | | | Basic load ratings dynamic | static | Fatigue load limit | Speed ratings Reference speed | Limiting speed | Mass Bearing with standard cage | Designations Bearing with standard cage | Alternative standard cage designs[1] |
|---|---|---|---|---|---|---|---|---|---|---|
| d | D | B | C | $C_0$ | $P_u$ | | | | | |
| mm | | | kN | | kN | r/min | | kg | – | |
| **85** | 130 | 22 | 68,2 | 86,5 | 10,8 | 6 000 | 9 000 | 1,05 | **NU 1017 ML** | **–** |
| | 150 | 28 | 190 | 200 | 24,5 | 4 800 | 5 300 | 1,90 | *** NU 217 ECP** | **J, M, ML** |
| | 150 | 28 | 190 | 200 | 24,5 | 4 800 | 5 300 | 1,95 | *** NJ 217 ECP** | **J, M, ML** |
| | 150 | 28 | 190 | 200 | 24,5 | 4 800 | 5 300 | 2,00 | *** NUP 217 ECP** | **J, ML** |
| | 150 | 28 | 190 | 200 | 24,5 | 4 800 | 5 300 | 1,90 | *** N 217 ECP** | **M** |
| | 150 | 36 | 250 | 280 | 34,5 | 4 800 | 5 300 | 2,50 | *** NU 2217 ECP** | **J, M, ML** |
| | 150 | 36 | 250 | 280 | 34,5 | 4 800 | 5 300 | 2,55 | *** NJ 2217 ECP** | **J, M, ML** |
| | 150 | 36 | 250 | 280 | 34,5 | 4 800 | 5 300 | 2,60 | *** NUP 2217 ECP** | **ML** |
| | 180 | 41 | 340 | 335 | 41,5 | 4 000 | 4 800 | 4,60 | *** NU 317 ECP** | **J, M** |
| | 180 | 41 | 340 | 335 | 41,5 | 4 000 | 4 800 | 4,75 | *** NJ 317 ECP** | **J, M** |
| | 180 | 41 | 340 | 335 | 41,5 | 4 000 | 4 800 | 4,90 | *** NUP 317 ECP** | **J, M** |
| | 180 | 41 | 340 | 335 | 41,5 | 4 000 | 4 800 | 4,55 | *** N 317 ECP** | **M** |
| | 180 | 60 | 455 | 490 | 60 | 4 000 | 4 800 | 6,85 | *** NU 2317 ECP** | **J, ML** |
| | 180 | 60 | 455 | 490 | 60 | 4 000 | 4 800 | 7,00 | *** NJ 2317 ECP** | **ML** |
| | 180 | 60 | 455 | 490 | 60 | 4 000 | 4 800 | 7,15 | *** NUP 2317 ECP** | **ML** |
| | 210 | 52 | 319 | 335 | 39 | 3 600 | 4 300 | 9,70 | **NU 417** | **–** |
| | 210 | 52 | 319 | 335 | 39 | 3 800 | 4 300 | 8,90 | **NJ 417** | **–** |
| **90** | 140 | 24 | 80,9 | 104 | 12,7 | 5 600 | 8 500 | 1,35 | **NU 1018 ML** | **–** |
| | 160 | 30 | 208 | 220 | 27 | 4 500 | 5 000 | 2,30 | *** NU 218 ECP** | **J, M, ML** |
| | 160 | 30 | 208 | 220 | 27 | 4 500 | 5 000 | 2,40 | *** NJ 218 ECP** | **J, M, ML** |
| | 160 | 30 | 208 | 220 | 27 | 4 500 | 5 000 | 2,45 | *** NUP 218 ECP** | **M, ML** |
| | 160 | 30 | 208 | 220 | 27 | 4 500 | 5 000 | 2,30 | *** N 218 ECP** | **M** |
| | 160 | 40 | 280 | 315 | 39 | 4 500 | 5 000 | 3,15 | *** NU 2218 ECP** | **J, M, ML** |
| | 160 | 40 | 280 | 315 | 39 | 4 500 | 5 000 | 3,25 | *** NJ 2218 ECP** | **M, ML** |
| | 160 | 40 | 280 | 315 | 39 | 4 500 | 5 000 | 3,30 | *** NUP 2218 ECP** | **–** |

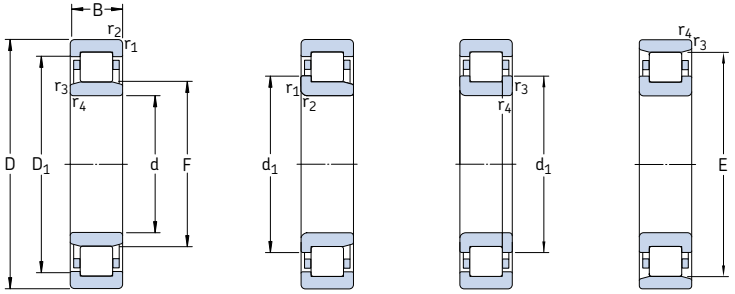
***** SKF Explorer bearing
[1] When ordering bearings with an alternative standard cage the suffix of the standard cage has to be replaced by the suffix of the cage in question, e.g. NU 217 ECP becomes NU 217 ECML (for speed ratings → **page 517**)




Angle ring

| Dimensions | | | | | | | Abutment and fillet dimensions | | | | | | Calculation factor | Angle ring Designation | Mass | Dimensions | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d | $d_1$ ~ | $D_1$ ~ | F, E | $r_{1,2}$ min | $r_{3,4}$ min | $s^{1)}$ | $d_a$ min | $d_a$ max | $d_b$, $D_a$ min | $D_a$ max | $r_a$ max | $r_b$ max | $k_r$ | | | $B_1$ | $B_2$ |
| mm | | | | | | | mm | | | | | | – | – | kg | mm | |
| **85** | – | 114 | 96,5 | 1,1 | 1 | 3,3 | 89,6 | 95 | 99 | 124 | 1 | 1 | 0,1 | **–** | | | |
| | 107 | 131 | 100,5 | 2 | 2 | 1,5 | 96 | 98 | 103 | 139 | 2 | 2 | 0,15 | **HJ 217 EC** | 0,24 | 8 | 12,5 |
| | 107 | 131 | 100,5 | 2 | 2 | 1,5 | 96 | 98 | 110 | 139 | 2 | 2 | 0,15 | **HJ 217 EC** | 0,24 | 8 | 12,5 |
| | 107 | 131 | 100,5 | 2 | 2 | – | 96 | – | 110 | 139 | 2 | 2 | 0,15 | **–** | | | |
| | 107 | – | 136,5 | 2 | 2 | 1,5 | 96 | 134 | 139 | 139 | 2 | 2 | 0,15 | **–** | | | |
| | – | 131 | 100,5 | 2 | 2 | 2 | 96 | 98 | 103 | 139 | 2 | 2 | 0,2 | **–** | | | |
| | 107 | 131 | 100,5 | 2 | 2 | 2 | 96 | 98 | 110 | 139 | 2 | 2 | 0,2 | **–** | | | |
| | 107 | 131 | 100,5 | 2 | 2 | – | 96 | – | 110 | 139 | 2 | 2 | 0,2 | **–** | | | |
| | 117 | 153 | 108 | 3 | 3 | 2,3 | 99 | 105 | 111 | 166 | 2,5 | 2,5 | 0,15 | **HJ 317 EC** | 0,55 | 12 | 18,5 |
| | 117 | 153 | 108 | 3 | 3 | 2,3 | 99 | 105 | 120 | 166 | 2,5 | 2,5 | 0,15 | **HJ 317 EC** | 0,55 | 12 | 18,5 |
| | 117 | 153 | 108 | 3 | 3 | – | 99 | – | 120 | 166 | 2,5 | 2,5 | 0,15 | **–** | | | |
| | 117 | – | 160 | 3 | 3 | 2,3 | 99 | 157 | 163 | 166 | 2,5 | 2,5 | 0,15 | **–** | | | |
| | 117 | 153 | 108 | 3 | 3 | 5,8 | 99 | 105 | 111 | 166 | 2,5 | 2,5 | 0,25 | **HJ 2317 EC** | 0,60 | 12 | 22 |
| | 117 | 153 | 108 | 3 | 3 | 5,8 | 99 | 105 | 120 | 166 | 2,5 | 2,5 | 0,25 | **HJ 2317 EC** | 0,60 | 12 | 22 |
| | 117 | 153 | 108 | 3 | 3 | – | 99 | – | 120 | 166 | 2,5 | 2,5 | 0,25 | **–** | | | |
| | 126 | 163 | 113 | 4 | 4 | 3,8 | 105 | 109 | 116 | 190 | 3 | 3 | 0,15 | **HJ 417** | 0,88 | 14 | 24 |
| | 126 | 163 | 113 | 4 | 4 | 3,8 | 105 | 109 | 129 | 190 | 3 | 3 | 0,15 | **HJ 417** | 0,88 | 14 | 24 |
| **90** | – | 122 | 103 | 1,5 | 1,1 | 3,5 | 96 | 101 | 106 | 133 | 1,5 | 1 | 0,1 | **–** | | | |
| | 114 | 140 | 107 | 2 | 2 | 1,8 | 101 | 104 | 110 | 149 | 2 | 2 | 0,15 | **HJ 218 EC** | 0,31 | 9 | 14 |
| | 114 | 140 | 107 | 2 | 2 | 1,8 | 101 | 104 | 117 | 149 | 2 | 2 | 0,15 | **HJ 218 EC** | 0,31 | 9 | 14 |
| | 114 | 140 | 107 | 2 | 2 | – | 101 | – | 117 | 149 | 2 | 2 | 0,15 | **–** | | | |
| | 114 | – | 145 | 2 | 2 | 1,8 | 101 | 142 | 148 | 149 | 2 | 2 | 0,15 | **–** | | | |
| | 114 | 140 | 107 | 2 | 2 | 2,6 | 101 | 104 | 110 | 149 | 2 | 2 | 0,2 | **HJ 2218 EC** | 0,33 | 9 | 15 |
| | 114 | 140 | 107 | 2 | 2 | 2,6 | 101 | 104 | 117 | 149 | 2 | 2 | 0,2 | **HJ 2218 EC** | 0,33 | 9 | 15 |
| | 114 | 140 | 107 | 2 | 2 | – | 101 | – | 117 | 149 | 2 | 2 | 0,2 | **–** | | | |

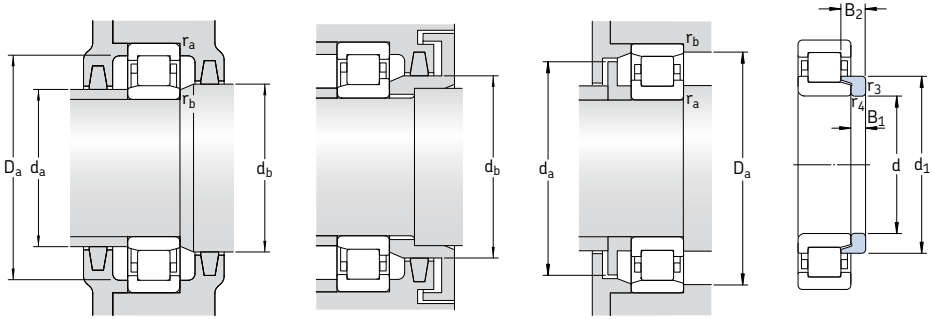
[1)] Permissible axial displacement from the normal position of one bearing ring in relation to the other




NU NJ NUP N

| Principal dimensions | | | Basic load ratings dynamic | static | Fatigue load limit | Speed ratings Reference speed | Limiting speed | Mass Bearing with standard cage | Designations Bearing with standard cage | Alternative standard cage designs[1] |
|---|---|---|---|---|---|---|---|---|---|---|
| d | D | B | C | $C_0$ | $P_u$ | | | | | |
| mm | | | kN | | kN | r/min | | kg | – | |
| **90** | 190 | 43 | 365 | 360 | 43 | 3 800 | 4 500 | 5,25 | ✱ **NU 318 ECP** | **J, M, ML** |
| cont. | 190 | 43 | 365 | 360 | 43 | 3 800 | 4 500 | 5,40 | ✱ **NJ 318 ECP** | **J, M, ML** |
| | 190 | 43 | 365 | 360 | 43 | 3 800 | 4 500 | 5,65 | ✱ **NUP 318 ECJ** | **M, ML** |
| | 190 | 43 | 365 | 360 | 43 | 3 800 | 4 500 | 5,30 | ✱ **N 318 ECP** | **M** |
| | 190 | 64 | 500 | 540 | 65,5 | 3 800 | 4 500 | 8,00 | ✱ **NU 2318 ECP** | **J, ML** |
| | 190 | 64 | 500 | 540 | 65,5 | 3 800 | 4 500 | 8,15 | ✱ **NJ 2318 ECP** | **J, ML, M** |
| | 190 | 64 | 500 | 540 | 65,5 | 3 800 | 4 500 | 8,30 | ✱ **NUP 2318 ECP** | **ML** |
| | 225 | 54 | 380 | 415 | 48 | 3 400 | 4 000 | 11,5 | **NU 418** | **–** |
| **95** | 145 | 24 | 84,2 | 110 | 13,2 | 5 300 | 8 000 | 1,45 | **NU 1019 ML** | **–** |
| | 170 | 32 | 255 | 265 | 32,5 | 4 300 | 4 800 | 2,85 | ✱ **NU 219 ECP** | **J, M, ML** |
| | 170 | 32 | 255 | 265 | 32,5 | 4 300 | 4 800 | 2,90 | ✱ **NJ 219 ECP** | **J, M, ML** |
| | 170 | 32 | 255 | 265 | 32,5 | 4 300 | 4 800 | 3,00 | ✱ **NUP 219 ECP** | **ML** |
| | 170 | 32 | 255 | 265 | 32,5 | 4 300 | 4 800 | 2,85 | ✱ **N 219 ECP** | **–** |
| | 170 | 43 | 325 | 375 | 45,5 | 4 300 | 4 800 | 3,80 | ✱ **NU 2219 ECP** | **J, M** |
| | 170 | 43 | 325 | 375 | 45,5 | 4 300 | 4 800 | 3,95 | ✱ **NJ 2219 ECP** | **J, M** |
| | 170 | 43 | 325 | 375 | 45,5 | 4 300 | 4 800 | 4,10 | ✱ **NUP 2219 ECP** | **–** |
| | 200 | 45 | 390 | 390 | 46,5 | 3 600 | 4 300 | 6,20 | ✱ **NU 319 ECP** | **J, M, ML** |
| | 200 | 45 | 390 | 390 | 46,5 | 3 600 | 4 300 | 6,25 | ✱ **NJ 319 ECP** | **J, M, ML** |
| | 200 | 45 | 390 | 390 | 46,5 | 3 600 | 4 300 | 6,30 | ✱ **NUP 319 ECP** | **M, ML** |
| | 200 | 45 | 390 | 390 | 46,5 | 3 600 | 4 300 | 6,20 | ✱ **N 319 ECP** | **M** |
| | 200 | 67 | 530 | 585 | 69,5 | 3 600 | 4 300 | 9,35 | ✱ **NU 2319 ECP** | **J, ML** |
| | 200 | 67 | 530 | 585 | 69,5 | 3 600 | 4 300 | 9,55 | ✱ **NJ 2319 ECP** | **J, ML** |
| | 200 | 67 | 530 | 585 | 69,5 | 3 600 | 4 300 | 9,75 | ✱ **NUP 2319 ECP** | **J, ML** |
| | 240 | 55 | 413 | 455 | 52 | 3 200 | 3 600 | 13,5 | **NU 419 M** | **–** |

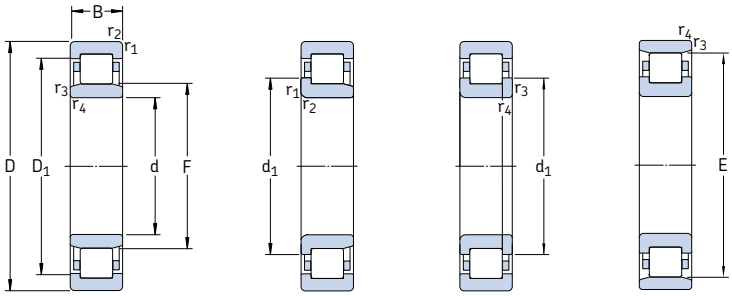
✱ SKF Explorer bearing
[1] When ordering bearings with an alternative standard cage the suffix of the standard cage has to be replaced by the suffix of the cage in question, e.g. NU 318 ECP becomes NU 318 ECML (for speed ratings → **page 517**)




Angle ring

| Dimensions | | | | | | | Abutment and fillet dimensions | | | | | | Calculation factor | Angle ring Designation | Mass | Dimensions | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d | $d_1$ ~ | $D_1$ ~ | F, E | $r_{1,2}$ min | $r_{3,4}$ min | s[1] | $d_a$ min | $d_a$ max | $d_b$, $D_a$ min | $D_a$ max | $r_a$ max | $r_b$ max | $k_r$ | | | $B_1$ | $B_2$ |
| mm | | | | | | | mm | | | | | | – | – | kg | mm | |
| **90** | 124 | 162 | 113,5 | 3 | 3 | 2,5 | 104 | 110 | 116 | 176 | 2,5 | 2,5 | 0,15 | **HJ 318 EC** | 0,60 | 12 | 18,5 |
| cont. | 124 | 162 | 113,5 | 3 | 3 | 2,5 | 104 | 110 | 127 | 176 | 2,5 | 2,5 | 0,15 | **HJ 318 EC** | 0,60 | 12 | 18,5 |
| | 124 | 162 | 113,5 | 3 | 3 | – | 104 | – | 127 | 176 | 2,5 | 2,5 | 0,15 | – | | | |
| | 124 | – | 169,5 | 3 | 3 | 2,5 | 104 | 166 | 173 | 176 | 2,5 | 2,5 | 0,15 | – | | | |
| | 124 | 162 | 113,5 | 3 | 3 | 6 | 104 | 110 | 116 | 176 | 2,5 | 2,5 | 0,25 | **HJ 2318 EC** | 0,66 | 12 | 22 |
| | 124 | 162 | 113,5 | 3 | 3 | 6 | 104 | 110 | 127 | 176 | 2,5 | 2,5 | 0,25 | **HJ 2318 EC** | 0,66 | 12 | 22 |
| | 124 | 162 | 113,5 | 3 | 3 | – | 104 | 110 | 127 | 176 | 2,5 | 2,5 | 0,25 | – | | | |
| | – | 176 | 123,5 | 4 | 4 | 4,9 | 106 | 120 | 126 | 209 | 3 | 3 | 0,15 | – | | | |
| **95** | – | 127 | 108 | 1,5 | 1,1 | 3,5 | 101 | 106 | 111 | 138 | 1,5 | 1 | 0,1 | – | | | |
| | 120 | 149 | 112,5 | 2,1 | 2,1 | 1,7 | 107 | 110 | 115 | 158 | 2 | 2 | 0,15 | **HJ 219 EC** | 0,33 | 9 | 14 |
| | 120 | 149 | 112,5 | 2,1 | 2,1 | 1,7 | 107 | 110 | 123 | 158 | 2 | 2 | 0,15 | **HJ 219 EC** | 0,33 | 9 | 14 |
| | 120 | 149 | 112,5 | 2,1 | 2,1 | – | 107 | – | 123 | 158 | 2 | 2 | 0,15 | – | | | |
| | 120 | – | 154,5 | 2,1 | 2,1 | 1,7 | 107 | 152 | 157 | 158 | 2 | 2 | 0,15 | – | | | |
| | – | 149 | 112,5 | 2,1 | 2,1 | 3 | 107 | 110 | 115 | 158 | 2 | 2 | 0,2 | – | | | |
| | 120 | 149 | 112,5 | 2,1 | 2,1 | 3 | 107 | 110 | 123 | 158 | 2 | 2 | 0,2 | – | | | |
| | 120 | 149 | 112,5 | 2,1 | 2,1 | – | 107 | – | 123 | 158 | 2 | 2 | 0,2 | – | | | |
| | 132 | 170 | 121,5 | 3 | 3 | 2,9 | 109 | 118 | 124 | 186 | 2,5 | 2,5 | 0,15 | **HJ 319 EC** | 0,76 | 13 | 20,5 |
| | 132 | 170 | 121,5 | 3 | 3 | 2,9 | 109 | 118 | 135 | 186 | 2,5 | 2,5 | 0,15 | **HJ 319 EC** | 0,76 | 13 | 20,5 |
| | 132 | 170 | 121,5 | 3 | 3 | – | 109 | – | 135 | 186 | 2,5 | 2,5 | 0,15 | – | | | |
| | 132 | – | 177,5 | 3 | 3 | 2,9 | 109 | 174 | 181 | 186 | 2,5 | 2,5 | 0,15 | – | | | |
| | 132 | 170 | 121,5 | 3 | 3 | 6,9 | 109 | 118 | 124 | 186 | 2,5 | 2,5 | 0,25 | **HJ 2319 EC** | 0,81 | 13 | 24,5 |
| | 132 | 170 | 121,5 | 3 | 3 | 6,9 | 109 | 118 | 135 | 186 | 2,5 | 2,5 | 0,25 | **HJ 2319 EC** | 0,81 | 13 | 24,5 |
| | 132 | 170 | 121,5 | 3 | 3 | – | 109 | – | 135 | 186 | 2,5 | 2,5 | 0,25 | – | | | |
| | – | 186 | 133,5 | 4 | 4 | 5 | 115 | 130 | 136 | 220 | 3 | 3 | 0,15 | – | | | |

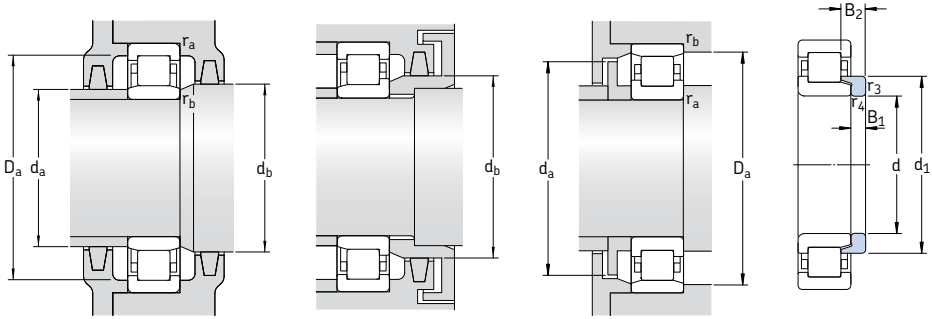
[1] Permissible axial displacement from the normal position of one bearing ring in relation to the other




NU NJ NUP N

| Principal dimensions | | | Basic load ratings dynamic | static | Fatigue load limit | Speed ratings Reference speed | Limiting speed | Mass Bearing with standard cage | Designations Bearing with standard cage | Alternative standard cage designs[1] |
|---|---|---|---|---|---|---|---|---|---|---|
| d | D | B | C | $C_0$ | $P_u$ | | | | | |
| mm | | | kN | | kN | r/min | | kg | – | |
| **100** | 150 | 24 | 85,8 | 114 | 13,7 | 5 000 | 7 500 | 1,45 | **NU 1020 ML** | **M** |
| | 180 | 34 | 285 | 305 | 36,5 | 4 000 | 4 500 | 3,40 | *** NU 220 ECP** | **J, M, ML** |
| | 180 | 34 | 285 | 305 | 36,5 | 4 000 | 4 500 | 3,50 | *** NJ 220 ECP** | **J, M, ML** |
| | 180 | 34 | 285 | 305 | 36,5 | 4 000 | 4 500 | 3,60 | *** NUP 220 ECP** | **ML** |
| | 180 | 34 | 285 | 305 | 36,5 | 4 000 | 4 500 | 3,45 | *** N 220 ECP** | **–** |
| | 180 | 46 | 380 | 450 | 54 | 4 000 | 4 500 | 4,75 | *** NU 2220 ECP** | **J, M, ML** |
| | 180 | 46 | 380 | 450 | 54 | 4 000 | 4 500 | 4,80 | *** NJ 2220 ECP** | **J, M, ML** |
| | 180 | 46 | 380 | 450 | 54 | 4 000 | 4 500 | 4,90 | *** NUP 2220 ECP** | **ML** |
| | 215 | 47 | 450 | 440 | 51 | 3 200 | 3 800 | 7,45 | *** NU 320 ECP** | **J, M, ML** |
| | 215 | 47 | 450 | 440 | 51 | 3 200 | 3 800 | 7,65 | *** NJ 320 ECP** | **J, M, ML** |
| | 215 | 47 | 450 | 440 | 51 | 3 200 | 3 800 | 7,85 | *** NUP 320 ECJ** | **ML** |
| | 215 | 47 | 450 | 440 | 51 | 3 200 | 3 800 | 7,50 | *** N 320 ECP** | **M** |
| | 215 | 73 | 670 | 735 | 85 | 3 200 | 3 800 | 12,0 | *** NU 2320 ECP** | **J, M, ML** |
| | 215 | 73 | 670 | 735 | 85 | 3 200 | 3 800 | 12,2 | *** NJ 2320 ECP** | **J, M, ML** |
| | 215 | 73 | 670 | 735 | 85 | 3 200 | 3 800 | 12,5 | *** NUP 2320 ECP** | **J, ML** |
| | 250 | 58 | 429 | 475 | 53 | 3 000 | 3 600 | 14,0 | **NU 420 M** | **–** |
| **105** | 160 | 26 | 101 | 137 | 16 | 4 800 | 7 500 | 1,90 | **NU 1021 ML** | **M** |
| | 190 | 36 | 300 | 315 | 36,5 | 3 800 | 4 300 | 4,00 | *** NU 221 ECP** | **J, ML** |
| | 190 | 36 | 300 | 315 | 36,5 | 3 800 | 4 300 | 4,10 | *** NJ 221 ECP** | **ML** |
| | 190 | 36 | 300 | 315 | 36,5 | 3 800 | 4 300 | 4,20 | *** NUP 221 ECP** | **ML** |
| | 190 | 36 | 300 | 315 | 36,5 | 3 800 | 4 300 | 3,95 | *** N 221 ECP** | **–** |
| | 225 | 49 | 500 | 500 | 57 | 3 200 | 3 800 | 8,55 | *** NU 321 ECP** | **J, ML** |
| | 225 | 49 | 500 | 500 | 57 | 3 200 | 3 800 | 8,75 | *** NJ 321 ECJ** | **ML** |
| | 225 | 49 | 500 | 500 | 57 | 3 200 | 3 800 | 8,60 | *** N 321 ECP** | **–** |
| | 260 | 60 | 501 | 570 | 64 | 2 800 | 3 400 | 19,0 | **NU 421 M** | **–** |

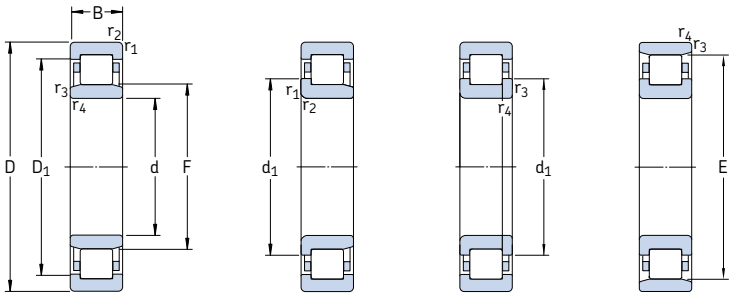
***** SKF Explorer bearing
[1] When ordering bearings with an alternative standard cage the suffix of the standard cage has to be replaced by the suffix of the cage in question, e.g. NU 220 ECP becomes NU 220 ECML (for speed ratings → **page 517**)




Angle ring

| Dimensions | | | | | | | Abutment and fillet dimensions | | | | | | Calculation factor | Angle ring Designation | Mass | Dimensions | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d | $d_1$ ~ | $D_1$ ~ | F, E | $r_{1,2}$ min | $r_{3,4}$ min | s[1] | $d_a$ min | $d_a$ max | $d_b$, $D_a$ min | $D_a$ max | $r_a$ max | $r_b$ max | $k_r$ | | | $B_1$ | $B_2$ |
| mm | | | | | | | mm | | | | | | – | – | kg | mm | |
| **100** | – | 132 | 113 | 1,5 | 1,1 | 3,5 | 106 | 111 | 116 | 143 | 1,5 | 1 | 0,1 | **–** | | | |
| | 127 | 157 | 119 | 2,1 | 2,1 | 1,7 | 112 | 116 | 122 | 168 | 2 | 2 | 0,15 | **HJ 220 EC** | 0,42 | 10 | 15 |
| | 127 | 157 | 119 | 2,1 | 2,1 | 1,7 | 112 | 116 | 130 | 168 | 2 | 2 | 0,15 | **HJ 220 EC** | 0,42 | 10 | 15 |
| | 127 | 157 | 119 | 2,1 | 2,1 | – | 112 | – | 130 | 168 | 2 | 2 | 0,15 | **–** | | | |
| | 127 | – | 163 | 2,1 | 2,1 | 1,7 | 112 | 160 | 166 | 168 | 2 | 2 | 0,15 | **–** | | | |
| | 127 | 157 | 119 | 2,1 | 2,1 | 2,5 | 112 | 116 | 122 | 168 | 2 | 2 | 0,2 | **HJ 2220 EC** | 0,43 | 10 | 16 |
| | 127 | 157 | 119 | 2,1 | 2,1 | 2,5 | 112 | 116 | 130 | 168 | 2 | 2 | 0,2 | **HJ 2220 EC** | 0,43 | 10 | 16 |
| | 127 | 157 | 119 | 2,1 | 2,1 | – | 112 | – | 130 | 168 | 2 | 2 | 0,2 | **–** | | | |
| | 139 | 182 | 127,5 | 3 | 3 | 2,9 | 114 | 124 | 130 | 201 | 2,5 | 2,5 | 0,15 | **HJ 320 EC** | 0,87 | 13 | 20,5 |
| | 139 | 182 | 127,5 | 3 | 3 | 2,9 | 114 | 124 | 142 | 201 | 2,5 | 2,5 | 0,15 | **HJ 320 EC** | 0,87 | 13 | 20,5 |
| | 139 | 182 | 127,5 | 3 | 3 | – | 114 | – | 142 | 201 | 2,5 | 2,5 | 0,15 | **–** | | | |
| | 139 | – | 191,5 | 3 | 3 | 2,9 | 114 | 188 | 195 | 201 | 2,5 | 2,5 | 0,15 | **–** | | | |
| | 139 | 182 | 127,5 | 3 | 3 | 5,9 | 114 | 124 | 130 | 201 | 2,5 | 2,5 | 0,25 | **HJ 2320 EC** | 0,93 | 13 | 23,5 |
| | 139 | 182 | 127,5 | 3 | 3 | 5,9 | 114 | 124 | 142 | 201 | 2,5 | 2,5 | 0,25 | **HJ 2320 EC** | 0,93 | 13 | 23,5 |
| | 139 | 182 | 127,5 | 3 | 3 | – | 114 | – | 142 | 201 | 2,5 | 2,5 | 0,25 | **–** | | | |
| | 153 | 195 | 139 | 4 | 4 | 4,9 | 120 | 135 | 142 | 230 | 3 | 3 | 0,15 | **HJ 420** | 1,50 | 16 | 27 |
| **105** | – | 140 | 119,5 | 2 | 1,1 | 3,8 | 111 | 117 | 122 | 151 | 2 | 1 | 0,1 | **–** | | | |
| | 134 | 164 | 125 | 2,1 | 2,1 | 2 | 117 | 122 | 128 | 178 | 2 | 2 | 0,15 | **HJ 221 EC** | 0,50 | 10 | 17,5 |
| | 134 | 164 | 125 | 2,1 | 2,1 | 2 | 117 | 122 | 137 | 178 | 2 | 2 | 0,15 | **HJ 221 EC** | 0,50 | 10 | 17,5 |
| | 134 | 164 | 125 | 2,1 | 2,1 | – | 117 | – | 137 | 178 | 2 | 2 | 0,15 | **–** | | | |
| | 134 | – | 173 | 2,1 | 2,1 | 2 | 117 | 170 | 176 | 178 | 2 | 2 | 0,15 | **–** | | | |
| | – | 190 | 133 | 3 | 3 | 3,4 | 119 | 130 | 136 | 211 | 2,5 | 2,5 | 0,15 | **–** | | | |
| | 145 | 190 | 133 | 3 | 3 | 3,4 | 119 | 130 | 148 | 211 | 2,5 | 2,5 | 0,15 | **–** | | | |
| | 145 | – | 201 | 3 | 3 | 3,4 | 119 | 198 | 203 | 211 | 2,5 | 2,5 | 0,15 | **–** | | | |
| | – | 203 | 144,5 | 4 | 4 | 4,9 | 125 | 140 | 147 | 240 | 3 | 3 | 0,15 | **–** | | | |

