

Ceramic&Exsev bearing series

More and more bearings are being used in extreme special environments, such as in a vacuum, or in a clean, corrosive, or heated place. In some cases bearings are required to be insulated or antimagnetic.

Applications of bearings in such environments are increasing in the field of state-of-the-art technology, e.g. vacuum equipment, aerospace equipment and semi-conductor production facilities. Bearings made of conventional materials and lubricants can hardly meet these new needs.

JTEKT has succeeded in developing a series of bearings for use in extreme special environments, having started from the study of the very basics of materials and testing of their performance under various severe conditions.

JTEKT has standardized the following bearings as the "Koyo **EXSEV** bearing series".

- Exsev bearings for use in a clean environment
Designed for use in a vacuum.
The friction surface of the bearing interior is coated with solid lubricant (or soft metal). Bearings pre-lubricated with special grease are also available.
- Exsev bearings for use in a vacuum environment
Produce insignificant contamination, provided with rolling elements and a cage made of self-lubricating materials. Optimal for use in environments which need to be clean.
- Ceramic bearings
Ceramic rings and rolling elements (silicon nitride Si_3N_4) ensure excellent performance in various extreme special environments.
- For details, refer to JTEKT separate catalog "Ceramic bearings and **EXSEV** bearings for extreme special environments" (CAT. NO. B2004E).

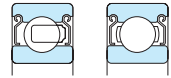


Exsev bearings for use in a vacuum environment



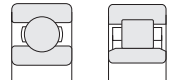
Bore diameter 4 – 40 mm

Exsev bearings for use in a clean environment



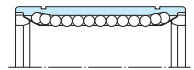
Bore diameter 4 – 40 mm

Ceramic bearings



Bore diameter 4 – 120 mm

Linear ball bearings for vacuum

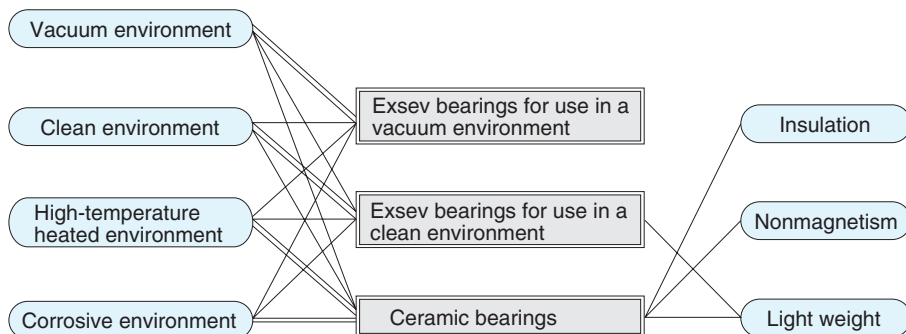


Ball complement bore diameter 3 – 40 mm

The chart below summarizes the EXSEV bearing series and the conditions in which each operates successfully.

Materials and lubricants which are resistant to certain special conditions are listed in Tables 1 and 2.

Major Koyo EXSEV bearing series made of these materials and lubricants are listed in Table 3.



| Lubricant | Operating temperature range °C | Vacuum resistance (room temperature) Pa | Steam pressure at high temperature Pa | Remarks | |
|-----------------|--|---|--|---|---|
| Vacuum grease | - 30 to + 200 | Atmospheric pressure (10 ⁵) to 10 ⁻⁵ | - | Not to be used when grease affects operating environment. | |
| Solid lubricant | Polytetrafluoroethylene resin (PTFE) | - 100 to + 200 | Atmospheric pressure to 10 ⁻⁵ | Highly resistant to chemicals and highly insulating. Suitable when the environment repeats alternation between the atmosphere and a vacuum. | |
| | Molybdenum disulfide (MoS ₂) | - 100 to + 300 | Atmospheric pressure to 10 ⁻⁵ | Friction torque is low even in a vacuum. Not suitable for use in air at high temperature. | |
| | Lead ¹⁾ (Pb) | - 200 to + 300 | 10 ⁻³ to 10 ⁻¹⁰ | 10 ⁻⁶ (300°C) | Low friction torque. Not suitable for use in air. |
| | Silver ¹⁾ (Ag) | - 200 to + 600 | 10 ⁻³ to 10 ⁻¹⁰ | 10 ⁻⁵ (550°C) | Not suitable for use in air or in corrosive gas. |

[Note] 1) Rolling elements or bearing rings are coated using the special ion plating method JTEKT developed.

[Remark] The lubricants in the table above are usually applied to bearings for use in a vacuum. The most suitable one should be selected in consideration of the vacuum condition, temperature, and whether reactive gas or inert gas exists.

○ Good △ Fair × No good












Table 1 EXSEV bearing materials

| Bearing material | Component | | | | Operating temperature range °C | Vacuum resistance (room temperature) Pa | Density g/cm ³ | Young's ¹⁾ modulus GPa | Coefficient ²⁾ of linear thermal expansion ×10 ⁻⁶ /°C | Self-lubrication | Insulation | Nonmagnetism | Corrosion resistance | | | | | | | | | | Used to produce : | | | | |
|--|--------------|-----------------|------|--------|--------------------------------|---|---------------------------|-----------------------------------|---|------------------|------------|--------------|----------------------|-----------|-----------------|------------------|--------------------|---------------|-------------------|-----------------------|-------------------|-----------------|-------------------|----------------|---|---|--|
| | Bearing ring | Rolling element | Cage | Shield | | | | | | | | | Water | Sea water | Alkaline liquid | Weak acid liquid | Strong acid liquid | Sulfuric acid | Hydrochloric acid | Molten metal Al Zn Fe | Hydrogen fluoride | Vacuum bearings | Ceramic bearings | Clean bearings | | | |
| Martensitic stainless steel | □ | □ | | | - 250 to + 400 | Atmospheric pressure (10 ⁵) to 10 ⁻⁸ | 7.7 | 208 | 10.5 | × | × | × | △ | × | ○ | × | × | × | × | × | × | × | × | □ | □ | □ | |
| Precipitation hardening stainless steel | □ | □ | | | - 250 to + 400 | Atmospheric pressure to 10 ⁻⁸ | 7.8 | 196 | 11.0 | × | × | × | ○ | △ | ○ | ○ | ○ | × | × | × | × | × | × | □ | □ | □ | |
| High speed tool steel | □ | □ | | | - 250 to + 550 | Atmospheric pressure to 10 ⁻⁸ | 8.5 | 207 | 12.0 | × | × | × | △ | × | ○ | × | × | × | × | × | × | × | × | □ | □ | | |
| Ceramics (Si ₃ N ₄) | □ | □ | | | - 270 to + 800 | Atmospheric pressure to 10 ⁻⁸ | 3.2 | 320 | 3.2 | × | ○ | ○ | ○ | ○ | ○ | ○ | △ | ○ | ○ | ○ | ○ | × | × | × | □ | □ | |
| Graphite (GF) | | | □ | | + 500 max. | - | 2.15 | - | 5.5 | ○ | × | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | □ | □ | |
| Reinforced fluorocarbon resin (FA) | | | □ | | - 100 to + 200 | Atmospheric pressure to 10 ⁻⁶ | 1.9 | - | - | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | × | × | ○ | | □ | □ | | |
| Reinforced fluorocarbon resin (PT) | | | □ | | - 100 to + 200 | Atmospheric pressure to 10 ⁻⁴ | 2.15 | - | - | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | × | × | ○ | | □ | □ | | | |
| Reinforced PEEK resin (PN) | | | □ | | - 100 to + 300 | Atmospheric pressure to 10 ⁻⁶ | 1.54 | - | - | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | × | × | ○ | | □ | □ | | | | |
| Austenitic stainless steel | | | □ | □ | - 200 to + 300 | Atmospheric pressure to 10 ⁻⁸ | 8.0 | 193 | 16.3 | × | × | ○ | ○ | ○ | △ | × | × | × | × | × | × | × | × | □ | □ | □ | |
| (Ref.) High carbon chromium bearing steel | □ | □ | | | - 200 to + 120 | Atmospheric pressure to 10 ⁻⁸ | 7.8 | 208 | 12.5 | × | × | × | × | × | × | × | × | × | × | × | × | × | × | | | - | |

[Notes] 1) A larger Young's modulus indicates higher rigidity.

2) A smaller coefficient of linear thermal expansion indicates a greater dimensional stability under heating.

Table 3 Koyo EXSEV bearing series models and types

| | | Exsev bearings for use in a vacuum environment | | | | Exsev bearings for use in a clean environment | | | Ceramic bearings ⁴⁾ | | | | | | | | | | | | | | |
|-----------------------------------|---------------------------------------|---|--|---|--------------------------------|---|--|---|--|---|----------------------------|--|---|------------------------------|---|----------------------------------|---|-----------------------------------|---|---|---|---|---|
| Characteristics(selective points) | Vacuum resistance ¹⁾ | Repeated alternation between atmospheric pressure and medium vacuum environments | | Repeated alternation between atmospheric pressure and high vacuum environments | | From high vacuum to ultra-high vacuum | | | Repeated alternation between atmospheric pressure and medium vacuum environments | | | atmospheric pressure | | | | | | | | | | | |
| | Operating temperature range, °C | - 30 to + 200 | | - 100 to + 300 | | - 100 to + 350 | | - 200 to + 350 | | - 30 to + 120 | | | - 120 to + 200 | | + 200 to + 260 | | - 100 to + 200 | | - 30 to + 120 | | + 500 max. | | |
| | Cleanness | (class 100 ⁵⁾) | | | | - | | | - | | | class 10 ⁵⁾ | | | | - | | - | | - | | - | |
| | Corrosion resistance ²⁾ | ○ | | ○ | | ○ | | - | | ○ | | | ◎ | | - | | - | | - | | - | | |
| | Running friction torque | - | | Low torque | | Low torque | | - | | Extremely low torque | | | - | | - | | - | | - | | - | | |
| | Others | - | | - | | - | | Unstable for use with oxygen or corrosive gas | | - | | | - | | - | | Corrosion resistant | | nonmagnetism | | Insulation | | High temperature |
| Bearing types | | DL bearing | | MO bearing | | WS bearing | | MG bearing | | Clean pro PRA bearing | | | Clean pro bearing | | High temperature clean pro bearing | | Hybrid ceramic bearing | | Hybrid ceramic bearing | | Hybrid ceramic bearing | | Hybrid ceramic bearing |
| | |  | |  | |  | |  | |  | | |  | |  | |  | |  | |  | |  |
| | | SV...ST | | SE...STMSA7 | | SE...STWS | | SE...STMG3 | | SE...STPRA | | | SE...STPR | | SE...STPRB | | 3NC...MD4FA | | 3NC...YH4FA | | 3NC...FG | | 3NC...HT4GF |
| Materials | Inner ring and outer ring | Martensitic stainless steel | | | | | | | Martensitic stainless steel | | | Precipitation hardening stainless steel | | Non-magnetic stainless steel | | High carbon chrome bearing steel | | High speed tool steel | | | | | |
| | Rolling elements (balls or rollers) | | | | | | | | Martensitic stainless steel | | | Ceramics | | | | | | | | | | | |
| | Cage | Austenitic stainless steel | | Tungsten disulfide (WS) | | Austenitic stainless steel | | | | | Austenitic stainless steel | | | Fluorocarbon resin (FA) | | Polyamide resin | | Graphite (GF) | | | | | |
| Lubricant | Vacuum grease | | Cage coated with molybdenum disulfide(MoS ₂) | | Self-lubrication ⁶⁾ | | Balls coated with ³⁾ silver(Ag) | | Fluorocarbon-base polymeric coating | | | Self-lubrication ⁶⁾ | | Vacuum grease | | Self-lubrication ⁶⁾ | | | | | | | |
| Applications | Vacuum pump, general vacuum equipment | | P-CVD equipment for manufacture of semiconductors and electronic parts, sputtering equipment | | | | Electron beam epitaxial equipment | | Semiconductor manufacturing | | | Food or chemical manufacturing equipment | | Vacuum equipment | | Motors | | Heat roll heat treatment furnaces | | | | | |

[Notes] 1) Vacuum (pressure) is generally graded as follows :
 Low vacuum.....10⁵ - 10²Pa
 Medium vacuum.....10² - 10⁻¹Pa
 High vacuum.....10⁻¹ - 10⁻⁵Pa
 Ultra-high vacuum.....10⁻⁵Pa or less
 Extremely high vacuum.....10⁻⁸Pa or less
 (Atmospheric pressure ≈ 10⁵Pa)
 2) The corrosion resistance column shows general evaluations.
 Marks "◎" and "○", respectively, denote "excellent", "good", and "fair".
 Refer to Table 1 for the corrosive materials concerned.

3) These soft metals are applied by the special ion plating method JTEKT developed, so that they feature excellent bonding strength, extending the service life of bearings.
 4) When higher corrosion resistance, nonmagnetism and heat resistance are required, Full Ceramic Bearings should be used. Please consult with JTEKT for details.
 Ceramics can also be used to produce many types of bearings, such as angular contact ball bearings and cylindrical roller bearings.

5) These evaluations indicate the cleanness around the bearing, or in the equipment interior. Cleanness is largely dependent on the amount of dirt produced by operation of the bearing. The suffixed numbers refer to amounts of dirt, and the smaller the number is, the less dirt produced by the bearing.
 [Ex.] Class 10.....there are less than 10 particles 0.5 μm or larger in diameter in a 1-cubic-foot space.(as specified in USA standards FED-STD-209D.)

6) Because the cage is made from self-lubricating material.

■ Life of EXSEV Bearings

EXSEV bearings, lubricated with a solid lubricant, are usually used under relatively light load conditions, such as 10% of their static load ratings or less. These bearings can maintain stable performance as long as the solid lubricant is maintained. Once the lubricant wears out, metallic contact occurs, which increases rotational friction torque and shortens service life.

Service life depends on use conditions. At present, it is not possible to predict their service life under varied use conditions.

However, based on a variety of experiments and tests, JTEKT has established an experimental formulae to predict the lives of bearings. The formulae is described in the following subsections for reference only.

(1) Life of MG bearings consisting of silver-coated balls

The life of MG bearings (JTEKT serial number, SE...STMG3) can be predicted according to the following formula;

$$L_{vh} = b_1 \cdot b_2 \cdot b_3 (C_v/P)^q \times 16\,667/n \dots\dots\dots (1)$$

where,

- L_{vh} : 90% reliable life, h
- C_v : Basic dynamic load rating of vacuum-resistant ball bearings (1/13 of basic dynamic load rating of steel bearings of equal size), N
- P : Dynamic equivalent load, N
- q : Index, $q = 1$
- n : Rotational speed, min^{-1} , limited to $10 \leq n \leq 10\,000$
- b_1 : Rotational speed-dependant coefficient
 $b_1 = 1.5 \times 10^{-3}n + 1$
- b_2 : Material coefficient
 $b_2 = 1$ (for bearings ion-plated with silver by the special ion-plating process)
- b_3 : Coefficient for atmospheric pressure and temperature
 $b_3 = 1$ (for 10^{-3} Pa and room temperature)

(2) For bearings coated with PTFE or special polymeric fluoride

For those bearings coated with PTFE (MP7) or those coated with the special polymeric fluoride (PR), the following formula gives their mean life for reference only. (See Fig. 3.8.)

$$L_{av} = b_2 \cdot (C_e/P)^d \times 0.016667/n \dots\dots\dots (2)$$

where,

- L_{av} : Average life, h
- b_2 : Lubrication coefficient
6 for bearings coated with PTFE
42 for bearings coated with special polymeric fluoride
- C_e : 0.85 times the basic dynamic load rating of steel bearings of equal size, N
- P : Dynamic equivalent load, N
- d : Coefficient, $d = 3$
- n : Rotational speed, min^{-1}

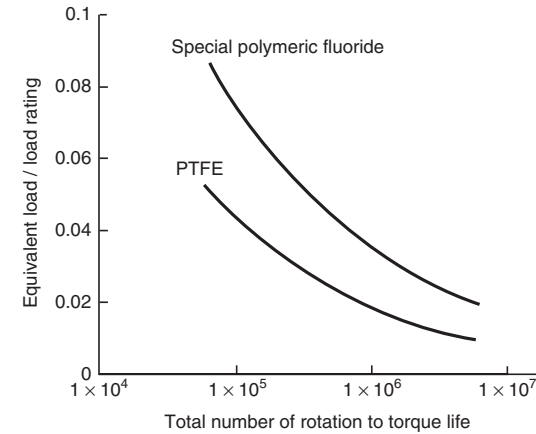


Fig. 1 Mean life of Coated Bearings

(3) Ceramic bearing service life

Ceramic bearings are used for a variety of pur-poses, and their specifications differ case by case. Therefore, there is no common system for estimating their service lives.

The estimation of full ceramic bearing service life is especially difficult at present for theoretical reasons, and requires further study.

JTEKT estimates the full ceramic bearing service life on a case by case basis according to the customer request, based on experience and experimental data.

For hybrid ceramic bearings, in many cases the conventional equation (2) below based on rolling contact fatigue is used to estimate service life, where grease or oil can be used for lubrication and, at the same time, bearings are required to be insulating and antimagnetic, or to be highly rigid and have excellent high-speed performance.

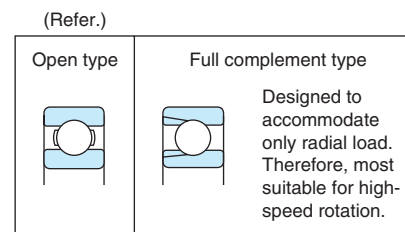
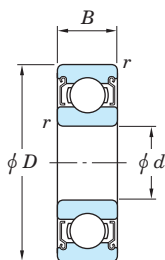
This equation is called the corrected rated life estimation equation. (refer to p. A 26.)

$$L_{na} = a_1 a_2 a_3 L_{10} = a_1 a_2 a_3 (C/P)^p \dots\dots\dots (3)$$

- In an environment where a lubricating film is formed properly, the bearing characteristic coefficient a_2 is expected to be equivalent to or larger than that of conventional steel bearings. However, given current conditions, coefficient a_2 is counted as : $a_2 = 1$. Basic dynamic load rating C is treated as being equivalent to that of steel bearings of the same type and size.
- When a satisfactory oil film is formed, the operating condition coefficient a_3 is counted as : $a_3 > 1$.

EXSEV bearing series
for use in a vacuum environment

d 4 ~ 17 mm

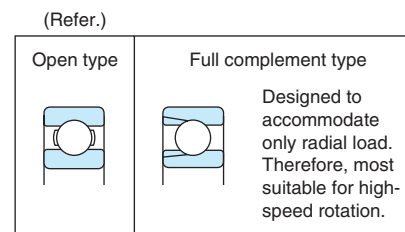
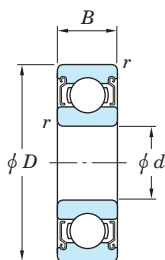


| Boundary dimensions (mm) | | | | Bearing No. | | | (Refer.) Basic bearing | | | |
|--------------------------|-----|-----|------------------|--------------------------------------|------------------------------------|--|---|-------------------------|-------|----------|
| d | D | B | $r^{1)}$ min. | Atmospheric pressure to 10^{-5} Pa | | | 10^{-3} to 10^{-10} Pa Ag ion-plating (balls) | Basic load ratings (kN) | | |
| | | | | With vacuum grease filled | MoS ₂ coating (cage) | | | Bearing No. | C_r | C_{0r} |
| 4 | 10 | 4 | 0.1(0.15) | SVWML 4010 ZZST | SEWML 4010 ZZSTMSA7 | | — | WML4010 | 0.65 | 0.23 |
| | 12 | 4 | 0.2 | SV 604 ZZST | SE 604 ZZSTMSA7 | | SE 604 ZZSTMG3 | 604 | 0.97 | 0.36 |
| | 13 | 5 | 0.2 | SV 624 ZZST | SE 624 ZZSTMSA7 | | SE 624 ZZSTMG3 | 624 | 1.30 | 0.49 |
| 5 | 14 | 5 | 0.2 | SV 605 ZZST | SE 605 ZZSTMSA7 | | SE 605 ZZSTMG3 | 605 | 1.30 | 0.49 |
| | 16 | 5 | 0.3 | SV 625 ZZST | SE 625 ZZSTMSA7 | | SE 625 ZZSTMG3 | 625 | 1.75 | 0.67 |
| 6 | 10 | 3 | 0.08(0.1) | SVWML 6010 ZZST | SEWML 6010 ZZSTMSA7 | | — | WML6010 | 0.36 | 0.16 |
| | 12 | 4 | 0.1(0.15) | SVWML 6012 ZZST | SEWML 6012 ZZSTMSA7 | | — | WML6012 | 0.71 | 0.29 |
| | 13 | 5 | 0.15 | SV 686 ZZST | SE 686 ZZSTMSA7 | | SE 686 ZZSTMG3 | 686 | 1.10 | 0.44 |
| | 17 | 6 | 0.3 | SV 606 ZZST | SE 606 ZZSTMSA7 | | SE 606 ZZSTMG3 | 606 | 1.95 | 0.74 |
| | 19 | 6 | 0.3 | SV 626 ZZST | SE 626 ZZSTMSA7 | | SE 626 ZZSTMG3 | 626 | 2.60 | 1.05 |
| 7 | 19 | 6 | 0.3 | SV 607 ZZST | SE 607 ZZSTMSA7 | | SE 607 ZZSTMG3 | 607 | 2.60 | 1.05 |
| | 22 | 7 | 0.3 | SV 627 ZZST | SE 627 ZZSTMSA7 | | SE 627 ZZSTMG3 | 627 | 3.30 | 1.35 |
| 8 | 22 | 7 | 0.3 | SV 608 ZZST | SE 608 ZZSTMSA7 | | SE 608 ZZSTMG3 | 608 | 3.30 | 1.35 |
| | 24 | 8 | 0.3 | SV 628 ZZST | SE 628 ZZSTMSA7 | | SE 628 ZZSTMG3 | 628 | 3.35 | 1.40 |
| 9 | 24 | 7 | 0.3 | SV 609 ZZST | SE 609 ZZSTMSA7 | | SE 609 ZZSTMG3 | 609 | 3.35 | 1.40 |
| | 26 | 8 | 0.6 | SV 629 ZZST | SE 629 ZZSTMSA7 | | SE 629 ZZSTMG3 | 629 | 4.55 | 1.95 |
| 10 | 26 | 8 | 0.3 | SV 6000 ZZST | SE 6000 ZZSTMSA7 | | SE 6000 ZZSTMG3 | 6000 | 4.55 | 1.95 |
| | 30 | 9 | 0.6 | SV 6200 ZZST | SE 6200 ZZSTMSA7 | | SE 6200 ZZSTMG3 | 6200 | 5.10 | 2.40 |
| 12 | 28 | 8 | 0.3 | SV 6001 ZZST | SE 6001 ZZSTMSA7 | | SE 6001 ZZSTMG3 | 6001 | 5.10 | 2.40 |
| | 32 | 10 | 0.6 | SV 6201 ZZST | SE 6201 ZZSTMSA7 | | SE 6201 ZZSTMG3 | 6201 | 6.80 | 3.05 |
| 15 | 32 | 9 | 0.3 | SV 6002 ZZST | SE 6002 ZZSTMSA7 | | SE 6002 ZZSTMG3 | 6002 | 5.60 | 2.85 |
| | 35 | 11 | 0.6 | SV 6202 ZZST | SE 6202 ZZSTMSA7 | | SE 6202 ZZSTMG3 | 6202 | 7.65 | 3.75 |
| 17 | 35 | 10 | 0.3 | SV 6003 ZZST | SE 6003 ZZSTMSA7 | | SE 6003 ZZSTMG3 | 6003 | 6.00 | 3.25 |
| | 40 | 12 | 0.6 | SV 6203 ZZST | SE 6203 ZZSTMSA7 | | SE 6203 ZZSTMG3 | 6203 | 9.55 | 4.80 |

[Note] 1) The value in () shows the minimum chamfer dimension of open type bearings. If there is no indication, the value is the same as that of the shielded type (zz).

EXSEV bearing series
for use in a vacuum environment

d 20 ~ 40 mm

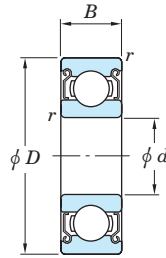


| Boundary dimensions (mm) | | | | Bearing No. | | | (Refer.) Basic bearing | | |
|--------------------------|-----|-----|------------------|--------------------------------------|---------------------------------|--|-------------------------|-------|----------|
| d | D | B | $r^{1)}$ min. | Atmospheric pressure to 10^{-5} Pa | | 10^{-3} to 10^{-10} Pa Ag ion-plating (balls) | Basic load ratings (kN) | | |
| | | | | With vacuum grease filled | MoS ₂ coating (cage) | | Bearing No. | C_r | C_{0r} |
| 20 | 42 | 12 | 0.6 | SV 6004 ZZST | SE 6004 ZZSTMSA7 | SE 6004 ZZSTMG3 | 6004 | 9.40 | 5.05 |
| | 47 | 14 | 1 | SV 6204 ZZST | SE 6204 ZZSTMSA7 | | SE 6204 ZZSTMG3 | 6204 | 12.8 |
| 25 | 47 | 12 | 0.6 | SV 6005 ZZST | SE 6005 ZZSTMSA7 | SE 6005 ZZSTMG3 | 6005 | 10.1 | 5.85 |
| | 52 | 15 | 1 | SV 6205 ZZST | SE 6205 ZZSTMSA7 | | SE 6205 ZZSTMG3 | 6205 | 14.0 |
| 30 | 55 | 13 | 1 | SV 6006 ZZST | SE 6006 ZZSTMSA7 | SE 6006 ZZSTMG3 | 6006 | 13.2 | 8.25 |
| | 62 | 16 | 1 | SV 6206 ZZST | SE 6206 ZZSTMSA7 | | SE 6206 ZZSTMG3 | 6206 | 19.5 |
| 35 | 62 | 14 | 1 | SV 6007 ZZST | SE 6007 ZZSTMSA7 | SE 6007 ZZSTMG3 | 6007 | 15.9 | 10.3 |
| | 72 | 17 | 1.1 | SV 6207 ZZST | SE 6207 ZZSTMSA7 | | SE 6207 ZZSTMG3 | 6207 | 25.7 |
| 40 | 68 | 15 | 1 | SV 6008 ZZST | SE 6008 ZZSTMSA7 | SE 6008 ZZSTMG3 | 6008 | 16.7 | 11.5 |
| | 80 | 18 | 1.1 | SV 6208 ZZST | SE 6208 ZZSTMSA7 | | SE 6208 ZZSTMG3 | 6208 | 29.1 |

[Note] 1) The value in () shows the minimum chamfer dimension of open type bearings. If there is no indication, the value is the same as that of the shielded type (zz).

EXSEV bearing series
for use in a clean environment

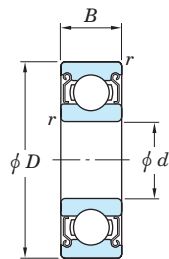
d 4 ~ (25) mm



| d | Boundary dimensions (mm) | | | Bearing No. | | | |
|-----|-----------------------------|-----|-------------|----------------------------|----------------------------|--|----------------------------|
| | D | B | r min. | <120°C Clean Class10 | <200°C Clean Class10 | | <260°C Clean Class10 |
| 4 | 12 | 4 | 0.2 | SE 604 ZZSTPRA | SE 604 ZZSTPR | | SE 604 ZZSTPRB |
| | 13 | 5 | 0.2 | SE 624 ZZSTPRA | SE 624 ZZSTPR | | SE 624 ZZSTPRB |
| 5 | 14 | 5 | 0.2 | SE 605 ZZSTPRA | SE 605 ZZSTPR | | SE 605 ZZSTPRB |
| | 16 | 5 | 0.3 | SE 625 ZZSTPRA | SE 625 ZZSTPR | | SE 625 ZZSTPRB |
| 6 | 12 | 4 | — | SEWML6012-1 ZZSTPRA | SEWML6012-1 ZZSTPR | | SEWML6012-1 ZZSTPRB |
| | 13 | 5 | — | SEW686 ZZSTPRA | SEW686 ZZSTPR | | SEW686 ZZSTPRB |
| | 17 | 6 | 0.3 | SE 606 ZZSTPRA | SE 606 ZZSTPR | | SE 606 ZZSTPRB |
| | 19 | 6 | 0.3 | SE 626 ZZSTPRA | SE 626 ZZSTPR | | SE 626 ZZSTPRB |
| 7 | 19 | 6 | 0.3 | SE 607 ZZSTPRA | SE 607 ZZSTPR | | SE 607 ZZSTPRB |
| | 22 | 7 | 0.3 | SE 627 ZZSTPRA | SE 627 ZZSTPR | | SE 627 ZZSTPRB |
| 8 | 22 | 7 | 0.3 | SE 608 ZZSTPRA | SE 608 ZZSTPR | | SE 608 ZZSTPRB |
| | 24 | 8 | 0.3 | SE 628 ZZSTPRA | SE 628 ZZSTPR | | SE 628 ZZSTPRB |
| 9 | 24 | 7 | 0.3 | SE 609 ZZSTPRA | SE 609 ZZSTPR | | SE 609 ZZSTPRB |
| | 26 | 8 | 0.6 | SE 629 ZZSTPRA | SE 629 ZZSTPR | | SE 629 ZZSTPRB |
| 10 | 26 | 8 | 0.3 | SE 6000 ZZSTPRA | SE 6000 ZZSTPR | | SE 6000 ZZSTPRB |
| | 30 | 9 | 0.6 | SE 6200 ZZSTPRA | SE 6200 ZZSTPR | | SE 6200 ZZSTPRB |
| 12 | 28 | 8 | 0.3 | SE 6001 ZZSTPRA | SE 6001 ZZSTPR | | SE 6001 ZZSTPRB |
| | 32 | 10 | 0.6 | SE 6201 ZZSTPRA | SE 6201 ZZSTPR | | SE 6201 ZZSTPRB |
| 15 | 32 | 9 | 0.3 | SE 6002 ZZSTPRA | SE 6002 ZZSTPR | | SE 6002 ZZSTPRB |
| | 35 | 11 | 0.6 | SE 6202 ZZSTPRA | SE 6202 ZZSTPR | | SE 6202 ZZSTPRB |
| 17 | 35 | 10 | 0.3 | SE 6003 ZZSTPRA | SE 6003 ZZSTPR | | SE 6003 ZZSTPRB |
| | 40 | 12 | 0.6 | SE 6203 ZZSTPRA | SE 6203 ZZSTPR | | SE 6203 ZZSTPRB |
| 20 | 42 | 12 | 0.6 | SE 6004 ZZSTPRA | SE 6004 ZZSTPR | | SE 6004 ZZSTPRB |
| | 47 | 14 | 1 | SE 6204 ZZSTPRA | SE 6204 ZZSTPR | | SE 6204 ZZSTPRB |
| 25 | 47 | 12 | 0.6 | SE 6005 ZZSTPRA | SE 6005 ZZSTPR | | SE 6005 ZZSTPRB |

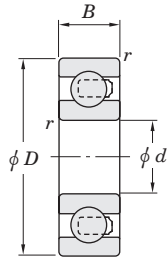
EXSEV bearing series
for use in a clean environment

d (25) ~ 40 mm



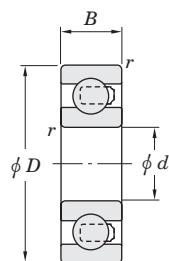
| Boundary dimensions (mm) | | | | Bearing No. | | | |
|-----------------------------|-----|-----|-------------|----------------------------|----------------------------|--|----------------------------|
| d | D | B | r min. | <120°C Clean Class10 | <200°C Clean Class10 | | <260°C Clean Class10 |
| 25 | 52 | 15 | 1 | SE 6205 ZZSTPRA | SE 6205 ZZSTPR | | SE 6205 ZZSTPRB |
| 30 | 55 | 13 | 1 | SE 6006 ZZSTPRA | SE 6006 ZZSTPR | | SE 6006 ZZSTPRB |
| | 62 | 16 | 1 | SE 6206 ZZSTPRA | SE 6206 ZZSTPR | | SE 6206 ZZSTPRB |
| 35 | 62 | 14 | 1 | SE 6007 ZZSTPRA | SE 6007 ZZSTPR | | SE 6007 ZZSTPRB |
| | 72 | 17 | 1.1 | SE 6207 ZZSTPRA | SE 6207 ZZSTPR | | SE 6207 ZZSTPRB |
| 40 | 68 | 15 | 1 | SE 6008 ZZSTPRA | SE 6008 ZZSTPR | | SE 6008 ZZSTPRB |
| | 80 | 18 | 1.1 | SE 6208 ZZSTPRA | SE 6208 ZZSTPR | | SE 6208 ZZSTPRB |

d 4 ~ 25 mm



| Boundary dimensions (mm) | | | | Bearing No. | | | | | Full ceramic type | |
|--------------------------|-----|-----|-------------|-----------------------------------|-----------------------------|---------------|------------|--|-----------------------------------|---|
| d | D | B | r min. | Hybrid ceramic type | | | | | High temperature (up to 800°C) | For corrosion resistance/ Non magnetism/Insulation |
| | | | | High temperature (up to 500°C) | For corrosion resistance | Non magnetism | Insulation | | | |
| 4 | 12 | 4 | 0.2 | — | 3NC604MD4 | 3NC604YH4 | 3NC604ST4 | | — | NC604 |
| | 13 | 5 | 0.2 | — | 3NC624MD4 | 3NC624YH4 | 3NC624ST4 | | — | NC624 |
| 5 | 14 | 5 | 0.2 | — | 3NC605MD4 | 3NC605YH4 | 3NC605ST4 | | — | NC605 |
| | 16 | 5 | 0.3 | — | 3NC625MD4 | 3NC625YH4 | 3NC625ST4 | | — | NC625 |
| 6 | 17 | 6 | 0.3 | 3NC606HT4 GF | 3NC606MD4 | 3NC606YH4 | 3NC606ST4 | | NC706V | NC606 |
| | 19 | 6 | 0.3 | 3NC626HT4 GF | 3NC626MD4 | 3NC626YH4 | 3NC626ST4 | | NC726V | NC626 |
| 7 | 19 | 6 | 0.3 | 3NC607HT4 GF | 3NC607MD4 | 3NC607YH4 | 3NC607ST4 | | NC707V | NC607 |
| | 22 | 7 | 0.3 | 3NC627HT4 GF | 3NC627MD4 | 3NC627YH4 | 3NC627ST4 | | NC727V | NC627 |
| 8 | 22 | 7 | 0.3 | 3NC608HT4 GF | 3NC608MD4 | 3NC608YH4 | 3NC608ST4 | | NC708V | NC608 |
| | 24 | 8 | 0.3 | 3NC628HT4 GF | 3NC628MD4 | 3NC628YH4 | 3NC628ST4 | | NC728V | NC628 |
| 9 | 24 | 7 | 0.3 | 3NC609HT4 GF | 3NC609MD4 | 3NC609YH4 | 3NC609ST4 | | NC709V | NC609 |
| | 26 | 8 | 0.6 | 3NC629HT4 GF | 3NC629MD4 | 3NC629YH4 | 3NC629ST4 | | NC729V | NC629 |
| 10 | 26 | 8 | 0.3 | 3NC6000HT4 GF | 3NC6000MD4 | 3NC6000YH4 | 3NC6000ST4 | | NC7000V | NC6000 |
| | 30 | 9 | 0.6 | 3NC6200HT4 GF | 3NC6200MD4 | 3NC6200YH4 | 3NC6200ST4 | | NC7200V | NC6200 |
| 12 | 28 | 8 | 0.3 | 3NC6001HT4 GF | 3NC6001MD4 | 3NC6001YH4 | 3NC6001ST4 | | NC7001V | NC6001 |
| | 32 | 10 | 0.6 | 3NC6201HT4 GF | 3NC6201MD4 | 3NC6201YH4 | 3NC6201ST4 | | NC7201V | NC6201 |
| 15 | 32 | 9 | 0.3 | 3NC6002HT4 GF | 3NC6002MD4 | 3NC6002YH4 | 3NC6002ST4 | | NC7002V | NC6002 |
| | 35 | 11 | 0.6 | 3NC6202HT4 GF | 3NC6202MD4 | 3NC6202YH4 | 3NC6202ST4 | | NC7202V | NC6202 |
| 17 | 35 | 10 | 0.3 | 3NC6003HT4 GF | 3NC6003MD4 | 3NC6003YH4 | 3NC6003ST4 | | NC7003V | NC6003 |
| | 40 | 12 | 0.6 | 3NC6203HT4 GF | 3NC6203MD4 | 3NC6203YH4 | 3NC6203ST4 | | NC7203V | NC6203 |
| 20 | 42 | 12 | 0.6 | 3NC6004HT4 GF | 3NC6004MD4 | 3NC6004YH4 | 3NC6004ST4 | | NC7004V | NC6004 |
| | 47 | 14 | 1 | 3NC6204HT4 GF | 3NC6204MD4 | 3NC6204YH4 | 3NC6204ST4 | | NC7204V | NC6204 |
| 25 | 47 | 12 | 0.6 | 3NC6005HT4 GF | 3NC6005MD4 | 3NC6005YH4 | 3NC6005ST4 | | NC7005V | NC6005 |
| | 52 | 15 | 1 | 3NC6205HT4 GF | 3NC6205MD4 | 3NC6205YH4 | 3NC6205ST4 | | NC7205V | NC6205 |

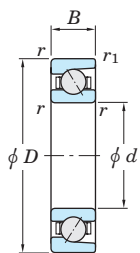
d 30 ~ 40 mm



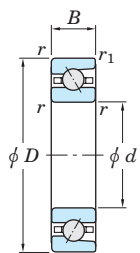
| Boundary dimensions (mm) | | | | Bearing No. | | | | | | | |
|-----------------------------|-----|-----|-------------|-----------------------------------|-----------------------------|-------------------|-------------------|-----------------------------------|---|---------------|--|
| d | D | B | r min. | Hybrid ceramic type | | | | Full ceramic type | | | |
| | | | | High temperature (up to 500°C) | For corrosion resistance | Non magnetism | Insulation | High temperature (up to 800°C) | For corrosion resistance/ Non magnetism/Insulation | | |
| 30 | 55 | 13 | 1 | 3NC6006HT4 GF | 3NC6006MD4 | 3NC6006YH4 | 3NC6006ST4 | | NC7006V | NC6006 | |
| | 62 | 16 | 1 | 3NC6206HT4 GF | 3NC6206MD4 | 3NC6206YH4 | 3NC6206ST4 | | NC7206V | NC6206 | |
| 35 | 62 | 14 | 1 | 3NC6007HT4 GF | 3NC6007MD4 | 3NC6007YH4 | 3NC6007ST4 | | NC7007V | NC6007 | |
| | 72 | 17 | 1.1 | 3NC6207HT4 GF | 3NC6207MD4 | 3NC6207YH4 | 3NC6207ST4 | | NC7207V | NC6207 | |
| 40 | 68 | 15 | 1 | 3NC6008HT4 GF | 3NC6008MD4 | 3NC6008YH4 | 3NC6008ST4 | | NC7008V | NC6008 | |
| | 80 | 18 | 1.1 | 3NC6208HT4 GF | 3NC6208MD4 | 3NC6208YH4 | 3NC6208ST4 | | NC7208V | NC6208 | |

Refer. Hybrid ceramic bearings (for high speed applications)

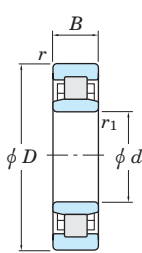
d 15 ~ (75) mm



70,72 series



HAR 0,9 series



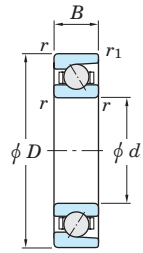
NU 10 series

* This type of bearing is mainly used in high speed rotating parts such as machine tool spindles. Since rolling elements are made of ceramics, this type of bearing is shown here, even though not designed as EXSEV bearing series. (Bearing rings are made of high carbon chromium bearing steel)

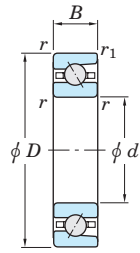
| Boundary dimensions (mm) | | | | | Bearing No. | | | (Refer.) Basic bearing | | | | | | | | |
|--------------------------|-----|-----|-------------|---------------|-------------------------------|----------------|---|------------------------|-------------------------|----------|------------------------|-------------------------|----------|----------------------|-------------------------|----------|
| d | D | B | r min. | r_1 min. | Angular contact ball bearings | | Cylindrical roller bearings NU 10 series | Bearing No. 70,72 | Basic load ratings (kN) | | Bearing No. HAR 0,9 | Basic load ratings (kN) | | Bearing No. NU 10 | Basic load ratings (kN) | |
| | | | | | 70,72 series | HAR 0,9 series | | | C_r | C_{0r} | | C_r | C_{0r} | | C_r | C_{0r} |
| 15 | 32 | 9 | 0.3 | 0.15 | 3NC 7002 FT | — | — | 7002 | 6.10 | 3.45 | — | — | — | — | — | — |
| | 35 | 11 | 0.6 | 0.3 | 3NC 7202 FT | — | — | 7202 | 8.10 | 4.25 | — | — | — | — | — | — |
| 20 | 42 | 12 | 0.6 | 0.3 | 3NC 7004 FT | — | — | 7004 | 10.3 | 6.10 | — | — | — | — | — | — |
| | 47 | 14 | 1 | 0.6 | 3NC 7204 FT | — | — | 7204 | 14.5 | 8.40 | — | — | — | — | — | — |
| 25 | 47 | 12 | 0.6 | 0.3 | 3NC 7005 FT | — | — | 7005 | 11.3 | 7.40 | — | — | — | — | — | — |
| | 52 | 15 | 1 | 0.6 | 3NC 7205 FT | — | — | 7205 | 15.3 | 9.50 | — | — | — | — | — | — |
| 30 | 55 | 13 | 1 | 0.6 | 3NC 7006 FT | 3NC HAR006C FT | — | 7006 | 14.5 | 10.1 | HAR006C | 8.7 | 4.85 | — | — | — |
| | 62 | 16 | 1 | 0.6 | 3NC 7206 FT | — | — | 7206 | 21.3 | 13.7 | — | — | — | — | — | — |
| 35 | 62 | 14 | 1 | 0.6 | 3NC 7007 FT | 3NC HAR007C FT | — | 7007 | 17.5 | 12.6 | HAR007C | 9.25 | 5.55 | — | — | — |
| | 72 | 17 | 1.1 | 0.6 | 3NC 7207 FT | — | — | 7207 | 28.1 | 18.6 | — | — | — | — | — | — |
| 40 | 68 | 15 | 1 | 0.6 | 3NC 7008 FT | 3NC HAR008C FT | — | 7008 | 18.7 | 14.6 | HAR008C | 9.70 | 6.20 | — | — | — |
| | 80 | 18 | 1.1 | 0.6 | 3NC 7208 FT | — | — | 7208 | 33.6 | 23.3 | — | — | — | — | — | — |
| 45 | 75 | 16 | 1 | 0.6 | 3NC 7009 FT | 3NC HAR009C FT | — | 7009 | 22.2 | 17.7 | HAR009C | 10.9 | 7.1 | — | — | — |
| 50 | 72 | 12 | 0.6 | 0.3 | — | 3NC HAR910C FT | — | — | — | — | HAR910C | 9.10 | 6.30 | — | — | — |
| | 80 | 16 | 1 | 0.6 | 3NC 7010 FT | 3NC HAR010C FT | 3NC NU1010 FY | 7010 | 23.6 | 20.1 | HAR010C | 11.4 | 7.85 | NU1010 | 33.6 | 36.8 |
| 55 | 80 | 13 | 1 | 0.6 | — | 3NC HAR911C FT | — | — | — | — | HAR911C | 10.1 | 7.65 | — | — | — |
| | 90 | 18 | 1.1 | 0.6 | 3NC 7011 FT | 3NC HAR011C FT | 3NC NU1011 FY | 7011 | 31.1 | 26.3 | HAR011C | 14.1 | 9.9 | NU1011 | 37.4 | 43.8 |
| 60 | 85 | 13 | 1 | 0.6 | — | 3NC HAR912C FT | — | — | — | — | HAR912C | 9.95 | 7.75 | — | — | — |
| | 95 | 18 | 1.1 | 0.6 | 3NC 7012 FT | 3NC HAR012C FT | 3NC NU1012 FY | 7012 | 31.9 | 28.1 | HAR012C | 14.7 | 10.8 | NU1012 | 42.1 | 50.0 |
| 65 | 90 | 13 | 1 | 0.6 | — | 3NC HAR913C FT | — | — | — | — | HAR913C | 11.8 | 9.45 | — | — | — |
| | 100 | 18 | 1.1 | 0.6 | 3NC 7013 FT | 3NC HAR013C FT | 3NC NU1013 FY | 7013 | 33.7 | 31.4 | HAR013C | 15.3 | 11.8 | NU1013 | 43.3 | 52.9 |
| 70 | 100 | 16 | 1 | 0.6 | — | 3NC HAR914C FT | — | — | — | — | HAR914C | 12.9 | 10.5 | — | — | — |
| | 110 | 20 | 1.1 | 0.6 | 3NC 7014 FT | 3NC HAR014C FT | 3NC NU1014 FY | 7014 | 42.7 | 39.4 | HAR014C | 20.7 | 15.5 | NU1014 | 57.9 | 70.4 |
| 75 | 105 | 16 | 1 | 0.6 | — | 3NC HAR915C FT | — | — | — | — | HAR915C | 13.3 | 11.2 | — | — | — |

Refer. Hybrid ceramic bearings (for high speed applications)

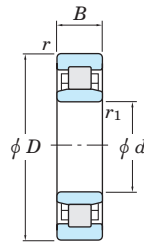
d (75) ~ 120 mm



70,72 series



HAR 0,9 series



NU 10 series

* This type of bearing is mainly used in high speed rotating parts such as machine tool spindles. Since rolling elements are made of ceramics, this type of bearing is shown here, even though not designed as EXSEV bearing series.
(Bearing rings are made of high carbon chromium bearing steel)

| Boundary dimensions (mm) | | | | | Bearing No. | | | (Refer.) Basic bearing | | | | | | | | |
|--------------------------|-----|-----|-------------|---------------|-------------------------------|-----------------------|---|------------------------|-------------------------|----------|------------------------|-------------------------|----------|----------------------|-------------------------|----------|
| d | D | B | r min. | r_1 min. | Angular contact ball bearings | | Cylindrical roller bearings NU 10 series | Bearing No. 70,72 | Basic load ratings (kN) | | Bearing No. HAR 0,9 | Basic load ratings (kN) | | Bearing No. NU 10 | Basic load ratings (kN) | |
| | | | | | 70,72 series | HAR 0,9 series | | | C_r | C_{0r} | | C_r | C_{0r} | | C_r | C_{0r} |
| 75 | 115 | 20 | 1.1 | 0.6 | 3NC 7015 FT | 3NC HAR015C FT | 3NC NU1015 FY | 7015 | 43.6 | 41.7 | HAR015C | 21.1 | 16.2 | NU1015 | 63.6 | 78.1 |
| | 125 | 22 | 1.1 | 0.6 | — | 3NC HAR016C FT | 3NC NU1016 FY | — | — | — | HAR016C | 24.7 | 19.2 | NU1016 | 69.3 | 86.4 |
| 85 | 120 | 18 | 1.1 | 0.6 | — | 3NC HAR017C FT | — | — | — | — | HAR017C | 25.1 | 20.1 | — | — | — |
| | 130 | 22 | 1.1 | 0.6 | — | 3NC HAR017C FT | 3NC NU1017 FY | — | — | — | HAR017C | 25.1 | 20.1 | NU1017 | 71.4 | 91.2 |
| 90 | 125 | 18 | 1.1 | 0.6 | — | 3NC HAR018C FT | — | — | — | — | HAR018C | 32.8 | 26.1 | — | — | — |
| | 140 | 24 | 1.5 | 1 | — | 3NC HAR018C FT | 3NC NU1018 FY | — | — | — | HAR018C | 32.8 | 26.1 | NU1018 | 84.7 | 109 |
| 95 | 130 | 18 | 1.1 | 0.6 | — | 3NC HAR019C FT | — | — | — | — | HAR019C | 33.4 | 27.2 | — | — | — |
| | 145 | 24 | 1.5 | 1 | — | 3NC HAR019C FT | 3NC NU1019 FY | — | — | — | HAR019C | 33.4 | 27.2 | NU1019 | 87.2 | 115 |
| 100 | 140 | 20 | 1.1 | 0.6 | — | 3NC HAR020C FT | — | — | — | — | HAR020C | 34.0 | 28.4 | — | — | — |
| | 150 | 24 | 1.5 | 1 | — | 3NC HAR020C FT | 3NC NU1020 FY | — | — | — | HAR020C | 34.0 | 28.4 | NU1020 | 91.0 | 120 |
| 105 | 145 | 20 | 1.1 | 0.6 | — | 3NC HAR021C FT | — | — | — | — | HAR021C | 38.6 | 32.5 | — | — | — |
| | 160 | 26 | 2 | 1 | — | 3NC HAR021C FT | — | — | — | — | HAR021C | 38.6 | 32.5 | — | — | — |
| 110 | 150 | 20 | 1.1 | 0.6 | — | 3NC HAR022C FT | — | — | — | — | HAR022C | 43.4 | 37.0 | — | — | — |
| | 170 | 28 | 2 | 1 | — | 3NC HAR022C FT | — | — | — | — | HAR022C | 43.4 | 37.0 | — | — | — |
| 120 | 165 | 22 | 1.1 | 0.6 | — | 3NC HAR024C FT | — | — | — | — | HAR024C | 44.9 | 39.9 | — | — | — |
| | 180 | 28 | 2 | 1 | — | 3NC HAR024C FT | — | — | — | — | HAR024C | 44.9 | 39.9 | — | — | — |

EXSEV bearing series
Linear ball bearings for vacuum

d 3 ~ 60 mm



| Shaft dia. (mm) | Boundary dimensions (mm) | | | | | | | | Bearing No. | | | Basic load ratings (kN) | | No. of ball rows | | | |
|--------------------|-----------------------------|-----|------|------|------|-------|-----|-------|-------------|---------------|---------------------------|----------------------------|-------|------------------|---------------|---------------------------|-----------|
| | d | D | L | B | W | D_1 | h | h_1 | θ | Standard type | Clearance adjustable type | Open type | C | C_0 | Standard type | Clearance adjustable type | Open type |
| 3 | 7 | 10 | — | — | — | — | — | — | — | SESDM 3 | — | — | 69 | 105 | 4 | — | — |
| 4 | 8 | 12 | — | — | — | — | — | — | — | SESDM 4 | — | — | 88 | 127 | 4 | — | — |
| 5 | 10 | 15 | 10.2 | 1.1 | 9.6 | — | — | — | — | SESDM 5 | — | — | 167 | 206 | 4 | — | — |
| 6 | 12 | 19 | 13.5 | 1.1 | 11.5 | — | — | — | — | SESDM 6 | — | — | 206 | 265 | 4 | — | — |
| 8 | 15 | 17 | 11.5 | 1.1 | 14.3 | — | — | — | — | SESDM 8S | — | — | 176 | 216 | 4 | — | — |
| | 15 | 24 | 17.5 | 1.1 | 14.3 | — | — | — | — | SESDM 8 | — | — | 274 | 392 | 4 | — | — |
| 10 | 19 | 29 | 22 | 1.3 | 18 | — | — | — | — | SESDM10 | — | — | 372 | 549 | 4 | — | — |
| 12 | 21 | 30 | 23 | 1.3 | 20 | 1.5 | 8 | 80° | — | SESDM12 | SESDM12 AJ | SESDM12 OP | 510 | 784 | 4 | 4 | 3 |
| 13 | 23 | 32 | 23 | 1.3 | 22 | 1.5 | 9 | 80° | — | SESDM13 | SESDM13 AJ | SESDM13 OP | 510 | 784 | 4 | 4 | 3 |
| 16 | 28 | 37 | 26.5 | 1.6 | 27 | 1.5 | 11 | 80° | — | SESDM16 | SESDM16 AJ | SESDM16 OP | 774 | 1 180 | 4 | 4 | 3 |
| 20 | 32 | 42 | 30.5 | 1.6 | 30.5 | 1.5 | 11 | 60° | — | SESDM20 | SESDM20 AJ | SESDM20 OP | 882 | 1 370 | 5 | 5 | 4 |
| 25 | 40 | 59 | 41 | 1.85 | 38 | 2 | 12 | 50° | — | SESDM25 | SESDM25 AJ | SESDM25 OP | 980 | 1 570 | 6 | 6 | 5 |
| 30 | 45 | 64 | 44.5 | 1.85 | 43 | 2.5 | 15 | 50° | — | SESDM30 | SESDM30 AJ | SESDM30 OP | 1 570 | 2 740 | 6 | 6 | 5 |
| 35 | 52 | 70 | 49.5 | 2.1 | 49 | 2.5 | 17 | 50° | — | SESDM35 | SESDM35 AJ | SESDM35 OP | 1 670 | 3 140 | 6 | 6 | 5 |
| 40 | 60 | 80 | 60.5 | 2.1 | 57 | 3 | 20 | 50° | — | SESDM40 | SESDM40 AJ | SESDM40 OP | 2 160 | 4 020 | 6 | 6 | 5 |
| 50 | 80 | 100 | 74 | 2.6 | 76.5 | 3 | 25 | 50° | — | SESDM50 | SESDM50 AJ | SESDM50 OP | 3 820 | 7 940 | 6 | 6 | 5 |
| 60 | 90 | 110 | 85 | 3.15 | 86.5 | 3 | 30 | 50° | — | SESDM60 | SESDM60 AJ | SESDM60 OP | 4 700 | 10 000 | 6 | 6 | 5 |

K-series super thin section ball bearings

Koyo K-series super thin section ball bearings were developed to meet current engineering needs for thinner, lighter bearings. They are used extensively in automation and labor saving equipment, such as industrial robots.

These bearings are sorted into nine dimension series according to cross-sectional area.

Those of the same dimension series have an equivalent cross-sectional area irrespective of the bore diameter.

They are available in three types that differ in structure.

■ Deep groove type

Carries radial load, axial load in both directions, and combined loads.

■ Angular contact type

Has a 30° contact angle, and carries radial load and axial load in one direction.

Two bearings are usually used together facing one another.

■ Four-point contact type

Has a contact angle of 30° both to the right and to the left. Able to carry axial load in both directions. Also able to support moment and radial loads.



| Dimension series code | Cross-sectional dimension $B = E$ (mm) | Bearing type code | | | Bore diameter (mm) |
|-----------------------|--|-------------------------|-----------------------------|--------------------------------|-----------------------|
| | | C (Deep groove type) | A (Angular contact type) | X (Four-point contact type) | |
| | | | | | |
| T | 4.762 | KTC | KTA | KTX | 25.4 to 38.1 |
| A | 6.35 | KAC | KAA | KAX | 50.8 to 304.8 |
| B | 7.938 | KBC | KBA | KBX | 50.8 to 508 |
| C | 9.525 | KCC | KCA | KCX | 101.6 to 762 |
| D | 12.7 | KDC | KDA | KDX | |
| F | 19.05 | KFC | KFA | KFX | 101.6 to 1016 |
| G | 25.4 | KGC | KGA | KGX | |
| J | $B = 11.1$ $E = 9.525$ | - | KJA...RD | - | 101.6 to 304.8 |
| U | $B = 12.7$ $E = 9.525$ | KUC...2RD | - | KUX...2RD | |

Table 1 K-series super thin section ball bearings : tolerance

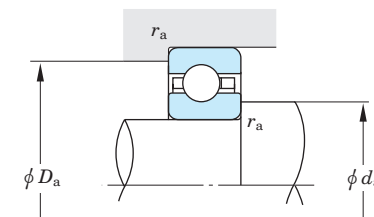
| Bore diameter number | Single plane mean bore diameter deviation | | | | | Single plane mean outside diameter deviation | | | | | Single inner (outer) ring width deviation $\Delta B_s, \Delta C_s$ | | | Radial runout of assembled bearing ring, max. | | | | | | | | | | Assembled bearing ring face runout with raceway, max. | | | | Bore diameter number |
|----------------------|---|----------|----------|----------|----------|--|---------|----------|----------|----------|--|----------------|----------|---|----------|----------------|----------------|----------|---------------------|----------------|----------------|----------------|------------------------|---|------------------------|---------------------|--|----------------------|
| | Δd_{mp} | | | | | ΔD_{mp} | | | | | | | | Inner ring K_{ia} | | | | | Outer ring K_{ea} | | | | | Inner ring S_{ia} | | Outer ring S_{ea} | | |
| | classes K0, K1, K2 | | class K3 | class K4 | class K6 | classes K0, K1, K2 | | class K3 | class K4 | class K6 | classes K0, K1, K2 | classes K3, K4 | class K6 | class K0 | class K3 | classes K1, K4 | classes K2, K6 | class K0 | class K3 | classes K1, K4 | classes K2, K6 | classes K1, K4 | classes K0, K2, K3, K6 | classes K1, K4 | classes K0, K2, K3, K6 | | | |
| | div. I | div. II | | | | div. I | div. II | | | | | | | div. I | div. II | | | | | | | | | | | | | |
| 010 | 0 -10 | 0 -5 | 0 -5 | 0 -4 | | | 0 -8 | 0 -5 | 0 -5 | | | | 13 | 8 | 8 | | | | | | | | | | 010 | | | |
| 015 | 0 -13 | 0 -8 | 0 -5 | 0 -5 | | | 0 -8 | 0 -5 | 0 -5 | | | | 15 | 10 | | | | | | | | | | | 015 | | | |
| 020 | | | | | | | | | | | | | | | | | | | | | | | | | 020 | | | |
| 025 | 0 -15 | 0 -10 | | 0 -5 | | | | | | | | | 20 | 13 | 10 | 5 | 4 | | | | | | | | 025 | | | |
| 030 | | | | | | | | | | | | | | | | | | | | | | | | | 030 | | | |
| 035 | | | | | | | | | | | | | | | | | | | | | | | | | 035 | | | |
| 040 | | | | | | | | | | | | | | | | | | | | | | | | | 040 | | | |
| 042 | 0 -20 | 0 -13 | | 0 -6 | | | | | | | | | 25 | | 13 | | | | | | | | | | 042 | | | |
| 045 | | | | | | | | | | | | | | | | | | | | | | | | | 045 | | | |
| 047 | | | | | | | | | | | | | | | | | | | | | | | | | 047 | | | |
| 050 | | | | | | | | | | | | | | | | | | | | | | | | | 050 | | | |
| 055 | 0 -25 | 0 -15 | 0 -10 | 0 -8 | | | | | | | | | 30 | | | | | | | | | | | | 055 | | | |
| 060 | | | | | | | | | | | | | | | | | | | | | | | | | 060 | | | |
| 065 | | | | | | | | | | | | | | | | | | | | | | | | | 065 | | | |
| 070 | | | | | | | | | | | | | | | | | | | | | | | | | 070 | | | |
| 075 | | | | | | | | | | | | | | | | | | | | | | | | | 075 | | | |
| 080 | 0 -30 | 0 -18 | | 0 -10 | | | | | | | | | 41 | 30 | 20 | 10 | | | | | | | | | 080 | | | |
| 090 | | | | | | | | | | | | | | | | | | | | | | | | | 090 | | | |
| 100 | | | | | | | | | | | | | | | | | | | | | | | | | 100 | | | |
| 110 | 0 -36 | 0 -36 | 0 -20 | 0 -13 | | | | | | | | | 46 | 36 | 25 | 13 | 10 | | | | | | | | 110 | | | |
| 120 | | | | | | | | | | | | | | | | | | | | | | | | | 120 | | | |
| 140 | 0 -41 | | | | | | | | | | | | | | | | | | | | | | | | 140 | | | |
| 160 | 0 -46 | 0 -41 | 0 -23 | 0 -15 | | | | | | | | | | | | | | | | | | | | | 160 | | | |
| 180 | | | | | | | | | | | | | | | | | | | | | | | | | 180 | | | |
| 200 | 0 -51 | | 0 -25 | 0 -18 | | | | | | | | | | | | | | | | | | | | | 200 | | | |
| 250 | 0 -76 | 0 -46 | | | | | | | | | | | | | | | | | | | | | | | 250 | | | |
| 300 | | | | | | | | | | | | | | | | | | | | | | | | | 300 | | | |
| 350 | 0 -102 | 0 -51 | | | | | | | | | | | | | | | | | | | | | | | 350 | | | |
| 400 | | | | | | | | | | | | | | | | | | | | | | | | | 400 | | | |

[Notes] Division I is for deep groove type ball bearings.
Division II is for angular contact type and four-point contact type ball bearings.

Table 2 Standard radial internal clearance of deep groove and four-point contact type ball bearings Unit : μm

| Bore diameter number | Radial internal clearance | | | | |
|----------------------|---------------------------|-------------------------|----------|----------|----------|
| | classes K0, K1, K2 | | class K3 | class K4 | class K6 |
| | Deep groove type | Four-point contact type | | | |
| 010 | 25 – 41 | 25 – 38 | 18 – 28 | 13 – 23 | 10 – 20 |
| 015 | 30 – 46 | 30 – 43 | 20 – 30 | | 13 – 23 |
| 020 | 30 – 61 | 30 – 56 | 20 – 46 | 15 – 30 | 10 – 25 |
| 025 | | | | | 15 – 30 |
| 030 | | | | | |
| 035 | 41 – 71 | 41 – 66 | 25 – 51 | 20 – 36 | 15 – 30 |
| 040 | | | | | |
| 042 | | | | | |
| 045 | 51 – 86 | 51 – 76 | 30 – 56 | 20 – 36 | 20 – 36 |
| 050 | | | | | |
| 055 | | | | | |
| 060 | | | | | |
| 065 | | | | | |
| 070 | 61 – 107 | 61 – 86 | 36 – 61 | 25 – 41 | 25 – 41 |
| 075 | | | | | |
| 080 | | | | | |
| 090 | 71 – 122 | 71 – 97 | 41 – 66 | 30 – 46 | 30 – 46 |
| 100 | | | | | |
| 110 | 81 – 132 | | 46 – 71 | | |
| 120 | | | | | |
| 140 | 91 – 142 | 81 – 107 | 51 – 76 | 36 – 51 | |
| 160 | | | | | |
| 180 | | | | | |
| 200 | 102 – 152 | 91 – 117 | 61 – 86 | 36 – 56 | |
| 250 | | | | | |
| 300 | | | | | |
| 350 | 203 – 254 | 102 – 127 | | | |
| 400 | | | | | |

Table 3 Mounting dimensions



Unit : mm

| Dimension series | Bearing type | | | ϕd_a | | ϕD_a | | r_a |
|------------------|--------------|-----|-----|------------|------------|------------|------------|-------|
| | | | | max. | min. | min. | max. | max. |
| T | KTC | KTA | KTX | $d + 5.3$ | $d + 3.4$ | $d + 4.2$ | $d + 6.1$ | 0.2 |
| A | KAC | KAA | KAX | $d + 7.3$ | $d + 4.6$ | $d + 5.4$ | $d + 8.2$ | 0.4 |
| B | KBC | KBA | KBX | $d + 9.3$ | $d + 5.7$ | $d + 6.6$ | $d + 10.2$ | 0.8 |
| C | KCC | KCA | KCX | $d + 11.3$ | $d + 6.9$ | $d + 7.7$ | $d + 12.2$ | 0.8 |
| D | KDC | KDA | KDX | $d + 15.3$ | $d + 9.2$ | $d + 10.1$ | $d + 16.2$ | 1.3 |
| F | KFC | KFA | KFX | $d + 23.3$ | $d + 13.9$ | $d + 14.8$ | $d + 24.2$ | 1.8 |
| G | KGC | KGA | KGX | $d + 31.3$ | $d + 18.7$ | $d + 19.5$ | $d + 32.1$ | 1.8 |
| J | - | KJA | - | $d + 11.3$ | $d + 6.9$ | $d + 7.7$ | $d + 12.2$ | 0.2 |
| U | KUC | - | KUX | | | | | |

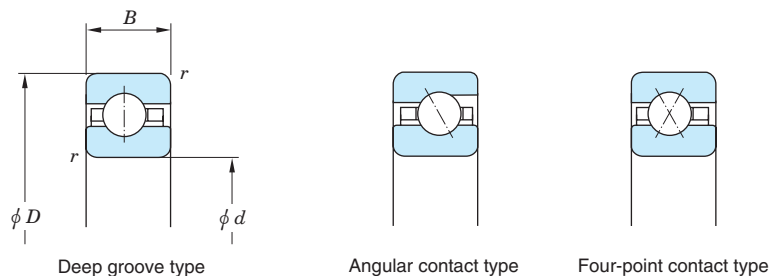
Table 4 Shaft diameter and housing bore diameter tolerance

| Bore diameter number | Inner ring rotation | | | | | | | | | | Outer ring rotation | | | | | | | | | | Bore diameter number |
|----------------------|--------------------------|----------|----------|----------|----------|---------------------------------|----------|----------|----------|----------|--------------------------|------------|------------|------------|-------------|---------------------------------|------------|------------|------------|----------|----------------------|
| | Shaft diameter tolerance | | | | | Housing bore diameter tolerance | | | | | Shaft diameter tolerance | | | | | Housing bore diameter tolerance | | | | | |
| | classes K0, K1, K2 | | class K3 | class K4 | class K6 | classes K0, K1, K2 | | class K3 | class K4 | class K6 | classes K0, K1, K2 | | class K3 | class K4 | class K6 | classes K0, K1, K2 | | class K3 | class K4 | class K6 | |
| | div. I | div. II | | | | div. I | div. II | | | | div. I | div. II | | | | div. I | div. II | | | | |
| 010 | +10 0 | +5 0 | +5 0 | +4 0 | +13 0 | | +8 0 | +5 0 | | | -10 -20 | -5 -10 | -5 -10 | -4 -8 | -13 -25 | | -8 -15 | -5 -10 | | 010 | |
| 015 | +13 0 | +8 0 | | | | +13 0 | | | +5 0 | | | | | | | -13 -25 | | | -5 -10 | 015 | |
| 020 | | | | +5 0 | | | | | | | | | | -5 -10 | | | | | | 020 | |
| 025 | +15 0 | +10 0 | | | | | +10 0 | +8 0 | | | -15 -30 | -10 -20 | | | | | | | | 025 | |
| 030 | | | | | +15 0 | | +10 0 | +8 0 | | | | | | | -15 -30 | | | | | 030 | |
| 035 | | | +8 0 | | | +15 0 | | | +8 0 | | | | -8 -15 | | | | | | | 035 | |
| 040 | +20 0 | +13 0 | | +6 0 | | | | | | | -20 -40 | -13 -25 | | -6 -13 | | | | | | 040 | |
| 042 | | | | | | | | | | | | | | | | | | | | 042 | |
| 045 | | | | | +20 0 | | +13 0 | +10 0 | | | | | | | -20 -40 | | -13 -25 | -10 -20 | | 045 | |
| 047 | | | | | | | | | | | | | | | | | | | | 047 | |
| 050 | | | | | | | | | | | | | | | | | | | | 050 | |
| 055 | +25 0 | +15 0 | +10 0 | +8 0 | | | | | | | -25 -50 | -15 -30 | -10 -20 | -8 -15 | -25 -50 | | -15 -30 | | -10 -20 | 055 | |
| 060 | | | | | +25 0 | | +15 0 | | +10 0 | | | | | | | | | | | 060 | |
| 065 | | | | | | | | | | | | | | | | | | | | 065 | |
| 070 | | | | | | | | | | | | | | | | | | | | 070 | |
| 075 | | | | | +30 0 | | +18 0 | +13 0 | | | | | | | -30 -60 | | -18 -35 | -13 -25 | | 075 | |
| 080 | +30 0 | +18 0 | | +10 0 | | | | | | | | | | -10 -20 | | | | | | 080 | |
| 090 | | | +13 0 | | | | | | | | | | | | | | | | | 090 | |
| 100 | | | | | | | | | | | | | | | | | | | | 100 | |
| 110 | +35 0 | +35 0 | +20 0 | +13 0 | +35 0 | +35 0 | +20 0 | +13 0 | | | -35 -70 | -35 -70 | -20 -40 | -13 -25 | -35 -70 | -35 -70 | -20 -40 | | -13 -25 | 110 | |
| 120 | | | | | | | | | | | | | | | | | | | | 120 | |
| 140 | +40 0 | | | | +40 0 | | +23 0 | +15 0 | +15 0 | | | | | | -40 -80 | | -23 -45 | -15 -30 | -15 -30 | 140 | |
| 160 | +45 0 | +40 0 | +23 0 | +15 0 | | | | | | | -45 -90 | -40 -80 | -23 -45 | -15 -30 | -45 -90 | -40 -80 | -25 -50 | -18 -35 | | 160 | |
| 180 | | | | | | | | | | | | | | | | | | | | 180 | |
| 200 | +50 0 | | +25 0 | +18 0 | | | | | | | -50 -100 | -45 -90 | -25 -50 | -15 -35 | -50 -100 | -45 -90 | -30 -60 | -18 -40 | | 200 | |
| 250 | +75 0 | +45 0 | | | | | | | | | | | | | | | | | | 250 | |
| 300 | | | | | | | | | | | | | | | | | | | | 300 | |
| 350 | +100 0 | +50 0 | | | | | | | | | | | | | | | | | | 350 | |
| 400 | | | | | | | | | | | | | | | | | | | | 400 | |

[Notes] Division I is for deep groove type ball bearings.
Division II is for angular contact type and four-point contact type ball bearings.

K-series super thin section ball bearings
open type

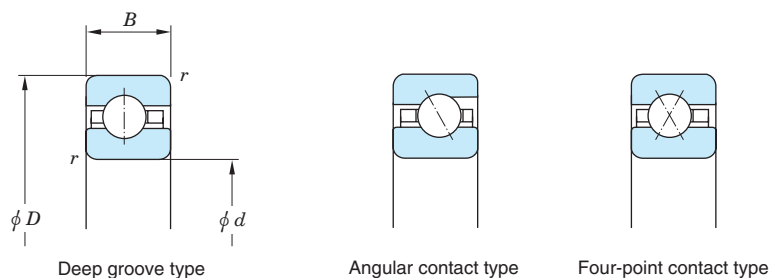
d 25.4 ~ (114.3) mm



| Boundary dimensions (mm) | | | | Deep groove type | | | Angular contact type | | | | Four-point contact type | | | | (Refer.) Mass (kg) | | | | |
|--------------------------|----------|----------|------------------|------------------|-------------------------|-----------------------|----------------------|-------------------------|-----------------------|----------------------|-------------------------|-------------------------|----------------------|-----------------------|--------------------|----------------------|-------------------------|----------------------|-----------------------|
| <i>d</i> | <i>D</i> | <i>B</i> | <i>r</i> min. | Bearing No. | Basic load ratings (kN) | | Bearing No. | Basic load ratings (kN) | | | Bearing No. | Basic load ratings (kN) | | | Deep groove type | Angular contact type | Four-point contact type | | |
| | | | | | <i>C_r</i> | <i>C_{0r}</i> | | <i>C_r</i> | <i>C_{0r}</i> | <i>C_a</i> | | <i>C_{0a}</i> | <i>C_r</i> | <i>C_{0r}</i> | | | | <i>C_a</i> | <i>C_{0a}</i> |
| 25.4 | 34.925 | 4.762 | 0.4 | KTC010 | 2.50 | 1.95 | KTA010 | 2.65 | 2.20 | 3.45 | 6.70 | KTX010 | 2.15 | 1.65 | 3.70 | 7.15 | 0.012 | 0.011 | 0.012 |
| | | | | | | | | | | | | | | | | | | | |
| 38.1 | 47.625 | 4.762 | 0.4 | KTC015 | 2.90 | 2.70 | KTA015 | 3.05 | 3.10 | 4.00 | 9.35 | KTX015 | 2.50 | 2.30 | 4.20 | 10.5 | 0.018 | 0.017 | 0.018 |
| | | | | | | | | | | | | | | | | | | | |
| 50.8 | 63.5 | 6.35 | 0.6 | KAC020 | 4.50 | 4.30 | KAA020 | 4.75 | 4.95 | 6.25 | 14.9 | KAX020 | 3.90 | 3.70 | 6.60 | 16.9 | 0.045 | 0.045 | 0.045 |
| | 66.675 | 7.938 | 1 | | KBC020 | 6.35 | | 5.85 | KBA020 | 6.75 | 6.70 | | 8.90 | 20.4 | KBX020 | 5.55 | 5.00 | 9.35 | 22.0 |
| 63.5 | 76.2 | 6.35 | 0.6 | KAC025 | 4.85 | 5.20 | KAA025 | 5.10 | 5.95 | 6.75 | 18.0 | KAX025 | 4.20 | 4.45 | 7.05 | 20.9 | 0.059 | 0.054 | 0.059 |
| | 79.375 | 7.938 | 1 | | KBC025 | 6.90 | | 7.00 | KBA025 | 7.35 | 8.15 | | 9.65 | 24.6 | KBX025 | 6.00 | 6.00 | 10.0 | 27.3 |
| 76.2 | 88.9 | 6.35 | 0.6 | KAC030 | 5.20 | 6.10 | KAA030 | 5.45 | 7.00 | 7.15 | 21.2 | KAX030 | 4.50 | 5.25 | 7.45 | 24.9 | 0.068 | 0.064 | 0.068 |
| | 92.075 | 7.938 | 1 | | KBC030 | 7.35 | | 8.15 | KBA030 | 7.70 | 9.35 | | 10.2 | 28.3 | KBX030 | 6.35 | 7.00 | 10.6 | 32.5 |
| 88.9 | 101.6 | 6.35 | 0.6 | KAC035 | 5.45 | 7.00 | KAA035 | 5.75 | 8.00 | 7.55 | 24.3 | KAX035 | 4.75 | 6.00 | 7.80 | 29.0 | 0.082 | 0.077 | 0.082 |
| | 104.775 | 7.938 | 1 | | KBC035 | 7.75 | | 9.30 | KBA035 | 8.20 | 10.7 | | 10.8 | 32.5 | KBX035 | 6.70 | 8.00 | 11.1 | 37.8 |
| 101.6 | 114.3 | 6.35 | 0.6 | KAC040 | 5.75 | 7.85 | KAA040 | 6.00 | 9.05 | 7.90 | 27.4 | KAX040 | 4.95 | 6.80 | 8.10 | 33.0 | 0.086 | 0.086 | 0.086 |
| | 117.475 | 7.938 | 1 | | KBC040 | 8.10 | | 10.5 | KBA040 | 8.60 | 12.1 | | 11.3 | 36.8 | KBX040 | 7.05 | 9.00 | 11.6 | 43.1 |
| | 120.65 | 9.525 | 1 | KCC040 | 10.3 | 12.4 | KCA040 | 11.2 | 14.9 | 14.7 | 45.1 | KCX040 | 8.95 | 10.6 | 14.8 | 50.0 | 0.204 | 0.200 | 0.204 |
| | 127 | 12.7 | 1.5 | KDC040 | 15.7 | 17.2 | KDA040 | 16.5 | 19.7 | 21.7 | 59.8 | KDX040 | 13.6 | 14.8 | 22.6 | 67.4 | 0.354 | 0.363 | 0.354 |
| | 139.7 | 19.05 | 2 | KFC040 | 28.2 | 28.1 | KFA040 | 30.3 | 32.9 | 39.8 | 99.6 | KFX040 | 24.6 | 24.0 | 41.0 | 103 | 0.862 | 0.871 | 0.862 |
| | 152.4 | 25.4 | 2 | KGC040 | 42.6 | 39.6 | KGA040 | 45.2 | 46.0 | 59.5 | 139 | KGX040 | 37.3 | 34.5 | 62.4 | 141 | 1.63 | 1.64 | 1.63 |
| 107.95 | 120.65 | 6.35 | 0.6 | KAC042 | 5.85 | 8.30 | KAA042 | 6.15 | 9.55 | 8.10 | 29.0 | KAX042 | 5.10 | 7.15 | 8.25 | 35.0 | 0.091 | 0.091 | 0.091 |
| | 123.825 | 7.938 | 1 | | KBC042 | 8.25 | | 10.9 | KBA042 | 8.75 | 12.7 | | 11.5 | 38.6 | KBX042 | 7.15 | 9.40 | 11.7 | 45.2 |
| | 127 | 9.525 | 1 | KCC042 | 10.5 | 13.0 | KCA042 | 11.5 | 15.8 | 15.1 | 47.8 | KCX042 | 9.15 | 11.2 | 15.0 | 53.0 | 0.213 | 0.209 | 0.213 |
| | 133.35 | 12.7 | 1.5 | KDC042 | 15.8 | 17.8 | KDA042 | 16.8 | 20.8 | 22.1 | 62.9 | KDX042 | 13.7 | 15.3 | 22.8 | 70.2 | 0.376 | 0.381 | 0.376 |
| | 146.05 | 19.05 | 2 | KFC042 | 28.8 | 29.4 | KFA042 | 30.6 | 34.0 | 40.3 | 103 | KFX042 | 25.1 | 25.2 | 41.8 | 109 | 0.907 | 0.925 | 0.907 |
| | 158.75 | 25.4 | 2 | KGC042 | 42.2 | 39.9 | KGA042 | 46.2 | 48.0 | 60.8 | 146 | KGX042 | 36.9 | 34.3 | 61.8 | 142 | 1.72 | 1.74 | 1.72 |
| 114.3 | 127 | 6.35 | 0.6 | KAC045 | 6.00 | 8.75 | KAA045 | 6.25 | 10.1 | 8.25 | 30.5 | KAX045 | 5.20 | 7.55 | 8.40 | 37.0 | 0.100 | 0.095 | 0.100 |
| | 130.175 | 7.938 | 1 | KBC045 | 8.45 | 11.6 | KBA045 | 8.90 | 13.3 | 11.7 | 40.4 | KBX045 | 7.35 | 10.0 | 12.0 | 48.3 | 0.150 | 0.154 | 0.150 |
| | 133.35 | 9.525 | 1 | KCC045 | 10.7 | 13.7 | KCA045 | 11.7 | 16.6 | 15.4 | 50.4 | KCX045 | 9.30 | 11.8 | 15.3 | 56.1 | 0.218 | 0.222 | 0.218 |
| | 139.7 | 12.7 | 1.5 | KDC045 | 16.3 | 19.0 | KDA045 | 17.2 | 21.8 | 22.6 | 66.0 | KDX045 | 14.2 | 16.3 | 23.4 | 75.5 | 0.399 | 0.399 | 0.399 |

K-series super thin section ball bearings
open type

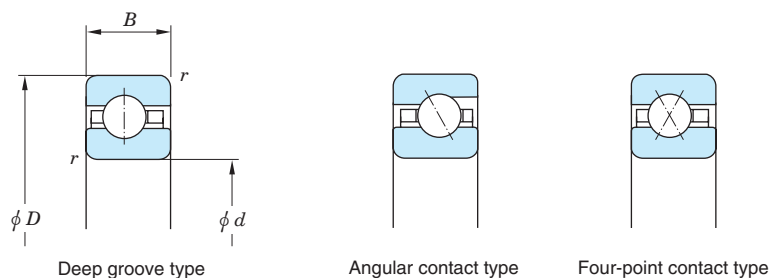
d (114.3) ~ (165.1) mm



| Boundary dimensions (mm) | | | | Deep groove type | | | | Angular contact type | | | | Four-point contact type | | | | (Refer.) Mass (kg) | | | |
|--------------------------|---------|-------|----------|------------------|-------------------------|----------|---------------|-------------------------|----------|-------|-------------|-------------------------|-------|----------|------------------|----------------------|-------------------------|-------|----------|
| d | D | B | r min. | Bearing No. | Basic load ratings (kN) | | Bearing No. | Basic load ratings (kN) | | | Bearing No. | Basic load ratings (kN) | | | Deep groove type | Angular contact type | Four-point contact type | | |
| | | | | | C_r | C_{0r} | | C_r | C_{0r} | C_a | | C_{0a} | C_r | C_{0r} | | | | C_a | C_{0a} |
| 114.3 | 152.4 | 19.05 | 2 | KFC045 | 29.4 | 30.8 | KFA045 | 31.7 | 36.4 | 41.7 | 110 | KFX045 | 25.6 | 26.3 | 42.6 | 115 | 0.953 | 0.971 | 0.953 |
| | 165.1 | 25.4 | 2 | KGC045 | 43.6 | 42.7 | KGA045 | 47.1 | 50.1 | 62.0 | 152 | KGX045 | 38.1 | 36.4 | 63.6 | 152 | 1.81 | 1.79 | 1.81 |
| 120.65 | 133.35 | 6.35 | 0.6 | KAC047 | 6.10 | 9.20 | KAA047 | 6.40 | 10.6 | 8.40 | 32.1 | KAX047 | 5.30 | 7.95 | 8.55 | 39.0 | 0.104 | 0.100 | 0.104 |
| | 136.525 | 7.938 | 1 | KBC047 | 8.55 | 12.1 | KBA047 | 9.10 | 14.2 | 12.0 | 42.9 | KBX047 | 7.45 | 10.4 | 12.1 | 50.4 | 0.154 | 0.159 | 0.154 |
| | 139.7 | 9.525 | 1 | KCC047 | 10.9 | 14.4 | KCA047 | 12.0 | 17.5 | 15.7 | 53.0 | KCX047 | 9.50 | 12.4 | 15.5 | 59.1 | 0.227 | 0.231 | 0.227 |
| | 146.05 | 12.7 | 1.5 | KDC047 | 16.5 | 19.6 | KDA047 | 17.5 | 22.8 | 23.0 | 69.1 | KDX047 | 14.3 | 16.8 | 23.6 | 78.2 | 0.426 | 0.422 | 0.426 |
| | 158.75 | 19.05 | 2 | KFC047 | 29.9 | 32.1 | KFA047 | 32.0 | 37.5 | 42.2 | 114 | KFX047 | 26.1 | 27.5 | 43.3 | 121 | 0.998 | 1.03 | 0.998 |
| | 171.45 | 25.4 | 2 | KGC047 | 44.9 | 45.2 | KGA047 | 48.0 | 52.1 | 63.1 | 158 | KGX047 | 39.2 | 38.6 | 65.4 | 162 | 1.86 | 1.89 | 1.86 |
| 127 | 139.7 | 6.35 | 0.6 | KAC050 | 6.20 | 9.65 | KAA050 | 6.50 | 11.1 | 8.55 | 33.6 | KAX050 | 5.35 | 8.35 | 8.65 | 41.1 | 0.109 | 0.104 | 0.109 |
| | 142.875 | 7.938 | 1 | KBC050 | 8.80 | 12.8 | KBA050 | 9.25 | 14.8 | 12.2 | 44.7 | KBX050 | 7.60 | 11.0 | 12.4 | 53.6 | 0.172 | 0.168 | 0.172 |
| | 146.05 | 9.525 | 1 | KCC050 | 11.1 | 15.0 | KCA050 | 12.2 | 18.4 | 16.0 | 55.7 | KCX050 | 9.65 | 12.9 | 15.8 | 62.1 | 0.263 | 0.245 | 0.263 |
| | 152.4 | 12.7 | 1.5 | KDC050 | 16.9 | 20.8 | KDA050 | 17.8 | 23.8 | 23.4 | 72.2 | KDX050 | 14.7 | 17.9 | 24.2 | 83.5 | 0.454 | 0.445 | 0.454 |
| | 165.1 | 19.05 | 2 | KFC050 | 30.5 | 33.4 | KFA050 | 32.4 | 38.6 | 42.6 | 117 | KFX050 | 26.5 | 28.7 | 44.0 | 127 | 1.04 | 1.08 | 1.04 |
| | 177.8 | 25.4 | 2 | KGC050 | 46.2 | 47.6 | KGA050 | 48.8 | 54.2 | 64.3 | 164 | KGX050 | 40.3 | 40.7 | 67.1 | 173 | 1.95 | 2.00 | 1.95 |
| 139.7 | 152.4 | 6.35 | 0.6 | KAC055 | 6.40 | 10.5 | KAA055 | 6.75 | 12.1 | 8.85 | 36.8 | KAX055 | 5.55 | 9.10 | 8.90 | 45.1 | 0.113 | 0.113 | 0.113 |
| | 155.575 | 7.938 | 1 | KBC055 | 9.10 | 13.9 | KBA055 | 9.60 | 16.2 | 12.6 | 49.0 | KBX055 | 7.85 | 12.0 | 12.7 | 58.8 | 0.186 | 0.181 | 0.186 |
| | 158.75 | 9.525 | 1 | KCC055 | 11.5 | 16.4 | KCA055 | 12.5 | 19.8 | 16.5 | 60.0 | KCX055 | 10.0 | 14.1 | 16.2 | 68.2 | 0.268 | 0.263 | 0.268 |
| | 165.1 | 12.7 | 1.5 | KDC055 | 17.5 | 22.6 | KDA055 | 18.4 | 25.9 | 24.2 | 78.5 | KDX055 | 15.2 | 19.4 | 24.9 | 91.6 | 0.481 | 0.481 | 0.481 |
| | 177.8 | 19.05 | 2 | KFC055 | 31.5 | 36.1 | KFA055 | 33.6 | 42.1 | 44.3 | 128 | KFX055 | 27.4 | 31.0 | 45.3 | 140 | 1.13 | 1.17 | 1.13 |
| | 190.5 | 25.4 | 2 | KGC055 | 47.0 | 49.8 | KGA055 | 50.5 | 58.3 | 66.4 | 177 | KGX055 | 41.0 | 42.6 | 68.0 | 184 | 2.13 | 2.15 | 2.13 |
| 152.4 | 165.1 | 6.35 | 0.6 | KAC060 | 6.60 | 11.4 | KAA060 | 6.95 | 13.2 | 9.15 | 39.9 | KAX060 | 5.75 | 9.85 | 9.15 | 49.1 | 0.127 | 0.127 | 0.127 |
| | 168.275 | 7.938 | 1 | KBC060 | 9.35 | 15.1 | KBA060 | 9.90 | 17.6 | 13.0 | 53.3 | KBX060 | 8.10 | 13.0 | 13.1 | 64.1 | 0.200 | 0.200 | 0.200 |
| | 171.45 | 9.525 | 1 | KCC060 | 11.9 | 17.7 | KCA060 | 12.9 | 21.5 | 17.0 | 65.3 | KCX060 | 10.3 | 15.3 | 16.7 | 74.2 | 0.286 | 0.290 | 0.286 |
| | 177.8 | 12.7 | 1.5 | KDC060 | 18.0 | 24.4 | KDA060 | 19.0 | 27.9 | 24.9 | 84.7 | KDX060 | 15.7 | 21.0 | 25.5 | 99.7 | 0.526 | 0.522 | 0.526 |
| | 190.5 | 19.05 | 2 | KFC060 | 32.5 | 38.8 | KFA060 | 34.8 | 45.6 | 45.8 | 138 | KFX060 | 28.2 | 33.3 | 46.5 | 152 | 1.22 | 1.23 | 1.22 |
| | 203.2 | 25.4 | 2 | KGC060 | 49.3 | 54.7 | KGA060 | 52.0 | 62.4 | 68.4 | 189 | KGX060 | 42.9 | 46.8 | 71.1 | 205 | 2.31 | 2.30 | 2.31 |
| 165.1 | 177.8 | 6.35 | 0.6 | KAC065 | 6.80 | 12.3 | KAA065 | 7.15 | 14.2 | 9.40 | 43.0 | KAX065 | 5.90 | 10.6 | 9.40 | 53.2 | 0.136 | 0.136 | 0.136 |
| | 180.975 | 7.938 | 1 | KBC065 | 9.65 | 16.3 | KBA065 | 10.1 | 18.8 | 13.3 | 56.9 | KBX065 | 8.35 | 14.0 | 13.4 | 69.3 | 0.213 | 0.213 | 0.213 |

K-series super thin section ball bearings
open type

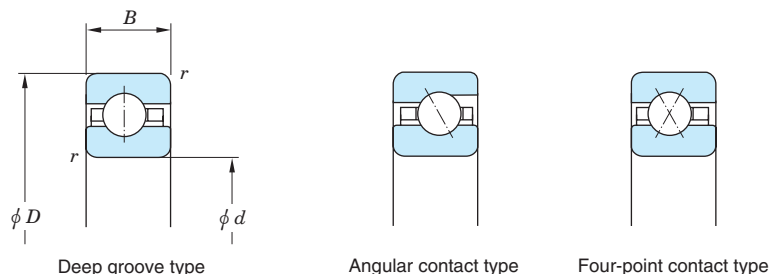
d (165.1) ~ 228.6 mm



| Boundary dimensions (mm) | | | | Deep groove type | | Angular contact type | | | | Four-point contact type | | | | (Refer.) Mass (kg) | | | | | |
|--------------------------|---------|-------|-------------|------------------|-------------------------|----------------------|-------------|-------------------------|----------|-------------------------|-------------|-------------------------|-------|--------------------|------------------|----------------------|-------------------------|-------|----------|
| d | D | B | r min. | Bearing No. | Basic load ratings (kN) | | Bearing No. | Basic load ratings (kN) | | | Bearing No. | Basic load ratings (kN) | | | Deep groove type | Angular contact type | Four-point contact type | | |
| | | | | | C_r | C_{0r} | | C_r | C_{0r} | C_a | | C_{0a} | C_r | C_{0r} | | | | C_a | C_{0a} |
| 165.1 | 184.15 | 9.525 | 1 | KCC065 | 12.2 | 19.0 | KCA065 | 13.4 | 23.3 | 17.6 | 70.6 | KCX065 | 10.6 | 16.4 | 17.1 | 80.3 | 0.308 | 0.308 | 0.308 |
| | 190.5 | 12.7 | 1.5 | KDC065 | 18.6 | 26.1 | KDA065 | 19.5 | 30.0 | 25.6 | 90.9 | KDX065 | 16.1 | 22.5 | 26.2 | 108 | 0.553 | 0.562 | 0.553 |
| | 203.2 | 19.05 | 2 | KFC065 | 33.4 | 41.5 | KFA065 | 36.0 | 49.1 | 47.3 | 149 | KFX065 | 29.0 | 35.6 | 47.7 | 164 | 1.32 | 1.33 | 1.32 |
| | 215.9 | 25.4 | 2 | KGC065 | 50.0 | 57.0 | KGA065 | 53.5 | 66.5 | 70.3 | 202 | KGX065 | 43.5 | 48.8 | 71.8 | 216 | 2.45 | 2.45 | 2.45 |
| 177.8 | 190.5 | 6.35 | 0.6 | KAC070 | 7.00 | 13.2 | KAA070 | 7.35 | 15.2 | 9.65 | 46.1 | KAX070 | 6.05 | 11.4 | 9.60 | 57.2 | 0.141 | 0.145 | 0.141 |
| | 193.675 | 7.938 | 1 | KBC070 | 9.90 | 17.4 | KBA070 | 10.4 | 20.2 | 13.7 | 61.2 | KBX070 | 8.55 | 15.0 | 13.7 | 74.6 | 0.227 | 0.227 | 0.227 |
| | 196.85 | 9.525 | 1 | KCC070 | 12.5 | 20.4 | KCA070 | 13.6 | 24.7 | 17.9 | 74.9 | KCX070 | 10.9 | 17.6 | 17.5 | 86.3 | 0.331 | 0.336 | 0.331 |
| | 203.2 | 12.7 | 1.5 | KDC070 | 19.0 | 27.9 | KDA070 | 20.0 | 32.1 | 26.3 | 97.2 | KDX070 | 16.5 | 24.0 | 26.7 | 116 | 0.594 | 0.603 | 0.594 |
| | 215.9 | 19.05 | 2 | KFC070 | 34.3 | 44.1 | KFA070 | 37.0 | 52.6 | 48.7 | 159 | KFX070 | 29.8 | 37.9 | 48.7 | 176 | 1.45 | 1.43 | 1.45 |
| | 228.6 | 25.4 | 2 | KGC070 | 52.1 | 61.8 | KGA070 | 54.8 | 70.7 | 72.2 | 214 | KGX070 | 45.3 | 53.0 | 74.5 | 237 | 2.63 | 2.66 | 2.63 |
| 190.5 | 203.2 | 6.35 | 0.6 | KAC075 | 7.15 | 14.1 | KAA075 | 7.50 | 16.2 | 9.90 | 49.2 | KAX075 | 6.20 | 12.2 | 9.80 | 61.3 | 0.154 | 0.154 | 0.154 |
| | 206.375 | 7.938 | 1 | KBC075 | 10.1 | 18.6 | KBA075 | 10.7 | 21.6 | 14.1 | 65.4 | KBX075 | 8.80 | 16.0 | 14.0 | 79.8 | 0.240 | 0.245 | 0.240 |
| | 209.55 | 9.525 | 1 | KCC075 | 12.8 | 21.7 | KCA075 | 14.0 | 26.5 | 18.4 | 80.2 | KCX075 | 11.1 | 18.7 | 17.8 | 92.4 | 0.354 | 0.354 | 0.354 |
| | 215.9 | 12.7 | 1.5 | KDC075 | 19.5 | 29.7 | KDA075 | 20.5 | 34.1 | 27.0 | 103 | KDX075 | 16.9 | 25.6 | 27.3 | 124 | 0.640 | 0.644 | 0.640 |
| | 228.6 | 19.05 | 2 | KFC075 | 35.1 | 46.8 | KFA075 | 37.5 | 54.8 | 49.3 | 166 | KFX075 | 30.5 | 40.2 | 49.8 | 188 | 1.54 | 1.54 | 1.54 |
| | 241.3 | 25.4 | 2 | KGC075 | 52.6 | 64.1 | KGA075 | 56.2 | 74.8 | 73.9 | 227 | KGX075 | 45.8 | 55.0 | 75.2 | 249 | 2.77 | 2.81 | 2.77 |
| 203.2 | 215.9 | 6.35 | 0.6 | KAC080 | 7.35 | 15.0 | KAA080 | 7.70 | 17.3 | 10.1 | 52.3 | KAX080 | 6.35 | 13.0 | 10.0 | 65.3 | 0.172 | 0.163 | 0.172 |
| | 219.075 | 7.938 | 1 | KBC080 | 10.4 | 19.7 | KBA080 | 11.0 | 23.0 | 14.4 | 69.7 | KBX080 | 9.00 | 17.0 | 14.3 | 85.1 | 0.259 | 0.259 | 0.259 |
| | 222.25 | 9.525 | 1 | KCC080 | 13.1 | 23.1 | KCA080 | 14.4 | 28.2 | 18.9 | 85.5 | KCX080 | 11.4 | 19.9 | 18.2 | 98.5 | 0.381 | 0.381 | 0.381 |
| | 228.6 | 12.7 | 1.5 | KDC080 | 20.0 | 31.5 | KDA080 | 21.0 | 36.2 | 27.6 | 110 | KDX080 | 17.3 | 27.1 | 27.9 | 132 | 0.694 | 0.689 | 0.694 |
| | 241.3 | 19.05 | 2 | KFC080 | 35.9 | 49.5 | KFA080 | 38.5 | 58.3 | 50.6 | 177 | KFX080 | 31.2 | 42.5 | 50.7 | 200 | 1.59 | 1.64 | 1.59 |
| | 254 | 25.4 | 2 | KGC080 | 54.5 | 69.0 | KGA080 | 57.4 | 78.9 | 75.5 | 239 | KGX080 | 47.4 | 59.2 | 77.6 | 270 | 2.95 | 2.97 | 2.95 |
| 228.6 | 241.3 | 6.35 | 0.6 | KAC090 | 7.65 | 16.8 | KAA090 | 8.00 | 19.3 | 10.5 | 58.6 | KAX090 | 6.60 | 14.5 | 10.4 | 73.4 | 0.200 | 0.186 | 0.200 |
| | 244.475 | 7.938 | 1 | KBC090 | 10.8 | 22.1 | KBA090 | 11.4 | 25.6 | 15.0 | 77.6 | KBX090 | 9.35 | 19.1 | 14.8 | 95.6 | 0.299 | 0.290 | 0.299 |
| | 247.65 | 9.525 | 1 | KCC090 | 13.7 | 25.7 | KCA090 | 14.9 | 31.4 | 19.6 | 95.1 | KCX090 | 11.9 | 22.2 | 18.9 | 111 | 0.426 | 0.445 | 0.426 |
| | 254 | 12.7 | 1.5 | KDC090 | 20.8 | 35.0 | KDA090 | 21.8 | 40.3 | 28.7 | 122 | KDX090 | 18.0 | 30.2 | 28.9 | 148 | 0.780 | 0.767 | 0.780 |
| | 266.7 | 19.05 | 2 | KFC090 | 37.4 | 54.8 | KFA090 | 40.3 | 65.3 | 53.1 | 198 | KFX090 | 32.5 | 47.2 | 52.6 | 224 | 1.77 | 1.79 | 1.77 |
| | 279.4 | 25.4 | 2 | KGC090 | 56.8 | 76.1 | KGA090 | 59.8 | 87.1 | 78.7 | 264 | KGX090 | 49.4 | 65.3 | 80.5 | 302 | 3.27 | 3.27 | 3.27 |

K-series super thin section ball bearings open type

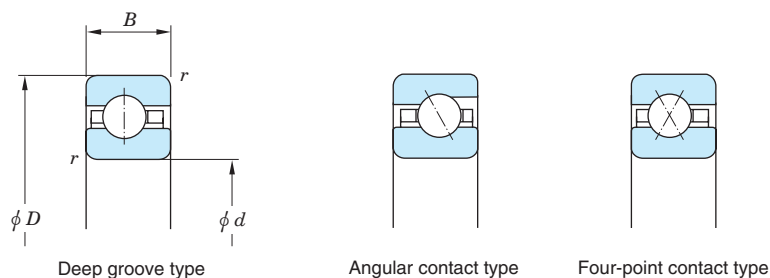
d 254 ~ 406.4 mm



| Boundary dimensions (mm) | | | | Deep groove type | | | Angular contact type | | | | Four-point contact type | | | | (Refer.) Mass (kg) | | | | |
|--------------------------|---------|---------|-------------|------------------|-------------------------|----------|----------------------|-------------------------|----------|-------|-------------------------|-------------------------|--------|----------|--------------------|----------------------|-------------------------|-------|----------|
| d | D | B | r min. | Bearing No. | Basic load ratings (kN) | | Bearing No. | Basic load ratings (kN) | | | Bearing No. | Basic load ratings (kN) | | | Deep groove type | Angular contact type | Four-point contact type | | |
| | | | | | C_r | C_{0r} | | C_r | C_{0r} | C_a | | C_{0a} | C_r | C_{0r} | | | | C_a | C_{0a} |
| 254 | 266.7 | 6.35 | 0.6 | KAC100 | 7.95 | 18.6 | KAA100 | 8.30 | 21.4 | 11.0 | 64.8 | KAX100 | 6.85 | 16.0 | 10.7 | 81.4 | 0.227 | 0.204 | 0.227 |
| | 269.875 | 7.938 | 1 | KBC100 | 11.2 | 24.4 | KBA100 | 11.9 | 28.4 | 15.6 | 86.1 | KBX100 | 9.75 | 21.1 | 15.3 | 106 | 0.331 | 0.322 | 0.331 |
| | 273.05 | 9.525 | 1 | KCC100 | 14.2 | 28.4 | KCA100 | 15.6 | 34.9 | 20.5 | 106 | KCX100 | 12.3 | 24.5 | 19.5 | 123 | 0.481 | 0.472 | 0.481 |
| | 279.4 | 12.7 | 1.5 | KDC100 | 21.6 | 38.6 | KDA100 | 22.7 | 44.4 | 29.8 | 135 | KDX100 | 18.7 | 33.3 | 29.8 | 164 | 0.853 | 0.848 | 0.853 |
| | 292.1 | 19.05 | 2 | KFC100 | 38.8 | 60.2 | KFA100 | 41.6 | 71.1 | 54.7 | 215 | KFX100 | 33.7 | 51.8 | 54.3 | 249 | 1.95 | 2.00 | 1.95 |
| | 304.8 | 25.4 | 2 | KGC100 | 59.0 | 83.2 | KGA100 | 62.0 | 95.3 | 81.6 | 289 | KGX100 | 51.2 | 71.5 | 83.1 | 334 | 3.58 | 3.63 | 3.58 |
| 279.4 | 292.1 | 6.35 | 0.6 | KAC110 | 8.20 | 20.3 | KAA110 | 8.60 | 23.4 | 11.3 | 71.0 | KAX110 | 7.10 | 17.6 | 11.1 | 89.5 | 0.236 | 0.227 | 0.236 |
| | 295.275 | 7.938 | 1 | KBC110 | 11.6 | 26.7 | KBA110 | 12.3 | 31.0 | 16.1 | 94.0 | KBX110 | 10.1 | 23.1 | 15.7 | 117 | 0.340 | 0.354 | 0.340 |
| | 298.45 | 9.525 | 1 | KCC110 | 14.7 | 31.1 | KCA110 | 16.1 | 38.0 | 21.1 | 115 | KCX110 | 12.7 | 26.8 | 20.1 | 135 | 0.526 | 0.517 | 0.526 |
| | 304.8 | 12.7 | 1.5 | KDC110 | 22.3 | 42.2 | KDA110 | 23.4 | 48.5 | 30.8 | 147 | KDX110 | 19.3 | 36.4 | 30.7 | 180 | 0.934 | 0.930 | 0.934 |
| | 317.5 | 19.05 | 2 | KFC110 | 40.2 | 65.5 | KFA110 | 43.2 | 78.0 | 56.9 | 236 | KFX110 | 34.8 | 56.4 | 55.9 | 273 | 2.18 | 2.15 | 2.18 |
| | 330.2 | 25.4 | 2 | KGC110 | 61.0 | 90.3 | KGA110 | 64.1 | 104 | 84.3 | 314 | KGX110 | 52.9 | 77.7 | 85.5 | 366 | 3.90 | 3.94 | 3.90 |
| 304.8 | 317.5 | 6.35 | 0.6 | KAC120 | 8.45 | 22.1 | KAA120 | 8.90 | 25.5 | 11.7 | 77.3 | KAX120 | 7.35 | 19.1 | 11.4 | 97.6 | 0.254 | 0.245 | 0.254 |
| | 320.675 | 7.938 | 1 | KBC120 | 12.0 | 29.0 | KBA120 | 12.7 | 33.8 | 16.7 | 103 | KBX120 | 10.4 | 25.1 | 16.2 | 127 | 0.376 | 0.386 | 0.376 |
| | 323.85 | 9.525 | 1 | KCC120 | 15.2 | 33.8 | KCA120 | 16.5 | 41.2 | 21.8 | 125 | KCX120 | 13.1 | 29.2 | 20.6 | 147 | 0.567 | 0.558 | 0.567 |
| | 330.2 | 12.7 | 1.5 | KDC120 | 23.0 | 45.7 | KDA120 | 24.2 | 52.6 | 31.8 | 160 | KDX120 | 20.0 | 39.5 | 31.5 | 197 | 1.02 | 1.01 | 1.02 |
| | 342.9 | 19.05 | 2 | KFC120 | 41.4 | 70.9 | KFA120 | 44.3 | 83.8 | 58.3 | 254 | KFX120 | 35.9 | 61.1 | 57.4 | 297 | 2.36 | 2.36 | 2.36 |
| | 355.6 | 25.4 | 2 | KGC120 | 62.9 | 97.5 | KGA120 | 66.0 | 112 | 86.9 | 339 | KGX120 | 54.5 | 83.9 | 87.8 | 399 | 4.22 | 4.30 | 4.22 |
| 355.6 | 371.475 | 7.938 | 1 | KBC140 | 12.7 | 33.7 | KBA140 | 13.4 | 39.1 | 17.6 | 118 | KBX140 | 11.0 | 29.1 | 17.0 | 148 | 0.476 | 0.445 | 0.476 |
| | 374.65 | 9.525 | 1 | KCC140 | 16.0 | 39.1 | KCA140 | 17.5 | 47.9 | 23.0 | 145 | KCX140 | 13.9 | 33.8 | 21.6 | 171 | 0.689 | 0.649 | 0.689 |
| | 381 | 12.7 | 1.5 | KDC140 | 24.3 | 52.9 | KDA140 | 25.5 | 60.9 | 33.6 | 184 | KDX140 | 21.1 | 45.7 | 33.1 | 229 | 1.24 | 1.17 | 1.24 |
| | 393.7 | 19.05 | 2 | KFC140 | 43.7 | 81.5 | KFA140 | 46.8 | 96.5 | 61.6 | 293 | KFX140 | 37.9 | 70.3 | 60.2 | 345 | 2.72 | 2.61 | 2.72 |
| | 406.4 | 25.4 | 2 | KGC140 | 66.3 | 112 | KGA140 | 69.7 | 128 | 91.7 | 389 | KGX140 | 57.5 | 96.2 | 92.0 | 463 | 4.90 | 4.94 | 4.90 |
| | 406.4 | 422.275 | 7.938 | 1 | KBC160 | 13.3 | 38.3 | KBA160 | 14.0 | 44.5 | 18.4 | 135 | KBX160 | 11.5 | 33.1 | 17.7 | 169 | 0.544 | 0.508 |
| 425.45 | | 9.525 | 1 | KCC160 | 16.8 | 44.4 | KCA160 | 18.4 | 54.5 | 24.2 | 165 | KCX160 | 14.6 | 38.4 | 22.6 | 195 | 0.785 | 0.739 | 0.785 |
| 431.8 | | 12.7 | 1.5 | KDC160 | 25.5 | 60.0 | KDA160 | 26.8 | 69.1 | 35.2 | 209 | KDX160 | 22.1 | 51.8 | 34.5 | 261 | 1.41 | 1.33 | 1.41 |
| 444.5 | | 19.05 | 2 | KFC160 | 45.8 | 92.2 | KFA160 | 49.0 | 109 | 64.5 | 331 | KFX160 | 39.7 | 79.6 | 62.7 | 394 | 3.22 | 3.08 | 3.22 |
| 457.2 | | 25.4 | 2 | KGC160 | 69.5 | 126 | KGA160 | 73.0 | 145 | 96.0 | 439 | KGX160 | 60.3 | 109 | 95.9 | 528 | 5.58 | 5.62 | 5.58 |

K-series super thin section ball bearings
open type

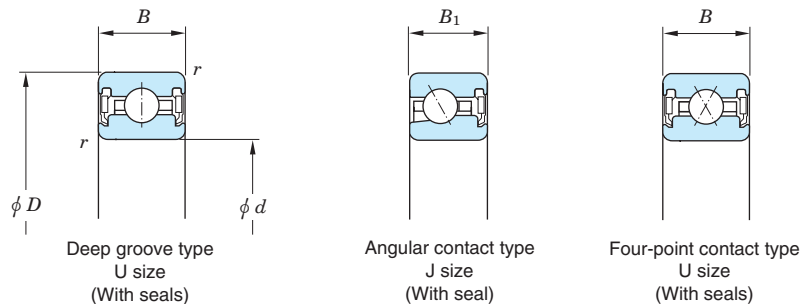
d 457.2 ~ 1 016 mm



| Boundary dimensions (mm) | | | | Deep groove type | | | Angular contact type | | | | | Four-point contact type | | | | | (Refer.) Mass (kg) | | |
|--------------------------|----------|----------|------------------|------------------|-------------------------|-----------------------|----------------------|-------------------------|-----------------------|----------------------|-----------------------|-------------------------|-------------------------|-----------------------|----------------------|-----------------------|--------------------|----------------------|-------------------------|
| <i>d</i> | <i>D</i> | <i>B</i> | <i>r</i> min. | Bearing No. | Basic load ratings (kN) | | Bearing No. | Basic load ratings (kN) | | | | Bearing No. | Basic load ratings (kN) | | | | Deep groove type | Angular contact type | Four-point contact type |
| | | | | | <i>C_r</i> | <i>C_{0r}</i> | | <i>C_r</i> | <i>C_{0r}</i> | <i>C_a</i> | <i>C_{0a}</i> | | <i>C_r</i> | <i>C_{0r}</i> | <i>C_a</i> | <i>C_{0a}</i> | | | |
| 457.2 | 473.075 | 7.938 | 1 | KBC180 | 13.9 | 42.9 | KBA180 | 14.6 | 49.9 | 19.2 | 151 | KBX180 | 12.0 | 37.1 | 18.4 | 190 | 0.612 | 0.572 | 0.612 |
| | 476.25 | 9.525 | 1 | KCC180 | 17.5 | 49.8 | KCA180 | 19.2 | 61.2 | 25.3 | 185 | KCX180 | 15.2 | 43.0 | 23.4 | 220 | 0.880 | 0.830 | 0.880 |
| | 482.6 | 12.7 | 1.5 | KDC180 | 26.6 | 67.1 | KDA180 | 27.6 | 77.3 | 36.3 | 234 | KDX180 | 23.0 | 58.0 | 35.8 | 293 | 1.58 | 1.49 | 1.58 |
| | 495.3 | 19.05 | 2 | KFC180 | 47.8 | 103 | KFA180 | 51.5 | 123 | 67.7 | 373 | KFX180 | 41.4 | 88.8 | 65.0 | 442 | 3.58 | 3.48 | 3.58 |
| | 508 | 25.4 | 2 | KGC180 | 72.5 | 140 | KGA180 | 76.0 | 161 | 100 | 488 | KGX180 | 62.8 | 121 | 99.4 | 592 | 6.21 | 6.26 | 6.21 |
| 508 | 523.875 | 7.938 | 1 | KBC200 | 14.4 | 47.6 | KBA200 | 15.2 | 55.3 | 20.0 | 168 | KBX200 | 12.5 | 41.2 | 19.0 | 211 | 0.680 | 0.635 | 0.680 |
| | 527.05 | 9.525 | 1 | KCC200 | 18.2 | 55.1 | KCA200 | 19.9 | 67.5 | 26.2 | 205 | KCX200 | 15.8 | 47.7 | 24.2 | 244 | 0.980 | 0.921 | 0.980 |
| | 533.4 | 12.7 | 1.5 | KDC200 | 27.6 | 74.3 | KDA200 | 29.0 | 85.6 | 38.1 | 259 | KDX200 | 23.9 | 64.2 | 37.0 | 326 | 1.75 | 1.66 | 1.75 |
| | 546.1 | 19.05 | 2 | KFC200 | 49.6 | 114 | KFA200 | 53.4 | 136 | 70.3 | 412 | KFX200 | 43.0 | 98.1 | 67.2 | 491 | 4.04 | 3.84 | 4.04 |
| | 558.8 | 25.4 | 2 | KGC200 | 75.2 | 154 | KGA200 | 78.9 | 178 | 104 | 538 | KGX200 | 65.2 | 133 | 103 | 657 | 8.53 | 6.89 | 8.53 |
| 635 | 654.05 | 9.525 | 1 | KCC250 | 19.7 | 68.5 | KCA250 | 21.6 | 84.0 | 28.4 | 255 | KCX250 | 17.1 | 59.2 | 26.0 | 304 | 1.22 | 1.14 | 1.22 |
| | 660.4 | 12.7 | 1.5 | KDC250 | 29.9 | 92.1 | KDA250 | 31.4 | 106 | 41.3 | 322 | KDX250 | 25.9 | 79.6 | 39.7 | 407 | 2.17 | 2.06 | 2.17 |
| | 673.1 | 19.05 | 2 | KFC250 | 53.7 | 140 | KFA250 | 57.6 | 167 | 75.8 | 506 | KFX250 | 46.5 | 121 | 72.0 | 612 | 4.94 | 4.76 | 4.94 |
| | 685.8 | 25.4 | 2 | KGC250 | 81.4 | 190 | KGA250 | 85.4 | 219 | 112 | 663 | KGX250 | 70.5 | 164 | 110 | 819 | 8.85 | 8.53 | 8.85 |
| 762 | 781.05 | 9.525 | 1 | KCC300 | 21.1 | 81.9 | KCA300 | 23.1 | 101 | 30.3 | 305 | KCX300 | 18.3 | 70.8 | 27.6 | 365 | 1.46 | 1.37 | 1.46 |
| | 787.4 | 12.7 | 1.5 | KDC300 | 32.0 | 110 | KDA300 | 33.5 | 127 | 44.1 | 384 | KDX300 | 27.7 | 95.0 | 42.1 | 487 | 2.60 | 2.47 | 2.60 |
| | 800.1 | 19.05 | 2 | KFC300 | 57.3 | 167 | KFA300 | 61.6 | 200 | 81.0 | 605 | KFX300 | 49.6 | 144 | 76.3 | 733 | 5.90 | 5.67 | 5.90 |
| | 812.8 | 25.4 | 2 | KGC300 | 86.8 | 226 | KGA300 | 91.1 | 260 | 120 | 788 | KGX300 | 75.2 | 195 | 116 | 980 | 10.6 | 10.2 | 10.6 |
| 889 | 927.1 | 19.05 | 2 | KFC350 | 60.6 | 194 | KFA350 | 65.2 | 232 | 85.8 | 703 | KFX350 | 52.5 | 168 | 80.1 | 854 | 6.85 | 6.62 | 6.85 |
| | 939.8 | 25.4 | 2 | KGC350 | 91.7 | 261 | KGA350 | 96.2 | 301 | 127 | 912 | KGX350 | 79.4 | 226 | 122 | 1 140 | 12.3 | 11.9 | 12.3 |
| 1 016 | 1 054.1 | 19.05 | 2 | KFC400 | 63.5 | 221 | KFA400 | 68.4 | 264 | 90.0 | 801 | KFX400 | 55.0 | 191 | 83.6 | 975 | 7.80 | 7.53 | 7.80 |
| | 1 066.8 | 25.4 | 2 | KGC400 | 96.2 | 297 | KGA400 | 101 | 342 | 133 | 1 040 | KGX400 | 83.3 | 257 | 128 | 1 300 | 14.0 | 13.5 | 14.0 |

K-series super thin section ball bearings
sealed type

d 101.6 ~ 304.8 mm



| Boundary dimensions (mm) | | | | | Deep groove type Basic load ratings | | | Angular contact type Basic load ratings | | | | Four-point contact type Basic load ratings | | | | (Refer.) Mass (kg) | | | | |
|--------------------------|----------|----------|-----------------------|--------------------------|--|----------------------------|-----------------------------|--|----------------------------|-----------------------------|----------------------------|---|-------------|----------------------------|-----------------------------|----------------------------|-----------------------------|------------------|----------------------|-------------------------|
| <i>d</i> | <i>D</i> | <i>B</i> | <i>B</i> ₁ | <i>r</i> _{min.} | Bearing No. | <i>C</i> _r (kN) | <i>C</i> _{0r} (kN) | Bearing No. | <i>C</i> _r (kN) | <i>C</i> _{0r} (kN) | <i>C</i> _a (kN) | <i>C</i> _{0a} (kN) | Bearing No. | <i>C</i> _r (kN) | <i>C</i> _{0r} (kN) | <i>C</i> _a (kN) | <i>C</i> _{0a} (kN) | Deep groove type | Angular contact type | Four-point contact type |
| 101.6 | 120.65 | 12.7 | 11.1 | 0.4 | KUC040 2RD | 10.3 | 12.4 | KJA040 RD | 11.2 | 14.9 | 14.7 | 45.1 | KUX040 2RD | 8.95 | 10.6 | 14.8 | 50.0 | 0.249 | 0.222 | 0.249 |
| 107.95 | 127 | 12.7 | 11.1 | 0.4 | KUC042 2RD | 10.5 | 13.0 | KJA042 RD | 11.5 | 15.8 | 15.1 | 47.8 | KUX042 2RD | 9.15 | 11.2 | 15.0 | 53.0 | 0.263 | 0.236 | 0.263 |
| 114.3 | 133.35 | 12.7 | 11.1 | 0.4 | KUC045 2RD | 10.7 | 13.7 | KJA045 RD | 11.7 | 16.6 | 15.4 | 50.4 | KUX045 2RD | 9.30 | 11.8 | 15.3 | 56.1 | 0.277 | 0.254 | 0.277 |
| 120.65 | 139.7 | 12.7 | 11.1 | 0.4 | KUC047 2RD | 10.9 | 14.4 | KJA047 RD | 12.0 | 17.5 | 15.7 | 53.0 | KUX047 2RD | 9.50 | 12.4 | 15.5 | 59.1 | 0.295 | 0.268 | 0.295 |
| 127 | 146.05 | 12.7 | 11.1 | 0.4 | KUC050 2RD | 11.1 | 15.0 | KJA050 RD | 12.2 | 18.4 | 16.0 | 55.7 | KUX050 2RD | 9.65 | 12.9 | 15.8 | 62.1 | 0.308 | 0.281 | 0.308 |
| 139.7 | 158.75 | 12.7 | 11.1 | 0.4 | KUC055 2RD | 11.5 | 16.4 | KJA055 RD | 12.5 | 19.8 | 16.5 | 60.0 | KUX055 2RD | 10.0 | 14.1 | 16.2 | 68.2 | 0.336 | 0.304 | 0.336 |
| 152.4 | 171.45 | 12.7 | 11.1 | 0.4 | KUC060 2RD | 11.9 | 17.7 | KJA060 RD | 12.9 | 21.5 | 17.0 | 65.3 | KUX060 2RD | 10.3 | 15.3 | 16.7 | 74.2 | 0.367 | 0.331 | 0.367 |
| 165.1 | 184.15 | 12.7 | 11.1 | 0.4 | KUC065 2RD | 12.2 | 19.0 | KJA065 RD | 13.4 | 23.3 | 17.6 | 70.6 | KUX065 2RD | 10.6 | 16.4 | 17.1 | 80.3 | 0.395 | 0.354 | 0.395 |
| 177.8 | 196.85 | 12.7 | 11.1 | 0.4 | KUC070 2RD | 12.5 | 20.4 | KJA070 RD | 13.6 | 24.7 | 17.9 | 74.9 | KUX070 2RD | 10.9 | 17.6 | 17.5 | 86.3 | 0.422 | 0.381 | 0.422 |
| 190.5 | 209.55 | 12.7 | 11.1 | 0.4 | KUC075 2RD | 12.8 | 21.7 | KJA075 RD | 14.0 | 26.5 | 18.4 | 80.2 | KUX075 2RD | 11.1 | 18.7 | 17.8 | 92.4 | 0.449 | 0.404 | 0.449 |
| 203.2 | 222.25 | 12.7 | 11.1 | 0.4 | KUC080 2RD | 13.1 | 23.1 | KJA080 RD | 14.4 | 28.2 | 18.9 | 85.5 | KUX080 2RD | 11.4 | 19.9 | 18.2 | 98.5 | 0.481 | 0.431 | 0.481 |
| 228.6 | 247.65 | 12.7 | 11.1 | 0.4 | KUC090 2RD | 13.7 | 25.7 | KJA090 RD | 14.9 | 31.4 | 19.6 | 95.1 | KUX090 2RD | 11.9 | 22.2 | 18.9 | 111 | 0.535 | 0.499 | 0.535 |
| 254 | 273.05 | 12.7 | 11.1 | 0.4 | KUC100 2RD | 14.2 | 28.4 | KJA100 RD | 15.6 | 34.9 | 20.5 | 106 | KUX100 2RD | 12.3 | 24.5 | 19.5 | 123 | 0.594 | 0.531 | 0.594 |
| 279.4 | 298.45 | 12.7 | 11.1 | 0.4 | KUC110 2RD | 14.7 | 31.1 | KJA110 RD | 16.1 | 38.0 | 21.1 | 115 | KUX110 2RD | 12.7 | 26.8 | 20.1 | 135 | 0.649 | 0.581 | 0.649 |
| 304.8 | 323.85 | 12.7 | 11.1 | 0.4 | KUC120 2RD | 15.2 | 33.8 | KJA120 RD | 16.5 | 41.2 | 21.8 | 125 | KUX120 2RD | 13.1 | 29.2 | 20.6 | 147 | 0.708 | 0.630 | 0.708 |

Bearings for machine tool spindles (for support of axial loading)

JTEKT supplies double direction angular contact thrust ball bearings and ACT type matched pair angular contact ball bearings which are used with machine tool spindles to support axial loading.

These bearings were developed to meet needs which have grown as machine tool spindle rotation has become faster and more accurate.

Several dimension series are available for selection according to operating conditions.

For details, refer to JTEKT separate catalog "Precision Ball and Roller Bearings for Machine Tools" (CAT. NO. B2005E).

See also the catalog for high ability bearings, CAT NO. B2006 for High Ability Ball Bearing Series Angular Contact Ball Bearings for Machining Tools.

Double direction angular contact thrust ball bearings



Bore diameter 25 – 340 mm

Matched pair angular contact ball bearing (ACT type)



Bore diameter 50 – 170 mm



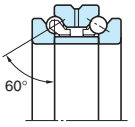
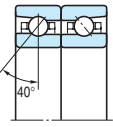
(Reference)

Major bearing types which are used to carry radial loading of machine tool spindles are shown below.

For further details, refer to the specification table for each type.

| Angular contact ball bearings | | | Double-row cylindrical roller bearings | |
|--|----------------------------|---|--|-----------------------------------|
| | | | | |
| (for high-speed applications) | | | | |
| 79 C 70, 70 B, 70 C 72, 72 B, 72 C | 79 CPA 70 CPA 72 CPA | HAR 9 C HAR 0 C (high ability ball bearing) | NN 30 NN 30 K (Tapered bore) | NNU 49 NNU 49 K (Tapered bore) |
| Refer to p. B 92. (for bearings with ceramic balls, refer to p. C 21.) | | | Refer to p. B 194. | |

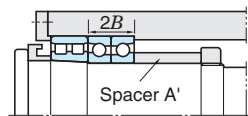
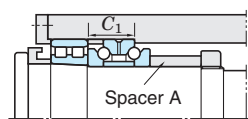
Table 1 Bearing types for support of axial loading

| Type | Double direction angular contact thrust ball bearings | | Matched pair angular contact ball bearings | | Types of ¹⁾ arrangement with a double-row cylindrical roller bearing |
|-----------------|--|-----------------|---|--------|---|
| |  | |  | | |
| Diameter series | | | | | |
| 0 | 2344 B 2347 B | ACT 0 B DB — | ACT 0 DB — | ① ② | |
| 9 | 2394 B 2397 B | — — | — — | ③ ④ | |
| Characteristics | <ul style="list-style-type: none"> Supports axial loading in both directions. Highly rigid in the axial direction. Bearings with a larger contact angle feature higher rigidity, while those with a smaller contact angle feature better high-speed performance. | | <ul style="list-style-type: none"> For support of axial loading only. Negative tolerances are specified for the outside diameter. Excellent high-speed performance is achieved because of the small contact angle. Interchangeable with 2344 B series bearings.²⁾ | | — |

[Notes]

1) These bearings are usually used in arrangement with a double-row cylindrical roller bearing which carries a radial load. There are four arrangement types (① to ④) as follows :

- ① Mounted with an NN30K tapered bore bearing or with an NN30 cylindrical bore bearing. The tapered bore bearing is combined at its smaller side.
- ② Mounted with an NN30K tapered bore bearing, which is combined at its larger side.
- ③ Mounted with an NNU49K tapered bore bearing or with an NNU49 cylindrical bore bearing. The tapered bore bearing is combined at its smaller side.
- ④ Mounted with an NNU49K tapered bore bearing, which is combined at its larger side.



2) The overall width "2 B" of ACT0 DB and ACT0B DB bearings is equivalent to dimension "C₁" of 2344B bearings. Therefore, when a 2344B bearing is replaced with an ACT0 DB or ACT0B DB bearing, change the width of spacer "A" only. No change is necessary to the spindle or housing dimensions.