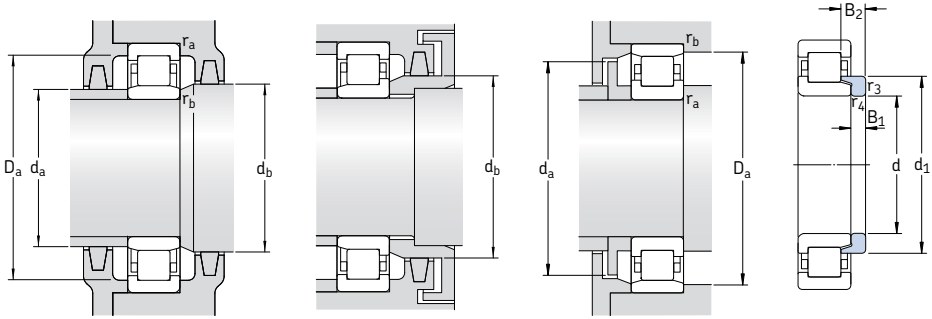
[1] Permissible axial displacement from the normal position of one bearing ring in relation to the other




NU NJ NUP N

| Principal dimensions | | | Basic load ratings dynamic | static | Fatigue load limit | Speed ratings Reference speed | Limiting speed | Mass Bearing with standard cage | Designations Bearing with standard cage | Alternative standard cage designs |
|---|---|---|---|---|---|---|---|---|---|---|
| d | D | B | C | $C_0$ | $P_u$ | | | | | |
| mm | | | kN | | kN | r/min | | kg | – | |
| **110** | 170 | 28 | 128 | 166 | 19,3 | 4 500 | 7 000 | 2,35 | **NU 1022 ML** | **M** |
| | 200 | 38 | 335 | 365 | 42,5 | 3 600 | 4 000 | 4,80 | *** NU 222 ECP** | **J, M, ML** |
| | 200 | 38 | 335 | 365 | 42,5 | 3 600 | 4 000 | 4,90 | *** NJ 222 ECP** | **J, M, ML** |
| | 200 | 38 | 335 | 365 | 42,5 | 3 600 | 4 000 | 5,00 | *** NUP 222 ECP** | **ML** |
| | 200 | 38 | 335 | 365 | 42,5 | 3 600 | 4 000 | 4,80 | *** N 222 ECP** | **M** |
| | 200 | 53 | 440 | 520 | 61 | 3 600 | 4 000 | 6,70 | *** NU 2222 ECP** | **J, ML** |
| | 200 | 53 | 440 | 520 | 61 | 3 600 | 4 000 | 6,75 | *** NJ 2222 ECP** | **J, ML** |
| | 200 | 53 | 440 | 520 | 61 | 3 600 | 4 000 | 6,80 | *** NUP 2222 ECP** | **ML** |
| | 240 | 50 | 530 | 540 | 61 | 3 000 | 3 400 | 10,3 | *** NU 322 ECP** | **J, M, ML** |
| | 240 | 50 | 530 | 540 | 61 | 3 000 | 3 400 | 10,5 | *** NJ 322 ECP** | **J, M, ML** |
| | 240 | 50 | 530 | 540 | 61 | 3 000 | 3 400 | 10,7 | *** NUP 322 ECP** | **J, ML** |
| | 240 | 50 | 530 | 540 | 61 | 3 000 | 3 400 | 10,2 | *** N 322 ECP** | **M** |
| | 240 | 80 | 780 | 900 | 102 | 3 000 | 3 400 | 17,0 | *** NU 2322 ECP** | **MA** |
| | 240 | 80 | 780 | 900 | 102 | 3 000 | 3 400 | 17,2 | *** NJ 2322 ECP** | **MA** |
| | 240 | 80 | 780 | 900 | 102 | 3 000 | 3 400 | 17,4 | *** NUP 2322 ECP** | **MA** |
| | 280 | 65 | 532 | 585 | 64 | 2 600 | 3 200 | 20,0 | **NU 422** | **–** |
| | 280 | 65 | 532 | 585 | 64 | 2 600 | 3 200 | 20,3 | **NJ 422** | **–** |
| **120** | 180 | 28 | 134 | 183 | 20,8 | 4 000 | 6 300 | 2,55 | **NU 1024 ML** | **M** |
| | 215 | 40 | 390 | 430 | 49 | 3 400 | 3 600 | 5,75 | *** NU 224 ECP** | **J, M, ML** |
| | 215 | 40 | 390 | 430 | 49 | 3 400 | 3 600 | 5,85 | *** NJ 224 ECP** | **J, M, ML** |
| | 215 | 40 | 390 | 430 | 49 | 3 400 | 3 600 | 6,00 | *** NUP 224 ECJ** | **ML** |
| | 215 | 40 | 390 | 430 | 49 | 3 400 | 3 600 | 5,75 | *** N 224 ECP** | **M** |
| | 215 | 58 | 520 | 630 | 72 | 3 400 | 3 600 | 8,30 | *** NU 2224 ECP** | **J, M, ML** |
| | 215 | 58 | 520 | 630 | 72 | 3 400 | 3 600 | 8,50 | *** NJ 2224 ECP** | **J, M, ML** |
| | 215 | 58 | 520 | 630 | 72 | 3 400 | 3 600 | 8,70 | *** NUP 2224 ECP** | **ML** |
| | 260 | 55 | 610 | 620 | 69,5 | 2 800 | 3 200 | 13,0 | *** NU 324 ECP** | **J, M, ML** |
| | 260 | 55 | 610 | 620 | 69,5 | 2 800 | 3 200 | 13,3 | *** NJ 324 ECP** | **J, M, ML** |
| | 260 | 55 | 610 | 620 | 69,5 | 2 800 | 3 200 | 13,7 | *** NUP 324 ECP** | **ML** |
| | 260 | 55 | 610 | 620 | 69,5 | 2 800 | 3 200 | 13,0 | *** N 324 ECP** | **M** |

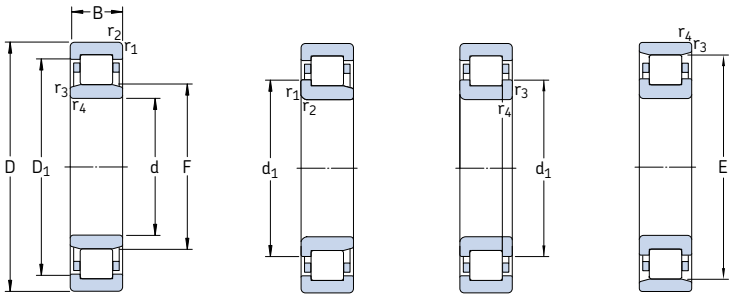
* SKF Explorer bearing
[1)] When ordering bearings with an alternative standard cage the suffix of the standard cage has to be replaced by the suffix of the cage in question, e.g. NU 222 ECP becomes NU 222 ECML (for speed ratings → **page 517**)




Angle ring

| Dimensions | | | | | | | Abutment and fillet dimensions | | | | | | Calculation factor | Angle ring Designation | Mass | Dimensions | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d | $d_1$ ~ | $D_1$ ~ | F, E | $r_{1,2}$ min | $r_{3,4}$ min | s[1] | $d_a$ min | $d_a$ max | $d_b$, $D_a$ min | $D_a$ max | $r_a$ max | $r_b$ max | $k_r$ | | | $B_1$ | $B_2$ |
| mm | | | | | | | mm | | | | | | – | – | kg | mm | |
| **110** | – | 149 | 125 | 2 | 1,1 | 3,8 | 116 | 123 | 128 | 161 | 2 | 1 | 0,1 | **–** | | | |
| | 141 | 174 | 132,5 | 2,1 | 2,1 | 2,1 | 122 | 130 | 135 | 188 | 2 | 2 | 0,15 | **HJ 222 EC** | 0,60 | 11 | 17 |
| | 141 | 174 | 132,5 | 2,1 | 2,1 | 2,1 | 122 | 130 | 145 | 188 | 2 | 2 | 0,15 | **HJ 222 EC** | 0,60 | 11 | 17 |
| | 141 | 174 | 132,5 | 2,1 | 2,1 | – | 122 | – | 145 | 188 | 2 | 2 | 0,15 | **–** | | | |
| | 141 | – | 180,5 | 2,1 | 2,1 | 2,1 | 122 | 177 | 183 | 188 | 2 | 2 | 0,15 | **–** | | | |
| | – | 174 | 132,5 | 2,1 | 2,1 | 3,7 | 122 | 129 | 135 | 188 | 2 | 2 | 0,2 | **–** | | | |
| | 141 | 174 | 132,5 | 2,1 | 2,1 | 3,7 | 122 | 129 | 145 | 188 | 2 | 2 | 0,2 | **–** | | | |
| | 141 | 174 | 132,5 | 2,1 | 2,1 | – | 122 | – | 145 | 188 | 2 | 2 | 0,2 | **–** | | | |
| | 155 | 201 | 143 | 3 | 3 | 3 | 124 | 139 | 146 | 226 | 2,5 | 2,5 | 0,15 | **HJ 322 EC** | 1,20 | 14 | 22 |
| | 155 | 201 | 143 | 3 | 3 | 3 | 124 | 139 | 159 | 226 | 2,5 | 2,5 | 0,15 | **HJ 322 EC** | 1,20 | 14 | 22 |
| | 155 | 201 | 143 | 3 | 3 | – | 124 | – | 159 | 226 | 2,5 | 2,5 | 0,15 | **–** | | | |
| | 155 | – | 211 | 3 | 3 | 3 | 124 | 208 | 215 | 226 | 2,5 | 2,5 | 0,15 | **–** | | | |
| | 155 | 201 | 143 | 3 | 3 | 7,5 | 124 | 139 | 146 | 226 | 2,5 | 2,5 | 0,25 | **HJ 2322 EC** | 1,25 | 14 | 26,5 |
| | 155 | 201 | 143 | 3 | 3 | 7,5 | 124 | 139 | 159 | 226 | 2,5 | 2,5 | 0,25 | **HJ 2322 EC** | 1,25 | 14 | 26,5 |
| | 155 | 201 | 143 | 3 | 3 | – | 124 | – | 159 | 226 | 2,5 | 2,5 | 0,25 | **–** | | | |
| | 171 | 217 | 155 | 4 | 4 | 4,8 | 130 | 150 | 158 | 260 | 3 | 3 | 0,15 | **HJ 422** | 2,10 | 17 | 29,5 |
| | 171 | 217 | 155 | 4 | 4 | 4,8 | 130 | 150 | 174 | 260 | 3 | 3 | 0,15 | **HJ 422** | 2,10 | 17 | 29,5 |
| **120** | – | 159 | 135 | 2 | 1,1 | 3,8 | 126 | 133 | 138 | 171 | 2 | 1 | 0,1 | **–** | | | |
| | 153 | 188 | 143,5 | 2,1 | 2,1 | 1,9 | 132 | 140 | 146 | 203 | 2 | 2 | 0,15 | **HJ 224 EC** | 0,69 | 11 | 17 |
| | 153 | 188 | 143,5 | 2,1 | 2,1 | 1,9 | 132 | 140 | 156 | 203 | 2 | 2 | 0,15 | **HJ 224 EC** | 0,69 | 11 | 17 |
| | 153 | 188 | 143,5 | 2,1 | 2,1 | – | 132 | – | 156 | 203 | 2 | 2 | 0,15 | **–** | | | |
| | 153 | – | 195,5 | 2,1 | 2,1 | 1,9 | 132 | 192 | 199 | 203 | 2 | 2 | 0,15 | **–** | | | |
| | 153 | 188 | 143,5 | 2,1 | 2,1 | 3,8 | 132 | 140 | 146 | 203 | 2 | 2 | 0,2 | **HJ 2224 EC** | 0,74 | 11 | 20 |
| | 153 | 188 | 143,5 | 2,1 | 2,1 | 3,8 | 132 | 140 | 156 | 203 | 2 | 2 | 0,2 | **HJ 2224 EC** | 0,74 | 11 | 20 |
| | 153 | 188 | 143,5 | 2,1 | 2,1 | – | 132 | – | 156 | 203 | 2 | 2 | 0,2 | **–** | | | |
| | 168 | 219 | 154 | 3 | 3 | 3,7 | 134 | 150 | 157 | 246 | 2,5 | 2,5 | 0,15 | **HJ 324 EC** | 1,40 | 14 | 22,5 |
| | 168 | 219 | 154 | 3 | 3 | 3,7 | 134 | 150 | 171 | 246 | 2,5 | 2,5 | 0,15 | **HJ 324 EC** | 1,40 | 14 | 22,5 |
| | 168 | 219 | 154 | 3 | 3 | – | 134 | – | 171 | 246 | 2,5 | 2,5 | 0,15 | **–** | | | |
| | 168 | – | 230 | 3 | 3 | 3,7 | 134 | 226 | 234 | 246 | 2,5 | 2,5 | 0,15 | **–** | | | |

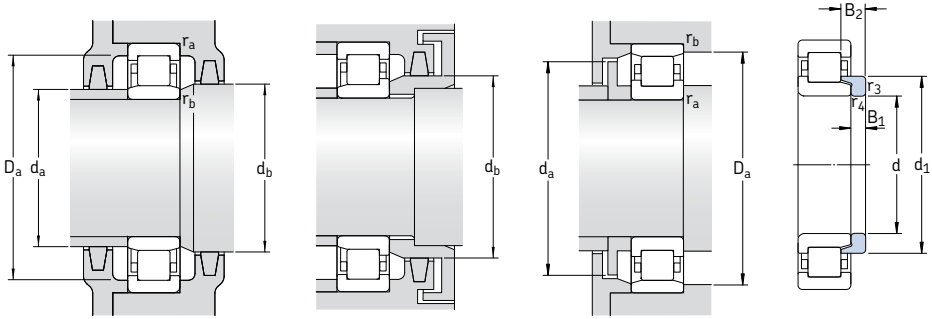
[1] Permissible axial displacement from the normal position of one bearing ring in relation to the other




NU NJ NUP N

| Principal dimensions | | | Basic load ratings dynamic | static | Fatigue load limit | Speed ratings Reference speed | Limiting speed | Mass Bearing with standard cage | Designations Bearing with standard cage | Alternative standard cage designs[1] |
|---|---|---|---|---|---|---|---|---|---|---|
| d | D | B | C | $C_0$ | $P_u$ | | | | | |
| mm | | | kN | | kN | r/min | | kg | – | |
| **120** | 260 | 86 | 915 | 1 040 | 116 | 2 800 | 4 300 | 23,3 | * **NU 2324 ECMA** | **–** |
| cont. | 260 | 86 | 915 | 1 040 | 116 | 2 800 | 4 300 | 23,6 | * **NJ 2324 ECMA** | **M** |
| | 260 | 86 | 915 | 1 040 | 116 | 2 800 | 4 300 | 24,0 | * **NUP 2324 ECMA** | **–** |
| | 310 | 72 | 644 | 735 | 78 | 2 400 | 2 800 | 28,0 | **NU 424** | **–** |
| **130** | 200 | 33 | 165 | 224 | 25 | 3 800 | 5 600 | 3,85 | **NU 1026 ML** | **M** |
| | 230 | 40 | 415 | 455 | 51 | 3 200 | 3 400 | 6,45 | * **NU 226 ECP** | **J, M, ML** |
| | 230 | 40 | 415 | 455 | 51 | 3 200 | 3 400 | 6,60 | * **NJ 226 ECP** | **J, M, ML** |
| | 230 | 40 | 415 | 455 | 51 | 3 200 | 3 400 | 6,75 | * **NUP 226 ECP** | **J, ML** |
| | 230 | 40 | 415 | 455 | 51 | 3 200 | 3 400 | 6,30 | * **N 226 ECP** | **–** |
| | 230 | 64 | 610 | 735 | 83 | 3 200 | 3 400 | 10,3 | * **NU 2226 ECP** | **ML** |
| | 230 | 64 | 610 | 735 | 83 | 3 200 | 3 400 | 10,6 | * **NJ 2226 ECP** | **ML** |
| | 230 | 64 | 610 | 735 | 83 | 3 200 | 3 400 | 11,0 | * **NUP 2226 ECP** | **ML** |
| | 280 | 58 | 720 | 750 | 81,5 | 2 400 | 3 000 | 16,1 | * **NU 326 ECP** | **J, M, ML** |
| | 280 | 58 | 720 | 750 | 81,5 | 2 400 | 3 000 | 16,5 | * **NJ 326 ECP** | **J, M, ML** |
| | 280 | 58 | 720 | 750 | 81,5 | 2 400 | 3 000 | 17,0 | * **NUP 326 ECP** | **ML** |
| | 280 | 58 | 720 | 750 | 81,5 | 2 400 | 3 000 | 16,0 | * **N 326 ECP** | **M** |
| | 280 | 93 | 1 060 | 1 250 | 137 | 2 400 | 3 800 | 30,0 | * **NU 2326 ECMA** | **–** |
| | 280 | 93 | 1 060 | 1 250 | 137 | 2 400 | 3 800 | 30,5 | * **NJ 2326 ECMA** | **–** |
| | 280 | 93 | 1 060 | 1 250 | 137 | 2 400 | 3 800 | 31,0 | * **NUP 2326 ECMA** | **–** |
| **140** | 210 | 33 | 179 | 255 | 28 | 3 600 | 5 300 | 4,05 | **NU 1028 ML** | **M** |
| | 250 | 42 | 450 | 510 | 57 | 2 800 | 3 200 | 9,00 | * **NU 228 ECM** | **J, ML** |
| | 250 | 42 | 450 | 510 | 57 | 2 800 | 3 200 | 9,20 | * **NJ 228 ECM** | **J, ML** |
| | 250 | 42 | 450 | 510 | 57 | 2 800 | 3 200 | 9,40 | * **NUP 228 ECM** | **ML** |
| | 250 | 68 | 655 | 830 | 93 | 2 800 | 4 800 | 15,0 | * **NU 2228 ECML** | **–** |
| | 250 | 68 | 655 | 830 | 93 | 2 800 | 4 800 | 15,3 | * **NJ 2228 ECML** | **–** |
| | 250 | 68 | 655 | 830 | 93 | 2 800 | 4 800 | 15,6 | * **NUP 2228 ECML** | **–** |
| | 300 | 62 | 780 | 830 | 88 | 2 400 | 2 800 | 22,0 | * **NU 328 ECM** | **J, ML** |
| | 300 | 62 | 780 | 830 | 88 | 2 400 | 2 800 | 22,5 | * **NJ 328 ECM** | **J, ML** |
| | 300 | 62 | 780 | 830 | 88 | 2 400 | 2 800 | 23,0 | * **NUP 328 ECM** | **ML** |

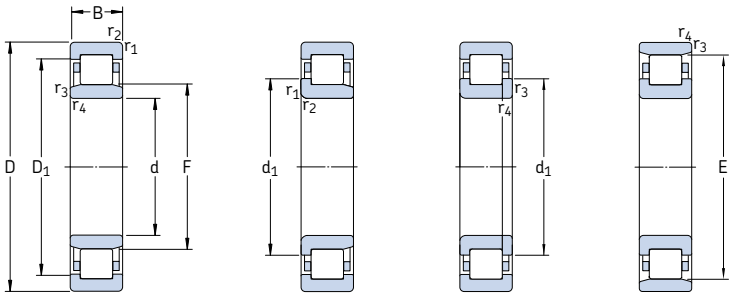
* SKF Explorer bearing
[1] When ordering bearings with an alternative standard cage the suffix of the standard cage has to be replaced by the suffix of the cage in question, e.g. NU 226 ECP becomes NU 226 ECML (for speed ratings → **page 517**)




Angle ring

| Dimensions | | | | | | | Abutment and fillet dimensions | | | | | | Calculation factor | Angle ring Designation | Mass | Dimensions | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d | $d_1$ ~ | $D_1$ ~ | F, E | $r_{1,2}$ min | $r_{3,4}$ min | s[1] | $d_a$ min | $d_a$ max | $d_b$, $D_a$ min | $D_a$ max | $r_a$ max | $r_b$ max | $k_r$ | | | $B_1$ | $B_2$ |
| mm | | | | | | | mm | | | | | | – | – | kg | mm | |
| **120** | 168 | 219 | 154 | 3 | 3 | 7,2 | 134 | 150 | 157 | 246 | 2,5 | 2,5 | 0,25 | **HJ 2324 EC** | 1,45 | 14 | 26 |
| cont. | 168 | 219 | 154 | 3 | 3 | 7,2 | 134 | 150 | 171 | 246 | 2,5 | 2,5 | 0,25 | **HJ 2324 EC** | 1,45 | 14 | 26 |
| | 168 | 219 | 154 | 3 | 3 | – | 134 | – | 171 | 246 | 2,5 | 2,5 | 0,25 | **–** | | | |
| | 188 | 240 | 170 | 5 | 5 | 6,3 | 144 | 165 | 173 | 286 | 4 | 4 | 0,15 | **HJ 424** | 2,60 | 17 | 30,5 |
| **130** | – | 175 | 148 | 2 | 1,1 | 4,7 | 136 | 145 | 151 | 191 | 2 | 1 | 0,1 | **–** | | | |
| | 164 | 202 | 153,5 | 3 | 3 | 2,1 | 144 | 150 | 156 | 216 | 2,5 | 2,5 | 0,15 | **HJ 226 EC** | 0,75 | 11 | 17 |
| | 164 | 202 | 153,5 | 3 | 3 | 2,1 | 144 | 150 | 167 | 216 | 2,5 | 2,5 | 0,15 | **HJ 226 EC** | 0,75 | 11 | 17 |
| | 164 | 202 | 153,5 | 3 | 3 | – | 144 | – | 167 | 216 | 2,5 | 2,5 | 0,15 | **–** | | | |
| | 164 | – | 209,5 | 3 | 3 | 2,1 | 144 | 206 | 213 | 216 | 2,5 | 2,5 | 0,15 | **–** | | | |
| | 164 | 202 | 153,5 | 3 | 3 | 4,3 | 144 | 149 | 156 | 216 | 2,5 | 2,5 | 0,2 | **HJ 2226 EC** | 0,83 | 11 | 21 |
| | 164 | 202 | 153,5 | 3 | 3 | 4,3 | 144 | 149 | 167 | 216 | 2,5 | 2,5 | 0,2 | **HJ 2226 EC** | 0,83 | 11 | 21 |
| | 164 | 202 | 153,5 | 3 | 3 | – | 144 | – | 167 | 216 | 2,5 | 2,5 | 0,2 | | | | |
| | 181 | 236 | 167 | 4 | 4 | 3,7 | 147 | 163 | 170 | 263 | 3 | 3 | 0,15 | **HJ 326 EC** | 1,60 | 14 | 23 |
| | 181 | 236 | 167 | 4 | 4 | 3,7 | 147 | 163 | 185 | 263 | 3 | 3 | 0,15 | **HJ 326 EC** | 1,60 | 14 | 23 |
| | 181 | 236 | 167 | 4 | 4 | – | 147 | – | 185 | 263 | 3 | 3 | 0,15 | **–** | | | |
| | 181 | – | 247 | 4 | 4 | 3,7 | 147 | 243 | 251 | 263 | 3 | 3 | 0,15 | **–** | | | |
| | 181 | 236 | 167 | 4 | 4 | 8,7 | 147 | 163 | 170 | 263 | 3 | 3 | 0,25 | **HJ 2326 EC** | 1,70 | 14 | 28 |
| | 181 | 236 | 167 | 4 | 4 | 8,7 | 147 | 163 | 185 | 263 | 3 | 3 | 0,25 | **HJ 2326 EC** | 1,70 | 14 | 28 |
| | 181 | 236 | 167 | 4 | 4 | – | 147 | – | 185 | 263 | 3 | 3 | 0,25 | **–** | | | |
| **140** | – | 185 | 158 | 2 | 1,1 | 4,4 | 146 | 155 | 161 | 201 | 2 | 1 | 0,1 | **–** | | | |
| | 179 | 217 | 169 | 3 | 3 | 2,5 | 154 | 166 | 172 | 236 | 2,5 | 2,5 | 0,15 | **HJ 228 EC** | 1,00 | 10 | 18 |
| | 179 | 217 | 169 | 3 | 3 | 2,5 | 154 | 166 | 183 | 236 | 2,5 | 2,5 | 0,15 | **HJ 228 EC** | 1,00 | 10 | 18 |
| | 179 | 217 | 169 | 3 | 3 | – | 154 | – | 183 | 236 | 2,5 | 2,5 | 0,15 | **–** | | | |
| | 179 | 217 | 169 | 3 | 3 | 4,4 | 154 | 164 | 172 | 236 | 2,5 | 2,5 | 0,2 | **HJ 2228 EC** | 1,05 | 11 | 23 |
| | 179 | 217 | 169 | 3 | 3 | 4,4 | 154 | 164 | 183 | 236 | 2,5 | 2,5 | 0,2 | **HJ 2228 EC** | 1,05 | 11 | 23 |
| | 179 | 217 | 169 | 3 | 3 | – | 154 | – | 183 | 236 | 2,5 | 2,5 | 0,2 | **–** | | | |
| | 195 | 252 | 180 | 4 | 4 | 3,7 | 157 | 176 | 183 | 283 | 3 | 3 | 0,15 | **HJ 328 EC** | 2,00 | 15 | 25 |
| | 195 | 252 | 180 | 4 | 4 | 3,7 | 157 | 176 | 199 | 283 | 3 | 3 | 0,15 | **HJ 328 EC** | 2,00 | 15 | 25 |
| | 195 | 252 | 180 | 4 | 4 | – | 157 | – | 199 | 283 | 3 | 3 | 0,15 | **–** | | | |

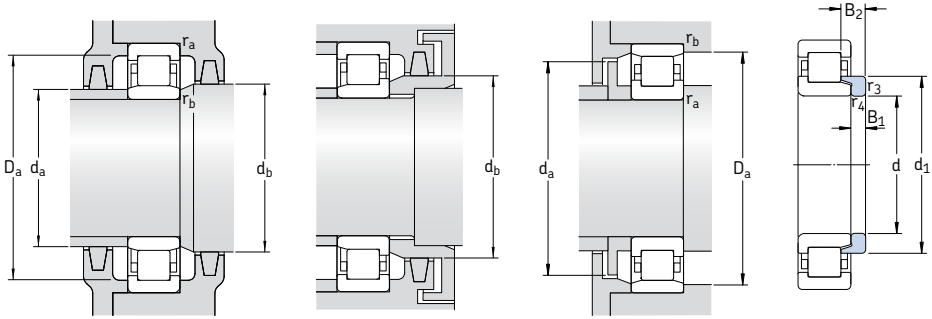
[1] Permissible axial displacement from the normal position of one bearing ring in relation to the other




NU NJ NUP N

| Principal dimensions | | | Basic load ratings dynamic | static | Fatigue load limit | Speed ratings Reference speed | Limiting speed | Mass Bearing with standard cage | Designations Bearing with standard cage | Alternative standard cage designs[1] |
|---|---|---|---|---|---|---|---|---|---|---|
| d | D | B | C | $C_0$ | $P_u$ | | | | | |
| mm | | | kN | | kN | r/min | | kg | – | |
| **140** | 300 | 102 | 1 200 | 1 430 | 150 | 2 400 | 3 600 | 37,0 | * **NU 2328 ECMA** | **–** |
| cont. | 300 | 102 | 1 200 | 1 430 | 150 | 2 400 | 3 600 | 37,5 | * **NJ 2328 ECMA** | **–** |
| | 300 | 102 | 1 200 | 1 430 | 150 | 2 400 | 3 600 | 38,0 | * **NUP 2328 ECMA** | **–** |
| **150** | 225 | 35 | 198 | 290 | 31,5 | 3 200 | 5 000 | 4,90 | **NU 1030 ML** | **M** |
| | 270 | 45 | 510 | 600 | 64 | 2 600 | 2 800 | 11,8 | * **NU 230 ECM** | **J, ML** |
| | 270 | 45 | 510 | 600 | 64 | 2 600 | 2 800 | 12,0 | * **NJ 230 ECM** | **J, ML** |
| | 270 | 45 | 510 | 600 | 64 | 2 600 | 2 800 | 12,2 | * **NUP 230 ECM** | **ML** |
| | 270 | 73 | 735 | 930 | 100 | 2 600 | 2 800 | 18,5 | * **NU 2230 ECM** | **–** |
| | 270 | 73 | 735 | 930 | 100 | 2 600 | 2 800 | 19,0 | * **NJ 2230 ECM** | **–** |
| | 320 | 65 | 900 | 965 | 100 | 2 200 | 2 600 | 26,3 | * **NU 330 ECM** | **MA** |
| | 320 | 65 | 900 | 965 | 100 | 2 200 | 2 600 | 27,0 | * **NJ 330 ECM** | **MA** |
| | 320 | 108 | 1 370 | 1 630 | 166 | 2 200 | 3 400 | 45,5 | * **NU 2330 ECMA** | **–** |
| | 320 | 108 | 1 370 | 1 630 | 166 | 2 200 | 3 400 | 46,0 | * **NJ 2330 ECMA** | **–** |
| | 320 | 108 | 1 370 | 1 630 | 166 | 2 200 | 3 400 | 46,5 | * **NUP 2330 ECMA** | **–** |
| **160** | 240 | 38 | 229 | 325 | 35,5 | 3 000 | 4 800 | 5,95 | **NU 1032 ML** | **M** |
| | 290 | 48 | 585 | 680 | 72 | 2 400 | 2 600 | 14,1 | * **NU 232 ECM** | **ML** |
| | 290 | 48 | 585 | 680 | 72 | 2 400 | 2 600 | 14,4 | * **NJ 232 ECM** | **ML** |
| | 290 | 48 | 585 | 680 | 72 | 2 400 | 2 600 | 14,8 | * **NUP 232 ECM** | **ML** |
| | 290 | 48 | 585 | 680 | 72 | 2 400 | 2 600 | 14,0 | * **N 232 ECM** | **–** |
| | 290 | 80 | 930 | 1 200 | 129 | 2 400 | 3 600 | 24,3 | * **NU 2232 ECMA** | **–** |
| | 290 | 80 | 930 | 1 200 | 129 | 2 400 | 3 600 | 24,8 | * **NJ 2232 ECMA** | **–** |
| | 340 | 68 | 1 000 | 1 080 | 112 | 2 000 | 2 400 | 32,0 | * **NU 332 ECM** | **MA** |
| | 340 | 68 | 1 000 | 1 080 | 112 | 2 000 | 2 400 | 32,5 | * **NJ 332 ECM** | **MA** |
| | 340 | 114 | 1 250 | 1 730 | 173 | 1 800 | 2 800 | 53,0 | **NU 2332 ECMA** | **–** |
| | 340 | 114 | 1 250 | 1 730 | 173 | 1 800 | 2 800 | 53,5 | **NJ 2332 ECMA** | **–** |

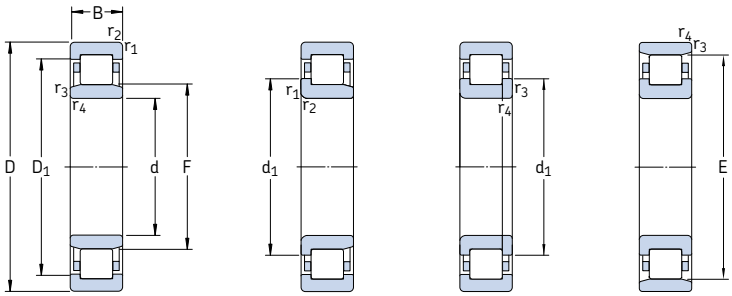
* SKF Explorer bearing
[1] When ordering bearings with an alternative standard cage the suffix of the standard cage has to be replaced by the suffix of the cage in question, e.g. NU 230 ECM becomes NU 230 ECML (for speed ratings → **page 517**)