Table 2 Double direction angular contact thrust ball bearing tolerance

(1) Inner ring and assembled bearing width

Unit : μm

| Nominal bore diameter <i>d</i> (mm) | Δ_{dmp} or $\Delta_{ds}^{1)}$ | | Actual bearing width deviation Δ_{Ts} | | Inner ring width variation V_{Bs} | | Perpendicularity of inner ring face with respect to the bore S_d | | Assembled bearing inner ring face runout with raceway S_{ia} | | | | |
|---|--------------------------------------|-------|---|-------|--|-------|---|-----------------------|---|-----------------------|---|----|----|
| | class 5 or equivalent | | class 4 or equivalent | | classes 4 and 5, or equivalent | | class 5 or equivalent | class 4 or equivalent | class 5 or equivalent | class 4 or equivalent | | | |
| | over | up to | upper | lower | upper | lower | max. | max. | max. | max. | | | |
| 18 | 30 | 0 | -6 | 0 | -5 | 0 | -300 | 5 | 2.5 | 8 | 4 | 5 | 3 |
| 30 | 50 | 0 | -8 | 0 | -6 | 0 | -400 | 5 | 3 | 8 | 4 | 5 | 3 |
| 50 | 80 | 0 | -9 | 0 | -7 | 0 | -500 | 6 | 4 | 8 | 4 | 6 | 5 |
| 80 | 120 | 0 | -10 | 0 | -8 | 0 | -600 | 7 | 4 | 9 | 5 | 6 | 5 |
| 120 | 180 | 0 | -13 | 0 | -10 | 0 | -700 | 8 | 5 | 10 | 6 | 8 | 6 |
| 180 | 250 | 0 | -15 | 0 | -12 | 0 | -800 | 10 | 6 | 11 | 7 | 8 | 6 |
| 250 | 315 | 0 | -18 | 0 | -15 | 0 | -900 | 13 | 7 | 13 | 8 | 10 | 8 |
| 315 | 400 | 0 | -23 | 0 | -18 | 0 | -1 000 | 15 | 9 | 15 | 9 | 13 | 10 |

(2) Outer ring

Unit : μm

| Nominal outside diameter <i>D</i> (mm) | Δ_{Dmp} or $\Delta_{Ds}^{2)}$ | | Outer ring width variation V_{Cs} | | Perpendicularity of outer ring outside surface with respect to the face S_D | | Assembled bearing outer ring face runout with raceway S_{ea} | |
|--|--------------------------------------|-------|--|-----------------------|--|-----------------------|---|---|
| | classes 5 and 4, or equivalent | | class 5 or equivalent | class 4 or equivalent | class 5 or equivalent | class 4 or equivalent | classes 5 and 4, or equivalent | |
| | over | up to | upper | lower | max. | | max. | |
| 30 | 50 | -30 | -40 | 5 | 2.5 | 8 | 4 | Shall conform to the tolerance S_{ia} on <i>d</i> of the same bearing |
| 50 | 80 | -40 | -50 | 6 | 3 | 8 | 4 | |
| 80 | 120 | -50 | -60 | 8 | 4 | 9 | 5 | |
| 120 | 150 | -60 | -75 | 8 | 5 | 10 | 5 | |
| 150 | 180 | -60 | -75 | 8 | 5 | 10 | 5 | |
| 180 | 250 | -75 | -90 | 10 | 7 | 11 | 7 | |
| 250 | 315 | -90 | -105 | 11 | 7 | 13 | 8 | |
| 315 | 400 | -110 | -125 | 13 | 8 | 13 | 10 | |
| 400 | 500 | -120 | -140 | 15 | 10 | 15 | 13 | |

[Notes] 1) Single plane mean bore diameter deviation or single bore diameter deviation

2) Single plane mean outside diameter deviation or single outside diameter deviation

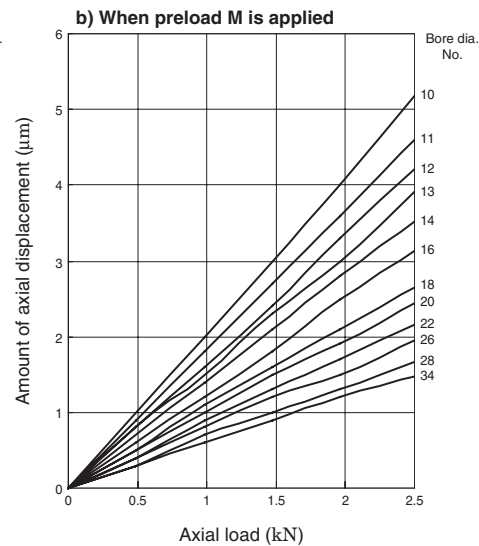
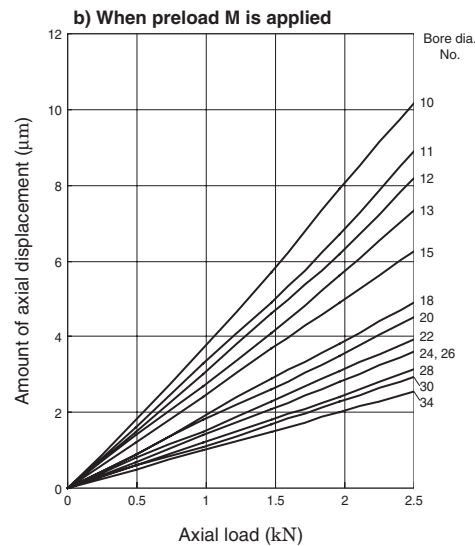
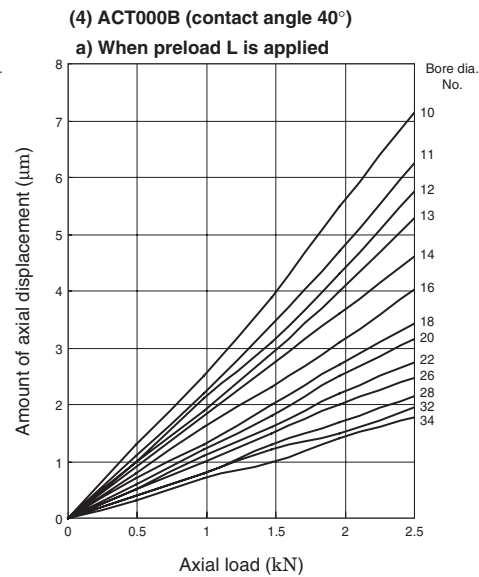
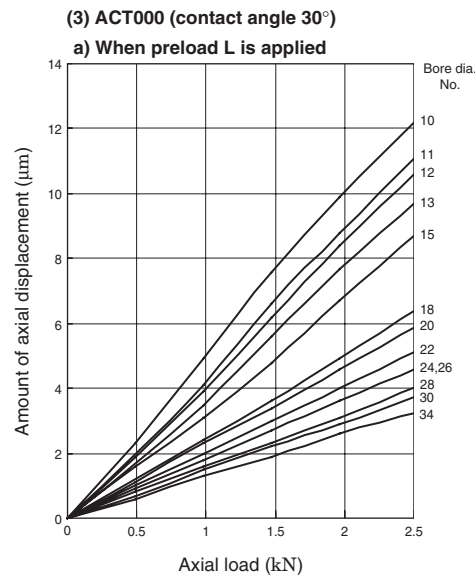
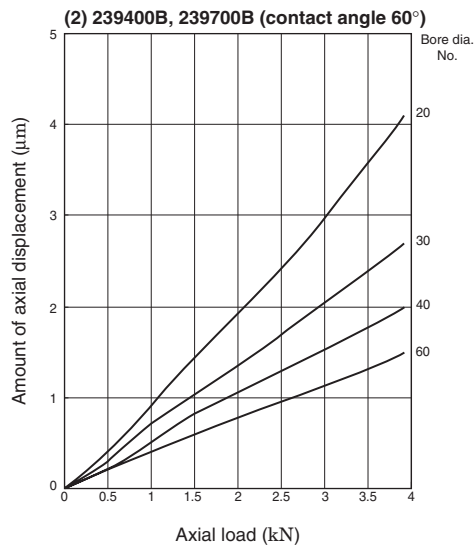
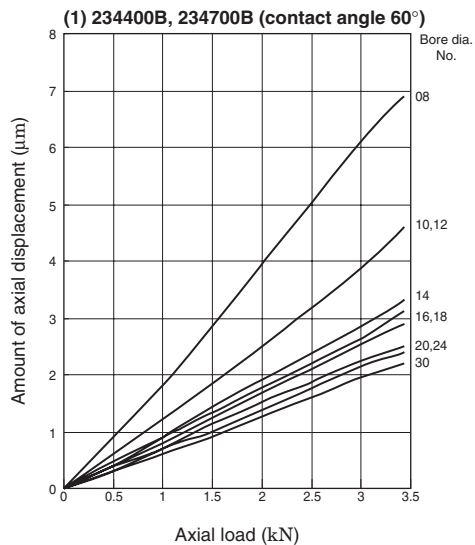
Table 3 ACT 0 series angular contact ball bearing outside diameter tolerance Unit : μm

| Nominal outside diameter <i>D</i> (mm) | | Single outside diameter deviation Δ_{Ds} | |
|--|-------|---|-------|
| over | up to | upper | lower |
| 50 | 80 | -32 | -47 |
| 80 | 120 | -39 | -56 |
| 120 | 150 | -44 | -66 |
| 150 | 180 | -44 | -68 |
| 180 | 250 | -51 | -79 |
| 250 | 315 | -56 | -89 |

[Remark] Refer to JIS B 1514 "radial bearing tolerance" class 4 and class 5 (pp. A 54 to A 57, Table 7-3) for the accuracy of dimensions other than outside diameter and for running accuracy.

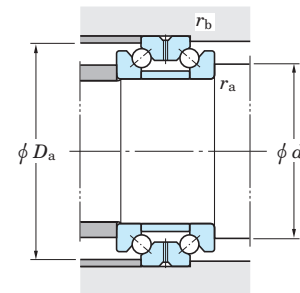
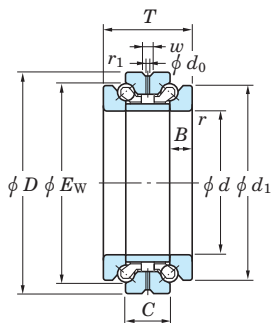
[Reference] Axial load and axial displacement

The relationship between axial loading and the axial displacement of double direction angular contact thrust ball bearings and ACT type angular contact ball bearings is shown below :



Double direction angular contact thrust ball bearings

d 25 ~ 105 mm

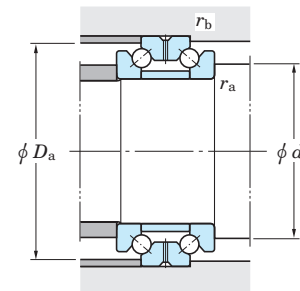
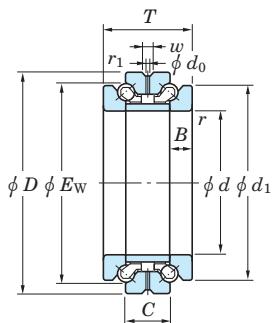


| d Small bore type Large bore type | Boundary dimensions (mm) | | | | | | Basic load ratings (kN) | | Limiting speeds (min ⁻¹) | | Bearing No. | | Dimensions (mm) | | | | | Mounting dimensions (mm) | | | | Amount of grease fill (cm ³ /row) | | (Refer.) Mass (kg) | |
|---|--------------------------|-----|----|-------------------|---------------------|----------------|-------------------------|-------------|--------------------------------------|-----------------|-----------------|------------------------------|-----------------|------|----------------|---|---------------------|--------------------------|---------------------|---------------------|-----------------|--|-----------------|--------------------|--|
| | D | T | C | r _{min.} | r _{1 min.} | C _a | C _{0a} | Grease lub. | Oil lub. | Small bore type | Large bore type | E _w ¹⁾ | d ₁ | B | d ₀ | w | d _{a min.} | D _{a max.} | r _{a max.} | r _{b max.} | Small bore type | Large bore type | Small bore type | Large bore type | |
| 25 | — | 47 | 28 | 14 | 0.6 | 0.3 | 13.2 | 19.9 | 7 700 | 11 000 | 234405B | — | 41.3 | 40 | 7 | 2 | 4.5 | 33 | 44 | 0.6 | 0.3 | 0.18 ~ 0.26 | 0.194 | — | |
| 30 | 32 | 55 | 32 | 16 | 1 | 0.6 | 14.0 | 23.6 | 6 700 | 9 500 | 234406B | 234706B | 48.5 | 47 | 8 | 2 | 4.5 | 40 | 50.5 | 1 | 0.6 | 0.30 ~ 0.45 | 0.296 | 0.272 | |
| 35 | 37 | 62 | 34 | 17 | 1 | 0.6 | 20.8 | 34.8 | 6 100 | 8 700 | 234407B | 234707B | 55 | 53 | 8.5 | 2 | 4.5 | 45.5 | 57.5 | 1 | 0.6 | 0.40 ~ 0.60 | 0.388 | 0.357 | |
| 40 | 42 | 68 | 36 | 18 | 1 | 0.6 | 23.9 | 41.7 | 5 700 | 8 100 | 234408B | 234708B | 61 | 58.5 | 9 | 2 | 4.5 | 50 | 63.5 | 1 | 0.6 | 0.50 ~ 0.75 | 0.475 | 0.437 | |
| 45 | 47 | 75 | 38 | 19 | 1 | 0.6 | 26.0 | 50.1 | 5 200 | 7 500 | 234409B | 234709B | 67.5 | 65 | 9.5 | 2 | 4.5 | 56.5 | 70.5 | 1 | 0.6 | 0.65 ~ 0.98 | 0.602 | 0.554 | |
| 50 | 52 | 80 | 38 | 19 | 1 | 0.6 | 26.8 | 54.4 | 5 100 | 7 300 | 234410B | 234710B | 72.5 | 70 | 9.5 | 2 | 4.5 | 61.5 | 75.5 | 1 | 0.6 | 0.70 ~ 1.1 | 0.654 | 0.602 | |
| 55 | 57 | 90 | 44 | 22 | 1.1 | 0.6 | 37.2 | 71.7 | 4 400 | 6 400 | 234411B | 234711B | 81 | 78 | 11 | 4 | 8 | 67.5 | 84 | 1 | 0.6 | 1.0 ~ 1.5 | 0.978 | 0.900 | |
| 60 | 62 | 95 | 44 | 22 | 1.1 | 0.6 | 37.6 | 75.2 | 4 300 | 6 200 | 234412B | 234712B | 86.1 | 83 | 11 | 4 | 8 | 72.5 | 89 | 1 | 0.6 | 1.1 ~ 1.7 | 1.04 | 0.957 | |
| 65 | 67 | 100 | 44 | 22 | 1.1 | 0.6 | 39.0 | 81.8 | 4 200 | 6 000 | 234413B | 234713B | 91 | 88 | 11 | 4 | 8 | 77.5 | 94 | 1 | 0.6 | 1.2 ~ 1.7 | 1.11 | 1.02 | |
| 70 | 73 | 110 | 48 | 24 | 1.1 | 0.6 | 47.5 | 103 | 3 800 | 5 500 | 234414B | 234714B | 100 | 97 | 12 | 4 | 8 | 85 | 104 | 1 | 0.6 | 1.7 ~ 2.5 | 1.52 | 1.40 | |
| 75 | 78 | 115 | 48 | 24 | 1.1 | 0.6 | 49.1 | 111 | 3 700 | 5 300 | 234415B | 234715B | 105 | 102 | 12 | 4 | 8 | 90 | 109 | 1 | 0.6 | 1.8 ~ 2.6 | 1.62 | 1.49 | |
| 80 | 83 | 125 | 54 | 27 | 1.1 | 0.6 | 57.6 | 132 | 3 400 | 4 800 | 234416B | 234716B | 113 | 110 | 13.5 | 4 | 8 | 96.5 | 119 | 1 | 0.6 | 2.4 ~ 3.6 | 2.19 | 2.03 | |
| 85 | 88 | 130 | 54 | 27 | 1.1 | 0.6 | 58.2 | 137 | 3 300 | 4 700 | 234417B | 234717B | 118 | 115 | 13.5 | 4 | 8 | 102 | 124 | 1 | 0.6 | 2.5 ~ 3.8 | 2.30 | 2.12 | |
| 90 | 93 | 140 | 60 | 30 | 1.5 | 1 | 67.4 | 160 | 3 000 | 4 300 | 234418B | 234718B | 127 | 123 | 15 | 4 | 8 | 109 | 133.5 | 1.5 | 1 | 3.3 ~ 4.9 | 3.03 | 2.79 | |
| 95 | 98 | 145 | 60 | 30 | 1.5 | 1 | 68.0 | 166 | 3 000 | 4 200 | 234419B | 234719B | 132 | 128 | 15 | 4 | 8 | 114 | 138.5 | 1.5 | 1 | 3.4 ~ 5.0 | 3.17 | 2.92 | |
| 100 | — | 140 | 48 | 24 | 1.1 | 0.6 | 52.2 | 135 | 2 800 | 3 800 | 239420B | — | 131 | 126 | 12 | 4 | 8 | 114 | 134 | 1 | 0.6 | 3.1 ~ 4.6 | 2.08 | — | |
| | 103 | 150 | 60 | 30 | 1.5 | 1 | 68.7 | 172 | 2 900 | 4 100 | 234420B | 234720B | 137 | 133 | 15 | 4 | 8 | 119 | 143.5 | 1.5 | 1 | 3.4 ~ 5.1 | 3.33 | 3.06 | |
| 105 | — | 145 | 48 | 24 | 1.1 | 0.6 | 53.6 | 143 | 2 700 | 3 800 | 239421B | — | 136 | 131 | 12 | 4 | 8 | 119 | 139 | 1 | 0.6 | 3.1 ~ 4.6 | 2.16 | — | |
| | 109 | 160 | 66 | 33 | 2 | 1 | 78.8 | 199 | 2 700 | 3 800 | 234421B | 234721B | 146 | 142 | 16.5 | 6 | 12 | 127 | 152 | 2 | 1 | 4.7 ~ 7.1 | 4.15 | 3.82 | |

[Note] 1) The dimension E_w is used as a reference for the ball set outside diameter.

Double direction angular contact thrust ball bearings

d 110 ~ (240) mm

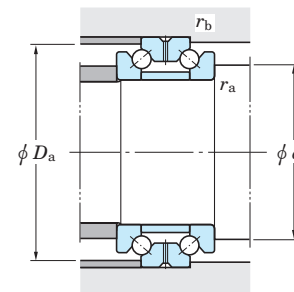
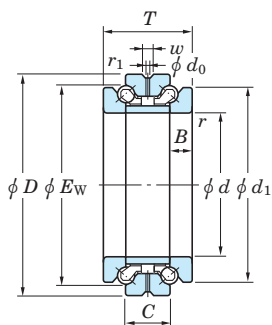


| d | Boundary dimensions (mm) | | | | | | Basic load ratings (kN) | | Limiting speeds (min ⁻¹) | | Bearing No. | | Dimensions (mm) | | | | | Mounting dimensions (mm) | | | | Amount of grease fill (cm ³ /row) | | (Refer.) Mass (kg) | |
|-----|--------------------------|-----------------|-----|----|-----|--------|-------------------------|-----|--------------------------------------|-------------|-------------|-----------------|-----------------|------------------|------|----|----|--------------------------|---------|---------|---------|--|--|--------------------|-----------------|
| | Small bore type | Large bore type | D | T | C | r min. | r1 min. | Ca | Coa | Grease lub. | Oil lub. | Small bore type | Large bore type | Ew ¹⁾ | d1 | B | d0 | w | da min. | Da max. | ra max. | rb max. | | | Small bore type |
| 110 | — | 150 | 48 | 24 | 1.1 | 0.6 | 53.9 | 148 | 2 700 | 3 700 | 239422B | — | 141 | 136 | 12 | 4 | 8 | 124 | 144 | 1 | 0.6 | 3.0 ~ 4.5 | | 2.25 | — |
| | 114 | 170 | 72 | 36 | 2 | 1 | 95.9 | 235 | 2 500 | 3 500 | 234422B | 234722B | 155 | 150 | 18 | 6 | 12 | 133 | 162 | 2 | 1 | 5.9 ~ 8.8 | | 5.38 | 4.95 |
| 120 | 124 | 165 | 54 | 27 | 1.1 | 0.6 | 64.9 | 185 | 2 400 | 3 300 | 239424B | 239724B | 154.5 | 150 | 13.5 | 4 | 8 | 138 | 160 | 1 | 0.6 | 4.2 ~ 6.3 | | 3.12 | 2.81 |
| | 124 | 180 | 72 | 36 | 2 | 1 | 98.3 | 252 | 2 400 | 3 400 | 234424B | 234724B | 165 | 160 | 18 | 6 | 12 | 143 | 172 | 2 | 1 | 6.4 ~ 9.5 | | 5.77 | 5.31 |
| 130 | 134 | 180 | 60 | 30 | 1.5 | 1 | 75.0 | 217 | 2 100 | 3 000 | 239426B | 239726B | 168 | 163 | 15 | 4 | 8 | 150 | 172 | 1.5 | 1 | 5.8 ~ 8.7 | | 4.19 | 3.77 |
| | 135 | 200 | 84 | 42 | 2 | 1 | 139 | 340 | 2 100 | 3 000 | 234426B | 234726B | 182 | 177 | 21 | 6 | 12 | 155 | 192 | 2 | 1 | 9.3 ~ 13.9 | | 8.63 | 7.94 |
| 140 | 144 | 190 | 60 | 30 | 1.5 | 1 | 75.9 | 229 | 2 100 | 2 900 | 239428B | 239728B | 178 | 173 | 15 | 4 | 8 | 160 | 182 | 1.5 | 1 | 6.3 ~ 9.4 | | 4.47 | 4.03 |
| | 145 | 210 | 84 | 42 | 2 | 1 | 144 | 366 | 2 000 | 2 900 | 234428B | 234728B | 192 | 187 | 21 | 6 | 12 | 165 | 202 | 2 | 1 | 9.7 ~ 14.5 | | 9.18 | 8.44 |
| 150 | 155 | 210 | 72 | 36 | 2 | 1 | 107 | 312 | 1 800 | 2 500 | 239430B | 239730B | 196.5 | 190 | 18 | 4 | 8 | 174 | 200 | 2 | 1 | 9.6 ~ 14.4 | | 7.01 | 6.31 |
| | 155 | 225 | 90 | 45 | 2.1 | 1.1 | 147 | 394 | 1 900 | 2 700 | 234430B | 234730B | 206 | 200 | 22.5 | 6 | 14 | 178 | 215 | 2 | 1 | 12.0 ~ 17.9 | | 11.3 | 10.4 |
| 160 | 165 | 220 | 72 | 36 | 2 | 1 | 109 | 329 | 1 700 | 2 400 | 239432B | 239732B | 206.5 | 200 | 18 | 4 | 8 | 184 | 210 | 2 | 1 | 9.3 ~ 14.0 | | 7.40 | 6.66 |
| | 165 | 240 | 96 | 48 | 2.1 | 1.1 | 173 | 460 | 1 700 | 2 500 | 234432B | 234732B | 219 | 212 | 24 | 6 | 14 | 189 | 230 | 2 | 1 | 14.1 ~ 21.1 | | 13.3 | 12.2 |
| 170 | 175 | 230 | 72 | 36 | 2 | 1 | 111 | 346 | 1 700 | 2 300 | 239434B | 239734B | 216.5 | 210 | 18 | 4 | 8 | 194 | 220 | 2 | 1 | 10.8 ~ 16.2 | | 7.79 | 7.01 |
| | 176 | 260 | 108 | 54 | 2.1 | 1.1 | 203 | 547 | 1 600 | 2 200 | 234434B | 234734B | 236 | 230 | 27 | 6 | 14 | 203 | 250 | 2 | 1 | 18.6 ~ 27.8 | | 18.1 | 16.6 |
| 180 | 186 | 250 | 84 | 42 | 2 | 1 | 157 | 460 | 1 500 | 2 100 | 239436B | 239736B | 234 | 227 | 21 | 4 | 8 | 207 | 240 | 2 | 1 | 14.9 ~ 22.3 | | 11.3 | 10.2 |
| | 187 | 280 | 120 | 60 | 2.1 | 1.1 | 234 | 642 | 1 400 | 2 000 | 234436B | 234736B | 255 | 248 | 30 | 8 | 16 | 219 | 270 | 2 | 1 | 23.4 ~ 35.1 | | 24.9 | 22.9 |
| 190 | 196 | 260 | 84 | 42 | 2 | 1 | 157 | 474 | 1 400 | 2 000 | 239438B | 239738B | 242 | 237 | 21 | 4 | 8 | 217 | 250 | 2 | 1 | 15.7 ~ 23.5 | | 11.9 | 10.7 |
| | 197 | 290 | 120 | 60 | 2.1 | 1.1 | 237 | 665 | 1 400 | 1 900 | 234438B | 234738B | 265 | 258 | 30 | 8 | 16 | 229 | 280 | 2 | 1 | 24.7 ~ 37.1 | | 25.0 | 23.0 |
| 200 | 207 | 280 | 96 | 48 | 2.1 | 1.1 | 185 | 557 | 1 300 | 1 800 | 239440B | 239740B | 259 | 252 | 24 | 4 | 8 | 231 | 268 | 2 | 1 | 23.5 ~ 35.2 | | 16.6 | 14.9 |
| | 207 | 310 | 132 | 66 | 2.1 | 1.1 | 279 | 771 | 1 200 | 1 800 | 234440B | 234740B | 282 | 274 | 33 | 8 | 16 | 243 | 300 | 2 | 1 | 31.8 ~ 47.7 | | 32.1 | 29.5 |
| 220 | 227 | 300 | 96 | 48 | 2.1 | 1.1 | 191 | 606 | 1 200 | 1 700 | 239444B | 239744B | 280 | 272 | 24 | 6 | 12 | 251 | 288 | 2 | 1 | 24.7 ~ 37.0 | | 18.0 | 16.2 |
| | 228 | 340 | 144 | 72 | 3 | 1.1 | 334 | 939 | 1 100 | 1 600 | 234444B | 234744B | 310 | 304 | 36 | 12 | 22 | 267 | 330 | 2.5 | 1 | 43.0 ~ 64.4 | | 42.0 | 38.6 |
| 240 | 247 | 320 | 96 | 48 | 2.1 | 1.1 | 196 | 655 | 1 200 | 1 600 | 239448B | 239748B | 299 | 292 | 24 | 6 | 12 | 271 | 308 | 2 | 1 | 26.4 ~ 39.5 | | 19.1 | 17.2 |

[Note] 1) The dimension Ew is used as a reference for the ball set outside diameter.

Double direction angular contact thrust ball bearings

d (240) ~ 340 mm

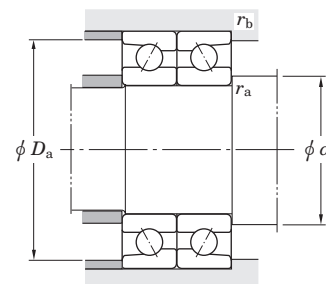
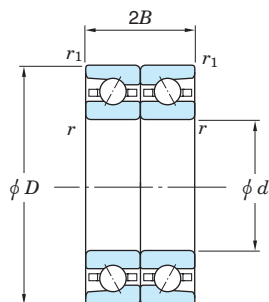


| d | Boundary dimensions (mm) | | | | | | Basic load ratings (kN) | | Limiting speeds (min ⁻¹) | | Bearing No. | | Dimensions (mm) | | | | | Mounting dimensions (mm) | | | | (Refer.) Mass (kg) | | |
|------------|--------------------------|-----------------|-----|-----|-----|----------|-------------------------|-------|--------------------------------------|-------------|----------------|-----------------|-----------------|---------------------|-------|-----|-------|--------------------------|------------|------------|------------|--------------------|--|-----------------|
| | Small bore type | Large bore type | D | T | C | r min. | r_1 min. | C_a | C_{0a} | Grease lub. | Oil lub. | Small bore type | Large bore type | E_w ¹⁾ | d_1 | B | d_0 | w | d_a min. | D_a max. | r_a max. | r_b max. | Amount of grease fill (cm ³ /row) | Small bore type |
| 240 | 248 | 360 | 144 | 72 | 3 | 1.1 | 342 | 1 010 | 1 100 | 1 500 | 234448B | 234748B | 330 | 322 | 36 | 12 | 22 | 287 | 350 | 2.5 | 1 | 47.7 ~ 71.6 | 45.0 | 41.4 |
| | 269 | 400 | 164 | 82 | 4 | 1.5 | 406 | 1 270 | 920 | 1 300 | | | | | | | | | | | | | | |
| 260 | 269 | 360 | 120 | 60 | 2.1 | 1.1 | 261 | 869 | 950 | 1 300 | 239452B | 239752B | 335 | 328 | 30 | 6 | 12 | 299 | 344 | 2 | 1 | 43.7 ~ 65.5 | 33.5 | 30.2 |
| | 289 | 420 | 164 | 82 | 4 | 1.5 | 417 | 1 360 | 880 | 1 300 | | | | | | | | | | | | | | |
| 280 | 289 | 380 | 120 | 60 | 2.1 | 1.1 | 265 | 915 | 910 | 1 300 | 239456B | 239756B | 356 | 348 | 30 | 6 | 14 | 319 | 363 | 2 | 1 | 49.1 ~ 73.7 | 35.7 | 32.1 |
| | 289 | 420 | 164 | 82 | 4 | 1.5 | 417 | 1 360 | 880 | 1 300 | | | | | | | | | | | | | | |
| 300 | 310 | 420 | 144 | 72 | 3 | 1.1 | 352 | 1 150 | 770 | 1 100 | 239460B | 239760B | 391 | 384 | 36 | 6 | 14 | 349 | 398 | 2.5 | 1 | 71.5 ~ 107 | 56.1 | 50.5 |
| | 310 | 460 | 190 | 95 | 4 | 1.5 | 476 | 1 630 | 760 | 1 100 | | | | | | | | | | | | | | |
| 320 | 330 | 440 | 144 | 72 | 3 | 1.1 | 361 | 1 220 | 740 | 1 000 | 239464B | 239764B | 408 | 404 | 36 | 6 | 14 | 369 | 419 | 2.5 | 1 | 81.5 ~ 122 | 59.2 | 53.3 |
| | 330 | 480 | 190 | 95 | 4 | 1.5 | 479 | 1 680 | 730 | 1 000 | | | | | | | | | | | | | | |
| 340 | — | 460 | 144 | 72 | 3 | 1.1 | 368 | 1 290 | 710 | 980 | 239468B | — | 428 | 424 | 36 | 8 | 16 | 389 | 438 | 2.5 | 1 | 84.5 ~ 127 | 63.1 | — |

[Note] 1) The dimension E_w is used as a reference for the ball set outside diameter.

Matched pair angular contact ball bearings

d 30 ~ 85 mm

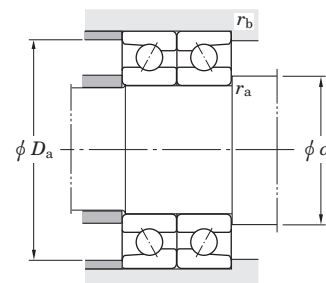
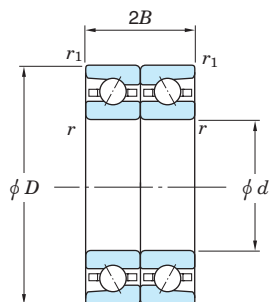


| d | Boundary dimensions (mm) | | | | Basic load ratings (kN) | | Limiting speeds (min ⁻¹) | | Bearing No. ¹⁾ | Permissible axial loads (kN) (static) | Mounting dimensions (mm) | | | | Envelope volume (cm ³ /row) | (Refer.) Mass (kg/row) |
|-----|--------------------------|------|------------|--------------|-------------------------|----------|--------------------------------------|----------|---------------------------|---------------------------------------|--------------------------|------------|------------|------------|--|------------------------|
| | D | $2B$ | $r_{min.}$ | $r_{1 min.}$ | C_a | C_{0a} | Grease lub. | Oil lub. | | | d_a min. | D_a max. | r_a max. | r_b max. | | |
| 30 | 55 | 24 | 1 | 0.6 | 15.1 | 26.6 | 15 000 | 20 000 | ACT006DB ACT006BDB | 2.92 | 41 | 50 | 1 | 0.6 | 3.0 | 0.235 |
| | 55 | 24 | 1 | 0.6 | 18.1 | 30.5 | 13 000 | 18 000 | | 9.86 | 41 | 50 | 1 | 0.6 | 3.0 | 0.235 |
| 35 | 62 | 25.5 | 1 | 0.6 | 15.8 | 30.2 | 13 000 | 17 000 | ACT007DB ACT007BDB | 3.25 | 46 | 57 | 1 | 0.6 | 4.2 | 0.312 |
| | 62 | 25.5 | 1 | 0.6 | 18.9 | 34.5 | 12 000 | 15 000 | | 10.9 | 46 | 57 | 1 | 0.6 | 4.2 | 0.312 |
| 40 | 68 | 27 | 1 | 0.6 | 16.5 | 33.8 | 12 000 | 15 000 | ACT008DB ACT008BDB | 3.58 | 51 | 63 | 1 | 0.6 | 5.0 | 0.391 |
| | 68 | 27 | 1 | 0.6 | 19.6 | 37.7 | 11 000 | 14 000 | | 12.1 | 51 | 63 | 1 | 0.6 | 5.0 | 0.391 |
| 45 | 75 | 28.5 | 1 | 0.6 | 18.4 | 38.6 | 11 000 | 14 000 | ACT009DB ACT009BDB | 3.84 | 56 | 70 | 1 | 0.6 | 5.7 | 0.536 |
| | 75 | 28.5 | 1 | 0.6 | 21.8 | 42.7 | 9 500 | 13 000 | | 13.2 | 56 | 70 | 1 | 0.6 | 5.7 | 0.536 |
| 50 | 80 | 28.5 | 1 | 0.6 | 19.1 | 41.7 | 9 700 | 13 000 | ACT010DB ACT010BDB | 4.20 | 61 | 75 | 1 | 0.6 | 8.0 | 0.551 |
| | 80 | 28.5 | 1 | 0.6 | 22.7 | 46.3 | 8 800 | 12 000 | | 14.5 | 61 | 75 | 1 | 0.6 | 8.0 | 0.551 |
| 55 | 90 | 33 | 1.1 | 0.6 | 23.7 | 52.8 | 8 700 | 11 000 | ACT011DB ACT011BDB | 5.63 | 68 | 84 | 1 | 0.6 | 12 | 0.831 |
| | 90 | 33 | 1.1 | 0.6 | 28.1 | 58.6 | 7 900 | 10 000 | | 19.0 | 68 | 84 | 1 | 0.6 | 12 | 0.831 |
| 60 | 95 | 33 | 1.1 | 0.6 | 24.6 | 56.9 | 8 100 | 11 000 | ACT012DB ACT012BDB | 6.11 | 73 | 89 | 1 | 0.6 | 13 | 0.887 |
| | 95 | 33 | 1.1 | 0.6 | 29.1 | 63.1 | 7 400 | 9 700 | | 20.6 | 73 | 89 | 1 | 0.6 | 13 | 0.887 |
| 65 | 100 | 33 | 1.1 | 0.6 | 25.4 | 60.9 | 7 600 | 10 000 | ACT013DB ACT013BDB | 6.59 | 78 | 94 | 1 | 0.6 | 14 | 0.943 |
| | 100 | 33 | 1.1 | 0.6 | 30.1 | 67.6 | 6 900 | 9 000 | | 22.2 | 78 | 94 | 1 | 0.6 | 14 | 0.945 |
| 70 | 110 | 36 | 1.1 | 0.6 | 34.8 | 82.1 | 7 000 | 9 200 | ACT014DB ACT014BDB | 8.39 | 85 | 104 | 1 | 0.6 | 16 | 1.33 |
| | 110 | 36 | 1.1 | 0.6 | 41.3 | 91.1 | 6 300 | 8 300 | | 28.8 | 85 | 104 | 1 | 0.6 | 16 | 1.33 |
| 75 | 115 | 36 | 1.1 | 0.6 | 35.3 | 84.9 | 6 600 | 8 700 | ACT015DB ACT015BDB | 8.74 | 90 | 109 | 1 | 0.6 | 20 | 1.35 |
| | 115 | 36 | 1.1 | 0.6 | 41.8 | 94.2 | 6 000 | 7 800 | | 30.0 | 90 | 109 | 1 | 0.6 | 20 | 1.35 |
| 80 | 125 | 40.5 | 1.1 | 0.6 | 41.3 | 101 | 6 100 | 8 000 | ACT016DB ACT016BDB | 10.8 | 97 | 118 | 1 | 0.6 | 27 | 1.86 |
| | 125 | 40.5 | 1.1 | 0.6 | 49.1 | 112 | 5 500 | 7 200 | | 36.6 | 97 | 118 | 1 | 0.6 | 27 | 1.86 |
| 85 | 130 | 40.5 | 1.1 | 0.6 | 41.9 | 105 | 5 800 | 7 600 | ACT017DB ACT017BDB | 11.2 | 102 | 123 | 1 | 0.6 | 29 | 1.94 |
| | 130 | 40.5 | 1.1 | 0.6 | 49.7 | 116 | 5 200 | 6 900 | | 38.0 | 102 | 123 | 1 | 0.6 | 29 | 1.94 |

[Note] 1) B and no indication before matching code in bearing numbers represent nominal contact angle of 40° and 30° respectively.

Matched pair angular contact ball bearings

d 90 ~ 180 mm

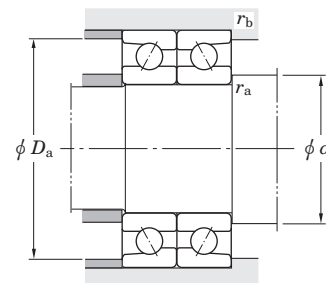
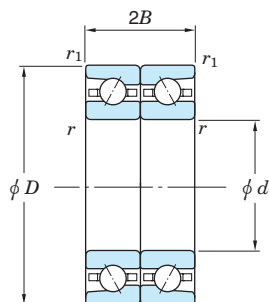


| d | Boundary dimensions (mm) | | | | Basic load ratings (kN) | | Limiting speeds (min ⁻¹) | | Bearing No. ¹⁾ | Permissible axial loads (kN) (static) | Mounting dimensions (mm) | | | | Envelope volume (cm ³ /row) | (Refer.) Mass (kg/row) |
|-----|--------------------------|------|----------|------------|-------------------------|----------|--------------------------------------|----------|---------------------------|---------------------------------------|--------------------------|------------|------------|------------|--|------------------------|
| | D | $2B$ | r min. | r_1 min. | C_a | C_{0a} | Grease lub. | Oil lub. | | | d_a min. | D_a max. | r_a max. | r_b max. | | |
| 90 | 140 | 45 | 1.5 | 1 | 55.0 | 138 | 5 400 | 7 100 | ACT018DB ACT018BDB | 14.2 48.7 | 109 | 132 | 1.5 | 1 | 39 | 2.55 |
| | 140 | 45 | 1.5 | 1 | 65.3 | 153 | 4 900 | 6 400 | | | | | | | | |
| 95 | 145 | 45 | 1.5 | 1 | 55.8 | 143 | 5 200 | 6 800 | ACT019DB ACT019BDB | 14.8 50.6 | 114 | 137 | 1.5 | 1 | 40 | 2.62 |
| | 145 | 45 | 1.5 | 1 | 66.3 | 159 | 4 700 | 6 200 | | | | | | | | |
| 100 | 150 | 45 | 1.5 | 1 | 56.6 | 148 | 5 000 | 6 500 | ACT020DB ACT020BDB | 15.3 52.5 | 119 | 143 | 1.5 | 1 | 42 | 2.77 |
| | 150 | 45 | 1.5 | 1 | 67.2 | 164 | 4 500 | 5 900 | | | | | | | | |
| 105 | 160 | 49.5 | 2 | 1 | 64.4 | 170 | 4 700 | 6 100 | ACT021DB ACT021BDB | 18.2 63.2 | 125 | 151 | 2 | 1 | 50 | 3.61 |
| | 160 | 49.5 | 2 | 1 | 76.4 | 188 | 4 200 | 5 500 | | | | | | | | |
| 110 | 170 | 54 | 2 | 1 | 72.4 | 193 | 4 400 | 5 800 | ACT022DB ACT022BDB | 19.6 71.3 | 132 | 160 | 2 | 1 | 64 | 4.52 |
| | 170 | 54 | 2 | 1 | 86.0 | 214 | 4 000 | 5 200 | | | | | | | | |
| 120 | 180 | 54 | 2 | 1 | 74.6 | 206 | 4 100 | 5 400 | ACT024DB ACT024BDB | 21.0 76.4 | 142 | 170 | 2 | 1 | 69 | 4.83 |
| | 180 | 54 | 2 | 1 | 88.4 | 228 | 3 700 | 4 900 | | | | | | | | |
| 130 | 200 | 63 | 2 | 1 | 94.2 | 253 | 3 700 | 4 800 | ACT026DB ACT026BDB | 25.9 93.0 | 156 | 188 | 2 | 1 | 106 | 7.21 |
| | 200 | 63 | 2 | 1 | 112 | 281 | 3 300 | 4 400 | | | | | | | | |
| 140 | 210 | 63 | 2 | 1 | 102 | 290 | 3 400 | 4 500 | ACT028DB ACT028BDB | 29.9 107 | 166 | 198 | 2 | 1 | 110 | 7.69 |
| | 210 | 63 | 2 | 1 | 121 | 323 | 3 100 | 4 100 | | | | | | | | |
| 150 | 225 | 67.5 | 2.1 | 1.1 | 120 | 344 | 3 200 | 4 200 | ACT030DB ACT030BDB | 34.7 125 | 178 | 213 | 2 | 1 | 138 | 9.39 |
| | 225 | 67.5 | 2.1 | 1.1 | 143 | 382 | 2 900 | 3 800 | | | | | | | | |
| 160 | 240 | 72 | 2.1 | 1.1 | 130 | 377 | 3 000 | 3 900 | ACT032DB ACT032BDB | 39.1 139 | 190 | 227 | 2 | 1 | 167 | 11.4 |
| | 240 | 72 | 2.1 | 1.1 | 155 | 419 | 2 700 | 3 500 | | | | | | | | |
| 170 | 260 | 81 | 2.1 | 1.1 | 153 | 449 | 2 700 | 3 600 | ACT034DB ACT034BDB | 45.7 163 | 204 | 245 | 2 | 1 | 221 | 15.7 |
| | 260 | 81 | 2.1 | 1.1 | 181 | 499 | 2 500 | 3 200 | | | | | | | | |
| 180 | 280 | 90 | 2.1 | 1.1 | 173 | 510 | 2 500 | 3 300 | ACT036DB ACT036BDB | 54.0 183 | 216 | 264 | 2 | 1 | 313 | 22.2 |
| | 280 | 90 | 2.1 | 1.1 | 205 | 566 | 2 300 | 3 000 | | | | | | | | |

[Note] 1) B and no indication before matching code in bearing numbers represent nominal contact angle of 40° and 30° respectively.

Matched pair angular contact ball bearings

d 190 ~ 320 mm

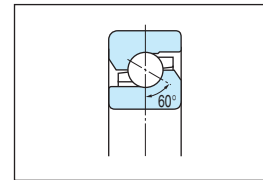


| d | Boundary dimensions (mm) | | | | Basic load ratings (kN) | | Limiting speeds (min ⁻¹) | | Bearing No. ¹⁾ | Permissible axial loads (kN) (static) | Mounting dimensions (mm) | | | | Envelope volume (cm ³ /row) | (Refer.) Mass (kg/row) |
|-----|--------------------------|-------|------------|--------------|-------------------------|----------|--------------------------------------|----------|---------------------------|---------------------------------------|--------------------------|------------|------------|------------|--|------------------------|
| | D | $2B$ | $r_{min.}$ | $r_{1 min.}$ | C_a | C_{0a} | Grease lub. | Oil lub. | | | d_a min. | D_a max. | r_a max. | r_b max. | | |
| 190 | 290 | 90 | 2.1 | 1.1 | 179 | 544 | 2 400 | 3 100 | ACT038DB ACT038BDB | 57.9 | 226 | 275 | 2 | 1 | 329 | 23.0 |
| | 290 | 90 | 2.1 | 1.1 | 213 | 604 | 2 200 | 2 800 | | 196 | 226 | 275 | 2 | 1 | 329 | 23.0 |
| 200 | 310 | 99 | 2.1 | 1.1 | 215 | 633 | 2 200 | 2 900 | ACT040DB ACT040BDB | 64.8 | 240 | 293 | 2 | 1 | 421 | 29.5 |
| | 310 | 99 | 2.1 | 1.1 | 255 | 702 | 2 000 | 2 600 | | 229 | 240 | 293 | 2 | 1 | 421 | 29.5 |
| 220 | 340 | 108 | 3 | 1.1 | 252 | 773 | 2 000 | 2 600 | ACT044DB ACT044BDB | 81.9 | 263 | 321 | 2.5 | 1 | 566 | 38.5 |
| | 340 | 108 | 3 | 1.1 | 299 | 858 | 1 800 | 2 400 | | 278 | 263 | 321 | 2.5 | 1 | 566 | 38.5 |
| 240 | 360 | 108 | 3 | 1.1 | 260 | 823 | 1 800 | 2 400 | ACT048DB ACT048BDB | 87.9 | 283 | 343 | 2.5 | 1 | 605 | 41.1 |
| | 360 | 108 | 3 | 1.1 | 308 | 914 | 1 600 | 2 200 | | 298 | 283 | 343 | 2.5 | 1 | 605 | 41.1 |
| 260 | 400 | 123 | 4 | 1.5 | 321 | 1 090 | 1 600 | 2 100 | ACT052DB ACT052BDB | 111 | 310 | 379 | 3 | 1.5 | 866 | 60.5 |
| | 400 | 123 | 4 | 1.5 | 381 | 1 210 | 1 500 | 1 900 | | 393 | 310 | 379 | 3 | 1.5 | 866 | 60.5 |
| 280 | 420 | 123 | 4 | 1.5 | 332 | 1 160 | 1 500 | 2 000 | ACT056DB ACT056BDB | 119 | 330 | 401 | 3 | 1.5 | 915 | 64.1 |
| | 420 | 123 | 4 | 1.5 | 393 | 1 290 | 1 400 | 1 800 | | 421 | 330 | 401 | 3 | 1.5 | 915 | 64.1 |
| 300 | 460 | 142.5 | 4 | 1.5 | 375 | 1 370 | 1 300 | 1 800 | ACT060DB ACT060BDB | 143 | 358 | 435 | 3 | 1.5 | 1 320 | 92.1 |
| | 460 | 142.5 | 4 | 1.5 | 444 | 1 530 | 1 200 | 1 600 | | 501 | 358 | 435 | 3 | 1.5 | 1 320 | 92.1 |
| 320 | 480 | 142.5 | 4 | 1.5 | 378 | 1 420 | 1 200 | 1 600 | ACT064DB ACT064BDB | 148 | 378 | 457 | 3 | 1.5 | 1 400 | 96.9 |
| | 480 | 142.5 | 4 | 1.5 | 449 | 1 570 | 1 100 | 1 500 | | 518 | 378 | 457 | 3 | 1.5 | 1 400 | 96.9 |

[Note] 1) B and no indication before matching code in bearing numbers represent nominal contact angle of 40° and 30° respectively.

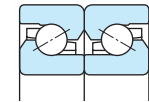
Precision ball screw support bearings and bearing units

■ Support bearings were developed to support precision ball screw shafts. They have the same structure as angular contact thrust ball bearings with a contact angle of 60°.



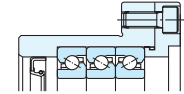
- Have a large axial load carrying capacity. Also able to carry a certain degree of radial load.
- Highly rigid in the axial direction.
- Starting torque is small.

Support bearings



Bore diameter 17 – 60 mm

Support bearing units



Bore diameter 17 – 40 mm

- Support bearing units consist of the bearings described above and a precisely processed housing. Units with a Koyo precision ball screw are also available.
- For details, refer to JTEKT separate catalog "Precision Ball and Roller Bearings for Machine Tools" (CAT. NO. B2005E).

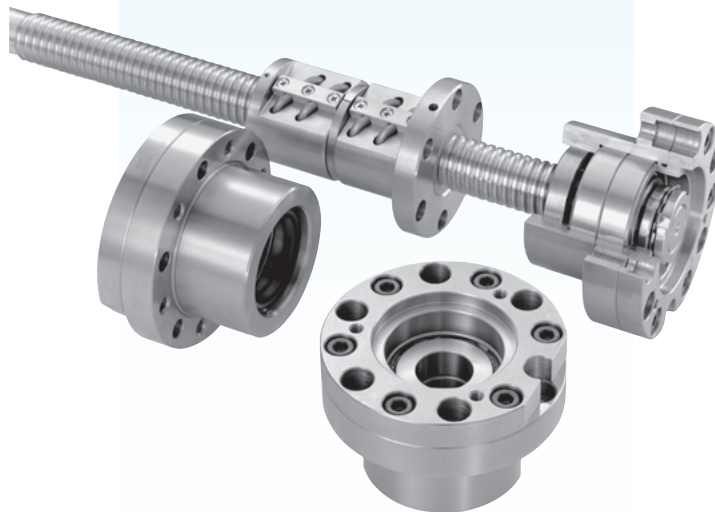


Table 1 Support bearing tolerance

(1) Inner ring Unit : μm

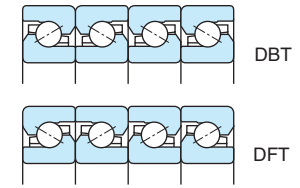
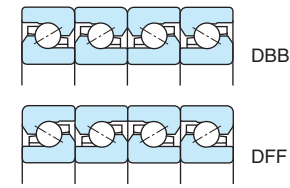
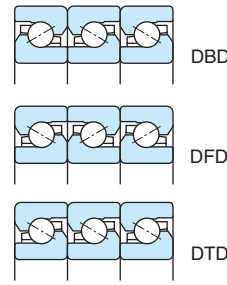
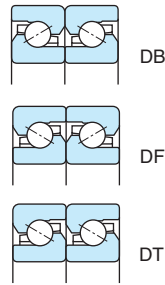
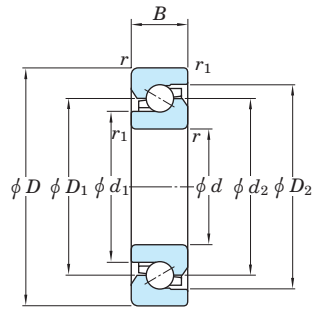
| Nominal bore diameter d (mm) | Single plane mean bore diameter deviation | | Single bore diameter deviation | | | | Single inner ring width deviation | | Inner ring width variation | | Radial runout of assembled bearing inner ring | | Perpendicularity of inner ring face with respect to the bore | | Assembled bearing inner ring face runout with raceway | | | | |
|--------------------------------------|---|----------|--------------------------------|----------|----------|----------|-----------------------------------|----------|----------------------------|----------|---|----------|--|----------|---|----------|---|---|---|
| | Δ_{dmp} | | Δ_{ds} | | | | Δ_{Bs} | | V_{Bs} | | K_{ia} | | S_d | | S_{ia} | | | | |
| | class 5Z | class 4Z | class 5Z | class 4Z | class 5Z | class 4Z | class 5Z | class 4Z | class 5Z | class 4Z | class 5Z | class 4Z | class 5Z | class 4Z | class 5Z | class 4Z | | | |
| over | up to | upper | lower | upper | lower | upper | lower | upper | lower | max. | max. | max. | max. | max. | max. | | | | |
| 10 | 18 | 0 | -5 | 0 | -4 | 0 | -5 | 0 | -4 | 0 | -80 | 5 | 2.5 | 4 | 2.5 | 7 | 3 | 5 | 3 |
| 18 | 30 | 0 | -6 | 0 | -5 | 0 | -6 | 0 | -5 | 0 | -120 | 5 | 2.5 | 4 | 3 | 8 | 4 | 5 | 3 |
| 30 | 50 | 0 | -8 | 0 | -6 | 0 | -8 | 0 | -6 | 0 | -120 | 5 | 3 | 5 | 4 | 8 | 4 | 6 | 3 |
| 50 | 80 | 0 | -9 | 0 | -7 | 0 | -9 | 0 | -7 | 0 | -150 | 6 | 4 | 5 | 4 | 8 | 5 | 7 | 4 |

(2) Outer ring Unit : μm

| Nominal outside diameter D (mm) | Single plane mean outside diameter deviation | | Single outside diameter deviation | | | | Single outer ring width deviation | | Outer ring width variation | | Radial runout of assembled bearing outer ring | | Perpendicularity of outer ring outside surface with respect to the face | | Assembled bearing outer ring face runout with raceway | | |
|---|--|----------|-----------------------------------|----------|----------|----------|-----------------------------------|----------|----------------------------|---|---|----------|---|----------|---|----------|--|
| | Δ_{Dmp} | | Δ_{Ds} | | | | Δ_{Cs} | | V_{Cs} | | K_{ea} | | S_D | | S_{ea} | | |
| | class 5Z | class 4Z | class 5Z | class 4Z | class 5Z | class 4Z | class 5Z | class 4Z | class 5Z | class 4Z | class 5Z | class 4Z | class 5Z | class 4Z | class 5Z | class 4Z | |
| over | up to | upper | lower | upper | lower | upper | lower | upper | lower | max. | max. | max. | max. | max. | max. | | |
| 30 | 50 | 0 | -7 | 0 | -6 | 0 | -7 | 0 | -6 | Equivalent to Δ_{Bs} tolerances of a bearing of the same d | 5 | 2.5 | 7 | 5 | 8 | 4 | Equivalent to S_{ia} tolerances of a bearing of the same d |
| 50 | 80 | 0 | -9 | 0 | -7 | 0 | -9 | 0 | -7 | | 6 | 3 | 8 | 5 | 8 | 4 | |
| 80 | 120 | 0 | -10 | 0 | -8 | 0 | -10 | 0 | -8 | | 8 | 4 | 10 | 6 | 9 | 5 | |

Precision ball screw support bearings

d 17 ~ 60 mm



| Boundary dimensions (mm) | | | | | Basic dynamic load rating ¹⁾ C_a (kN) | Max. axial loadings (kN) | | | Limiting speeds (min ⁻¹) | | Bearing No. ²⁾ | Envelope volume (cm ³ /row) | Dimensions (mm) | | | | Standard preload (kN) Matching types | | | Starting torque (mN·m) Matching types | | | Axial rigidity (N/μm) Matching types | | | (Refer.) Mass (kg/row) |
|--------------------------|-----|-----|-------------|---------------|---|--------------------------|------------|------------|--------------------------------------|----------|---------------------------|--|-----------------|-------|-------|-------|---|----------------|---------------|--|----------------|---------------|---|----------------|---------------|---------------------------|
| d | D | B | r min. | r_1 min. | | Single-row | Double-row | Triple-row | Grease lub. | Oil lub. | | | d_1 | d_2 | D_1 | D_2 | Two bearings | Three bearings | Four bearings | Two bearings | Three bearings | Four bearings | Two bearings | Three bearings | Four bearings | |
| 17 | 47 | 15 | 1 | 0.6 | 26.0 | 34.3 | 68.6 | 103 | 6 300 | 8 000 | SAC1747B | 3.7 | 25.5 | 33.7 | 33.5 | 41 | 2.15 | 2.92 | 4.30 | 140 | 180 | 280 | 695 | 1 030 | 1 390 | 0.13 |
| 20 | 47 | 15 | 1 | 0.6 | 26.0 | 34.3 | 68.6 | 103 | 6 300 | 8 000 | SAC2047B | 3.7 | 26.8 | 33.7 | 33.5 | 41 | 2.15 | 2.92 | 4.30 | 140 | 180 | 280 | 695 | 1 030 | 1 390 | 0.12 |
| 25 | 62 | 15 | 1 | 0.6 | 30.2 | 48.1 | 96.2 | 144 | 4 600 | 6 000 | SAC2562B | 4.9 | 38 | 46.2 | 46 | 53.5 | 3.04 | 4.13 | 6.08 | 200 | 260 | 400 | 970 | 1 440 | 1 940 | 0.24 |
| 30 | 62 | 15 | 1 | 0.6 | 30.2 | 48.1 | 96.2 | 144 | 4 600 | 6 000 | SAC3062B | 4.9 | 38 | 46.2 | 46 | 53.5 | 3.04 | 4.13 | 6.08 | 200 | 260 | 400 | 970 | 1 440 | 1 940 | 0.21 |
| 35 | 72 | 15 | 1 | 0.6 | 32.8 | 58.8 | 118 | 176 | 3 700 | 5 000 | SAC3572B | 6.2 | 48 | 56.3 | 55.9 | 63.5 | 3.73 | 5.07 | 7.46 | 240 | 320 | 480 | 1 180 | 1 760 | 2 360 | 0.29 |
| 40 | 72 | 15 | 1 | 0.6 | 32.8 | 58.8 | 118 | 176 | 3 700 | 4 800 | SAC4072B | 6.2 | 48 | 56.3 | 55.9 | 63.5 | 3.73 | 5.07 | 7.46 | 240 | 320 | 480 | 1 180 | 1 760 | 2 360 | 0.26 |
| | 90 | 20 | 1 | 0.6 | 65.4 | 122 | 244 | 366 | 3 100 | 4 000 | SAC4090B | 15 | 54.5 | 67.5 | 66.8 | 78.5 | 5.00 | 6.80 | 10.0 | 440 | 610 | 880 | 1 270 | 1 890 | 2 540 | 0.62 |
| 45 | 75 | 15 | 1 | 0.6 | 34.0 | 64.4 | 129 | 193 | 3 400 | 4 300 | SAC4575B | 6.9 | 54 | 61.7 | 61.5 | 69 | 3.89 | 5.29 | 7.78 | 250 | 330 | 500 | 1 270 | 1 890 | 2 540 | 0.25 |
| | 100 | 20 | 1 | 0.6 | 68.8 | 137 | 274 | 411 | 2 800 | 3 600 | SAC45100B | 16 | 61.5 | 74.2 | 74 | 85.5 | 5.95 | 8.09 | 11.9 | 540 | 730 | 1 080 | 1 450 | 2 150 | 2 900 | 0.79 |
| 50 | 100 | 20 | 1 | 0.6 | 70.3 | 144 | 288 | 432 | 2 700 | 3 400 | SAC50100B | 17 | 65.8 | 78.2 | 78 | 89.5 | 6.00 | 8.15 | 12.0 | 540 | 730 | 1 080 | 1 500 | 2 230 | 3 000 | 0.65 |
| 55 | 120 | 20 | 1 | 0.6 | 73.9 | 166 | 332 | 498 | 2 300 | 3 000 | SAC55120B | 20 | 79.5 | 92.2 | 92 | 103.6 | 7.08 | 9.62 | 14.2 | 640 | 860 | 1 280 | 1 740 | 2 590 | 3 480 | 1.15 |
| 60 | 120 | 20 | 1 | 0.6 | 73.9 | 166 | 332 | 498 | 2 300 | 3 000 | SAC60120B | 20 | 78.3 | 92.2 | 92 | 103.6 | 7.08 | 9.62 | 14.2 | 640 | 860 | 1 280 | 1 740 | 2 590 | 3 480 | 1.15 |

[Notes] 1) The basic dynamic load ratings of a single-row bearing are shown in this column. Those of matched pair and stack bearings are as shown below.

Dynamic equivalent load $P_a = XF_r + YF_a$

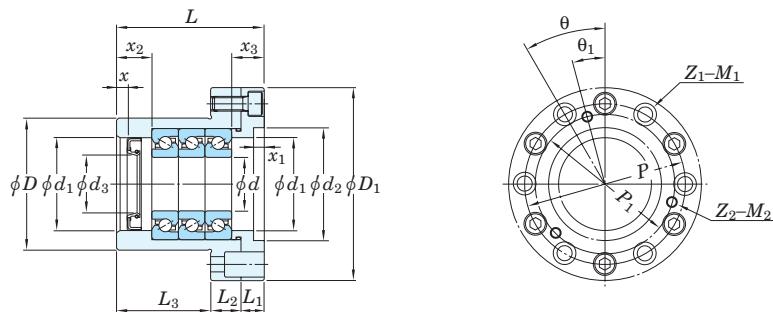
| Number of rows which support axial loading | Basic dynamic load rating | Matching types (the arrow denotes the load direction.) |
|--|---------------------------|--|
| One | C_a | |
| Two | $C_a \times 1.625$ | |
| Three | $C_a \times 2.16$ | |

| Matching Types | Two bearings | | Three bearings | | | Four bearings | | |
|--|--------------|------|----------------|------|------------|---------------|------------|-------|
| | DB DF | DT | DBD DFD | DTD | DBT DFT | DBB DFF | DBT DFT | |
| Number of rows which support axial loading | One | Two | One | Two | Three | One | Two | Three |
| $\frac{F_a}{F_r} \leq 2.17$ | X | 1.9 | — | 1.43 | 2.33 | — | 1.17 | 2.33 |
| | Y | 0.54 | — | 0.77 | 0.35 | — | 0.89 | 0.26 |
| $\frac{F_a}{F_r} > 2.17$ | X | 0.92 | | | | | | |
| | Y | 1 | | | | | | |

2) Matched bearing numbers consist of a single-row bearing number and a matching code such as DB or DF which is shown as a suffix.

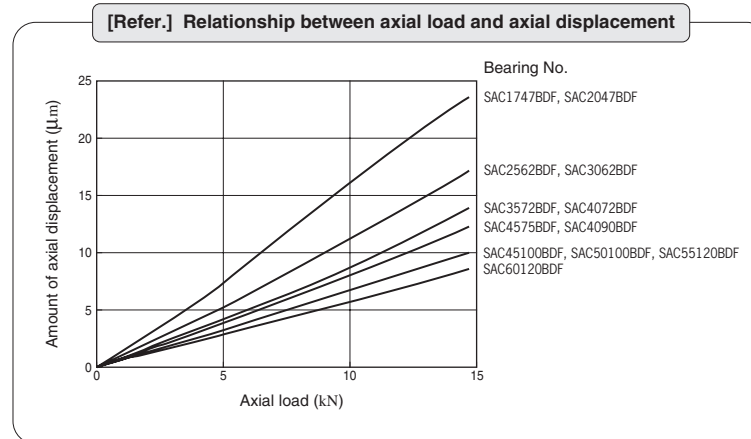
Precision ball screw support bearing units

d 17 ~ 40 mm



| Dimensions (mm) | | | | | | | | | | | | | Applicable shaft dia. d ₃ (mm) | Unit No. ¹⁾ | Bearing qty. | Drilled-hole of housing | | | Tapped-hole for dust-cover | | | Standard preload (kN) | Starting torque (mN·m) | (Refer.) Mass (kg) |
|-----------------|----|----------------|----|----------------|----------------|----------------|----------------|----------------|---|----------------|----------------|----------------|---|------------------------|--------------|-------------------------|-------|--|----------------------------|--------------------|--|-----------------------|------------------------|--------------------|
| d | D | D ₁ | L | L ₁ | L ₂ | L ₃ | d ₁ | d ₂ | x | x ₁ | x ₂ | x ₃ | | | | P (mm) | θ (°) | Z ₁ -M ₁ Hole No.-thread | P ₁ (mm) | θ ₁ (°) | Z ₂ -M ₂ Hole No.-thread | | | |
| 17 | 60 | 90 | 65 | 15 | 15 | 35 | 38 | 47 | 6 | 6 | 15 | 20 | 28 | BSU1747BDF | 2 | 75 | 45 | 4-M6 | 75 | 22.5 | 4-M6 | 2.15 | 140 | 1.72 |
| 20 | 60 | 90 | 65 | 15 | 15 | 35 | 38 | 47 | 6 | 6 | 15 | 20 | 28 | BSU2047BDF | 2 | 75 | 45 | 4-M6 | 75 | 22.5 | 4-M6 | 2.15 | 140 | 1.70 |
| 25 | 74 | 108 | 68 | 13 | 17 | 38 | 52 | 63 | 6 | 6 | 20 | 18 | 32 | BSU2562BDF | 2 | 90 | 30 | 6-M8 | 78 | 15 | 3-M6 | 3.04 | 200 | 2.45 |
| | 74 | 108 | 83 | 13 | 17 | 53 | 52 | 63 | 6 | 6 | 20 | 18 | 32 | BSU2562BDFD | 3 | 90 | 30 | 6-M8 | 78 | 15 | 3-M6 | 4.13 | 260 | 2.85 |
| 30 | 74 | 108 | 68 | 13 | 17 | 38 | 52 | 63 | 6 | 6 | 20 | 18 | 40 | BSU3062BDF | 2 | 90 | 30 | 6-M8 | 78 | 15 | 3-M6 | 3.04 | 200 | 2.38 |
| | 74 | 108 | 83 | 13 | 17 | 53 | 52 | 63 | 6 | 6 | 20 | 18 | 40 | BSU3062BDFD | 3 | 90 | 30 | 6-M8 | 78 | 15 | 3-M6 | 4.13 | 260 | 2.74 |
| 35 | 84 | 118 | 68 | 13 | 17 | 38 | 60 | 73 | 6 | 6 | 20 | 18 | 45 | BSU3572BDF | 2 | 100 | 30 | 6-M8 | 88 | 15 | 3-M6 | 3.73 | 240 | 2.81 |
| | 84 | 118 | 83 | 13 | 17 | 53 | 60 | 73 | 6 | 6 | 20 | 18 | 45 | BSU3572BDFD | 3 | 100 | 30 | 6-M8 | 88 | 15 | 3-M6 | 5.07 | 320 | 3.28 |
| | 84 | 118 | 98 | 13 | 17 | 68 | 60 | 73 | 6 | 6 | 20 | 18 | 45 | BSU3572BDFD | 4 | 100 | 30 | 6-M8 | 88 | 15 | 3-M6 | 7.46 | 480 | 3.74 |
| 40 | 84 | 118 | 68 | 13 | 17 | 38 | 60 | 73 | 6 | 6 | 20 | 18 | 50 | BSU4072BDF | 2 | 100 | 30 | 6-M8 | 88 | 15 | 3-M6 | 3.73 | 240 | 2.77 |
| | 84 | 118 | 83 | 13 | 17 | 53 | 60 | 73 | 6 | 6 | 20 | 18 | 50 | BSU4072BDFD | 3 | 100 | 30 | 6-M8 | 88 | 15 | 3-M6 | 5.07 | 320 | 3.20 |
| | 84 | 118 | 98 | 13 | 17 | 68 | 60 | 73 | 6 | 6 | 20 | 18 | 50 | BSU4072BDFD | 4 | 100 | 30 | 6-M8 | 88 | 15 | 3-M6 | 7.46 | 480 | 3.64 |

[Note] 1) Diagrams show a unit mounted with triple-row matched bearing DFD. Specifications of each bearing are shown in the former pages. (BSU1747BDF → SAC1747BDF)



Full complement type cylindrical roller bearings for crane sheaves

Crane rope sheaves and running wheels which are operated at low or medium speed are generally equipped with full complement type cylindrical roller bearings because the operation of these machines involves heavy, impact loading.

These bearings are divided into shielded and open types. The shielded type is often used with the outer ring rotation.

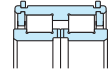
■ Shielded type

- The shielded type was developed for use with rope sheaves. It is shielded, non-separable and pre-lubricated with grease.
- Bearings with locating snap rings around the outer ring can be positioned and fit to sheaves with ease.
- The bearing surface is coated with phosphate for rust prevention.

■ Open type

- Open type bearings are further divided into those used on the fixed side and those used on the free side. The former carry axial load in both directions. The relative position of the latter's inner ring and outer ring can be adjusted by moving them along the axis.
- Open type bearings are separable because the outer ring divided into two annular pieces in a plane perpendicular to its axis. Triple-row and four-row bearings are available along with double-row types.

Shielded type

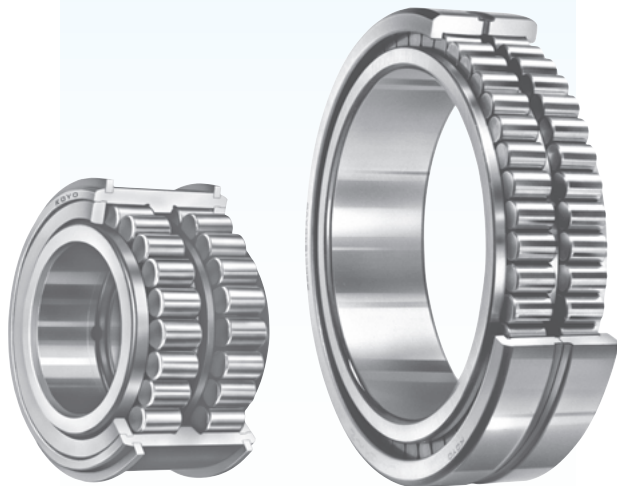


Bore diameter **40 – 440 mm**

Open type



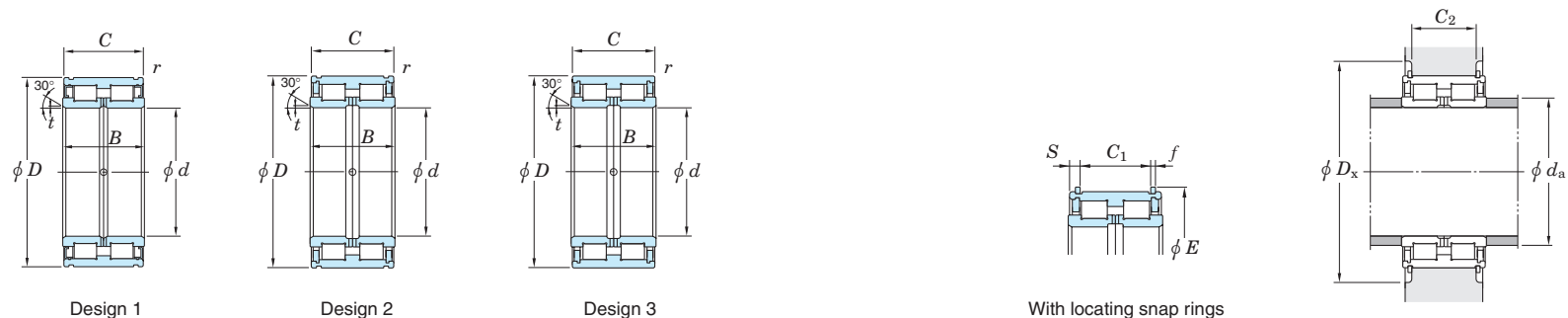
Bore diameter **50 – 440 mm**



| Tolerances | As specified in JIS B 1514-1, classes 0 and 6 (ref. Table 7-3 on pp. A 54-A 57). | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|----------------------------|------------------------------|-----------------------------------|------------------------------|-----------------------------------|--------------------------|---------------------------|------------|-----|--------------|----------------------|-----|--------------|------------------------------------|-----|--------------|---|----|----|----|----|----|----|-----|----|-----|----|-----|-----|-----|----|-----|-----|-----|----|-----|--|--|
| Recommended fits and radial internal clearance | <ul style="list-style-type: none"> • Recommended fits: refer to Table 9-4 on pp. A 85, 86. <ul style="list-style-type: none"> ■ Fits and clearance of full complement type cylindrical roller bearings for use with crane sheaves with the rotating outer ring load | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <thead> <tr> <th colspan="2">Condition</th> <th>Shaft tolerance class</th> <th>Housing bore tolerance class</th> <th>Bearing radial internal clearance</th> </tr> </thead> <tbody> <tr> <td rowspan="3">Rotating outer ring load</td> <td>Light or fluctuating load</td> <td rowspan="3">g 6 or h 6</td> <td>M 7</td> <td>CN clearance</td> </tr> <tr> <td>Normal or heavy load</td> <td>N 7</td> <td>C3 clearance</td> </tr> <tr> <td>Heavy load on thin section housing</td> <td>P 7</td> <td>C3 clearance</td> </tr> </tbody> </table> | Condition | | Shaft tolerance class | Housing bore tolerance class | Bearing radial internal clearance | Rotating outer ring load | Light or fluctuating load | g 6 or h 6 | M 7 | CN clearance | Normal or heavy load | N 7 | C3 clearance | Heavy load on thin section housing | P 7 | C3 clearance | <ul style="list-style-type: none"> • Radial internal clearance : Refer to Table 10-8 (1) on p. A 100. <ul style="list-style-type: none"> As for the nominal bore dia. up to 140mm shielded type (DC5000 series), the corresponding CN clearance are shown below. ■ CN clearance of shielded type roller bearings for nominal diameter up to 140mm | | | | | | | | | | | | | | | | | | | | | |
| Condition | | Shaft tolerance class | Housing bore tolerance class | Bearing radial internal clearance | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rotating outer ring load | Light or fluctuating load | g 6 or h 6 | M 7 | CN clearance | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Normal or heavy load | | N 7 | C3 clearance | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Heavy load on thin section housing | | P 7 | C3 clearance | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <thead> <tr> <th colspan="2">Nominal bore dia. d(mm)</th> <th colspan="2">CN clearance (μm)</th> </tr> <tr> <th>over</th> <th>up to</th> <th>min.</th> <th>max.</th> </tr> </thead> <tbody> <tr> <td>30</td> <td>40</td> <td>35</td> <td>70</td> </tr> <tr> <td>40</td> <td>50</td> <td>40</td> <td>75</td> </tr> <tr> <td>50</td> <td>65</td> <td>45</td> <td>90</td> </tr> <tr> <td>65</td> <td>80</td> <td>55</td> <td>105</td> </tr> <tr> <td>80</td> <td>100</td> <td>65</td> <td>115</td> </tr> <tr> <td>100</td> <td>120</td> <td>80</td> <td>120</td> </tr> <tr> <td>120</td> <td>140</td> <td>90</td> <td>130</td> </tr> </tbody> </table> | | Nominal bore dia. d (mm) | | CN clearance (μ m) | | over | up to | min. | max. | 30 | 40 | 35 | 70 | 40 | 50 | 40 | 75 | 50 | 65 | 45 | 90 | 65 | 80 | 55 | 105 | 80 | 100 | 65 | 115 | 100 | 120 | 80 | 120 | 120 | 140 | 90 | 130 | | |
| Nominal bore dia. d (mm) | | CN clearance (μ m) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| over | up to | min. | max. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30 | 40 | 35 | 70 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 40 | 50 | 40 | 75 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 50 | 65 | 45 | 90 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 65 | 80 | 55 | 105 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 80 | 100 | 65 | 115 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 100 | 120 | 80 | 120 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 120 | 140 | 90 | 130 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

**Full complement type cylindrical roller bearings
for crane sheaves
shielded type**

d 40 ~ 150 mm



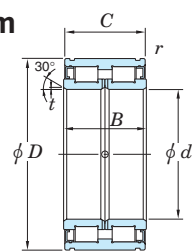
| Boundary dimensions (mm) | | | | | | Basic load ratings (kN) | | Bearing No. | | Design | Locating snap ring specifications (mm) | | | | Mounting dimensions (mm) | | | (Refer.) Mass (kg) |
|--------------------------|-----|-----|-----|-----|----------|-------------------------|----------|-----------------------------|--------------------------|--------|--|-----|-------|-----|--------------------------|------------|---------------------|--------------------|
| d | D | B | C | t | r min. | C_r | C_{0r} | Without locating snap rings | With locating snap rings | | C_1 ¹⁾ | S | E | f | d_a min. | D_x min. | C_2 ²⁾ | |
| 40 | 68 | 38 | 37 | 0.9 | 0.6 | 87.8 | 125 | DC5008N | DC5008NR | 1 | 28 | 4.5 | 71.8 | 2 | 46 | 80 | 28 | 0.55 |
| 45 | 75 | 40 | 39 | 0.9 | 0.6 | 95.1 | 144 | DC5009N | DC5009NR | 1 | 30 | 4.5 | 78.8 | 2 | 51 | 87 | 30 | 0.70 |
| 50 | 80 | 40 | 39 | 0.9 | 0.6 | 99.7 | 158 | DC5010N | DC5010NR | 1 | 30 | 4.5 | 83.8 | 2 | 56 | 92 | 30 | 0.75 |
| 55 | 90 | 46 | 45 | 1.2 | 0.6 | 118 | 193 | DC5011N | DC5011NR | 1 | 34 | 5.5 | 94.8 | 2.5 | 63 | 104 | 34 | 1.19 |
| 60 | 95 | 46 | 45 | 1.2 | 0.6 | 123 | 208 | DC5012N | DC5012NR | 1 | 34 | 5.5 | 99.8 | 2.5 | 68 | 109 | 34 | 1.27 |
| 65 | 100 | 46 | 45 | 1.2 | 0.6 | 128 | 224 | DC5013N | DC5013NR | 1 | 34 | 5.5 | 104.8 | 2.5 | 73 | 114 | 34 | 1.30 |
| 70 | 110 | 54 | 53 | 1.2 | 0.6 | 170 | 285 | DC5014N | DC5014NR | 1 | 42 | 5.5 | 114.5 | 2.5 | 78 | 124 | 42 | 1.94 |
| 75 | 115 | 54 | 53 | 1.2 | 0.6 | 178 | 307 | DC5015N | DC5015NR | 1 | 42 | 5.5 | 119.5 | 2.5 | 83 | 129 | 42 | 2.11 |
| 80 | 125 | 60 | 59 | 1.2 | 0.6 | 250 | 429 | DC5016N | DC5016NR | 1 | 48 | 5.5 | 129.5 | 2.5 | 88 | 146 | 48 | 2.65 |
| 85 | 130 | 60 | 59 | 1.2 | 0.6 | 255 | 446 | DC5017N | DC5017NR | 1 | 48 | 5.5 | 134.5 | 2.5 | 93 | 155 | 48 | 2.80 |
| 90 | 140 | 67 | 66 | 1.4 | 0.6 | 303 | 541 | DC5018N | DC5018NR | 1 | 54 | 6 | 145.4 | 2.5 | 100 | 165 | 54 | 3.70 |
| 95 | 145 | 67 | 66 | 1.4 | 0.6 | 310 | 562 | DC5019N | DC5019NR | 1 | 54 | 6 | 150.4 | 2.5 | 105 | 175 | 54 | 3.90 |
| 100 | 150 | 67 | 66 | 1.4 | 0.6 | 316 | 584 | DC5020N | DC5020NR | 1 | 54 | 6 | 155.4 | 2.5 | 110 | 180 | 54 | 4.05 |
| 110 | 170 | 80 | 79 | 1.7 | 1 | 382 | 697 | DC5022N | DC5022NR | 1 | 65 | 7 | 175.4 | 2.5 | 122 | 200 | 65 | 6.50 |
| 120 | 180 | 80 | 79 | 1.7 | 1 | 398 | 750 | DC5024N | DC5024NR | 1 | 65 | 7 | 188.4 | 3 | 132 | 210 | 65 | 6.95 |
| 130 | 200 | 95 | 94 | 1.7 | 1 | 534 | 1 000 | DC5026N | DC5026NR | 1 | 77 | 8.5 | 208.4 | 3 | 142 | 230 | 77 | 10.5 |
| 140 | 210 | 95 | 94 | 1.7 | 1 | 540 | 1 070 | DC5028N | DC5028NR | 1 | 77 | 8.5 | 218.4 | 3 | 152 | 245 | 77 | 11.0 |
| 150 | 225 | 100 | 99 | 2 | 1 | 682 | 1 400 | DC5030N | DC5030NR | 2 | 81 | 9 | 233 | 3 | 178.5 | 244 | 81 | 13.9 |

[Notes] 1) Dimensional tolerance of C_1 is +0.4/0 when bore diameter is not more than 170mm, while +0.6/0 when bore diameter is not more than 170mm.

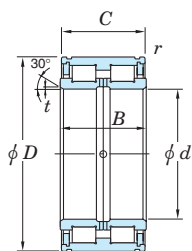
2) Dimensional tolerance of C_2 is -0.1/-0.5 when bore diameter is not more than 170mm, while -0.1/-0.7 when bore diameter is not more than 170mm.

**Full complement type cylindrical roller bearings
for crane sheaves
shielded type**

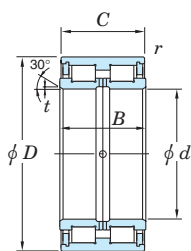
d 160 ~ 440 mm



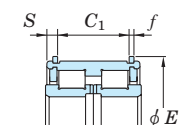
Design 1



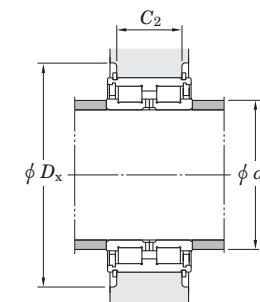
Design 2



Design 3



With locating snap rings

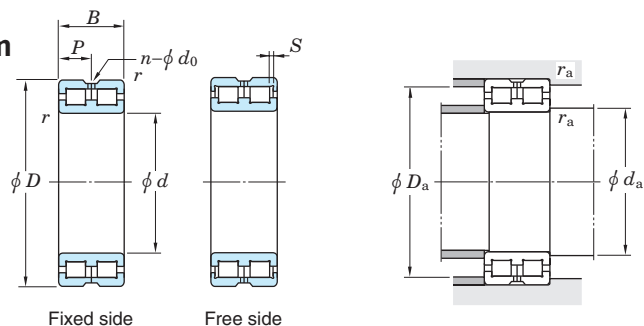


| Boundary dimensions (mm) | | | | | | Basic load ratings (kN) | | Bearing No. | | Design | Locating snap ring specifications (mm) | | | | Mounting dimensions (mm) | | | (Refer.) Mass (kg) |
|--------------------------|----------|----------|----------|----------|---------------|-------------------------|-----------------------|-----------------------------|--------------------------|--------|--|----------|----------|----------|---------------------------|---------------------------|------------------------------------|--------------------|
| <i>d</i> | <i>D</i> | <i>B</i> | <i>C</i> | <i>t</i> | <i>r</i> min. | <i>C_r</i> | <i>C_{0r}</i> | Without locating snap rings | With locating snap rings | | <i>C₁</i> ¹⁾ | <i>S</i> | <i>E</i> | <i>f</i> | <i>d_a</i> min. | <i>D_x</i> min. | <i>C₂</i> ²⁾ | |
| 160 | 240 | 109 | 108 | 2 | 1.1 | 786 | 1 640 | DC5032N | DC5032NR | 2 | 89 | 9.5 | 248 | 3 | 190 | 259 | 89 | 17.2 |
| 170 | 260 | 122 | 121 | 2 | 1.1 | 977 | 2 020 | DC5034N | DC5034NR | 2 | 99 | 11 | 270 | 4 | 204 | 286 | 99 | 23.1 |
| 180 | 280 | 136 | 135 | 2 | 1.1 | 1 150 | 2 440 | DC5036N | DC5036NR | 2 | 110 | 12.5 | 290 | 4 | 217.5 | 306 | 110 | 30.8 |
| 190 | 290 | 136 | 135 | 2 | 1.1 | 1 180 | 2 530 | DC5038N | DC5038NR | 2 | 110 | 12.5 | 300 | 4 | 225 | 316 | 110 | 32.4 |
| 200 | 310 | 150 | 149 | 2 | 1.1 | 1 390 | 2 980 | DC5040N | DC5040NR | 2 | 120 | 14.5 | 320 | 4 | 240 | 336 | 120 | 41.7 |
| 220 | 340 | 160 | 159 | 2.5 | 1.1 | 1 620 | 3 590 | DC5044N | DC5044NR | 2 | 130 | 14.5 | 356 | 6 | 266.5 | 380 | 130 | 53.5 |
| 240 | 360 | 160 | 159 | 2.5 | 1.1 | 1 690 | 3 850 | DC5048N | DC5048NR | 2 | 130 | 14.5 | 376 | 6 | 284.5 | 400 | 130 | 57.3 |
| 260 | 400 | 190 | 189 | 3 | 1.5 | 2 230 | 4 980 | DC5052N | DC5052NR | 2 | 154 | 17.5 | 416 | 7 | 312.5 | 444 | 154 | 87.2 |
| 280 | 420 | 190 | 189 | 3 | 1.5 | 2 330 | 5 350 | DC5056N | DC5056NR | 2 | 154 | 17.5 | 436 | 7 | 334.5 | 464 | 154 | 93.0 |
| 300 | 460 | 218 | 216 | 3 | 1.5 | 2 860 | 6 610 | DC5060 | — | 3 | — | — | — | 361 | — | — | 134 | |
| 320 | 480 | 218 | 216 | 3 | 1.5 | 2 950 | 6 930 | DC5064 | — | 3 | — | — | — | 378.5 | — | — | 140 | |
| 340 | 520 | 243 | 241 | 3.5 | 2 | 3 590 | 8 420 | DC5068 | — | 3 | — | — | — | 413 | — | — | 189 | |
| 360 | 540 | 243 | 241 | 3.5 | 2 | 3 660 | 8 720 | DC5072 | — | 3 | — | — | — | 427 | — | — | 197 | |
| 380 | 560 | 243 | 241 | 3.5 | 2 | 3 730 | 9 020 | DC5076 | — | 3 | — | — | — | 441 | — | — | 207 | |
| 400 | 600 | 272 | 270 | 3.5 | 2 | 4 510 | 11 000 | DC5080 | — | 3 | — | — | — | 475.5 | — | — | 281 | |
| 420 | 620 | 272 | 270 | 3.5 | 2 | 4 650 | 11 400 | DC5084 | — | 3 | — | — | — | 496 | — | — | 290 | |
| 440 | 650 | 280 | 278 | 4.5 | 3 | 4 940 | 12 200 | DC5088 | — | 3 | — | — | — | 521 | — | — | 330 | |

[Notes] 1) Dimensional tolerance of *C₁* is +0.4/0 when bore diameter is not more than 170mm, while +0.6/0 when bore diameter is not more than 170mm.
2) Dimensional tolerance of *C₂* is -0.1/-0.5 when bore diameter is not more than 170mm, while -0.1/-0.7 when bore diameter is not more than 170mm.

Full complement type cylindrical roller bearings
for crane sheaves

open type
d 50 ~ 200 mm



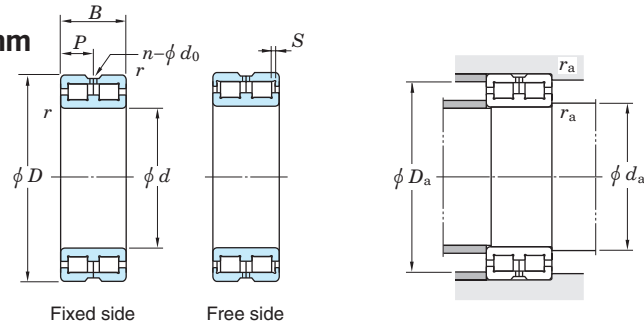
| Boundary dimensions (mm) | | | | S ¹⁾ (mm) | Basic load ratings (kN) | | Bearing No. | | Lubrication hole (mm) | | | Mounting dimensions (mm) | | | Mass Fixed side (kg) |
|--------------------------|-----|----|-----------|-------------------------|-------------------------|-----------------|-------------|-----------|-----------------------|----------|----------------|--------------------------|------------------------|------------------------|----------------------------|
| d | D | B | r min. | | C _r | C _{0r} | Fixed side | Free side | P | n qty | d ₀ | d _a min. | D _a max. | r _a max. | |
| 50 | 72 | 22 | 0.6 | 1 | 49.1 | 82.9 | DC4910AVW | DC4910VW | 11 | 4 | 2 | 55 | 67 | 0.6 | 0.30 |
| 60 | 85 | 25 | 1 | 1 | 72.7 | 136 | DC4912AVW | DC4912VW | 12.5 | 4 | 2 | 66 | 79 | 1 | 0.46 |
| 70 | 100 | 30 | 1 | 1 | 105 | 193 | DC4914AVW | DC4914VW | 15 | 4 | 2 | 76 | 94 | 1 | 0.78 |
| 80 | 110 | 30 | 1 | 1 | 114 | 218 | DC4916AVW | DC4916VW | 15 | 4 | 2 | 86 | 104 | 1 | 0.88 |
| 90 | 125 | 35 | 1.1 | 1.5 | 150 | 301 | DC4918AVW | DC4918VW | 17.5 | 4 | 2.5 | 97 | 118 | 1 | 1.35 |
| 100 | 140 | 40 | 1.1 | 2 | 194 | 400 | DC4920AVW | DC4920VW | 20 | 4 | 2.5 | 107 | 133 | 1 | 1.95 |
| 110 | 150 | 40 | 1.1 | 2 | 202 | 431 | DC4922AVW | DC4922VW | 20 | 4 | 2.5 | 117 | 143 | 1 | 2.15 |
| 120 | 165 | 45 | 1.1 | 3 | 226 | 479 | DC4924AVW | DC4924VW | 22.5 | 4 | 3 | 127 | 158 | 1 | 2.95 |
| 130 | 180 | 50 | 1.5 | 4 | 276 | 560 | DC4926AVW | DC4926VW | 25 | 4 | 3 | 138.5 | 171.5 | 1.5 | 3.95 |
| 140 | 190 | 50 | 1.5 | 4 | 284 | 589 | DC4928AVW | DC4928VW | 25 | 4 | 3 | 148.5 | 181.5 | 1.5 | 4.20 |
| 150 | 190 | 40 | 1.1 | 2 | 234 | 575 | DC4830AVW | DC4830VW | 20 | 4 | 3 | 157 | 183 | 1 | 2.90 |
| | 210 | 60 | 2 | 4 | 406 | 842 | DC4930AVW | DC4930VW | 30 | 6 | 4 | 160 | 200 | 2 | 6.65 |
| 160 | 200 | 40 | 1.1 | 2 | 242 | 616 | DC4832AVW | DC4832VW | 20 | 4 | 3 | 167 | 193 | 1 | 3.05 |
| | 220 | 60 | 2 | 4 | 428 | 895 | DC4932AVW | DC4932VW | 30 | 6 | 4 | 170 | 210 | 2 | 7.00 |
| 170 | 215 | 45 | 1.1 | 3 | 269 | 655 | DC4834AVW | DC4834VW | 22.5 | 4 | 3 | 177 | 208 | 1 | 4.10 |
| | 230 | 60 | 2 | 4 | 440 | 944 | DC4934AVW | DC4934VW | 30 | 6 | 4 | 180 | 220 | 2 | 7.35 |
| 180 | 225 | 45 | 1.1 | 3 | 276 | 690 | DC4836AVW | DC4836VW | 22.5 | 4 | 4 | 187 | 218 | 1 | 4.30 |
| | 250 | 69 | 2 | 4 | 547 | 1 140 | DC4936AVW | DC4936VW | 34.5 | 6 | 4 | 190 | 240 | 2 | 10.7 |
| 190 | 240 | 50 | 1.5 | 4 | 327 | 782 | DC4838AVW | DC4838VW | 25 | 4 | 4 | 198.5 | 231.5 | 1.5 | 5.65 |
| | 260 | 69 | 2 | 4 | 555 | 1 200 | DC4938AVW | DC4938VW | 34.5 | 6 | 5 | 200 | 250 | 2 | 11.2 |
| 200 | 250 | 50 | 1.5 | 4 | 337 | 826 | DC4840AVW | DC4840VW | 25 | 4 | 4 | 208.5 | 241.5 | 1.5 | 5.90 |
| | 280 | 80 | 2.1 | 5 | 667 | 1 500 | DC4940AVW | DC4940VW | 40 | 6 | 6 | 212 | 268 | 2 | 15.7 |

[Note] 1) Effective movement of the bearing on the free side in an axial direction.

Full complement type cylindrical roller bearings
for crane sheaves

open type

d 220 ~ 440 mm



| Boundary dimensions (mm) | | | | S^1 (mm) | Basic load ratings (kN) | | Bearing No. | | Lubrication hole (mm) | | | Mounting dimensions (mm) | | | Mass Fixed side (kg) |
|--------------------------|-----|-----|------------|---------------|-------------------------|----------|-------------|-----------|-----------------------|------------|-------|--------------------------|---------------|---------------|----------------------------|
| d | D | B | $r_{min.}$ | | C_r | C_{0r} | Fixed side | Free side | P | n qty | d_0 | d_a min. | D_a max. | r_a max. | |
| 220 | 270 | 50 | 1.5 | 4 | 355 | 971 | DC4844AVW | DC4844VW | 25 | 6 | 4 | 228.5 | 261.5 | 1.5 | 6.40 |
| | 300 | 80 | 2.1 | 5 | 707 | 1 600 | DC4944AVW | DC4944VW | 40 | 6 | 6 | 232 | 288 | 2 | 17.1 |
| 240 | 300 | 60 | 2 | 4 | 509 | 1 330 | DC4848AVW | DC4848VW | 30 | 6 | 5 | 250 | 290 | 2 | 10.2 |
| | 320 | 80 | 2.1 | 5 | 735 | 1 720 | DC4948AVW | DC4948VW | 40 | 6 | 6 | 252 | 308 | 2 | 18.4 |
| 260 | 320 | 60 | 2 | 4 | 532 | 1 450 | DC4852AVW | DC4852VW | 30 | 6 | 5 | 270 | 310 | 2 | 11.0 |
| | 360 | 100 | 2.1 | 6 | 1 070 | 2 520 | DC4952AVW | DC4952VW | 50 | 8 | 6 | 272 | 348 | 2 | 32.0 |
| 280 | 350 | 69 | 2 | 4 | 663 | 1 720 | DC4856AVW | DC4856VW | 34.5 | 6 | 5 | 290 | 340 | 2 | 16.0 |
| | 380 | 100 | 2.1 | 6 | 1 130 | 2 700 | DC4956AVW | DC4956VW | 50 | 8 | 6 | 292 | 368 | 2 | 33.9 |
| 300 | 380 | 80 | 2.1 | 6 | 802 | 2 160 | DC4860AVW | DC4860VW | 40 | 8 | 6 | 312 | 368 | 2 | 23.0 |
| | 420 | 118 | 3 | 6 | 1 560 | 3 710 | DC4960AVW | DC4960VW | 59 | 8 | 8 | 314 | 406 | 2.5 | 53.0 |
| 320 | 400 | 80 | 2.1 | 6 | 832 | 2 310 | DC4864AVW | DC4864VW | 40 | 8 | 6 | 332 | 388 | 2 | 24.3 |
| | 440 | 118 | 3 | 6 | 1 620 | 3 940 | DC4964AVW | DC4964VW | 59 | 8 | 8 | 334 | 426 | 2.5 | 56.0 |
| 340 | 420 | 80 | 2.1 | 6 | 853 | 2 430 | DC4868AVW | DC4868VW | 40 | 8 | 6 | 352 | 408 | 2 | 25.6 |
| | 460 | 118 | 3 | 6 | 1 660 | 4 150 | DC4968AVW | DC4968VW | 59 | 8 | 8 | 354 | 446 | 2.5 | 59.0 |
| 360 | 440 | 80 | 2.1 | 6 | 880 | 2 580 | DC4872AVW | DC4872VW | 40 | 8 | 6 | 372 | 428 | 2 | 27.0 |
| | 480 | 118 | 3 | 6 | 1 700 | 4 390 | DC4972AVW | DC4972VW | 59 | 8 | 8 | 374 | 466 | 2.5 | 62.0 |
| 380 | 480 | 100 | 2.1 | 6 | 1 310 | 3 570 | DC4876AVW | DC4876VW | 50 | 8 | 6 | 392 | 468 | 2 | 45.3 |
| | 520 | 140 | 4 | 7 | 2 290 | 5 600 | DC4976AVW | DC4976VW | 70 | 8 | 8 | 398 | 502 | 3 | 92.3 |
| 400 | 540 | 140 | 4 | 7 | 2 380 | 5 990 | DC4980AVW | DC4980VW | 70 | 8 | 8 | 418 | 522 | 3 | 96.4 |
| 420 | 560 | 140 | 4 | 7 | 2 440 | 6 270 | DC4984AVW | DC4984VW | 70 | 8 | 8 | 438 | 542 | 3 | 101 |
| 440 | 600 | 160 | 4 | 7 | 2 970 | 7 390 | DC4988AVW | DC4988VW | 80 | 8 | 8 | 458 | 582 | 3 | 139 |

[Note] 1) Effective movement of the bearing on the free side in an axial direction.

Rolling mill roll neck bearings

Rolling mill roll neck four-row cylindrical roller bearings and tapered roller bearings are designed to achieve the maximum load rating capacity in a limited space.

- Four-row cylindrical roller bearings
 - Suitable for high-speed rotation. Thin section designs are also available.
 - The inner ring raceway surface and the roll can be finished simultaneously after the inner ring is mounted on the roll neck. This feature is useful in improving rolling mill accuracy.
- Four-row tapered roller bearings
 - Suitable for low- and medium-speed rotation. Available in both metric and inch series.
 - The internal clearance is preadjusted, facilitating mounting.
 - More sealed type four-row tapered roller bearings are being used currently.

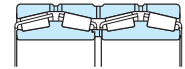
Four-row cylindrical roller bearings



Cylindrical bore

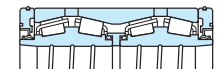
Bore diameter **100 – 500 mm**

Four-row tapered roller bearings



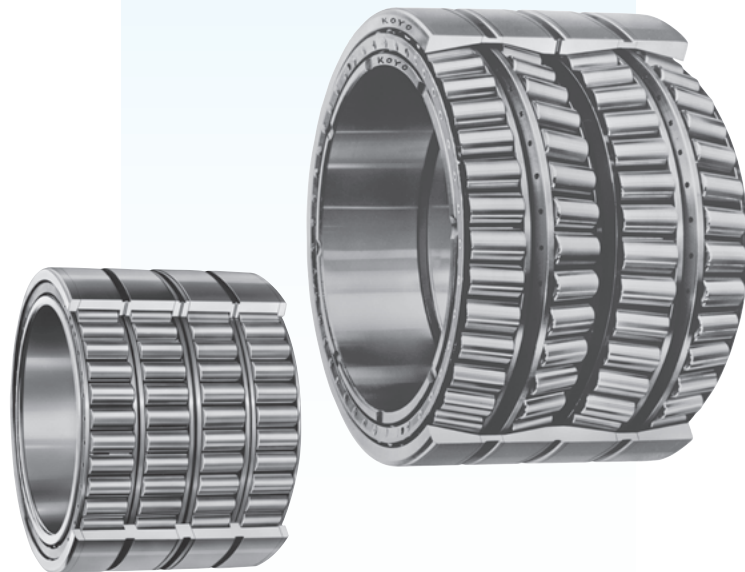
Open type

Bore diameter **65 – 500 mm**



Sealed type

Bore diameter **75 – 800 mm**



| | Four-row cylindrical roller bearings | Four-row tapered roller bearings |
|--------------------|---|--|
| Tolerances | As specified in JIS B 1514-1. (refer to Table 7-3 on pp. A 54-A 57.) | <ul style="list-style-type: none"> ● Metric series : as specified in BAS 1002. (refer to Table 7-6 on p. A 63.) ● Inch series : as specified in ABMA Section 19. (refer to Table 7-7 on pp. A 64, 65.) ● Special series (47T..., 4TR...) : Special allowances are applied to these series. For details, consult with JTEKT. |
| Recommended fits | Refer to Table 1. | <ul style="list-style-type: none"> ● Metric series : refer to Table 2. ● Inch series : refer to Table 3. |
| Internal clearance | Refer to Table 10-8 on pp. A 100, 101. (JTEKT should be consulted to determine the clearance according to application conditions.) | Refer to Table 10-10 on p. A 104. |
| Equivalent load | Dynamic equivalent radial load : $P_r = F_r$ Static equivalent radial load : $P_{0r} = F_r$ | Dynamic equivalent radial load : $\left[\text{when } \frac{F_a}{F_r} \leq e \right] P_r = F_r + Y_2 F_a$ $\left[\text{when } \frac{F_a}{F_r} > e \right] P_r = 0.67 F_r + Y_3 F_a$ Static equivalent radial load : $P_{0r} = F_r + Y_0 F_a$ |

[Note] For axial load factor Y_2 , Y_3 and Y_0 , and the constant e , use values listed in the specification table.

| Inner ring and roll neck (shaft) | | | | | | Outer ring and chock (housing) | | | | | |
|----------------------------------|-------|---|-------|------------------------------|-----------|--------------------------------|-------|--|-------|-------------------------------|-----------|
| Nominal bore diameter | | Single plane mean bore diameter deviation | | Roll neck diameter deviation | | Nominal outside diameter | | Single plane mean outside diameter deviation | | Chock bore diameter deviation | |
| d (mm) | | Δd_{mp} | | | | D (mm) | | ΔD_{mp} | | | |
| over | up to | upper | lower | upper | lower | over | up to | upper | lower | upper | lower |
| 80 | 120 | 0 | -20 | +59 | +37 | 120 | 150 | 0 | -18 | +40 | 0 |
| 120 | 180 | 0 | -25 | +68 | +43 (p6) | 150 | 180 | 0 | -25 | +40 | 0 (H7) |
| 180 | 250 | 0 | -30 | +79 | +50 | 180 | 250 | 0 | -30 | +46 | 0 |
| 250 | 280 | 0 | -35 | +126 | +94 | 250 | 315 | 0 | -35 | +52 | 0 (H7) |
| 280 | 315 | 0 | -35 | +130 | +98 (r6) | 315 | 400 | 0 | -40 | +75 | +18 (G7) |
| 315 | 355 | 0 | -40 | +144 | +108 | 400 | 500 | 0 | -45 | +83 | +20 (G7) |
| 355 | 400 | 0 | -40 | +150 | +114 | 500 | 630 | 0 | -50 | +92 | +22 (G7) |
| 400 | 450 | 0 | -45 | +166 | +126 (r6) | 630 | 800 | 0 | -75 | +160 | +80 (F7) |
| 450 | 500 | 0 | -45 | +172 | +132 | 800 | 1000 | 0 | -100 | +176 | +86 (F7) |
| 500 | 560 | 0 | -50 | +194 | +150 (r6) | 1000 | 1250 | 0 | -125 | +203 | +98 (F7) |
| 560 | 630 | 0 | -50 | +354 | +310 (s6) | 1250 | 1400 | 0 | -160 | +235 | +110 (F7) |
| 630 | 710 | 0 | -75 | +390 | +340 (s6) | 1400 | 1600 | 0 | -160 | +345 | +220 (E7) |
| 710 | 800 | 0 | -75 | +430 | +380 | | | | | | |
| 800 | 900 | 0 | -100 | +486 | +430 (s6) | | | | | | |
| 900 | 1000 | 0 | -100 | +526 | +470 | | | | | | |
| 1000 | 1120 | 0 | -125 | +588 | +520 (s6) | | | | | | |
| 1120 | 1250 | 0 | -125 | +646 | +580 (s6) | | | | | | |

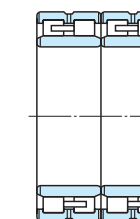
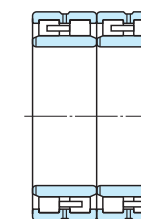
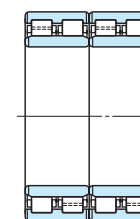
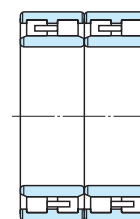
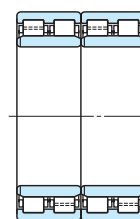
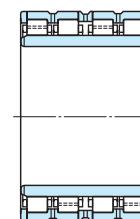
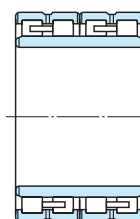
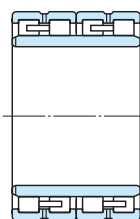
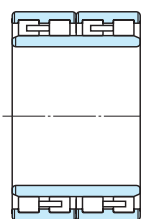
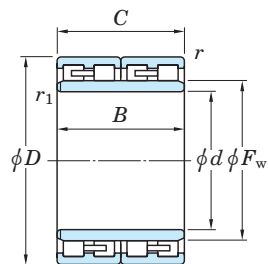
[Note] The table above shows general values. JTEKT determines recommended fit on a case by case basis according to bearing materials and operating conditions to prevent the inner ring from creeping. Consult with JTEKT when referring to this table.

| Double inner ring and roll neck (shaft) | | | | | | Outer ring and chock (housing) | | | | | |
|---|-------|---|-------|------------------------------|-------|--------------------------------|-------|--|-------|-------------------------------|-------|
| Nominal bore diameter | | Single plane mean bore diameter deviation | | Roll neck diameter deviation | | Nominal outside diameter | | Single plane mean outside diameter deviation | | Chock bore diameter deviation | |
| d (mm) | | Δd_{mp} | | | | D (mm) | | ΔD_{mp} | | | |
| over | up to | upper | lower | upper | lower | over | up to | upper | lower | upper | lower |
| 80 | 120 | 0 | -20 | -120 | -150 | 120 | 150 | 0 | -20 | +57 | +25 |
| 120 | 180 | 0 | -25 | -150 | -175 | 150 | 180 | 0 | -25 | +100 | +50 |
| 180 | 250 | 0 | -30 | -175 | -200 | 180 | 250 | 0 | -30 | +120 | +50 |
| 250 | 315 | 0 | -35 | -210 | -250 | 250 | 315 | 0 | -35 | +115 | +50 |
| 315 | 400 | 0 | -40 | -240 | -300 | 315 | 400 | 0 | -40 | +110 | +50 |
| 400 | 500 | 0 | -45 | -245 | -300 | 400 | 500 | 0 | -45 | +105 | +50 |
| 500 | 630 | 0 | -50 | -250 | -300 | 500 | 630 | 0 | -50 | +100 | +50 |
| 630 | 800 | 0 | -75 | -325 | -400 | 630 | 800 | 0 | -75 | +150 | +75 |
| 800 | 1000 | 0 | -100 | -350 | -425 | 800 | 1000 | 0 | -100 | +150 | +75 |
| 1000 | 1250 | 0 | -125 | -425 | -500 | 1000 | 1250 | 0 | -125 | +175 | +100 |
| 1250 | 1600 | 0 | -160 | -510 | -600 | 1250 | 1600 | 0 | -160 | +215 | +125 |
| | | | | | | 1600 | 2000 | 0 | -200 | +250 | +150 |

| Double inner ring and roll neck (shaft) | | | | | | Outer ring and chock (housing) | | | | | |
|---|--------|---|-------|------------------------------|-------|--------------------------------|--------|--|-------|-------------------------------|-------|
| Nominal bore diameter | | Single plane mean bore diameter deviation | | Roll neck diameter deviation | | Nominal outside diameter | | Single plane mean outside diameter deviation | | Chock bore diameter deviation | |
| d (mm)(1/25.4) | | Δd_{mp} | | | | D (mm)(1/25.4) | | ΔD_{mp} | | | |
| over | up to | upper | lower | upper | lower | over | up to | upper | lower | upper | lower |
| 76.2 | 101.6 | +25 | 0 | -75 | -100 | - | 304.8 | +25 | 0 | +75 | +50 |
| (3.0) | (4.0) | | | | | | (12.0) | | | | |
| 101.6 | 127.0 | +25 | 0 | -100 | -125 | 304.8 | 609.6 | +51 | 0 | +150 | +100 |
| (4.0) | (5.0) | | | | | (12.0) | (24.0) | | | | |
| 127.0 | 152.4 | +25 | 0 | -125 | -150 | 609.6 | 914.4 | +76 | 0 | +225 | +150 |
| (5.0) | (6.0) | | | | | (24.0) | (36.0) | | | | |
| 152.4 | 203.2 | +25 | 0 | -150 | -175 | 914.4 | 1219.2 | +102 | 0 | +300 | +200 |
| (6.0) | (8.0) | | | | | (36.0) | (48.0) | | | | |
| 203.2 | 304.8 | +25 | 0 | -175 | -200 | 1219.2 | 1524.0 | +127 | 0 | +375 | +250 |
| (8.0) | (12.0) | | | | | (48.0) | (60.0) | | | | |
| 304.8 | 609.6 | +51 | 0 | -200 | -250 | 1524.0 | - | +127 | 0 | +450 | +300 |
| (12.0) | (24.0) | | | | | (60.0) | | | | | |
| 609.6 | 914.4 | +76 | 0 | -250 | -325 | | | | | | |
| (24.0) | (36.0) | | | | | | | | | | |
| 914.4 | 1219.2 | +102 | 0 | -300 | -400 | | | | | | |
| (36.0) | (48.0) | | | | | | | | | | |
| 1219.2 | - | +127 | 0 | -375 | -475 | | | | | | |
| (48.0) | | | | | | | | | | | |

Four-row cylindrical roller bearings

d 100 ~ (160) mm



Design 1-1

Design 1-2

Design 1-3

Design 1-4

Design 1-6P

Design 2-1P

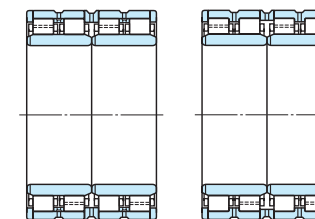
Design 2-2

Design 2-2P

Design 2-3

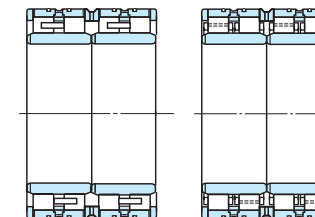
Design 2-4

| Boundary dimensions (mm) | | | | | Basic load ratings (kN) | | | | Bearing No. | Design ¹⁾ | Mounting dimensions (mm) | | | | | (Refer.) Mass (kg) |
|--------------------------|--------|---------|---------|----------------|-------------------------|---------------------|----------------|-----------------|--|--|--------------------------|---------------------|------------------------|------------------------|-----|--|
| d | D | B | C | F _w | r _{min.} | r _{1 min.} | C _r | C _{0r} | | | d _{a min.} | D _{a max.} | r _{a 2) max.} | r _{b 2) max.} | | |
| 100 | 140 | 120 | 120 | 110 | 1.1 | 1.1 | 485 | 945 | 20FC14120 | 2-2 | 107 | 133 | 131 | 1 | 1 | 5.6 |
| | 180 | 120 | 120 | 128 | 2 | 2 | 636 | 971 | | | 119 | 170 | 164 | 2 | 1.5 | |
| 110 | 170 | 90 | 90 | 127 | 2 | 2 | 428 | 692 | 22FC1790 22FC18120 | 1-2 2-2 | 120 | 160 | 155 | 2 | 2 | 7.4 12 |
| | 180 | 120 | 120 | 128 | 2 | 2 | 636 | 971 | | | 119 | 170 | 164 | 2 | 1.5 | |
| 115 | 165 | 90 | 90 | 132.5 | 1.1 | 1.1 | 398 | 751 | 23FC1690 | 1-1 | 122 | 158 | 154 | 1 | 1 | 6.5 |
| | 180 | 105 | 105 | 135 | 2 | 1.1 | 487 | 796 | | | 127 | 170 | 165 | 2 | 1 | |
| 120 | 165 | 87 | 87 | 134.5 | 1.1 | 1.1 | 374 | 745 | 24FC1787 4CR120 | 1-2 1-2 | 127 | 158 | 154 | 1 | 1 | 5.6 9.3 |
| | 180 | 105 | 105 | 135 | 2 | 1.1 | 487 | 796 | | | 127 | 170 | 165 | 2 | 1 | |
| 127 | 174.65 | 150.812 | 150.812 | 139.5 | 1.1 | 1.1 | 630 | 1 300 | 25FC17150 25FC20127 | 2-2 1-3 | 134 | 167 | 163 | 1 | 1 | 10.5 15.4 |
| | 203.2 | 127 | 127 | 147 | 2 | 2 | 740 | 1 180 | | | 137 | 193 | 185 | 2 | 2 | |
| 130 | 200 | 104 | 104 | 150 | 2 | 2 | 566 | 953 | 26FC20104 26FC20125 | 1-2 1-2 | 140 | 190 | 182 | 2 | 2 | 11.8 14.4 |
| | 200 | 125 | 125 | 149 | 2 | 2 | 752 | 1 310 | | | 140 | 190 | 183 | 2 | 2 | |
| 140 | 190 | 119 | 119 | 154 | 1.5 | 1.5 | 565 | 1 160 | 28FC19119W 28FC21116 | 1-3 1-2 | 149 | 181 | 178 | 1.5 | 1.5 | 9.6 13.5 |
| | 210 | 116 | 116 | 158 | 2 | 2 | 675 | 1 120 | | | 150 | 200 | 194 | 2 | 2 | |
| 145 | 210 | 155 | 155 | 166 | 1.1 | 1.1 | 845 | 1 710 | 29FC21155 313924 | 1-2 1-2 | 152 | 203 | 196 | 1 | 1 | 17.8 22.9 |
| | 225 | 156 | 156 | 169 | 2 | 2 | 912 | 1 680 | | | 155 | 215 | 205 | 2 | 2 | |
| 150 | 200 | 120 | 120 | 162 | 2 | 2 | 672 | 1 400 | 30FC20120 30FC21120 30FC21150 30FC22150 30FC22150A 313891-1 | 1-2 2-2 1-2 1-2 1-2 1-2 | 160 | 190 | 188 | 2 | 2 | 10.1 12.8 15.9 19.2 19.5 23.8 |
| | 210 | 120 | 120 | 168.5 | 2 | 2 | 686 | 1 380 | | | 160 | 200 | 196 | 2 | 2 | |
| | 210 | 150 | 150 | 165 | 2 | 2 | 872 | 1 780 | | | 160 | 200 | 195 | 2 | 2 | |
| | 220 | 150 | 150 | 170 | 2 | 2 | 887 | 1 760 | | | 160 | 210 | 202 | 2 | 2 | |
| | 220 | 150 | 150 | 168 | 2 | 2 | 889 | 1 760 | | | 160 | 210 | 200 | 2 | 2 | |
| | 230 | 156 | 156 | 174 | 2 | 2 | 961 | 1 810 | | | 160 | 220 | 210 | 2 | 2 | |
| 160 | 220 | 180 | 180 | 177 | 2 | 2 | 964 | 2 170 | 32FC22180 314190 | 1-2 1-2 | 170 | 210 | 205 | 2 | 2 | 20.5 17.7 |
| | 230 | 130 | 130 | 180 | 2.1 | 2.1 | 867 | 1 740 | | | 172 | 218 | 212 | 2 | 2 | |



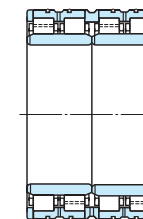
Design 2-5P

Design 2-6P

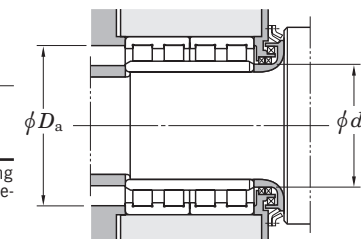


Design 3-1

Design 3-1P



Design 3-2P



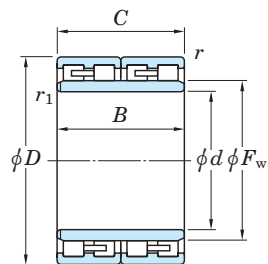
[Notes] 1) Design numbers indicate the following meanings with P..... pin type cages without P..... machined cages

| | Outer ring with rib | Outer ring with loose rib |
|---------------------|---------------------------|---------------------------|
| One inner ring | 1-1, 1-2, 1-3, 1-4 | 1-6P |
| Two inner rings | 2-1P, 2-2, 2-2P, 2-3, 2-4 | 2-5P, 2-6P |
| Extended inner ring | | 3-1, 3-1P, 3-2P |

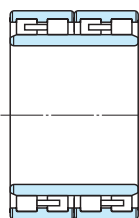
2) r_a indicates housing chamfer dimension corresponding to outer ring chamfer dimension r. r_b indicates the shaft chamfer dimension corresponding to inner ring chamfer dimension r₁.

Four-row cylindrical roller bearings

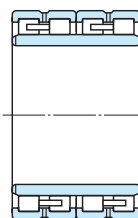
d (160) ~ 190 mm



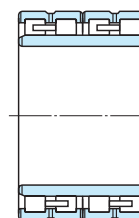
Design 1-1



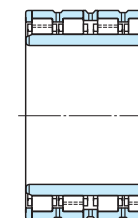
Design 1-2



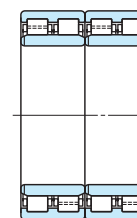
Design 1-3



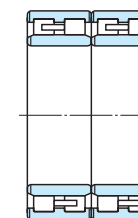
Design 1-4



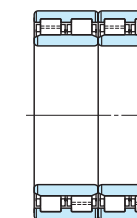
Design 1-6P



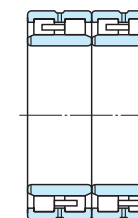
Design 2-1P



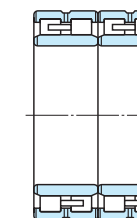
Design 2-2



Design 2-2P

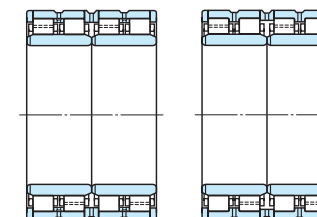


Design 2-3



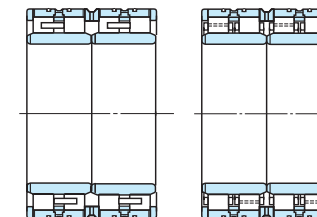
Design 2-4

| Boundary dimensions (mm) | | | | | | | Basic load ratings (kN) | | Bearing No. | Design ¹⁾ | Mounting dimensions (mm) | | | | | (Refer.) Mass (kg) |
|--------------------------|--------|-----|-----|----------------|-------------------|---------------------|-------------------------|-----------------|-------------|----------------------|--------------------------|---------------------|------------------------|------------------------|-----|--------------------|
| d | D | B | C | F _w | r _{min.} | r _{1 min.} | C _r | C _{0r} | | | d _{a min.} | D _{a max.} | r _{a 2)} max. | r _{b 2)} max. | | |
| 160 | 230 | 168 | 168 | 182 | 1.1 | 1.1 | 1 040 | 2 210 | 32FC23170 | 1-2 | 167 | 223 | 214 | 1 | 1 | 22.8 |
| | 230 | 168 | 168 | 180 | 2 | 2 | 1 040 | 2 200 | 32FC23170A | 1-2 | 170 | 220 | 212 | 2 | 2 | 23.1 |
| | 230 | 168 | 168 | 179 | 2 | 2 | 1 110 | 2 210 | 32FC23170B | 1-4 | 170 | 220 | 215 | 2 | 2 | 22.6 |
| | 230 | 180 | 180 | 177 | 2 | 2 | 1 140 | 2 270 | 32FC23180A | 1-2 | 170 | 220 | 213 | 2 | 2 | 24.1 |
| | 240 | 120 | 120 | 183 | 2.1 | 2.1 | 663 | 1 140 | 32FC24120W | 1-3 | 172 | 228 | 219 | 2 | 2 | 18.5 |
| | 240 | 170 | 170 | 183 | 2.1 | 2.1 | 1 180 | 2 220 | 32FC24170 | 1-2 | 172 | 228 | 223 | 2 | 2 | 26.8 |
| 170 | 230 | 120 | 120 | 187 | 2 | 2 | 782 | 1 680 | 34FC23120 | 1-2 | 180 | 220 | 215 | 2 | 2 | 14.4 |
| | 240 | 156 | 156 | 190 | 2 | 2 | 972 | 2 050 | 34FC24156A | 1-2 | 180 | 230 | 222 | 2 | 2 | 22.4 |
| | 240 | 156 | 156 | 189 | 2 | 2 | 1 060 | 2 100 | 34FC24156B | 1-2 | 180 | 230 | 225 | 2 | 2 | 21.8 |
| | 240 | 190 | 190 | 187 | 1.5 | 1.5 | 1 260 | 2 620 | 34FC24190 | 1-2 | 179 | 231 | 223 | 1.5 | 1.5 | 26.9 |
| | 250 | 168 | 168 | 192 | 2.1 | 2.1 | 1 170 | 2 230 | 34FC25168 | 1-2 | 182 | 238 | 232 | 2 | 2 | 27.6 |
| | 250 | 170 | 170 | 192 | 2.1 | 2.1 | 1 170 | 2 230 | 34FC25170 | 1-2 | 182 | 238 | 232 | 2 | 2 | 27.8 |
| | 260 | 150 | 150 | 195 | 2.1 | 2.1 | 1 100 | 2 000 | 34FC26150 | 1-2 | 182 | 248 | 237 | 2 | 2 | 28.8 |
| 178 | 258.75 | 150 | 150 | 199 | 1.5 | 1.5 | 1 090 | 2 070 | 36FC26150 | 1-2 | 187 | 250 | 239 | 1.5 | 1.5 | 25.8 |
| 180 | 250 | 156 | 156 | 200 | 2 | 2 | 1 020 | 2 130 | 36FC25156A | 1-2 | 190 | 240 | 234 | 2 | 2 | 23.3 |
| | 260 | 168 | 168 | 202 | 2.1 | 2.1 | 1 150 | 2 390 | 313812W | 1-4 | 192 | 248 | 238 | 2 | 2 | 29.7 |
| | 260 | 168 | 168 | 202 | 2.1 | 2.1 | 1 230 | 2 420 | 36FC26168 | 1-2 | 192 | 248 | 242 | 2 | 2 | 29.3 |
| | 265 | 180 | 180 | 203 | 2 | 2 | 1 300 | 2 600 | 36FC27180 | 1-2 | 190 | 255 | 243 | 2 | 2 | 33.6 |
| 190 | 260 | 168 | 168 | 212 | 2.1 | 2.1 | 1 140 | 2 600 | 38FC26168-1 | 1-2 | 202 | 248 | 244 | 2 | 2 | 26.5 |
| | 270 | 170 | 170 | 212 | 2 | 2 | 1 140 | 2 310 | 38FC27170 | 1-2 | 200 | 260 | 250 | 2 | 2 | 30.8 |
| | 270 | 170 | 170 | 213 | 2 | 2 | 1 140 | 2 310 | 38FC27170A | 1-2 | 200 | 260 | 251 | 2 | 2 | 31.0 |
| | 270 | 200 | 200 | 212 | 2 | 2 | 1 460 | 3 080 | 314199 | 1-2 | 200 | 260 | 252 | 2 | 2 | 36.1 |
| | 280 | 200 | 200 | 214 | 2.1 | 2.1 | 1 550 | 3 100 | 38FC28200 | 1-2 | 202 | 268 | 258 | 2 | 2 | 42 |
| | 290 | 190 | 190 | 215 | 2.1 | 2.1 | 1 550 | 2 860 | 38FC29190 | 1-2 | 202 | 278 | 265 | 2 | 2 | 44.9 |



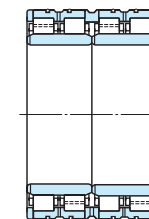
Design 2-5P

Design 2-6P

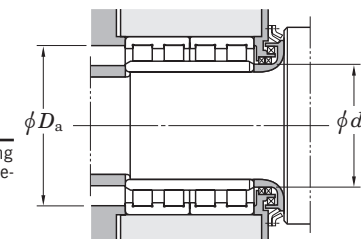


Design 3-1

Design 3-1P



Design 3-2P



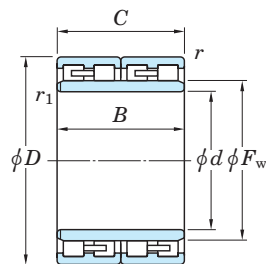
[Notes] 1) Design numbers indicate the following meanings
 with P pin type cages
 without P machined cages

| | Outer ring with rib | Outer ring with loose rib |
|---------------------|---------------------------|---------------------------|
| One inner ring | 1-1, 1-2, 1-3, 1-4 | 1-6P |
| Two inner rings | 2-1P, 2-2, 2-2P, 2-3, 2-4 | 2-5P, 2-6P |
| Extended inner ring | | 3-1, 3-1P, 3-2P |

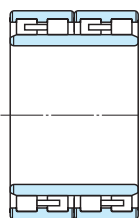
2) r_a indicates housing chamfer dimension corresponding to outer ring chamfer dimension r. r_b indicates the shaft chamfer dimension corresponding to inner ring chamfer dimension r₁.

Four-row cylindrical roller bearings

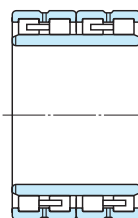
d 195 ~ 230 mm



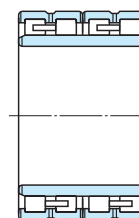
Design 1-1



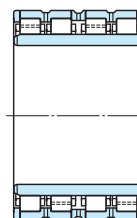
Design 1-2



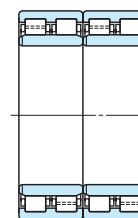
Design 1-3



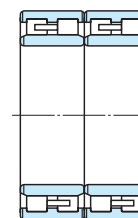
Design 1-4



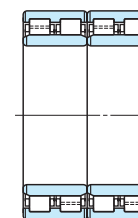
Design 1-6P



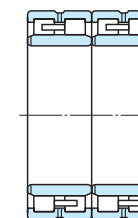
Design 2-1P



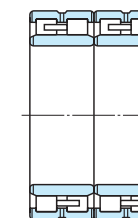
Design 2-2



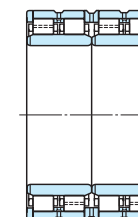
Design 2-2P



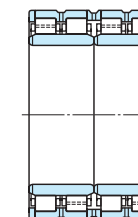
Design 2-3



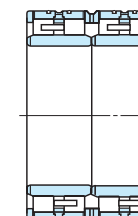
Design 2-4



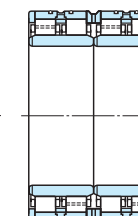
Design 2-5P



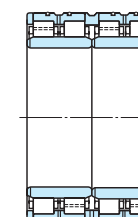
Design 2-6P



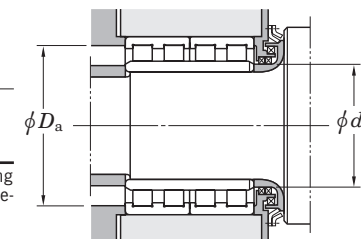
Design 3-1



Design 3-1P



Design 3-2P



| Boundary dimensions (mm) | | | | | | | Basic load ratings (kN) | | Bearing No. | Design ¹⁾ | Mounting dimensions (mm) | | | | (Refer.) Mass (kg) | |
|--------------------------|--------|-----|-----|-------|----------|------------|-------------------------|------------------|--------------------|----------------------|--------------------------|------------|--------------------------|--------------------------|--------------------|------|
| d | D | B | C | F_w | r min. | r_1 min. | C_r | C_{0r} | | | d_a min. | D_a max. | r_a ²⁾ min. | r_b ²⁾ max. | | |
| 195 | 300 | 226 | 226 | 220 | 2.1 | 2.1 | 1 960 | 3 690 | 39FC30226 | 1-2 | 207 | 288 | 274 | 2 | 2 | 57.9 |
| 200 | 270 | 170 | 170 | 222 | 2 | 2.1 | 1 190 | 2 780 | 314553 | 1-2 | 212 | 260 | 254 | 2 | 2 | 28.0 |
| | 280 | 152 | 152 | 222 | 2.1 | 2.1 | 1 100 | 2 150 | 40FC28152BW | 1-3 | 212 | 268 | 262 | 2 | 2 | 28.0 |
| | 280 | 170 | 170 | 222 | 2.1 | 2.1 | 1 280 | 2 620 | 40FC28170 | 1-2 | 212 | 268 | 262 | 2 | 2 | 31.7 |
| | 280 | 188 | 188 | 222 | 2.1 | 2.1 | 1 350 | 2 810 | 40FC28188 | 1-2 | 212 | 268 | 262 | 2 | 2 | 35.0 |
| | 280 | 190 | 190 | 223 | 3 | 3 | 1 460 | 3 100 | 40FC28190A | 1-2 | 214 | 266 | 263 | 2.5 | 2.5 | 36.0 |
| | 280 | 200 | 200 | 222 | 2 | 2 | 1 450 | 3 090 | 313893-1 | 1-2 | 210 | 270 | 262 | 2 | 2 | 37.7 |
| | 280 | 200 | 200 | 224 | 2.1 | 2.1 | 1 450 | 3 330 | 40FC28200 | 1-2 | 212 | 268 | 260 | 2 | 2 | 38.7 |
| | 290 | 192 | 192 | 226 | 2.1 | 2.1 | 1 460 | 3 030 | 313811 | 1-2 | 212 | 278 | 268 | 2 | 2 | 42.0 |
| | 310 | 160 | 160 | 232 | 2.1 | 2.1 | 1 260 | 2 240 | 40FC31160 | 1-1 | 212 | 298 | 282 | 2 | 2 | 44.6 |
| 310 | 206 | 206 | 227 | 2.1 | 2.1 | 1 790 | 3 240 | 40FC31206 | 1-2 | 212 | 298 | 283 | 2 | 2 | 56.6 | |
| 206 | 299.97 | 170 | 170 | 229 | 2 | 2 | 1 470 | 2 780 | 41FC30170 | 1-2 | 216 | 289 | 277 | 2 | 2 | 39.2 |
| 210 | 290 | 192 | 192 | 236 | 2.1 | 2.1 | 1 460 | 3 270 | 42FC29192 | 1-2 | 222 | 278 | 274 | 2 | 2 | 38.1 |
| | 300 | 210 | 210 | 234 | 2.1 | 2.1 | 1 660 | 3 490 | 42FC30210 | 1-2 | 222 | 288 | 278 | 2 | 2 | 47.3 |
| 220 | 300 | 150 | 150 | 240 | 2.1 | 2.1 | 1 210 | 2 500 | 44FC30150W | 1-3 | 232 | 288 | 280 | 2 | 2 | 30.7 |
| | 310 | 192 | 192 | 247 | 2.1 | 2.1 | 1 520 | 3 270 | 313837-1 | 1-2 | 232 | 298 | 289 | 2 | 2 | 45.5 |
| | 310 | 192 | 192 | 246 | 2 | 2 | 1 630 | 3 420 | 313837A | 1-2 | 230 | 300 | 291 | 2 | 2 | 44.9 |
| | 310 | 192 | 192 | 245 | 3 | 2.1 | 1 450 | 2 980 | 44FC31192W | 1-3 | 232 | 296 | 289 | 2.5 | 2 | 43.9 |
| | 310 | 225 | 225 | 244 | 2.1 | 2.1 | 1 880 | 4 160 | 44FC31225A | 1-2 | 232 | 298 | 288 | 2 | 2 | 53.5 |
| | 320 | 210 | 210 | 246 | 2.1 | 2.1 | 1 760 | 3 490 | 44FC32210 | 1-2 | 232 | 308 | 296 | 2 | 2 | 55.4 |
| | 320 | 210 | 210 | 248 | 2.1 | 2.1 | 1 810 | 3 740 | 44FC32210-1 | 1-4 | 232 | 308 | 296 | 2 | 2 | 56.7 |
| | 340 | 180 | 180 | 256 | 3 | 3 | 1 500 | 2 750 | 44FC34180A | 1-4 | 234 | 326 | 310 | 2.5 | 2.5 | 59.0 |
| 230 | 330 | 206 | 206 | 260 | 2.1 | 2.1 | 1 880 | 3 980 | 313824A | 1-2 | 242 | 318 | 308 | 2 | 2 | 57.5 |
| | 340 | 260 | 260 | 261 | 3 | 3 | 2 310 | 4 900 | 46FC34260 | 1-2 | 244 | 326 | 313 | 2.5 | 2.5 | 81.2 |

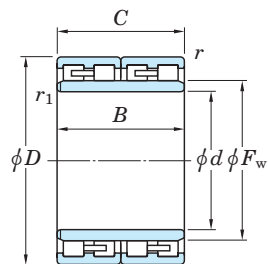
[Notes] 1) Design numbers indicate the following meanings
with P pin type cages
without P machined cages

| | Outer ring with rib | Outer ring with loose rib |
|---------------------|---------------------------|---------------------------|
| One inner ring | 1-1, 1-2, 1-3, 1-4 | 1-6P |
| Two inner rings | 2-1P, 2-2, 2-2P, 2-3, 2-4 | 2-5P, 2-6P |
| Extended inner ring | | 3-1, 3-1P, 3-2P |

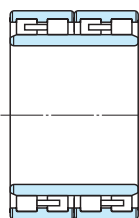
2) r_a indicates housing chamfer dimension corresponding to outer ring chamfer dimension r . r_b indicates the shaft chamfer dimension corresponding to inner ring chamfer dimension r_1 .