Angle ring

| Dimensions | | | | | | | Abutment and fillet dimensions | | | | | | Calculation factor | Angle ring Designation | Mass | Dimensions | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d | $d_1$ ~ | $D_1$ ~ | F, E | $r_{1,2}$ min | $r_{3,4}$ min | $s^{1)}$ | $d_a$ min | $d_a$ max | $d_b$, $D_a$ min | $D_a$ max | $r_a$ max | $r_b$ max | $k_r$ | | | $B_1$ | $B_2$ |
| mm | | | | | | | mm | | | | | | – | – | kg | mm | |
| **140** | 195 | 252 | 180 | 4 | 4 | 9,7 | 157 | 176 | 183 | 283 | 3 | 3 | 0,25 | **HJ 2328 EC** | 2,15 | 15 | 31 |
| cont. | 195 | 252 | 180 | 4 | 4 | 9,7 | 157 | 176 | 199 | 283 | 3 | 3 | 0,25 | **HJ 2328 EC** | 2,15 | 15 | 31 |
| | 195 | 252 | 180 | 4 | 4 | – | 157 | – | 199 | 283 | 3 | 3 | 0,25 | **–** | | | |
| **150** | – | 198 | 169,5 | 2,1 | 1,5 | 4,9 | 157 | 167 | 173 | 215 | 2 | 1,5 | 0,1 | **–** | | | |
| | 193 | 234 | 182 | 3 | 3 | 2,5 | 163 | 178 | 185 | 256 | 2,5 | 2,5 | 0,15 | **HJ 230 EC** | 1,25 | 12 | 19,5 |
| | 193 | 234 | 182 | 3 | 3 | 2,5 | 164 | 178 | 197 | 256 | 2,5 | 2,5 | 0,15 | **HJ 230 EC** | 1,25 | 12 | 19,5 |
| | 193 | 234 | 182 | 3 | 3 | – | 164 | – | 197 | 256 | 2,5 | 2,5 | 0,15 | **–** | | | |
| | 194 | 234 | 182 | 3 | 3 | 4,9 | 164 | 179 | 185 | 256 | 2,5 | 2,5 | 0,2 | **HJ 2230 EC** | 1,35 | 12 | 24,5 |
| | 194 | 234 | 182 | 3 | 3 | 4,9 | 164 | 179 | 197 | 256 | 2,5 | 2,5 | 0,2 | **HJ 2230 EC** | 1,35 | 12 | 24,5 |
| | 209 | 270 | 193 | 4 | 4 | 4 | 167 | 189 | 196 | 303 | 3 | 3 | 0,15 | **HJ 330 EC** | 2,35 | 15 | 25 |
| | 209 | 270 | 193 | 4 | 4 | 4 | 167 | 189 | 213 | 303 | 3 | 3 | 0,15 | **HJ 330 EC** | 2,35 | 15 | 25 |
| | 209 | 270 | 193 | 4 | 4 | 10,5 | 167 | 189 | 196 | 303 | 3 | 3 | 0,25 | **–** | | | |
| | 209 | 270 | 193 | 4 | 4 | 10,5 | 167 | 189 | 213 | 303 | 3 | 3 | 0,25 | **–** | | | |
| | 209 | 270 | 193 | 4 | 4 | – | 167 | – | 213 | 303 | 3 | 3 | 0,25 | **–** | | | |
| **160** | 188 | 211 | 180 | 2,1 | 1,5 | 5,2 | 167 | 177 | 183 | 230 | 2 | 1,5 | 0,1 | **HJ 1032** | 0,65 | 10 | 19 |
| | 206 | 250 | 195 | 3 | 3 | 2,7 | 174 | 191 | 198 | 276 | 2,5 | 2,5 | 0,15 | **HJ 232 EC** | 1,50 | 12 | 20 |
| | 206 | 250 | 195 | 3 | 3 | 2,7 | 174 | 191 | 210 | 276 | 2,5 | 2,5 | 0,15 | **HJ 232 EC** | 1,50 | 12 | 20 |
| | 206 | 250 | 195 | 3 | 3 | – | 174 | – | 210 | 276 | 2,5 | 2,5 | 0,15 | **–** | | | |
| | 206 | – | 259 | 3 | 3 | 2,7 | 174 | 255 | 263 | 276 | 2,5 | 2,5 | 0,15 | **–** | | | |
| | 205 | 252 | 193 | 3 | 3 | 4,5 | 174 | 188 | 196 | 276 | 2,5 | 2,5 | 0,2 | **HJ 2232 EC** | 1,55 | 12 | 24,5 |
| | 205 | 252 | 193 | 3 | 3 | 4,5 | 174 | 188 | 209 | 276 | 2,5 | 2,5 | 0,2 | **HJ 2232 EC** | 1,55 | 12 | 24,5 |
| | 221 | 286 | 204 | 4 | 4 | 4 | 177 | 200 | 207 | 323 | 3 | 3 | 0,15 | **HJ 332 EC** | 2,55 | 15 | 25 |
| | 221 | 286 | 204 | 4 | 4 | 4 | 177 | 200 | 225 | 323 | 3 | 3 | 0,15 | **HJ 332 EC** | 2,55 | 15 | 25 |
| | – | 286 | 204 | 4 | 4 | 11 | 177 | 200 | 207 | 323 | 3 | 3 | 0,25 | **–** | | | |
| | 221 | 286 | 204 | 4 | 4 | 11 | 177 | 200 | 225 | 323 | 3 | 3 | 0,25 | **–** | | | |

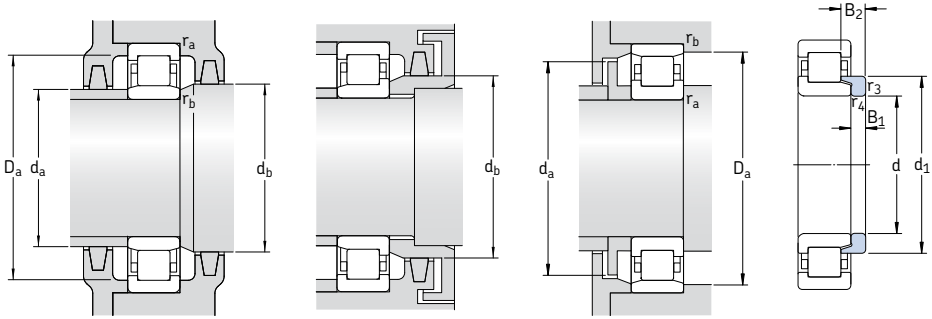
[1)] Permissible axial displacement from the normal position of one bearing ring in relation to the other




NU NJ NUP N

| Principal dimensions | | | Basic load ratings dynamic | static | Fatigue load limit | Speed ratings Reference speed | Limiting speed | Mass Bearing with standard cage | Designations Bearing with standard cage | Alternative standard cage designs[1] |
|---|---|---|---|---|---|---|---|---|---|---|
| d | D | B | C | $C_0$ | $P_u$ | | | | | |
| mm | | | kN | | kN | r/min | | kg | – | |
| **170** | 260 | 42 | 275 | 400 | 41,5 | 2 800 | 4 300 | 8,00 | **NU 1034 ML** | **M** |
| | 310 | 52 | 695 | 815 | 85 | 2 200 | 2 400 | 18,2 | *** NU 234 ECM** | **MA** |
| | 310 | 52 | 695 | 815 | 85 | 2 200 | 2 400 | 18,6 | *** NJ 234 ECM** | **MA** |
| | 310 | 52 | 695 | 815 | 85 | 2 200 | 2 400 | 19,0 | *** NUP 234 ECM** | **MA** |
| | 310 | 86 | 1 060 | 1 340 | 140 | 2 200 | 3 200 | 30,0 | *** NU 2234 ECMA** | **–** |
| | 360 | 72 | 952 | 1 180 | 116 | 1 700 | 2 200 | 37,5 | **NU 334 ECM** | **MA** |
| | 360 | 72 | 952 | 1 180 | 116 | 1 700 | 2 200 | 38,5 | **N 334 ECM** | **–** |
| | 360 | 120 | 1 450 | 2 040 | 204 | 1 700 | 3 000 | 62,0 | **NU 2334 ECMA** | **–** |
| | 360 | 120 | 1 450 | 2 040 | 204 | 1 700 | 3 000 | 63,0 | **NJ 2334 ECMA** | **–** |
| **180** | 280 | 46 | 336 | 475 | 51 | 2 600 | 4 000 | 10,5 | **NU 1036 ML** | **M** |
| | 320 | 52 | 720 | 850 | 88 | 2 200 | 3 200 | 19,0 | *** NU 236 ECMA** | **M** |
| | 320 | 52 | 720 | 850 | 88 | 2 200 | 3 200 | 19,3 | *** NJ 236 ECMA** | **–** |
| | 320 | 52 | 720 | 850 | 88 | 2 200 | 3 200 | 19,8 | *** NUP 236 ECMA** | **–** |
| | 320 | 86 | 1 100 | 1 430 | 146 | 2 200 | 3 200 | 31,5 | *** NU 2236 ECMA** | **M** |
| | 320 | 86 | 1 100 | 1 430 | 146 | 2 200 | 3 200 | 32,0 | *** NJ 2236 ECMA** | **M** |
| | 380 | 75 | 1 020 | 1 290 | 125 | 1 600 | 2 200 | 44,0 | **NU 336 ECM** | **–** |
| | 380 | 126 | 1 610 | 2 240 | 216 | 1 600 | 2 800 | 71,5 | **NU 2336 ECMA** | **–** |
| **190** | 290 | 46 | 347 | 500 | 53 | 2 600 | 3 800 | 11,0 | **NU 1038 ML** | **–** |
| | 340 | 55 | 800 | 965 | 98 | 2 000 | 3 000 | 24,0 | *** NU 238 ECMA** | **M** |
| | 340 | 55 | 800 | 965 | 98 | 2 000 | 3 000 | 24,5 | *** NJ 238 ECMA** | **M** |
| | 340 | 55 | 800 | 965 | 98 | 2 000 | 3 000 | 25,0 | *** NUP 238 ECMA** | **M** |
| | 340 | 92 | 1 220 | 1 600 | 160 | 2 000 | 3 000 | 39,0 | *** NU 2238 ECMA** | **M** |
| | 400 | 78 | 1 140 | 1 500 | 143 | 1 500 | 2 000 | 50,0 | **NU 338 ECM** | **–** |
| | 400 | 132 | 1 830 | 2 550 | 236 | 1 500 | 2 600 | 82,5 | **NU 2338 ECMA** | **–** |

***** SKF Explorer bearing
[1] When ordering bearings with an alternative standard cage the suffix of the standard cage has to be replaced by the suffix of the cage in question, e.g. NU 234 ECM becomes NU 234 ECMA (for speed ratings → **page 517**)

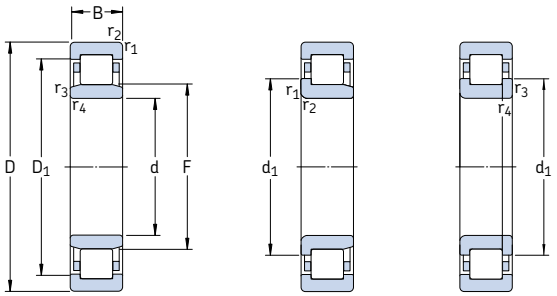



Angle ring

| Dimensions | | | | | | | Abutment and fillet dimensions | | | | | | Calculation factor | Angle ring Designation | Mass | Dimensions | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d | $d_1$ ~ | $D_1$ ~ | F, E | $r_{1,2}$ min | $r_{3,4}$ min | s[1] | $d_a$ min | $d_a$ max | $d_b$, $D_a$ min | $D_a$ max | $r_a$ max | $r_b$ max | $k_r$ | | | $B_1$ | $B_2$ |
| mm | | | | | | | mm | | | | | | – | – | kg | mm | |
| **170** | 201 | 227 | 193 | 2,1 | 2,1 | 5,8 | 180 | 190 | 196 | 250 | 2 | 2 | 0,1 | **HJ 1034** | 0,94 | 11 | 21 |
| | 220 | 268 | 207 | 4 | 4 | 2,9 | 187 | 203 | 210 | 293 | 3 | 3 | 0,15 | **HJ 234 EC** | 1,65 | 12 | 20 |
| | 220 | 268 | 207 | 4 | 4 | 2,9 | 187 | 203 | 224 | 293 | 3 | 3 | 0,15 | **HJ 234 EC** | 1,65 | 12 | 20 |
| | 220 | 268 | 207 | 4 | 4 | – | 187 | – | 224 | 293 | 3 | 3 | 0,15 | **–** | | | |
| | 220 | 270 | 205 | 4 | 4 | 4,2 | 187 | 200 | 208 | 293 | 3 | 3 | 0,2 | **HJ 2234 EC** | 1,80 | 12 | 24 |
| | – | 303 | 218 | 4 | 4 | 4,6 | 187 | 214 | 221 | 343 | 3 | 3 | 0,15 | **–** | | | |
| | 236 | – | 318 | 4 | 4 | 4,6 | 187 | 313 | 323 | 343 | 3 | 3 | 0,15 | **–** | | | |
| | – | 301 | 216 | 4 | 4 | 10 | 187 | 211 | 220 | 343 | 3 | 3 | 0,25 | **–** | | | |
| | 234 | 301 | 216 | 4 | 4 | 10 | 187 | 211 | 238 | 343 | 3 | 3 | 0,25 | **–** | | | |
| **180** | 215 | 244 | 205 | 2,1 | 2,1 | 6,1 | 190 | 202 | 208 | 270 | 2 | 2 | 0,1 | **HJ 1036** | 1,25 | 12 | 22,5 |
| | 230 | 279 | 217 | 4 | 4 | 2,9 | 197 | 213 | 220 | 303 | 3 | 3 | 0,15 | **HJ 236 EC** | 1,70 | 12 | 20 |
| | 230 | 279 | 217 | 4 | 4 | 2,9 | 197 | 213 | 234 | 303 | 3 | 3 | 0,15 | **HJ 236 EC** | 1,70 | 12 | 20 |
| | 230 | 279 | 217 | 4 | 4 | – | 197 | – | 234 | 303 | 3 | 3 | 0,15 | **–** | | | |
| | 229 | 280 | 215 | 4 | 4 | 4,2 | 197 | 210 | 218 | 303 | 3 | 3 | 0,2 | **HJ 2236 EC** | 1,90 | 12 | 24 |
| | 229 | 280 | 215 | 4 | 4 | 4,2 | 197 | 210 | 233 | 303 | 3 | 3 | 0,2 | **HJ 2236 EC** | 1,90 | 12 | 24 |
| | – | 319 | 231 | 4 | 4 | 4,2 | 197 | 223 | 235 | 363 | 3 | 3 | 0,15 | **–** | | | |
| | – | 320 | 227 | 4 | 4 | 10,5 | 197 | 223 | 231 | 363 | 3 | 3 | 0,25 | **–** | | | |
| **190** | 225 | 254 | 215 | 2,1 | 2,1 | 6,1 | 200 | 212 | 218 | 280 | 2 | 2 | 0,1 | **HJ 1038** | 1,35 | 12 | 22,5 |
| | 244 | 295 | 230 | 4 | 4 | 3 | 207 | 226 | 234 | 323 | 3 | 3 | 0,15 | **HJ 238 EC** | 2,10 | 13 | 21,5 |
| | 244 | 295 | 230 | 4 | 4 | 3 | 207 | 226 | 248 | 323 | 3 | 3 | 0,15 | **HJ 238 EC** | 2,10 | 13 | 21,5 |
| | 244 | 295 | 230 | 4 | 4 | – | 207 | – | 248 | 323 | 3 | 3 | 0,15 | **–** | | | |
| | – | 297 | 228 | 4 | 4 | 5 | 207 | 222 | 232 | 323 | 3 | 3 | 0,2 | **–** | | | |
| | 264 | 338 | 245 | 5 | 5 | 4,3 | 210 | 240 | 249 | 380 | 4 | 4 | 0,15 | **HJ 338 EC** | 4,30 | 18 | 29 |
| | – | 341 | 240 | 5 | 5 | 9,5 | 210 | 235 | 244 | 380 | 4 | 4 | 0,25 | **–** | | | |

[1] Permissible axial displacement from the normal position of one bearing ring in relation to the other

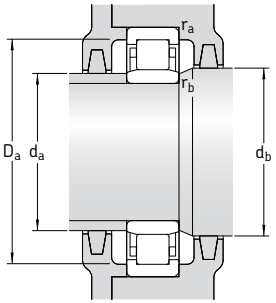
## Single row cylindrical roller bearings
d **200 – 240** mm

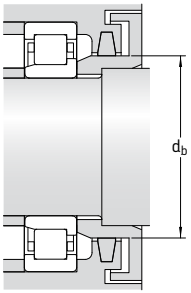


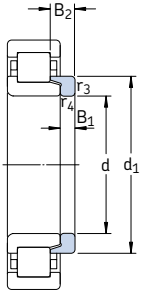

NU NJ NUP

| Principal dimensions | | | Basic load ratings dynamic | static | Fatigue load limit | Speed ratings Reference speed | Limiting speed | Mass Bearing with standard cage | Designations Bearing with standard cage | Alternative standard cage designs[1] |
|---|---|---|---|---|---|---|---|---|---|---|
| d | D | B | C | $C_0$ | $P_u$ | | | | | |
| mm | | | kN | | kN | r/min | | kg | – | |
| **200** | 310 | 51 | 380 | 570 | 58,5 | 2 400 | 3 000 | 14,5 | **NU 1040 MA** | **M** |
| | 360 | 58 | 850 | 1 020 | 100 | 1 900 | 2 800 | 28,5 | * **NU 240 ECMA** | **M** |
| | 360 | 58 | 850 | 1 020 | 100 | 1 900 | 2 800 | 29,0 | * **NJ 240 ECMA** | **M** |
| | 360 | 58 | 850 | 1 020 | 100 | 1 900 | 2 800 | 29,5 | * **NUP 240 ECMA** | **M** |
| | 360 | 98 | 1 370 | 1 800 | 180 | 1 900 | 2 800 | 46,0 | * **NU 2240 ECMA** | **–** |
| | 420 | 80 | 1 230 | 1 630 | 150 | 1 400 | 2 400 | 57,5 | **NU 340 ECMA** | **–** |
| | 420 | 138 | 1 980 | 2 800 | 255 | 1 400 | 2 400 | 96,5 | **NU 2340 ECMA** | **–** |
| | 420 | 138 | 1 980 | 2 800 | 255 | 1 400 | 2 400 | 97,0 | **NJ 2340 ECMA** | **–** |
| **220** | 340 | 56 | 495 | 735 | 73,5 | 2 200 | 2 800 | 18,5 | **NU 1044 MA** | **M** |
| | 400 | 65 | 1 060 | 1 290 | 125 | 1 600 | 2 400 | 38,5 | * **NU 244 ECMA** | **M** |
| | 400 | 65 | 1 060 | 1 290 | 125 | 1 600 | 2 400 | 39,0 | * **NJ 244 ECMA** | **M** |
| | 400 | 65 | 1 060 | 1 290 | 125 | 1 600 | 2 400 | 39,5 | * **NUP 244 ECMA** | **M** |
| | 400 | 108 | 1 570 | 2 280 | 212 | 1 600 | 2 400 | 62,5 | **NU 2244 ECMA** | **–** |
| | 460 | 88 | 1 210 | 1 630 | 150 | 1 500 | 1 700 | 72,5 | **NU 344 M** | **–** |
| | 460 | 88 | 1 210 | 1 630 | 150 | 1 500 | 1 700 | 73,5 | **NJ 344 M** | **–** |
| | 460 | 145 | 2 380 | 3 450 | 310 | 1 300 | 2 200 | 120 | **NU 2344 ECMA** | **–** |
| **240** | 360 | 56 | 523 | 800 | 78 | 2 000 | 2 600 | 20,0 | **NU 1048 MA** | **–** |
| | 440 | 72 | 952 | 1 370 | 129 | 1 600 | 2 200 | 51,5 | **NU 248 MA** | **–** |
| | 440 | 72 | 952 | 1 370 | 129 | 1 600 | 2 200 | 52,5 | **NJ 248 MA** | **–** |
| | 440 | 72 | 952 | 1 370 | 129 | 1 600 | 2 200 | 53,5 | **NUP 248 MA** | **–** |
| | 440 | 120 | 1 450 | 2 360 | 216 | 1 500 | 2 200 | 84,0 | **NU 2248 MA** | **–** |
| | 440 | 120 | 1 450 | 2 360 | 216 | 1 500 | 2 200 | 85,0 | **NJ 2248 MA** | **–** |
| | 500 | 95 | 1 450 | 2 000 | 180 | 1 300 | 1 600 | 94,5 | **NU 348 M** | **–** |
| | 500 | 95 | 1 450 | 2 000 | 180 | 1 300 | 2 000 | 98,5 | **NJ 348 MA** | **–** |
| | 500 | 155 | 2 600 | 3 650 | 320 | 1 200 | 2 000 | 155 | **NU 2348 ECMA** | **–** |

* SKF Explorer bearing
[1] When ordering bearings with an alternative standard cage the suffix of the standard cage has to be replaced by the suffix of the cage in question, e.g. NU 240 ECMA becomes NU 240 ECM (for speed ratings → **page 517**)



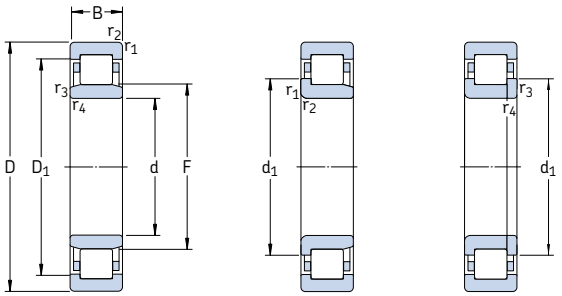




Angle ring

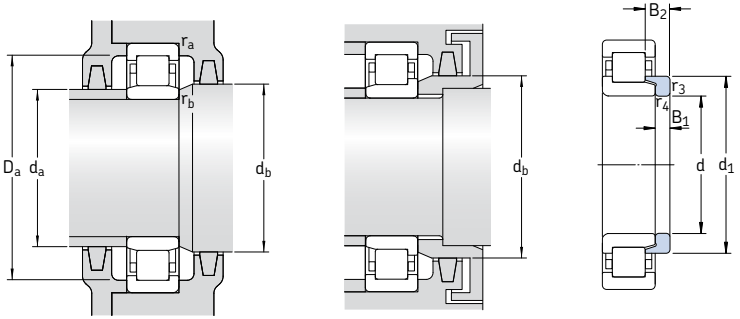
| Dimensions | | | | | | | Abutment and fillet dimensions | | | | | | Calculation factor | Angle ring Designation | Mass | Dimensions | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d | $d_1$ ~ | $D_1$ ~ | F | $r_{1,2}$ min | $r_{3,4}$ min | s[1] | $d_a$ min | $d_a$ max | $d_b$ min | $D_a$ max | $r_a$ max | $r_b$ max | $k_r$ | | | $B_1$ | $B_2$ |
| mm | | | | | | | mm | | | | | | – | – | kg | mm | |
| **200** | 239 | 269 | 229 | 2,1 | 2,1 | 7 | 210 | 225 | 233 | 299 | 2 | 2 | 0,1 | **HJ 1040** | 1,65 | 13 | 25,5 |
| | 258 | 312 | 243 | 4 | 4 | 2,6 | 217 | 239 | 247 | 343 | 3 | 3 | 0,15 | **HJ 240 EC** | 2,55 | 14 | 23 |
| | 258 | 312 | 243 | 4 | 4 | 2,6 | 217 | 239 | 262 | 343 | 3 | 3 | 0,15 | **HJ 240 EC** | 2,55 | 14 | 23 |
| | 258 | 312 | 243 | 4 | 4 | – | 217 | – | 262 | 343 | 3 | 3 | 0,15 | – | | | |
| | – | 313 | 241 | 4 | 4 | 5,1 | 217 | 235 | 245 | 343 | 3 | 3 | 0,2 | – | | | |
| | – | 353 | 258 | 5 | 5 | 6 | 220 | 254 | 262 | 400 | 4 | 4 | 0,15 | – | | | |
| | – | 353 | 253 | 5 | 5 | 9,4 | 220 | 249 | 257 | 400 | 4 | 4 | 0,25 | – | | | |
| | 278 | 353 | 253 | 5 | 5 | 9,4 | 220 | 249 | 280 | 400 | 4 | 4 | 0,25 | – | | | |
| **220** | 262 | 297 | 250 | 3 | 3 | 7,5 | 233 | 246 | 254 | 327 | 2,5 | 2,5 | 0,1 | **HJ 1044** | 2,10 | 14 | 27 |
| | 284 | 344 | 268 | 4 | 4 | 2,3 | 237 | 264 | 270 | 383 | 3 | 3 | 0,15 | **HJ 244 EC** | 3,25 | 15 | 25 |
| | 284 | 344 | 268 | 4 | 4 | 2,3 | 237 | 264 | 288 | 383 | 3 | 3 | 0,15 | **HJ 244 EC** | 3,25 | 15 | 25 |
| | 284 | 344 | 268 | 4 | 4 | – | 237 | – | 288 | 383 | 3 | 3 | 0,15 | – | | | |
| | – | 349 | 259 | 4 | 4 | 7,9 | 237 | 255 | 264 | 383 | 3 | 3 | 0,2 | – | | | |
| | – | 371 | 284 | 5 | 5 | 5,2 | 240 | 277 | 288 | 440 | 4 | 4 | 0,15 | – | | | |
| | 307 | 371 | 284 | 5 | 5 | 5,2 | 240 | 277 | 311 | 440 | 4 | 4 | 0,15 | – | | | |
| | – | 384 | 277 | 5 | 5 | 10,4 | 240 | 268 | 280 | 440 | 4 | 4 | 0,25 | – | | | |
| **240** | 282 | 317 | 270 | 3 | 3 | 7,5 | 253 | 266 | 274 | 347 | 2,5 | 2,5 | 0,1 | **HJ 1048** | 2,25 | 14 | 27 |
| | – | 365 | 295 | 4 | 4 | 3,4 | 257 | 288 | 299 | 423 | 3 | 3 | 0,15 | – | | | |
| | 313 | 365 | 295 | 4 | 4 | 3,4 | 257 | 288 | 317 | 423 | 3 | 3 | 0,15 | – | | | |
| | 313 | 365 | 295 | 4 | 4 | – | 257 | – | 317 | 423 | 3 | 3 | 0,15 | – | | | |
| | – | 365 | 295 | 4 | 4 | 4,3 | 257 | 284 | 299 | 423 | 3 | 3 | 0,2 | – | | | |
| | 313 | 365 | 295 | 4 | 4 | 4,3 | 257 | 284 | 317 | 423 | 3 | 3 | 0,2 | – | | | |
| | 335 | 401 | 310 | 5 | 5 | 5,6 | 260 | 302 | 314 | 480 | 4 | 4 | 0,15 | **HJ 348** | 8,90 | 22 | 39,5 |
| | 335 | 401 | 310 | 5 | 5 | 5,6 | 260 | 302 | 339 | 480 | 4 | 4 | 0,15 | **HJ 348** | 8,90 | 22 | 39,5 |
| | – | 426 | 299 | 5 | 5 | 10,3 | 260 | 295 | 305 | 480 | 4 | 4 | 0,25 | – | | | |

[1] Permissible axial displacement from the normal position of one bearing ring in relation to the other




NU NJ NUP

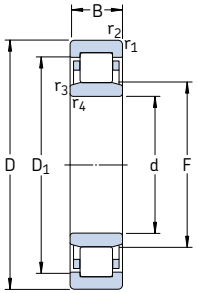
| Principal dimensions | | | Basic load ratings dynamic | static | Fatigue load limit | Speed ratings Reference speed | Limiting speed | Mass | Designation |
|---|---|---|---|---|---|---|---|---|---|
| d | D | B | C | $C_0$ | $P_u$ | | | | |
| mm | | | kN | | kN | r/min | | kg | – |
| **260** | 400 | 65 | 627 | 965 | 96,5 | 1 800 | 2 400 | 29,5 | **NU 1052 MA** |
| | 480 | 80 | 1 170 | 1 700 | 156 | 1 400 | 2 000 | 68,5 | **NU 252 MA** |
| | 480 | 80 | 1 170 | 1 700 | 156 | 1 400 | 2 000 | 70,0 | **NJ 252 MA** |
| | 480 | 80 | 1 170 | 1 700 | 156 | 1 400 | 2 000 | 72,0 | **NUP 252 MA** |
| | 480 | 130 | 1 790 | 3 000 | 265 | 1 300 | 2 000 | 110 | **NU 2252 MA** |
| | 480 | 130 | 1 790 | 3 000 | 265 | 1 300 | 2 000 | 112 | **NJ 2252 MA** |
| | 540 | 102 | 1 940 | 2 700 | 236 | 1 100 | 1 800 | 125 | **NU 352 ECMA** |
| **280** | 420 | 65 | 660 | 1 060 | 102 | 1 700 | 2 200 | 31,5 | **NU 1056 MA** |
| | 500 | 80 | 1 140 | 1 700 | 153 | 1 400 | 1 900 | 71,5 | **NU 256 MA** |
| | 500 | 80 | 1 140 | 1 700 | 153 | 1 400 | 1 900 | 73,0 | **NJ 256 MA** |
| | 500 | 130 | 2 200 | 3 250 | 285 | 1 200 | 1 900 | 115 | **NU 2256 ECMA** |
| | 580 | 175 | 2 700 | 4 300 | 365 | 1 000 | 1 700 | 230 | **NU 2356 MA** |
| **300** | 460 | 74 | 858 | 1 370 | 129 | 1 500 | 2 000 | 46,5 | **NU 1060 MA** |
| | 460 | 74 | 858 | 1 370 | 129 | 1 500 | 2 000 | 47,0 | **NJ 1060 MA** |
| | 540 | 85 | 1 420 | 2 120 | 183 | 1 300 | 1 800 | 89,5 | **NU 260 MA** |
| | 540 | 140 | 2 090 | 3 450 | 300 | 1 200 | 1 800 | 145 | **NU 2260 MA** |
| **320** | 480 | 74 | 880 | 1 430 | 132 | 1 400 | 1 900 | 48,5 | **NU 1064 MA** |
| | 480 | 74 | 880 | 1 430 | 132 | 1 400 | 1 900 | 49,0 | **NJ 1064 MA** |
| | 580 | 92 | 1 610 | 2 450 | 204 | 1 200 | 1 600 | 115 | **NU 264 MA** |
| | 580 | 150 | 3 190 | 5 000 | 415 | 1 000 | 1 600 | 180 | **NU 2264 ECMA** |
| **340** | 520 | 82 | 1 080 | 1 760 | 156 | 1 300 | 1 700 | 65,0 | **NU 1068 MA** |
| | 520 | 82 | 1 080 | 1 760 | 156 | 1 300 | 1 700 | 68,0 | **NJ 1068 MA** |
| | 620 | 165 | 2 640 | 4 500 | 365 | 1 000 | 1 500 | 220 | **NU 2268 MA** |
| **360** | 540 | 82 | 1 100 | 1 830 | 163 | 1 300 | 1 600 | 67,5 | **NU 1072 MA** |
| | 650 | 170 | 2 920 | 4 900 | 400 | 950 | 1 400 | 250 | **NU 2272 MA** |
| **380** | 560 | 82 | 1 140 | 1 930 | 170 | 1 200 | 1 600 | 71,0 | **NU 1076 MA** |
| | 560 | 82 | 1 140 | 1 930 | 170 | 1 200 | 1 600 | 73,0 | **NJ 1076 MA** |
| | 680 | 175 | 3 960 | 6 400 | 510 | 850 | 1 300 | 275 | **NU 2276 ECMA** |