Four-row cylindrical roller bearings

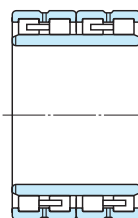
d 237 ~ (280) mm



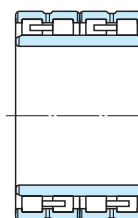
Design 1-1



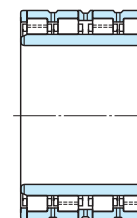
Design 1-2



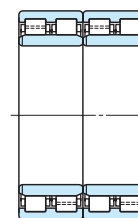
Design 1-3



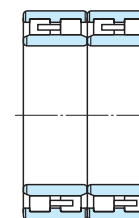
Design 1-4



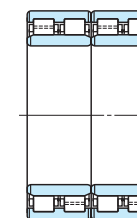
Design 1-6P



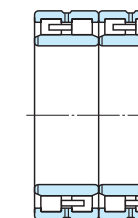
Design 2-1P



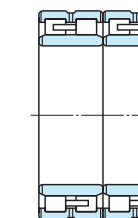
Design 2-2



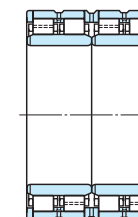
Design 2-2P



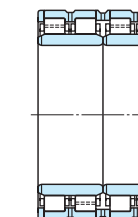
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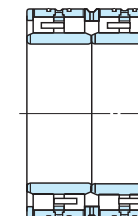
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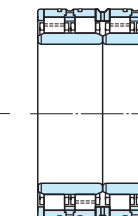
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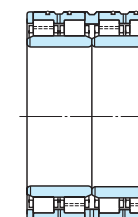
Design 2-6P



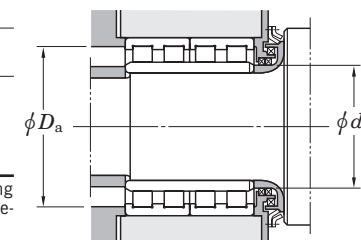
Design 3-1



Design 3-1P



Design 3-2P



| Boundary dimensions (mm) | | | | | | | Basic load ratings (kN) | | Bearing No. | Design ¹⁾ | Mounting dimensions (mm) | | | | (Refer.) Mass (kg) | |
|--------------------------|--------|-----|-----|----------------|-------------------|---------------------|-------------------------|-----------------|-------------|----------------------|--------------------------|---------------------|------------------------|------------------------|--------------------|------|
| d | D | B | C | F _w | r _{min.} | r _{1 min.} | C _r | C _{0r} | | | d _{a min.} | D _{a max.} | r _{a 2)} min. | r _{b 2)} max. | | |
| 237 | 339.67 | 200 | 200 | 264 | 2 | 2 | 1 840 | 3 780 | 47FC34200 | 1-2 | 247 | 329 | 314 | 2 | 2 | 58.0 |
| 240 | 330 | 220 | 220 | 270 | 3 | 3 | 1 780 | 4 250 | 312943/1YD | 1-4 | 254 | 316 | 310 | 2.5 | 2.5 | 55.5 |
| | 330 | 220 | 220 | 264 | 2.1 | 2.1 | 1 830 | 4 120 | 48FC33220 | 1-2 | 252 | 318 | 308 | 2 | 2 | 54.3 |
| | 330 | 220 | 220 | 268 | 3 | 3 | 1 770 | 4 070 | 48FC33220BW | 1-4 | 254 | 316 | 310 | 2.5 | 2.5 | 55.5 |
| | 330 | 250 | 250 | 263 | 2.1 | 2.1 | 2 160 | 4 910 | 48FC33250W | 1-3 | 252 | 318 | 309 | 2 | 2 | 63.7 |
| | 340 | 200 | 200 | 266 | 3 | 3 | 1 880 | 3 780 | 48FC34200 | 1-2 | 254 | 326 | 318 | 2.5 | 2.5 | 56.3 |
| | 340 | 220 | 220 | 268 | 3 | 3 | 2 000 | 4 240 | 48FC34220 | 1-2 | 254 | 326 | 318 | 2.5 | 2.5 | 63.4 |
| 250 | 350 | 220 | 220 | 278 | 3 | 3 | 1 930 | 4 200 | 50FC35220 | 1-2 | 264 | 336 | 326 | 2.5 | 2.5 | 64.6 |
| 260 | 355 | 260 | 260 | 286 | 2.1 | 2.1 | 2 290 | 5 440 | 52FC35260 | 2-2 | 272 | 343 | 332 | 2 | 2 | 75.0 |
| | 360 | 192 | 192 | 287 | 2.1 | 2.1 | 1 750 | 3 740 | 52FC36192W | 1-3 | 272 | 348 | 335 | 2 | 2 | 59.8 |
| | 360 | 200 | 200 | 287 | 2.1 | 2.1 | 1 880 | 4 110 | 52FC36200 | 1-2 | 272 | 348 | 335 | 2 | 2 | 62.0 |
| | 360 | 230 | 230 | 292.5 | 2.1 | 2.1 | 2 140 | 4 900 | 52FC36230CW | 1-4 | 272 | 348 | 340 | 2 | 2 | 69.7 |
| | 360 | 230 | 230 | 292 | 2.1 | 2.1 | 2 020 | 4 790 | 52FC36230D | 1-2 | 272 | 348 | 336 | 2 | 2 | 72.6 |
| | 360 | 260 | 260 | 287 | 2.1 | 2.1 | 2 300 | 5 320 | 52FC36260 | 2-2 | 272 | 348 | 335 | 2 | 2 | 80.0 |
| | 368 | 268 | 268 | 288 | 2.1 | 2.1 | 2 740 | 5 990 | 52FC37268W | 1-4 | 272 | 356 | 344 | 2 | 2 | 89.9 |
| | 370 | 220 | 220 | 292 | 3 | 3 | 2 000 | 4 330 | 313823 | 1-2 | 274 | 356 | 342 | 2.5 | 2.5 | 76.0 |
| | 370 | 220 | 220 | 290 | 3 | 3 | 2 180 | 4 480 | 313823A | 1-2 | 274 | 356 | 346 | 2.5 | 2.5 | 75.0 |
| | 370 | 260 | 260 | 290 | 2.1 | 2.1 | 2 640 | 5 740 | 52FC37260 | 1-2 | 272 | 358 | 346 | 2 | 2 | 88.5 |
| 265 | 370 | 234 | 234 | 292 | 1.5 | 1.5 | 2 290 | 4 910 | 53FC37234A | 1-2 | 274 | 361 | 346 | 1.5 | 1.5 | 76.3 |
| | 370 | 234 | 234 | 300 | 1.5 | 1.5 | 2 270 | 5 290 | 53FC37234B | 2-2 | 274 | 361 | 348 | 1.5 | 1.5 | 78.5 |
| 270 | 380 | 230 | 230 | 298 | 2.1 | 2.1 | 2 330 | 4 910 | 54FC38230 | 1-2 | 282 | 368 | 354 | 2 | 2 | 80.0 |
| 280 | 380 | 170 | 170 | 306 | 2.1 | 2.1 | 1 710 | 3 590 | 56FC38170W | 1-3 | 292 | 368 | 356 | 2 | 2 | 55.0 |
| | 390 | 220 | 220 | 312 | 3 | 3 | 2 070 | 4 640 | 313822 | 1-2 | 294 | 376 | 362 | 2.5 | 2.5 | 81.8 |
| | 390 | 220 | 220 | 308 | 3 | 3 | 2 180 | 4 670 | 313822A | 1-2 | 294 | 376 | 362 | 2.5 | 2.5 | 79.7 |

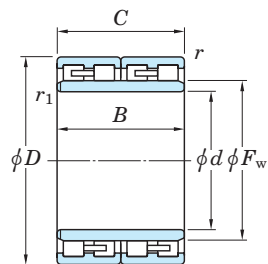
[Notes] 1) Design numbers indicate the following meanings
 with P pin type cages
 without P machined cages

| | Outer ring with rib | Outer ring with loose rib |
|---------------------|---------------------------|---------------------------|
| One inner ring | 1-1, 1-2, 1-3, 1-4 | 1-6P |
| Two inner rings | 2-1P, 2-2, 2-2P, 2-3, 2-4 | 2-5P, 2-6P |
| Extended inner ring | | 3-1, 3-1P, 3-2P |

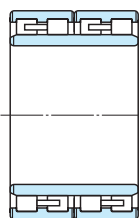
2) r_a indicates housing chamfer dimension corresponding to outer ring chamfer dimension r. r_b indicates the shaft chamfer dimension corresponding to inner ring chamfer dimension r₁.

Four-row cylindrical roller bearings

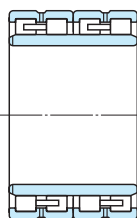
d (280) ~ (320) mm



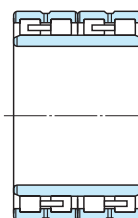
Design 1-1



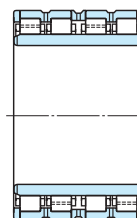
Design 1-2



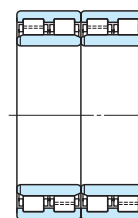
Design 1-3



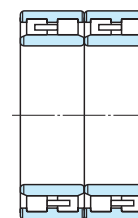
Design 1-4



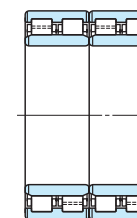
Design 1-6P



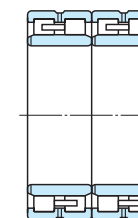
Design 2-1P



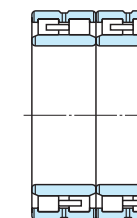
Design 2-2



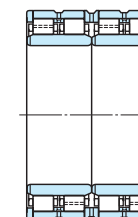
Design 2-2P



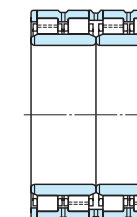
Design 2-3



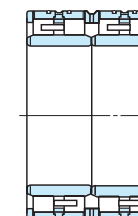
Design 2-4



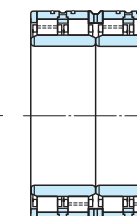
Design 2-5P



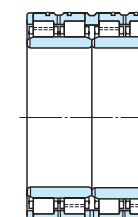
Design 2-6P



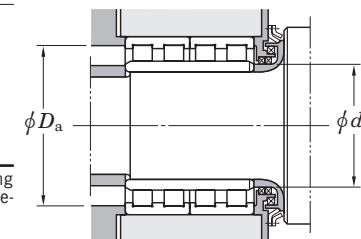
Design 3-1



Design 3-1P



Design 3-2P



| Boundary dimensions (mm) | | | | | | | Basic load ratings (kN) | | Bearing No. | Design ¹⁾ | Mounting dimensions (mm) | | | | | (Refer.) Mass (kg) |
|--------------------------|-----|-----|-----|----------------|-------------------|---------------------|-------------------------|-----------------|---|----------------------|--------------------------|---------------------|----------------------------------|----------------------------------|----------------------------------|---|
| d | D | B | C | F _w | r _{min.} | r _{1 min.} | C _r | C _{0r} | | | d _{a min.} | D _{a max.} | r _{a²⁾ min.} | r _{a²⁾ max.} | r _{b²⁾ max.} | |
| 280 | 390 | 220 | 220 | 306 | 3 | 2.1 | 2 520 | 5 350 | 313822C 313822D 56FC39240 56FC39275B 56FC39275J 56FC41300 | 1-2 | 292 | 376 | 364 | 2.5 | 2 | 79.7 80.1 88.1 100 102 137 |
| | 390 | 220 | 220 | 312 | 3 | 3 | 2 320 | 5 100 | | | 294 | 376 | 366 | 2.5 | 2.5 | |
| | 390 | 240 | 240 | 312 | 3 | 3 | 2 460 | 5 620 | | | 294 | 376 | 364 | 2.5 | 2.5 | |
| | 390 | 275 | 275 | 309 | 2.1 | 2.1 | 2 680 | 6 110 | | | 292 | 378 | 363 | 2 | 2 | |
| | 390 | 275 | 275 | 308 | 3 | 2.1 | 3 040 | 6 850 | | | 292 | 376 | 366 | 2.5 | 2 | |
| 410 | 300 | 300 | 314 | 3 | 3 | 3 730 | 8 400 | 294 | 396 | 378 | 2.5 | 2.5 | | | | |
| 290 | 390 | 234 | 234 | 320 | 3 | 3 | 2 300 | 5 500 | 58FC39234 58FC40180W 58FC41240 58FC42300 | 1-2 | 304 | 376 | 368 | 2.5 | 2.5 | 80.0 68.3 99.0 138 |
| | 400 | 180 | 180 | 320 | 3 | 3 | 1 880 | 4 010 | | | 304 | 386 | 372 | 2.5 | 2.5 | |
| | 410 | 240 | 240 | 320 | 3 | 3 | 2 610 | 5 540 | | | 304 | 396 | 380 | 2.5 | 2.5 | |
| | 420 | 300 | 300 | 327 | 3 | 3 | 3 100 | 6 960 | | | 304 | 406 | 387 | 2.5 | 2.5 | |
| 300 | 400 | 300 | 300 | 328 | 3 | 3 | 2 920 | 7 310 | 60FC40300A 60FC42218 60FC42240 4CR300 60FC42300DW 60FC42300L-2 60FC42300W | 1-2 | 314 | 386 | 378 | 2.5 | 2.5 | 103 93.0 102 |
| | 420 | 218 | 218 | 332 | 3 | 3 | 2 350 | 5 010 | | | 314 | 406 | 390 | 2.5 | 2.5 | |
| | 420 | 240 | 240 | 332 | 3 | 3 | 2 660 | 5 750 | | | 314 | 406 | 392 | 2.5 | 2.5 | |
| | 420 | 300 | 300 | 332 | 3 | 3 | 3 370 | 7 840 | | 314 | 3-2P | 406 | 392 | 2.5 | 2.5 | 125 127 129 127 |
| | 420 | 300 | 300 | 331 | 1.5 | 1.5 | 3 420 | 7 750 | | | | | | | | |
| | 420 | 300 | 300 | 332 | 2 | 2 | 3 750 | 8 690 | | | | | | | | |
| | 420 | 300 | 300 | 332 | 3 | 3 | 3 250 | 7 270 | | | | | | | | |
| 310 | 420 | 300 | 300 | 338 | 3 | 3 | 3 090 | 7 370 | 62FC42300 62FC43240 62FC44240 | 1-2 | 324 | 406 | 394 | 2.5 | 2.5 | 119 105 113 |
| | 430 | 240 | 240 | 344.5 | 3 | 3 | 2 640 | 5 770 | | | 324 | 416 | 404 | 2.5 | 2.5 | |
| | 440 | 240 | 240 | 341 | 3 | 3 | 2 820 | 5 730 | | | 324 | 426 | 409 | 2.5 | 2.5 | |
| 320 | 440 | 230 | 230 | 351 | 3 | 3 | 2 530 | 5 490 | 64FC44230/240 4CR320 64FC45240 64FC45240CW 64FC46340A | 1-2 | 334 | 426 | 411 | 2.5 | 2.5 | 103 119 117 118 187 |
| | 450 | 240 | 240 | 358 | 3 | 3 | 2 700 | 5 740 | | | 334 | 436 | 422 | 2.5 | 2.5 | |
| | 450 | 240 | 240 | 355 | 3 | 3 | 2 700 | 5 730 | | | 334 | 436 | 419 | 2.5 | 2.5 | |
| | 450 | 240 | 240 | 358 | 3 | 3 | 2 770 | 5 930 | | | 334 | 436 | 422 | 2.5 | 2.5 | |
| | 460 | 340 | 340 | 360 | 3 | 3 | 3 860 | 8 730 | | | 334 | 446 | 428 | 2.5 | 2.5 | |

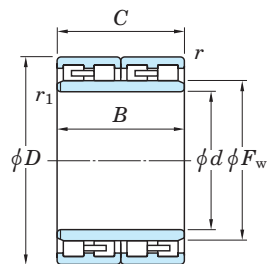
[Notes] 1) Design numbers indicate the following meanings
with P pin type cages
without P machined cages

| | Outer ring with rib | Outer ring with loose rib |
|---------------------|---------------------------|---------------------------|
| One inner ring | 1-1, 1-2, 1-3, 1-4 | 1-6P |
| Two inner rings | 2-1P, 2-2, 2-2P, 2-3, 2-4 | 2-5P, 2-6P |
| Extended inner ring | | 3-1, 3-1P, 3-2P |

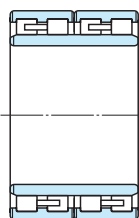
2) r_a indicates housing chamfer dimension corresponding to outer ring chamfer dimension r. r_b indicates the shaft chamfer dimension corresponding to inner ring chamfer dimension r₁.

Four-row cylindrical roller bearings

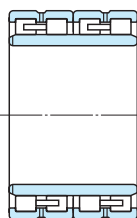
d (320) ~ 370 mm



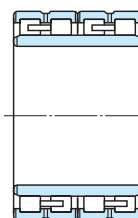
Design 1-1



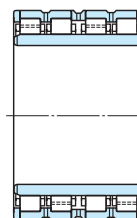
Design 1-2



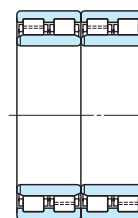
Design 1-3



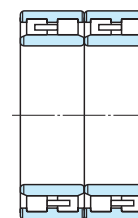
Design 1-4



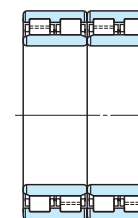
Design 1-6P



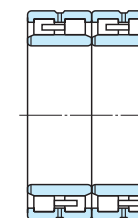
Design 2-1P



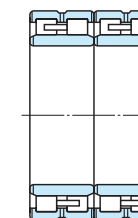
Design 2-2



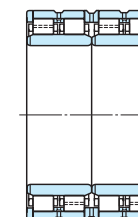
Design 2-2P



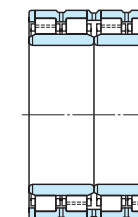
Design 2-3



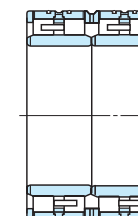
Design 2-4



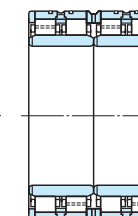
Design 2-5P



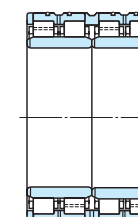
Design 2-6P



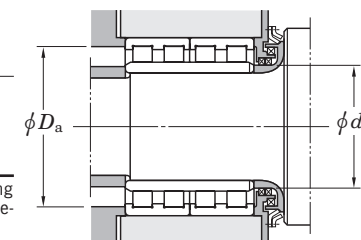
Design 3-1



Design 3-1P



Design 3-2P



| Boundary dimensions (mm) | | | | | | | Basic load ratings (kN) | | Bearing No. | Design ¹⁾ | Mounting dimensions (mm) | | | | | (Refer.) Mass (kg) | |
|--------------------------|---------|-----|-----|----------------|-------------------|-----------------------------------|-------------------------|-----------------|---|----------------------|--------------------------|---------------------|-----------------------------------|-----------------------------------|-----------------------------------|--------------------|------|
| d | D | B | C | F _w | r _{min.} | r ₁ ³⁾ min. | C _r | C _{0r} | | | d _a min. | D _a max. | r _a ²⁾ min. | r _a ²⁾ max. | r _b ²⁾ max. | | |
| 320 | 480 | 290 | 290 | 361 | 4 | 4 | 4 080 | 8 450 | 64FC48290 314274A | 2-6P | 338 | 462 | 441 | 3 | 3 | 189 | |
| | 480 | 350 | 350 | 364 | 2.1 | 2.1 | 5 010 | 11 000 | | | 332 | 468 | 444 | 2 | 2 | 227 | |
| 330 | 440 | 200 | 200 | 358 | 3 | 3 | 2 340 | 5 220 | 66FC44200AW 66FC44200W 66FC46340 66FC46340B 66FC46380W | 1-3 | 344 | 426 | 414 | 2.5 | 2.5 | 83.4 | |
| | 440 | 200 | 200 | 360 | 3 | 5 | 2 050 | 4 670 | | | 1-3 | 352 | 426 | 412 | 2.5 | 4 | 83.0 |
| | 460 | 340 | 340 | 364 | 2.1 | 2.1 | 3 860 | 9 150 | | | 1-2 | 342 | 448 | 428 | 2 | 2 | 172 |
| | 460 | 340 | 340 | 368 | 4 | 4 | 4 060 | 9 800 | | | 1-2 | 348 | 442 | 432 | 3 | 3 | 176 |
| | 460 | 380 | 380 | 364 | 2.1 | 2.1 | 4 380 | 10 800 | | | 1-4 | 342 | 448 | 428 | 2 | 2 | 195 |
| 340 | 445 | 250 | 250 | 367 | 2.1 | 4 | 2 510 | 6 110 | 68FC45250W 68FC45250BW 68FC48350-2 68FC48350D 68FC48350L 68FC48350N 68FC49300 68FC49300A | 1-3 | 358 | 433 | 419 | 2 | 3 | 100 | |
| | 450 | 250 | 250 | 368 | 2.1 | 2.1 | 2 750 | 6 480 | | | 1-3 | 352 | 438 | 424 | 2 | 2 | 106 |
| | 480 | 350 | 350 | 378 | 4 | SP | 4 580 | 11 100 | | | 2-4 | 354 | 462 | 446 | 3 | 2 | 211 |
| | 480 | 350 | 350 | 378 | 3 | SP | 4 780 | 11 500 | | | 3-2P | 354 | 466 | 448 | 2.5 | 2 | 201 |
| | 480 | 350 | 350 | 376 | 4 | 4 | 4 840 | 11 400 | | | 3-2P | 358 | 462 | 448 | 3 | 3 | 201 |
| | 480 | 385 | 350 | 378 | 2.1 | SP | 4 780 | 11 500 | | | 2-6P | 358 | 468 | 448 | 2 | 3 | 209 |
| | 490 | 300 | 300 | 380 | 5 | 5 | 3 500 | 7 690 | | | 1-2 | 362 | 468 | 450 | 4 | 4 | 187 |
| | 490 | 300 | 300 | 379 | 5 | 5 | 3 680 | 7 850 | | | 1-2 | 362 | 468 | 453 | 4 | 4 | 182 |
| 343.052 | 457.098 | 254 | 254 | 374 | 3 | 3 | 2 640 | 6 190 | 69FC46254W | 1-4 | 358 | 443 | 430 | 2.5 | 2.5 | 112 | |
| 350 | 500 | 460 | 460 | 388 | 2 | 2 | 6 570 | 16 500 | 70FC50460 | 2-6P | 360 | 490 | 464 | 2 | 2 | 296 | |
| 360 | 480 | 290 | 290 | 392 | 3 | 3 | 3 470 | 8 510 | 72FC48290 72FC50250 72FC51370 72FC52380 | 1-2 | 374 | 466 | 452 | 2.5 | 2.5 | 145 | |
| | 500 | 250 | 250 | 394 | 3 | 3 | 3 510 | 7 340 | | | 2-2 | 374 | 486 | 470 | 2.5 | 2.5 | 145 |
| | 510 | 370 | 370 | 400 | 4 | 4 | 4 590 | 11 000 | | | 1-2 | 378 | 492 | 470 | 3 | 3 | 241 |
| | 520 | 380 | 380 | 405 | 2 | 5 | 5 800 | 13 700 | | | 2-6P | 382 | 510 | 485 | 2 | 4 | 270 |
| 370 | 520 | 380 | 380 | 409 | 5 | 5 | 5 320 | 13 200 | 74FC52380 74FC52400W 74FC54400A | 2-6P | 392 | 498 | 481 | 4 | 4 | 257 | |
| | 520 | 400 | 400 | 413 | 5 | 5 | 4 740 | 11 900 | | | 2-4 | 392 | 498 | 481 | 4 | 4 | 268 |
| | 540 | 400 | 400 | 415 | 4 | 4 | 5 190 | 11 500 | | | 1-2 | 388 | 522 | 499 | 3 | 3 | 311 |

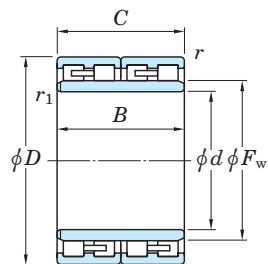
[Notes] 1) Design numbers indicate the following meanings with P pin type cages without P machined cages

| | Outer ring with rib | Outer ring with loose rib |
|---------------------|---------------------------|---------------------------|
| One inner ring | 1-1, 1-2, 1-3, 1-4 | 1-6P |
| Two inner rings | 2-1P, 2-2, 2-2P, 2-3, 2-4 | 2-5P, 2-6P |
| Extended inner ring | | 3-1, 3-1P, 3-2P |

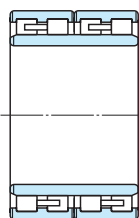
2) r_a indicates housing chamfer dimension corresponding to outer ring chamfer dimension r. r_b indicates the shaft chamfer dimension corresponding to inner ring chamfer dimension r₁.
3) SP indicates the specially chamfered form.

Four-row cylindrical roller bearings

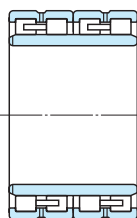
d 375 ~ (420) mm



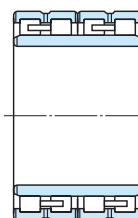
Design 1-1



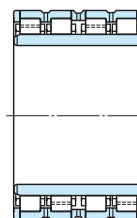
Design 1-2



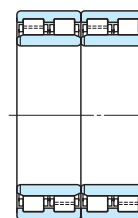
Design 1-3



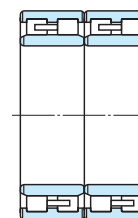
Design 1-4



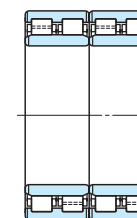
Design 1-6P



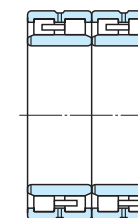
Design 2-1P



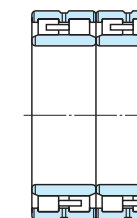
Design 2-2



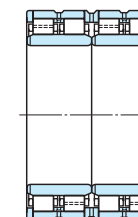
Design 2-2P



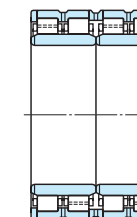
Design 2-3



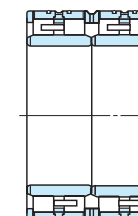
Design 2-4



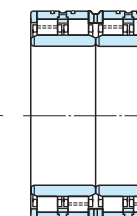
Design 2-5P



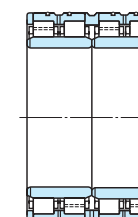
Design 2-6P



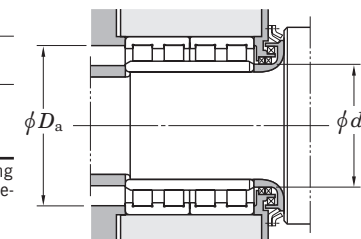
Design 3-1



Design 3-1P



Design 3-2P



| Boundary dimensions (mm) | | | | | | | Basic load ratings (kN) | | Bearing No. | Design ¹⁾ | Mounting dimensions (mm) | | | | | (Refer.) Mass (kg) |
|--------------------------|-------|-------|-------|----------------|-------------------|-----------------------------------|-------------------------|--------------------|--------------------|----------------------|--------------------------|---------------------|-----------------------------------|-----------------------------------|-----------------------------------|--------------------|
| d | D | B | C | F _w | r _{min.} | r ₁ ³⁾ min. | C _r | C _{0r} | | | d _a min. | D _a max. | r _a ²⁾ min. | r _a ²⁾ max. | r _b ²⁾ max. | |
| 375 | 545 | 400 | 400 | 417 | 4 | 4 | 6 310 | 14 500 | 75FC55400 | 3-2P | 393 | 527 | 505 | 3 | 3 | 315 |
| 380 | 520 | 280 | 280 | 417 | 4 | 4 | 3 720 | 8 550 | 76FC52280 | 1-2 | 398 | 502 | 487 | 3 | 3 | 173 |
| | 520 | 290 | 290 | 418 | 4 | 4 | 3 760 | 8 840 | 76FC52290 | 1-2 | 398 | 502 | 486 | 3 | 3 | 181 |
| | 540 | 300 | 300 | 421 | 3 | 3 | 4 650 | 10 100 | 76FC54300 | 2-6P | 394 | 526 | 505 | 2.5 | 2.5 | 222 |
| | 540 | 340 | 340 | 422 | 4 | 4 | 4 600 | 10 300 | 76FC54340W | 3-1 | 398 | 522 | 502 | 3 | 3 | 256 |
| | 540 | 360 | 360 | 422 | 4 | 4 | 5 480 | 12 900 | 76FC54360 | 2-6P | 398 | 522 | 502 | 3 | 3 | 266 |
| | 540 | 400 | 380 | 422 | 4 | 4 | 6 010 | 14 300 | 76FC54380 | 2-6P | 398 | 522 | 504 | 3 | 3 | 287 |
| | 540 | 400 | 400 | 422 | 4 | 4 | 6 040 | 14 600 | 76FC54400BW | 2-6P | 398 | 522 | 502 | 3 | 3 | 298 |
| 540 | 400 | 400 | 422 | 4 | 4 | 6 040 | 14 600 | 76FC54400DW | 3-2P | 398 | 522 | 502 | 3 | 3 | 298 | |
| 390 | 550 | 400 | 400 | 434 | 5 | SP | 5 130 | 12 400 | 78FC55400AW | 2-3 | 410 | 528 | 510 | 4 | 4 | 296 |
| 400 | 520 | 250 | 250 | 432 | 4 | 4 | 2 920 | 7 100 | 80FC52250W | 1-3 | 418 | 502 | 492 | 3 | 3 | 133 |
| | 560 | 360 | 360 | 441 | 5 | 5 | 5 570 | 13 400 | 80FC56360 | 2-6P | 422 | 538 | 521 | 4 | 4 | 277 |
| | 560 | 410 | 410 | 445 | 5 | 5 | 6 330 | 15 800 | 4CR400 | 3-2P | 422 | 538 | 525 | 4 | 4 | 310 |
| | 560 | 410 | 410 | 445 | 2 | 5 | 6 470 | 16 300 | 80FC56410 | 2-6P | 422 | 550 | 525 | 2 | 4 | 315 |
| | 600 | 380 | 380 | 450 | 5 | 5 | 6 610 | 14 300 | 80FC60380 | 2-6P | 422 | 578 | 552 | 4 | 4 | 388 |
| 406.4 | 609.6 | 304.8 | 304.8 | 460 | 5 | 5 | 4 380 | 8 750 | 81FC6130W | 1-4 | 429 | 587 | 556 | 4 | 4 | 307 |
| 410 | 546 | 400 | 400 | 448 | 5 | 5 | 5 010 | 13 000 | 82FC55400 | 2-2 | 432 | 524 | 516 | 4 | 4 | 256 |
| | 600 | 440 | 440 | 460 | 5 | 5 | 8 070 | 18 800 | 82FC60440 | 2-6P | 432 | 578 | 560 | 4 | 4 | 432 |
| 418.5 | 600 | 410 | 410 | 470 | 5 | 5 | 6 630 | 15 700 | 84FC60410A | 2-6P | 441 | 578 | 560 | 4 | 4 | 385 |
| 419 | 592 | 350 | 350 | 462 | 4 | 4 | 5 690 | 12 900 | 84FC59350 | 1-6P | 437 | 574 | 552 | 3 | 3 | 304 |
| 420 | 560 | 280 | 280 | 457 | 4 | 4 | 3 930 | 9 410 | 84FC56280 | 1-1 | 438 | 542 | 527 | 3 | 3 | 189 |
| | 560 | 400 | 400 | 458 | 4 | 4 | 4 870 | 12 700 | 84FC56400 | 2-4 | 438 | 542 | 526 | 3 | 3 | 270 |

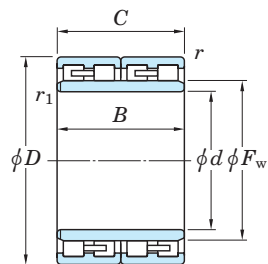
[Notes] 1) Design numbers indicate the following meanings with P pin type cages without P machined cages

| | Outer ring with rib | Outer ring with loose rib |
|---------------------|---------------------------|---------------------------|
| One inner ring | 1-1, 1-2, 1-3, 1-4 | 1-6P |
| Two inner rings | 2-1P, 2-2, 2-2P, 2-3, 2-4 | 2-5P, 2-6P |
| Extended inner ring | | 3-1, 3-1P, 3-2P |

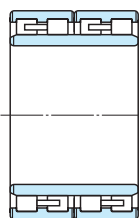
2) r_a indicates housing chamfer dimension corresponding to outer ring chamfer dimension r. r_b indicates the shaft chamfer dimension corresponding to inner ring chamfer dimension r₁.
3) SP indicates the specially chamfered form.

Four-row cylindrical roller bearings

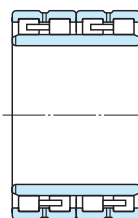
d (420) ~ (480) mm



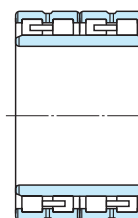
Design 1-1



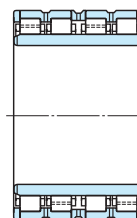
Design 1-2



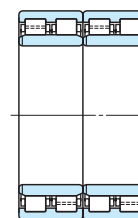
Design 1-3



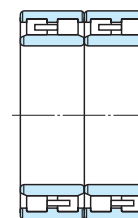
Design 1-4



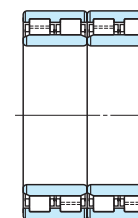
Design 1-6P



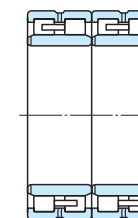
Design 2-1P



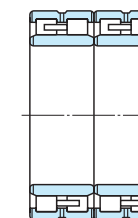
Design 2-2



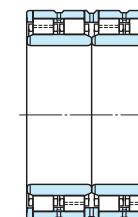
Design 2-2P



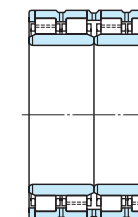
Design 2-3



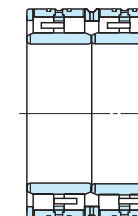
Design 2-4



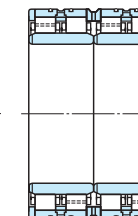
Design 2-5P



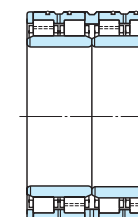
Design 2-6P



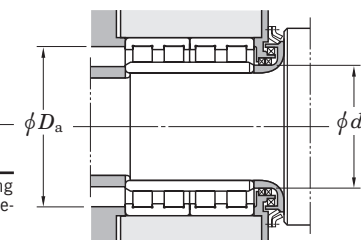
Design 3-1



Design 3-1P



Design 3-2P



| Boundary dimensions (mm) | | | | Basic load ratings (kN) | | Bearing No. | Design ¹⁾ | Mounting dimensions (mm) | | | | (Refer.) Mass (kg) | | | | |
|--------------------------|-------|--------|--------|-------------------------|-------------------|-------------|----------------------|-----------------------------------|---|--|---------------------|--------------------|---------------------|-----------------------------------|-----------------------------------|-----|
| d | D | B | C | F _w | r _{min.} | | | r ₁ ³⁾ min. | C _r | C _{0r} | d _a min. | | D _a max. | r _a ²⁾ min. | r _b ²⁾ max. | |
| 420 | 580 | 320 | 320 | 463 | 4 | 4 | 4 760 | 11 000 | 84FC58320 4CR420A | 2-4 | 438 | 562 | 543 | 3 | 3 | 249 |
| | 600 | 440 | 440 | 470 | 5 | 5 | 7 240 | 17 700 | | | 3-1P | 442 | 578 | 560 | 4 | 4 |
| 430 | 591 | 420 | 420 | 472 | 5 | 5 | 6 550 | 16 800 | 86FC59420 86FC59420-2 86FC59420A-1 86FC60450 | 2-2P 2-6P 1-3 2-6P | 452 | 569 | 552 | 4 | 4 | 345 |
| | 591 | 420 | 420 | 476 | 4 | 4 | 6 520 | 17 400 | | | 448 | 573 | 552 | 3 | 3 | 349 |
| | 591 | 420 | 420 | 476 | 4 | 4 | 5 910 | 14 700 | | | 448 | 573 | 552 | 3 | 3 | 340 |
| | 600 | 450 | 450 | 475 | 5 | 5 | 7 460 | 19 300 | | | 452 | 578 | 559 | 4 | 4 | 405 |
| 440 | 590 | 270 | 270 | 482 | 4 | 4 | 3 620 | 8 460 | 88FC59270W 4CR440 88FC62450AW 88FC64420 88FC72452 | 1-3 3-1P 2-6P 2-6P 1-6P | 458 | 572 | 554 | 3 | 3 | 207 |
| | 620 | 450 | 450 | 487 | 4 | 4 | 7 900 | 20 000 | | | 458 | 602 | 577 | 3 | 3 | 440 |
| | 620 | 450 | 450 | 487 | 4 | 4 | 7 900 | 20 000 | | | 458 | 602 | 577 | 3 | 3 | 440 |
| | 640 | 420 | 420 | 492 | 5 | 5 | 7 820 | 18 400 | | | 462 | 618 | 592 | 4 | 4 | 470 |
| | 720 | 452 | 452 | 512 | 6 | 6 | 8 570 | 16 600 | | | 468 | 692 | 652 | 5 | 5 | 740 |
| 444.5 | 660.4 | 323.85 | 323.85 | 500 | 4 | 4 | 6 040 | 12 600 | 89FC66324 | 1-6P | 463 | 642 | 608 | 3 | 3 | 400 |
| 445 | 635 | 375 | 375 | 496 | 4 | 4 | 6 240 | 14 600 | 4CR445 | 3-1P | 463 | 617 | 588 | 3 | 3 | 385 |
| 450 | 630 | 450 | 450 | 500 | 4 | 4 | 6 820 | 16 600 | 90FC63450A | 2-2 | 468 | 612 | 590 | 3 | 3 | 433 |
| 460 | 600 | 400 | 400 | 497 | 4 | SP | 5 300 | 14 300 | 92FC60400 4CR460C 92FC62400BW 92FC62400D 92FC65470W 4CR460 92FC66500 4CR460D | 2-4 3-1P 1-6P 1-4 1-6P 3-1P 2-6P 3-1P | 478 | 582 | 567 | 3 | 3 | 287 |
| | 620 | 400 | 400 | 504 | 4 | 4 | 6 850 | 18 200 | | | 478 | 602 | 584 | 3 | 3 | 350 |
| | 620 | 400 | 400 | 502 | 4 | 4 | 6 510 | 17 000 | | | 478 | 602 | 582 | 3 | 3 | 350 |
| | 620 | 400 | 400 | 502 | 4 | 4 | 5 900 | 14 800 | | | 478 | 602 | 583 | 3 | 3 | 340 |
| | 650 | 470 | 470 | 509 | 6 | 6 | 8 990 | 22 200 | | | 488 | 622 | 609 | 5 | 5 | 494 |
| | 660 | 500 | 500 | 512 | 4 | 4 | 9 310 | 23 300 | | | 478 | 642 | 612 | 3 | 3 | 590 |
| | 660 | 500 | 500 | 510 | 5 | 5 | 9 540 | 23 400 | | | 482 | 638 | 614 | 4 | 4 | 573 |
| | 680 | 400 | 400 | 504 | 4 | 4 | 7 910 | 16 600 | | | 478 | 662 | 624 | 3 | 3 | 510 |
| | 480 | 650 | 450 | 450 | 525 | 5 | 5 | 8 480 | | | 22 400 | 96FC65450B | 2-6P | 502 | 628 | 615 |

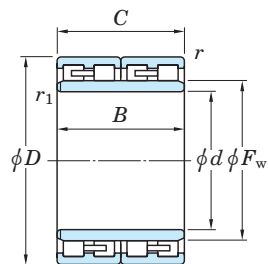
[Notes] 1) Design numbers indicate the following meanings
 with P pin type cages
 without P machined cages

| | Outer ring with rib | Outer ring with loose rib |
|---------------------|---------------------------|---------------------------|
| One inner ring | 1-1, 1-2, 1-3, 1-4 | 1-6P |
| Two inner rings | 2-1P, 2-2, 2-2P, 2-3, 2-4 | 2-5P, 2-6P |
| Extended inner ring | | 3-1, 3-1P, 3-2P |

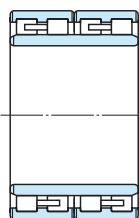
2) r_a indicates housing chamfer dimension corresponding to outer ring chamfer dimension r. r_b indicates the shaft chamfer dimension corresponding to inner ring chamfer dimension r₁.
 3) SP indicates the specially chamfered form.

Four-row cylindrical roller bearings

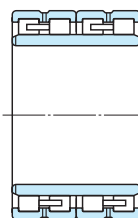
d (480) ~ 500 mm



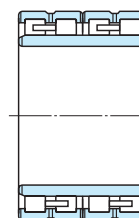
Design 1-1



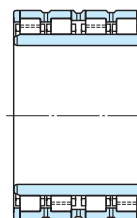
Design 1-2



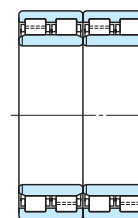
Design 1-3



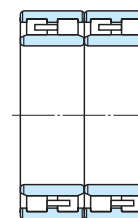
Design 1-4



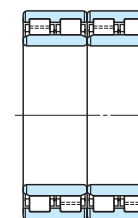
Design 1-6P



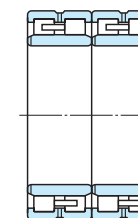
Design 2-1P



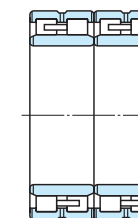
Design 2-2



Design 2-2P



Design 2-3



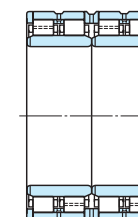
Design 2-4

| d | Boundary dimensions (mm) | | | | | Basic load ratings (kN) | | Bearing No. | Design ¹⁾ | Mounting dimensions (mm) | | | | | (Refer.) Mass (kg) | |
|-----|--------------------------|-----|-----|----------------|----------------------|-----------------------------------|----------------|-------------|----------------------|--------------------------|---------------------|---------------------|-----------------------------------|-----------------------------------|--------------------|-----------------------------------|
| | D | B | C | F _w | r ³⁾ min. | r ₁ ³⁾ min. | C _r | | | C _{0r} | d _a min. | D _a max. | r _a ²⁾ min. | r _b ²⁾ max. | | r _a ²⁾ max. |
| 480 | 650 | 460 | 460 | 526 | 5 | 5 | 7 730 | 20 800 | 96FC65460 | 2-6P | 502 | 628 | 610 | 4 | 4 | 443 |
| | 680 | 460 | 460 | 532 | 5 | 5 | 8 620 | 21 300 | 96FC68460 | 2-6P | 502 | 658 | 632 | 4 | 4 | 545 |
| | 680 | 500 | 500 | 534 | 5 | 5 | 8 620 | 22 000 | 4CR480 | 3-1P | 502 | 658 | 630 | 4 | 4 | 580 |
| | 680 | 500 | 500 | 534 | 5 | 5 | 8 620 | 22 000 | 4CR480B | 3-2P | 502 | 658 | 630 | 4 | 4 | 580 |
| | 680 | 500 | 500 | 532 | 5 | 5 | 9 550 | 24 300 | 96FC68500A | 2-6P | 502 | 658 | 632 | 4 | 4 | 595 |
| 495 | 615 | 360 | 360 | 530 | SP | SP | 4 030 | 12 000 | 99FC62360 | 2-4 | 511 | 597 | 586 | 3 | 3 | 235 |
| 500 | 670 | 450 | 450 | 540 | 5 | SP | 8 460 | 22 500 | 100FC67450A-3 | 2-6P | 522 | 648 | 630 | 4 | 4 | 451 |
| | 680 | 420 | 405 | 550 | 5 | 5 | 6 710 | 17 600 | 100FC68405 | 2-6P | 522 | 658 | 634 | 4 | 4 | 442 |
| | 680 | 450 | 450 | 542.5 | 4 | 4 | 8 980 | 23 100 | 100FC68450 | 2-6P | 518 | 662 | 639 | 3 | 3 | 495 |
| | 690 | 510 | 510 | 550 | 5 | 5 | 9 350 | 24 600 | 100FC69510A | 3-2P | 522 | 668 | 646 | 4 | 4 | 562 |
| | 710 | 480 | 480 | 558 | 6 | 6 | 9 770 | 24 800 | 100FC71480 | 2-6P | 528 | 682 | 662 | 5 | 5 | 631 |
| | 720 | 400 | 400 | 558 | 5 | 6 | 8 320 | 18 900 | 100FC72400 | 1-6P | 528 | 698 | 672 | 4 | 5 | 549 |
| | 720 | 530 | 530 | 560 | 6 | 6 | 10 800 | 26 500 | 100FC72530 | 2-6P | 528 | 692 | 674 | 5 | 5 | 725 |
| | 720 | 530 | 530 | 568 | 5 | 4 | 11 000 | 28 900 | 100FC72530C | 2-6P | 518 | 698 | 672 | 4 | 3 | 742 |
| | 720 | 530 | 530 | 560 | 6 | 6 | 10 800 | 26 500 | 100FC72530W | 3-2P | 528 | 692 | 674 | 5 | 5 | 725 |

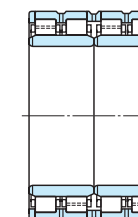
[Notes] 1) Design numbers indicate the following meanings with P pin type cages without P machined cages

| | Outer ring with rib | Outer ring with loose rib |
|---------------------|---------------------------|---------------------------|
| One inner ring | 1-1, 1-2, 1-3, 1-4 | 1-6P |
| Two inner rings | 2-1P, 2-2, 2-2P, 2-3, 2-4 | 2-5P, 2-6P |
| Extended inner ring | | 3-1, 3-1P, 3-2P |

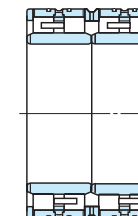
2) r_a indicates housing chamfer dimension corresponding to outer ring chamfer dimension r. r_b indicates the shaft chamfer dimension corresponding to inner ring chamfer dimension r₁.
3) SP indicates the specially chamfered form.



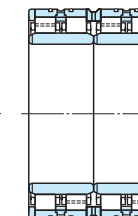
Design 2-5P



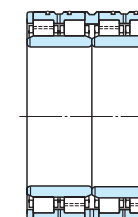
Design 2-6P



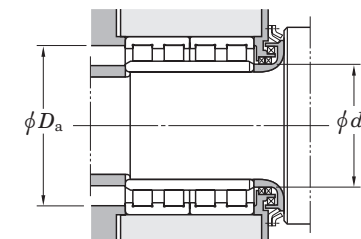
Design 3-1



Design 3-1P

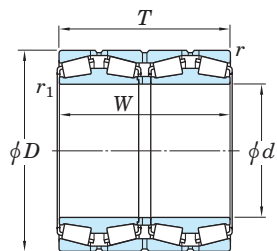


Design 3-2P

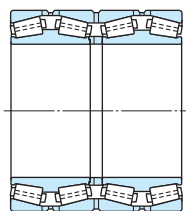


Four-row tapered roller bearings

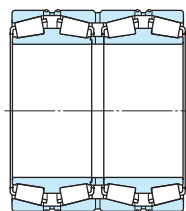
d 65 ~ 133.350 mm



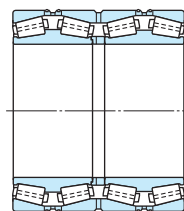
Design 1



Design 1-P

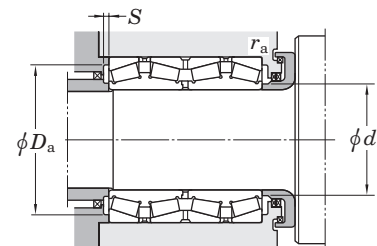


Design 2



Design 2-P

For oil mist lubrication



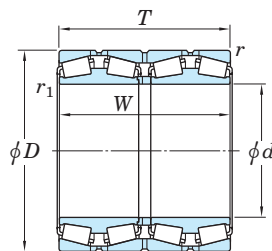
| Boundary dimensions (mm) | | | | | | Basic load ratings (kN) | | Bearing No. ¹⁾ | Design | Mounting dimensions (mm) | | | | | | Constant e | Axial load factors | | | (Refer.) Mass (kg) |
|--------------------------|---------|---------|---------|------------|--------------|-------------------------|----------|---------------------------|--------|--------------------------|------------|------------|----------|------------|--------------------------|--------------|--------------------|-------|-------|--------------------|
| d | D | T | W | $r_{min.}$ | $r_{1 min.}$ | C_r | C_{0r} | | | d_a max. | D_a max. | D_a min. | S min. | r_a max. | r_b ²⁾ max. | | Y_2 | Y_3 | Y_0 | |
| 65 | 100 | 98 | 98 | 1.5 | 0.3 | 309 | 550 | 47T131010 | 1 | 73 | 91.5 | 87 | 3.6 | 1.5 | 0.3 | 0.46 | 1.47 | 2.19 | 1.44 | 2.82 |
| 80 | 115 | 88 | 88 | 1.5 | 1.5 | 265 | 543 | 47T1611 | 1 | 91 | 106.5 | 102 | 3.4 | 1.5 | 1.5 | 0.33 | 2.03 | 3.02 | 1.98 | 2.99 |
| 95 | 130 | 100 | 100 | 1.5 | 1.5 | 347 | 729 | 47T191310 | 1 | 104 | 121.5 | 117 | 3.5 | 1.5 | 1.5 | 0.33 | 2.03 | 3.02 | 1.98 | 3.83 |
| 100 | 140 | 104 | 104 | 2 | 2.5 | 338 | 661 | 37220 | 1 | 112 | 130 | 125 | 3.8 | 2 | 2 | 0.28 | 2.37 | 3.53 | 2.32 | 4.6 |
| | 140 | 104 | 104 | 2 | 1 | 407 | 852 | 37220A | 1 | 110 | 130 | 125 | 4.1 | 2 | 1 | 0.40 | 1.68 | 2.50 | 1.64 | 4.8 |
| | 170 | 155 | 155 | 2 | 2.5 | 787 | 1 470 | 47T2017 | 1 | 119 | 160 | 149 | 5.7 | 2 | 2 | 0.35 | 1.95 | 2.90 | 1.91 | 14.7 |
| 105 | 160 | 150 | 150 | 1.5 | 1 | 747 | 1 420 | 47T211615 | 1 | 118 | 151.5 | 146 | 5.9 | 1.5 | 1 | 0.33 | 2.03 | 3.02 | 1.98 | 10.6 |
| 110 | 155 | 114 | 114 | 2 | 2.5 | 475 | 955 | 37222 | 1 | 121 | 145 | 140 | 4.8 | 2 | 2 | 0.33 | 2.03 | 3.02 | 1.98 | 6.45 |
| | 160 | 115 | 115 | 1.5 | 1 | 548 | 1 030 | 47T221612 | 1 | 121 | 151.5 | 146 | 5.2 | 1.5 | 1 | 0.43 | 1.57 | 2.34 | 1.53 | 7.63 |
| | 180 | 154 | 154 | 2 | 2.5 | 882 | 1 530 | 47T221815 | 1 | 127 | 170 | 162 | 5.9 | 2 | 2 | 0.39 | 1.74 | 2.59 | 1.70 | 15.4 |
| | 180 | 170 | 170 | 1 | 1 | 989 | 1 770 | 47T221817 | 1 | 126 | 174.5 | 162 | 6.5 | 1 | 1 | 0.33 | 2.03 | 3.02 | 1.98 | 17 |
| 115 | 155 | 115 | 115 | 1.5 | 0.6 | 437 | 1 020 | 47T231612A | 1 | 126 | 146.5 | 142 | 3.4 | 1.5 | 0.6 | 0.40 | 1.68 | 2.50 | 1.64 | 6.12 |
| | 160 | 120 | 120 | 1.5 | 0.6 | 560 | 1 160 | 47T231612 | 1 | 124 | 151.5 | 147 | 5.7 | 1.5 | 0.6 | 0.35 | 1.95 | 2.90 | 1.91 | 7.2 |
| 120 | 170 | 124 | 124 | 2 | 2.5 | 472 | 943 | 37224 | 1 | 135 | 160 | 155 | 4.1 | 2 | 2 | 0.28 | 2.37 | 3.53 | 2.32 | 8.56 |
| | 170 | 130 | 130 | 1.5 | 2 | 591 | 1 290 | 47T241713 | 1 | 133 | 161.5 | 155 | 4.4 | 1.5 | 2 | 0.40 | 1.68 | 2.50 | 1.64 | 9.38 |
| | 200 | 132 | 132 | 2 | 2.5 | 706 | 1 200 | 47324 | 1 | 143 | 190 | 178 | 5.7 | 2 | 2 | 0.35 | 1.95 | 2.90 | 1.91 | 16.5 |
| | 210 | 174 | 174 | 2.5 | 3 | 1 110 | 1 770 | 47T242117 | 1 | 143 | 198 | 188 | 4 | 2 | 2.5 | 0.33 | 2.03 | 3.02 | 1.98 | 24.5 |
| 120.650 | 161.925 | 106.365 | 106.365 | 1.6 | 1.6 | 322 | 771 | L624549D/514/514D | 1 | 130 | 153 | 147 | 5.1 | 1.6 | 1.6 | 0.43 | 1.56 | 2.32 | 1.52 | 6.24 |
| | 166.688 | 152.414 | 152.400 | 3.3 | 1.6 | 637 | 1 460 | LM124449D/410/410D | 1 | 132 | 155 | 150 | 2.3 | 3.3 | 1.6 | 0.29 | 2.30 | 3.42 | 2.25 | 9.84 |
| | 174.625 | 139.703 | 141.288 | 1.6 | 0.8 | 712 | 1 450 | M224749D/710/710D | 1 | 133 | 166 | 159 | 4.9 | 1.6 | 0.8 | 0.33 | 2.03 | 3.02 | 1.98 | 11.1 |
| 127.000 | 182.563 | 158.750 | 158.750 | 3.2 | 1.6 | 778 | 1 720 | 48290D/20/20D | 1 | 140 | 171 | 166 | 3.7 | 3.2 | 1.6 | 0.31 | 2.21 | 3.29 | 2.16 | 13.6 |
| 130 | 184 | 134 | 134 | 2 | 2.5 | 645 | 1 330 | 37226 | 1 | 143 | 174 | 169 | 4.3 | 2 | 2 | 0.33 | 2.03 | 3.02 | 1.98 | 11 |
| 133.350 | 196.850 | 193.675 | 193.675 | 3.2 | 1.6 | 1 070 | 2 240 | 67390D/22/22D | 1 | 148 | 185 | 180 | 5.6 | 3.2 | 1.6 | 0.34 | 1.96 | 2.92 | 1.92 | 19.8 |

[Notes] 1) While metric series bearings have minus tolerances for bore and OD, inch series have plus tolerances. Refer to page C 82 for details of applicable tolerance standards.

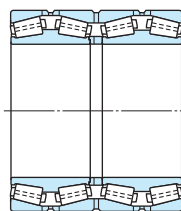
2) r_b indicates the shaft chamfer dimension corresponding to cone chamfer dimension r_1 .

Four-row tapered roller bearings

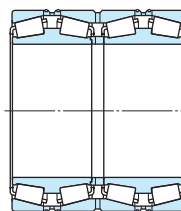
d 135 ~ 170 mm



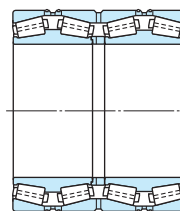
Design 1



Design 1-P

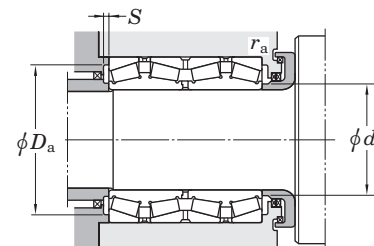


Design 2



Design 2-P

For oil mist lubrication



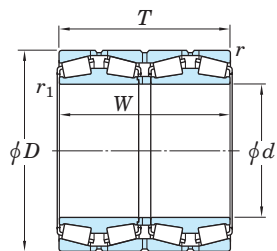
| Boundary dimensions (mm) | | | | | | Basic load ratings (kN) | | Bearing No. ¹⁾ | Design | Mounting dimensions (mm) | | | | | Constant e | Axial load factors | | | (Refer.) Mass (kg) | |
|--------------------------|---------|---------|---------|----------|------------|-------------------------|----------|---------------------------|--------|--------------------------|------------|------------|----------|------------|--------------|--------------------------|-------|-------|--------------------|-------|
| d | D | T | W | r min. | r_1 min. | C_r | C_{0r} | | | d_a max. | D_a max. | D_a min. | S min. | r_a max. | | r_b ²⁾ max. | Y_2 | Y_3 | | Y_0 |
| 135 | 180 | 160 | 160 | 1.5 | 1 | 559 | 1 290 | 47T271816 | 1 | 146 | 171.5 | 166 | 1.4 | 1.5 | 1 | 0.33 | 2.03 | 3.02 | 1.98 | 10.7 |
| | 195 | 160 | 160 | 1.5 | 0.6 | 938 | 1 930 | 47T272016 | 1 | 147 | 186.5 | 179 | 3.9 | 1.5 | 0.6 | 0.33 | 2.03 | 3.02 | 1.98 | 15.4 |
| 136.525 | 190.500 | 161.925 | 161.925 | 3.2 | 1.6 | 809 | 1 890 | 47T271916 | 2 | 150 | 179 | 174 | 4.8 | 3.2 | 1.6 | 0.32 | 2.10 | 3.13 | 2.06 | 14.3 |
| | 190.500 | 161.925 | 161.925 | 3.2 | 1.6 | 809 | 1 890 | 48393D/20/20D | 1 | 150 | 179 | 174 | 4.8 | 3.2 | 1.6 | 0.32 | 2.10 | 3.13 | 2.06 | 14.3 |
| 139.700 | 200.025 | 160.340 | 157.166 | 3.3 | 0.8 | 844 | 1 960 | 48680D/20/20D | 1 | 157 | 187 | 182 | 4 | 3.3 | 0.8 | 0.34 | 2.01 | 2.99 | 1.96 | 16.6 |
| 140 | 198 | 144 | 144 | 2 | 2.5 | 770 | 1 650 | 37228 | 1 | 157 | 188 | 183 | 5.3 | 2 | 2 | 0.28 | 2.43 | 3.61 | 2.37 | 13.6 |
| | 210 | 114 | 114 | 2 | 2.5 | 623 | 1 130 | 47228 | 1 | 160 | 200 | 190 | 6 | 2 | 2 | 0.27 | 2.47 | 3.67 | 2.41 | 13.7 |
| | 225 | 145 | 145 | 2.5 | 3 | 973 | 1 610 | 47328 | 1 | 161 | 213 | 203 | 6.5 | 2 | 2.5 | 0.40 | 1.68 | 2.50 | 1.64 | 21.2 |
| 145 | 195 | 130 | 130 | 1.5 | 0.6 | 641 | 1 550 | 47T292013 | 1 | 158 | 186.5 | 177 | 5.1 | 1.5 | 0.6 | 0.40 | 1.68 | 2.50 | 1.64 | 11.1 |
| 150 | 210 | 190 | 190 | 2 | 0.6 | 993 | 2 270 | 47T302119 | 1 | 163 | 200 | 190 | 5 | 2 | 0.6 | 0.39 | 1.74 | 2.59 | 1.70 | 20.2 |
| | 212 | 155 | 155 | 2.5 | 3 | 774 | 1 640 | 37230 | 1 | 168 | 200 | 190 | 6 | 2 | 2.5 | 0.28 | 2.37 | 3.53 | 2.32 | 16.7 |
| 152.400 | 222.250 | 174.625 | 174.625 | 1.6 | 1.6 | 1 080 | 2 390 | M231649D/610/610D | 1 | 168 | 213 | 201 | 6 | 1.6 | 1.6 | 0.33 | 2.03 | 3.02 | 1.98 | 22.8 |
| 160 | 226 | 165 | 165 | 2.5 | 3 | 873 | 1 870 | 37232 | 1 | 178 | 214 | 204 | 6 | 2 | 2.5 | 0.28 | 2.37 | 3.53 | 2.32 | 20.1 |
| | 250 | 145 | 145 | 2.5 | 3 | 1 090 | 1 870 | 47T322515 | 1 | 182 | 238 | 226 | 6.5 | 2 | 2.5 | 0.33 | 2.03 | 3.02 | 1.98 | 25.4 |
| | 265 | 173 | 173 | 2.5 | 1 | 1 320 | 2 400 | 47T322717 | 1 | 193 | 253 | 241 | 7 | 2 | 1 | 0.35 | 1.95 | 2.90 | 1.91 | 37.6 |
| 165.100 | 225.425 | 168.275 | 165.100 | 3.2 | 0.8 | 868 | 2 140 | 46791D/20/21D | 1 | 180 | 213 | 203 | 4.5 | 3.2 | 0.8 | 0.38 | 1.77 | 2.63 | 1.73 | 19.7 |
| 168.275 | 247.650 | 192.088 | 192.088 | 3.2 | 1.6 | 1 190 | 2 800 | 67782D/20/21D | 1 | 189 | 236 | 226 | 5 | 3.2 | 1.6 | 0.44 | 1.54 | 2.29 | 1.50 | 31.7 |
| 170 | 230 | 175 | 175 | 2 | 1 | 1 030 | 2 370 | 47T342318 | 1 | 183 | 220 | 210 | 6 | 2 | 1 | 0.40 | 1.68 | 2.50 | 1.64 | 19.9 |
| | 240 | 175 | 175 | 2.5 | 3 | 1 020 | 2 310 | 37234A | 1 | 189 | 228 | 218 | 5 | 2 | 2.5 | 0.33 | 2.03 | 3.02 | 1.98 | 24.2 |
| | 240 | 175 | 175 | 2.5 | 1.5 | 1 120 | 2 340 | 47T342418A | 2 | 184 | 228 | 218 | 7.5 | 2 | 1.5 | 0.40 | 1.68 | 2.50 | 1.64 | 24.7 |
| | 260 | 160 | 160 | 2.5 | 3 | 1 110 | 1 900 | 47T342616 | 1 | 194 | 248 | 238 | 6 | 2 | 2.5 | 0.35 | 1.95 | 2.90 | 1.91 | 28.5 |
| | 280 | 181 | 181 | 2.5 | 3 | 1 330 | 2 420 | 47334/181 | 1 | 202 | 268 | 250 | 6 | 2 | 2.5 | 0.33 | 2.03 | 3.02 | 1.98 | 44 |
| | 280 | 185 | 185 | 2.5 | 3 | 1 330 | 2 420 | 47334 | 1 | 202 | 268 | 250 | 6 | 2 | 2.5 | 0.33 | 2.03 | 3.02 | 1.98 | 44.8 |

[Notes] 1) While metric series bearings have minus tolerances for bore and OD, inch series have plus tolerances. Refer to page C 82 for details of applicable tolerance standards.

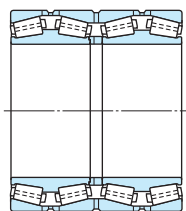
2) r_b indicates the shaft chamfer dimension corresponding to cone chamfer dimension r_1 .