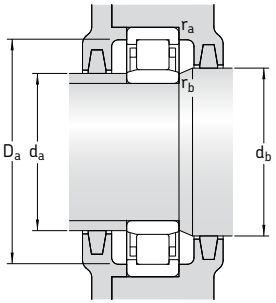

Angle ring

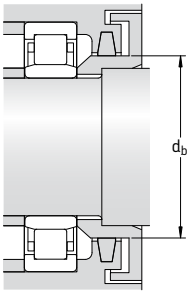
| Dimensions | | | | | | | Abutment and fillet dimensions | | | | | | Calculation factor | Angle ring Designation | Mass | Dimensions | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d | $d_1$ ~ | $D_1$ ~ | F | $r_{1,2}$ min | $r_{3,4}$ min | $s^{1)}$ | $d_a$ min | $d_a$ max | $d_b$ min | $D_a$ max | $r_a$ max | $r_b$ max | $k_r$ | | | $B_1$ | $B_2$ |
| mm | | | | | | | mm | | | | | | – | – | kg | mm | |
| **260** | 309 | 349 | 296 | 4 | 4 | 8 | 276 | 291 | 300 | 384 | 3 | 3 | 0,1 | **HJ 1052** | 3,30 | 16 | 31,5 |
| | 340 | 397 | 320 | 5 | 5 | 3,4 | 280 | 313 | 324 | 460 | 4 | 4 | 0,15 | **HJ 252** | 6,20 | 18 | 33 |
| | 340 | 397 | 320 | 5 | 5 | 3,4 | 280 | 313 | 344 | 460 | 4 | 4 | 0,15 | **HJ 252** | 6,20 | 18 | 33 |
| | 340 | 397 | 320 | 5 | 5 | – | 280 | – | 344 | 460 | 4 | 4 | 0,15 | – | | | |
| | – | 397 | 320 | 5 | 5 | 4,3 | 280 | 309 | 324 | 460 | 4 | 4 | 0,2 | – | | | |
| | 340 | 397 | 320 | 5 | 5 | 4,3 | 280 | 309 | 344 | 460 | 4 | 4 | 0,2 | – | | | |
| | – | 455 | 337 | 6 | 6 | 4,2 | 286 | 330 | 341 | 514 | 5 | 5 | 0,15 | – | | | |
| **280** | 329 | 369 | 316 | 4 | 4 | 8 | 295 | 311 | 320 | 405 | 3 | 3 | 0,1 | **HJ 1056** | 3,55 | 16 | 31,5 |
| | – | 417 | 340 | 5 | 5 | 3,8 | 300 | 333 | 344 | 480 | 4 | 4 | 0,15 | – | | | |
| | 360 | 417 | 340 | 5 | 5 | 3,8 | 300 | 333 | 364 | 480 | 4 | 4 | 0,15 | – | | | |
| | 350 | 433 | 327 | 5 | 5 | 10,2 | 300 | 320 | 331 | 480 | 4 | 4 | 0,2 | **HJ 2256 EC** | 6,75 | 18 | 38 |
| | – | 467 | 362 | 6 | 6 | 6,6 | 306 | 347 | 366 | 554 | 5 | 5 | 0,25 | – | | | |
| **300** | 356 | 402 | 340 | 4 | 4 | 9,7 | 317 | 335 | 344 | 443 | 3 | 3 | 0,1 | **HJ 1060** | 5,30 | 19 | 36 |
| | 356 | 402 | 340 | 4 | 4 | 9,7 | 317 | 335 | 360 | 443 | 3 | 3 | 0,1 | **HJ 1060** | 5,30 | 19 | 36 |
| | – | 451 | 364 | 5 | 5 | 4,8 | 320 | 358 | 368 | 520 | 4 | 4 | 0,15 | – | | | |
| | – | 451 | 364 | 5 | 5 | 5,6 | 320 | 352 | 368 | 520 | 4 | 4 | 0,2 | – | | | |
| **320** | 376 | 422 | 360 | 4 | 4 | 9,7 | 335 | 355 | 364 | 465 | 3 | 3 | 0,1 | **HJ 1064** | 5,65 | 19 | 36 |
| | 376 | 422 | 360 | 4 | 4 | 9,7 | 335 | 355 | 380 | 465 | 3 | 3 | 0,1 | **HJ 1064** | 5,65 | 19 | 36 |
| | – | 485 | 380 | 5 | 5 | 5,3 | 340 | 383 | 394 | 560 | 4 | 4 | 0,15 | – | | | |
| | – | 485 | 380 | 5 | 5 | 5,9 | 340 | 377 | 394 | 560 | 4 | 4 | 0,2 | – | | | |
| **340** | 403 | 455 | 385 | 5 | 5 | 6,5 | 358 | 380 | 389 | 502 | 4 | 4 | 0,1 | **HJ 1068** | 7,40 | 21 | 39,5 |
| | 403 | 455 | 385 | 5 | 5 | 6,5 | 358 | 380 | 408 | 502 | 4 | 4 | 0,1 | **HJ 1068** | 7,40 | 21 | 39,5 |
| | – | 515 | 416 | 6 | 6 | 8 | 366 | 401 | 421 | 594 | 5 | 5 | 0,2 | – | | | |
| **360** | 423 | 475 | 405 | 5 | 5 | 6,5 | 378 | 400 | 410 | 522 | 4 | 4 | 0,1 | **HJ 1072** | 7,75 | 21 | 39,5 |
| | – | 542 | 437 | 6 | 6 | 16,7 | 386 | 428 | 442 | 624 | 5 | 5 | 0,2 | – | | | |
| **380** | 443 | 495 | 425 | 5 | 5 | 10,8 | 398 | 420 | 430 | 542 | 4 | 4 | 0,1 | **HJ 1076** | 8,25 | 21 | 39,5 |
| | 443 | 495 | 425 | 5 | 5 | 10,8 | 398 | 420 | 448 | 542 | 4 | 4 | 0,1 | **HJ 1076** | 8,25 | 21 | 39,5 |
| | – | 595 | 451 | 6 | 6 | 8,3 | 406 | 447 | 455 | 654 | 5 | 5 | 0,2 | – | | | |

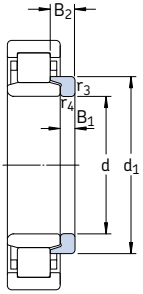
[1)] Permissible axial displacement from the normal position of one bearing ring in relation to the other




| Principal dimensions | | | Basic load ratings | | Fatigue load limit | Speed ratings | | Mass | Designation |
|---|---|---|---|---|---|---|---|---|---|
| | | | dynamic | static | | Reference | Limiting | | |
| d | D | B | C | $C_0$ | $P_u$ | speed | speed | | |
| mm | | | kN | | kN | r/min | | kg | – |
| **400** | 600 | 90 | 1 380 | 2 320 | 204 | 1 100 | 1 500 | 92,5 | **NU 1080 MA** |
| **420** | 620 | 90 | 1 420 | 2 450 | 212 | 1 100 | 1 400 | 96,0 | **NU 1084 MA** |
| **440** | 650 | 94 | 1 510 | 2 650 | 212 | 1 000 | 1 300 | 105 | **NU 1088 MA** |
| **460** | 680 | 100 | 1 650 | 2 850 | 224 | 950 | 1 200 | 115 | **NU 1092 MA** |
| | 830 | 165 | 4 180 | 6 800 | 510 | 750 | 1 100 | 415 | **NU 1292 MA** |
| | 830 | 212 | 5 120 | 8 650 | 655 | 700 | 1 100 | 530 | **NU 2292 MA** |
| **480** | 700 | 100 | 1 680 | 3 000 | 232 | 900 | 1 200 | 130 | **NU 1096 MA** |
| **500** | 720 | 100 | 1 720 | 3 100 | 236 | 900 | 1 100 | 135 | **NU 10/500 MA** |
| | 920 | 185 | 5 280 | 8 500 | 620 | 670 | 950 | 585 | **NU 12/500 MA** |
| **530** | 780 | 112 | 2 290 | 4 050 | 305 | 800 | 1 000 | 190 | **NU 10/530 MA** |
| | 780 | 145 | 3 740 | 7 350 | 550 | 670 | 1 000 | 255 | **NU 20/530 ECMA** |
| **560** | 820 | 115 | 2 330 | 4 250 | 310 | 750 | 1 000 | 210 | **NU 10/560 MA** |
| | 820 | 150 | 3 800 | 7 650 | 560 | 630 | 1 000 | 290 | **NU 20/560 ECMA** |
| | 1 030 | 206 | 7 210 | 11 200 | 780 | 560 | 800 | 805 | **NU 12/560 MA** |
| **600** | 870 | 118 | 2 750 | 5 100 | 365 | 700 | 900 | 245 | **NU 10/600 N2MA** |
| | 870 | 155 | 4 180 | 8 000 | 570 | 600 | 900 | 325 | **NU 20/600 ECMA** |
| | 1 090 | 155 | 5 610 | 9 800 | 670 | 480 | 850 | 710 | **NU 2/600 ECMA/HB1** |
| **630** | 920 | 128 | 3 410 | 6 200 | 430 | 630 | 1 000 | 285 | **NU 10/630 ECN2MA** |
| | 920 | 170 | 4 730 | 9 500 | 670 | 560 | 850 | 400 | **NU 20/630 ECMA** |
| | 1 150 | 230 | 8 580 | 13 700 | 915 | 450 | 700 | 1 100 | **NU 12/630 ECMA** |
| **670** | 980 | 136 | 3 740 | 6 800 | 465 | 530 | 800 | 350 | **NU 10/670 ECMA** |
| | 980 | 180 | 5 390 | 11 000 | 750 | 500 | 800 | 480 | **NU 20/670 ECMA** |
| **710** | 1 030 | 140 | 4 680 | 8 500 | 570 | 500 | 750 | 415 | **NU 10/710 ECN2MA** |
| | 1 030 | 185 | 5 940 | 12 000 | 815 | 480 | 700 | 540 | **NU 20/710 ECMA** |
| **750** | 1 090 | 150 | 4 730 | 8 800 | 585 | 430 | 670 | 490 | **NU 10/750 ECN2MA** |
| | 1 090 | 195 | 7 040 | 14 600 | 980 | 430 | 670 | 635 | **NU 20/750 ECM** |
| **800** | 1 150 | 200 | 7 040 | 14 600 | 950 | 400 | 630 | 715 | **NU 20/800 ECMA** |




Angle ring

| Dimensions | | | | | | | Abutment and fillet dimensions | | | | | | Calculation factor | Angle ring Designation | Mass | Dimensions | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d | $d_1$ ~ | $D_1$ ~ | F | $r_{1,2}$ min | $r_{3,4}$ min | s[1] | $d_a$ min | $d_a$ max | $d_b$ min | $D_a$ max | $r_a$ max | $r_b$ max | $k_r$ | | | $B_1$ | $B_2$ |
| mm | | | | | | | mm | | | | | | – | – | kg | mm | |
| **400** | 470 | 527 | 450 | 5 | 5 | 14 | 418 | 446 | 455 | 582 | 4 | 4 | 0,1 | **HJ 1080** | 9,75 | 23 | 43 |
| **420** | 490 | 547 | 470 | 5 | 5 | 14 | 438 | 466 | 475 | 602 | 4 | 4 | 0,1 | **HJ 1084** | 10,0 | 23 | 43 |
| **440** | 512 | 574 | 493 | 6 | 6 | 14,7 | 463 | 488 | 498 | 627 | 5 | 5 | 0,1 | **HJ 1088** | 11,5 | 24 | 45 |
| **460** | 537 | 600 | 516 | 6 | 6 | 15,9 | 483 | 511 | 521 | 657 | 5 | 5 | 0,1 | **HJ 1092** | 14,0 | 25 | 48 |
| | – | 715 | 554 | 7,5 | 7,5 | 6,4 | 492 | 542 | 559 | 798 | 6 | 6 | 0,14 | – | | | |
| | – | 706 | 554 | 7,5 | 7,5 | 16,5 | 492 | 542 | 559 | 798 | 6 | 6 | 0,2 | – | | | |
| **480** | 557 | 620 | 536 | 6 | 6 | 15,9 | 503 | 531 | 541 | 677 | 5 | 5 | 0,1 | **HJ 1096** | 14,5 | 25 | 48 |
| **500** | 577 | 640 | 556 | 6 | 6 | 11,2 | 523 | 550 | 561 | 697 | 5 | 5 | 0,1 | **HJ 10/500** | 15,0 | 25 | 48 |
| | – | 728 | 576 | 7,5 | 7,5 | 14,5 | 532 | 564 | 581 | 798 | 6 | 6 | 0,21 | – | | | |
| **530** | – | 692 | 593 | 6 | 6 | 10,4 | 553 | 585 | 598 | 757 | 5 | 5 | 0,1 | – | | | |
| | – | 704 | 591 | 6 | 6 | 6,8 | 553 | 587 | 596 | 757 | 5 | 5 | 0,14 | – | | | |
| **560** | 648 | 726 | 625 | 6 | 6 | 12,3 | 583 | 617 | 630 | 797 | 5 | 5 | 0,1 | **HJ 10/560** | 21,0 | 27,5 | 53 |
| | – | 726 | 625 | 6 | 6 | 12,3 | 583 | 617 | 630 | 797 | 5 | 5 | 0,1 | – | | | |
| | – | 741 | 626 | 6 | 6 | 6,7 | 583 | 616 | 631 | 797 | 5 | 5 | 0,14 | – | | | |
| **600** | 695 | 779 | 667 | 6 | 6 | 14 | 623 | 658 | 672 | 847 | 5 | 5 | 0,1 | **HJ 10/600** | 27,5 | 31 | 55 |
| | – | 793 | 661 | 6 | 6 | 6,1 | 623 | 652 | 667 | 847 | 5 | 5 | 0,14 | – | | | |
| | – | 925 | 749 | 9,5 | 9,5 | 3 | 640 | 743 | 755 | 1 050 | 8 | 8 | 0,17 | – | | | |
| **630** | – | 837 | 702 | 7,5 | 7,5 | 6,2 | 658 | 691 | 706 | 892 | 6 | 6 | 0,1 | – | | | |
| | – | 832 | 699 | 7,5 | 7,5 | 8,7 | 658 | 690 | 705 | 892 | 6 | 6 | 0,14 | – | | | |
| | – | 1 005 | 751 | 12 | 12 | 13,5 | 678 | 735 | 757 | 1 102 | 10 | 10 | 0,17 | – | | | |
| **670** | – | 891 | 747 | 7,5 | 7,5 | 7,9 | 698 | 736 | 753 | 952 | 6 | 6 | 0,1 | – | | | |
| | – | 890 | 746 | 7,5 | 7,5 | 7 | 698 | 736 | 752 | 952 | 6 | 6 | 0,14 | – | | | |
| **710** | – | 939 | 778 | 7,5 | 7,5 | 8 | 738 | 769 | 783 | 1 002 | 6 | 6 | 0,1 | – | | | |
| | – | 939 | 787 | 7,5 | 7,5 | 10 | 738 | 774 | 793 | 1 002 | 6 | 6 | 0,14 | – | | | |
| **750** | – | 993 | 832 | 7,5 | 7,5 | 3 | 778 | 823 | 838 | 1 062 | 6 | 6 | 0,1 | – | | | |
| | – | 993 | 832 | 7,5 | 7,5 | 2 | 778 | 823 | 838 | 1 062 | 6 | 6 | 0,14 | – | | | |
| **800** | – | 1 051 | 882 | 7,5 | 7,5 | 2 | 828 | 868 | 888 | 1 122 | 6 | 6 | 0,14 | – | | | |

[1] Permissible axial displacement from the normal position of one bearing ring in relation to the other


SKF

# Single row full complement cylindrical roller bearings

# Designs

Full complement cylindrical roller bearings incorporate a maximum number of rollers and are therefore suitable for very heavy radial loads. However, they cannot operate at the same high speeds as caged design cylindrical roller bearings. The standard SKF range of single row full complement cylindrical roller bearings consist of the NCF and NJG designs.

## NCF design

NCF design bearings (→ **fig. 1**) have two integral flanges on the inner ring and one integral flange on the outer ring and can thus support axial loads acting in one direction and provide axial shaft location in one direction. A retaining ring at the flangeless side of the outer ring holds the bearing assembly together. The axial internal clearance in the bearing is provided in the product table and is designed to permit small axial displacements of the shaft in relation to the housing, e.g. as a result of thermal expansion of the shaft, to be accommodated in the bearing.

## NJG design

NJG design bearings (→ **fig. 2**) comprise the heavy dimension series 23 and are intended for very heavily loaded, slow speed applications. These bearings have two integral flanges on the outer ring and one integral flange on the inner ring and can thus support axial loads acting in one direction and provide axial shaft location in one direction. In contrast to the other full complement bearing designs, NJG design bearings have a self-retaining roller complement. The outer ring with its two integral flanges together with the roller complement can therefore be withdrawn from the inner ring, without having to take any precautions to prevent the rollers from falling out. This simplifies mounting and dismounting.

Fig. 1

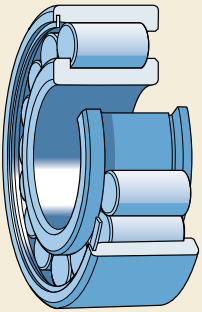
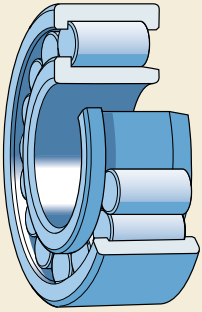


Fig. 2



# Bearing data – general

## Dimensions

The boundary dimensions of SKF single row full complement cylindrical roller bearings are in accordance with ISO 15:1998.

## Tolerances

SKF single row full complement cylindrical roller bearings are produced to Normal tolerances. The values for the tolerances correspond to ISO 492:2002 and can be found in **table 3** on **page 125**.

## Radial internal clearance

SKF single row full complement cylindrical roller bearings are produced with Normal radial internal clearance as standard. The majority of the bearings are also available with the greater C3 radial internal clearance. The values correspond to ISO 5753:1991 and are provided in **table 1** on **page 513**. The clearance limits apply to unmounted bearings under zero measuring load.

## Misalignment

The ability of single row full complement cylindrical roller bearings to accommodate angular misalignment of the inner ring with respect to the outer ring is limited to a few minutes of arc. The actual values are

- 4 minutes of arc for bearings of the narrow dimension series 18, and
- 3 minutes of arc for bearings of the wide dimension series 22, 23, 28, 29 and 30.

The above guideline values apply provided the position of the shaft and housing axes remains constant. A larger misalignment is possible, but may result in reduced bearing service life. In such cases, please contact the SKF application engineering service.

## Influence of operating temperature on bearing material

SKF single row full complement cylindrical roller bearings undergo a special heat treatment. They can operate at temperatures of up to +150 °C.

## Minimum load

In order to provide satisfactory operation, single row full complement cylindrical roller bearings, like all ball and roller bearings, must always be subjected to a given minimum load, particularly if they are to operate at relatively high speeds (n > 0,5 times the reference speed) or are subjected to high accelerations or rapid changes in the direction of the load. Under such conditions, the inertia forces of the rollers and the friction in the lubricant, can have a detrimental effect on the rolling conditions in the bearing arrangement and may cause damaging sliding movements to occur between the rollers and raceways.

The requisite minimum load to be applied to single row full complement cylindrical roller bearings can be estimated using

$$F_{rm} = k_r \left(6 + \frac{4\,n}{n_r}\right) \left(\frac{d_m}{100}\right)^2$$

where
$F_{rm}$ = minimum radial load, kN
$k_r$ = minimum load factor
0,1 for bearing series 18
0,11 for bearing series 28
0,2 for bearing series 29
0,3 for bearing series 30 and 22
0,35 for bearing series 23
$n$ = rotational speed, r/min
$n_r$ = reference speed, r/min
(→ product table)
$d_m$ = bearing mean diameter
= 0,5 (d + D), mm

When starting up at low temperatures or when the lubricant is highly viscous, even greater minimum loads may be required. The weight of the components supported by the bearing, together with external forces, generally exceeds the requisite minimum load. If this is not the case, the single row full complement cylindrical roller bearing must be subjected to an additional radial load.

## Dynamic axial load carrying capacity

Single row full complement cylindrical roller bearings with flanges on both inner and outer rings can support axial loads in one direction. Their axial load carrying capacity is primarily determined by the ability of the sliding surfaces of the roller end/flange contact to support loads. Factors having the greatest effect on this ability are the lubrication, operating temperature and heat dissipation from the bearing.

Assuming the conditions cited below, the permissible axial load can be calculated with sufficient accuracy from

$$F_{ap} = \frac{k_1 C_0 10^4}{n (d + D)} - k_2 F_r$$

where
$F_{ap}$ = permissible axial load, kN
$C_0$ = basic static load rating, kN
$F_r$ = actual radial bearing load, kN
n = rotational speed, r/min
d = bearing bore diameter, mm
D = bearing outside diameter, mm
$k_1$ = a factor
1 for oil lubrication
0,5 for grease lubrication
$k_2$ = a factor
0,3 for oil lubrication
0,15 for grease lubrication

The above equation is based on conditions that are considered typical for normal bearing operation, i.e.

- a difference of 60 °C between the bearing operating temperature and the ambient temperature
- a specific heat loss from the bearing of 0,5 mW/mm$^2$ °C with reference to the bearing outside diameter surface (π D B)
- a viscosity ratio κ ≥ 2.

For grease lubrication the viscosity of the base oil in the grease may be used. If κ is less than 2, the friction will increase and there will be more wear. These effects can be reduced at low speeds, for example by using oils with AW (anti-wear) and/or EP (extreme pressure) additives.

Where axial loads act for longer periods and the bearings are grease lubricated, it is advisable to use a grease that has good oil bleeding properties at the operating temperatures (> 3 % according to DIN 51 817). Frequent relubrication is also recommended.

The values of the permissible load $F_{ap}$ obtained from the heat balance equation are valid for a continuously acting constant axial load and adequate lubricant supply to the roller end/flange contacts. Where axial loads act only for short periods, the values can be multiplied by a factor of 2, or for shock loads by a factor of 3, provided the limits given in the following with regard to flange strength are not exceeded.

To avoid any risk of flange breakage, the constantly acting axial load applied to the bearings should never exceed

$$F_{a\,max} = 0{,}0023\ D^{1,7}$$

When acting only occasionally and for brief periods, the axial load applied to the bearings should never exceed

$$F_{a\,max} = 0{,}007\ D^{1,7}$$

where
$F_{a\,max}$ = maximum constantly or occasionally acting axial load, kN
D = bearing outside diameter, mm

To obtain an even flange load and provide sufficient running accuracy of the shaft when single row full complement cylindrical roller bearings are subjected to heavy axial loads, axial runout and the size of the abutment surfaces of adjacent components become particularly important.

If shaft deflection occurs together with an axial load, the inner ring flange should only be supported to half its height (→ **fig. 3**) so that it is not subjected to damaging alternating stresses. The recommended shaft abutment diameter $d_{as}$ can be obtained from the product table.

Where misalignment between the inner and outer rings exceeds 1 minute of arc, the action of the load on the flange changes considerably. As a result, the safety factors implicit in the guideline values may not be adequate. In these cases, contact the SKF application engineering service.

## Equivalent dynamic bearing load

For non-locating bearings

$P = F_r$

If the bearings are used to locate a shaft in one direction, the equivalent dynamic bearing load should be calculated using

$P = F_r$ when $F_a/F_r \leq e$
$P = 0{,}92\ F_r + Y\ F_a$ when $F_a/F_r > e$

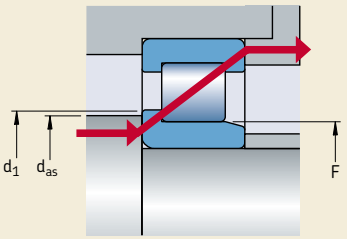
where
e = limiting value
= 0,2 for bearings in the 18 series
= 0,3 for bearings in the 22, 23, 28, 29 and 30 series
Y = axial load factor
= 0,6 for bearings in the 18 series
= 0,4 for bearings in the 22, 23, 28, 29 and 30 series

Since axially loaded single row full complement cylindrical roller bearings only operate satisfactorily when they are subjected to a simultaneously acting radial load, the ratio $F_a/F_r$ should not exceed 0,5.

## Equivalent static bearing load

$P_0 = F_r$

Fig. 3

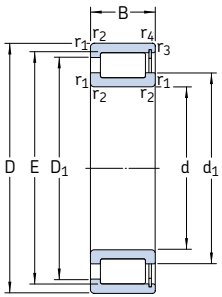



## Supplementary designations

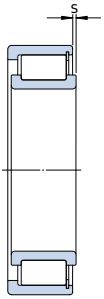
The designation suffixes used to identify certain features of SKF single row full complement cylindrical roller bearings are explained in the following.

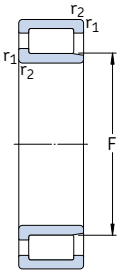
**CV** Modified internal design, full complement roller set
**C3** Radial internal clearance greater than Normal
**HA1** Case-hardened inner and outer rings
**HB1** Bainite hardened inner and outer rings
**L4B** Bearing rings and rolling elements with special surface coating
**L5B** Rolling elements with special surface coating
**V** Full complement of rollers (without cage)
**VH** Full complement of rollers (without cage), self-retaining

## Single row full complement cylindrical roller bearings
d **20 – 75** mm



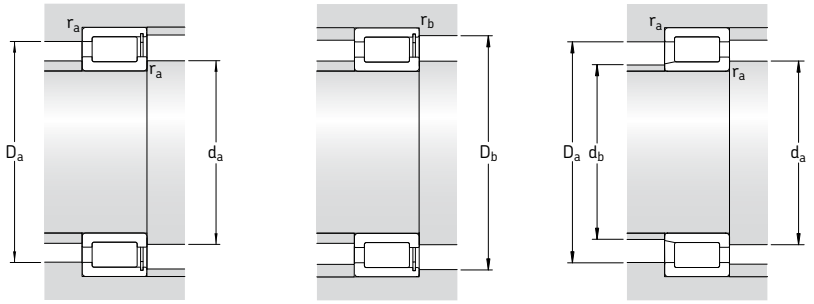

NCF



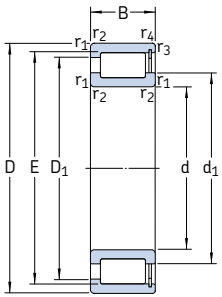

NJG

| Principal dimensions | | | Basic load ratings dynamic | static | Fatigue load limit | Speed ratings Reference | Limiting | Mass | Designation |
|---|---|---|---|---|---|---|---|---|---|
| d | D | B | C | $C_0$ | $P_u$ | speed | speed | | |
| mm | | | kN | | kN | r/min | | kg | – |
| **20** | 42 | 16 | 28,1 | 28,5 | 3,1 | 8 500 | 10 000 | 0,11 | **NCF 3004 CV** |
| **25** | 47 | 16 | 31,9 | 35,5 | 3,8 | 7 000 | 9 000 | 0,12 | **NCF 3005 CV** |
| | 62 | 24 | 68,2 | 68 | 8,5 | 4 500 | 5 600 | 0,38 | **NJG 2305 VH** |
| **30** | 55 | 19 | 39,6 | 44 | 5 | 6 000 | 7 500 | 0,20 | **NCF 3006 CV** |
| | 72 | 27 | 84,2 | 86,5 | 11 | 4 000 | 4 800 | 0,56 | **NJG 2306 VH** |
| **35** | 62 | 20 | 48,4 | 56 | 6,55 | 5 300 | 6 700 | 0,26 | **NCF 3007 CV** |
| | 80 | 31 | 108 | 114 | 14,3 | 3 400 | 4 300 | 0,75 | **NJG 2307 VH** |
| **40** | 68 | 21 | 57,2 | 69,5 | 8,15 | 4 800 | 6 000 | 0,31 | **NCF 3008 CV** |
| | 90 | 33 | 145 | 156 | 20 | 3 000 | 3 600 | 1,00 | **NJG 2308 VH** |
| **45** | 75 | 23 | 60,5 | 78 | 9,15 | 4 300 | 5 300 | 0,40 | **NCF 3009 CV** |
| | 100 | 36 | 172 | 196 | 25,5 | 2 800 | 3 400 | 1,45 | **NJG 2309 VH** |
| **50** | 80 | 23 | 76,5 | 98 | 11,8 | 4 000 | 5 000 | 0,43 | **NCF 3010 CV** |
| **55** | 90 | 26 | 105 | 140 | 17,3 | 3 400 | 4 300 | 0,64 | **NCF 3011 CV** |
| | 120 | 43 | 233 | 260 | 33,5 | 2 200 | 2 800 | 2,30 | **NJG 2311 VH** |
| **60** | 85 | 16 | 55 | 80 | 9,15 | 3 600 | 4 500 | 0,29 | **NCF 2912 CV** |
| | 95 | 26 | 106 | 146 | 18,3 | 3 400 | 4 000 | 0,69 | **NCF 3012 CV** |
| **65** | 90 | 16 | 58,3 | 88 | 10,2 | 3 200 | 4 000 | 0,31 | **NCF 2913 CV** |
| | 100 | 26 | 112 | 163 | 20 | 3 000 | 3 800 | 0,73 | **NCF 3013 CV** |
| | 140 | 48 | 303 | 360 | 46,5 | 1 900 | 2 400 | 3,55 | **NJG 2313 VH** |
| **70** | 100 | 19 | 76,5 | 116 | 13,7 | 3 000 | 3 800 | 0,49 | **NCF 2914 CV** |
| | 110 | 30 | 128 | 173 | 22,4 | 2 800 | 3 600 | 1,02 | **NCF 3014 CV** |
| | 150 | 51 | 336 | 400 | 50 | 1 800 | 2 200 | 4,40 | **NJG 2314 VH** |
| **75** | 105 | 19 | 79,2 | 125 | 14,6 | 2 800 | 3 600 | 0,52 | **NCF 2915 CV** |
| | 115 | 30 | 134 | 190 | 24,5 | 2 600 | 3 200 | 1,06 | **NCF 3015 CV** |
| | 160 | 55 | 396 | 480 | 60 | 1 600 | 2 000 | 5,35 | **NJG 2315 VH** |

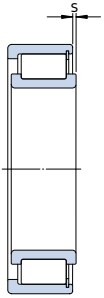


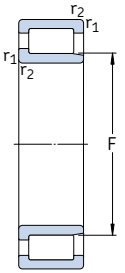

| Dimensions | | | | | | | Abutment and fillet dimensions | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d | $d_1$ ~ | $D_1$ ~ | E, F | $r_{1,2}$ min | $r_{3,4}$ min | s[1] | $d_a$ min | $d_{as}$[2] | $d_b$ max | $D_a$ max | $D_b$ max | $r_a$ max | $r_b$ max |
| mm | | | | | | | mm | | | | | | |
| **20** | 29 | 33 | 36,8 | 0,6 | 0,6 | 1,5 | 24 | 26,9 | – | 38 | 40 | 0,6 | 0,6 |
| **25** | 34 | 39 | 42,5 | 0,6 | 0,6 | 1,5 | 29 | 32,3 | – | 43 | 45 | 0,6 | 0,6 |
| | 36,1 | 48,2 | 31,74 | 1,1 | – | 1,7 | 32 | 33,9 | 30 | 55 | – | 1 | – |
| **30** | 40 | 45 | 49,6 | 1 | 1 | 2 | 35 | 37,8 | – | 50 | 52 | 1 | 1 |
| | 43,2 | 56,4 | 38,36 | 1,1 | – | 1,8 | 37 | 40,8 | 36 | 65 | – | 1 | – |
| **35** | 45 | 51 | 55,5 | 1 | 1 | 2 | 40 | 42,8 | – | 57 | 59 | 1 | 1 |
| | 50,4 | 65,8 | 44,75 | 1,5 | – | 2 | 44 | 47,6 | 42 | 71 | – | 1,5 | – |
| **40** | 50 | 58 | 61,7 | 1 | 1 | 2 | 45 | 47,9 | – | 63 | 65 | 1 | 1 |
| | 57,6 | 75,2 | 51,15 | 1,5 | – | 2,4 | 49 | 54,4 | 49 | 81 | – | 1,5 | – |
| **45** | 55 | 62 | 66,9 | 1 | 1 | 2 | 50 | 53 | – | 70 | 72 | 1 | 1 |
| | 62,5 | 80,1 | 56,14 | 1,5 | – | 2,4 | 54 | 59,3 | 54 | 91 | – | 1,5 | – |
| **50** | 59 | 68 | 72,3 | 1 | 1 | 2 | 55 | 56,7 | – | 75 | 77 | 1 | 1 |
| **55** | 68 | 79 | 83,5 | 1,1 | 1,1 | 2 | 61 | 65,8 | – | 84 | 86 | 1 | 1 |
| | 75,5 | 98,6 | 67,14 | 2 | – | 2,6 | 66 | 71,3 | 66 | 109 | – | 2 | – |
| **60** | 69 | 74,5 | 78,65 | 1 | 1 | 1 | 65 | 66,8 | – | 80 | 80 | 1 | 1 |
| | 71 | 82 | 86,7 | 1,1 | 1,1 | 2 | 66 | 68,9 | – | 89 | 91 | 1 | 1 |
| **65** | 75,5 | 81 | 85,35 | 1 | 1 | 1 | 70 | 73,4 | – | 85 | 85 | 1 | 1 |
| | 78 | 88 | 93,1 | 1,1 | 1,1 | 2 | 71 | 75,6 | – | 94 | 96 | 1 | 1 |
| | 89,9 | 116 | 80,71 | 2,1 | – | 3 | 77 | 85,3 | 78 | 128 | – | 2 | – |
| **70** | 80,5 | 88,5 | 92,5 | 1 | 1 | 1 | 75 | 78,5 | – | 95 | 95 | 1 | 1 |
| | 81 | 95 | 100,3 | 1,1 | 1,1 | 3 | 76 | 78,7 | – | 104 | 106 | 1 | 1 |
| | 93,8 | 121 | 84,22 | 2,1 | – | 3 | 82 | 89 | 81 | 138 | – | 2 | – |
| **75** | 86 | 93 | 97,6 | 1 | 1 | 1 | 80 | 83,8 | – | 100 | 100 | 1 | 1 |
| | 89 | 103 | 107,9 | 1,1 | 1,1 | 3 | 81 | 86,5 | – | 109 | 111 | 1 | 1 |
| | 101 | 131 | 91,24 | 2,1 | – | 3 | 87 | 96,1 | 88 | 148 | – | 2 | – |