Four-row tapered roller bearings

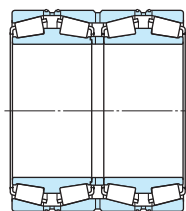
d 177.800 ~ 205 mm



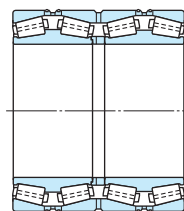
Design 1



Design 1-P

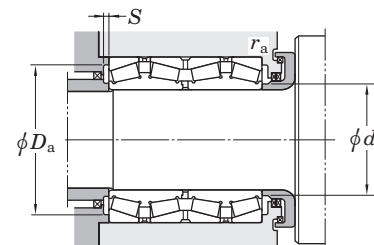


Design 2



Design 2-P

For oil mist lubrication



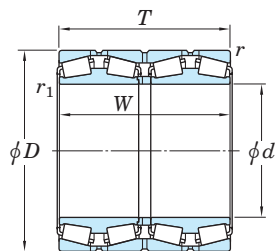
| Boundary dimensions (mm) | | | | | | Basic load ratings (kN) | | Bearing No. ¹⁾ | Design | Mounting dimensions (mm) | | | | | | Constant e | Axial load factors | | | (Refer.) Mass (kg) |
|--------------------------|---------|---------|---------|------------|--------------|-------------------------|----------|---------------------------|--------|--------------------------|------------|------------|----------|------------|--------------------------|--------------|--------------------|-------|-------|--------------------|
| d | D | T | W | $r_{min.}$ | $r_{1 min.}$ | C_r | C_{0r} | | | d_a max. | D_a max. | D_a min. | S min. | r_a max. | r_b ²⁾ max. | | Y_2 | Y_3 | Y_0 | |
| 177.800 | 247.650 | 192.088 | 192.088 | 3.2 | 1.6 | 1 190 | 2 800 | 67791D/20/21D | 1 | 189 | 235 | 225 | 5 | 3.2 | 1.6 | 0.44 | 1.54 | 2.29 | 1.50 | 28.4 |
| | 279.400 | 234.948 | 234.950 | 3.2 | 1.6 | 1 660 | 3 290 | 82681D/20/20D | 1 | 197 | 267 | 251 | 6.5 | 3.2 | 1.6 | 0.52 | 1.29 | 1.92 | 1.26 | 52.5 |
| | 285.750 | 222.245 | 222.500 | 3.2 | 1.6 | 1 520 | 2 860 | EE91700D/112/113XD | 1 | 201 | 273 | 251 | 3.5 | 3.2 | 1.6 | 0.43 | 1.57 | 2.34 | 1.53 | 53.7 |
| 180 | 250 | 185 | 185 | 2.5 | 3 | 1 140 | 2 550 | 47T362519 | 1 | 198 | 238 | 228 | 6 | 2 | 2.5 | 0.33 | 2.03 | 3.02 | 1.98 | 26.9 |
| | 254 | 185 | 185 | 2.5 | 3 | 1 140 | 2 550 | 37236 | 1 | 198 | 242 | 232 | 6 | 2 | 2.5 | 0.33 | 2.03 | 3.02 | 1.98 | 29.1 |
| | 260 | 160 | 160 | 2.5 | 1 | 1 090 | 2 090 | 47T362616 | 1 | 198 | 248 | 238 | 5 | 2 | 1 | 0.37 | 1.80 | 2.69 | 1.76 | 26.4 |
| | 260 | 200 | 200 | 2 | 2.5 | 1 390 | 2 950 | 47T362620 | 1 | 200 | 250 | 240 | 4.5 | 2 | 2 | 0.31 | 2.15 | 3.20 | 2.10 | 33.6 |
| | 280 | 181 | 181 | 2.5 | 3 | 1 510 | 2 830 | 47T362818A | 1 | 204 | 268 | 253 | 8 | 2 | 2.5 | 0.33 | 2.03 | 3.02 | 1.98 | 40.8 |
| | 300 | 202 | 202 | 3 | 4 | 1 580 | 2 750 | 47336 | 1 | 211 | 286 | 267 | 5.5 | 2.5 | 3 | 0.35 | 1.95 | 2.90 | 1.91 | 54.9 |
| | 300 | 280 | 280 | 3 | 4 | 2 400 | 4 430 | 47T363028 | 1 | 211 | 286 | 270 | 6 | 2.5 | 3 | 0.33 | 2.03 | 3.02 | 1.98 | 78.4 |
| 187 | 270 | 210 | 210 | 2.5 | 1 | 1 660 | 3 570 | 47T372721B | 1 | 205 | 258 | 248 | 8 | 2 | 1 | 0.33 | 2.03 | 3.02 | 1.98 | 39.1 |
| 187.325 | 269.875 | 211.138 | 211.138 | 3.2 | 1.6 | 1 410 | 3 220 | M238849D/810/810D | 1 | 206 | 257 | 245 | 5 | 3.2 | 1.6 | 0.33 | 2.03 | 3.02 | 1.98 | 39.5 |
| 190 | 268 | 196 | 196 | 2.5 | 3 | 1 210 | 2 760 | 37238 | 1 | 210 | 256 | 246 | 6 | 2 | 2.5 | 0.33 | 2.03 | 3.02 | 1.98 | 33.4 |
| | 270 | 160 | 160 | 2.5 | 1 | 1 170 | 2 370 | 47T382716 | 1 | 208 | 258 | 248 | 7 | 2 | 1 | 0.40 | 1.68 | 2.50 | 1.64 | 28.3 |
| 190.000 | 270.000 | 190.000 | 190.000 | 3.2 | 1.6 | 1 160 | 2 810 | 4TR3827 | 1 | 208 | 257 | 244 | 6 | 3.2 | 1.6 | 0.48 | 1.42 | 2.11 | 1.38 | 34.7 |
| 190.500 | 266.700 | 188.913 | 187.325 | 3.2 | 1.6 | 1 160 | 2 810 | 67885D/67820/67820D | 1 | 208.5 | 255.3 | 245.1 | 6 | 3.2 | 1.6 | 0.48 | 1.42 | 2.11 | 1.38 | 32.4 |
| 198.438 | 284.163 | 225.425 | 225.425 | 3.2 | 1.6 | 1 740 | 3 780 | M240648D/611/611D | 1 | 215 | 271 | 260 | 5 | 3.2 | 1.6 | 0.33 | 2.03 | 3.02 | 1.98 | 44.7 |
| 200 | 280 | 206 | 206 | 2.5 | 1.5 | 1 670 | 3 830 | 47T402821 | 1 | 216 | 268 | 258 | 6.5 | 2 | 1.5 | 0.39 | 1.71 | 2.54 | 1.67 | 39.7 |
| | 282 | 206 | 206 | 2.5 | 3 | 1 490 | 3 380 | 37240 | 1 | 223 | 270 | 260 | 5.5 | 2 | 2.5 | 0.28 | 2.43 | 3.61 | 2.37 | 39.6 |
| | 340 | 234 | 234 | 3 | 4 | 2 340 | 4 150 | 47T403423 | 1 | 234 | 326 | 302 | 6 | 2.5 | 4 | 0.40 | 1.68 | 2.50 | 1.64 | 86 |
| 203.200 | 317.500 | 209.550 | 215.900 | 3.2 | 3.2 | 1 510 | 2 900 | EE132082D/125/126D | 1 | 235 | 304 | 284 | 7 | 3.2 | 3.2 | 0.31 | 2.15 | 3.21 | 2.11 | 61 |
| | 317.500 | 266.700 | 266.700 | 3.2 | 1.6 | 2 070 | 4 540 | 93800D/125/127D | 1 | 223 | 304 | 278 | 6.5 | 3.2 | 1.6 | 0.52 | 1.29 | 1.92 | 1.26 | 78.8 |
| 205 | 320 | 205 | 205 | 3 | 4 | 1 740 | 3 030 | 47T413221 | 1 | 230 | 306 | 292 | 7.5 | 2.5 | 3 | 0.46 | 1.46 | 2.17 | 1.42 | 58.9 |

[Notes] 1) While metric series bearings have minus tolerances for bore and OD, inch series have plus tolerances. Refer to page C 82 for details of applicable tolerance standards.

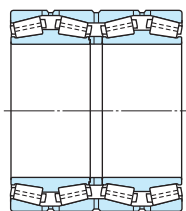
2) r_b indicates the shaft chamfer dimension corresponding to cone chamfer dimension r_1 .

Four-row tapered roller bearings

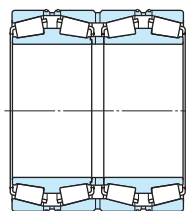
d 206.375 ~ 235 mm



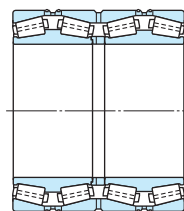
Design 1



Design 1-P

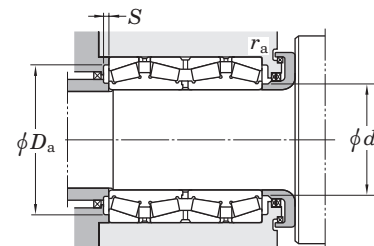


Design 2



Design 2-P

For oil mist lubrication



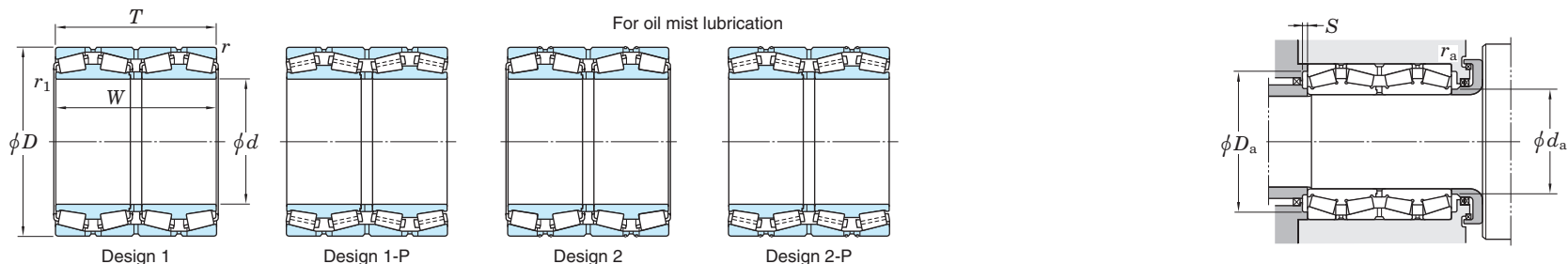
| Boundary dimensions (mm) | | | | | | Basic load ratings (kN) | | Bearing No. ¹⁾ | Design | Mounting dimensions (mm) | | | | | | Constant e | Axial load factors | | | (Refer.) Mass (kg) |
|--------------------------|---------|---------|---------|----------|------------|-------------------------|-----------|---------------------------|--------|--------------------------|------------|------------|----------|------------|--------------------------|--------------|--------------------|-------|-------|--------------------|
| d | D | T | W | r min. | r_1 min. | C_r | C_{0r} | | | d_a max. | D_a max. | D_a min. | S min. | r_a max. | r_b ²⁾ max. | | Y_2 | Y_3 | Y_0 | |
| 206.375 | 282.575 | 184.150 | 184.150 | 3.2 | 0.8 | 1 200 | 2 830 | 67985D/20/20D | 1 | 219 | 270 | 259 | 7 | 3.2 | 0.8 | 0.51 | 1.33 | 1.97 | 1.30 | 33.9 |
| | 282.575 | 190.500 | 190.500 | 3.2 | 0.8 | 1 200 | 2 830 | 67986D/20/21D | 1 | 222 | 270 | 259 | 7 | 3.2 | 0.8 | 0.51 | 1.33 | 1.97 | 1.30 | 34.8 |
| | 282.575 | 210.000 | 210.000 | 3.2 | 0.8 | 1 380 | 3 010 | 47T412821A | 1 | 219 | 270 | 260 | 3.5 | 3.2 | 0.8 | 0.43 | 1.57 | 2.34 | 1.53 | 36.2 |
| 215.090 | 311.150 | 228.600 | 228.600 | 3.2 | 1.6 | 1 750 | 4 040 | 47T433123 | 1 | 233 | 297 | 278 | 7 | 3.2 | 1.6 | 0.40 | 1.68 | 2.50 | 1.64 | 57.5 |
| 215.900 | 288.925 | 177.800 | 177.800 | 3.2 | 0.8 | 1 220 | 3 120 | LM742749D/714/714D | 1 | 229 | 276 | 265 | 5.5 | 3.2 | 0.8 | 0.48 | 1.40 | 2.09 | 1.37 | 32.8 |
| | 336.550 | 266.700 | 266.700 | 3.2 | 6.4 | 2 430 | 4 760 | 47T433427 | 1 | 238 | 323 | 304 | 6.5 | 3.2 | 6.4 | 0.50 | 1.34 | 2.00 | 1.32 | 85.1 |
| 216.103 | 330.200 | 269.875 | 263.525 | 3.2 | 1.6 | 2 500 | 5 120 | 47T433327 | 1 | 237 | 316 | 300 | 7 | 3.2 | 1.6 | 0.46 | 1.47 | 2.19 | 1.44 | 81.6 |
| 220 | 300 | 230 | 230 | 2.5 | 3 | 1 750 | 4 040 | 47T443023 | 1 | 231 | 288 | 278 | 6.5 | 2 | 2.5 | 0.40 | 1.68 | 2.50 | 1.64 | 45.1 |
| | 310 | 226 | 226 | 3 | 4 | 1 690 | 3 880 | 37244 | 1 | 242 | 296 | 285 | 6 | 2.5 | 3 | 0.33 | 2.03 | 3.02 | 1.98 | 52 |
| | 320 | 201 | 201 | 3 | 3 | 1 660 | 3 760 | 47T443220 | 1 | 247 | 306 | 290 | 5.5 | 2.5 | 2.5 | 0.33 | 2.03 | 3.02 | 1.98 | 52.4 |
| | 320 | 250 | 250 | 2.5 | 3 | 1 930 | 4 230 | 47T443225 | 1 | 244 | 308 | 293 | 6.5 | 2 | 2.5 | 0.35 | 1.95 | 2.90 | 1.91 | 64.7 |
| | 330 | 260 | 260 | 3 | 1 | 2 350 | 5 070 | 47T443326A | 1 | 243 | 316 | 299 | 9 | 2.5 | 1 | 0.40 | 1.68 | 2.50 | 1.64 | 78.4 |
| | 330 | 260 | 260 | 3 | 1 | 2 330 | 4 860 | 47T443326B | 2 | 238 | 316 | 300 | 8 | 2.5 | 1 | 0.55 | 1.24 | 1.84 | 1.21 | 77.5 |
| | 340 | 190 | 190 | 3 | 4 | 1 490 | 2 910 | 47244 | 1 | 260 | 326 | 308 | 6 | 2.5 | 3 | 0.28 | 2.43 | 3.61 | 2.37 | 62.2 |
| | 340 | 280 | 280 | 3 | 1 | 2 720 | 5 580 | 47T443428-1 | 1 | 247 | 326 | 308 | 10 | 2.5 | 1 | 0.33 | 2.03 | 3.02 | 1.98 | 95.1 |
| 340 | 305 | 305 | 3 | 4 | 2 910 | 5 940 | 47T443431 | 1 | 244 | 326 | 307 | 8 | 2.5 | 3 | 0.35 | 1.95 | 2.90 | 1.91 | 99.6 | |
| 220.662 | 314.325 | 290.000 | 290.000 | 3.2 | 1.6 | 2 300 | 5 050 | 47T443129A | 1 | 240 | 300 | 289 | 4.5 | 3.2 | 1.6 | 0.33 | 2.03 | 3.02 | 1.98 | 70 |
| 220.663 | 314.325 | 239.713 | 239.713 | 3.2 | 1.6 | 2 100 | 4 890 | M244249D/210/210D | 1 | 241 | 300 | 288 | 5 | 3.2 | 1.6 | 0.33 | 2.03 | 3.02 | 1.98 | 59 |
| 225 | 320 | 230 | 230 | 2 | 2.5 | 1 670 | 3 730 | 4TR225A | 1 | 246 | 310 | 293 | 5 | 2 | 2 | 0.37 | 1.80 | 2.69 | 1.76 | 57 |
| 228.600 | 311.150 | 200.025 | 200.025 | 3.2 | 1.6 | 1 660 | 3 760 | LM245149D/110/110D | 1 | 247 | 297 | 287 | 5.5 | 3.2 | 1.6 | 0.33 | 2.03 | 3.02 | 1.98 | 41.8 |
| 230 | 315 | 190 | 190 | 2 | 2.5 | 1 510 | 3 470 | 47T463119 | 1 | 248 | 305 | 290 | 7.5 | 2 | 2 | 0.37 | 1.80 | 2.69 | 1.76 | 43 |
| 234.950 | 327.025 | 196.850 | 196.850 | 3.2 | 1.6 | 1 600 | 3 720 | 8576D/20/20D | 1 | 255 | 313 | 299 | 5.5 | 3.2 | 1.6 | 0.41 | 1.66 | 2.47 | 1.62 | 50.1 |
| 235 | 325 | 240 | 240 | 2.5 | 1.5 | 2 200 | 5 310 | 47T473324 | 1 | 254 | 313 | 301 | 8.5 | 2 | 1.5 | 0.33 | 2.03 | 3.02 | 1.98 | 60.5 |

[Notes] 1) While metric series bearings have minus tolerances for bore and OD, inch series have plus tolerances. Refer to page C 82 for details of applicable tolerance standards.

2) r_b indicates the shaft chamfer dimension corresponding to cone chamfer dimension r_1 .

Four-row tapered roller bearings

d 240 ~ (260) mm



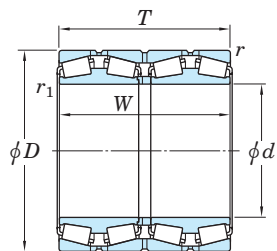
| d | Boundary dimensions (mm) | | | | | Basic load ratings (kN) | | Bearing No. ²⁾ | Design | Mounting dimensions (mm) | | | | | | Constant e | Axial load factors | | | (Refer.) Mass (kg) |
|---------|--------------------------|---------|---------|--------|-----------------------------------|-------------------------|-----------------|---------------------------|--------|--------------------------|---------------------|--------|---------------------|-----------------------------------|----------------|------------|--------------------|----------------|------|--------------------|
| | D | T | W | r min. | r ₁ ¹⁾ min. | C _r | C _{0r} | | | d _a max. | D _a max. | S min. | r _a max. | r _b ³⁾ max. | Y ₂ | | Y ₃ | Y ₀ | | |
| 240 | 320 | 250 | 250 | 2 | 1 | 1 880 | 4 760 | 47T483225B | 1 | 257 | 310 | 299 | 7.5 | 2 | 1 | 0.33 | 2.03 | 3.02 | 1.98 | 54.2 |
| | 338 | 248 | 248 | 3 | 4 | 2 360 | 5 360 | 37248 | 1 | 259 | 324 | 312 | 8.5 | 2.5 | 3 | 0.39 | 1.74 | 2.59 | 1.70 | 68.4 |
| | 338 | 248 | 248 | 3 | 4 | 2 360 | 5 360 | 37248/DP1 | 2 | 259 | 324 | 312 | 8.5 | 2.5 | 3 | 0.39 | 1.74 | 2.59 | 1.70 | 68.4 |
| | 360 | 194 | 194 | 3 | 4 | 1 830 | 3 580 | 47248 | 1 | 272 | 346 | 327 | 8.5 | 2.5 | 3 | 0.32 | 2.12 | 3.15 | 2.07 | 66.5 |
| | 360 | 214 | 214 | 3 | 2.5 | 2 170 | 4 340 | 47T483621 | 1 | 268 | 346 | 328 | 9 | 2.5 | 2.5 | 0.40 | 1.68 | 2.50 | 1.64 | 75.4 |
| | 360 | 308.5 | 308.5 | 3 | 2.5 | 3 320 | 7 400 | 47T483631A | 1 | 268 | 346 | 329 | 9.5 | 2.5 | 2.5 | 0.26 | 2.55 | 3.80 | 2.50 | 112 |
| | 365 | 290 | 290 | 2 | SP | 2 870 | 5 930 | 47T483729 | 1 | 265 | 355 | 333 | 9 | 2 | 0.8 | 0.46 | 1.47 | 2.19 | 1.44 | 108 |
| 410 | 270 | 270 | 4 | 2.5 | 3 220 | 5 520 | 47T484127A | 1 | 281 | 392 | 369 | 8.5 | 3 | 2 | 0.40 | 1.68 | 2.50 | 1.64 | 144 | |
| 241.478 | 349.148 | 228.600 | 228.600 | 3.2 | 1.6 | 2 190 | 4 920 | 47T483523A | 1 | 267 | 335 | 319 | 8.5 | 3.2 | 1.6 | 0.35 | 1.91 | 2.84 | 1.86 | 72.9 |
| | 349.148 | 228.600 | 228.600 | 3.2 | 1.6 | 1 900 | 4 100 | EE127097D/135/136D | 1 | 267 | 335 | 319 | 5.5 | 3.2 | 1.6 | 0.35 | 1.91 | 2.84 | 1.86 | 70.4 |
| 244.475 | 327.025 | 193.675 | 193.675 | 3.2 | 1.6 | 1 470 | 3 500 | 47T493319 | 1 | 259 | 313 | 303 | 5.5 | 3.2 | 1.6 | 0.55 | 1.24 | 1.84 | 1.21 | 44.4 |
| | 327.025 | 193.675 | 193.675 | 3.2 | 1.6 | 1 570 | 3 780 | LM247748D/710/710D | 1 | 265 | 313 | 305 | 7.5 | 3.2 | 1.6 | 0.32 | 2.10 | 3.13 | 2.06 | 44.4 |
| | 381.000 | 304.800 | 304.800 | 4.8 | 3.2 | 2 700 | 5 870 | EE126096D/150/151D | 1 | 269 | 364 | 336 | 6 | 4.8 | 3.2 | 0.52 | 1.31 | 1.95 | 1.28 | 129 |
| 247.650 | 400.050 | 253.995 | 249.235 | 6.4 | 1.6 | 2 600 | 5 140 | EE220975D/1575/1576D | 1 | 292 | 379 | 359 | 7.5 | 6.4 | 1.6 | 0.39 | 1.71 | 2.54 | 1.67 | 123 |
| 250 | 350 | 240 | 240 | 2.5 | 1 | 2 180 | 4 970 | 47T503524 | 1 | 270 | 338 | 324 | 6 | 2 | 1 | 0.40 | 1.68 | 2.50 | 1.64 | 70 |
| | 365 | 270 | 270 | 3 | 1.5 | 2 650 | 6 340 | 47T503627 | 1 | 277 | 351 | 330 | 8 | 2.5 | 1.5 | 0.33 | 2.03 | 3.02 | 1.98 | 96.7 |
| 254.000 | 358.775 | 147.000 | 147.000 | 3.2 | 1.6 | 1 320 | 2 910 | 47T513615 | 1 | 290 | 345 | 331 | 7 | 3.2 | 1.6 | 0.33 | 2.03 | 3.02 | 1.98 | 46.9 |
| | 358.775 | 269.875 | 269.875 | 3.2 | 1.6 | 2 650 | 6 340 | 47T513627A | 2 | 277 | 345 | 330 | 8 | 3.2 | 1.6 | 0.33 | 2.03 | 3.02 | 1.98 | 85.8 |
| | 358.775 | 269.875 | 269.875 | 3.2 | 1.6 | 2 630 | 6 030 | 47T513627B | 1 | 272 | 345 | 331 | 7.5 | 3.2 | 1.6 | 0.46 | 1.47 | 2.19 | 1.44 | 85.5 |
| | 358.775 | 269.875 | 269.875 | 3.2 | 1.6 | 2 630 | 6 030 | 47T513627C | 2 | 272 | 345 | 331 | 7.5 | 3.2 | 1.6 | 0.46 | 1.47 | 2.19 | 1.44 | 86.1 |
| | 358.775 | 269.875 | 269.875 | 3.2 | 3.2 | 2 650 | 6 340 | M249748D/710/710D | 1 | 277 | 345 | 330 | 8 | 3.2 | 3.2 | 0.33 | 2.03 | 3.02 | 1.98 | 86 |
| 260 | 360 | 272 | 272 | 3 | 1 | 2 910 | 7 020 | 47T523627A | 1 | 280 | 346 | 335 | 9 | 2.5 | 1 | 0.33 | 2.03 | 3.02 | 1.98 | 83.6 |
| | 368 | 268 | 268 | 4 | 5 | 2 510 | 6 020 | 37252 | 1 | 286 | 350 | 338 | 6 | 3 | 4 | 0.33 | 2.03 | 3.02 | 1.98 | 88.4 |
| | 400 | 220 | 220 | 4 | 1.5 | 2 390 | 4 520 | 47T524022 | 1 | 295 | 382 | 364 | 7.5 | 3 | 1.5 | 0.40 | 1.68 | 2.50 | 1.64 | 98.5 |
| | 400 | 255 | 255 | 7.5 | 5 | 2 620 | 5 400 | 47T524026 | 1 | 296 | 400 | 360 | 9 | 6 | 4 | 0.39 | 1.72 | 2.56 | 1.68 | 113 |
| | 400 | 320 | 320 | 4 | 5 | 3 270 | 7 070 | 47T524032 | 1 | 294 | 382 | 361 | 8.5 | 3 | 4 | 0.33 | 2.03 | 3.02 | 1.98 | 145 |

[Notes] 1) SP indicates the specially chamfered form.
 2) While metric series bearings have minus tolerances for bore and OD, inch series have plus tolerances. Refer to page C 82 for details of applicable tolerance standards.

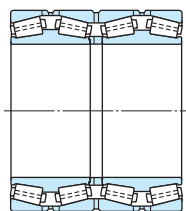
3) r_b indicates the shaft chamfer dimension corresponding to cone chamfer dimension r₁.

Four-row tapered roller bearings

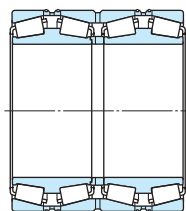
d (260) ~ 288.925 mm



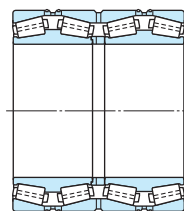
Design 1



Design 1-P

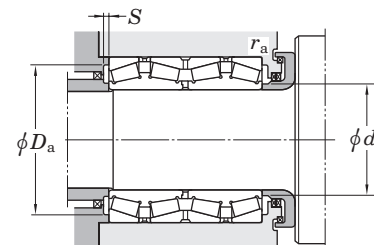


Design 2



Design 2-P

For oil mist lubrication



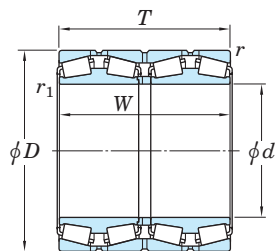
| Boundary dimensions (mm) | | | | | | Basic load ratings (kN) | | Bearing No. ¹⁾ | Design | Mounting dimensions (mm) | | | | | | Constant e | Axial load factors | | | (Refer.) Mass (kg) |
|--------------------------|---------|---------|---------|----------|------------|-------------------------|----------|---------------------------|--------|--------------------------|------------|------------|----------|------------|--------------------------|--------------|--------------------|-------|-------|--------------------|
| d | D | T | W | r min. | r_1 min. | C_r | C_{0r} | | | d_a max. | D_a max. | D_a min. | S min. | r_a max. | r_b ²⁾ max. | | Y_2 | Y_3 | Y_0 | |
| 260 | 440 | 300 | 300 | 4 | 5 | 3 470 | 6 880 | 47352 | 1 | 311 | 422 | 392 | 10 | 3 | 4 | 0.35 | 1.95 | 2.90 | 1.91 | 188 |
| 260.350 | 422.275 | 317.500 | 314.325 | 3.2 | 6.4 | 3 470 | 6 720 | HM252348D/310/310D | 1 | 304 | 407 | 384 | 1 | 3.2 | 6.4 | 0.33 | 2.03 | 3.02 | 1.98 | 167 |
| 266.700 | 335.600 | 228.600 | 230.188 | 3.2 | 1.6 | 1 850 | 5 260 | 47T533423 | 1 | 281 | 322 | 312 | 7 | 3.2 | 1.6 | 0.28 | 2.43 | 3.61 | 2.37 | 46.4 |
| | 355.600 | 228.600 | 230.188 | 3.2 | 1.6 | 2 230 | 5 690 | 47T533623B | 1 | 285 | 342 | 332 | 8 | 3.2 | 1.6 | 0.36 | 1.87 | 2.79 | 1.83 | 62.7 |
| | 355.600 | 228.600 | 230.188 | 3.2 | 1.6 | 1 980 | 4 830 | 76589D/20/20D | 1 | 285 | 342 | 331 | 7 | 3.2 | 1.6 | 0.37 | 1.83 | 2.73 | 1.79 | 59.8 |
| | 393.700 | 269.878 | 269.878 | 6.4 | 1.6 | 2 990 | 6 460 | 47T533927-1 | 1 | 294 | 373 | 361 | 8.5 | 6.4 | 1.6 | 0.40 | 1.68 | 2.50 | 1.64 | 112 |
| 269.875 | 381.000 | 282.575 | 282.575 | 3.2 | 3.2 | 2 930 | 6 690 | M252349D/310/310D | 1 | 291 | 367 | 350 | 6 | 3.2 | 3.2 | 0.33 | 2.03 | 3.02 | 1.98 | 98.4 |
| 270 | 364 | 260 | 260 | 3 | 1.5 | 2 370 | 5 720 | 47T543626 | 1 | 285 | 350 | 338 | 4.5 | 2.5 | 1.5 | 0.42 | 1.59 | 2.37 | 1.56 | 72.8 |
| | 410 | 222 | 222 | 4 | 5 | 2 250 | 4 380 | 47254 | 1 | 308 | 392 | 372 | 6.5 | 3 | 4 | 0.27 | 2.51 | 3.74 | 2.45 | 100 |
| 276.225 | 393.700 | 269.878 | 269.878 | 6.4 | 1.6 | 2 730 | 5 830 | 47T553927 | 1 | 299 | 373 | 363 | 4.5 | 6.4 | 1.6 | 0.40 | 1.68 | 2.50 | 1.64 | 101 |
| 279.400 | 393.700 | 269.875 | 269.875 | 6.4 | 1.6 | 2 660 | 5 990 | 47T563927A | 2 | 305 | 373 | 363 | 9.5 | 6.4 | 1.6 | 0.40 | 1.68 | 2.50 | 1.64 | 101 |
| | 393.700 | 269.875 | 269.875 | 6.4 | 1.6 | 2 660 | 5 990 | 47T563927B | 1 | 305 | 373 | 363 | 9.5 | 6.4 | 1.6 | 0.40 | 1.68 | 2.50 | 1.64 | 101 |
| | 410.000 | 310.000 | 310.000 | 6.4 | 1.6 | 3 120 | 7 290 | 47T564131 | 2 | 308 | 389 | 374 | 8 | 6.4 | 1.6 | 0.40 | 1.68 | 2.50 | 1.64 | 140 |
| 279.578 | 380.898 | 244.475 | 244.475 | 3.2 | 1.6 | 2 280 | 5 650 | LM654644D/610/610D | 1 | 303 | 367 | 356 | 6.5 | 3.2 | 1.6 | 0.43 | 1.57 | 2.34 | 1.53 | 80.4 |
| 280 | 380 | 290 | 290 | 2 | 2 | 2 810 | 6 940 | 47T563829 | 1 | 300 | 370 | 354 | 6 | 2 | 2 | 0.33 | 2.03 | 3.02 | 1.98 | 91.8 |
| | 380 | 290 | 290 | 2 | 1 | 2 810 | 6 940 | 47T563829A | 2 | 300 | 370 | 354 | 6 | 2 | 1 | 0.33 | 2.03 | 3.02 | 1.98 | 92.1 |
| | 395 | 288 | 288 | 4 | 2 | 2 880 | 6 900 | 37256X | 1 | 303 | 377 | 363 | 8 | 3 | 2 | 0.40 | 1.68 | 2.50 | 1.64 | 110 |
| | 395 | 288 | 288 | 4 | 2 | 2 880 | 6 900 | 47T564029A | 2 | 303 | 377 | 363 | 8 | 3 | 2 | 0.40 | 1.68 | 2.50 | 1.64 | 110 |
| | 420 | 225 | 225 | 4 | 5 | 2 390 | 4 950 | 47256 | 1 | 322 | 402 | 382 | 8.5 | 3 | 4 | 0.25 | 2.69 | 4.00 | 2.63 | 104 |
| | 460 | 324 | 324 | 5 | 6 | 4 300 | 8 230 | 47T564632 | 1-P | 321 | 438 | 415 | 10.5 | 4 | 5 | 0.46 | 1.47 | 2.19 | 1.44 | 214 |
| 280.268 | 379.887 | 244.475 | 244.475 | 3.2 | 1.6 | 2 280 | 5 650 | 47T563824 | 1 | 303 | 366 | 355 | 6.5 | 3.2 | 1.6 | 0.43 | 1.57 | 2.34 | 1.53 | 80 |
| 285.750 | 380.898 | 244.475 | 244.475 | 3.2 | 1.6 | 2 280 | 5 650 | LM654648D/610/610D | 1 | 303 | 367 | 356 | 6.5 | 3.2 | 1.6 | 0.43 | 1.57 | 2.34 | 1.53 | 75.6 |
| 288.925 | 406.400 | 298.450 | 298.450 | 3.2 | 3.2 | 3 450 | 8 840 | M255449D/410/410D | 1 | 316 | 392 | 373 | 9 | 3.2 | 3.2 | 0.34 | 2.00 | 2.97 | 1.95 | 127 |

[Notes] 1) While metric series bearings have minus tolerances for bore and OD, inch series have plus tolerances. Refer to page C 82 for details of applicable tolerance standards.

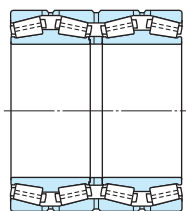
2) r_b indicates the shaft chamfer dimension corresponding to cone chamfer dimension r_1 .

Four-row tapered roller bearings

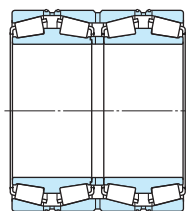
d 292.100 ~ (320) mm



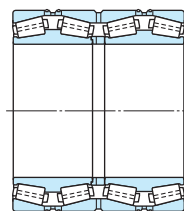
Design 1



Design 1-P

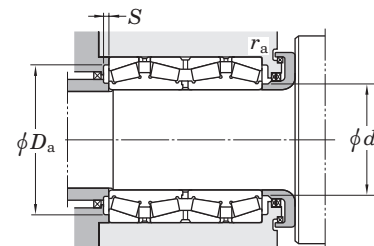


Design 2



Design 2-P

For oil mist lubrication



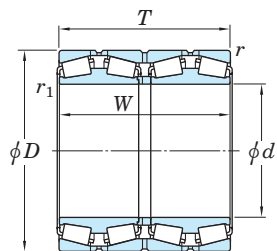
| Boundary dimensions (mm) | | | | | | Basic load ratings (kN) | | Bearing No. ²⁾ | Design | Mounting dimensions (mm) | | | | | | Constant e | Axial load factors | | | (Refer.) Mass (kg) |
|--------------------------|---------|---------|---------|--------|-----------------------------------|-------------------------|------------------|---------------------------|--------|--------------------------|---------------------|---------------------|--------|---------------------|-----------------------------------|------------|--------------------|----------------|----------------|--------------------|
| d | D | T | W | r min. | r ₁ ¹⁾ min. | C _r | C _{0r} | | | d _a max. | D _a max. | D _a min. | S min. | r _a max. | r _b ³⁾ max. | | Y ₂ | Y ₃ | Y ₀ | |
| 292.100 | 422.275 | 269.875 | 269.875 | 3.2 | 6.4 | 3 170 | 6 830 | EE330116D/166/167D | 1 | 321 | 407 | 387 | 7.5 | 3.2 | 6.4 | 0.32 | 2.11 | 3.14 | 2.06 | 124 |
| 300 | 420 | 310 | 310 | 3 | 1 | 3 390 | 8 050 | 47T604231 | 1 | 325 | 406 | 388 | 8.5 | 2.5 | 1 | 0.34 | 2.00 | 2.98 | 1.96 | 132 |
| | 424 | 310 | 310 | 4 | 5 | 3 000 | 6 570 | 37260 | 1 | 334 | 406 | 391 | 6 | 3 | 4 | 0.28 | 2.37 | 3.53 | 2.32 | 134 |
| | 430 | 300 | 300 | 3 | 4 | 3 320 | 7 630 | 47T604330 | 1 | 328 | 416 | 393 | 10 | 2.5 | 3 | 0.35 | 1.95 | 2.90 | 1.91 | 141 |
| | 430 | 310 | 310 | 3 | 2.5 | 3 520 | 8 420 | 47T604331 | 1 | 332 | 416 | 399 | 10 | 2.5 | 2 | 0.40 | 1.68 | 2.50 | 1.64 | 146 |
| | 460 | 248 | 248 | 4 | 1.5 | 3 060 | 6 300 | 47T604625 | 1 | 342 | 442 | 416 | 8.5 | 3 | 1.5 | 0.40 | 1.68 | 2.50 | 1.64 | 149 |
| | 460 | 360 | 360 | 4 | 5 | 4 300 | 9 550 | 47T604636 | 1 | 339 | 442 | 416 | 9 | 3 | 4 | 0.33 | 2.03 | 3.02 | 1.98 | 220 |
| | 470 | 270 | 270 | 4 | 5 | 3 500 | 6 440 | 47T604727A | 1 | 338 | 452 | 426 | 8 | 3 | 4 | 0.40 | 1.68 | 2.50 | 1.64 | 165 |
| | 470 | 292 | 292 | 4 | SP | 3 980 | 7 870 | 47T604729B | 1-P | 341 | 452 | 428 | 8.5 | 3 | 2 | 0.40 | 1.68 | 2.50 | 1.64 | 193 |
| | 470 | 292 | 292 | 4 | 1.5 | 4 120 | 8 210 | 47T604729C | 1-P | 343 | 452 | 428 | 9.5 | 3 | 1.5 | 0.33 | 2.03 | 3.02 | 1.98 | 198 |
| 500 | 350 | 350 | 4 | 2.5 | 5 010 | 9 290 | 47T605035 | 1 | 346 | 482 | 451 | 8 | 3 | 2 | 0.40 | 1.68 | 2.50 | 1.64 | 270 | |
| 300.038 | 422.275 | 311.150 | 311.150 | 3.2 | 3.2 | 3 390 | 8 050 | HM256849D/810/810D | 1 | 325 | 407 | 388 | 7 | 3.2 | 3.2 | 0.34 | 2.00 | 2.98 | 1.96 | 136 |
| 304.648 | 438.048 | 279.400 | 280.990 | 4.8 | 3.2 | 3 230 | 6 980 | 47T614428C | 2 | 331 | 420 | 403 | 7 | 4.8 | 3.2 | 0.47 | 1.44 | 2.15 | 1.41 | 133 |
| | 438.048 | 279.400 | 280.990 | 4.8 | 3.2 | 3 230 | 6 980 | M757448D/410/410D | 1 | 331 | 420 | 403 | 7 | 4.8 | 3.2 | 0.47 | 1.44 | 2.15 | 1.41 | 132 |
| 304.800 | 419.100 | 269.875 | 269.875 | 6.4 | 1.6 | 2 840 | 6 950 | M257149D/110/110D | 1 | 331 | 398 | 387 | 7 | 6.4 | 1.6 | 0.33 | 2.03 | 3.02 | 1.98 | 110 |
| | 482.600 | 377.825 | 365.125 | 6.4 | 3.2 | 4 820 | 9 800 | 47T614838A | 1-P | 343 | 461 | 437 | 1 | 6.4 | 3.2 | 0.47 | 1.43 | 2.12 | 1.40 | 250 |
| | 495.300 | 349.250 | 342.900 | 6.4 | 3.2 | 4 370 | 9 370 | EE724121D/195/196D | 1 | 355 | 474 | 438 | 7 | 6.4 | 3.2 | 0.40 | 1.68 | 2.50 | 1.64 | 267 |
| 304.902 | 412.648 | 266.7 | 266.7 | 3.2 | 3.2 | 2 990 | 7 280 | M257248D/210/210D | 1 | 328 | 398 | 383 | 7 | 3.2 | 3.2 | 0.32 | 2.12 | 3.15 | 2.07 | 101 |
| 310 | 430 | 310 | 310 | 3 | 3 | 3 520 | 8 420 | 47T624331A | 1 | 332 | 416 | 399 | 10 | 2.5 | 2.5 | 0.40 | 1.68 | 2.50 | 1.64 | 135 |
| | 460 | 325 | 325 | 4 | 5 | 4 200 | 9 500 | 47T6246A | 1 | 346 | 442 | 421 | 12 | 3 | 4 | 0.32 | 2.12 | 3.15 | 2.07 | 188 |
| 317.500 | 422.275 | 269.875 | 269.875 | 3.2 | 1.6 | 2 930 | 7 450 | LM258649D/610/610D | 1 | 341 | 407 | 392 | 8.5 | 3.2 | 1.6 | 0.32 | 2.12 | 3.15 | 2.07 | 104 |
| | 447.675 | 327.025 | 327.025 | 6.4 | 1.6 | 4 120 | 9 820 | 47T644533J | 1-P | 341 | 426 | 411 | 7.5 | 6.4 | 1.6 | 0.33 | 2.02 | 3.00 | 1.97 | 161 |
| | 447.675 | 327.025 | 327.025 | 6.4 | 1.6 | 4 280 | 10 100 | 47T644533L | 1 | 344 | 426 | 411 | 11.5 | 6.4 | 1.6 | 0.33 | 2.03 | 3.02 | 1.98 | 161 |
| 320 | 440 | 335 | 335 | 2 | 2.5 | 3 590 | 8 750 | 47T644434 | 1 | 341 | 430 | 408 | 5.5 | 2 | 2 | 0.40 | 1.68 | 2.50 | 1.64 | 149 |

[Notes] 1) SP indicates the specially chamfered form.
 2) While metric series bearings have minus tolerances for bore and OD, inch series have plus tolerances. Refer to page C 82 for details of applicable tolerance standards.

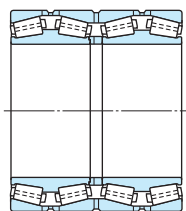
3) r_b indicates the shaft chamfer dimension corresponding to cone chamfer dimension r₁.

Four-row tapered roller bearings

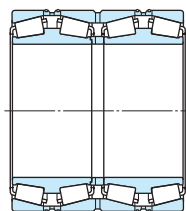
d (320) ~ (355.600) mm



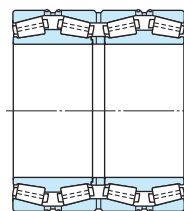
Design 1



Design 1-P

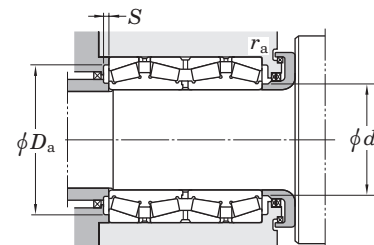


Design 2



Design 2-P

For oil mist lubrication



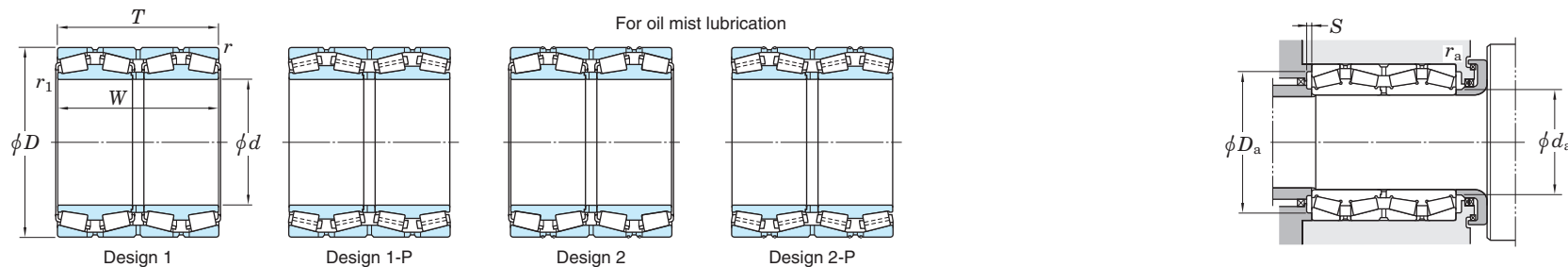
| Boundary dimensions (mm) | | | | | | Basic load ratings (kN) | | Bearing No. ¹⁾ | Design | Mounting dimensions (mm) | | | | | | Constant e | Axial load factors | | | (Refer.) Mass (kg) |
|--------------------------|---------|---------|---------|----------|------------|-------------------------|----------|---------------------------|--------|--------------------------|------------|------------|----------|------------|--------------------------|--------------|--------------------|-------|-------|--------------------|
| d | D | T | W | r min. | r_1 min. | C_r | C_{0r} | | | d_a max. | D_a max. | D_a min. | S min. | r_a max. | r_b ²⁾ max. | | Y_2 | Y_3 | Y_0 | |
| 320 | 460 | 325 | 325 | 4 | 2.5 | 4 030 | 9 420 | 47T644633 | 1 | 349 | 442 | 424 | 10 | 3 | 2.5 | 0.42 | 1.62 | 2.42 | 1.59 | 175 |
| | 460 | 338 | 338 | 4 | 5 | 3 500 | 8 590 | 37264 | 1 | 356 | 442 | 421 | 8.5 | 3 | 4 | 0.33 | 2.03 | 3.02 | 1.98 | 183 |
| | 480 | 254 | 254 | 4 | 2.5 | 3 400 | 6 940 | 47T644825 | 1-P | 358 | 462 | 437 | 9 | 3 | 2 | 0.40 | 1.68 | 2.50 | 1.64 | 161 |
| | 480 | 260 | 260 | 4 | 5 | 3 360 | 6 890 | 47T644826 | 1 | 359 | 462 | 437 | 11.5 | 3 | 5 | 0.40 | 1.68 | 2.50 | 1.64 | 165 |
| | 480 | 360 | 360 | 4 | 1 | 4 970 | 11 000 | 47T644836-1 | 1-P | 352 | 462 | 442 | 9 | 3 | 1 | 0.47 | 1.43 | 2.12 | 1.40 | 229 |
| | 500 | 380 | 380 | 4 | 1.5 | 5 540 | 11 900 | 47T645038 | 1-P | 363 | 482 | 454 | 11.5 | 3 | 1.5 | 0.33 | 2.03 | 3.02 | 1.98 | 284 |
| | 540 | 364 | 364 | 5 | 6 | 5 380 | 10 600 | 47364 | 1 | 376 | 518 | 479 | 8.5 | 4 | 5 | 0.32 | 2.12 | 3.15 | 2.07 | 340 |
| 325 | 430 | 230 | 230 | 3 | 1 | 2 410 | 5 800 | 47T654323 | 1 | 347 | 416 | 401 | 8.5 | 2.5 | 1 | 0.40 | 1.68 | 2.50 | 1.64 | 88.5 |
| 327 | 445 | 230 | 230 | 3 | 1 | 2 620 | 6 080 | 47T654523 | 1 | 353 | 431 | 413 | 9 | 2.5 | 1 | 0.40 | 1.68 | 2.50 | 1.64 | 102 |
| 330.200 | 444.500 | 301.625 | 301.625 | 3.2 | 3.2 | 3 550 | 9 260 | 47T664430 | 1 | 357 | 430 | 414 | 10 | 3.2 | 3.2 | 0.26 | 2.55 | 3.80 | 2.50 | 134 |
| | 508.000 | 307.975 | 307.975 | 6.4 | 1.6 | 4 320 | 8 500 | 47T665131A | 1 | 372 | 486 | 462 | 8 | 6.4 | 1.6 | 0.33 | 2.03 | 3.02 | 1.98 | 219 |
| 335.000 | 460.000 | 342.900 | 342.900 | 3.2 | 1.6 | 3 960 | 9 390 | 47T674634/DP | 2 | 361 | 445 | 428 | 7.5 | 3.2 | 1.6 | 0.40 | 1.68 | 2.50 | 1.64 | 165 |
| 337.375 | 469.900 | 342.900 | 342.900 | 3.2 | 1.6 | 4 630 | 11 400 | HM261049D/010/010D | 1-P | 360 | 455 | 432 | 9 | 3.2 | 1.6 | 0.33 | 2.02 | 3.01 | 1.97 | 190 |
| 340 | 480 | 350 | 350 | 5 | 6 | 4 700 | 11 700 | 37268A | 1-P | 371 | 458 | 443 | 9.5 | 4 | 6 | 0.33 | 2.03 | 3.02 | 1.98 | 198 |
| | 520 | 278 | 278 | 5 | 6 | 4 040 | 8 110 | 47T685228 | 1 | 384 | 498 | 473 | 9 | 4 | 6 | 0.40 | 1.68 | 2.50 | 1.64 | 212 |
| | 520 | 323 | 323 | 5 | 6 | 4 380 | 8 930 | 47T685232 | 1 | 381 | 498 | 473 | 10 | 4 | 5 | 0.40 | 1.68 | 2.50 | 1.64 | 242 |
| 343.052 | 457.098 | 254.000 | 254.000 | 3.2 | 1.6 | 2 850 | 6 950 | 47T694625 | 1 | 363 | 442 | 425 | 6 | 3.2 | 1.6 | 0.47 | 1.43 | 2.12 | 1.40 | 111 |
| | 457.098 | 254.000 | 254.000 | 3.2 | 1.6 | 2 850 | 6 950 | 47T694625/DP3 | 2 | 363 | 442 | 425 | 6 | 3.2 | 1.6 | 0.47 | 1.43 | 2.12 | 1.40 | 111 |
| 346.075 | 488.950 | 358.775 | 358.775 | 3.2 | 3.2 | 4 620 | 11 600 | HM262749D/10/10D | 1 | 378 | 474 | 449 | 8 | 3.2 | 3.2 | 0.33 | 2.02 | 3.00 | 1.97 | 214 |
| 347.663 | 469.900 | 292.100 | 292.100 | 3.2 | 3.2 | 3 600 | 9 040 | M262449D/10/10D | 1 | 374 | 455 | 436 | 10 | 3.2 | 3.2 | 0.33 | 2.03 | 3.02 | 1.98 | 145 |
| 355 | 490 | 316 | 316 | 2 | 2.5 | 4 160 | 10 000 | 47T714932 | 1 | 385 | 480 | 455 | 12.5 | 2 | 2 | 0.33 | 2.03 | 3.02 | 1.98 | 180 |
| 355.600 | 482.600 | 269.875 | 265.113 | 3.2 | 1.6 | 3 390 | 7 860 | 47T714827-1 | 1 | 386 | 468 | 450 | 8 | 3.2 | 1.6 | 0.26 | 2.55 | 3.80 | 2.50 | 139 |
| | 482.600 | 269.875 | 265.112 | 3.2 | 1.6 | 3 060 | 7 020 | LM763449D/410/410D | 1 | 381 | 468 | 450 | 3.5 | 3.2 | 1.6 | 0.47 | 1.43 | 2.14 | 1.40 | 136 |

[Notes] 1) While metric series bearings have minus tolerances for bore and OD, inch series have plus tolerances. Refer to page C 82 for details of applicable tolerance standards.

2) r_b indicates the shaft chamfer dimension corresponding to cone chamfer dimension r_1 .

Four-row tapered roller bearings

d (355.600) ~ (380) mm



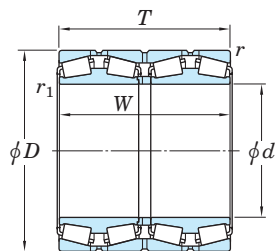
| Boundary dimensions (mm) | | | | | | Basic load ratings (kN) | | Bearing No. ¹⁾ | Design | Mounting dimensions (mm) | | | | | | Constant e | Axial load factors | | | (Refer.) Mass (kg) |
|--------------------------|---------|---------|---------|--------|---------|-------------------------|--------|---------------------------|--------|--------------------------|---------|---------|--------|---------|-----------------------|------------|--------------------|------|------|--------------------|
| d | D | T | W | r min. | r1 min. | Cr | C0r | | | da max. | Da max. | Da min. | S min. | ra max. | rb ²⁾ max. | | Y2 | Y3 | Y0 | |
| 355.600 | 488.950 | 317.500 | 317.500 | 3.2 | 1.6 | 4 370 | 10 900 | M263349D/310/310D | 1-P | 383 | 474 | 452 | 7.5 | 3.2 | 1.6 | 0.33 | 2.03 | 3.02 | 1.98 | 182 |
| 360 | 480 | 375 | 375 | 3 | 4 | 3 930 | 9 910 | 47T724838A | 1 | 383 | 466 | 446 | 3.5 | 2.5 | 3 | 0.40 | 1.68 | 2.50 | 1.64 | 177 |
| | 480 | 375 | 375 | 3 | 1 | 4 190 | 11 100 | 47T724838C | 1 | 381 | 466 | 448 | 5 | 2.5 | 1 | 0.33 | 2.03 | 3.02 | 1.98 | 183 |
| | 508 | 370 | 370 | 5 | 6 | 4 840 | 11 500 | 47T725137 | 1 | 392 | 486 | 471 | 7 | 4 | 6 | 0.33 | 2.03 | 3.02 | 1.98 | 232 |
| | 520 | 370 | 370 | 5 | 6 | 4 920 | 11 400 | 47T725237 | 1 | 395 | 498 | 476 | 8.5 | 4 | 5 | 0.33 | 2.03 | 3.02 | 1.98 | 259 |
| | 520 | 410 | 410 | 5 | 6 | 5 970 | 14 300 | 47T725241 | 1-P | 395 | 498 | 479 | 8.5 | 4 | 5 | 0.33 | 2.03 | 3.02 | 1.98 | 292 |
| | 540 | 280 | 280 | 5 | 6 | 3 790 | 7 820 | 47272 | 1 | 406 | 518 | 490 | 10 | 4 | 5 | 0.32 | 2.12 | 3.15 | 2.07 | 221 |
| | 540 | 280 | 280 | 5 | 6 | 3 760 | 8 000 | 47T725428 | 1 | 402 | 518 | 489 | 10.5 | 4 | 5 | 0.55 | 1.24 | 1.84 | 1.21 | 224 |
| | 540 | 460 | 460 | 4 | 5 | 6 440 | 15 800 | 47T7254 | 1 | 408 | 522 | 492 | 9.5 | 3 | 4 | 0.27 | 2.47 | 3.67 | 2.41 | 373 |
| 368.300 | 523.875 | 382.588 | 382.588 | 6.4 | 3.2 | 5 530 | 13 600 | 47T745238B | 1-P | 404 | 502 | 483 | 9 | 6.4 | 3.2 | 0.29 | 2.32 | 3.45 | 2.26 | 269 |
| | 523.875 | 382.588 | 382.588 | 3.2 | 1.6 | 5 620 | 14 100 | 47T745238D | 1 | 403 | 508 | 483 | 7.5 | 3.2 | 1.6 | 0.33 | 2.03 | 3.02 | 1.98 | 265 |
| | 523.875 | 382.588 | 382.588 | 6.4 | 3.2 | 5 920 | 14 500 | 47T745238J | 1-P | 401 | 502 | 485 | 10.5 | 6.4 | 3.2 | 0.33 | 2.03 | 3.02 | 1.98 | 268 |
| | 523.875 | 382.588 | 382.588 | 6.4 | 3.2 | 5 460 | 13 600 | HM265049D/010/010D | 1-P | 403 | 502 | 483 | 7 | 6.4 | 3.2 | 0.33 | 2.03 | 3.02 | 1.98 | 269 |
| | 563.000 | 382.588 | 382.588 | 6.4 | 3.2 | 6 300 | 13 600 | 47T745638 | 1-P | 417 | 541 | 516 | 10.5 | 6.4 | 3.2 | 0.29 | 2.32 | 3.45 | 2.26 | 344 |
| 370 | 516 | 346 | 346 | 4 | 1.5 | 4 880 | 11 700 | 47T745235 | 1-P | 398 | 498 | 479 | 9 | 3 | 1.5 | 0.40 | 1.68 | 2.50 | 1.64 | 216 |
| 374.650 | 501.650 | 260.350 | 260.350 | 3.2 | 1.6 | 2 930 | 7 750 | 47T745026 | 1 | 399 | 486 | 459 | 7 | 3.2 | 1.6 | 0.43 | 1.56 | 2.32 | 1.52 | 145 |
| 380 | 520 | 360 | 360 | 5 | 6 | 4 610 | 12 200 | 47T765236 | 1 | 417 | 498 | 484 | 11 | 4 | 5 | 0.32 | 2.12 | 3.15 | 2.07 | 225 |
| | 520 | 400 | 400 | 4 | 2.5 | 5 020 | 13 000 | 47T765240 | 1 | 404 | 502 | 482 | 9.5 | 3 | 2 | 0.40 | 1.68 | 2.50 | 1.64 | 248 |
| | 536 | 390 | 390 | 5 | 6 | 5 760 | 12 900 | 37276 | 1 | 415 | 514 | 496 | 7.5 | 4 | 5 | 0.40 | 1.68 | 2.50 | 1.64 | 268 |
| | 560 | 282 | 282 | 5 | 6 | 3 670 | 7 580 | 47276 | 1 | 429 | 538 | 511 | 9 | 4 | 5 | 0.27 | 2.47 | 3.67 | 2.41 | 232 |
| | 560 | 285 | 285 | 4 | 5 | 4 600 | 10 000 | 47T765629 | 1-P | 428 | 542 | 513 | 11 | 3 | 4 | 0.27 | 2.47 | 3.67 | 2.41 | 246 |
| | 560 | 285 | 285 | 4 | 5 | 4 420 | 9 240 | 47T765629A | 1 | 427 | 542 | 515 | 11 | 3 | 5 | 0.27 | 2.47 | 3.67 | 2.41 | 244 |
| | 560 | 325 | 325 | 5 | 6 | 5 330 | 11 900 | 47T765633A | 1-P | 427 | 538 | 514 | 11 | 4 | 5 | 0.27 | 2.47 | 3.67 | 2.41 | 278 |
| | 560 | 360 | 390 | 4 | 1.5 | 5 310 | 11 800 | 47T765639 | 1 | 422 | 542 | 514 | 9 | 3 | 1.5 | 0.35 | 1.95 | 2.90 | 1.91 | 307 |
| | 560 | 370 | 370 | 5 | 6 | 5 910 | 13 600 | 47T765637 | 1-P | 423 | 538 | 515 | 10 | 4 | 5 | 0.33 | 2.03 | 3.02 | 1.98 | 312 |
| | 580 | 500 | 500 | 5 | 6 | 7 410 | 17 500 | 47T765850 | 1 | 427 | 558 | 529 | 10.5 | 4 | 5 | 0.33 | 2.03 | 3.02 | 1.98 | 478 |

[Notes] 1) While metric series bearings have minus tolerances for bore and OD, inch series have plus tolerances. Refer to page C 82 for details of applicable tolerance standards.

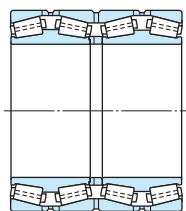
2) rb indicates the shaft chamfer dimension corresponding to cone chamfer dimension r1.

Four-row tapered roller bearings

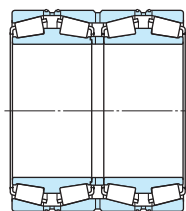
d (380) ~ 430 mm



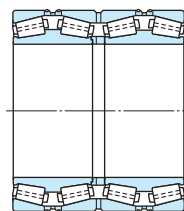
Design 1



Design 1-P

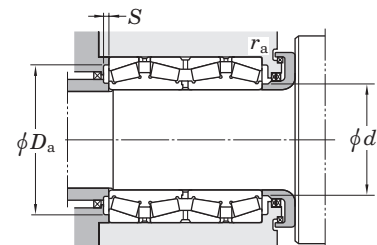


Design 2



Design 2-P

For oil mist lubrication



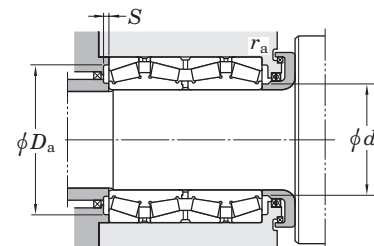
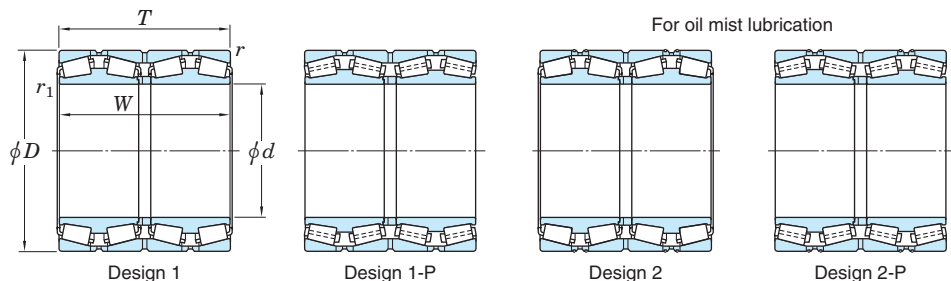
| Boundary dimensions (mm) | | | | | | Basic load ratings (kN) | | Bearing No. ¹⁾ | Design | Mounting dimensions (mm) | | | | | | Constant e | Axial load factors | | | (Refer.) Mass (kg) |
|--------------------------|---------|---------|---------|------------|--------------|-------------------------|----------|---------------------------|--------|--------------------------|------------|----------|------------|--------------------------|-------|--------------|--------------------|-------|------|--------------------|
| d | D | T | W | $r_{min.}$ | $r_{1 min.}$ | C_r | C_{0r} | | | d_a max. | D_a max. | S min. | r_a max. | r_b ²⁾ max. | Y_2 | | Y_3 | Y_0 | | |
| 380 | 620 | 400 | 400 | 5 | 6 | 6 130 | 12 700 | 47376 | 1 | 445 | 598 | 552 | 6.5 | 4 | 5 | 0.32 | 2.12 | 3.15 | 2.07 | 476 |
| | 620 | 418.5 | 418.5 | 5 | 6 | 7 080 | 14 000 | 47T766242 | 1-P | 435 | 598 | 561 | 10 | 4 | 5 | 0.46 | 1.47 | 2.19 | 1.44 | 499 |
| 384.175 | 546.100 | 400.050 | 400.050 | 6.4 | 3.2 | 6 530 | 16 900 | HM266449D/410/410D | 1-P | 418 | 524 | 502 | 10.5 | 6.4 | 3.2 | 0.33 | 2.03 | 3.02 | 1.98 | 315 |
| | 546.100 | 470.000 | 470.000 | 6.4 | 3.2 | 6 220 | 16 200 | 47T775547 | 1 | 418 | 524 | 503 | 7.5 | 6.4 | 3.2 | 0.33 | 2.03 | 3.02 | 1.98 | 360 |
| 390 | 510 | 350 | 350 | 3 | 1.5 | 4 300 | 11 700 | 47T785135A | 1 | 413 | 496 | 478 | 10.5 | 2.5 | 1.5 | 0.33 | 2.03 | 3.02 | 1.98 | 186 |
| | 510 | 350 | 350 | 3 | 1 | 4 150 | 11 200 | 47T785135B | 1 | 415 | 496 | 479 | 5.5 | 2.5 | 1 | 0.29 | 2.32 | 3.45 | 2.26 | 183 |
| 395 | 545 | 288.7 | 270.3 | 7.5 | 5 | 3 330 | 7 680 | 47T795529 | 1 | 433 | 509 | 494 | 3 | 6 | 4 | 0.43 | 1.57 | 2.34 | 1.53 | 190 |
| 400 | 560 | 380 | 380 | 4 | 1.5 | 5 970 | 15 200 | 47T805638A | 1-P | 435 | 542 | 519 | 10 | 3 | 1.5 | 0.33 | 2.03 | 3.02 | 1.98 | 296 |
| | 564 | 412 | 412 | 4 | 2.5 | 6 470 | 16 500 | 47T805641 | 1-P | 432 | 546 | 522 | 9 | 3 | 2.5 | 0.40 | 1.68 | 2.50 | 1.64 | 329 |
| | 590 | 304 | 304 | 4 | 1.5 | 4 760 | 10 200 | 47T805930A | 1-P | 449 | 572 | 540 | 7.5 | 3 | 1.5 | 0.33 | 2.03 | 3.02 | 1.98 | 289 |
| | 600 | 308 | 308 | 5 | 6 | 4 810 | 9 930 | 47280 | 1 | 452 | 578 | 548 | 9 | 4 | 5 | 0.33 | 2.03 | 3.02 | 1.98 | 310 |
| 406.400 | 546.100 | 288.925 | 288.925 | 6.4 | 1.6 | 3 960 | 9 540 | 47T815529 | 1 | 435 | 524 | 509 | 9.5 | 6.4 | 1.6 | 0.47 | 1.43 | 2.12 | 1.40 | 184 |
| | 546.100 | 330.000 | 330.000 | 6.4 | 3.2 | 4 800 | 12 400 | 47T815533B | 1-P | 434 | 524 | 509 | 8.5 | 6.4 | 3.2 | 0.40 | 1.68 | 2.50 | 1.64 | 214 |
| | 562.000 | 381.000 | 381.000 | 6.4 | 3.2 | 5 990 | 15 000 | 47T815638 | 1 | 439 | 540 | 524 | 9.5 | 6.4 | 3.2 | 0.33 | 2.03 | 3.02 | 1.98 | 284 |
| | 565.150 | 381.000 | 381.000 | 6.4 | 3.2 | 5 990 | 15 000 | M267949D/910/910XD | 1 | 438.3 | 544 | 524 | 9.5 | 6.4 | 3.2 | 0.33 | 2.03 | 3.02 | 1.98 | 291 |
| 409.575 | 546.100 | 334.963 | 334.963 | 6.4 | 1.6 | 4 570 | 11 500 | M667947D/911/911D | 1 | 432 | 524 | 509 | 8.5 | 6.4 | 1.6 | 0.42 | 1.62 | 2.42 | 1.59 | 213 |
| 415.925 | 590.550 | 434.975 | 434.975 | 6.4 | 3.2 | 7 060 | 18 800 | 47T835943A | 1-P | 455 | 568 | 543 | 10 | 6.4 | 3.2 | 0.33 | 2.03 | 3.02 | 1.98 | 391 |
| 420 | 560 | 370 | 370 | 5 | 6 | 4 950 | 13 600 | 47T845637 | 1 | 459 | 538 | 527 | 12 | 4 | 5 | 0.32 | 2.12 | 3.15 | 2.07 | 252 |
| | 560 | 437 | 437 | 4 | 1.5 | 5 620 | 14 900 | 47T845644 | 1 | 450 | 542 | 526 | 4 | 3 | 1.5 | 0.26 | 2.55 | 3.80 | 2.50 | 283 |
| | 592 | 432 | 432 | 5 | 6 | 6 030 | 15 700 | 37284 | 1 | 460 | 570 | 544 | 7.5 | 4 | 5 | 0.33 | 2.03 | 3.02 | 1.98 | 374 |
| | 620 | 312 | 312 | 5 | 6 | 4 810 | 10 400 | 47284 | 1 | 473.5 | 598 | 567 | 10 | 4 | 5 | 0.33 | 2.03 | 3.02 | 1.98 | 328 |
| | 650 | 460 | 460 | 6 | 6 | 8 560 | 18 300 | 47T846546 | 1 | 468 | 622 | 595 | 8.5 | 5 | 5 | 0.40 | 1.68 | 2.50 | 1.64 | 558 |
| 430 | 570 | 336 | 336 | 4 | 1.5 | 4 790 | 12 500 | 47T865734C | 1 | 460 | 552 | 536 | 10 | 3 | 1.5 | 0.36 | 1.87 | 2.79 | 1.83 | 232 |
| | 570 | 380 | 380 | 4 | 1.5 | 5 640 | 15 900 | 47T865738 | 1 | 463 | 552 | 534 | 10.5 | 3 | 1.5 | 0.26 | 2.55 | 3.80 | 2.50 | 269 |

[Notes] 1) While metric series bearings have minus tolerances for bore and OD, inch series have plus tolerances. Refer to page C 82 for details of applicable tolerance standards.