[1] Permissible axial displacement from the normal position of one bearing ring in relation to the other
[2] Recommended shaft abutment diameter for axially loaded bearings → **page 562**



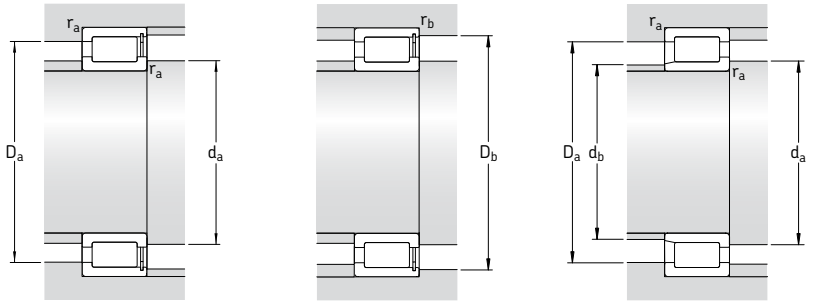

NCF




NJG

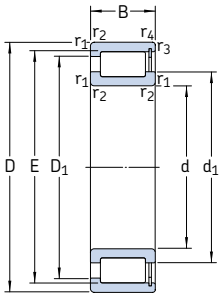
| Principal dimensions | | | Basic load ratings | | Fatigue load limit | Speed ratings | | Mass | Designation |
|---|---|---|---|---|---|---|---|---|---|
| | | | dynamic | static | | Reference | Limiting | | |
| d | D | B | C | $C_0$ | $P_u$ | speed | speed | | |
| mm | | | kN | | kN | r/min | | kg | – |
| **80** | 110 | 19 | 80,9 | 132 | 15,6 | 2 600 | 3 400 | 0,55 | **NCF 2916 CV** |
| | 125 | 34 | 165 | 228 | 29 | 2 400 | 3 000 | 1,43 | **NCF 3016 CV** |
| | 170 | 58 | 457 | 570 | 71 | 1 500 | 1 900 | 6,40 | **NJG 2316 VH** |
| **85** | 120 | 22 | 102 | 166 | 20 | 2 600 | 3 200 | 0,81 | **NCF 2917 CV** |
| | 130 | 34 | 172 | 236 | 30 | 2 400 | 3 000 | 1,51 | **NCF 3017 CV** |
| | 180 | 60 | 484 | 620 | 76,5 | 1 400 | 1 800 | 7,40 | **NJG 2317 VH** |
| **90** | 125 | 22 | 105 | 176 | 20,8 | 2 400 | 3 000 | 0,84 | **NCF 2918 CV** |
| | 140 | 37 | 198 | 280 | 35,5 | 2 200 | 2 800 | 1,97 | **NCF 3018 CV** |
| | 190 | 64 | 528 | 670 | 81,5 | 1 400 | 1 800 | 8,75 | **NJG 2318 VH** |
| **100** | 140 | 24 | 128 | 200 | 24,5 | 2 200 | 2 600 | 1,14 | **NCF 2920 CV** |
| | 150 | 37 | 209 | 310 | 37,5 | 2 000 | 2 600 | 2,15 | **NCF 3020 CV** |
| | 215 | 73 | 682 | 865 | 104 | 1 200 | 1 500 | 13,0 | **NJG 2320 VH** |
| **110** | 150 | 24 | 134 | 220 | 26 | 1 900 | 2 400 | 1,23 | **NCF 2922 CV** |
| | 170 | 45 | 275 | 400 | 47,5 | 1 800 | 2 200 | 3,50 | **NCF 3022 CV** |
| | 240 | 80 | 858 | 1 060 | 122 | 1 100 | 1 300 | 17,5 | **NJG 2322 VH** |
| **120** | 165 | 27 | 172 | 290 | 34,5 | 1 800 | 2 200 | 1,73 | **NCF 2924 CV** |
| | 180 | 46 | 292 | 440 | 52 | 1 700 | 2 000 | 3,80 | **NCF 3024 CV** |
| | 215 | 58 | 512 | 735 | 85 | 1 400 | 1 700 | 9,05 | **NCF 2224 V** |
| | 260 | 86 | 952 | 1 250 | 140 | 1 000 | 1 200 | 22,5 | **NJG 2324 VH** |
| **130** | 180 | 30 | 205 | 360 | 40,5 | 1 600 | 2 000 | 2,33 | **NCF 2926 CV** |
| | 200 | 52 | 413 | 620 | 72 | 1 500 | 1 900 | 5,80 | **NCF 3026 CV** |
| | 280 | 93 | 1 080 | 1 430 | 156 | 950 | 1 200 | 28,0 | **NJG 2326 VH** |
| **140** | 190 | 30 | 220 | 390 | 43 | 1 500 | 1 900 | 2,42 | **NCF 2928 CV** |
| | 210 | 53 | 440 | 680 | 78 | 1 400 | 1 800 | 6,10 | **NCF 3028 CV** |
| | 250 | 68 | 693 | 1 020 | 114 | 1 200 | 1 500 | 14,5 | **NCF 2228 V** |
| | 300 | 102 | 1 210 | 1 600 | 173 | 850 | 1 100 | 35,5 | **NJG 2328 VH** |
| **150** | 210 | 36 | 292 | 490 | 55 | 1 400 | 1 700 | 3,77 | **NCF 2930 CV** |
| | 225 | 56 | 457 | 710 | 80 | 1 300 | 1 600 | 7,50 | **NCF 3030 CV** |
| | 270 | 73 | 792 | 1 180 | 132 | 1 100 | 1 400 | 18,4 | **NCF 2230 V** |
| | 320 | 108 | 1 450 | 1 930 | 196 | 800 | 1 000 | 42,5 | **NJG 2330 VH** |



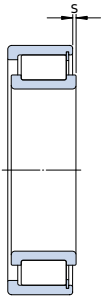

| Dimensions | | | | | | | Abutment and fillet dimensions | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d | $d_1$ ~ | $D_1$ ~ | E, F | $r_{1,2}$ min | $r_{3,4}$ min | s[1] | $d_a$ min | $d_{as}$[2] | $d_b$ max | $D_a$ max | $D_b$ max | $r_a$ max | $r_b$ max |
| mm | | | | | | | mm | | | | | | |
| **80** | 90,5 | 99 | 102,7 | 1 | 1 | 1 | 85 | 88,6 | – | 105 | 105 | 1 | 1 |
| | 95 | 111 | 117 | 1,1 | 1,1 | 4 | 86 | 92 | – | 119 | 121 | 1 | 1 |
| | 109 | 141 | 98,26 | 2,1 | – | 4 | 92 | 104 | 95 | 158 | – | 2 | – |
| **85** | 96 | 105 | 109,7 | 1,1 | 1,1 | 1 | 91 | 93,9 | – | 114 | 114 | 1 | 1 |
| | 99 | 116 | 121,4 | 1,1 | 1,1 | 4 | 91 | 96,2 | – | 124 | 126 | 1 | 1 |
| | 118 | 149 | 107 | 3 | – | 4 | 99 | 113 | 104 | 166 | – | 2,5 | – |
| **90** | 102 | 111 | 115,6 | 1,1 | 1,1 | 1 | 96 | 99,8 | – | 119 | 119 | 1 | 1 |
| | 106 | 124 | 130,1 | 1,5 | 1,5 | 4 | 97 | 103 | – | 133 | 135 | 1,5 | 1,5 |
| | 117 | 152 | 105,3 | 3 | – | 4 | 104 | 111 | 105 | 176 | – | 2,5 | – |
| **100** | 114 | 126 | 130,6 | 1,1 | 1,1 | 1,5 | 106 | 111 | – | 134 | 134 | 1 | 1 |
| | 115 | 134 | 139,7 | 1,5 | 1,5 | 4 | 107 | 112 | – | 143 | 145 | 1,5 | 1,5 |
| | 133 | 173 | 119,3 | 3 | – | 4 | 114 | 126 | 119 | 201 | – | 2,5 | – |
| **110** | 124 | 136 | 141,1 | 1,1 | 1,1 | 1,5 | 116 | 122 | – | 144 | 144 | 1 | 1 |
| | 127 | 149 | 156,1 | 2 | 2 | 5,5 | 120 | 124 | – | 160 | 165 | 2 | 2 |
| | 151 | 198 | 134,3 | 3 | – | 5 | 124 | 143 | 130 | 226 | – | 2,5 | – |
| **120** | 136 | 149 | 154,3 | 1,1 | 1,1 | 1,5 | 126 | 133 | – | 159 | 159 | 1 | 1 |
| | 139 | 160 | 167,6 | 2 | 2 | 5,5 | 130 | 135 | – | 170 | 175 | 2 | 2 |
| | 150 | 184 | 192,32 | 2,1 | 2,1 | 4 | 131 | 145 | – | 204 | 204 | 2 | 2 |
| | 164 | 213 | 147,4 | 3 | – | 5 | 134 | 156 | 142 | 246 | – | 2,5 | – |
| **130** | 147 | 161 | 167,1 | 1,5 | 1,5 | 2 | 137 | 143 | – | 173 | 173 | 1,5 | 1,5 |
| | 149 | 175 | 183 | 2 | 1 | 5,5 | 140 | 148 | – | 190 | 195 | 2 | 1 |
| | 175 | 226 | 157,9 | 4 | – | 6 | 147 | 166 | 153 | 263 | – | 3 | – |
| **140** | 158 | 173 | 180 | 1,5 | 1,5 | 2 | 147 | 155 | – | 183 | 183 | 1,5 | 1,5 |
| | 163 | 189 | 197 | 2 | 1 | 5,5 | 150 | 159 | – | 200 | 205 | 2 | 1 |
| | 173 | 212 | 221,9 | 3 | 3 | 5 | 143 | 167 | – | 127 | 127 | 2,5 | 2,5 |
| | 187 | 241 | 168,5 | 4 | – | 6,5 | 157 | 178 | 163 | 283 | – | 3 | – |
| **150** | 169 | 189 | 196,4 | 2 | 2 | 2,5 | 159 | 166 | – | 201 | 201 | 2 | 2 |
| | 170 | 198 | 206 | 2,1 | 1,1 | 7 | 161 | 167 | – | 214 | 234 | 2 | 1 |
| | 184 | 227 | 236,7 | 3 | 3 | 6 | 153 | 178 | – | 137 | 137 | 2,5 | 2,5 |
| | 202 | 261 | 182,5 | 4 | – | 6,5 | 167 | 192 | 178 | 303 | – | 3 | – |

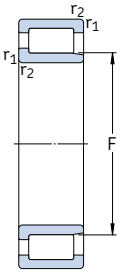
[1] Permissible axial displacement from the normal position of one bearing ring in relation to the other
[2] Recommended shaft abutment diameter for axially loaded bearings → **page 562**

## Single row full complement cylindrical roller bearings
d **160 – 260** mm



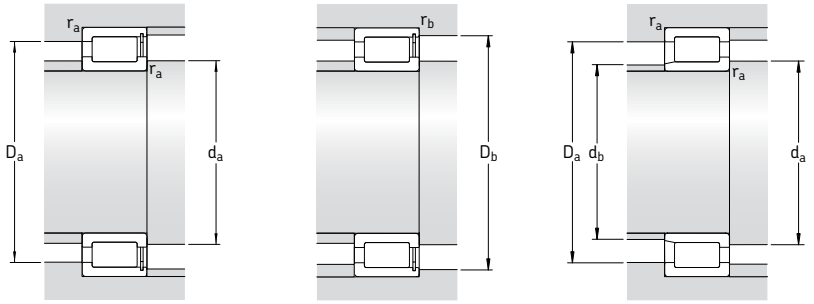

NCF




NJG

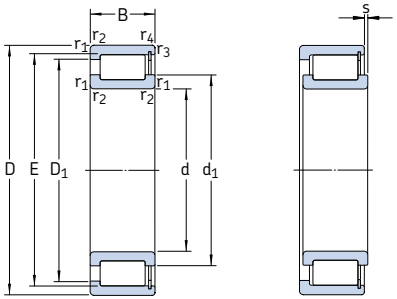
| Principal dimensions | | | Basic load ratings dynamic | static | Fatigue load limit | Speed ratings Reference | Limiting | Mass | Designation |
|---|---|---|---|---|---|---|---|---|---|
| d | D | B | C | $C_0$ | $P_u$ | speed | speed | | |
| mm | | | kN | | kN | r/min | | kg | – |
| **160** | 220 | 36 | 303 | 530 | 58,5 | 1 300 | 1 600 | 4,00 | **NCF 2932 CV** |
| | 240 | 60 | 512 | 800 | 90 | 1 200 | 1 500 | 9,10 | **NCF 3032 CV** |
| | 290 | 80 | 990 | 1 500 | 160 | 950 | 1 200 | 23,0 | **NCF 2232 V** |
| **170** | 230 | 36 | 314 | 560 | 60 | 1 200 | 1 500 | 4,30 | **NCF 2934 CV** |
| | 260 | 67 | 671 | 1 060 | 118 | 1 100 | 1 400 | 12,5 | **NCF 3034 CV** |
| | 310 | 86 | 1 100 | 1 700 | 176 | 900 | 1 100 | 28,7 | **NCF 2234 V** |
| | 360 | 120 | 1 760 | 2 450 | 236 | 700 | 900 | 59,5 | **NJG 2334 VH** |
| **180** | 250 | 42 | 391 | 695 | 75 | 1 100 | 1 400 | 6,20 | **NCF 2936 CV** |
| | 280 | 74 | 781 | 1 250 | 134 | 1 100 | 1 300 | 16,5 | **NCF 3036 CV** |
| | 380 | 126 | 1 870 | 2 650 | 255 | 670 | 800 | 69,5 | **NJG 2336 VH** |
| **190** | 260 | 42 | 440 | 780 | 81,5 | 1 100 | 1 400 | 6,50 | **NCF 2938 CV** |
| | 290 | 75 | 792 | 1 290 | 140 | 1 000 | 1 300 | 17,0 | **NCF 3038 CV** |
| | 340 | 92 | 1 250 | 1 900 | 196 | 800 | 1 000 | 35,7 | **NCF 2238 V** |
| | 400 | 132 | 2 160 | 3 000 | 280 | 630 | 800 | 80,0 | **NJG 2338 VH** |
| **200** | 250 | 24 | 176 | 335 | 32,5 | 1 100 | 1 400 | 2,60 | **NCF 1840 V** |
| | 280 | 48 | 528 | 965 | 100 | 1 000 | 1 300 | 9,10 | **NCF 2940 CV** |
| | 310 | 82 | 913 | 1 530 | 160 | 950 | 1 200 | 22,5 | **NCF 3040 CV** |
| | 420 | 138 | 2 290 | 3 200 | 290 | 600 | 750 | 92,0 | **NJG 2340 VH** |
| **220** | 270 | 24 | 183 | 365 | 34,5 | 1 000 | 1 200 | 2,85 | **NCF 1844 V** |
| | 300 | 48 | 550 | 1 060 | 106 | 950 | 1 200 | 9,90 | **NCF 2944 CV** |
| | 340 | 90 | 1 080 | 1 800 | 186 | 850 | 1 100 | 29,5 | **NCF 3044 CV** |
| | 400 | 108 | 1 830 | 2 750 | 255 | 700 | 850 | 58,0 | **NCF 2244 V** |
| | 460 | 145 | 2 550 | 3 550 | 320 | 530 | 670 | 111 | **NJG 2344 VH** |
| **240** | 300 | 28 | 260 | 510 | 47,5 | 900 | 1 100 | 4,40 | **NCF 1848 V** |
| | 320 | 48 | 583 | 1 140 | 114 | 850 | 1 100 | 10,6 | **NCF 2948 CV** |
| | 360 | 92 | 1 140 | 1 960 | 200 | 800 | 1 000 | 32,0 | **NCF 3048 CV** |
| | 500 | 155 | 2 810 | 3 900 | 345 | 500 | 630 | 147 | **NJG 2348 VH** |
| **260** | 320 | 28 | 270 | 550 | 50 | 800 | 1 000 | 4,75 | **NCF 1852 V** |
| | 360 | 60 | 737 | 1 430 | 143 | 750 | 950 | 18,5 | **NCF 2952 CV** |
| | 400 | 104 | 1 540 | 2 550 | 250 | 700 | 900 | 46,5 | **NCF 3052 CV** |
| | 540 | 165 | 3 410 | 4 800 | 415 | 430 | 530 | 177 | **NJG 2352 VH** |



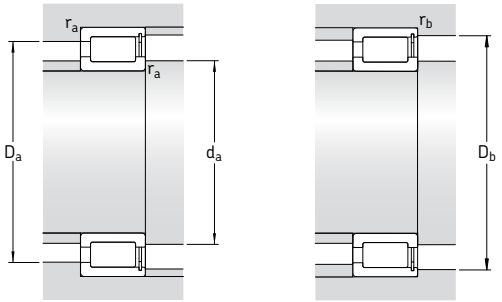

| Dimensions | | | | | | | Abutment and fillet dimensions | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d | $d_1$ ~ | $D_1$ ~ | E, F | $r_{1,2}$ min | $r_{3,4}$ min | $s^{1)}$ | $d_a$ min | $d_{as}^{2)}$ | $d_b$ max | $D_a$ max | $D_b$ max | $r_a$ max | $r_b$ max |
| mm | | | | | | | mm | | | | | | |
| **160** | 180 | 200 | 207,2 | 2 | 2 | 2,5 | 169 | 177 | – | 211 | 211 | 2 | 2 |
| | 185 | 215 | 224 | 2,1 | 1,1 | 7 | 171 | 180 | – | 229 | 304 | 2 | 1 |
| | 208 | 255 | 266,4 | 3 | 3 | 6 | 163 | 201 | – | 147 | 147 | 2,5 | 2,5 |
| **170** | 191 | 211 | 218 | 2 | 2 | 2,5 | 179 | 188 | – | 221 | 221 | 2 | 2 |
| | 198 | 232 | 242 | 2,1 | 1,1 | 7 | 181 | 192 | – | 249 | 274 | 2 | 1 |
| | 219 | 269 | 281,1 | 4 | 4 | 7 | 185 | 212 | – | 295 | 295 | 3 | 3 |
| | 227 | 291 | 203,55 | 4 | – | 7 | 187 | 214 | 200 | 343 | – | 3 | – |
| **180** | 203 | 223 | 232 | 2 | 2 | 2,5 | 189 | 199 | – | 241 | 241 | 2 | 2 |
| | 212 | 248 | 260 | 2,1 | 2,1 | 7 | 191 | 206 | – | 269 | 269 | 2 | 2 |
| | 245 | 309 | 221,7 | 4 | – | 8 | 197 | 232 | 216 | 363 | – | 3 | – |
| **190** | 212 | 236 | 244 | 2 | 2 | 2,5 | 199 | 208 | – | 251 | 251 | 2 | 2 |
| | 222 | 258 | 269 | 2,1 | 2,1 | 9 | 201 | 216 | – | 279 | 279 | 2 | 2 |
| | 243 | 296 | 311 | 4 | 4 | 7 | 205 | 235 | – | 325 | 325 | 3 | 3 |
| | 250 | 320 | 224,5 | 5 | – | 8 | 210 | 237 | 222 | 380 | – | 4 | – |
| **200** | 218 | 231 | 237,5 | 1,5 | 1,1 | 1,8 | 207 | 215 | – | 243 | 245 | 1,5 | 1 |
| | 226 | 253 | 262 | 2,1 | 2,1 | 3 | 211 | 222 | – | 269 | 269 | 2 | 2 |
| | 237 | 275 | 287 | 2,1 | 2,1 | 9 | 211 | 230 | – | 299 | 299 | 2 | 2 |
| | 266 | 342 | 238,6 | 5 | – | 9 | 220 | 252 | 232 | 400 | – | 4 | – |
| **220** | 238 | 252 | 258 | 1,5 | 1,1 | 1,8 | 227 | 235 | – | 263 | 265 | 1,5 | 1 |
| | 247 | 274 | 283 | 2,1 | 2,1 | 3 | 231 | 242 | – | 289 | 289 | 2 | 2 |
| | 255 | 298 | 312 | 3 | 3 | 9 | 233 | 248 | – | 327 | 327 | 2,5 | 2,5 |
| | 277 | 349 | 366 | 4 | 4 | 8 | 235 | 260 | – | 385 | 385 | 3 | 3 |
| | 295 | 383 | 266,7 | 5 | – | 10 | 240 | 281 | 260 | 440 | – | 4 | – |
| **240** | 263 | 279 | 287 | 2 | 1,1 | 1,8 | 249 | 259 | – | 291 | 295 | 2 | 1 |
| | 267 | 294 | 303 | 2,1 | 2,1 | 3 | 251 | 263 | – | 309 | 309 | 2 | 2 |
| | 278 | 321 | 335 | 3 | 3 | 11 | 253 | 271 | – | 347 | 347 | 2,5 | 2,5 |
| | 310 | 403 | 280,6 | 5 | – | 10 | 260 | 295 | 282 | 480 | – | 4 | – |
| **260** | 283 | 299 | 307,2 | 2 | 1,1 | 1,8 | 270 | 279 | – | 310 | 315 | 2 | 1 |
| | 291 | 323 | 333 | 2,1 | 2,1 | 3,5 | 271 | 286 | – | 349 | 349 | 2 | 2 |
| | 304 | 358 | 376 | 4 | 4 | 11 | 275 | 295 | – | 385 | 385 | 3 | 3 |
| | 349 | 456 | 315,6 | 6 | – | 11 | 286 | 332 | 309 | 514 | – | 5 | – |

[1)] Permissible axial displacement from the normal position of one bearing ring in relation to the other
[2)] Recommended shaft abutment diameter for axially loaded bearings → **page 562**

## Single row full complement cylindrical roller bearings
d **280 – 440** mm



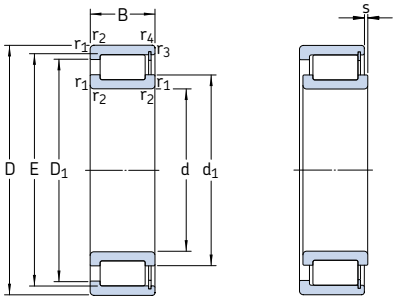

| Principal dimensions | | | Basic load ratings | | Fatigue load limit | Speed ratings | | Mass | Designation |
|---|---|---|---|---|---|---|---|---|---|
| | | | dynamic | static | | Reference | Limiting | | |
| d | D | B | C | $C_0$ | $P_u$ | speed | speed | | |
| mm | | | kN | | kN | r/min | | kg | – |
| **280** | 350 | 33 | 341 | 695 | 64 | 750 | 950 | 7,10 | **NCF 1856 V** |
| | 380 | 60 | 880 | 1 730 | 166 | 700 | 900 | 19,7 | **NCF 2956 CV** |
| | 420 | 106 | 1 570 | 2 650 | 260 | 670 | 850 | 50,0 | **NCF 3056 CV** |
| **300** | 380 | 38 | 418 | 850 | 75 | 670 | 850 | 10,0 | **NCF 1860 V** |
| | 420 | 72 | 1 120 | 2 200 | 208 | 670 | 800 | 31,2 | **NCF 2960 CV** |
| | 460 | 118 | 1 900 | 3 250 | 300 | 600 | 750 | 69,0 | **NCF 3060 CV** |
| **320** | 400 | 38 | 440 | 900 | 80 | 630 | 800 | 10,5 | **NCF 1864 V** |
| | 440 | 72 | 1 140 | 2 360 | 220 | 600 | 750 | 32,9 | **NCF 2964 CV** |
| | 480 | 121 | 1 980 | 3 450 | 310 | 560 | 700 | 74,5 | **NCF 3064 CV** |
| **340** | 420 | 38 | 446 | 950 | 83 | 600 | 750 | 11,0 | **NCF 1868 V** |
| | 460 | 72 | 1 190 | 2 500 | 228 | 560 | 700 | 35,0 | **NCF 2968 CV** |
| | 520 | 133 | 2 380 | 4 150 | 355 | 530 | 670 | 100 | **NCF 3068 CV** |
| **360** | 440 | 38 | 402 | 900 | 76,5 | 560 | 700 | 11,5 | **NCF 1872 V** |
| | 480 | 72 | 1 230 | 2 600 | 240 | 530 | 670 | 36,5 | **NCF 2972 CV** |
| | 540 | 134 | 2 420 | 4 300 | 365 | 500 | 630 | 105 | **NCF 3072 CV** |
| **380** | 480 | 46 | 627 | 1 290 | 114 | 530 | 670 | 19,5 | **NCF 1876 V** |
| | 520 | 82 | 1 570 | 3 250 | 300 | 500 | 630 | 52,5 | **NCF 2976 CV** |
| | 560 | 135 | 2 510 | 4 550 | 380 | 480 | 600 | 110 | **NCF 3076 CV** |
| **400** | 500 | 46 | 627 | 1 340 | 118 | 500 | 630 | 20,5 | **NCF 1880 V** |
| | 540 | 82 | 1 650 | 3 450 | 310 | 480 | 600 | 54,5 | **NCF 2980 CV** |
| | 600 | 148 | 2 970 | 5 500 | 450 | 450 | 560 | 145 | **NCF 3080 CV** |
| **420** | 520 | 46 | 660 | 1 430 | 122 | 480 | 600 | 21,0 | **NCF 1884 V** |
| | 560 | 82 | 1 650 | 3 600 | 315 | 450 | 560 | 57,0 | **NCF 2984 CV** |
| | 620 | 150 | 3 030 | 5 700 | 455 | 430 | 530 | 150 | **NCF 3084 CV** |
| **440** | 540 | 46 | 671 | 1 460 | 125 | 450 | 560 | 22,0 | **NCF 1888 V** |
| | 540 | 60 | 1 060 | 2 700 | 232 | 450 | 560 | 29,0 | **NCF 2888 V** |
| | 600 | 95 | 2 010 | 4 400 | 380 | 430 | 530 | 80,5 | **NCF 2988 V** |
| | 650 | 157 | 3 580 | 6 550 | 520 | 400 | 500 | 175 | **NCF 3088 CV** |



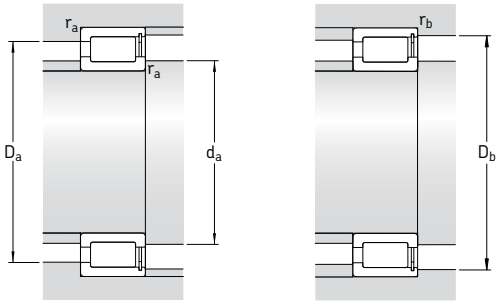

| Dimensions | | | | | | | Abutment and fillet dimensions | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d | $d_1$ ~ | $D_1$ ~ | E | $r_{1,2}$ min | $r_{3,4}$ min | s[1] | $d_a$ min | $d_{as}$[2] | $D_a$ max | $D_b$ max | $r_a$ max | $r_b$ max |
| mm | | | | | | | mm | | | | | |
| **280** | 307 | 325 | 334 | 2 | 1,1 | 2,5 | 289 | 303 | 341 | 344 | 2 | 1 |
| | 314 | 348 | 359,1 | 2,1 | 2,1 | 3,5 | 291 | 309 | 369 | 369 | 2 | 2 |
| | 319 | 373 | 391 | 4 | 4 | 11 | 295 | 310 | 405 | 405 | 3 | 3 |
| **300** | 331 | 353 | 363 | 2,1 | 1,5 | 3 | 311 | 326 | 369 | 373 | 2 | 1,5 |
| | 341 | 375 | 390,5 | 3 | 3 | 5 | 313 | 334 | 407 | 407 | 2,5 | 2,5 |
| | 355 | 413 | 433 | 4 | 4 | 14 | 315 | 344 | 445 | 445 | 3 | 3 |
| **320** | 351 | 373 | 383 | 2,1 | 1,5 | 3 | 331 | 346 | 389 | 393 | 2 | 1,5 |
| | 359 | 401 | 411 | 3 | 3 | 5 | 333 | 353 | 427 | 427 | 2,5 | 2,5 |
| | 368 | 434 | 449 | 4 | 4 | 14 | 335 | 359 | 465 | 465 | 3 | 3 |
| **340** | 371 | 393 | 403 | 2,1 | 1,5 | 3 | 351 | 366 | 409 | 413 | 2 | 1,5 |
| | 378 | 421 | 431 | 3 | 3 | 5 | 353 | 373 | 447 | 447 | 2,5 | 2,5 |
| | 395 | 468 | 485 | 5 | 5 | 14 | 358 | 384 | 502 | 502 | 4 | 4 |
| **360** | 388 | 413 | 418,9 | 2,1 | 1,5 | 4,5 | 371 | 384 | 429 | 433 | 2 | 1,5 |
| | 404 | 437 | 451,5 | 3 | 3 | 5 | 373 | 396 | 467 | 467 | 2,5 | 2,5 |
| | 412 | 486 | 503 | 5 | 5 | 14 | 378 | 402 | 522 | 522 | 4 | 4 |
| **380** | 416 | 448 | 458 | 2,1 | 1,5 | 3,5 | 391 | 411 | 469 | 473 | 2 | 1,5 |
| | 427 | 474 | 488 | 4 | 4 | 5 | 395 | 420 | 505 | 505 | 3 | 3 |
| | 431 | 504 | 521 | 5 | 5 | 14 | 398 | 420 | 542 | 542 | 4 | 4 |
| **400** | 433 | 465 | 475 | 2,1 | 1,5 | 3,5 | 411 | 428 | 489 | 493 | 2 | 1,5 |
| | 449 | 499 | 511 | 4 | 4 | 5 | 415 | 442 | 525 | 525 | 3 | 3 |
| | 460 | 540 | 558 | 5 | 5 | 14 | 418 | 449 | 582 | 582 | 4 | 4 |
| **420** | 457 | 489 | 499 | 2,1 | 1,5 | 3,5 | 431 | 452 | 509 | 513 | 2 | 1,5 |
| | 462 | 512 | 524 | 4 | 4 | 5 | 435 | 455 | 545 | 545 | 3 | 3 |
| | 480 | 559 | 577 | 5 | 5 | 15 | 438 | 469 | 602 | 602 | 4 | 4 |
| **440** | 474 | 506 | 516 | 2,1 | 1,5 | 3,5 | 451 | 469 | 529 | 533 | 2 | 1,5 |
| | 474 | 508 | 516 | 2,1 | 1,5 | 3,5 | 451 | 469 | 529 | 533 | 2 | 1,5 |
| | 502 | 545 | 565,5 | 4 | 4 | 6 | 455 | 492 | 585 | 585 | 3 | 3 |
| | 500 | 590 | 611 | 6 | 6 | 16 | 463 | 488 | 627 | 627 | 5 | 5 |

[1] Permissible axial displacement from the normal position of one bearing ring in relation to the other
[2] Recommended shaft abutment diameter for axially loaded bearings → **page 562**