2) r_b indicates the shaft chamfer dimension corresponding to cone chamfer dimension r_1 .

Four-row tapered roller bearings

d 431.800 ~ 475.000 mm



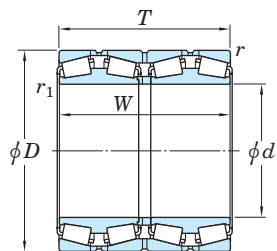
| Boundary dimensions (mm) | | | | | | Basic load ratings (kN) | | Bearing No. ¹⁾ | Design | Mounting dimensions (mm) | | | | | | Constant e | Axial load factors | | | (Refer.) Mass (kg) |
|--------------------------|---------|---------|---------|----------|------------|-------------------------|----------|---------------------------|--------|--------------------------|------------|------------|----------|------------|--------------------------|--------------|--------------------|-------|-------|--------------------|
| d | D | T | W | r min. | r_1 min. | C_r | C_{0r} | | | d_a max. | D_a max. | D_a min. | S min. | r_a max. | r_b ²⁾ max. | | Y_2 | Y_3 | Y_0 | |
| 431.800 | 571.500 | 336.550 | 336.550 | 6.4 | 1.6 | 5 070 | 13 500 | 47T865734 | 1-P | 460 | 549 | 534 | 10 | 6.4 | 1.6 | 0.36 | 1.87 | 2.79 | 1.83 | 232 |
| | 571.500 | 336.550 | 336.550 | 6.4 | 1.6 | 4 290 | 11 300 | LM769349D/310/310D | 1 | 463 | 549 | 534 | 7 | 6.4 | 1.6 | 0.48 | 1.41 | 2.10 | 1.38 | 231 |
| | 635.000 | 355.600 | 355.600 | 6.4 | 6.4 | 6 310 | 13 700 | EE931170D/250/251XD | 1-P | 481 | 612 | 586 | 8 | 6.4 | 6.4 | 0.32 | 2.10 | 3.13 | 2.06 | 385 |
| 432.003 | 609.524 | 317.500 | 317.500 | 6.4 | 3.6 | 5 210 | 12 100 | EE736173D/238/239D | 1-P | 474 | 586 | 562 | 9 | 6.4 | 3.6 | 0.35 | 1.94 | 2.89 | 1.90 | 291 |
| 440 | 580 | 420 | 420 | 4 | 1.5 | 5 730 | 15 400 | 47T885842 | 1-P | 467 | 562 | 544 | 1.5 | 3 | 1.5 | 0.26 | 2.55 | 3.80 | 2.50 | 288 |
| | 620 | 454 | 454 | 6 | 6 | 7 110 | 17 500 | 37288 | 1 | 482 | 592 | 576 | 9 | 5 | 5 | 0.40 | 1.68 | 2.50 | 1.64 | 417 |
| | 620 | 454 | 454 | 4 | 5 | 7 610 | 19 800 | 47T886246 | 1-P | 474 | 602 | 573 | 10.5 | 3 | 5 | 0.40 | 1.68 | 2.50 | 1.64 | 436 |
| | 635 | 430 | 430 | 5 | 6 | 7 560 | 18 000 | 47T886443 | 1-P | 485 | 613 | 587 | 9.5 | 4 | 5 | 0.33 | 2.03 | 3.02 | 1.98 | 450 |
| | 635 | 470 | 470 | 5 | 2.5 | 8 510 | 20 900 | 47T886447 | 1-P | 483 | 613 | 588 | 10.5 | 4 | 2 | 0.33 | 2.03 | 3.02 | 1.98 | 500 |
| | 650 | 326 | 326 | 6 | 6 | 5 080 | 11 000 | 47288 | 1-P | 500 | 622 | 595 | 11 | 5 | 5 | 0.28 | 2.43 | 3.61 | 2.37 | 361 |
| | 650 | 334 | 334 | 6 | 6 | 5 490 | 12 200 | 47288A | 1 | 500 | 622 | 595 | 9.5 | 5 | 5 | 0.28 | 2.43 | 3.61 | 2.37 | 375 |
| | 660 | 450 | 450 | 5 | 2 | 8 690 | 19 000 | 47T886645 | 1 | 489 | 638 | 610 | 9.5 | 4 | 2 | 0.32 | 2.12 | 3.15 | 2.07 | 532 |
| 447.675 | 635.000 | 463.550 | 463.550 | 6.4 | 3.2 | 7 860 | 21 000 | M270749D/710/710D | 1-P | 491 | 612 | 584 | 8 | 6.4 | 3.2 | 0.33 | 2.03 | 3.02 | 1.98 | 472 |
| 449.949 | 594.949 | 368.000 | 368.000 | 5 | 2.5 | 5 980 | 16 200 | M270449D/10/10D | 1-P | 478 | 573 | 557 | 9 | 5 | 2 | 0.33 | 2.03 | 3.02 | 1.98 | 278 |
| 450 | 580 | 450 | 450 | 6 | 1.5 | 5 130 | 14 600 | 47T905845 | 1 | 475 | 552 | 537 | 2 | 5 | 1.5 | 0.26 | 2.55 | 3.80 | 2.50 | 286 |
| 457.200 | 596.900 | 279.400 | 276.225 | 3.2 | 1.6 | 4 260 | 11 400 | 47T916028A | 1-P | 485 | 581 | 560 | 8.5 | 3.2 | 1.6 | 0.47 | 1.43 | 2.12 | 1.40 | 307 |
| | 660.400 | 323.847 | 323.850 | 6.4 | 3.2 | 5 700 | 12 700 | EE737179D/260/261D | 1-P | 501 | 637 | 603 | 9 | 6.4 | 3.2 | 0.37 | 1.80 | 2.69 | 1.76 | 365 |
| 460 | 586 | 280 | 280 | 3 | 1 | 3 710 | 9 810 | 47T925928 | 1 | 483 | 572 | 555 | 10.5 | 2.5 | 1 | 0.44 | 1.52 | 2.26 | 1.49 | 177 |
| | 615 | 360 | 360 | 3 | 1 | 5 000 | 13 300 | 47T926236 | 1 | 490 | 601 | 572 | 8 | 2.5 | 1 | 0.47 | 1.43 | 2.12 | 1.40 | 292 |
| | 625 | 421 | 421 | 4 | 1.5 | 6 920 | 18 800 | 47T926342 | 1-P | 495 | 607 | 582 | 8 | 3 | 1.5 | 0.33 | 2.03 | 3.02 | 1.98 | 386 |
| | 650 | 474 | 474 | 6 | 6 | 7 680 | 19 400 | 37292 | 1 | 500 | 622 | 598 | 8 | 5 | 5 | 0.33 | 2.03 | 3.02 | 1.98 | 495 |
| | 680 | 375 | 375 | 5 | 2 | 6 500 | 15 200 | 47T926838 | 1 | 515 | 658 | 618 | 10.5 | 4 | 2 | 0.36 | 1.87 | 2.79 | 1.83 | 475 |
| | 730 | 440 | 440 | 6 | 3 | 8 650 | 17 700 | 47T927344 | 1-P | 519 | 702 | 662 | 13 | 5 | 2.5 | 0.47 | 1.43 | 2.12 | 1.40 | 710 |
| 475.000 | 600.000 | 368.000 | 368.000 | 4.8 | 1.6 | 4 970 | 15 100 | 47T956037A | 1 | 501 | 581 | 566 | 10.5 | 4.8 | 1.6 | 0.26 | 2.55 | 3.80 | 2.50 | 246 |

[Notes] 1) While metric series bearings have minus tolerances for bore and OD, inch series have plus tolerances. Refer to page C 82 for details of applicable tolerance standards.

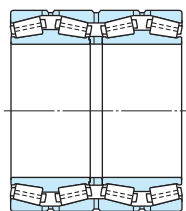
2) r_b indicates the shaft chamfer dimension corresponding to cone chamfer dimension r_1 .

Four-row tapered roller bearings

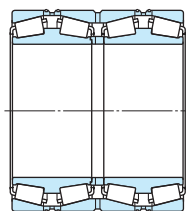
d 479.425 ~ 500 mm



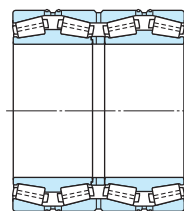
Design 1



Design 1-P

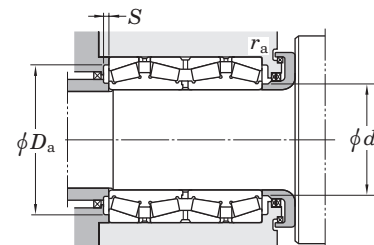


Design 2



Design 2-P

For oil mist lubrication



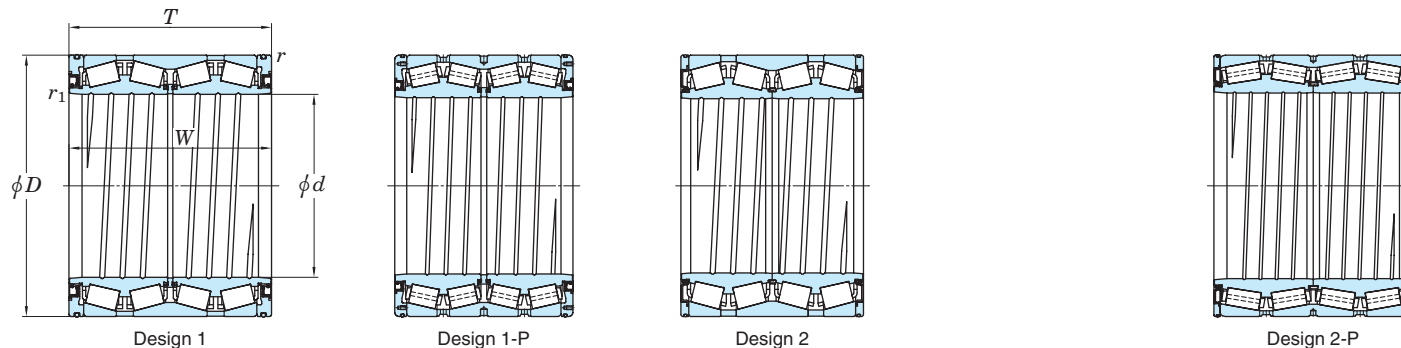
| d | Boundary dimensions (mm) | | | | | Basic load ratings (kN) | | Bearing No. ²⁾ | Design | Mounting dimensions (mm) | | | | | | Constant e | Axial load factors | | | (Refer.) Mass (kg) |
|---------|--------------------------|---------|---------|----------|--------------------------|-------------------------|----------|---------------------------|-----------|--------------------------|------------|----------|------------|--------------------------|-------|--------------|--------------------|-------|------|--------------------|
| | D | T | W | r min. | r_1 ¹⁾ min. | C_r | C_{0r} | | | d_a max. | D_a max. | S min. | r_a max. | r_b ³⁾ max. | Y_2 | | Y_3 | Y_0 | | |
| 479.425 | 679.450 | 495.300 | 495.300 | 6.4 | 3.2 | 9 660 | 25 400 | 47T966850 | 1-P | 523 | 656 | 641 | 12.5 | 6.4 | 3.2 | 0.33 | 2.03 | 3.02 | 1.98 | 591 |
| | 679.450 | 495.300 | 495.300 | 6.4 | 3.2 | 8 480 | 22 200 | M272749D/710/710D | 1-P | 524 | 656 | 627 | 7.5 | 6.4 | 3.2 | 0.33 | 2.03 | 3.02 | 1.98 | 575 |
| 480 | 678 | 494 | 494 | 6 | 6 | 9 160 | 23 300 | 37296 | 1-P | 520 | 650 | 629 | 9.5 | 5 | 5 | 0.33 | 2.03 | 3.02 | 1.98 | 563 |
| | 700 | 390 | 390 | 5 | 6 | 7 400 | 16 800 | 47T967039 | 1-P | 536 | 678 | 647 | 11 | 4 | 6 | 0.33 | 2.03 | 3.02 | 1.98 | 508 |
| 480.000 | 700.000 | 420.000 | 420.000 | 6.4 | 3.2 | 8 060 | 18 800 | 47T967042C | 1 | 531 | 677 | 644 | 10.5 | 6.4 | 3.2 | 0.35 | 1.95 | 2.90 | 1.91 | 540 |
| 482.600 | 615.950 | 330.200 | 330.200 | 6.4 | 6.4 | 4 830 | 13 400 | 47T976233 | 2-P | 512 | 593 | 573 | 6 | 6.4 | 6.4 | 0.44 | 1.54 | 2.30 | 1.51 | 240 |
| | 615.950 | 330.200 | 330.200 | 6.4 | 6.4 | 4 830 | 13 400 | 4TR19A | 1-P | 512 | 593 | 573 | 6.5 | 6.4 | 6.4 | 0.44 | 1.54 | 2.30 | 1.51 | 240 |
| | 615.950 | 330.200 | 330.200 | 6.4 | 4.8 | 5 270 | 15 000 | 4TR19B | 1-P | 509 | 593 | 573 | 10.5 | 6.4 | 4.8 | 0.33 | 2.03 | 3.02 | 1.98 | 243 |
| | 615.950 | 330.200 | 330.200 | 6.4 | 3.2 | 5 210 | 15 000 | 4TR19D | 1 | 508 | 593 | 573 | 10 | 6.4 | 3.2 | 0.36 | 1.87 | 2.79 | 1.83 | 240 |
| | 615.950 | 420.000 | 420.000 | 4 | 2.5 | 5 810 | 16 700 | 47T976242 | 1 | 508 | 597 | 577 | 6 | 4 | 2.5 | 0.26 | 2.55 | 3.80 | 2.50 | 296 |
| | 647.700 | 417.512 | 417.512 | 6.4 | 3.2 | 7 390 | 20 300 | 47T976542A | 2-P | 514 | 624 | 603 | 9.5 | 6.4 | 3.2 | 0.33 | 2.03 | 3.02 | 1.98 | 397 |
| | 647.700 | 417.512 | 417.512 | 6.4 | 3.2 | 7 390 | 20 300 | M272647D/610/610D | 1-P | 514 | 624 | 604 | 9.5 | 6.4 | 3.2 | 0.33 | 2.03 | 3.02 | 1.98 | 395 |
| | 488.950 | 622.300 | 365.125 | 365.125 | 3.6 | 3.6 | 4 950 | 13 900 | 47T986236 | 1 | 516 | 605 | 585 | 7.5 | 3.6 | 3.6 | 0.33 | 2.03 | 3.02 | 1.98 |
| | 660.400 | 361.950 | 365.125 | 6.4 | 7.9 | 6 200 | 15 800 | EE640193D/260/261D | 1-P | 527 | 637 | 616 | 11 | 6.4 | 7.9 | 0.31 | 2.20 | 3.27 | 2.15 | 357 |
| 489.026 | 634.873 | 320.675 | 320.675 | 3.2 | 3.2 | 4 520 | 13 200 | EE243193D/250/251D | 1 | 526 | 618 | 595 | 9.5 | 3.2 | 3.2 | 0.34 | 1.97 | 2.93 | 1.93 | 263 |
| | 634.873 | 320.675 | 320.675 | 3.2 | 3.2 | 4 930 | 13 700 | LM772749D/710/710D | 1 | 513 | 618 | 594 | 9.5 | 3.2 | 3.2 | 0.47 | 1.43 | 2.12 | 1.40 | 261 |
| 490 | 625 | 385 | 385 | 4 | 1.5 | 5 690 | 17 200 | 47T986339A | 1 | 520 | 607 | 587 | 9.5 | 3 | 1.5 | 0.28 | 2.43 | 3.61 | 2.37 | 290 |
| | 625 | 385 | 385 | 4 | 1.5 | 5 540 | 16 600 | 47T986339B | 1 | 517 | 607 | 587 | 4.5 | 3 | 1.5 | 0.32 | 2.12 | 3.15 | 2.07 | 285 |
| 500 | 640 | 450 | 450 | 4 | 1.5 | 7 050 | 20 300 | 4TR500M | 2-P | 527 | 622 | 602 | 10.5 | 3 | 1.5 | 0.24 | 2.84 | 4.23 | 2.78 | 352 |
| | 670 | 515 | 515 | 5 | 6 | 9 110 | 25 700 | 4TR500B | 1-P | 530 | 648 | 626 | 11 | 4 | 5 | 0.32 | 2.12 | 3.15 | 2.07 | 510 |
| | 705 | 515 | 515 | 6 | SP | 9 530 | 24 500 | 372/500 | 1-P | 544 | 677 | 651 | 8.5 | 5 | 6 | 0.37 | 1.80 | 2.69 | 1.76 | 641 |
| | 710 | 430 | 425 | 5 | 3 | 8 170 | 20 000 | 4TR500T | 1 | 547 | 688 | 658 | 12 | 4 | 3 | 0.37 | 1.80 | 2.69 | 1.76 | 528 |
| | 720 | 400 | 400 | 6 | 6 | 7 990 | 18 700 | 4TR500J | 1-P | 552 | 692 | 663 | 12.5 | 5 | 5 | 0.33 | 2.03 | 3.02 | 1.98 | 547 |
| | 760 | 420 | 420 | 2 | 6 | 8 730 | 19 300 | 4TR500Q | 1-P | 566 | 750 | 696 | 11.5 | 2 | 6 | 0.39 | 1.74 | 2.59 | 1.70 | 698 |

[Notes] 1) SP indicates the specially chamfered form.
 2) While metric series bearings have minus tolerances for bore and OD, inch series have plus tolerances. Refer to page C 82 for details of applicable tolerance standards.

3) r_b indicates the shaft chamfer dimension corresponding to cone chamfer dimension r_1 .

Sealed type four-row tapered roller bearings

d 75 ~ 234.950 mm

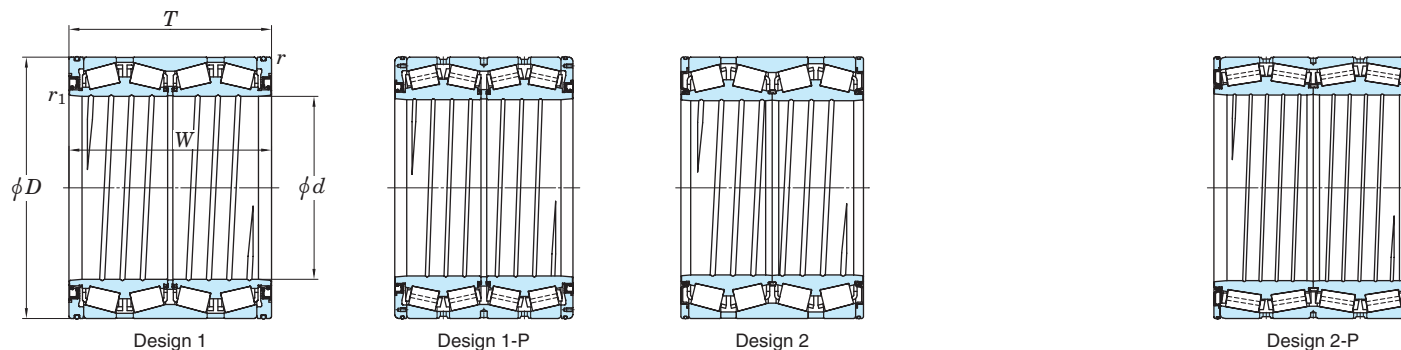


| Boundary dimensions | | | | | | | | Basic load ratings (kN) | | Bearing No. | Design | Constant e | Axial load factors | | (Refer.) Mass (kg) | | |
|---------------------|--------|---------|---------|---------|---------|---------|-----------------|------------------------------|----------------|-------------|--------|--------------|--------------------|----------------|--------------------|----------------|------|
| d | D | | T | | W | | r ¹⁾ | r ₁ ¹⁾ | C _r | | | | C _{0r} | Y ₂ | | Y ₃ | |
| mm | 1/25.4 | mm | 1/25.4 | mm | 1/25.4 | mm | 1/25.4 | min. | min. | | | | | | | | |
| 75 | — | 120 | — | 150 | — | 150 | — | 2 | 1 | 424 | 764 | 47TS151215 | 1 | 0.33 | 2.03 | 3.02 | 6.4 |
| | — | 135 | — | 180 | — | 187 | — | 1.5 | 1.5 | 455 | 776 | | 47TS151418 | 1 | 0.87 | 0.78 | 1.16 |
| 140 | — | 198 | — | 174 | — | 174 | — | 4 | 1 | 803 | 1 630 | 47TS282017 | 1 | 0.47 | 1.43 | 2.12 | 16.3 |
| 150 | — | 210 | — | 240 | — | 240 | — | 1.5 | 0.5 | 993 | 2 270 | 47TS302124 | 1 | 0.39 | 1.74 | 2.59 | 23.5 |
| 170 | — | 240 | — | 175 | — | 175 | — | 2.5 | 1.5 | 980 | 1 990 | 47TS342418 | 1 | 0.26 | 2.55 | 3.8 | 23.9 |
| | — | 250 | — | 230 | — | 230 | — | 2.5 | 1.5 | 1 370 | 2 860 | | 47TS342523 | 1 | 0.26 | 2.55 | 3.8 |
| 190.500 | 7.5000 | 266.700 | 10.5000 | 188.913 | 7.4375 | 187.325 | 7.3750 | 3.2 | 1 | 1 060 | 2 270 | 47TS382719A | 1 | 0.46 | 1.47 | 2.19 | 27.6 |
| 195 | — | 270 | — | 250 | — | 250 | — | 2.5 | 1 | 1 420 | 3 550 | 47TS392725-1 | 1 | 0.4 | 1.68 | 2.5 | 43.6 |
| 200 | — | 300 | — | 300 | — | 300 | — | 4 | 1.6 | 2 260 | 4 900 | 47TS403030 | 1 | 0.26 | 2.55 | 3.8 | 73.5 |
| 203.200 | 8.0000 | 317.500 | 12.5000 | 266.700 | 10.5000 | 266.700 | 10.5000 | 5 | 1.6 | 2 060 | 4 010 | 47TS413227 | 1 | 0.4 | 1.68 | 2.5 | 76.8 |
| 206.375 | 8.1250 | 282.575 | 11.1250 | 190.500 | 7.5000 | 190.500 | 7.5000 | 3.2 | 1 | 1 100 | 2 240 | 47TS412819 | 1 | 0.51 | 1.33 | 1.97 | 33.5 |
| | 8.1250 | 282.575 | 11.1250 | 240.000 | 9.4488 | 210.000 | 8.2677 | 3 | 1 | 1 450 | 3 380 | | 47TS412824 | 1 | 0.43 | 1.57 | 2.34 |
| 215.900 | 8.5000 | 288.925 | 11.3750 | 177.800 | 7.0000 | 177.800 | 7.0000 | 3.2 | 1 | 1 060 | 2 350 | 47TS432918 | 1 | 0.4 | 1.68 | 2.5 | 30.6 |
| 220 | — | 295 | — | 315 | — | 315 | — | SP | SP | 1 540 | 3 910 | 47TS443032A | 1 | 0.4 | 1.68 | 2.5 | 55.8 |
| | — | 320 | — | 290 | — | 290 | — | 3 | 2 | 2 200 | 4 700 | 47TS443229B | 1 | 0.39 | 1.74 | 2.59 | 73.9 |
| | — | 330 | — | 260 | — | 260 | — | 5 | 2.5 | 2 100 | 4 220 | 47TS443326 | 1 | 0.4 | 1.68 | 2.5 | 79.5 |
| 220.663 | 8.6875 | 314.325 | 12.3750 | 239.713 | 9.4375 | 239.713 | 9.4375 | 3.2 | 3 | 1 680 | 3 410 | 47TS443124 | 1 | 0.33 | 2.03 | 3.02 | 51.9 |
| | 8.6875 | 314.325 | 12.3750 | 330.000 | 12.9921 | 330.000 | 12.9921 | 3.2 | 3 | 2 360 | 5 650 | | 47TS443133 | 1 | 0.26 | 2.55 | 3.8 |
| 225 | — | 320 | — | 230 | — | 230 | — | 3 | 1.5 | 1 630 | 3 350 | 47TS453223A | 1 | 0.47 | 1.43 | 2.12 | 56.9 |
| 228.600 | 9.0000 | 311.150 | 12.2500 | 200.025 | 7.8750 | 200.025 | 7.8750 | 3.2 | SP | 1 330 | 2 850 | 47TS463120-1 | 1 | 0.4 | 1.68 | 2.5 | 41.3 |
| 234.950 | 9.2500 | 327.025 | 12.8750 | 196.850 | 7.7500 | 196.850 | 7.7500 | 3.2 | 1 | 1 490 | 3 310 | 47TS473320A | 2 | 0.4 | 1.68 | 2.5 | 48.1 |

[Note] 1) SP indicates the specially chamfered form.

Sealed type four-row tapered roller bearings

d 240 ~ (280) mm

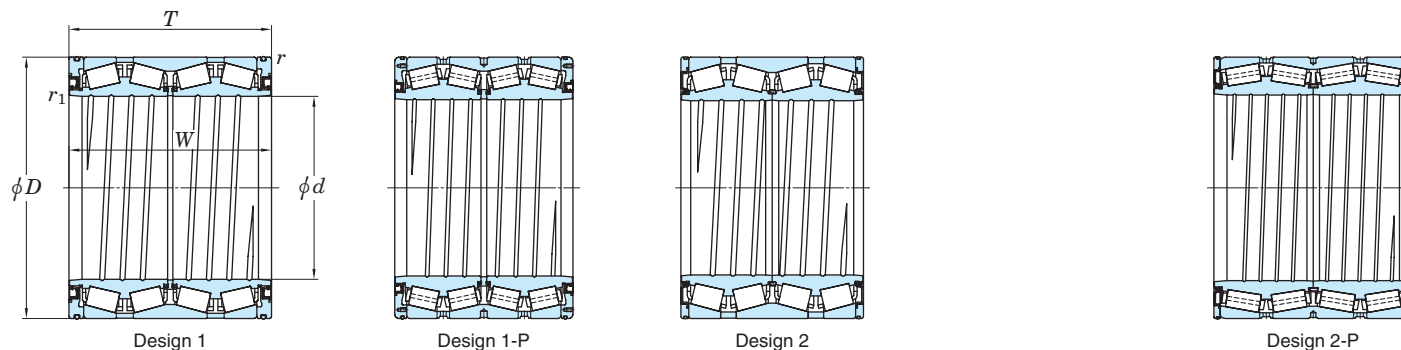


| Boundary dimensions | | | | | | | | Basic load ratings (kN) | | Bearing No. | Design | Constant e | Axial load factors | | (Refer.) Mass (kg) | | | |
|---------------------|---------|---------|---------|---------|---------|---------|---------|------------------------------|----------------|-------------|--------|----------------------|--------------------|----------------|--------------------|----------------|------|------|
| d | D | | T | | W | | r | r ₁ ¹⁾ | C _r | | | | C _{0r} | Y ₂ | | Y ₃ | | |
| mm | 1/25.4 | mm | 1/25.4 | mm | 1/25.4 | mm | 1/25.4 | mm | min. | min. | | | | | | | | |
| 240 | — | 320 | — | 294 | — | 294 | — | 4 | 1 | 1 880 | 4 760 | 47TS483229-1 | 1 | 0.33 | 2.03 | 3.02 | 63.6 | |
| | — | 338 | — | 248 | — | 248 | — | 3 | 1.5 | 1 890 | 4 120 | | 47TS483425B | 1 | 0.47 | 1.43 | 2.12 | 66 |
| | — | 338 | — | 290 | — | 290 | — | 3 | 1 | 2 360 | 5 360 | | 47TS483429 | 1 | 0.39 | 1.74 | 2.59 | 78 |
| | — | 338 | — | 320 | — | 320 | — | 3 | 1 | 2 430 | 5 890 | | 47TS483432 | 1 | 0.28 | 2.43 | 3.61 | 87.3 |
| | — | 338 | — | 340 | — | 340 | — | 3 | 1 | 2 450 | 5 930 | | 47TS483434A | 1 | 0.4 | 1.68 | 2.5 | 88 |
| 241.478 | 9.5070 | 349.148 | 13.7460 | 228.600 | 9.0000 | 228.600 | 9.0000 | 3.2 | SP | 2 000 | 4 110 | 47TS483523A | 2 | 0.35 | 1.91 | 2.84 | 67.5 | |
| 244.475 | 9.6250 | 327.025 | 12.8750 | 193.675 | 7.6250 | 193.675 | 7.6250 | 5 | 1.5 | 1 280 | 2 790 | 47TS493319 | 1 | 0.33 | 2.03 | 3.02 | 41.5 | |
| | 9.6250 | 381.000 | 15.0000 | 304.800 | 12.0000 | 304.800 | 12.0000 | 5 | 1.6 | 2 700 | 5 240 | 47TS493830 | 1 | 0.47 | 1.43 | 2.12 | 124 | |
| 245 | — | 345 | — | 310 | — | 310 | — | 3 | 1.5 | 2 520 | 6 020 | 47TS493531-2 | 1 | 0.4 | 1.68 | 2.5 | 89.9 | |
| 250 | — | 365 | — | 270 | — | 270 | — | 3 | 1.5 | 2 260 | 4 730 | 47TS503727A-1 | 1 | 0.4 | 1.68 | 2.5 | 94.2 | |
| 254.000 | 10.0000 | 358.775 | 14.1250 | 269.875 | 10.6250 | 269.875 | 10.6250 | 3.2 | 1.6 | 2 130 | 4 760 | 47TS513627A-1 | 1 | 0.55 | 1.24 | 1.84 | 82 | |
| | 10.0000 | 358.775 | 14.1250 | 269.875 | 10.6250 | 269.875 | 10.6250 | 3.2 | 1.5 | 2 520 | 6 010 | 47TS513627B | 2 | 0.4 | 1.68 | 2.5 | 85 | |
| 260 | — | 365 | — | 340 | — | 340 | — | 3.5 | 1.6 | 2 800 | 6 530 | 47TS523734-5 | 1 | 0.4 | 1.68 | 2.5 | 110 | |
| | — | 370 | — | 354 | — | 354 | — | 4 | 1.5 | 3 100 | 7 410 | 47TS523735 | 1 | 0.26 | 2.55 | 3.8 | 120 | |
| 266.700 | 10.5000 | 355.600 | 14.0000 | 228.600 | 9.0000 | 230.188 | 9.0625 | 3.2 | 1.6 | 1 940 | 4 880 | 47TS533623B | 2 | 0.36 | 1.87 | 2.79 | 60 | |
| 275 | — | 385 | — | 340 | — | 340 | — | 3 | 1.5 | 2 970 | 7 400 | 47TS553934 | 1 | 0.4 | 1.68 | 2.5 | 121 | |
| 276.225 | 10.8750 | 393.700 | 15.5000 | 269.875 | 10.6250 | 269.875 | 10.6250 | 3.2 | 1.6 | 2 350 | 5 040 | 47TS553927-4 | 1 | 0.47 | 1.43 | 2.12 | 100 | |
| | 10.8750 | 393.700 | 15.5000 | 269.875 | 10.6250 | 269.875 | 10.6250 | 3.2 | SP | 2 770 | 6 510 | 47TS553927A | 2 | 0.4 | 1.68 | 2.5 | 105 | |
| 279.400 | 11.0000 | 393.700 | 15.5000 | 269.875 | 10.6250 | 269.875 | 10.6250 | 3.2 | 1.6 | 2 350 | 5 040 | 47TS563927 | 1 | 0.47 | 1.43 | 2.12 | 99.5 | |
| | 11.0000 | 393.700 | 15.5000 | 269.875 | 10.6250 | 269.875 | 10.6250 | 3.2 | SP | 2 770 | 6 510 | 47TS563927B | 2 | 0.4 | 1.68 | 2.5 | 101 | |
| | 11.0000 | 393.700 | 15.5000 | 320.000 | 12.5984 | 320.000 | 12.5984 | 3.2 | 1.5 | 2 880 | 6 900 | 47TS563932-2 | 1 | 0.4 | 1.68 | 2.5 | 124 | |
| 279.578 | 11.0070 | 380.898 | 14.9960 | 244.475 | 9.6250 | 244.475 | 9.6250 | 3.2 | SP | 2 270 | 5 360 | 47TS563824 | 2 | 0.4 | 1.68 | 2.5 | 78.3 | |
| 280 | — | 380 | — | 290 | — | 290 | — | 3.2 | SP | 2 720 | 6 940 | 47TS563829A | 2 | 0.33 | 2.03 | 3.02 | 93.8 | |

[Note] 1) SP indicates the specially chamfered form.

Sealed type four-row tapered roller bearings

d (280) ~ 317.500 mm

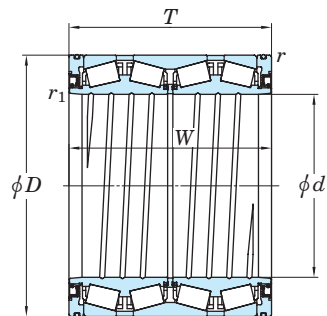


| Boundary dimensions | | | | | | | | Basic load ratings (kN) | | Bearing No. | Design | Constant e | Axial load factors | | (Refer.) Mass (kg) | | | |
|---------------------|-----------|-----------|-----------|-------------|-----------------------------|---------|----------|-------------------------|-------|-------------|--------|-----------------------|----------------------|------|--------------------|------|------|-----|
| d mm | D mm | T mm | W mm | r min. | r_1 ¹⁾ min. | C_r | C_{Or} | Y_2 | Y_3 | | | | | | | | | |
| 280 | — | 395 | — | 290 | — | 290 | — | 3 | 2.5 | 2 640 | 5 940 | 47TS564029 | 1 | 0.4 | 1.68 | 2.5 | 110 | |
| | — | 395 | — | 340 | — | 340 | — | 3 | 1.5 | 2 960 | 7 110 | | 47TS564034A | 1 | 0.4 | 1.68 | 2.5 | 130 |
| | — | 410 | — | 268 | — | 268 | — | 5.4 | 1.6 | 2 240 | 4 510 | | 47TS564127 | 1 | 0.33 | 2.03 | 3.02 | 118 |
| | — | 412 | — | 340 | — | 340 | — | 4 | 2 | 3 350 | 7 220 | | 47TS564134 | 1 | 0.28 | 2.43 | 3.61 | 154 |
| | — | 430 | — | 350 | — | 350 | — | 3.5 | 1.5 | 3 940 | 8 190 | | 47TS564335 | 1 | 0.4 | 1.68 | 2.5 | 178 |
| 285 | — | 400 | — | 340 | — | 340 | — | 3 | 1.5 | 3 190 | 7 610 | 47TS574034 | 1 | 0.4 | 1.68 | 2.5 | 131 | |
| 285.750 | 11.2500 | 380.898 | 14.9960 | 244.475 | 9.6250 | 244.475 | 9.6250 | 3.2 | 1 | 2 000 | 4 600 | 47TS573824A | 1 | 0.43 | 1.57 | 2.34 | 73.2 | |
| 290 | — | 400 | — | 346 | — | 346 | — | 4 | 1.5 | 3 070 | 7 860 | 47TS584035 | 1 | 0.4 | 1.68 | 2.5 | 128 | |
| | — | 400 | — | 420 | — | 420 | — | 4 | 1.5 | 3 070 | 7 860 | | 47TS584042C | 1 | 0.4 | 1.68 | 2.5 | 155 |
| | — | 420 | — | 380 | — | 380 | — | 3 | 1.2 | 3 640 | 8 260 | | 47TS584238 | 1 | 0.4 | 1.68 | 2.5 | 175 |
| | — | 450 | — | 415 | — | 415 | — | 4 | 1.5 | 4 460 | 9 460 | | 47TS584542 | 1 | 0.47 | 1.43 | 2.12 | 238 |
| 300 | — | 400 | — | 254 | — | 254 | — | 4 | 5 | 2 220 | 5 300 | 47TS604025 | 1 | 0.28 | 2.43 | 3.61 | 84.6 | |
| | — | 420 | — | 310 | — | 310 | — | 4 | 3.5 | 2 890 | 6 670 | | 47TS604231 | 1 | 0.4 | 1.68 | 2.5 | 128 |
| 304.648 | 11.9940 | 438.048 | 17.2460 | 279.400 | 11.0000 | 280.990 | 11.0626 | 4 | 1.6 | 2 570 | 5 380 | 47TS614428B-10 | 1 | 0.47 | 1.44 | 2.15 | 135 | |
| | 11.9940 | 438.048 | 17.2460 | 279.400 | 11.0000 | 279.400 | 11.0000 | 3.2 | 1.6 | 3 140 | 6 860 | | 47TS614428C-1 | 2 | 0.4 | 1.68 | 2.5 | 135 |
| 304.800 | 12.0000 | 419.100 | 16.5000 | 269.875 | 10.6250 | 269.875 | 10.6250 | 6.4 | 2 | 2 490 | 5 420 | 47TS614227 | 1 | 0.33 | 2.03 | 3.02 | 100 | |
| | 12.0000 | 501.650 | 19.7500 | 336.550 | 13.2500 | 296.550 | 11.6752 | 4 | 4 | 4 280 | 8 570 | | 47TS615034 | 1-P | 0.33 | 2.03 | 3.02 | 257 |
| 304.902 | 12.0040 | 412.648 | 16.2460 | 266.700 | 10.5000 | 266.700 | 10.5000 | 3.2 | 0.8 | 2 750 | 6 820 | 47TS614127D | 2 | 0.39 | 1.74 | 2.59 | 99.5 | |
| 310 | — | 430 | — | 310 | — | 310 | — | 3 | 1 | 3 010 | 6 880 | 47TS624331-4 | 1 | 0.4 | 1.68 | 2.5 | 131 | |
| | — | 430 | — | 350 | — | 350 | — | 3.5 | 1.5 | 3 280 | 7 870 | | 47TS624335A | 1 | 0.4 | 1.68 | 2.5 | 148 |
| | — | 430 | — | 350 | — | 350 | — | 3.5 | SP | 3 280 | 7 870 | | 47TS624335B-2 | 1 | 0.4 | 1.68 | 2.5 | 148 |
| | — | 457.098 | — | 390 | — | 390 | — | 4 | 1.5 | 4 200 | 9 500 | | 47TS624639 | 1 | 0.32 | 2.12 | 3.15 | 220 |
| 317.500 | 12.5000 | 447.675 | 17.6250 | 367.000 | 14.4488 | 367.000 | 14.4488 | 4 | 1.6 | 3 680 | 8 500 | 47TS644537-1 | 1 | 0.4 | 1.68 | 2.5 | 176 | |

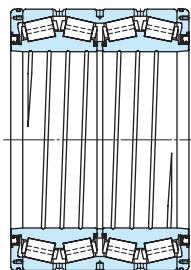
[Note] 1) SP indicates the specially chamfered form.

Sealed type four-row tapered roller bearings

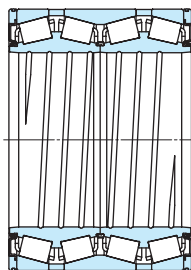
d 320 ~ 410 mm



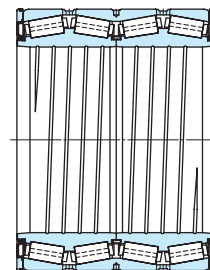
Design 1



Design 1-P



Design 2



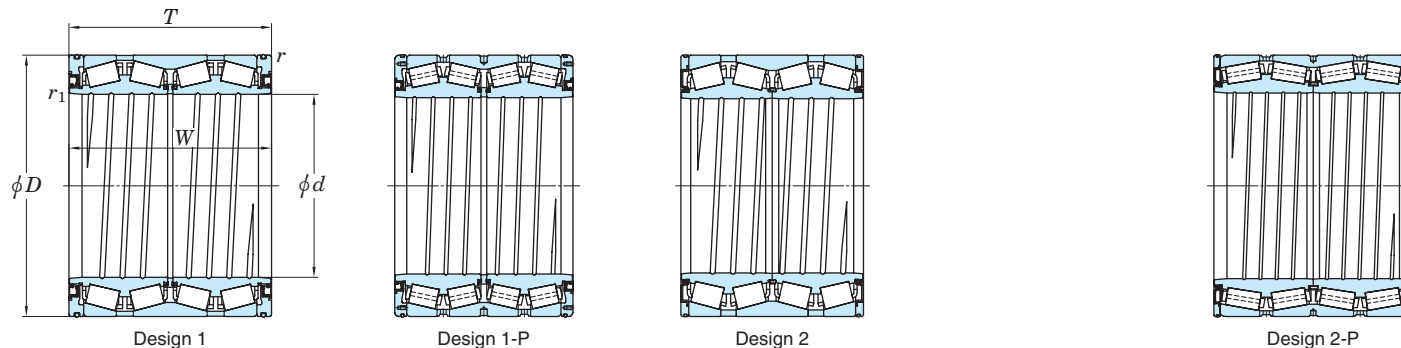
Design 2-P

| Boundary dimensions | | | | | | | | Basic load ratings (kN) | | Bearing No. | Design | Constant e | Axial load factors | | (Refer.) Mass (kg) | |
|---------------------|---------|---------|---------|-----------------|------------------------------|----------------|-----------------|-------------------------|----------------|-------------|--------|------------|--------------------|------|--------------------|------|
| d | D | T | W | r ¹⁾ | r ₁ ¹⁾ | C _r | C _{0r} | Y ₂ | Y ₃ | | | | | | | |
| mm | mm | mm | mm | min. | min. | | | | | | | | | | | |
| 320 | — | 440 | — | 335 | — | 335 | — | 4 | 1 | 3 140 | 7 330 | — | — | — | 146 | |
| | — | 480 | — | 360 | — | 360 | — | 4 | 1.5 | 4 210 | 8 800 | 1 | 0.4 | 1.68 | 2.5 | 220 |
| | — | 480 | — | 420 | — | 420 | — | 4 | 1.5 | 5 470 | 12 100 | 1-P | 0.47 | 1.43 | 2.12 | 262 |
| 330.302 | 13.0040 | 438.023 | 17.2450 | 254.000 | 10.0000 | 247.650 | 9.7500 | 3.2 | 1.6 | 2 190 | 4 960 | — | — | — | — | 95.8 |
| 335.000 | 13.1890 | 460.000 | 18.1102 | 342.900 | 13.5000 | 342.900 | 13.5000 | 3.3 | 1.5 | 3 740 | 9 290 | — | — | — | — | 167 |
| 342.875 | 13.4990 | 488.900 | 19.2480 | 410.000 | 16.1417 | 410.000 | 16.1417 | 4 | 2 | 4 620 | 11 600 | — | — | — | — | 233 |
| 342.875 | — | 560 | — | 500 | — | 500 | — | 5 | 2.5 | 7 210 | 15 000 | 1 | 0.33 | 2.02 | 3 | 495 |
| 343.052 | 13.5060 | 457.098 | 17.9960 | 254.000 | 10.0000 | 254.000 | 10.0000 | 3.2 | 0.8 | 2 870 | 7 030 | — | — | — | — | 110 |
| | 13.5060 | 457.098 | 17.9960 | 299.000 | 11.7717 | 299.000 | 11.7717 | 3.2 | SP | 3 310 | 9 010 | 2 | 0.4 | 1.68 | 2.5 | 135 |
| 346.075 | 13.6250 | 488.950 | 19.2500 | 358.775 | 14.1250 | 358.775 | 14.1250 | 4 | 2 | 3 780 | 8 310 | — | — | — | — | 210 |
| 350 | — | 480 | — | 420 | — | 420 | — | SP | 1.5 | 3 700 | 9 100 | 1 | 0.33 | 2.03 | 3.02 | 169 |
| 355 | — | 490 | — | 316 | — | 316 | — | 2 | 1.6 | 3 540 | 7 920 | 1 | 0.4 | 1.68 | 2.5 | 217 |
| 355.600 | 14.0000 | 482.600 | 19.0000 | 269.875 | 10.6250 | 265.112 | 10.4375 | 3.2 | 1.5 | 2 680 | 6 090 | — | — | — | — | 134 |
| 360 | — | 480 | — | 375 | — | 375 | — | 3 | 1 | 4 120 | 10 600 | 1 | 0.33 | 2.03 | 3.02 | 181 |
| 374.650 | 14.7500 | 501.650 | 19.7500 | 260.350 | 10.2500 | 250.825 | 9.8750 | 3.2 | 1.6 | 3 120 | 7 470 | — | — | — | — | 136 |
| 380 | — | 580 | — | 370 | — | 370 | — | 3 | SP | 5 690 | 12 300 | 1 | 0.47 | 1.43 | 2.12 | 220 |
| 395 | — | 545 | — | 360 | — | 360 | — | 6 | 1.6 | 3 790 | 8 930 | 1 | 0.47 | 1.43 | 2.12 | 242 |
| 406.400 | 16.0000 | 546.100 | 21.5000 | 288.925 | 11.3750 | 288.925 | 11.3750 | 6.4 | 1 | 3 620 | 8 190 | — | — | — | — | 195 |
| | 16.0000 | 546.100 | 21.5000 | 330.000 | 12.9921 | 330.000 | 12.9921 | 4 | 1.5 | 4 310 | 10 500 | 2-P | 0.43 | 1.57 | 2.34 | 204 |
| | 16.0000 | 546.100 | 21.5000 | 357.400 | 14.0709 | 357.400 | 14.0709 | 3.2 | 1.6 | 3 960 | 9 540 | 1 | 0.47 | 1.43 | 2.12 | 220 |
| 410 | — | 546 | — | 400 | — | 400 | — | 4 | 1.5 | 4 630 | 12 000 | 1 | 0.26 | 2.55 | 3.8 | 255 |

[Note] 1) SP indicates the specially chamfered form.

Sealed type four-row tapered roller bearings

d 415.925 ~ 482.600 mm

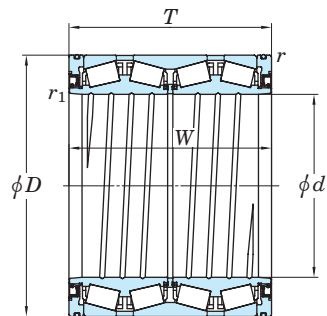


| Boundary dimensions | | | | | | | | Basic load ratings (kN) | | Bearing No. | Design | Constant e | Axial load factors | | (Refer.) Mass (kg) |
|---------------------|---------|---------|---------|-----------------|------------------------------|----------------|-----------------|-------------------------|----------------|-------------|--------|------------|--------------------|--|--------------------|
| d | D | T | W | r ¹⁾ | r ₁ ¹⁾ | C _r | C _{0r} | Y ₂ | Y ₃ | | | | | | |
| mm | mm | mm | mm | min. | min. | | | | | | | | | | |
| 415.925 | 590.550 | 434.975 | 434.975 | 4 | 1.5 | 6 390 | 15 600 | 47TS835944A | 2-P | 0.4 | 1.68 | 2.5 | 377 | | |
| 420 | 560 | 437 | 437 | 4 | 3 | 5 620 | 14 900 | 47TS845644 | 1 | 0.26 | 2.55 | 3.8 | 298 | | |
| | 574 | 480 | 480 | 3 | 1.6 | 6 730 | 17 800 | 47TS845748 | 1-P | 0.28 | 2.43 | 3.61 | 352 | | |
| | 620 | 395 | 320 | SP | SP | 5 160 | 11 600 | 47TS846240 | 1-P | 0.47 | 1.43 | 2.12 | 390 | | |
| 430 | 575 | 380 | 380 | 3.2 | SP | 5 200 | 14 300 | 47TS865838A | 2-P | 0.26 | 2.55 | 3.8 | 276 | | |
| 431.800 | 571.500 | 336.550 | 336.550 | 3.2 | 1.5 | 4 440 | 11 600 | 47TS865734A | 2 | 0.4 | 1.68 | 2.5 | 229 | | |
| 440 | 590 | 480 | 480 | 4 | SP | 6 870 | 18 700 | 47TS885948A-3 | 2-P | 0.26 | 2.55 | 3.8 | 362 | | |
| | 620 | 454 | 454 | 4 | 1.5 | 6 580 | 16 100 | 47TS886245-1 | 1-P | 0.33 | 2.03 | 3.02 | 430 | | |
| | 635 | 470 | 413 | 5 | 2 | 6 870 | 15 700 | 47TS886447 | 1 | 0.33 | 2.03 | 3.02 | 461 | | |
| 450 | 595 | 420 | 420 | 5 | 1.5 | 6 110 | 16 300 | 47TS906042 | 1-P | 0.26 | 2.55 | 3.8 | 308 | | |
| 457.200 | 596.900 | 279.400 | 276.225 | 3.2 | 1.6 | 3 760 | 9 520 | 47TS916028C | 2-P | 0.47 | 1.43 | 2.12 | 191 | | |
| | 596.900 | 279.400 | 276.225 | 3.2 | 1.6 | 3 300 | 8 180 | 47TS916028D | 2-P | 0.7 | 0.97 | 1.44 | 187 | | |
| 460 | 620 | 470 | 470 | 4 | 1.5 | 7 060 | 19 300 | 47TS926247 | 1-P | 0.26 | 2.55 | 3.8 | 412 | | |
| 479.425 | 679.450 | 495.300 | 495.300 | 6.4 | 2 | 8 030 | 19 600 | 47TS966850 | 1-P | 0.33 | 2.03 | 3.02 | 562 | | |
| 480.000 | 647.700 | 417.512 | 417.512 | 6.4 | SP | 6 680 | 17 400 | 47TS966542 | 1-P | 0.33 | 2.03 | 3.02 | 391 | | |
| 480 | 700 | 470 | 470 | 5 | 1.5 | 8 080 | 18 800 | 47TS967047 | 1-P | 0.32 | 2.12 | 3.15 | 621 | | |
| 482.600 | 615.950 | 330.200 | 330.200 | 6.4 | 1.6 | 4 310 | 11 700 | 4TRS19B | 1-P | 0.44 | 1.54 | 2.3 | 240 | | |
| | 615.950 | 330.200 | 330.200 | 3.2 | 1.6 | 4 360 | 11 800 | 4TRS19C | 2 | 0.4 | 1.68 | 2.5 | 229 | | |
| | 615.950 | 330.200 | 330.200 | 3.2 | 1.6 | 4 510 | 12 400 | 4TRS19D | 2-P | 0.4 | 1.68 | 2.5 | 239 | | |
| | 615.950 | 385.000 | 385.000 | 6.4 | 1.6 | 5 270 | 15 000 | 47TS976239 | 1-P | 0.33 | 2.03 | 3.02 | 278 | | |
| | 615.950 | 420.000 | 420.000 | 6.4 | 1.6 | 5 090 | 14 500 | 47TS976242 | 1 | 0.33 | 2.03 | 3.02 | 302 | | |
| | 615.950 | 425.000 | 425.000 | 6.4 | 1.6 | 5 090 | 14 500 | 47TS976243 | 1 | 0.33 | 2.03 | 3.02 | 306 | | |
| | 647.700 | 417.512 | 417.512 | 6.4 | 1.6 | 6 680 | 17 400 | 47TS976542A | 1-P | 0.33 | 2.03 | 3.02 | 382 | | |

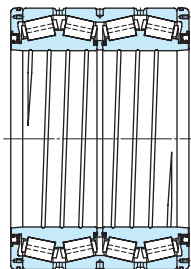
[Note] 1) SP indicates the specially chamfered form.

Sealed type four-row tapered roller bearings

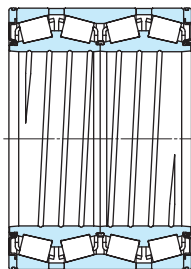
d 488.950 ~ 800 mm



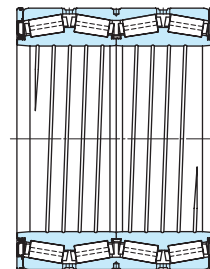
Design 1



Design 1-P



Design 2



Design 2-P

| Boundary dimensions | | | | | | | | | | Basic load ratings (kN) | | Bearing No. | Design | Con- stant e | Axial load factors | | (Refer.) Mass (kg) |
|---------------------|--------------------|--------------------|--------------------|-------------|-----------------------------|--------|----------|-------|-------|----------------------------|-----|-------------|--------|----------------------|--------------------|--|--------------------------|
| d mm | D mm | T mm | W mm | r min. | r_1 ¹⁾ min. | C_r | C_{Or} | Y_2 | Y_3 | | | | | | | | |
| 488.950 | 19.2500 622.300 | 24.5000 365.125 | 14.3750 365.125 | 6.4 | 1.5 | 4 320 | 12 200 | | | 47TS986236 | 1 | 0.4 | 1.68 | 2.5 | 270 | | |
| 492 | — 655 | — 480 | — 480 | 5 | 1.5 | 7 450 | 21 200 | | | 47TS986648 | 1-P | 0.33 | 2.03 | 3.02 | 449 | | |
| 509.948 | 20.0767 654.924 | 25.7844 379.000 | 14.8425 377.000 | 6.4 | 1.5 | 5 370 | 15 200 | | | 4TRS510B | 1-P | 0.41 | 1.64 | 2.44 | 320 | | |
| 530 | — 715 | — 590 | — 590 | 5 | 1.5 | 10 300 | 28 900 | | | 4TRS530A | 1-P | 0.26 | 2.55 | 3.8 | 664 | | |
| 558.800 | 22.0000 736.600 | 29.0000 372.263 | 14.6560 372.263 | 7 | SP | 6 910 | 16 100 | | | 4TRS559J | 1-P | 0.34 | 1.97 | 2.93 | 425 | | |
| | 22.0000 736.600 | 29.0000 409.575 | 16.1250 409.575 | 6 | 1.5 | 6 850 | 18 600 | | | 4TRS559C | 1-P | 0.35 | 1.95 | 2.9 | 475 | | |
| | 22.0000 736.600 | 29.0000 450.000 | 17.7165 450.000 | 6 | 1.5 | 7 180 | 19 700 | | | 4TRS559A | 1-P | 0.35 | 1.95 | 2.9 | 507 | | |
| | 22.0000 736.600 | 29.0000 480.000 | 18.8976 480.000 | 6 | 1.5 | 7 960 | 22 700 | | | 4TRS559B | 1-P | 0.4 | 1.68 | 2.5 | 547 | | |
| | 22.0000 736.600 | 29.0000 500.000 | 19.6850 500.000 | 6 | 1.6 | 8 220 | 23 100 | | | 4TRS559 | 1-P | 0.35 | 1.95 | 2.9 | 560 | | |
| 585.788 | 23.0625 771.525 | 30.3750 479.425 | 18.8750 479.425 | 6.4 | 1.5 | 8 730 | 24 400 | | | 4TRS586A | 1-P | 0.33 | 2.03 | 3.02 | 613 | | |
| 595.312 | 23.4375 844.550 | 33.2500 615.950 | 24.2500 615.950 | 6.4 | 3.6 | 12 700 | 32 200 | | | 4TRS595B | 1-P | 0.33 | 2.03 | 3.02 | 1 120 | | |
| 600 | — 870 | — 700 | — 700 | 5 | 4 | 15 100 | 39 400 | | | 4TRS600A | 1-P | 0.33 | 2.03 | 3.02 | 1 370 | | |
| 609.600 | 24.0000 787.400 | 31.0000 361.950 | 14.2500 361.950 | 6.4 | 3.2 | 5 920 | 14 900 | | | 4TRS610 | 1-P | 0.4 | 1.68 | 2.5 | 430 | | |
| | 24.0000 813.562 | 32.0300 540.000 | 21.2598 540.000 | 6.4 | 1.5 | 10 200 | 28 500 | | | 4TRS610A | 1-P | 0.33 | 2.03 | 3.02 | 775 | | |
| 679.450 | 26.7500 901.700 | 35.5000 552.450 | 21.7500 552.450 | 6.4 | 3 | 11 100 | 30 600 | | | 4TRS679 | 1-P | 0.33 | 2.03 | 3.02 | 951 | | |
| 685.800 | 27.000 876.300 | 34.5000 355.600 | 14.0000 352.425 | 6.4 | 3.2 | 6 130 | 16 300 | | | 4TRS686A | 1-P | 0.42 | 1.62 | 2.42 | 520 | | |
| 704.850 | 27.7500 914.400 | 36.0000 552.450 | 21.7500 552.450 | 6.4 | 3.2 | 11 300 | 33 400 | | | 4TRS705 | 1-P | 0.33 | 2.03 | 3.02 | 940 | | |
| 711.200 | 28.0000 914.400 | 36.0000 317.500 | 12.5000 317.500 | 3.2 | SP | 6 070 | 16 700 | | | 4TRS711N | 2-P | 0.46 | 1.47 | 2.19 | 507 | | |
| | 28.0000 914.400 | 36.0000 387.350 | 15.2500 387.350 | 6.4 | 3.2 | 7 160 | 19 400 | | | 4TRS711A | 1-P | 0.38 | 1.78 | 2.65 | 615 | | |
| | 28.0000 914.400 | 36.0000 410.000 | 16.1417 410.000 | 6.4 | 3.2 | 7 610 | 20 500 | | | 4TRS711 | 1-P | 0.44 | 1.54 | 2.29 | 670 | | |
| | 28.0000 914.400 | 36.0000 420.000 | 16.5354 420.000 | 6.4 | 3.2 | 7 870 | 22 200 | | | 4TRS711L | 1-P | 0.4 | 1.68 | 2.5 | 678 | | |
| 800 | — 1 130 | — 780 | — 780 | 6 | 1.5 | 21 900 | 58 800 | | | 4TRS800 | 1-P | 0.26 | 2.55 | 3.8 | 2 520 | | |

[Note] 1) SP indicates the specially chamfered form.

Bearings for railway rolling stock axle journals

Bearings used to support rolling stock axle journals are required to be very strong and, at the same time, to be small because of limited space.

Double-row bearings that are larger in width than general bearings are popular in that they are compact and have high load ratings.

■ Cylindrical roller bearings

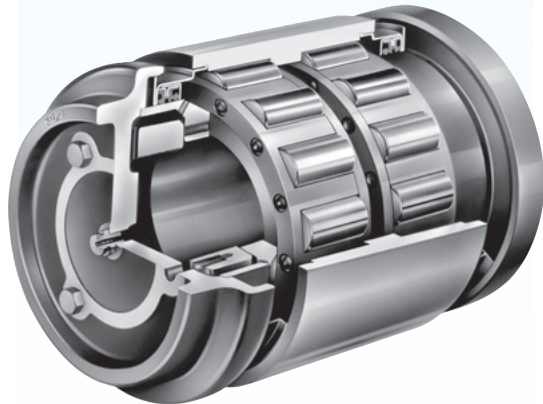
- Feature good high-speed performance, and can be maintained and inspected easily because of their separable structure.

Most commonly used bearing.

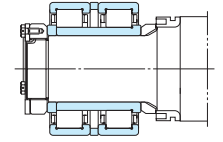
- Those with a rib next to the inner ring are able to support not only radial load but also a certain degree of axial load, so that a ball bearing is not required to accommodate the axial load.

■ Sealed type cylindrical roller bearing units and tapered roller bearing units

- Maintenance-free : pre-lubricated with grease and provided with oil seals.
- Can be used with a simplified axle box, or with an adapter instead.
- The inch series axle bearing units (ABU) are as specified in the "association of american rail-roads".