## Single row full complement cylindrical roller bearings
d **460 – 670** mm



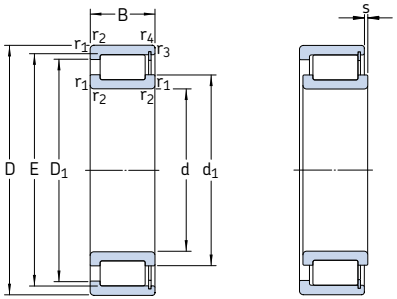

| Principal dimensions | | | Basic load ratings | | Fatigue load limit | Speed ratings | | Mass | Designation |
|---|---|---|---|---|---|---|---|---|---|
| | | | dynamic | static | | Reference | Limiting | | |
| d | D | B | C | $C_0$ | $P_u$ | speed | speed | | |
| mm | | | kN | | kN | r/min | | kg | – |
| **460** | 580 | 56 | 913 | 1 960 | 163 | 430 | 530 | 34,0 | **NCF 1892 V** |
| | 580 | 72 | 1 300 | 3 050 | 260 | 430 | 530 | 44,0 | **NCF 2892 V** |
| | 620 | 95 | 2 050 | 4 500 | 390 | 400 | 500 | 83,5 | **NCF 2992 V** |
| | 680 | 163 | 3 690 | 6 950 | 540 | 380 | 480 | 195 | **NCF 3092 CV** |
| **480** | 600 | 56 | 935 | 2 040 | 170 | 400 | 500 | 35,5 | **NCF 1896 V** |
| | 600 | 72 | 1 320 | 3 150 | 265 | 400 | 500 | 46,0 | **NCF 2896 V** |
| | 650 | 100 | 2 290 | 4 900 | 405 | 380 | 480 | 98,0 | **NCF 2996 V** |
| | 700 | 165 | 3 740 | 7 200 | 550 | 360 | 450 | 205 | **NCF 3096 CV** |
| **500** | 620 | 56 | 952 | 2 120 | 173 | 380 | 480 | 36,5 | **NCF 18/500 V** |
| | 620 | 72 | 1 340 | 3 350 | 275 | 380 | 480 | 48,0 | **NCF 28/500 V** |
| | 670 | 100 | 2 330 | 5 000 | 415 | 380 | 450 | 100 | **NCF 29/500 V** |
| | 720 | 167 | 3 800 | 7 500 | 570 | 360 | 450 | 215 | **NCF 30/500 CV** |
| **530** | 650 | 56 | 990 | 2 240 | 180 | 360 | 450 | 38,5 | **NCF 18/530 V** |
| | 650 | 72 | 1 400 | 3 450 | 285 | 360 | 450 | 49,5 | **NCF 28/530 V** |
| | 710 | 106 | 2 640 | 6 100 | 480 | 340 | 430 | 120 | **NCF 29/530 V** |
| | 780 | 185 | 5 230 | 10 600 | 780 | 320 | 400 | 300 | **NCF 30/530 V** |
| **560** | 680 | 56 | 1 020 | 2 360 | 186 | 340 | 430 | 40,5 | **NCF 18/560 V** |
| | 680 | 72 | 1 420 | 3 650 | 300 | 340 | 430 | 54,0 | **NCF 28/560 V** |
| | 750 | 112 | 3 080 | 6 700 | 500 | 320 | 400 | 140 | **NCF 29/560 V** |
| | 820 | 195 | 5 830 | 11 800 | 865 | 300 | 380 | 345 | **NCF 30/560 V** |
| **600** | 730 | 60 | 1 050 | 2 550 | 196 | 320 | 400 | 51,5 | **NCF 18/600 V** |
| | 730 | 78 | 1 570 | 4 300 | 340 | 320 | 400 | 67,5 | **NCF 28/600 V** |
| | 800 | 118 | 3 190 | 7 100 | 520 | 300 | 380 | 170 | **NCF 29/600 V** |
| **630** | 780 | 69 | 1 250 | 2 900 | 232 | 300 | 360 | 72,5 | **NCF 18/630 V** |
| | 780 | 88 | 1 870 | 5 000 | 390 | 300 | 360 | 92,5 | **NCF 28/630 V** |
| | 850 | 128 | 3 740 | 8 650 | 610 | 280 | 340 | 205 | **NCF 29/630 V** |
| **670** | 820 | 69 | 1 300 | 3 150 | 245 | 280 | 340 | 76,5 | **NCF 18/670 V** |
| | 820 | 88 | 1 940 | 5 300 | 415 | 280 | 340 | 97,5 | **NCF 28/670 V** |
| | 900 | 136 | 3 910 | 9 000 | 630 | 260 | 320 | 245 | **NCF 29/670 V** |



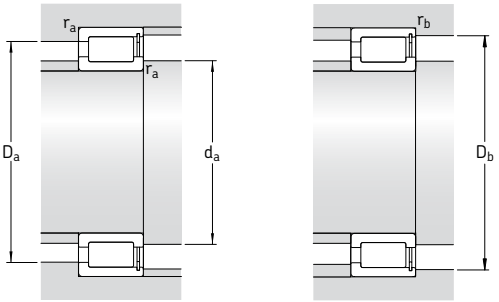

| Dimensions | | | | | | | Abutment and fillet dimensions | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d | $d_1$ ~ | $D_1$ ~ | E | $r_{1,2}$ min | $r_{3,4}$ min | s[1] | $d_a$ min | $d_{as}$[2] | $D_a$ max | $D_b$ max | $r_a$ max | $r_b$ max |
| mm | | | | | | | mm | | | | | |
| **460** | 501 | 541 | 553 | 3 | 3 | 5 | 473 | 495 | 567 | 567 | 2,5 | 2,5 |
| | 501 | 543 | 553 | 3 | 3 | 5 | 473 | 495 | 567 | 567 | 2,5 | 2,5 |
| | 516 | 558 | 579 | 4 | 4 | 6 | 475 | 506 | 605 | 605 | 3 | 3 |
| | 522 | 611 | 635 | 6 | 6 | 16 | 483 | 511 | 657 | 657 | 5 | 5 |
| **480** | 522 | 561 | 573,5 | 3 | 3 | 5 | 493 | 516 | 587 | 587 | 2,5 | 2,5 |
| | 520 | 562 | 573,5 | 3 | 3 | 5 | 493 | 515 | 587 | 587 | 2,5 | 2,5 |
| | 538 | 584 | 600 | 5 | 5 | 7 | 498 | 527 | 632 | 632 | 4 | 4 |
| | 546 | 628 | 654 | 6 | 6 | 16 | 503 | 532 | 677 | 677 | 5 | 5 |
| **500** | 542 | 582 | 594 | 3 | 3 | 5 | 513 | 536 | 607 | 607 | 2,5 | 2,5 |
| | 541 | 582 | 594 | 3 | 3 | 2,4 | 513 | 536 | 607 | 607 | 2,5 | 2,5 |
| | 553 | 611 | 630,9 | 5 | 5 | 7 | 518 | 544 | 652 | 652 | 4 | 4 |
| | 565 | 650 | 676 | 6 | 6 | 16 | 523 | 553 | 697 | 697 | 5 | 5 |
| **530** | 573 | 612 | 624,5 | 3 | 3 | 5 | 543 | 567 | 637 | 637 | 2,5 | 2,5 |
| | 572 | 614 | 624,5 | 3 | 3 | 5 | 543 | 566 | 637 | 637 | 2,5 | 2,5 |
| | 598 | 661 | 676 | 5 | 5 | 7 | 548 | 589 | 692 | 692 | 4 | 4 |
| | 610 | 702 | 732,3 | 6 | 6 | 16 | 553 | 595 | 757 | 757 | 5 | 5 |
| **560** | 603 | 643 | 655 | 3 | 3 | 5 | 573 | 597 | 667 | 667 | 2,5 | 2,5 |
| | 606 | 637 | 655 | 3 | 3 | 4,3 | 573 | 599 | 667 | 667 | 2,5 | 2,5 |
| | 628 | 700 | 718 | 5 | 5 | 7 | 578 | 617 | 732 | 732 | 4 | 4 |
| | 642 | 738 | 770 | 6 | 6 | 16 | 583 | 626 | 797 | 797 | 5 | 5 |
| **600** | 644 | 684 | 696 | 3 | 3 | 7 | 613 | 638 | 717 | 717 | 2,5 | 2,5 |
| | 644 | 685 | 696 | 3 | 3 | 6 | 613 | 638 | 717 | 717 | 2,5 | 2,5 |
| | 662 | 726 | 754 | 5 | 5 | 7 | 618 | 652 | 782 | 782 | 4 | 4 |
| **630** | 681 | 725 | 739 | 4 | 4 | 8 | 645 | 674 | 765 | 765 | 3 | 3 |
| | 680 | 728 | 739 | 4 | 4 | 8 | 645 | 674 | 765 | 765 | 3 | 3 |
| | 709 | 788 | 807 | 6 | 6 | 8 | 653 | 698 | 827 | 827 | 5 | 5 |
| **670** | 725 | 769 | 783 | 4 | 4 | 8 | 685 | 718 | 805 | 805 | 3 | 3 |
| | 724 | 772 | 783 | 4 | 4 | 8 | 685 | 718 | 805 | 805 | 3 | 3 |
| | 748 | 827 | 846 | 6 | 6 | 10 | 693 | 737 | 877 | 877 | 5 | 5 |

[1] Permissible axial displacement from the normal position of one bearing ring in relation to the other
[2] Recommended shaft abutment diameter for axially loaded bearings → **page 562**

## Single row full complement cylindrical roller bearings
d **710 – 1 120** mm




| Principal dimensions | | | Basic load ratings dynamic | static | Fatigue load limit | Speed ratings Reference speed | Limiting speed | Mass | Designation |
|---|---|---|---|---|---|---|---|---|---|
| d | D | B | C | $C_0$ | $P_u$ | | | | |
| mm | | | kN | | kN | r/min | | kg | – |
| **710** | 870 | 74 | 1 540 | 3 750 | 285 | 260 | 320 | 92,5 | **NCF 18/710 V** |
| | 870 | 95 | 2 330 | 6 300 | 480 | 260 | 320 | 115 | **NCF 28/710 V** |
| | 950 | 140 | 4 290 | 10 000 | 695 | 240 | 300 | 275 | **NCF 29/710 V** |
| **750** | 920 | 78 | 1 870 | 4 500 | 335 | 240 | 300 | 110 | **NCF 18/750 V** |
| | 920 | 100 | 2 640 | 6 950 | 520 | 240 | 300 | 140 | **NCF 28/750 V** |
| | 1 000 | 145 | 4 460 | 10 600 | 710 | 220 | 280 | 315 | **NCF 29/750 V** |
| **800** | 980 | 82 | 1 940 | 4 800 | 345 | 220 | 280 | 130 | **NCF 18/800 V** |
| | 980 | 106 | 2 750 | 7 500 | 550 | 220 | 280 | 165 | **NCF 28/800 V** |
| | 1 060 | 150 | 4 950 | 12 200 | 800 | 200 | 260 | 360 | **NCF 29/800 V** |
| **850** | 1 030 | 82 | 2 010 | 5 100 | 365 | 200 | 260 | 135 | **NCF 18/850 V** |
| | 1 030 | 106 | 2 860 | 8 000 | 570 | 200 | 260 | 175 | **NCF 28/850 V** |
| | 1 120 | 155 | 5 230 | 12 700 | 830 | 190 | 240 | 405 | **NCF 29/850 V** |
| **900** | 1 090 | 85 | 2 380 | 6 000 | 425 | 190 | 240 | 160 | **NCF 18/900 V** |
| | 1 090 | 112 | 3 190 | 9 150 | 655 | 190 | 240 | 208 | **NCF 28/900 V** |
| | 1 180 | 165 | 5 940 | 14 600 | 950 | 170 | 220 | 472 | **NCF 29/900 V** |
| **950** | 1 150 | 90 | 2 420 | 6 300 | 440 | 170 | 220 | 185 | **NCF 18/950 V** |
| | 1 150 | 118 | 3 410 | 9 800 | 655 | 170 | 220 | 240 | **NCF 28/950 V** |
| | 1 250 | 175 | 6 600 | 16 300 | 1 020 | 160 | 200 | 565 | **NCF 29/950 V** |
| **1 000** | 1 220 | 100 | 2 920 | 7 500 | 455 | 160 | 200 | 230 | **NCF 18/1000 V** |
| | 1 220 | 128 | 4 130 | 11 600 | 720 | 160 | 200 | 310 | **NCF 28/1000 V** |
| | 1 320 | 185 | 7 480 | 18 600 | 1 160 | 150 | 190 | 680 | **NCF 29/1000 V** |
| **1 120** | 1 360 | 106 | 3 740 | 9 650 | 585 | 130 | 170 | 298 | **NCF 18/1120 V** |




| Dimensions | | | | | | | Abutment and fillet dimensions | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d | $d_1$ ~ | $D_1$ ~ | E | $r_{1,2}$ min | $r_{3,4}$ min | s[1] | $d_a$ min | $d_{as}$[2] | $D_a$ max | $D_b$ max | $r_a$ max | $r_b$ max |
| mm | | | | | | | mm | | | | | |
| **710** | 767 | 815 | 831 | 4 | 4 | 8 | 725 | 759 | 855 | 855 | 3 | 3 |
| | 766 | 818 | 831 | 4 | 4 | 8 | 725 | 759 | 855 | 855 | 3 | 3 |
| | 790 | 876 | 896 | 6 | 6 | 10 | 733 | 761 | 927 | 927 | 5 | 5 |
| **750** | 811 | 863 | 882 | 5 | 5 | 8 | 768 | 802 | 902 | 902 | 4 | 4 |
| | 810 | 867 | 878 | 5 | 5 | 8 | 768 | 799 | 902 | 902 | 4 | 4 |
| | 832 | 918 | 937 | 6 | 6 | 11 | 773 | 820 | 977 | 977 | 5 | 5 |
| **800** | 863 | 922 | 936 | 5 | 5 | 9 | 818 | 855 | 962 | 962 | 4 | 4 |
| | 863 | 922 | 936 | 5 | 5 | 10 | 818 | 855 | 962 | 962 | 4 | 4 |
| | 891 | 981 | 1 002 | 6 | 6 | 11 | 823 | 860 | 977 | 977 | 5 | 5 |
| **850** | 911 | 972 | 985 | 5 | 5 | 9 | 868 | 902 | 1 012 | 1 012 | 4 | 4 |
| | 911 | 972 | 986 | 5 | 5 | 10 | 868 | 903 | 1 012 | 1 012 | 4 | 4 |
| | 943 | 1 039 | 1 061 | 6 | 6 | 13 | 873 | 914 | 1 097 | 1 097 | 5 | 5 |
| **900** | 966 | 1 029 | 1 044 | 5 | 5 | 9 | 918 | 957 | 1 072 | 1 072 | 4 | 4 |
| | 966 | 1 029 | 1 044 | 5 | 5 | 10 | 918 | 957 | 1 072 | 1 072 | 4 | 4 |
| | 996 | 1 096 | 1 120 | 6 | 6 | 13 | 923 | 982 | 1 127 | 1 127 | 5 | 5 |
| **950** | 1 021 | 1 087 | 1 103 | 5 | 5 | 10 | 968 | 1 012 | 1 132 | 1 132 | 4 | 4 |
| | 1 021 | 1 087 | 1 103 | 5 | 5 | 12 | 968 | 1 012 | 1 132 | 1 132 | 4 | 4 |
| | 1 048 | 1 154 | 1 179 | 7,5 | 7,5 | 14 | 978 | 1 033 | 1 222 | 1 222 | 6 | 6 |
| **1 000** | 1 073 | 1 148 | 1 165 | 6 | 6 | 12 | 1 023 | 1 063 | 1 197 | 1 197 | 5 | 5 |
| | 1 073 | 1 148 | 1 165 | 6 | 6 | 12 | 1 023 | 1 063 | 1 197 | 1 197 | 5 | 5 |
| | 1 113 | 1 226 | 1 252 | 7,5 | 7,5 | 14 | 1 028 | 1 091 | 1 292 | 1 292 | 6 | 6 |
| **1 120** | 1 206 | 1 290 | 1 310 | 6 | 6 | 12 | 1 143 | 1 194 | 1 337 | 1 337 | 5 | 5 |

[1] Permissible axial displacement from the normal position of one bearing ring in relation to the other
[2] Recommended shaft abutment diameter for axially loaded bearings → **page 562**


SKF

# Double row full complement cylindrical roller bearings

# Designs

Double row full complement cylindrical roller bearings incorporate a maximum number of rollers and are therefore suitable for very heavy radial loads. However, they cannot operate at the same high speeds as caged cylindrical roller bearings. SKF double row full complement cylindrical roller bearings are produced as standard in four designs, three open designs and one sealed (→ **fig. 1**). All the bearings are non-separable and have an annular groove and three lubrication holes in the outer ring to facilitate efficient lubrication.

## NNCL design

NNCL design bearings (**a**) have an inner ring with three integral flanges and a flangeless outer ring. A retaining ring, inserted in the outer ring between the roller rows, keeps all bearing components together. Axial displacement of the shaft relative to the housing in both directions can be accommodated within the bearing. The bearings are therefore suitable for non-locating bearing positions.

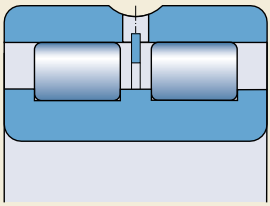
## NNCF design

NNCF design bearings (**b**) have three integral flanges on the inner ring and one integral flange on the outer ring enabling the bearing to provide axial location for a shaft in one direction. A retaining ring is inserted in the outer ring at the side opposite the integral flange and serves to hold the bearing together.

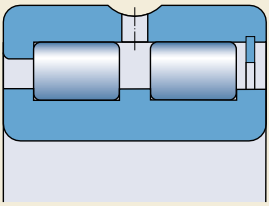
## NNC design

NNC design bearings (**c**) are equipped with the same inner ring as bearings of the NNCL and NNCF designs. The outer ring is split and held together by retaining elements, which should not be loaded axially. Both parts of the outer ring are identical and carry one integral flange, enabling the bearing to locate the shaft axially in both directions.

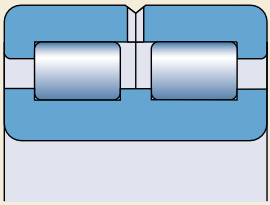
**Fig. 1**



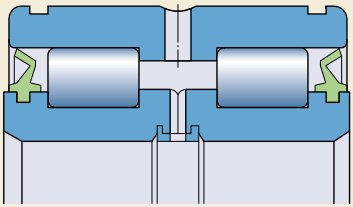
a



b



c



d

## NNF design

NNF design bearings (**d**) in the NNF 50 and 3194(00) series are always sealed on both sides and filled with grease. The two-piece inner ring has three integral flanges and is held together by a retaining ring. The outer ring has an integral central flange. The bearings can be used to locate a shaft axially in both directions. Because of the large distance between the two rows of rollers, the bearings are also able to accommodate tilting moments.

The outer ring of an NNF bearing is 1 mm narrower than the inner ring and has two snap ring grooves in the outside diameter. Therefore it is possible to eliminate the need for spacer rings between the inner ring and adjacent components, for example, in rope sheaves (→ **fig. 2**).

The bearings have a contact seal on both sides. The seals are retained on the inner ring shoulders, to provide efficient sealing at this position. The outer sealing lip exerts a slight pressure on the outer ring raceway. The operating temperature range for the seals is –20 to +80 °C.

The bearings are filled with greases, which have good rust inhibiting properties. The technical specifications of the greases are listed in **table 1**.

Under certain conditions, sealed NNF design bearings are maintenance-free, but if they operate in a moist or contaminated environment, or if speeds are moderate to high, they must be relubricated. This can be done through the inner as well as the outer ring.

If bearings with one or no seals are required, the seals may be removed easily with a screwdriver. For applications where oil lubrication is to be used, the bearings can be delivered without seals and grease if economic quantities are involved. Otherwise the seals should be removed and the bearings washed before use. If oil lubrication is used, the limiting speed quoted in the product tables can be increased by approximately 30 %.

**Fig. 2**

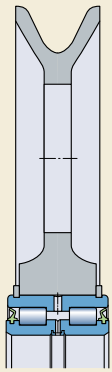


**Table 1**

**Technical specifications of SKF greases for sealed double row full complement cylindrical roller bearings**

| Technical specification | Bearings in the series NNF 50 ADA | NNF 50 ADB and 3194(00) DA |
|---|---|---|
| **Thickener** | Lithium soap | Lithium complex soap |
| **Base oil type** | Diester oil | Mineral oil |
| **NLGI consistency class** | 2 | 2 |
| **Temperature range**, °C[1)] | –55 to +110 | –20 to +140 |
| **Base oil viscosity**, $mm^2/s$ | | |
| at 40 °C | 15 | 160 |
| at 100 °C | 3,7 | 15,5 |

[1)] For safe operating temperature, → section "Temperature range – the SKF traffic light concept", starting on **page 232**

# Bearing data – general

## Dimensions

The boundary dimensions of SKF double row full complement cylindrical roller bearings are in accordance with ISO 15:1998, except for bearings in the NNF 50 and 3194(00) series. The outer rings of NNF bearings are 1 mm narrower than specified for the ISO Dimension Series 50. The dimensions of series 3194(00) bearings have been dictated by practical application requirements and are not covered by any international or national standard.

## Tolerances

Double row full complement cylindrical roller bearings are manufactured to Normal tolerances as standard. The tolerances are in accordance with ISO 492:2002 and can be found in **table 3** on **page 125**.

## Internal clearance

Double row full complement cylindrical roller bearings are manufactured with Normal radial internal clearance as standard. Bearings with the larger C3 or smaller C2 radial internal clearance can be supplied on request.

The clearance limits are in accordance with ISO 5753:1991 and can be found in **table 1** on **page 513**. The clearance limits apply to unmounted bearings under zero measuring load.

The axial internal clearance of NNC and NNF design bearings, which can axially locate the shaft in both directions, is 0,1 to 0,2 mm for all sizes.

## Axial displacement

NNCL and NNCF design bearings can accommodate axial displacement of the shaft with respect to the housing as a result of thermal expansion of the shaft within certain limits (→ **fig. 3**). As the axial displacement is accommodated within the bearing and not between the ring and shaft or housing bore, there is practically no additional friction when the bearing rotates. Values for the permissible axial displacement "s" from the normal position of one bearing ring in relation to the other are provided in the product table.

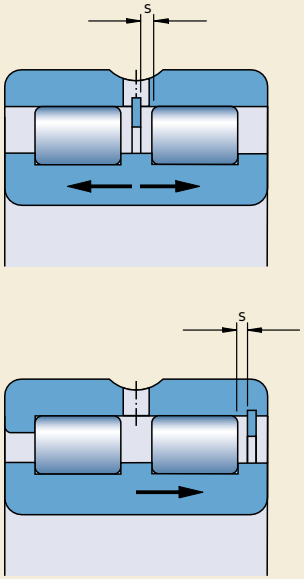
## Misalignment

Any angular misalignment of the outer ring relative to the inner ring of double row full complement cylindrical roller bearings produces moment loads in the bearing. The resulting increased bearing load shortens bearing service life.

## Influence of operating temperature on bearing material

SKF double row full complement cylindrical roller bearings undergo a special heat treatment. They can be used at temperatures of up to +150 °C.

**Fig. 3**



## Minimum load

In order to provide satisfactory operation, double row full complement cylindrical roller bearings, like all ball and roller bearings, must always be subjected to a given minimum load, particularly if they are to operate at relatively high speeds (n > 0,5 times the reference speed) or are subjected to high accelerations or rapid changes in the direction of load. Under such conditions, the inertia forces of the rollers and the friction in the lubricant, can have a detrimental effect on the rolling conditions in the bearing arrangement and may cause damaging sliding movements to occur between the rollers and raceways.

The requisite minimum load to be applied to double row full complement cylindrical roller bearings can be estimated using

$$F_{rm} = k_r \left(6 + \frac{4\,n}{n_r}\right)\left(\frac{d_m}{100}\right)^2$$

where
$F_{rm}$ = minimum radial load, kN
$k_r$ = minimum load factor
0,2 for bearing series 48
0,25 for bearing series 49
0,4 for bearing series NNF 50 and 3194(00)
0,5 for bearing series NNCF 50
$n$ = rotational speed, r/min
$n_r$ = speed rating according to the product tables, r/min
– for open bearings use reference speed
– for sealed bearings use 1,3 × limiting speed
$d_m$ = bearing mean diameter
= 0,5 (d + D), mm

When starting up at low temperatures or when the lubricant is highly viscous, even greater minimum loads may be required. The weight of the components supported by the bearing, together with external forces, generally exceeds the requisite minimum load. If this is not the case, the double row full complement cylindrical roller bearing must be subjected to an additional radial load.

## Dynamic axial load carrying capacity

Double row full complement cylindrical roller bearings with flanges on both the inner and outer rings can support axial loads in addition to radial loads. Their axial load carrying capacity is primarily determined by the ability of the sliding surfaces of the roller end/flange contact to support loads. Factors having the greatest effect on this ability are the lubrication, operating temperature and heat dissipation from the bearing.

Assuming the conditions cited below, the permissible axial load can be calculated with sufficient accuracy from

$$F_{ap} = \frac{k_1\, C_0\, 10^4}{n\,(d + D)} - k_2\, F_r$$

where
$F_{ap}$ = permissible axial load, kN
$C_0$ = basic static load rating, kN
$F_r$ = actual radial bearing load, kN
$n$ = rotational speed, r/min
$d$ = bearing bore diameter, mm
$D$ = bearing outside diameter, mm
$k_1$ = a factor
0,35 for oil lubrication
0,2 for grease lubrication
$k_2$ = a factor
0,1 for oil lubrication
0,06 for grease lubrication

The above equation is based on conditions that are considered typical for normal bearing operation, i.e.

- a difference of 60 °C between the bearing operating temperature and the ambient temperature
- a specific heat loss from the bearing of 0,5 mW/mm$^2$ °C; with reference to the bearing outside diameter surface (π D B)
- a viscosity ratio $\kappa \geq 2$.

For grease lubrication the viscosity of the base oil in the grease may be used. If $\kappa$ is less than 2,the friction will increase and there will be more wear. These effects can be reduced at low speeds, for example, by using oils with AW (anti-wear) and/or EP (extreme pressure) additives.

Where axial loads act for longer periods and the bearings are grease lubricated, it is advis-

able to use a grease that has good oil bleeding properties at the operating temperature (> 3 % according to DIN 51 817). Frequent relubrication is also recommended.

The values of the permissible load $F_{ap}$ obtained from the heat balance equation are valid for a continuously acting constant axial load and adequate lubricant supply to the roller end/flange contacts. Where axial loads act only for short periods, the values may be multiplied by a factor of 2, or for shock loads by a factor of 3, provided the limits given in the following with regard to flange strength are not exceeded.

To avoid any risk of flange breakage, the constantly acting axial load applied to the bearings should never exceed

$$F_{a\,max} = 0{,}0023\ D^{1,7}$$

When acting only occationally and for brief periods, the axial load applied to the bearings should never exceed

$$F_{a\,max} = 0{,}007\ D^{1,7}$$

where

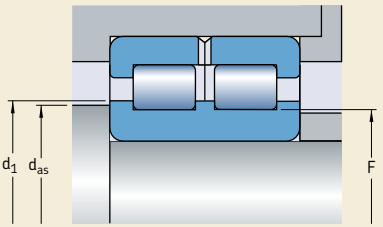
$F_{a\,max}$ = maximum constantly or occasionally acting axial load, kN
D = bearing outside diameter, mm

To obtain an even flange load and provide sufficient running accuracy of the shaft when double row full complement cylindrical roller bearings are subjected to heavy axial loads, axial runout and the size of the abutment surfaces of adjacent components become particularly important.

If shaft deflection occurs together with an axial load, the inner ring flange should only be supported to half its height (**→ fig. 4**) so that it is not subjected to damaging alternating stresses. The recommended shaft abutment diameter $d_{as}$ can be obtained from the product tables.

Where misalignment between the inner and outer rings exceeds 1 minute of arc, the action of the load on the flange changes considerably. As a result, the safety factors implicit in the guideline values may not be adequate. In these cases, contact the SKF application engineering service.

**Fig. 4**




## Equivalent dynamic bearing load

For non-locating bearings

$$P = F_r$$

If double row full complement cylindrical roller bearings with flanges on both inner and outer rings are used to locate a shaft in one or both directions, the equivalent dynamic bearing load should be calculated using

$P = F_r$ when $F_a/F_r \leq 0{,}15$
$P = 0{,}92\ F_r + 0{,}4\ F_a$ when $F_a/F_r > 0{,}15$

Since axially loaded double row full complement cylindrical roller bearings only operate satisfactorily when they are subjected to a simultaneously acting radial load, the ratio $F_a/F_r$ should not exceed 0,25.

## Equivalent static bearing load

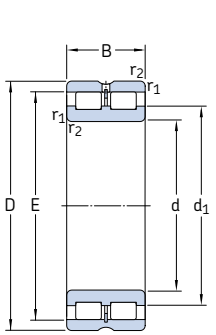
$$P_0 = F_r$$

## Supplementary designations

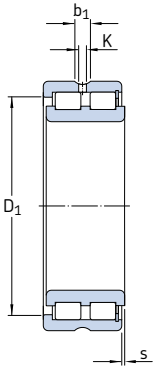
The designation suffixes used to identify certain features of SKF double row full complement cylindrical roller bearings are explained in the following.

**ADA** Modified snap ring grooves in the outer ring; two-piece inner ring held together by a retaining ring
**ADB** Modified internal design, modified snap ring grooves in the outer ring; two-piece inner ring held together by a retaining ring
**CV** Modified internal design, full complement roller set
**C2** Radial internal clearance smaller than Normal
**C3** Radial internal clearance greater than Normal
**DA** Modified snap ring grooves in the outer ring; two-piece inner ring held together by a retaining ring
**L4B** Bearing rings and rolling elements with special surface coating
**L5B** Rolling elements with special surface coating
**2LS** Contact seal of polyurethane (AU) on both sides of the bearing
**V** Full complement of rollers (without cage)

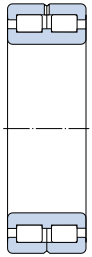
## Double row full complement cylindrical roller bearings
d **20 – 85** mm




NNCL

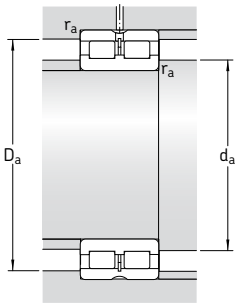



NNCF



NNC

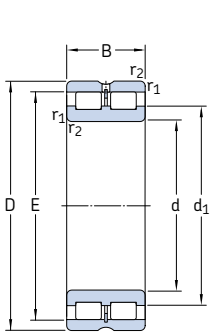
| Principal dimensions | | | Basic load ratings dynamic | static | Fatigue load limit | Speed ratings Reference speed | Limiting speed | Mass | Designation |
|---|---|---|---|---|---|---|---|---|---|
| d | D | B | C | $C_0$ | $P_u$ | | | | |
| mm | | | kN | | kN | r/min | | kg | – |
| **20** | 42 | 30 | 52,3 | 57 | 6,2 | 8 500 | 10 000 | 0,20 | **NNCF 5004 CV** |
| **25** | 47 | 30 | 59,4 | 71 | 7,65 | 7 000 | 9 000 | 0,23 | **NNCF 5005 CV** |
| **30** | 55 | 34 | 73,7 | 88 | 10 | 6 000 | 7 500 | 0,35 | **NNCF 5006 CV** |
| **35** | 62 | 36 | 89,7 | 112 | 12,9 | 5 300 | 6 700 | 0,46 | **NNCF 5007 CV** |
| **40** | 68 | 38 | 106 | 140 | 16,3 | 4 800 | 6 000 | 0,56 | **NNCF 5008 CV** |
| **45** | 75 | 40 | 112 | 156 | 18,3 | 4 300 | 5 300 | 0,71 | **NNCF 5009 CV** |
| **50** | 80 | 40 | 142 | 196 | 23,6 | 4 000 | 5 000 | 0,76 | **NNCF 5010 CV** |
| **55** | 90 | 46 | 190 | 280 | 34,5 | 3 400 | 4 300 | 1,16 | **NNCF 5011 CV** |
| **60** | 85 | 25 | 78,1 | 137 | 14,3 | 3 600 | 4 500 | 0,48 | **NNCF 4912 CV** |
| | 85 | 25 | 78,1 | 137 | 14,3 | 3 600 | 4 500 | 0,49 | **NNC 4912 CV** |
| | 85 | 25 | 78,1 | 137 | 14,3 | 3 600 | 4 500 | 0,47 | **NNCL 4912 CV** |
| | 95 | 46 | 198 | 300 | 36,5 | 3 400 | 4 000 | 1,24 | **NNCF 5012 CV** |
| **65** | 100 | 46 | 209 | 325 | 40 | 3 000 | 3 800 | 1,32 | **NNCF 5013 CV** |
| **70** | 100 | 30 | 114 | 193 | 22,4 | 3 000 | 3 800 | 0,77 | **NNCF 4914 CV** |
| | 100 | 30 | 114 | 193 | 22,4 | 3 000 | 3 800 | 0,78 | **NNC 4914 CV** |
| | 100 | 30 | 114 | 193 | 22,4 | 3 000 | 3 800 | 0,75 | **NNCL 4914 CV** |
| | 110 | 54 | 238 | 345 | 45 | 2 800 | 3 600 | 1,85 | **NNCF 5014 CV** |
| **75** | 115 | 54 | 251 | 380 | 49 | 2 600 | 3 200 | 1,93 | **NNCF 5015 CV** |
| **80** | 110 | 30 | 121 | 216 | 25 | 2 600 | 3 400 | 0,87 | **NNCF 4916 CV** |
| | 110 | 30 | 121 | 216 | 25 | 2 600 | 3 400 | 0,88 | **NNC 4916 CV** |
| | 110 | 30 | 121 | 216 | 25 | 2 600 | 3 400 | 0,85 | **NNCL 4916 CV** |
| | 125 | 60 | 308 | 455 | 58,5 | 2 400 | 3 000 | 2,59 | **NNCF 5016 CV** |
| **85** | 130 | 60 | 314 | 475 | 60 | 2 400 | 3 000 | 2,72 | **NNCF 5017 CV** |



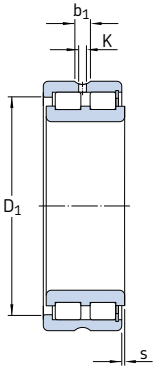

| Dimensions | | | | | | | | Abutment and fillet dimensions | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| d | $d_1$ ~ | $D_1$ ~ | E | $b_1$ | K | $r_{1,2}$ min | s[1] | $d_a$ min | $d_{as}$[2] | $D_a$ max | $r_a$ max |
| mm | | | | | | | | mm | | | |
| **20** | 28,4 | 33,2 | 36,81 | 4,5 | 3 | 0,6 | 1 | 23,2 | 26,6 | 38,8 | 0,6 |
| **25** | 34,5 | 38,9 | 42,51 | 4,5 | 3 | 0,6 | 1 | 28,2 | 28,2 | 43,8 | 0,6 |
| **30** | 40 | 45,3 | 49,6 | 4,5 | 3 | 1 | 1,5 | 34,6 | 34,6 | 50,4 | 1 |
| **35** | 44,9 | 51,3 | 55,52 | 4,5 | 3 | 1 | 1,5 | 39,6 | 39,6 | 57,4 | 1 |
| **40** | 50,5 | 57,2 | 61,74 | 4,5 | 3 | 1 | 1,5 | 44,6 | 44,6 | 63,4 | 1 |
| **45** | 55,3 | 62,5 | 66,85 | 4,5 | 3 | 1 | 1,5 | 49,6 | 49,6 | 70,4 | 1 |
| **50** | 59,1 | 67,6 | 72,23 | 4,5 | 3 | 1 | 1,5 | 54,6 | 54,6 | 75,4 | 1 |
| **55** | 68,5 | 78,7 | 83,54 | 4,5 | 3,5 | 1,1 | 1,5 | 61 | 61 | 84 | 1 |
| **60** | 70,5 | 73,5 | 77,51 | 4,5 | 3,5 | 1 | 1 | 64,6 | 68,5 | 80,4 | 1 |
| | 70,5 | 73,5 | 77,51 | 4,5 | 3,5 | 1 | – | 64,6 | 68,5 | 80,4 | 1 |
| | 70,5 | – | 77,51 | 4,5 | 3,5 | 1 | 1 | 64,6 | – | 80,4 | 1 |
| | 71,7 | 81,9 | 86,74 | 4,5 | 3,5 | 1,1 | 1,5 | 66 | 69,2 | 89 | 1 |
| **65** | 78,1 | 88,3 | 93,09 | 4,5 | 3,5 | 1,1 | 1,5 | 71 | 71 | 94 | 1 |
| **70** | 83 | 87 | 91,87 | 4,5 | 3,5 | 1 | 1 | 74,6 | 80,4 | 95,4 | 1 |
| | 83 | 87 | 91,87 | 4,5 | 3,5 | 1 | – | 74,6 | 80,4 | 95,4 | 1 |
| | 83 | – | 91,87 | 4,5 | 3,5 | 1 | 1 | 74,6 | – | 95,4 | 1 |
| | 81,5 | 95 | 100,28 | 5 | 3,5 | 1,1 | 3 | 76 | 78,9 | 104 | 1 |
| **75** | 89 | 103 | 107,9 | 5 | 3,5 | 1,1 | 3 | 81 | 81 | 109 | 1 |
| **80** | 91,4 | 96 | 100,78 | 5 | 3,5 | 1 | 1 | 84,6 | 89,4 | 105,4 | 1 |
| | 91,4 | 96 | 100,78 | 5 | 3,5 | 1 | – | 84,6 | 89,4 | 105,4 | 1 |
| | 91,4 | – | 100,78 | 5 | 3,5 | 1 | 1 | 84,6 | – | 105,4 | 1 |
| | 95 | 111 | 117,4 | 5 | 3,5 | 1,1 | 3,5 | 86 | 92 | 119 | 1 |
| **85** | 99 | 117 | 121,95 | 5 | 3,5 | 1,1 | 3,5 | 91 | 91 | 124 | 1 |

[1] Permissible axial displacement from the normal position of one bearing ring in relation to the other
[2] Recommended shaft abutment diameter for axially loaded bearings → **page 582**

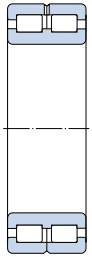
## Double row full complement cylindrical roller bearings
d **90 – 150** mm




NNCL

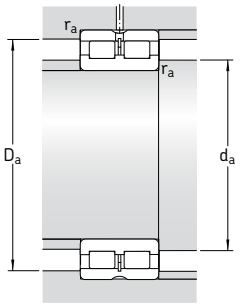



NNCF



NNC

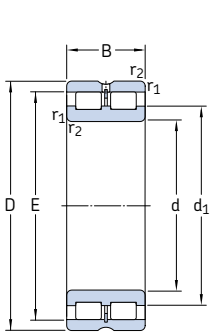
| Principal dimensions | | | Basic load ratings dynamic | static | Fatigue load limit | Speed ratings Reference speed | Limiting speed | Mass | Designation |
|---|---|---|---|---|---|---|---|---|---|
| d | D | B | C | $C_0$ | $P_u$ | | | | |
| mm | | | kN | | kN | r/min | | kg | – |
| **90** | 125 | 35 | 161 | 300 | 35,5 | 2 400 | 3 000 | 1,33 | **NNCF 4918 CV** |
| | 125 | 35 | 161 | 300 | 35,5 | 2 400 | 3 000 | 1,35 | **NNC 4918 CV** |
| | 125 | 35 | 161 | 300 | 35,5 | 2 400 | 3 000 | 1,30 | **NNCL 4918 CV** |
| | 140 | 67 | 369 | 560 | 69,5 | 2 200 | 2 800 | 3,62 | **NNCF 5018 CV** |
| **100** | 140 | 40 | 209 | 400 | 46,5 | 2 000 | 2 600 | 1,93 | **NNCF 4920 CV** |
| | 140 | 40 | 209 | 400 | 46,5 | 2 000 | 2 600 | 1,95 | **NNC 4920 CV** |
| | 140 | 40 | 209 | 400 | 46,5 | 2 000 | 2 600 | 1,90 | **NNCL 4920 CV** |
| | 150 | 67 | 391 | 620 | 75 | 2 000 | 2 600 | 3,94 | **NNCF 5020 CV** |
| **110** | 150 | 40 | 220 | 430 | 49 | 1 900 | 2 400 | 2,12 | **NNCF 4922 CV** |
| | 150 | 40 | 220 | 430 | 49 | 1 900 | 2 400 | 2,15 | **NNC 4922 CV** |
| | 150 | 40 | 220 | 430 | 49 | 1 900 | 2 400 | 2,10 | **NNCL 4922 CV** |
| | 170 | 80 | 512 | 800 | 95 | 1 800 | 2 200 | 6,32 | **NNCF 5022 CV** |
| **120** | 165 | 45 | 242 | 480 | 53 | 1 700 | 2 200 | 2,90 | **NNCF 4924 CV** |
| | 165 | 45 | 242 | 480 | 53 | 1 700 | 2 200 | 2,95 | **NNC 4924 CV** |
| | 165 | 45 | 242 | 480 | 53 | 1 700 | 2 200 | 2,85 | **NNCL 4924 CV** |
| | 180 | 80 | 539 | 880 | 104 | 1 700 | 2 000 | 6,77 | **NNCF 5024 CV** |
| **130** | 180 | 50 | 275 | 530 | 60 | 1 600 | 2 000 | 3,88 | **NNCF 4926 CV** |
| | 180 | 50 | 275 | 530 | 60 | 1 600 | 2 000 | 3,95 | **NNC 4926 CV** |
| | 180 | 50 | 275 | 530 | 60 | 1 600 | 2 000 | 3,80 | **NNCL 4926 CV** |
| | 200 | 95 | 765 | 1 250 | 143 | 1 500 | 1 900 | 10,2 | **NNCF 5026 CV** |
| **140** | 190 | 50 | 286 | 570 | 63 | 1 500 | 1 900 | 4,15 | **NNCF 4928 CV** |
| | 190 | 50 | 286 | 570 | 63 | 1 500 | 1 900 | 4,20 | **NNC 4928 CV** |
| | 190 | 50 | 286 | 570 | 63 | 1 500 | 1 900 | 4,10 | **NNCL 4928 CV** |
| | 210 | 95 | 809 | 1 370 | 156 | 1 400 | 1 800 | 11,1 | **NNCF 5028 CV** |
| **150** | 190 | 40 | 255 | 585 | 60 | 1 500 | 1 800 | 2,80 | **NNCF 4830 CV** |
| | 190 | 40 | 255 | 585 | 60 | 1 500 | 1 800 | 2,90 | **NNC 4830 CV** |
| | 190 | 40 | 255 | 585 | 60 | 1 500 | 1 800 | 2,70 | **NNCL 4830 CV** |
| | 210 | 60 | 429 | 830 | 91,5 | 1 400 | 1 700 | 6,55 | **NNCF 4930 CV** |
| | 210 | 60 | 429 | 830 | 91,5 | 1 400 | 1 700 | 6,65 | **NNC 4930 CV** |
| | 210 | 60 | 429 | 830 | 91,5 | 1 400 | 1 700 | 6,45 | **NNCL 4930 CV** |
| | 225 | 100 | 842 | 1 430 | 160 | 1 300 | 1 700 | 13,3 | **NNCF 5030 CV** |



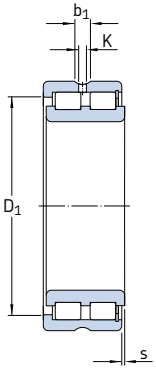

| Dimensions | | | | | | | | Abutment and fillet dimensions | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| d | $d_1$ ~ | $D_1$ ~ | E | $b_1$ | K | $r_{1,2}$ min | s[1] | $d_a$ min | $d_{as}$[2] | $D_a$ max | $r_a$ max |
| mm | | | | | | | | mm | | | |
| **90** | 103 | 111 | 115,2 | 5 | 3,5 | 1,1 | 1,5 | 96 | 101 | 119 | 1 |
| | 103 | 111 | 115,2 | 5 | 3,5 | 1,1 | – | 96 | 101 | 119 | 1 |
| | 103 | – | 115,2 | 5 | 3,5 | 1,1 | 1,5 | 96 | – | 119 | 1 |
| | 106 | 124 | 130,65 | 5 | 3,5 | 1,5 | 4 | 97 | 103 | 133 | 1,5 |
| **100** | 116 | 125 | 129,6 | 5 | 3,5 | 1,1 | 2 | 106 | 114 | 134 | 1 |
| | 116 | 125 | 129,6 | 5 | 3,5 | 1,1 | – | 106 | 114 | 134 | 1 |
| | 116 | – | 129,6 | 5 | 3,5 | 1,1 | 2 | 106 | – | 134 | 1 |
| | 115 | 134 | 140,2 | 6 | 3,5 | 1,5 | 4 | 107 | 112 | 143 | 1,5 |
| **110** | 125 | 134 | 138,2 | 6 | 3,5 | 1,1 | 2 | 116 | 123 | 144 | 1 |
| | 125 | 134 | 138,2 | 6 | 3,5 | 1,1 | – | 116 | 123 | 144 | 1 |
| | 125 | – | 138,2 | 6 | 3,5 | 1,1 | 2 | 116 | – | 144 | 1 |
| | 127 | 149 | 156,7 | 6 | 3,5 | 2 | 5 | 120 | 124 | 160 | 2 |
| **120** | 139 | 149 | 153,55 | 6 | 3,5 | 1,1 | 3 | 126 | 136 | 159 | 1 |
| | 139 | 149 | 153,55 | 6 | 3,5 | 1,1 | – | 126 | 136 | 159 | 1 |
| | 139 | – | 153,55 | 6 | 3,5 | 1,1 | 3 | 126 | – | 159 | 1 |
| | 138 | 161 | 168,15 | 6 | 3,5 | 2 | 5 | 130 | 135 | 170 | 2 |
| **130** | 149 | 160 | 165,4 | 6 | 3,5 | 1,5 | 4 | 137 | 146 | 173 | 1,5 |
| | 149 | 160 | 165,4 | 6 | 3,5 | 1,5 | – | 137 | 146 | 173 | 1,5 |
| | 149 | – | 165,4 | 6 | 3,5 | 1,5 | 4 | 137 | – | 173 | 1,5 |
| | 149 | 175 | 184,4 | 7 | 4 | 2 | 5 | 140 | 140 | 190 | 2 |
| **140** | 160 | 171 | 175,9 | 6 | 3,5 | 1,5 | 4 | 147 | 157 | 183 | 1,5 |
| | 160 | 171 | 175,9 | 6 | 3,5 | 1,5 | – | 147 | 157 | 183 | 1,5 |
| | 160 | – | 175,9 | 6 | 3,5 | 1,5 | 4 | 147 | – | 183 | 1,5 |
| | 163 | 189 | 198,4 | 7 | 4 | 2 | 5 | 150 | 150 | 200 | 2 |
| **150** | 165 | 174 | 178,3 | 7 | 4 | 1,1 | 2 | 156 | 163 | 184 | 1 |
| | 165 | 174 | 178,3 | 7 | 4 | 1,1 | – | 156 | 163 | 184 | 1 |
| | 165 | – | 178,3 | 7 | 4 | 1,1 | 2 | 156 | – | 184 | 1 |
| | 171 | 187 | 192,77 | 7 | 4 | 2 | 4 | 160 | 168 | 200 | 2 |
| | 171 | 187 | 192,77 | 7 | 4 | 2 | – | 160 | 168 | 200 | 2 |
| | 171 | – | 192,77 | 7 | 4 | 2 | 4 | 160 | – | 200 | 2 |
| | 170 | 198 | 207,45 | 7 | 4 | 2 | 6 | 160 | 160 | 215 | 2 |

[1] Permissible axial displacement from the normal position of one bearing ring in relation to the other
[2] Recommended shaft abutment diameter for axially loaded bearings → **page 582**

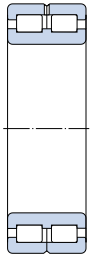
## Double row full complement cylindrical roller bearings
d **160 – 190** mm




NNCL

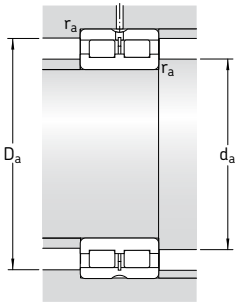



NNCF



NNC

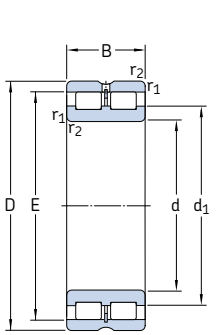
| Principal dimensions | | | Basic load ratings | | Fatigue load limit | Speed ratings | | Mass | Designation |
|---|---|---|---|---|---|---|---|---|---|
| | | | dynamic | static | | Reference | Limiting | | |
| d | D | B | C | $C_0$ | $P_u$ | speed | speed | | |
| mm | | | kN | | kN | r/min | | kg | – |
| **160** | 200 | 40 | 260 | 610 | 62 | 1 400 | 1 700 | 3,00 | **NNCF 4832 CV** |
| | 200 | 40 | 260 | 610 | 62 | 1 400 | 1 700 | 3,10 | **NNC 4832 CV** |
| | 200 | 40 | 260 | 610 | 62 | 1 400 | 1 700 | 2,90 | **NNCL 4832 CV** |
| | 220 | 60 | 446 | 915 | 96,5 | 1 300 | 1 600 | 6,90 | **NNCF 4932 CV** |
| | 220 | 60 | 446 | 915 | 96,5 | 1 300 | 1 600 | 7,00 | **NNC 4932 CV** |
| | 220 | 60 | 446 | 915 | 96,5 | 1 300 | 1 600 | 6,80 | **NNCL 4932 CV** |
| | 240 | 109 | 952 | 1 600 | 180 | 1 200 | 1 500 | 16,2 | **NNCF 5032 CV** |
| **170** | 215 | 45 | 286 | 655 | 65,5 | 1 300 | 1 600 | 4,00 | **NNCF 4834 CV** |
| | 215 | 45 | 286 | 655 | 65,5 | 1 300 | 1 600 | 4,10 | **NNC 4834 CV** |
| | 215 | 45 | 286 | 655 | 65,5 | 1 300 | 1 600 | 3,90 | **NNCL 4834 CV** |
| | 230 | 60 | 457 | 950 | 100 | 1 200 | 1 500 | 7,20 | **NNCF 4934 CV** |
| | 230 | 60 | 457 | 950 | 100 | 1 200 | 1 500 | 7,35 | **NNC 4934 CV** |
| | 230 | 60 | 457 | 950 | 100 | 1 200 | 1 500 | 7,10 | **NNCL 4934 CV** |
| | 260 | 122 | 1 230 | 2 120 | 236 | 1 100 | 1 400 | 23,0 | **NNCF 5034 CV** |
| **180** | 225 | 45 | 297 | 695 | 69,5 | 1 200 | 1 500 | 4,20 | **NNCF 4836 CV** |
| | 225 | 45 | 297 | 695 | 69,5 | 1 200 | 1 500 | 4,30 | **NNC 4836 CV** |
| | 225 | 45 | 297 | 695 | 69,5 | 1 200 | 1 500 | 4,10 | **NNCL 4836 CV** |
| | 250 | 69 | 594 | 1 220 | 127 | 1 100 | 1 400 | 10,7 | **NNCF 4936 CV** |
| | 250 | 69 | 594 | 1 220 | 127 | 1 100 | 1 400 | 10,8 | **NNC 4936 CV** |
| | 250 | 69 | 594 | 1 220 | 127 | 1 100 | 1 400 | 10,5 | **NNCL 4936 CV** |
| | 280 | 136 | 1 420 | 2 500 | 270 | 1 100 | 1 300 | 30,5 | **NNCF 5036 CV** |
| **190** | 240 | 50 | 330 | 750 | 76,5 | 1 100 | 1 400 | 5,50 | **NNCF 4838 CV** |
| | 240 | 50 | 330 | 750 | 76,5 | 1 100 | 1 400 | 5,65 | **NNC 4838 CV** |
| | 240 | 50 | 330 | 750 | 76,5 | 1 100 | 1 400 | 5,30 | **NNCL 4838 CV** |
| | 260 | 69 | 605 | 1 290 | 132 | 1 100 | 1 400 | 11,1 | **NNCF 4938 CV** |
| | 260 | 69 | 605 | 1 290 | 132 | 1 100 | 1 400 | 11,2 | **NNC 4938 CV** |
| | 260 | 69 | 605 | 1 290 | 132 | 1 100 | 1 400 | 10,9 | **NNCL 4938 CV** |
| | 290 | 136 | 1 470 | 2 600 | 280 | 1 000 | 1 300 | 31,5 | **NNCF 5038 CV** |



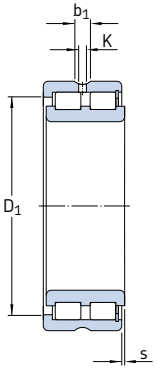

| Dimensions | | | | | | | | Abutment and fillet dimensions | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| d | $d_1$ ~ | $D_1$ ~ | E | $b_1$ | K | $r_{1,2}$ min | $s^{1)}$ | $d_a$ min | $d_{as}{}^{2)}$ | $D_a$ max | $r_a$ max |
| mm | | | | | | | | mm | | | |
| **160** | 174 | 182 | 186,9 | 7 | 4 | 1,1 | 2 | 166 | 171 | 194 | 1 |
| | 174 | 182 | 186,9 | 7 | 4 | 1,1 | – | 166 | 171 | 194 | 1 |
| | 174 | – | 186,9 | 7 | 4 | 1,1 | 2 | 166 | – | 194 | 1 |
| | 184 | 200 | 206,16 | 7 | 4 | 2 | 4 | 170 | 181 | 210 | 2 |
| | 184 | 200 | 206,16 | 7 | 4 | 2 | – | 170 | 181 | 210 | 2 |
| | 184 | – | 206,16 | 7 | 4 | 2 | 4 | 170 | – | 210 | 2 |
| | 184 | 216 | 224,8 | 7 | 4 | 2,1 | 6 | 171 | 171 | 229 | 2 |
| **170** | 187 | 197 | 201,3 | 7 | 4 | 1,1 | 3 | 176 | 184 | 209 | 1 |
| | 187 | 197 | 201,3 | 7 | 4 | 1,1 | – | 176 | 184 | 209 | 1 |
| | 187 | – | 201,3 | 7 | 4 | 1,1 | 3 | 176 | – | 209 | 1 |
| | 193 | 209 | 215,08 | 7 | 4 | 2 | 4 | 180 | 190 | 220 | 2 |
| | 193 | 209 | 215,08 | 7 | 4 | 2 | – | 180 | 190 | 220 | 2 |
| | 193 | – | 215,08 | 7 | 4 | 2 | 4 | 180 | – | 220 | 2 |
| | 198 | 232 | 243 | 7 | 4 | 2,1 | 6 | 181 | 181 | 249 | 2 |
| **180** | 200 | 210 | 214,1 | 7 | 4 | 1,1 | 3 | 186 | 197 | 219 | 1 |
| | 200 | 210 | 214,1 | 7 | 4 | 1,1 | – | 186 | 197 | 219 | 1 |
| | 200 | – | 214,1 | 7 | 4 | 1,1 | 3 | 186 | – | 219 | 1 |
| | 205 | 224 | 230,5 | 7 | 4 | 2 | 4 | 190 | 202 | 240 | 2 |
| | 205 | 224 | 230,5 | 7 | 4 | 2 | – | 190 | 202 | 240 | 2 |
| | 205 | – | 230,5 | 7 | 4 | 2 | 4 | 190 | – | 240 | 2 |
| | 212 | 249 | 260,5 | 8 | 4 | 2,1 | 8 | 191 | 206 | 269 | 2 |
| **190** | 209 | 221 | 225 | 7 | 4 | 1,5 | 4 | 197 | 206 | 233 | 1,5 |
| | 209 | 221 | 225 | 7 | 4 | 1,5 | – | 197 | 206 | 233 | 1,5 |
| | 209 | – | 225 | 7 | 4 | 1,5 | 4 | 197 | – | 233 | 1,5 |
| | 215 | 234 | 240,7 | 7 | 4 | 2 | 4 | 200 | 212 | 250 | 2 |
| | 215 | 234 | 240,7 | 7 | 4 | 2 | – | 200 | 212 | 250 | 2 |
| | 215 | – | 240,7 | 7 | 4 | 2 | 4 | 200 | – | 250 | 2 |
| | 222 | 258 | 270 | 8 | 4 | 2,1 | 8 | 201 | 201 | 279 | 2 |

[1] Permissible axial displacement from the normal position of one bearing ring in relation to the other
[2] Recommended shaft abutment diameter for axially loaded bearings → **page 582**

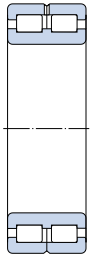
## Double row full complement cylindrical roller bearings
d **200 – 260** mm




NNCL

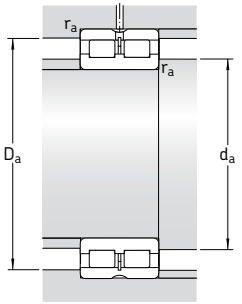



NNCF



NNC

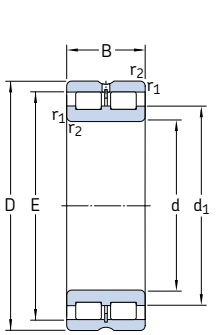
| Principal dimensions | | | Basic load ratings dynamic | static | Fatigue load limit | Speed ratings Reference speed | Limiting speed | Mass | Designation |
|---|---|---|---|---|---|---|---|---|---|
| d | D | B | C | $C_0$ | $P_u$ | | | | |
| mm | | | kN | | kN | r/min | | kg | – |
| **200** | 250 | 50 | 336 | 800 | 80 | 1 100 | 1 400 | 5,80 | **NNCF 4840 CV** |
| | 250 | 50 | 336 | 800 | 80 | 1 100 | 1 400 | 5,90 | **NNC 4840 CV** |
| | 250 | 50 | 336 | 800 | 80 | 1 100 | 1 400 | 5,70 | **NNCL 4840 CV** |
| | 280 | 80 | 704 | 1 500 | 153 | 1 000 | 1 300 | 15,6 | **NNCF 4940 CV** |
| | 280 | 80 | 704 | 1 500 | 153 | 1 000 | 1 300 | 15,8 | **NNC 4940 CV** |
| | 280 | 80 | 704 | 1 500 | 153 | 1 000 | 1 300 | 15,3 | **NNCL 4940 CV** |
| | 310 | 150 | 1 680 | 3 050 | 320 | 950 | 1 200 | 41,0 | **NNCF 5040 CV** |
| **220** | 270 | 50 | 352 | 865 | 85 | 1 000 | 1 200 | 6,30 | **NNCF 4844 CV** |
| | 270 | 50 | 352 | 865 | 85 | 1 000 | 1 200 | 6,40 | **NNC 4844 CV** |
| | 270 | 50 | 352 | 865 | 85 | 1 000 | 1 200 | 6,20 | **NNCL 4844 CV** |
| | 300 | 80 | 737 | 1 600 | 160 | 950 | 1 200 | 17,0 | **NNCF 4944 CV** |
| | 300 | 80 | 737 | 1 600 | 160 | 950 | 1 200 | 17,2 | **NNC 4944 CV** |
| | 300 | 80 | 737 | 1 600 | 160 | 950 | 1 200 | 16,8 | **NNCL 4944 CV** |
| | 340 | 160 | 2 010 | 3 600 | 375 | 850 | 1 100 | 52,5 | **NNCF 5044 CV** |
| **240** | 300 | 60 | 539 | 1 290 | 125 | 900 | 1 100 | 9,90 | **NNCF 4848 CV** |
| | 300 | 60 | 539 | 1 290 | 125 | 900 | 1 100 | 10,0 | **NNC 4848 CV** |
| | 300 | 60 | 539 | 1 290 | 125 | 900 | 1 100 | 9,80 | **NNCL 4848 CV** |
| | 320 | 80 | 781 | 1 760 | 173 | 850 | 1 100 | 18,3 | **NNCF 4948 CV** |
| | 320 | 80 | 781 | 1 760 | 173 | 850 | 1 100 | 18,5 | **NNC 4948 CV** |
| | 320 | 80 | 781 | 1 760 | 173 | 850 | 1 100 | 17,9 | **NNCL 4948 CV** |
| | 360 | 160 | 2 120 | 3 900 | 400 | 800 | 1 000 | 56,0 | **NNCF 5048 CV** |
| **260** | 320 | 60 | 561 | 1 400 | 132 | 800 | 1 000 | 10,8 | **NNCF 4852 CV** |
| | 320 | 60 | 561 | 1 400 | 132 | 800 | 1 000 | 11,0 | **NNC 4852 CV** |
| | 320 | 60 | 561 | 1 400 | 132 | 800 | 1 000 | 10,6 | **NNCL 4852 CV** |
| | 360 | 100 | 1 170 | 2 550 | 245 | 750 | 950 | 31,6 | **NNCF 4952 CV** |
| | 360 | 100 | 1 170 | 2 550 | 245 | 750 | 950 | 32,0 | **NNC 4952 CV** |
| | 360 | 100 | 1 170 | 2 550 | 245 | 750 | 950 | 31,2 | **NNCL 4952 CV** |
| | 400 | 190 | 2 860 | 5 100 | 500 | 700 | 900 | 85,5 | **NNCF 5052 CV** |



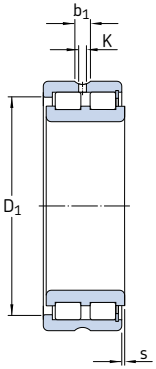

| Dimensions | | | | | | | | Abutment and fillet dimensions | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| d | $d_1$ ~ | $D_1$ ~ | E | $b_1$ | K | $r_{1,2}$ min | $s^{1)}$ | $d_a$ min | $d_{as}{}^{2)}$ | $D_a$ max | $r_a$ max |
| mm | | | | | | | | mm | | | |
| **200** | 219 | 231 | 235,5 | 7 | 4 | 1,5 | 4 | 207 | 217 | 243 | 1,5 |
| | 219 | 231 | 235,5 | 7 | 4 | 1,5 | – | 207 | 217 | 243 | 1,5 |
| | 219 | – | 235,5 | 7 | 4 | 1,5 | 4 | 207 | – | 243 | 1,5 |
| | 230 | 252 | 259,34 | 8 | 4 | 2,1 | 5 | 211 | 227 | 269 | 2 |
| | 230 | 252 | 259,34 | 8 | 4 | 2,1 | – | 211 | 227 | 269 | 2 |
| | 230 | – | 259,34 | 8 | 4 | 2,1 | 5 | 211 | – | 269 | 2 |
| | 236 | 276 | 288 | 8 | 4 | 2,1 | 9 | 211 | 230 | 299 | 2 |
| **220** | 239 | 252 | 256,5 | 7 | 4 | 1,5 | 4 | 227 | 238 | 263 | 1,5 |
| | 239 | 252 | 256,5 | 7 | 4 | 1,5 | – | 227 | 238 | 263 | 1,5 |
| | 239 | – | 256,5 | 7 | 4 | 1,5 | 4 | 227 | – | 263 | 1,5 |
| | 248 | 269 | 276,52 | 8 | 4 | 2,1 | 5 | 231 | 244 | 289 | 2 |
| | 248 | 269 | 276,52 | 8 | 4 | 2,1 | – | 231 | 244 | 289 | 2 |
| | 248 | – | 276,52 | 8 | 4 | 2,1 | 5 | 231 | – | 289 | 2 |
| | 255 | 300 | 312,2 | 8 | 6 | 3 | 9 | 235 | 248 | 325 | 2,5 |
| **240** | 259 | 277 | 281,9 | 8 | 4 | 2 | 4 | 250 | 257 | 290 | 2 |
| | 259 | 277 | 281,9 | 8 | 4 | 2 | – | 250 | 257 | 290 | 2 |
| | 259 | – | 281,9 | 8 | 4 | 2 | 4 | 250 | – | 290 | 2 |
| | 270 | 292 | 299,46 | 8 | 4 | 2,1 | 5 | 251 | 267 | 309 | 2 |
| | 270 | 292 | 299,46 | 8 | 4 | 2,1 | – | 251 | 267 | 309 | 2 |
| | 270 | – | 299,46 | 8 | 4 | 2,1 | 5 | 251 | – | 309 | 2 |
| | 278 | 322 | 335,6 | 9,4 | 5 | 3 | 9 | 255 | 271 | 345 | 2,5 |
| **260** | 282 | 299 | 304,2 | 8 | 4 | 2 | 4 | 270 | 280 | 310 | 2 |
| | 282 | 299 | 304,2 | 8 | 4 | 2 | – | 270 | 280 | 310 | 2 |
| | 282 | – | 304,2 | 8 | 4 | 2 | 4 | 270 | – | 310 | 2 |
| | 294 | 322 | 331,33 | 9,4 | 5 | 2,1 | 6 | 271 | 290 | 349 | 2 |
| | 294 | 322 | 331,33 | 9,4 | 5 | 2,1 | – | 271 | 290 | 349 | 2 |
| | 294 | – | 331,33 | 9,4 | 5 | 2,1 | 6 | 271 | – | 349 | 2 |
| | 304 | 357 | 373,5 | 9,4 | 5 | 4 | 10 | 278 | 297 | 382 | 3 |

[1] Permissible axial displacement from the normal position of one bearing ring in relation to the other
[2] Recommended shaft abutment diameter for axially loaded bearings → **page 582**

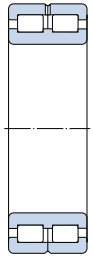
## Double row full complement cylindrical roller bearings
d **280 – 340** mm




NNCL

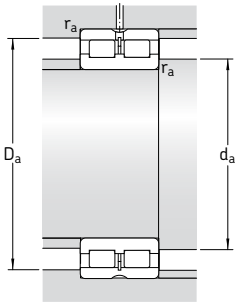



NNCF



NNC

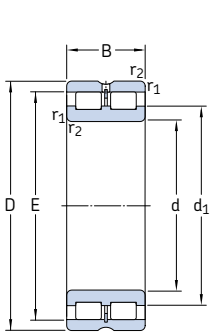
| Principal dimensions | | | Basic load ratings dynamic | static | Fatigue load limit | Speed ratings Reference speed | Limiting speed | Mass | Designation |
|---|---|---|---|---|---|---|---|---|---|
| d | D | B | C | $C_0$ | $P_u$ | | | | |
| mm | | | kN | | kN | r/min | | kg | – |
| **280** | 350 | 69 | 737 | 1 860 | 173 | 750 | 950 | 15,8 | **NNCF 4856 CV** |
| | 350 | 69 | 737 | 1 860 | 173 | 750 | 950 | 16,0 | **NNC 4856 CV** |
| | 350 | 69 | 737 | 1 860 | 173 | 750 | 950 | 15,6 | **NNCL 4856 CV** |
| | 380 | 100 | 1 210 | 2 700 | 255 | 700 | 900 | 33,5 | **NNCF 4956 CV** |
| | 380 | 100 | 1 210 | 2 700 | 255 | 700 | 900 | 34,0 | **NNC 4956 CV** |
| | 380 | 100 | 1 210 | 2 700 | 255 | 700 | 900 | 33,0 | **NNCL 4956 CV** |
| | 420 | 190 | 2 920 | 5 300 | 520 | 670 | 850 | 90,5 | **NNCF 5056 CV** |
| **300** | 380 | 80 | 858 | 2 120 | 196 | 700 | 850 | 22,5 | **NNCF 4860 CV** |
| | 380 | 80 | 858 | 2 120 | 196 | 700 | 850 | 23,0 | **NNC 4860 CV** |
| | 380 | 80 | 858 | 2 120 | 196 | 700 | 850 | 22,0 | **NNCL 4860 CV** |
| | 420 | 118 | 1 680 | 3 750 | 355 | 670 | 800 | 52,5 | **NNCF 4960 CV** |
| | 420 | 118 | 1 680 | 3 750 | 355 | 670 | 800 | 53,0 | **NNC 4960 CV** |
| | 420 | 118 | 1 680 | 3 750 | 355 | 670 | 800 | 52,0 | **NNCL 4960 CV** |
| | 460 | 218 | 3 250 | 6 550 | 600 | 600 | 750 | 130 | **NNCF 5060 CV** |
| **320** | 400 | 80 | 897 | 2 280 | 208 | 630 | 800 | 23,5 | **NNCF 4864 CV** |
| | 400 | 80 | 897 | 2 280 | 208 | 630 | 800 | 24,0 | **NNC 4864 CV** |
| | 400 | 80 | 897 | 2 280 | 208 | 630 | 800 | 23,0 | **NNCL 4864 CV** |
| | 440 | 118 | 1 760 | 4 050 | 375 | 600 | 750 | 55,5 | **NNCF 4964 CV** |
| | 440 | 118 | 1 760 | 4 050 | 375 | 600 | 750 | 56,0 | **NNC 4964 CV** |
| | 440 | 118 | 1 760 | 4 050 | 375 | 600 | 750 | 55,0 | **NNCL 4964 CV** |
| | 480 | 218 | 3 690 | 6 950 | 620 | 560 | 700 | 135 | **NNCF 5064 CV** |
| **340** | 420 | 80 | 913 | 2 400 | 216 | 600 | 750 | 25,0 | **NNCF 4868 CV** |
| | 420 | 80 | 913 | 2 400 | 216 | 600 | 750 | 25,5 | **NNC 4868 CV** |
| | 420 | 80 | 913 | 2 400 | 216 | 600 | 750 | 25,3 | **NNCL 4868 CV** |
| | 460 | 118 | 1 790 | 4 250 | 390 | 560 | 700 | 58,5 | **NNCF 4968 CV** |
| | 460 | 118 | 1 790 | 4 250 | 390 | 560 | 700 | 59,0 | **NNC 4968 CV** |
| | 460 | 118 | 1 790 | 4 250 | 390 | 560 | 700 | 57,8 | **NNCL 4968 CV** |
| | 520 | 243 | 4 400 | 8 300 | 710 | 530 | 670 | 185 | **NNCF 5068 CV** |



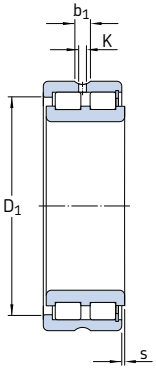

| Dimensions | | | | | | | | Abutment and fillet dimensions | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| d | $d_1$ ~ | $D_1$ ~ | E | $b_1$ | K | $r_{1,2}$ min | s[1] | $d_a$ min | $d_{as}$[2] | $D_a$ max | $r_a$ max |
| mm | | | | | | | | mm | | | |
| **280** | 307 | 326 | 332,4 | 8 | 4 | 2 | 4 | 290 | 305 | 340 | 2 |
| | 307 | 326 | 332,4 | 8 | 4 | 2 | – | 290 | 305 | 340 | 2 |
| | 307 | – | 332,4 | 8 | 4 | 2 | 4 | 290 | – | 340 | 2 |
| | 316 | 345 | 353,34 | 9,4 | 5 | 2,1 | 6 | 291 | 312 | 369 | 2 |
| | 316 | 345 | 353,34 | 9,4 | 5 | 2,1 | – | 291 | 312 | 369 | 2 |
| | 316 | – | 353,34 | 9,4 | 5 | 2,1 | 6 | 291 | – | 369 | 2 |
| | 320 | 372 | 389 | 9,4 | 5 | 4 | 10 | 298 | 314 | 402 | 3 |
| **300** | 328 | 350 | 356,7 | 9,4 | 5 | 2,1 | 6 | 311 | 325 | 369 | 2 |
| | 328 | 350 | 356,7 | 9,4 | 5 | 2,1 | – | 311 | 325 | 369 | 2 |
| | 328 | – | 356,7 | 9,4 | 5 | 2,1 | 6 | 311 | – | 369 | 2 |
| | 341 | 374 | 385,51 | 9,4 | 5 | 3 | 6 | 315 | 335 | 405 | 2,5 |
| | 341 | 374 | 385,51 | 9,4 | 5 | 3 | – | 315 | 335 | 405 | 2,5 |
| | 341 | – | 385,51 | 9,4 | 5 | 3 | 6 | 315 | – | 405 | 2,5 |
| | 352 | 418 | 433 | 9,4 | 5 | 4 | 9 | 318 | 343 | 442 | 3 |
| **320** | 351 | 373 | 379,7 | 9,4 | 5 | 2,1 | 6 | 331 | 348 | 389 | 2 |
| | 351 | 373 | 379,7 | 9,4 | 5 | 2,1 | – | 331 | 348 | 389 | 2 |
| | 351 | – | 379,7 | 9,4 | 5 | 2,1 | 6 | 331 | – | 389 | 2 |
| | 368 | 401 | 412,27 | 9,4 | 5 | 3 | 6 | 335 | 362 | 425 | 2,5 |
| | 368 | 401 | 412,27 | 9,4 | 5 | 3 | – | 335 | 362 | 425 | 2,5 |
| | 368 | – | 412,27 | 9,4 | 5 | 3 | 6 | 335 | – | 425 | 2,5 |
| | 370 | 434 | 449 | 9,4 | 5 | 4 | 9 | 338 | 360 | 462 | 3 |
| **340** | 368 | 390 | 396,9 | 9,4 | 5 | 2,1 | 6 | 351 | 365 | 409 | 2 |
| | 368 | 390 | 396,9 | 9,4 | 5 | 2,1 | – | 351 | 365 | 409 | 2 |
| | 368 | – | 396,9 | 9,4 | 5 | 2,1 | 6 | 351 | – | 409 | 2 |
| | 385 | 419 | 430,11 | 9,4 | 5 | 3 | 6 | 355 | 380 | 445 | 2,5 |
| | 385 | 419 | 430,11 | 9,4 | 5 | 3 | – | 355 | 380 | 445 | 2,5 |
| | 385 | – | 430,11 | 9,4 | 5 | 3 | 6 | 355 | – | 445 | 2,5 |
| | 395 | 468 | 485 | 9,4 | 5 | 5 | 11 | 363 | 384 | 497 | 4 |

[1] Permissible axial displacement from the normal position of one bearing ring in relation to the other
[2] Recommended shaft abutment diameter for axially loaded bearings → **page 582**

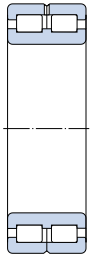
## Double row full complement cylindrical roller bearings
d **360 – 400** mm




NNCL

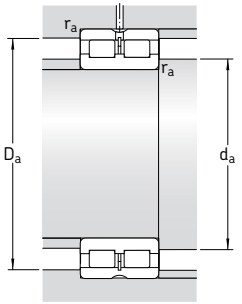



NNCF



NNC

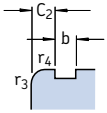
| Principal dimensions | | | Basic load ratings | | Fatigue load limit | Speed ratings | | Mass | Designation |
|---|---|---|---|---|---|---|---|---|---|
| | | | dynamic | static | | Reference | Limiting | | |
| d | D | B | C | $C_0$ | $P_u$ | speed | speed | | |
| mm | | | kN | | kN | r/min | | kg | – |
| **360** | 440 | 80 | 935 | 2 550 | 224 | 560 | 700 | 26,5 | **NNCF 4872 CV** |
| | 440 | 80 | 935 | 2 550 | 224 | 560 | 700 | 27,0 | **NNC 4872 CV** |
| | 440 | 80 | 935 | 2 550 | 224 | 560 | 700 | 26,0 | **NNCL 4872 CV** |
| | 480 | 118 | 1 830 | 4 500 | 405 | 530 | 670 | 61,5 | **NNCF 4972 CV** |
| | 480 | 118 | 1 830 | 4 500 | 405 | 530 | 670 | 62,1 | **NNC 4972 CV** |
| | 480 | 118 | 1 830 | 4 500 | 405 | 530 | 670 | 60,8 | **NNCL 4972 CV** |
| | 540 | 243 | 4 460 | 8 650 | 735 | 500 | 630 | 195 | **NNCF 5072 CV** |
| **380** | 480 | 100 | 1 400 | 3 650 | 315 | 530 | 670 | 44,8 | **NNCF 4876 CV** |
| | 480 | 100 | 1 400 | 3 650 | 315 | 530 | 670 | 45,5 | **NNC 4876 CV** |
| | 480 | 100 | 1 400 | 3 650 | 315 | 530 | 670 | 44,0 | **NNCL 4876 CV** |
| | 520 | 140 | 2 380 | 5 700 | 500 | 500 | 630 | 91,5 | **NNCF 4976 CV** |
| | 520 | 140 | 2 380 | 5 700 | 500 | 500 | 630 | 92,4 | **NNC 4976 CV** |
| | 520 | 140 | 2 380 | 5 700 | 500 | 500 | 630 | 90,5 | **NNCL 4976 CV** |
| | 560 | 243 | 4 680 | 9 150 | 735 | 480 | 600 | 200 | **NNCF 5076 CV** |
| **400** | 500 | 100 | 1 420 | 3 750 | 325 | 500 | 630 | 46,2 | **NNCF 4880 CV** |
| | 500 | 100 | 1 420 | 3 750 | 325 | 500 | 630 | 46,5 | **NNC 4880 CV** |
| | 500 | 100 | 1 420 | 3 750 | 325 | 500 | 630 | 45,9 | **NNCL 4880 CV** |
| | 540 | 140 | 2 420 | 6 000 | 520 | 480 | 600 | 95,5 | **NNCF 4980 CV** |
| | 540 | 140 | 2 420 | 6 000 | 520 | 480 | 600 | 96,5 | **NNC 4980 CV** |
| | 540 | 140 | 2 420 | 6 000 | 520 | 480 | 600 | 94,5 | **NNCL 4980 CV** |
| | 600 | 272 | 5 500 | 11 000 | 900 | 450 | 560 | 270 | **NNCF 5080 CV** |

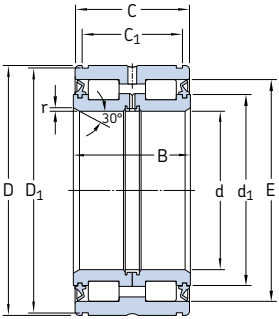



| Dimensions | | | | | | | | Abutment and fillet dimensions | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| d | $d_1$ ~ | $D_1$ ~ | E | $b_1$ | K | $r_{1,2}$ min | s[1] | $d_a$ min | $d_{as}$[2] | $D_a$ max | $r_a$ max |
| mm | | | | | | | | mm | | | |
| **360** | 391 | 413 | 419,8 | 9,4 | 5 | 2,1 | 6 | 371 | 388 | 429 | 2 |
| | 391 | 413 | 419,8 | 9,4 | 5 | 2,1 | – | 371 | 388 | 429 | 2 |
| | 391 | – | 419,8 | 9,4 | 5 | 2,1 | 6 | 371 | – | 429 | 2 |
| | 404 | 437 | 447,95 | 9,4 | 5 | 3 | 6 | 375 | 398 | 465 | 2,5 |
| | 404 | 437 | 447,95 | 9,4 | 5 | 3 | – | 375 | 398 | 465 | 2,5 |
| | 404 | – | 447,95 | 9,4 | 5 | 3 | 6 | 375 | – | 465 | 2,5 |
| | 412 | 486 | 503 | 9,4 | 5 | 5 | 11 | 383 | 402 | 517 | 4 |
| **380** | 419 | 447 | 455,8 | 9,4 | 5 | 2,1 | 6 | 391 | 415 | 469 | 2 |
| | 419 | 447 | 455,8 | 9,4 | 5 | 2,1 | – | 391 | 415 | 469 | 2 |
| | 419 | – | 455,8 | 9,4 | 5 | 2,1 | 6 | 391 | – | 469 | 2 |
| | 430 | 469 | 481,35 | 9,4 | 5 | 4 | 7 | 398 | 424 | 502 | 3 |
| | 430 | 469 | 481,35 | 9,4 | 5 | 4 | – | 398 | 424 | 502 | 3 |
| | 430 | – | 481,35 | 9,4 | 5 | 4 | 7 | 398 | – | 502 | 3 |
| | 431 | 504 | 521 | 9,4 | 5 | 5 | 11 | 403 | 420 | 537 | 4 |
| **400** | 434 | 462 | 470,59 | 9,4 | 5 | 2,1 | 6 | 411 | 430 | 489 | 2 |
| | 434 | 462 | 470,59 | 9,4 | 5 | 2,1 | – | 411 | 430 | 489 | 2 |
| | 434 | – | 470,59 | 9,4 | 5 | 2,1 | 6 | 411 | – | 489 | 2 |
| | 451 | 489 | 501,74 | 9,4 | 5 | 4 | 7 | 418 | 444 | 522 | 3 |
| | 451 | 489 | 501,74 | 9,4 | 5 | 4 | – | 418 | 444 | 522 | 3 |
| | 451 | – | 501,74 | 9,4 | 5 | 4 | 7 | 418 | – | 522 | 3 |
| | 460 | 540 | 558 | 9,4 | 5 | 5 | 11 | 423 | 449 | 577 | 4 |

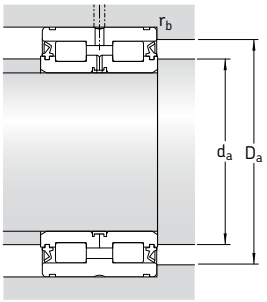
[1] Permissible axial displacement from the normal position of one bearing ring in relation to the other
[2] Recommended shaft abutment diameter for axially loaded bearings → **page 582**

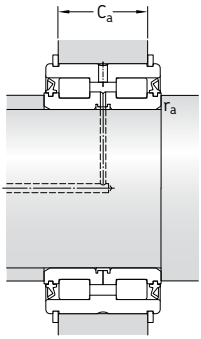
## Sealed double row full complement cylindrical roller bearings
d **20 – 100** mm




| Principal dimensions | | | | Basic load ratings dynamic | static | Fatigue load limit | Limiting speed | Mass | Designation |
|---|---|---|---|---|---|---|---|---|---|
| d | D | B | C | C | $C_0$ | $P_u$ | | | |
| mm | | | | kN | | kN | r/min | kg | – |
| **20** | 42 | 30 | 29 | 45,7 | 55 | 6,2 | 3 400 | 0,20 | **NNF 5004 ADB-2LSV** |
| **25** | 47 | 30 | 29 | 50,1 | 65,5 | 6,8 | 3 000 | 0,24 | **NNF 5005 ADB-2LSV** |
| **30** | 55 | 34 | 33 | 57,2 | 75 | 7,8 | 2 600 | 0,37 | **NNF 5006 ADB-2LSV** |
| **35** | 62 | 36 | 35 | 70,4 | 91,5 | 10,2 | 2 200 | 0,48 | **NNF 5007 ADB-2LSV** |
| **40** | 68 | 38 | 37 | 85,8 | 116 | 13,4 | 2 000 | 0,56 | **NNF 5008 ADB-2LSV** |
| **45** | 75 | 40 | 39 | 102 | 146 | 17 | 1 800 | 0,70 | **NNF 5009 ADB-2LSV** |
| **50** | 80 | 40 | 39 | 108 | 160 | 18,6 | 1 700 | 0,76 | **NNF 5010 ADB-2LSV** |
| **55** | 90 | 46 | 45 | 128 | 193 | 22,8 | 1 500 | 1,18 | **NNF 5011 ADB-2LSV** |
| **60** | 95 | 46 | 45 | 134 | 208 | 25 | 1 400 | 1,26 | **NNF 5012 ADB-2LSV** |
| **65** | 100 | 46 | 45 | 138 | 224 | 26,5 | 1 300 | 1,33 | **NNF 5013 ADB-2LSV** |
| **70** | 110 | 54 | 53 | 187 | 285 | 34,5 | 1 200 | 1,87 | **NNF 5014 ADB-2LSV** |
| **75** | 115 | 54 | 53 | 205 | 310 | 40 | 1 100 | 1,96 | **NNF 5015 ADB-2LSV** |
| **80** | 125 | 60 | 59 | 216 | 335 | 43 | 1 000 | 2,71 | **NNF 5016 ADB-2LSV** |
| **85** | 130 | 60 | 59 | 224 | 365 | 45 | 1 000 | 2,83 | **NNF 5017 ADB-2LSV** |
| **90** | 140 | 67 | 66 | 319 | 550 | 69,5 | 900 | 3,71 | **NNF 5018 ADB-2LSV** |
| **95** | 145 | 67 | 66 | 330 | 570 | 71 | 900 | 3,88 | **NNF 5019 ADB-2LSV** |
| **100** | 150 | 67 | 66 | 347 | 570 | 68 | 850 | 3,95 | **NNF 5020 ADB-2LSV** |

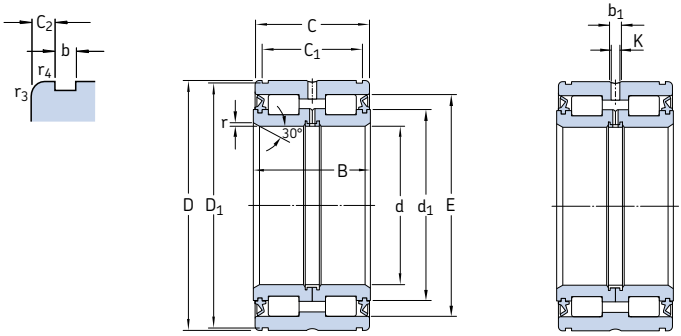


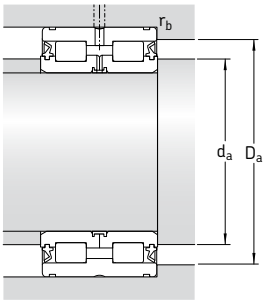

| Dimensions | | | | | | | | | Abutment and fillet dimensions[1] | | | | | | | Appropriate snap rings[2] Designations | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d | $d_1$ ~ | $D_1$ ~ | E | $C_1$ +0,2 | $C_2$ | b | r min | $r_{3,4}$ min | $d_a$ min | $d_{as}$[3] | $D_a$ max | $C_{a1}$ –0,2 | $C_{a2}$ –0,2 | $r_a$ max | $r_b$ max | Seeger | DIN 471 |
| mm | | | | | | | | | mm | | | | | | | – | |
| **20** | 30,6 | 40,2 | 35,6 | 24,7 | 2,15 | 1,8 | 0,5 | 0,3 | 24 | 28,8 | 38 | 21,5 | 21 | 0,3 | 0,3 | SW 42 | 42×1,75 |
| **25** | 35,35 | 45,2 | 40,4 | 24,7 | 2,15 | 1,8 | 0,5 | 0,3 | 29 | 33,6 | 45 | 21,5 | 21 | 0,3 | 0,3 | SW 47 | 47×1,75 |
| **30** | 40,6 | 53 | 47,9 | 28,2 | 2,4 | 2,1 | 0,5 | 0,3 | 34 | 38,7 | 53 | 25 | 24 | 0,3 | 0,3 | SW 55 | 55×2 |
| **35** | 46,1 | 60 | 54,5 | 30,2 | 2,4 | 2,1 | 0,5 | 0,3 | 39 | 44 | 60 | 27 | 26 | 0,3 | 0,3 | SW 62 | 62×2 |
| **40** | 51,4 | 65,8 | 61 | 32,2 | 2,4 | 2,7 | 0,8 | 0,6 | 44 | 49,1 | 63 | 28 | 27 | 0,4 | 0,6 | SW 68 | 68×2,5 |
| **45** | 57 | 72,8 | 67,7 | 34,2 | 2,4 | 2,7 | 0,8 | 0,6 | 49 | 54,7 | 70 | 30 | 29 | 0,4 | 0,6 | SW 75 | 75×2,5 |
| **50** | 61,8 | 77,8 | 72,5 | 34,2 | 2,4 | 2,7 | 0,8 | 0,6 | 54 | 59,5 | 75 | 30 | 29 | 0,4 | 0,6 | SW 80 | 80×2,5 |
| **55** | 68,6 | 87,4 | 80 | 40,2 | 2,4 | 3,2 | 1 | 0,6 | 60 | 66,1 | 85 | 35 | 34 | 0,6 | 0,6 | SW 90 | 90×3 |
| **60** | 73,7 | 92,4 | 85 | 40,2 | 2,4 | 3,2 | 1 | 0,6 | 65 | 71,2 | 90 | 35 | 34 | 0,6 | 0,6 | SW 95 | 95×3 |
| **65** | 78,8 | 97,4 | 90 | 40,2 | 2,4 | 3,2 | 1 | 0,6 | 70 | 76,3 | 95 | 35 | 34 | 0,6 | 0,6 | SW 100 | 100×3 |
| **70** | 84,5 | 107,1 | 100 | 48,2 | 2,4 | 4,2 | 1 | 0,6 | 75 | 82 | 105 | 43 | 40 | 0,6 | 0,6 | SW 110 | 110×4 |
| **75** | 90 | 112,1 | 106 | 48,2 | 2,4 | 4,2 | 1 | 0,6 | 80 | 87 | 110 | 43 | 40 | 0,6 | 0,6 | SW 115 | 115×4 |
| **80** | 97,1 | 122,1 | 113,5 | 54,2 | 2,4 | 4,2 | 1,5 | 0,6 | 86 | 94,1 | 120 | 49 | 46 | 1,5 | 0,6 | SW 125 | 125×4 |
| **85** | 103,9 | 127,1 | 119,5 | 54,2 | 2,4 | 4,2 | 1,5 | 0,6 | 91 | 101 | 125 | 49 | 46 | 1,5 | 0,6 | SW 130 | 130×4 |
| **90** | 109,3 | 137 | 127,5 | 59,2 | 3,4 | 4,2 | 1,5 | 0,6 | 96 | 106 | 135 | 54 | 51 | 1,5 | 0,6 | SW 140 | 140×4 |
| **95** | 113,35 | 142 | 131 | 59,2 | 3,4 | 4,2 | 1,5 | 0,6 | 101 | 110 | 140 | 54 | 51 | 1,5 | 0,6 | SW 145 | 145×4 |
| **100** | 117,35 | 147 | 138 | 59,2 | 3,4 | 4,2 | 1,5 | 0,6 | 106 | 114 | 145 | 54 | 51 | 1,5 | 0,6 | SW 150 | 150×4 |

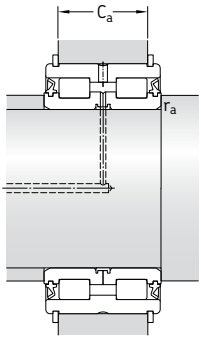
[1] The values for $C_{a1}$ apply for SW snap rings, the values for $C_{a2}$ for snap rings according to DIN 471
[2] Snap rings are not supplied with the bearing and must be ordered separately
[3] Recommended shaft abutment diameter for axially loaded bearings → **page 582**

## Sealed double row full complement cylindrical roller bearings
d **110 – 240** mm




| Principal dimensions | | | | Basic load ratings dynamic | static | Fatigue load limit | Limiting speed | Mass | Designation |
|---|---|---|---|---|---|---|---|---|---|
| d | D | B | C | C | $C_0$ | $P_u$ | | | |
| mm | | | | kN | | kN | r/min | kg | – |
| **110** | 170 | 80 | 79 | 413 | 695 | 81,5 | 750 | 6,45 | **NNF 5022 ADA-2LSV** |
| **120** | 180 | 80 | 79 | 429 | 750 | 86,5 | 700 | 6,90 | **NNF 5024 ADA-2LSV** |
| **130** | 190 | 80 | 79 | 446 | 815 | 91,5 | 670 | 7,50 | **319426 DA-2LS** |
| | 200 | 95 | 94 | 616 | 1 040 | 120 | 630 | 10,5 | **NNF 5026 ADA-2LSV** |
| **140** | 200 | 80 | 79 | 468 | 865 | 96,5 | 630 | 8,00 | **319428 DA-2LS** |
| | 210 | 95 | 94 | 644 | 1 120 | 127 | 600 | 11,0 | **NNF 5028 ADA-2LSV** |
| **150** | 210 | 80 | 79 | 468 | 900 | 96,5 | 560 | 8,40 | **319430 DA-2LS** |
| | 225 | 100 | 99 | 748 | 1 290 | 143 | 560 | 13,5 | **NNF 5030 ADA-2LSV** |
| **160** | 220 | 80 | 79 | 501 | 1 000 | 106 | 530 | 8,80 | **319432 DA-2LS** |
| | 240 | 109 | 108 | 781 | 1 400 | 153 | 500 | 16,5 | **NNF 5032 ADA-2LSV** |
| **170** | 230 | 80 | 79 | 512 | 1 060 | 110 | 530 | 9,30 | **319434 DA-2LS** |
| | 260 | 122 | 121 | 1 010 | 1 800 | 193 | 480 | 22,5 | **NNF 5034 ADA-2LSV** |
| **180** | 240 | 80 | 79 | 528 | 1 100 | 114 | 500 | 9,80 | **319436 DA-2LS** |
| | 280 | 136 | 135 | 1 170 | 2 120 | 228 | 450 | 30,0 | **NNF 5036 ADA-2LSV** |
| **190** | 260 | 80 | 79 | 550 | 1 180 | 120 | 450 | 12,7 | **319438 DA-2LS** |
| | 290 | 136 | 135 | 1 190 | 2 200 | 236 | 430 | 31,5 | **NNF 5038 ADA-2LSV** |
| **200** | 270 | 80 | 79 | 561 | 1 250 | 125 | 430 | 13,2 | **319440 DA-2LS** |
| | 310 | 150 | 149 | 1 450 | 2 900 | 300 | 400 | 42,0 | **NNF 5040 ADA-2LSV** |
| **220** | 340 | 160 | 159 | 1 610 | 3 100 | 315 | 360 | 53,5 | **NNF 5044 ADA-2LSV** |
| **240** | 360 | 160 | 159 | 1 680 | 3 350 | 335 | 340 | 57,5 | **NNF 5048 ADA-2LSV** |




| Dimensions | | | | | | | | | | | Abutment and fillet dimensions[1] | | | | | | | Appropriate snap rings[2] Designations | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d | $d_1$ ~ | $D_1$ ~ | E | $C_1$ +0,2 | $C_2$ | b | $b_1$ | K | r min | $r_{3,4}$ min | $d_a$ min | $d_{as}$[3] | $D_a$ max | $C_{a1}$ –0,2 | $C_{a2}$ –0,2 | $r_a$ max | $r_b$ max | Seeger | DIN 471 |
| mm | | | | | | | | | | | mm | | | | | | | – | |
| **110** | 132 | 167 | 154,5 | 70,2 | 4,4 | 4,2 | 6 | 3,5 | 1,8 | 0,6 | 117 | 128 | 165 | 65 | 62 | 1 | 0,6 | SW 170 | 170×4 |
| **120** | 141 | 176 | 164 | 71,2 | 3,9 | 4,2 | 6 | 3,5 | 1,8 | 0,6 | 127 | 138 | 175 | 65 | 63 | 1 | 0,6 | SW 180 | 180×4 |
| **130** | 151 | 186 | 173,1 | 71,2 | 3,9 | 4,2 | 6 | 3,5 | 1,8 | 0,6 | 137 | 147 | 185 | 65 | 63 | 1 | 0,6 | SW 190 | 190×4 |
| | 155 | 196 | 183,5 | 83,2 | 5,4 | 4,2 | 7 | 4 | 1,8 | 0,6 | 137 | 150 | 195 | 77 | 75 | 1 | 0,6 | SW 200 | 200×4 |
| **140** | 160 | 196 | 182,4 | 71,2 | 3,9 | 4,2 | 7 | 4 | 1,8 | 0,6 | 147 | 156 | 195 | 65 | 63 | 1 | 0,6 | SW 200 | 200×4 |
| | 167 | 206 | 195,5 | 83,2 | 5,4 | 5,2 | 7 | 4 | 1,8 | 0,6 | 147 | 162 | 205 | 77 | 73 | 1 | 0,6 | SW 210 | 210×5 |
| **150** | 175 | 206 | 197 | 71,2 | 3,9 | 5,2 | 7 | 4 | 1,8 | 0,6 | 157 | 171 | 205 | 65 | 61 | 1 | 0,6 | SW 210 | 210×5 |
| | 177 | 221 | 209 | 87,2 | 5,9 | 5,2 | 7 | 4 | 2 | 0,6 | 157 | 172 | 220 | 81 | 77 | 2 | 0,6 | SW 225 | 225×5 |
| **160** | 184 | 216 | 206,5 | 71,2 | 3,9 | 5,2 | 7 | 4 | 1,8 | 0,6 | 167 | 180 | 215 | 65 | 61 | 1 | 0,6 | SW 220 | 220×5 |
| | 191 | 236 | 222,6 | 95,2 | 6,4 | 5,2 | 7 | 4 | 2 | 0,6 | 167 | 186 | 235 | 89 | 85 | 2 | 0,6 | SW 240 | 240×5 |
| **170** | 194 | 226 | 216,1 | 71,2 | 3,9 | 5,2 | 7 | 4 | 1,8 | 0,6 | 177 | 190 | 225 | 65 | 61 | 1 | 0,6 | SW 230 | 230×5 |
| | 203 | 254 | 239 | 107,2 | 6,9 | 5,2 | 7 | 4 | 2 | 0,6 | 177 | 197 | 255 | 99 | 97 | 2 | 0,6 | SW 260 | 260×5 |
| **180** | 203 | 236 | 225,6 | 71,2 | 3,9 | 5,2 | 7 | 4 | 1,8 | 0,6 | 177 | 199 | 225 | 65 | 61 | 1 | 0,6 | SW 240 | 240×5 |
| | 220 | 274 | 259 | 118,2 | 8,4 | 5,2 | 8 | 4 | 2 | 0,6 | 187 | 214 | 275 | 110 | 108 | 2 | 0,6 | SW 280 | 280×5 |
| **190** | 218 | 254 | 240 | 73,2 | 2,9 | 5,2 | 7 | 4 | 1,8 | 0,6 | 197 | 214 | 255 | 65 | 63 | 1 | 0,6 | SW 260 | 260×5 |
| | 228 | 284 | 267,3 | 118,2 | 8,4 | 5,2 | 8 | 4 | 2 | 0,6 | 197 | 222 | 285 | 110 | 108 | 2 | 0,6 | SW 290 | 290×5 |
| **200** | 227 | 264 | 249,6 | 73,2 | 2,9 | 5,2 | 7 | 4 | 1,8 | 0,6 | 207 | 223 | 265 | 65 | 63 | 1 | 0,6 | SW 270 | 270×5 |
| | 245 | 304 | 284 | 128,2 | 10,4 | 6,3 | 8 | 4 | 2 | 0,6 | 207 | 239 | 305 | 120 | 116 | 2 | 0,6 | SW 310 | 310×6 |
| **220** | 264 | 334 | 308,5 | 138,2 | 10,4 | 6,3 | 8 | 6 | 2 | 1 | 227 | 256 | 334 | 130 | 126 | 2 | 1 | SW 340 | 340×6 |
| **240** | 283 | 354 | 327,5 | 138,2 | 10,4 | 6,3 | 9,4 | 6 | 2 | 1 | 247 | 275 | 354 | 130 | 126 | 2 | 1 | SW 360 | 360×6 |

[1] The values for $C_{a1}$ apply for SW snap rings, the values for $C_{a2}$ for snap rings according to DIN 471
[2] Snap rings are not supplied with the bearing and must be ordered separately
[3] Recommended shaft abutment diameter for axially loaded bearings → **page 582**