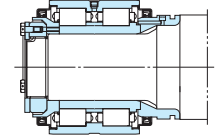


Cylindrical roller bearings



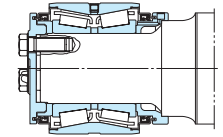
Bore diameter **85 – 133 mm**

Sealed type cylindrical roller bearing units



Bore diameter **95 – 120 mm**

Sealed type tapered roller bearing units(ABU)



Bore diameter **101.600 – 177.787 mm**

| | |
|---------------------------|---|
| Tolerances | <ul style="list-style-type: none"> Cylindrical roller and axial load support ball bearings : as specified in JIS B 1514-1, class 0 (Table 7-3 on pp. A 54–A 57). (The tolerances for cylindrical roller bearing width and overall width are as shown in Table 1.) Metric series ABU bearings: refer to Table 2. Inch series ABU bearings : refer to Table 3. |
| Recommended fits | Refer to Table 4. |
| Radial internal clearance | <ul style="list-style-type: none"> Cylindrical roller bearings : class C 3 UIC* standard cylindrical roller bearings : class C 4 (refer to Table 10-8 on p. A 100.) Axial load support ball bearings : class C 5 However, the clearance class should be adjusted according to the axle box structure. Consult with JTEKT for further information. ABU bearings : class C 3 (refer to Table 10-10 on p. A 104) *Denotes that the bearings are compatible with axle journals and axle boxes standardized by the UIC. |

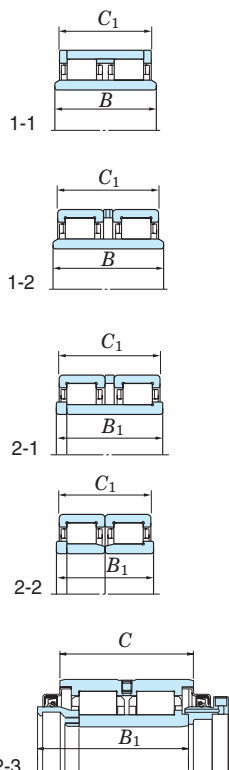
Table 1 Cylindrical roller bearings for axle journals : tolerances for inner ring width, outer ring width and overall width

(1) Tolerances for inner ring width and inner ring overall width Unit : μm

| Bearing type | Design | Nominal bore diameter d (mm) | | ΔB_s Or ΔB_{1s} | |
|--|----------------------|--------------------------------|-------|---------------------------------|-------|
| | | over | up to | upper | lower |
| Inner ring one-piece type, Inner ring with a rib and loose rib | 1-1, 1-2 2-1, 2-3 | 80 | 120 | 0 | -400 |
| | | 120 | 180 | 0 | -500 |
| Two inner rings and spacer | 2-2 | 80 | 120 | 0 | -600 |
| | | 120 | 180 | 0 | -700 |

(2) Tolerances for outer ring width and outer ring overall width Unit : μm

| Bearing type | Design | Nominal bore diameter d (mm) | | ΔC_s Or ΔC_{1s} | |
|-------------------------------|-------------------|--------------------------------|-------|---------------------------------|-------|
| | | over | up to | upper | lower |
| Outer ring one-piece type | 2-3 | 80 | 120 | 0 | -300 |
| | | 120 | 180 | 0 | -350 |
| Outer ring and two loose ribs | 1-1 | 80 | 120 | +100 | -200 |
| | | 120 | 180 | +100 | -250 |
| Two outer rings | 2-1 ¹⁾ | 120 | 180 | 0 | -500 |
| Two outer rings and spacer | 1-2 2-1, 2-2 | 80 | 120 | 0 | -500 |
| | | 120 | 180 | 0 | -600 |



[Note] 1) (2-1) means that spacer shown in Design 2-1 is removed.

Table 2 Metric series ABU bearing tolerances Unit : μm

| Nominal bore diameter d (mm) | Single plane mean bore diameter deviation Δd_{mp} | | Single plane mean outside diameter deviation ΔD_{mp} | | Single outer ring width deviation ΔC_s | | Actual overall width of inner rings deviation ΔB_{1s} | |
|--------------------------------|---|-------|--|-------|--|-------|---|-------|
| | upper | lower | upper | lower | upper | lower | upper | lower |
| 110 | 0 | -20 | | | +50 | -50 | | |
| 120 | 0 | -20 | 0 | -125 | +100 | -100 | +500 | -500 |
| 130 | 0 | -25 | | | +100 | -100 | | |

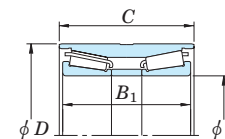


Table 3 Inch series ABU bearing tolerances Unit : μm

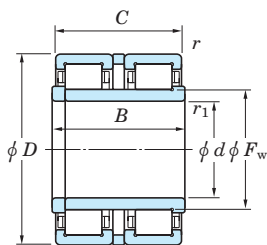
| Nominal bore diameter d (mm) | Single plane mean bore diameter deviation Δd_{mp} | | Single plane mean outside diameter deviation ΔD_{mp} | | Single outer ring width deviation ΔC_s | | Actual overall width of inner rings deviation ΔB_{1s} | |
|--------------------------------|---|-------|--|-------|--|-------|---|-------|
| | upper | lower | upper | lower | upper | lower | upper | lower |
| 101.6 to 177.8 | +25 | 0 | +127 | 0 | +50 | -250 | +710 | -510 |

Table 4 Axle journal bearing recommended fits

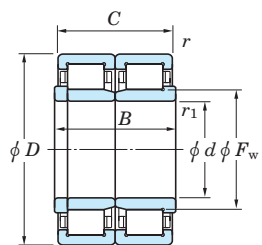
| Bearing type | Axle journal diameter (mm) | | Axle journal tolerance class | Axle box bore tolerance class |
|--|----------------------------|-------|------------------------------|--|
| | over | up to | | |
| Cylindrical roller bearing Tapered roller bearing | 50 | 100 | (m 6), n 6 | H 7 |
| | 100 | 140 | n 6 | |
| | 140 | 240 | p 6 | |
| Axial load support deep groove ball bearing | All diameters | | k 5 | Clearance fit (clearance of approx. 0.2 to 0.6 mm) |

Cylindrical roller bearings
for railway rolling stock axle journals

d 85 ~ (120) mm



Design 1

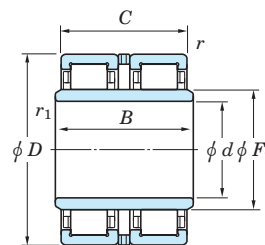


Design 2

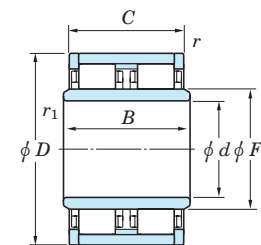
| d | Boundary dimensions (mm) | | | | | | Basic load ratings (kN) | | Bearing No. ²⁾ | Design ³⁾ | (Refer.) Mass (kg) |
|------------|--------------------------|-----|-----|-------|------------|------------|-------------------------|----------|---------------------------|----------------------|--------------------|
| | D | B | C | F_w | $r_{min.}$ | $r_1^{1)}$ | C_r | C_{Or} | | | |
| 85 | 150 | 130 | 120 | 101.5 | 1.1 | (7) | 369 | 592 | 2U2217SC | 3 | 8.6 |
| 90 | 160 | 88 | 80 | 107 | 2 | 2 | 355 | 529 | 2CR90D | 1 | 7.2 |
| 95 | 170 | 120 | 105 | 114 | 1.1 | (10) | 497 | 804 | 2UJ95 | 4 | 10.9 |
| | 170 | 125 | 115 | 113.5 | 2.5 | (7) | 441 | 687 | 2CR95A | 1 | 11.5 |
| | 170 | 130 | 130 | 114 | 2 | 2 | 441 | 688 | 2UJ1917 | 3 | 11.4 |
| | 170 | 140 | 125 | 114 | 1.1 | (10) | 555 | 926 | 4UJ95 | 5 | 12.7 |
| 100 | 180 | 150 | 134 | 120 | 1.1 | (10) | 594 | 990 | 4UJ100 | 5 | 15.1 |
| | 190 | 140 | 130 | 122 | 2.5 | (7) | 697 | 1 120 | 20DC19130/140 | 3 | 16.9 |
| | 200 | 170 | 170 | 125 | 2 | (7) | 755 | 1 160 | 2CR100 | 1 | 23.7 |
| | 200 | 170 | 170 | 125 | 2 | (10) | 755 | 1 160 | 20DC20170 | 3 | 23.2 |
| 110 | 200 | 180 | 160 | 134 | 1.1 | (7) | 721 | 1 190 | JC3 | 5 | 22.6 |
| | 220 | 180 | 160 | 138 | 2.5 | (7) | 789 | 1 190 | JC6 | 1 | 30.0 |
| | 220 | 185 | 180 | 138 | 2 | (7) | 922 | 1 460 | 2CR110 | 1 | 31.3 |
| | 225 | 150 | 140 | 138 | 1.1 | (7) | 833 | 1 230 | JC1A | 4 | 27.7 |
| | 225 | 150 | 140 | 138 | 2.5 | (7) | 897 | 1 350 | 22DC23140/150 | 3 | 26.7 |
| | 235 | 180 | 160 | 141 | 2.5 | (7) | 934 | 1 430 | JC2A | 3 | 35.3 |
| 116 | 220 | 185 | 180 | 142 | 2 | (7) | 891 | 1 470 | 2CR116 | 1 | 30.5 |
| | 225 | 150 | 140 | 197.5 | 1.1 | (7) | 786 | 1 220 | 2UJ116 | 4 | 26.0 |
| 120 | 225 | 170 | 165 | 145 | 3 | (10) | 876 | 1 380 | JC35 | 1 | 29.4 |
| | 230 | 170 | 165 | 145 | 3 | (10) | 943 | 1 460 | JC34 | 1 | 30.8 |
| | 230 | 177 | 150 | 145 | 3 | (30) | 943 | 1 460 | JC27X | (1) | 29.7 |
| | 240 | 160 | 160 | 150 | 3 | 7.5 | 961 | 1 500 | (24NJ/NJP2480) | 2 | 33.9 |
| | 240 | 180 | 160 | 150 | 1.1 | (10) | 1 020 | 1 580 | JC11 | 4 | 35.5 |
| | 240 | 180 | 176 | 150 | 3 | (7) | 1 020 | 1 580 | JC12 | 1 | 37.7 |

[Notes] 1) Values in () indicate axial chamfer dimension.
2) Bearings indicated in () are in accordance with UIC standards.
3) (1) means that the inner ring (rib side) shown in Design 1 has a special form.
(2) means that loose rib shown in Design 2 is replaced with thrust collar.

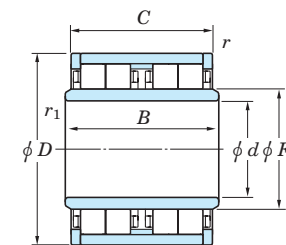
d (120) ~ 133 mm



Design 3



Design 4

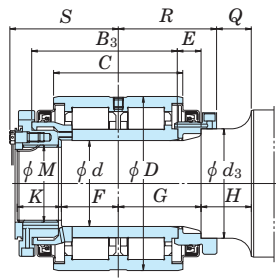


Design 5

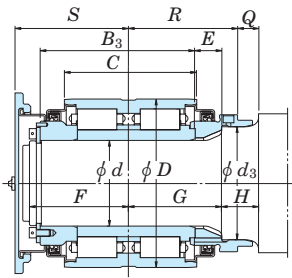
| d | Boundary dimensions (mm) | | | | | | Basic load ratings (kN) | | Bearing No. ²⁾ | Design ³⁾ | (Refer.) Mass (kg) |
|------------|--------------------------|-------|-----|-------|------------|------------|-------------------------|--------------|---------------------------|----------------------|--------------------|
| | D | B | C | F_w | $r_{min.}$ | $r_1^{1)}$ | C_r | C_{Or} | | | |
| 120 | 240 | 185 | 180 | 150 | 2 | (7) | 983 | 1 600 | 2CR120A | 1 | 37.8 |
| 130 | 220 | 170 | 160 | 152 | 1.1 | 0.6 | 865 | 1 520 | 4UJ130B | 5 | 25.2 |
| | 240 | 160 | 160 | 157 | 3 | 5 | 867 | 1 390 | (2CR2624A) | 2 | 32.0 |
| | 240 | 180 | 160 | 158 | 1.1 | (10) | 970 | 1 610 | 4UJ130A | 5 | 35.8 |
| | 240 | 204 | 198 | 157 | 3 | 5 | 867 | 1 390 | (2CR2624) | 2 | 35.4 |
| | 250 | 160 | 160 | 158 | 3 | 7.5 | 1 090 | 1 720 | (26NJ/NJP2580) | 2 | 36.4 |
| | 260 | 180 | 160 | 163 | 1.1 | (10) | 1 080 | 1 710 | JC5 | 4 | 42.7 |
| | 260 | 185 | 180 | 163 | 3 | (7) | 1 030 | 1 610 | 2CR130A | 1 | 44.2 |
| | 260 | 186 | 172 | 164 | 3 | 7.5 | 1 220 | 1 930 | 26NJ/NUJ2686 | (2) | 44.6 |
| | 260 | 205.5 | 180 | 163 | 3 | (30) | 1 030 | 1 610 | JC21 | (1) | 45.1 |
| | 270 | 215 | 210 | 164 | 4 | (15) | 1 280 | 2 000 | JC29 | 3 | 55.1 |
| 280 | 215 | 210 | 167 | 4 | (15) | 1 440 | 2 250 | JC9-1 | 3 | 61.4 | |
| 133 | 280 | 215 | 210 | 167 | 4 | (15) | 1 440 | 2 250 | JC9-2 | 3 | 59.8 |

Sealed type cylindrical roller bearings for railway rolling stock axle journals

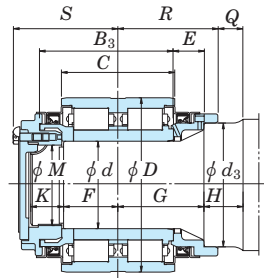
d 95 ~ 120 mm



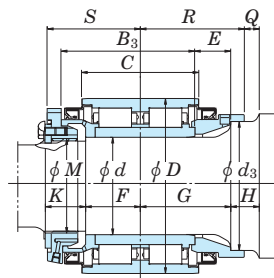
Design 1



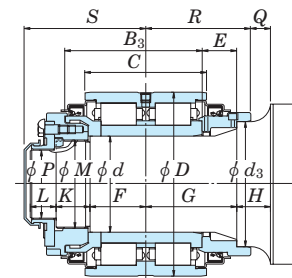
Design 2



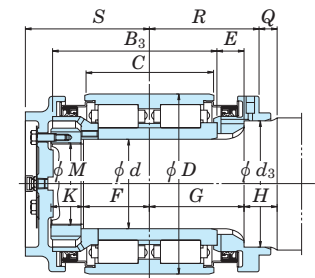
Design 3



Design 4

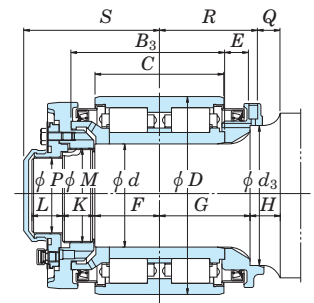


Design 5

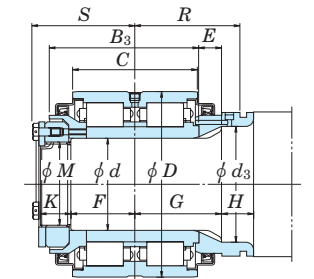


Design 6

| Shaft dia. (mm) d | Unit No. | Design | Boundary dimensions (mm) | | | | | | | | | | | | | | Basic load ratings (kN) C_r C_{Or} | (Refer.) Unit Mass (kg) | | | | |
|------------------------|----------|--------|--------------------------|-----|-----|-------|-------|-----|-----|-----|-----|-----|-----|--------|-----|-----|---|-------------------------|------------------------|-------|-------------|------|
| | | | $d_{Brg.}$ | D | C | B_3 | d_3 | E | F | G | H | K | L | M | P | Q | | | R | S | Bearing No. | |
| 95 | JB1425 | 1 | 95 | 190 | 140 | 158 | 120 | 25 | 62 | 90 | 35 | 48 | — | M85×4 | — | 18 | 107 | 119 | 19RDC19140/158 | 610 | 910 | 24.5 |
| 100 | JB1199B | 2 | 100 | 195 | 150 | 175 | 130 | 30 | 120 | 105 | 42 | — | — | — | — | 24 | 123 | 130 | 20RDC20150/133B | 673 | 1 040 | 27.5 |
| 110 | JB1462 | 3 | 110 | 220 | 145 | 171 | 155 | 39 | 70 | 110 | 50 | 42 | — | M100×2 | — | 33 | 127 | 134 | S-JC33 | 789 | 1 190 | 35.9 |
| 120 | JB1356 | 4 | 120 | 220 | 150 | 170 | 158 | 46 | 70 | 116 | 36 | 51 | — | M115×4 | — | 19 | 133 | 131 | 24RDC22150/170 | 702 | 1 110 | 34.9 |
| | JB1380D | 5 | 120 | 230 | 150 | 171 | 155 | 43 | 70 | 113 | 42 | 42 | 33 | M110×2 | 85 | 25 | 130 | 152 | JC32 | 831 | 1 290 | 39.0 |
| | JB1010 | 6 | 120 | 240 | 170 | 218 | 168 | 35 | 87 | 125 | 45 | 43 | — | M110×2 | — | 25 | 145 | 164 | JC17 | 1 020 | 1 580 | 57.7 |
| | JB1240 | 7 | 120 | 240 | 160 | 193 | 168 | 31 | 80 | 113 | 38 | 40 | 38 | M110×2 | 85 | 27 | 128 | 169 | JC26 | 935 | 1 420 | 51.1 |
| | JB1377 | 8 | 120 | 240 | 160 | 192 | 150 | 30 | 83 | 112 | 40 | 38 | — | M110×4 | — | — | 135 | 131 | 24RDC24160/192A | 935 | 1 420 | 42.0 |



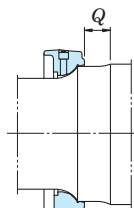
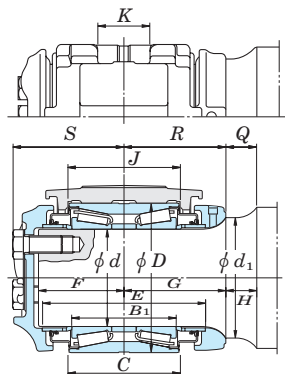
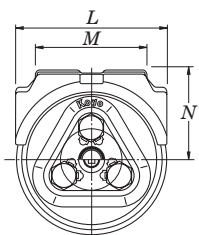
Design 7



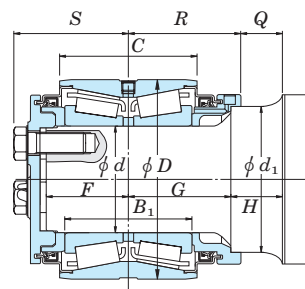
Design 8

Sealed type tapered roller bearings for railway rolling stock axle journals (ABU bearing)

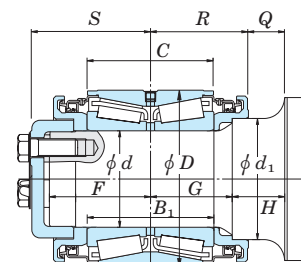
d 101.6 ~ 177.787 mm
110 ~ 130 mm



The shape of the backing ring used for JB1204P, JB1205P and JB1206P.



JB1486



JB1450

Dynamic equivalent load
(when $F_r/F_r \leq e$)
 $P = F_r + Y_2 F_a$
(when $F_r/F_r > e$)
 $P = 0.67 F_r + Y_3 F_a$
Static equivalent load
 $P_0 = F_r + Y_0 F_a$

| Class | Axle size | Unit No. | Boundary dimensions (mm) | | | | | | | | | | | | | Adapter No. | Dimensions of adapter (mm) | | | | | Bolt size | Dimensions (mm) p | Bearing No. | Basic load ratings (kN) | | Constant e | Axial load factors | | | (Refer.) Mass (kg) | |
|-------|-----------|----------|--------------------------|--------------------|---------|----------------|---------|------------------------------|-------|-------|-------|------|------|-------|-------|---------------------|----------------------------|-------|-------|-------|-------|-------------|-------------------|-------------------------|-------------------------|-----------------|------------|--------------------|----------------|----------------|--------------------|---------|
| | | | Brg. d | Axle ¹⁾ | D | B ₁ | C | d ₁ ¹⁾ | E | F | G | H | Q | R | S | | J | K | L | M | N | | | | C _r | C _{0r} | | Y ₂ | Y ₃ | Y ₀ | Unit | Adapter |
| B | 4 1/4x8 | JB1201 | 101.600 | 101.702 101.676 | 165.100 | 106.362 | 114.300 | 127.0 | 182.6 | 101.6 | 117.5 | 41.3 | 41.3 | 117.5 | 134.8 | JB701 | 117.5 | 68.3 | 165.9 | 124.6 | 101.6 | 3/4-10 UNC | 61.9 | HM120848/ HM120817XD | 402 | 769 | 0.26 | 2.55 | 3.80 | 2.50 | 17.3 | 3.8 |
| C | 5 x9 | JB1202 | 119.062 | 119.164 119.139 | 195.262 | 136.525 | 142.875 | 149.2 | 217.5 | 112.7 | 134.9 | 36.5 | 36.5 | 134.9 | 147.0 | JB702 | 146.0 | 74.6 | 196.1 | 143.7 | 117.5 | 7/8-9 UNC | 76.2 | HM124646/ HM124618XD | 626 | 1200 | 0.26 | 2.55 | 3.80 | 2.50 | 25.3 | 6.1 |
| D | 5 1/2x10 | JB1203 | 131.750 | 131.864 131.839 | 207.962 | 146.050 | 152.400 | 161.9 | 227.0 | 115.9 | 139.7 | 44.5 | 44.5 | 139.7 | 150.5 | JB703 | 155.6 | 74.6 | 208.8 | 156.4 | 123.8 | 7/8-9 UNC | 88.9 | HM127446/ HM127415XD | 641 | 1270 | 0.26 | 2.55 | 3.80 | 2.50 | 28.3 | 7.4 |
| E | 6 x11 | JB1204 | 144.450 | 144.564 144.539 | 220.662 | 155.575 | 163.512 | 177.8 | 241.3 | 127.0 | 150.8 | 46.0 | 46.0 | 150.8 | 164.1 | JB704 | 166.7 | 96.8 | 221.5 | 181.8 | 136.5 | 1-8 UNC | 98.4 | HM129848/ HM129814XD | 667 | 1380 | 0.26 | 2.55 | 3.80 | 2.50 | 34.3 | 10.8 |
| | | JB1204P | 144.450 | 144.564 144.539 | 220.662 | 155.575 | 163.512 | 178.613 178.562 | 241.3 | 127.0 | 150.8 | 46.0 | 36.8 | 160.0 | 164.1 | JB704 | 166.7 | 96.8 | 221.5 | 181.8 | 136.5 | 1-8 UNC | 98.4 | HM129848/ HM129814XD | 667 | 1380 | 0.26 | 2.55 | 3.80 | 2.50 | 35.0 | 10.8 |
| F | 6 1/2x12 | JB1205 | 157.150 | 157.264 157.239 | 252.412 | 177.800 | 184.150 | 190.5 | 273.0 | 134.9 | 163.5 | 46.0 | 46.0 | 163.5 | 176.6 | JB705 | 187.3 | 96.8 | 253.2 | 194.5 | 152.4 | 1 1/8-7 UNC | 108.0 | HM133444/ HM133416XD | 910 | 1890 | 0.26 | 2.55 | 3.80 | 2.50 | 51.6 | 16.3 |
| | | JB1205P | 157.150 | 157.264 157.239 | 252.412 | 177.800 | 184.150 | 191.313 191.262 | 273.0 | 134.9 | 163.5 | 46.0 | 36.7 | 172.8 | 176.6 | JB705 | 187.3 | 96.8 | 253.2 | 194.5 | 152.4 | 1 1/8-7 UNC | 108.0 | HM133444/ HM133416XD | 910 | 1890 | 0.26 | 2.55 | 3.80 | 2.50 | 52.4 | 16.3 |
| G | 7 x12 | JB1206P | 177.787 | 177.902 177.876 | 276.225 | 180.975 | 185.738 | 203.251 203.200 | 269.9 | 130.2 | 150.8 | 58.7 | 46.0 | 163.5 | 180.1 | JB706 ²⁾ | 189.7 | 181.0 | — | 279.4 | 168.3 | 1 1/4-7 UNC | 117.5 | HM136948/ HM136916XD | 1080 | 2220 | 0.26 | 2.55 | 3.80 | 2.50 | 59.2 | 23 |
| — | 110 | JB558 | 110 | 110.076 110.054 | 175 | 125 | 130 | 155 | 206 | 105 | 135 | 30 | 30 | 135 | 136.4 | JB558 | 134 | 70 | 175 | 135 | 110 | M22 | 75 | JT9 | 481 | 972 | 0.26 | 2.55 | 3.80 | 2.50 | 22.0 | 5.6 |
| — | | JB1486 | 110 | 110.059 110.037 | 205 | 130 | 140 | 150.068 150.043 | — | 85 | 105 | 53 | 43 | 115 | 118.4 | — | — | — | — | — | — | M22 | 75 | JT13 | 743 | 1220 | 0.26 | 2.55 | 3.80 | 2.50 | 27.3 | — |
| — | 120 | JB613 | 120 | 120.076 120.054 | 195 | 136 | 142 | 155 | 217 | 113 | 135 | 30 | 30 | 135 | 147.5 | JB613 | 146 | 74.5 | 196 | 142.5 | 118 | M22 | 75 | JT10 | 626 | 1200 | 0.26 | 2.55 | 3.80 | 2.50 | 27.0 | 6.2 |
| — | | JB1450 | 120 | 120.059 120.037 | 220 | 155 | 155 | 150.068 150.043 | — | 125 | 100 | 55 | 35 | 120 | 164.4 | — | — | — | — | — | — | M22 | 75 | JT12 | 907 | 1670 | 0.26 | 2.55 | 3.80 | 2.50 | 36.6 | — |
| — | 130 | JB633 | 130 | 130.076 130.054 | 208 | 146 | 152 | 165 | 227 | 139 | 139 | 26 | 26 | 139 | 149.2 | JB633 ²⁾ | 156 | 110 | 255 | 232 | 130 | M22 | 89 | JT11 | 641 | 1270 | 0.26 | 2.55 | 3.80 | 2.50 | 30.0 | 14.3 |

[Notes] 1) Upper figures : max. value ; lower : min.value

2) JB706 and JB633 indicate the specifications of wide adapters. Others indicate narrow adapters (shown in figures above).

Linear ball bearings

Linear ball bearings have an outer cylinder and a cage with three or more elliptic raceways inside. Balls are aligned on these raceways.

Ball complement
bore diameter (mm)
SDM series 6 – 120
SDMF, SDMK series 6 – 80
SDE series 5 – 80

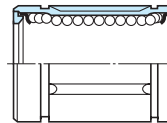
| Standard type | Clearance adjustable type | Open type |
|--|---|---|
| | | |
| Suitable for a wide range of applications and widely used in practice. The upper-class type is used for general purposes. The precision-class type is used when the bearing is required to be highly accurate. | The outer cylinder and side plate are slit axially so that the clearance between the bearing and shaft can be adjusted. Together with the use of a boreadjustable housing, a no-clearance state or light-preloaded state can be realized without fitting. | The outer cylinder and side plate each have a slit which is equivalent in size to a recirculating ball row raceway, so that the bearing does not interfere with a shaft strut during operation. This type is suitable for use with very long shafts. The bore diameter is adjustable. |

Flanged type



Can be fit quickly, and helps make equipment smaller and lighter in weight. Helps reduce cost.

Sealed type



One or both side(s) is/are sealed with special synthetic rubber so that foreign material cannot enter the bearing while the grease is kept from leaking. This sealing can be provided on all bearings of the standard, clearance adjustable, open, and flanged types.



Bearing numbering system

| Series code | Ball complement bore diameter number | Seal code | Shape code | Material code | Tolerance code |
|--------------------------------------|--------------------------------------|--|------------|---------------|----------------|
| Series code | | SDM : metric series SDMF : metric series (flanged type) SDMK : metric series (flanged type) SDE : metric series (popular ones in europe) SDB : inch series | | | |
| Ball complement bore diameter number | Metric series | 35 : ball complement bore diameter 35 mm | | | |
| | Inch series | 4 : ball complement bore diameter 4/16 = 1/4 inch | | | |
| Seal code | | UU : both sides sealed U : single side sealed Not specified : not sealed | | | |
| Shape code | | Not specified : standard type AJ : clearance adjustable type OP : open type | | | |
| Material code | Outer cylinder and balls | Not specified : high carbon chrome bearing steel | | | |
| | Cage | Not specified : cold rolled steel sheet MG : synthetic resin | | | |
| Tolerance code | | Not specified : upper-class P : precision-class | | | |

■ Linear ball bearing service life

Linear ball bearing service life refers to the distance that the bearing travels until the outer cylinder, balls or shaft become damaged because of rolling contact fatigue from repeated stress.

The basic dynamic load rating refers to the magnitude of a constant load which makes a bearing's service life end after it travels a distance of 50 km.

The linear ball bearing service life and the basic dynamic load rating bear the relation shown below :

$$L = 50 \left(\frac{C}{P} \right)^3$$

where :

- L : service life km
- P : radial load on the bearing N
- C : bearing basic dynamic load rating N (refer to the specification table.)

Shaft surface hardness is closely related to running performance. In general, it is best for the hardness to be 60 thru 64 HRC.

If the hardness is 60 HRC or lower, the basic dynamic load rating (C) should be corrected by multiplying it by the appropriate hardness coefficient selected from Table 1.

| Shaft hardness HRC | Hardness coefficient f_H |
|--------------------|----------------------------|
| 60 | 1 |
| 59 | 0.97 |
| 57 | 0.88 |
| 55 | 0.76 |
| 53 | 0.64 |
| 51 | 0.52 |

● Ball row arrangement and load rating

The basic load ratings given in the specification table are those measured when a load is applied directly above a ball row (Q_1). When the load is applied between two ball rows, the load ratings become larger (Q_2). Table 2 lists the ratios of Q_2 ratings to Q_1 ratings.

| Number of ball rows | When a load is applied directly above a row (Q_1) | When a load is applied between two rows (Q_2) | Ratios of Q_2 to Q_1 |
|---------------------|---|---|--------------------------|
| 4 | | | 1.414 |
| 5 | | | 1.463 |
| 6 | | | 1.280 |

[Note] When there are only three rows, $Q_2 / Q_1 = 1$

■ Recommended fits for linear ball bearings

Table 3 lists the recommended fits for linear ball bearings.

When a bearing is mounted with a housing, the normal clearance fit should be selected. When the application is highly precise or special, the transition fit should be selected.

For the clearance adjustable and open type bearings, it is best for the shaft diameter to be smaller than the ball complement bore diameter lower deviation, and for the housing bore diameter to be larger than the bearing outside diameter upper deviation.

| Bearing | Tolerance | Shaft tolerance class | | Housing bore tolerance class | |
|----------|-----------------|-----------------------|-----------------|------------------------------|----------------|
| | | Normal clearance | Close clearance | Clearance fit | Transition fit |
| SDM, SDB | Upper-class | f 6, g 6 | h 6 | H 7 | JS 7 (J 7) |
| | Precision-class | f 5, g 5 | h 5 | H 6 | JS 6 (J 6) |
| SDE | - | h 6 | js 6 (j 6) | H 7 | JS 7 (J 7) |

■ Linear ball bearing clearance

Linear ball bearings provide linear motion smoothly with little wear when the clearance is 0.003 to 0.012 mm. However, when clearance increase due to wear is considered critical, e.g. when the bearing is provided to press die sets, precision machine tools or precision testers; when the bearing becomes unable to slide because of moment; or when smooth bearing operation is needed with no clearance provided, the clearance is adjusted to zero or negative.

In such a case, shafts generally need to be mounted by "selective fitting." They should be handled carefully so as not to be preloaded excessively.

As Fig. 1 shows, the clearance of bearings with numbers SDM 6 thru SDM 10 can be easily set to

zero or negative, by adjusting one of the three ball rows with a bolt.

Consult with JTEKT on the gauging of linear ball bearings and shafts which should be mounted by "selective fitting," as well as on the whole design of shafts.

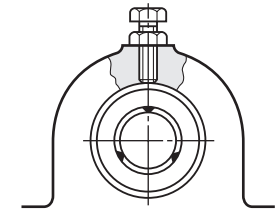


Fig. 1 Clearance adjustment

Table 4 SDM series linear ball bearing tolerances Unit : μm

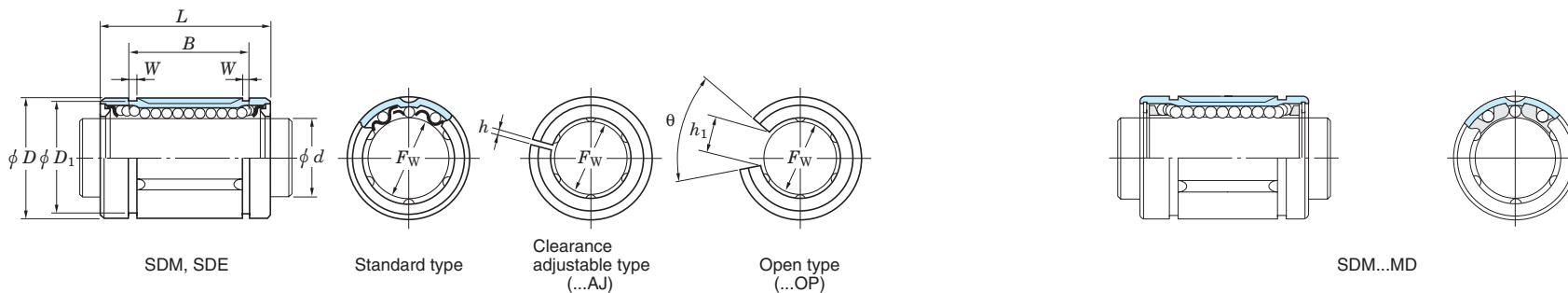
| Bearing number SDM | Ball complement bore diameter (F_w) deviation | | | | Outside diameter (D) deviation | | Overall length (L) deviation | | B deviation | | Eccentricity | |
|--------------------|---|-------|-------------|-------|------------------------------------|-------|----------------------------------|-------|---------------|------|-----------------|-------------|
| | Precision-class | | Upper-class | | | | | | | | Precision-class | Upper-class |
| | upper | lower | upper | lower | upper | lower | upper | lower | max. | | | |
| 6, 8 | 0 | -6 | 0 | -9 | 0 | -11 | 0 | -200 | 0 | -200 | 8 | 12 |
| 10, 12, 13, 16 | 0 | -6 | 0 | -9 | 0 | -13 | 0 | -200 | 0 | -200 | 8 | 12 |
| 20 | 0 | -7 | 0 | -10 | 0 | -16 | 0 | -200 | 0 | -200 | 10 | 15 |
| 25, 30 | 0 | -7 | 0 | -10 | 0 | -16 | 0 | -300 | 0 | -300 | 10 | 15 |
| 35, 38, 40, 50 | 0 | -8 | 0 | -12 | 0 | -19 | 0 | -300 | 0 | -300 | 12 | 20 |
| 60 | 0 | -9 | 0 | -15 | 0 | -22 | 0 | -300 | 0 | -300 | 17 | 25 |
| 80 | 0 | -9 | 0 | -15 | 0 | -22 | 0 | -400 | 0 | -400 | 17 | 25 |
| 100, 120 | 0 | -10 | 0 | -20 | 0 | -25 | 0 | -400 | 0 | -400 | 20 | 30 |

Table 5 SDE series linear ball bearing tolerances Unit : μm

| Bearing number SDE | Ball complement bore diameter (F_w) deviation | | Outside diameter (D) deviation | | Overall length (L) deviation | | B deviation | | Eccentricity max. |
|--------------------|---|-------|------------------------------------|-------|----------------------------------|-------|---------------|-------|-------------------|
| | upper | lower | upper | lower | upper | lower | upper | lower | |
| | | | | | | | | | |
| 5, 8 | + 8 | 0 | 0 | - 8 | 0 | -200 | 0 | -200 | 12 |
| 10, 12 | + 8 | 0 | 0 | - 9 | 0 | -200 | 0 | -200 | 12 |
| 16 | + 9 | -1 | 0 | - 9 | 0 | -200 | 0 | -200 | 12 |
| 20 | + 9 | -1 | 0 | -11 | 0 | -200 | 0 | -200 | 15 |
| 25, 30 | +11 | -1 | 0 | -11 | 0 | -300 | 0 | -300 | 15 |
| 40, 50 | +13 | -2 | 0 | -13 | 0 | -300 | 0 | -300 | 17 |
| 60 | +13 | -2 | 0 | -15 | 0 | -400 | 0 | -400 | 20 |
| 80 | +16 | -4 | 0 | -15 | 0 | -400 | 0 | -400 | 20 |

Linear ball bearings

d 5 ~ (20) mm

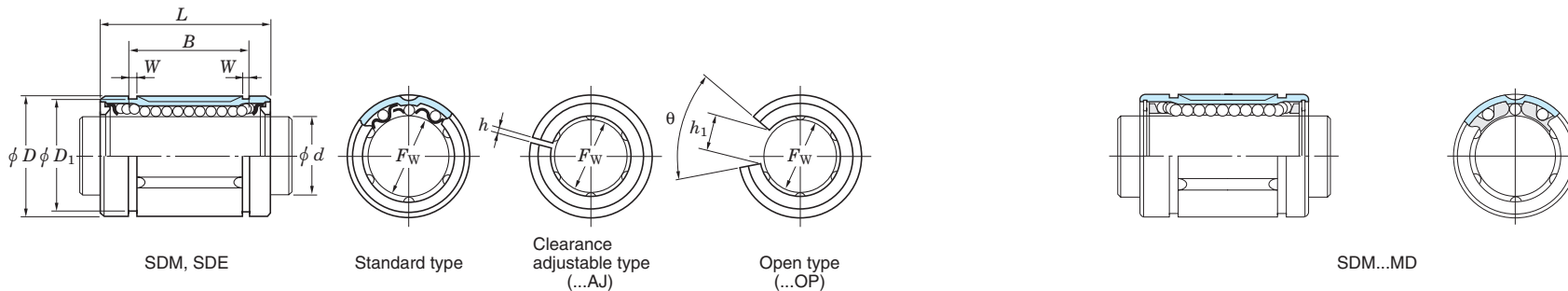


| Shaft dia. (mm) | Dimensions (mm) | | | | | | | | | Bearing No. ¹⁾ | | | No. of ball rows | | | Basic load ratings (N) | | (Refer.) Mass (g) | |
|--------------------|--------------------|----------------|----|------|-----|------|----------------|-----|----------------|---------------------------|---------------|---------------------------|------------------|---------------|---------------------------|---------------------------|----------------|-------------------------|---------------|
| | d | F _w | D | L | B | W | D ₁ | h | h ₁ | θ | Standard type | Clearance adjustable type | Open type | Standard type | Clearance adjustable type | Open type | C _r | C _{0r} | Standard type |
| 5 | 5 | 12 | 22 | 14.5 | 1.1 | 11.5 | — | — | — | | SDE5 | — | — | 3 | — | — | 108 | 183 | 10 |
| 6 | 6 | 12 | 19 | 13.5 | 1.1 | 11.5 | 1 | — | — | | SDM6 | SDM6AJ | — | 3 | 3 | — | 108 | 186 | 7 |
| | 6 | 12 | 19 | 13.5 | 1.1 | 11.5 | 1 | — | — | | SDM6MG | SDM6AJMG | — | 4 | 4 | — | 108 | 186 | 6 |
| 8 | 8 | 15 | 17 | 11.5 | 1.1 | 14.3 | 1 | — | — | | SDM8S | SDM8SAJ | — | 3 | 3 | — | 96 | 160 | 10 |
| | 8 | 15 | 17 | 11.5 | 1.1 | 14.3 | 1 | — | — | | SDM8SMG | SDM8SAJMG | — | 4 | 4 | — | 96 | 160 | 9 |
| | 8 | 15 | 24 | 17.5 | 1.1 | 14.3 | 1 | — | — | | SDM8 | SDM8AJ | — | 3 | 3 | — | 122 | 223 | 14 |
| | 8 | 15 | 24 | 17.5 | 1.1 | 14.3 | 1 | — | — | | SDM8MG | SDM8AJMG | — | 4 | 4 | — | 134 | 255 | 13 |
| | 8 | 16 | 25 | 16.5 | 1.1 | 15.2 | 1 | — | — | | SDE8 | SDE8AJ | — | 3 | 3 | — | 122 | 223 | 20 |
| | 8 | 16 | 25 | 16.5 | 1.1 | 15.2 | 1 | — | — | | SDE8MG | SDE8AJMG | — | 4 | 4 | — | 134 | 255 | 18 |
| 10 | 10 | 19 | 29 | 22 | 1.3 | 18 | 1 | 6.8 | 80° | | SDM10 | SDM10AJ | SDM10OP | 4 | 4 | 3 | 259 | 424 | 27 |
| | 10 | 19 | 29 | 22 | 1.3 | 18 | 1 | — | — | | SDM10MG | SDM8AJMG | — | 4 | 4 | — | 259 | 424 | 23 |
| | 10 | 19 | 29 | 22 | 1.3 | 18 | 1 | 6.8 | 80° | | SDE10 | SDE10AJ | SDE10OP | 4 | 4 | 3 | 259 | 424 | 27 |
| | 10 | 19 | 29 | 22 | 1.3 | 18 | 1 | — | — | | SDE10MG | SDE10AJMG | — | 4 | 4 | — | 259 | 424 | 23 |
| 12 | 12 | 21 | 30 | 23 | 1.3 | 20 | 1.5 | 8 | 80° | | SDM12 | SDM12AJ | SDM12OP | 4 | 4 | 3 | 260 | 431 | 31 |
| | 12 | 21 | 30 | 23 | 1.3 | 20 | 1.5 | — | — | | SDM12MG | SDM12AJMG | — | 4 | 4 | — | 260 | 431 | 27 |
| | 12 | 22 | 32 | 22.9 | 1.3 | 21 | 1.5 | 7.5 | 78° | | SDE12 | SDE12AJ | SDE12OP | 4 | 4 | 3 | 289 | 503 | 42 |
| | 12 | 22 | 32 | 22.9 | 1.3 | 21 | 1.5 | — | — | | SDE12MG | SDM12AJMG | — | 4 | 4 | — | 289 | 503 | 37 |
| 13 | 13 | 23 | 32 | 23 | 1.3 | 22 | 1.5 | 9 | 80° | | SDM13 | SDM13AJ | SDM13OP | 4 | 4 | 3 | 289 | 506 | 41 |
| | 13 | 23 | 32 | 23 | 1.3 | 22 | 1.5 | — | — | | SDM13MG | SDM13AJMG | — | 4 | 4 | — | 289 | 506 | 35 |
| 16 | 16 | 26 | 36 | 24.9 | 1.3 | 24.9 | 1.5 | 10 | 78° | | SDE16 | SDE16AJ | SDE16OP | 4 | 4 | 3 | 319 | 587 | 53 |
| | 16 | 26 | 36 | 24.9 | 1.3 | 24.9 | 1.5 | — | — | | SDE16MG | SDE16AJMG | — | 4 | 4 | — | 319 | 587 | 47 |
| | 16 | 28 | 37 | 26.5 | 1.6 | 27 | 1.5 | 11 | 80° | | SDM16 | SDM16AJ | SDM16OP | 4 | 4 | 3 | 480 | 766 | 69 |
| | 16 | 28 | 37 | 26.5 | 1.6 | 27 | 1.5 | — | — | | SDM16MG | SDM16AJMG | — | 4 | 4 | — | 480 | 766 | 59 |
| 20 | 20 | 32 | 42 | 30.5 | 1.6 | 30.5 | 1.5 | 11 | 60° | | SDM20 | SDM20AJ | SDM20OP | 5 | 5 | 4 | 590 | 1 010 | 92 |
| | 20 | 32 | 42 | 30.5 | 1.6 | 30.5 | 1.5 | — | — | | SDM20MG | SDM20AJMG | — | 5 | 5 | — | 590 | 1 010 | 79 |

[Note] 1) JTEKT also manufactures sealed types, which are identified by U (one side sealed) or UU (both sides sealed) after ball complement bore diameter number.

Linear ball bearings

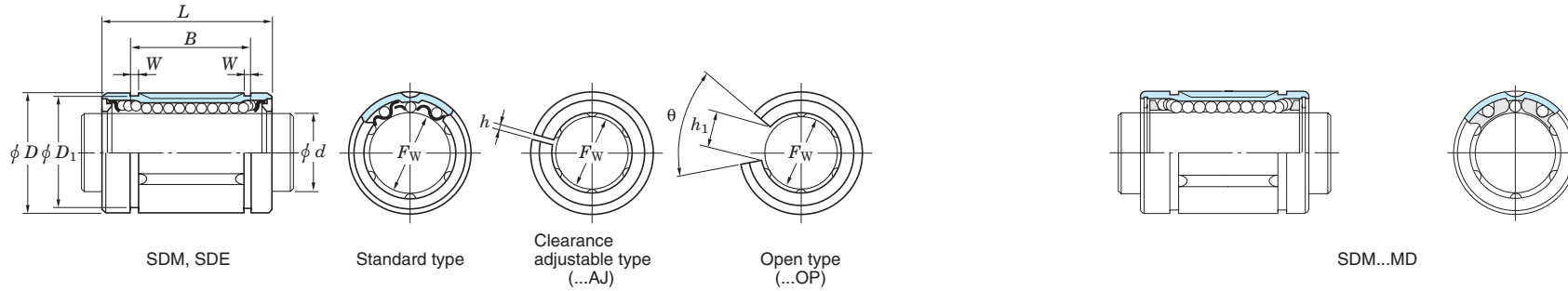
d (20) ~ 80 mm



| Shaft dia. (mm) | Dimensions (mm) | | | | | | | | | Bearing No. ¹⁾ | | | No. of ball rows | | | Basic load ratings (N) | | (Refer.) Mass (g) |
|--------------------|--------------------|----------------------|----------|----------|----------|----------|----------------------|----------|----------------------|---------------------------|------------------|---------------------------|------------------|---------------|---------------------------|---------------------------|----------------------|-------------------------|
| | <i>d</i> | <i>F_w</i> | <i>D</i> | <i>L</i> | <i>B</i> | <i>W</i> | <i>D₁</i> | <i>h</i> | <i>h₁</i> | θ | Standard type | Clearance adjustable type | Open type | Standard type | Clearance adjustable type | Open type | <i>C_r</i> | <i>C_{0r}</i> |
| 20 | 20 | 32 | 45 | 31.5 | 1.6 | 30.3 | 2 | 10 | 60° | SDE20 | SDE20AJ | SDE20OP | 5 | 5 | 4 | 590 | 1 010 | 96 |
| | 20 | 32 | 45 | 31.5 | 1.6 | 30.3 | 2 | — | — | SDE20MG | SDE20AJMG | — | 5 | 5 | — | 590 | 1 010 | 88 |
| 25 | 25 | 40 | 58 | 44.1 | 1.85 | 37.5 | 2 | 12.5 | 60° | SDE25 | SDE25AJ | SDE25OP | 5 | 5 | 4 | 1 130 | 2 030 | 190 |
| | 25 | 40 | 58 | 44.1 | 1.85 | 37.5 | 2 | — | — | SDE25MG | SDE25AJMG | — | 5 | 5 | — | 1 130 | 2 030 | 170 |
| | 25 | 40 | 59 | 41 | 1.85 | 38 | 2 | 12 | 60° | SDM25 | SDM25AJ | SDM25OP | 5 | 5 | 4 | 1 130 | 2 030 | 200 |
| | 25 | 40 | 59 | 41 | 1.85 | 38 | 2 | — | — | SDM25MG | SDM25AJMG | — | 5 | 5 | — | 1 130 | 2 030 | 170 |
| 30 | 30 | 45 | 64 | 44.5 | 1.85 | 43 | 2.5 | 15 | 50° | SDM30 | SDM30AJ | SDM30OP | 6 | 6 | 5 | 1 470 | 2 770 | 250 |
| | 30 | 45 | 64 | 44.5 | 1.85 | 43 | 2.5 | — | — | SDM30MG | SDM30AJMG | — | 6 | 6 | — | 1 470 | 2 770 | 220 |
| | 30 | 47 | 68 | 52.1 | 1.85 | 44.5 | 2 | 12.5 | 50° | SDE30 | SDE30AJ | SDE30OP | 6 | 6 | 5 | 1 470 | 2 770 | 340 |
| | 30 | 47 | 68 | 52.1 | 1.85 | 44.5 | 2 | — | — | SDE30MG | SDE30AJMG | — | 6 | 6 | — | 1 470 | 2 770 | 320 |
| 35 | 35 | 52 | 70 | 49.5 | 2.1 | 49 | 2.5 | 17 | 50° | SDM35 | SDM35AJ | SDM35OP | 6 | 6 | 5 | 1 580 | 3 070 | 370 |
| | 35 | 52 | 70 | 49.5 | 2.1 | 49 | 2.5 | — | — | SDM35MG | SDM35AJMG | — | 6 | 6 | — | 1 580 | 3 070 | 330 |
| 38 | 38 | 57 | 76 | 58.5 | 2.1 | 54.5 | 3 | 18 | 50° | SDM38 | SDM38AJ | SDM38OP | 6 | 6 | 5 | 2 020 | 3 600 | 490 |
| 40 | 40 | 60 | 80 | 60.5 | 2.1 | 57 | 3 | 20 | 50° | SDM40 | SDM40AJ | SDM40OP | 6 | 6 | 5 | 2 180 | 4 010 | 590 |
| | 40 | 60 | 80 | 60.5 | 2.1 | 57 | 3 | — | — | SDM40MG | SDM40AJMG | — | 6 | 6 | — | 2 180 | 4 010 | 530 |
| | 40 | 62 | 80 | 60.6 | 2.15 | 59 | 3 | 16.8 | 50° | SDE40 | SDE40AJ | SDE40OP | 6 | 6 | 5 | 2 180 | 4 010 | 710 |
| | 40 | 62 | 80 | 60.6 | 2.15 | 59 | 3 | — | — | SDE40MG | SDE40AJMG | — | 6 | 6 | — | 2 180 | 4 010 | 650 |
| 50 | 50 | 75 | 100 | 77.6 | 2.65 | 72 | 3 | 21 | 50° | SDE50 | SDE50AJ | SDE50OP | 6 | 6 | 5 | 4 020 | 7 110 | 1 050 |
| | 50 | 80 | 100 | 74 | 2.6 | 76.5 | 3 | 25 | 50° | SDM50 | SDM50AJ | SDM50OP | 6 | 6 | 5 | 4 420 | 7 150 | 1 500 |
| 60 | 60 | 90 | 110 | 85 | 3.15 | 86.5 | 3 | 30 | 50° | SDM60 | SDM60AJ | SDM60OP | 6 | 6 | 5 | 5 170 | 9 030 | 1 850 |
| | 60 | 90 | 125 | 101.7 | 3.15 | 86.5 | 3 | 27.2 | 54° | SDE60 | SDE60AJ | SDE60OP | 6 | 6 | 5 | 6 470 | 11 100 | 1 900 |
| 80 | 80 | 120 | 140 | 105.5 | 4.15 | 116 | 3 | 40 | 50° | SDM80 | SDM80AJ | SDM80OP | 6 | 6 | 5 | 8 180 | 12 800 | 4 200 |
| | 80 | 120 | 165 | 133.7 | 4.15 | 116 | 3 | 36.3 | 54° | SDE80 | SDE80AJ | SDE80OP | 6 | 6 | 5 | 8 890 | 14 500 | 4 800 |

[Note] 1) JTEKT also manufactures sealed types, which are identified by U (one side sealed) or UU (both sides sealed) after ball complement bore diameter number.

d 100 ~ 120 mm

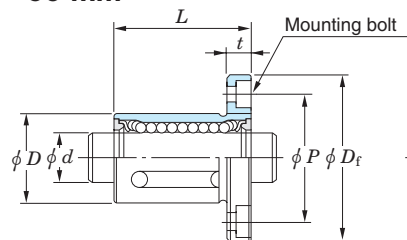


| Shaft dia. (mm) | Dimensions (mm) | | | | | | | | | Bearing No. ¹⁾ | | | No. of ball rows | | | Basic load ratings (N) | | (Refer.) Mass (g) |
|--------------------|--------------------|-------|-----|-------|------|-----|-------|-----|-------|---------------------------|-----------------|---------------------------|------------------|---------------|---------------------------|---------------------------|--------|-------------------------|
| | d | F_w | D | L | B | W | D_1 | h | h_1 | θ | Standard type | Clearance adjustable type | Open type | Standard type | Clearance adjustable type | Open type | C_r | C_{0r} |
| 100 | 100 | 150 | 175 | 125.5 | 4.15 | 145 | 3 | 50 | 50° | SDM100 | SDM100AJ | SDM100OP | 6 | 6 | 5 | 12 300 | 19 700 | 8 200 |
| 120 | 120 | 180 | 200 | 158.6 | 4.15 | 175 | 4 | 85 | 80° | SDM120 | SDM120AJ | SDM120OP | 8 | 8 | 6 | 22 300 | 39 100 | 15 500 |

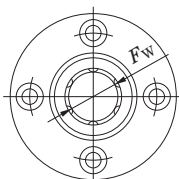
[Note] 1) JTEKT also manufactures sealed types, which are identified by U (one side sealed) or UU (both sides sealed) after ball complement bore diameter number.

Linear ball bearings
flanged type

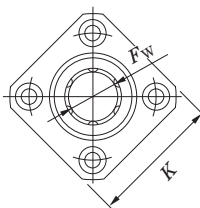
d 6 ~ 50 mm



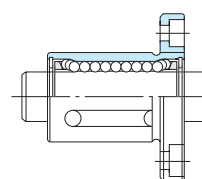
SDMF, SDMK



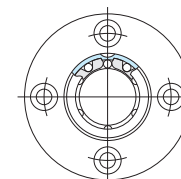
Round-flanged



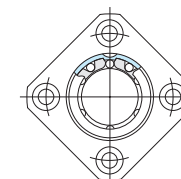
Square-flanged



SDMF...MG
SDMK...MG (Synthetic resin)



Round-flanged

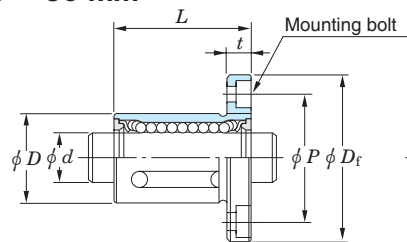


Square-flanged

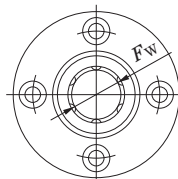
| Shaft dia. (mm) d | Dimensions (mm) | | | | | | | Bolt size | Bearing No. | | No. of ball rows | Basic load ratings (N) | | (Refer.) Mass (g) Round-flanged type |
|---------------------------|--------------------|-----|-----|-------|-----|-----|-----|--------------|-----------------------|------------------------|---------------------|---------------------------|----------|---|
| | F_w | D | L | D_f | K | t | P | | Round-flanged type | Square-flanged type | | C_r | C_{0r} | |
| 6 | 6 | 12 | 19 | 28 | 22 | 5 | 20 | M3 | SDMF6 | SDMK6 | 3 | 108 | 186 | 23 |
| | 6 | 12 | 19 | 28 | 22 | 5 | 20 | M3 | SDMF6MG | SDMK6MG | | 4 | 108 | 186 |
| 8 | 8 | 15 | 24 | 32 | 25 | 5 | 24 | M3 | SDMF8 | SDMK8 | 3 | 122 | 223 | 35 |
| | 8 | 15 | 24 | 32 | 25 | 5 | 24 | M3 | SDMF8MG | SDMK8MG | | 4 | 134 | 255 |
| 10 | 10 | 19 | 29 | 40 | 30 | 6 | 29 | M4 | SDMF10 | SDMK10 | 4 | 259 | 424 | 65 |
| | 10 | 19 | 29 | 40 | 30 | 6 | 29 | M4 | SDMF10MG | SDMK10MG | | 4 | 259 | 424 |
| 12 | 12 | 21 | 30 | 42 | 32 | 6 | 32 | M4 | SDMF12 | SDMK12 | 4 | 260 | 431 | 72 |
| | 12 | 21 | 30 | 42 | 32 | 6 | 32 | M4 | SDMF12MG | SDMK12MG | | 4 | 260 | 431 |
| 13 | 13 | 23 | 32 | 43 | 34 | 6 | 33 | M4 | SDMF13 | SDMK13 | 4 | 289 | 506 | 83 |
| | 13 | 23 | 32 | 43 | 34 | 6 | 33 | M4 | SDMF13MG | SDMK13MG | | 4 | 289 | 506 |
| 16 | 16 | 28 | 37 | 48 | 37 | 6 | 38 | M4 | SDMF16 | SDMK16 | 4 | 480 | 766 | 120 |
| | 16 | 28 | 37 | 48 | 37 | 6 | 38 | M4 | SDMF16MG | SDMK16MG | | 4 | 480 | 766 |
| 20 | 20 | 32 | 42 | 54 | 42 | 8 | 43 | M5 | SDMF20 | SDMK20 | 5 | 590 | 1 010 | 170 |
| | 20 | 32 | 42 | 54 | 42 | 8 | 43 | M5 | SDMF20MG | SDMK20MG | | 5 | 590 | 1 010 |
| 25 | 25 | 40 | 59 | 62 | 50 | 8 | 51 | M5 | SDMF25 | SDMK25 | 5 | 1 130 | 2 030 | 290 |
| | 25 | 40 | 59 | 62 | 50 | 8 | 51 | M5 | SDMF25MG | SDMK25MG | | 5 | 1 130 | 2 030 |
| 30 | 30 | 45 | 64 | 74 | 58 | 10 | 60 | M6 | SDMF30 | SDMK30 | 6 | 1 470 | 2 770 | 440 |
| | 30 | 45 | 64 | 74 | 58 | 10 | 60 | M6 | SDMF30MG | SDMK30MG | | 6 | 1 470 | 2 770 |
| 35 | 35 | 52 | 70 | 82 | 64 | 10 | 67 | M6 | SDMF35 | SDMK35 | 6 | 1 580 | 3 070 | 610 |
| | 35 | 52 | 70 | 82 | 64 | 10 | 67 | M6 | SDMF35MG | SDMK35MG | | 6 | 1 580 | 3 070 |
| 40 | 40 | 60 | 80 | 96 | 75 | 13 | 78 | M8 | SDMF40 | SDMK40 | 6 | 2 180 | 4 010 | 1 000 |
| | 40 | 60 | 80 | 96 | 75 | 13 | 78 | M8 | SDMF40MG | SDMK40MG | | 6 | 2 180 | 4 010 |
| 50 | 50 | 80 | 100 | 116 | 92 | 13 | 98 | M8 | SDMF50 | SDMK50 | 6 | 4 420 | 7 150 | 2 000 |

Linear ball bearings
flanged type

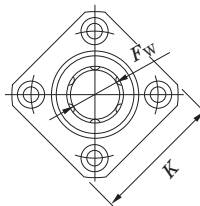
d 60 ~ 80 mm



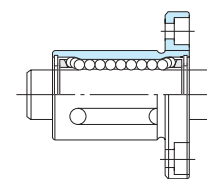
SDMF, SDMK



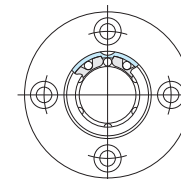
Round-flanged



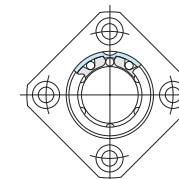
Square-flanged



SDMF...MG
SDMK...MG (Synthetic resin)



Round-flanged



Square-flanged

| Shaft dia. (mm) | Dimensions (mm) | | | | | | | Bolt size | Bearing No. | | No. of ball rows | Basic load ratings (N) | | (Refer.) Mass (g) Round-flanged type |
|--------------------|--------------------|-----|-----|-------|-----|-----|-----|--------------|-----------------------|------------------------|---------------------|---------------------------|----------|---|
| | F_w | D | L | D_f | K | t | P | | Round-flanged type | Square-flanged type | | C_r | C_{0r} | |
| 60 | 60 | 90 | 110 | 134 | 106 | 18 | 112 | M10 | SDMF60 | SDMK60 | 6 | 5 170 | 9 030 | 2 800 |
| 80 | 80 | 120 | 140 | 164 | 136 | 18 | 142 | M10 | SDMF80 | SDMK80 | 6 | 8 180 | 12 800 | 5 400 |

Locknuts, lockwashers & lock plates

Bearings are often fit to a shaft with an adapter sleeve, locknut, lockwasher or lock plate.

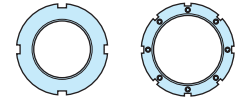
These accessories make it easy to attach and remove bearings.

They are standardized in JIS.

- Locknuts are standardized such that they can be used with either adapter sleeves, withdrawal sleeves or shafts.
- Lockwashers and lock plates are used as locks on locknuts.

Lockwashers are used with bearings of bore diameter number 40 or lower. Lock plates are used with those of bore diameter 44 or higher.

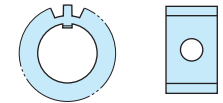
Locknuts



AN (ANL) 02 - 100

HN (HNL) 41 - 110

Lockwashers and lock plates



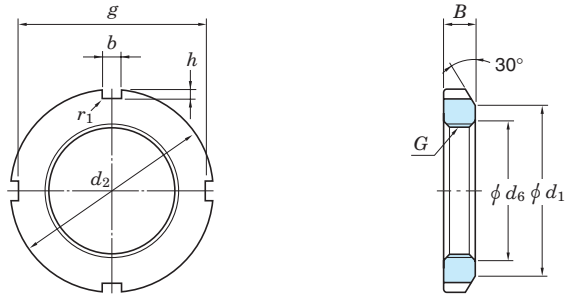
AW (AWL) 00 - 40(X)

AL (ALL) 44 - 100



Locknuts
for adapter sleeves and shafts

AN02 ~ 25



| Locknut No. | Thread size ¹⁾ G | Standard dimensions (mm) | | | | | | | | (Refer.) Mass (kg) | Applicable ²⁾ adapter sleeve (bore No.) | Applicable ³⁾ lockwasher No. |
|--------------|--------------------------------|--------------------------|----------------|-----|----------------|----|-----|----|---------------------|--------------------|--|---|
| | | d ₂ | d ₁ | g | d ₆ | b | h | B | r ₁ max. | | | |
| AN 02 | M 15×1 | 25 | 21 | 21 | 15.5 | 4 | 2 | 5 | 0.4 | 0.010 | — | AW 02 |
| 03 | M 17×1 | 28 | 24 | 24 | 17.5 | 4 | 2 | 5 | 0.4 | 0.013 | — | 03 |
| 04 | M 20×1 | 32 | 26 | 28 | 20.5 | 4 | 2 | 6 | 0.4 | 0.019 | 04 | 04 |
| AN 05 | M 25×1.5 | 38 | 32 | 34 | 25.8 | 5 | 2 | 7 | 0.4 | 0.025 | 05 | AW 05 |
| 06 | M 30×1.5 | 45 | 38 | 41 | 30.8 | 5 | 2 | 7 | 0.4 | 0.043 | 06 | 06 |
| 07 | M 35×1.5 | 52 | 44 | 48 | 35.8 | 5 | 2 | 8 | 0.4 | 0.053 | 07 | 07 |
| AN 08 | M 40×1.5 | 58 | 50 | 53 | 40.8 | 6 | 2.5 | 9 | 0.5 | 0.085 | 08 | AW 08 |
| 09 | M 45×1.5 | 65 | 56 | 60 | 45.8 | 6 | 2.5 | 10 | 0.5 | 0.119 | 09 | 09 |
| 10 | M 50×1.5 | 70 | 61 | 65 | 50.8 | 6 | 2.5 | 11 | 0.5 | 0.148 | 10 | 10 |
| AN 11 | M 55×2 | 75 | 67 | 69 | 56 | 7 | 3 | 11 | 0.5 | 0.158 | 11 | AW 11 |
| 12 | M 60×2 | 80 | 73 | 74 | 61 | 7 | 3 | 11 | 0.5 | 0.174 | 12 | 12 |
| 13 | M 65×2 | 85 | 79 | 79 | 66 | 7 | 3 | 12 | 0.5 | 0.203 | 13 | 13 |
| AN 14 | M 70×2 | 92 | 85 | 85 | 71 | 8 | 3.5 | 12 | 0.5 | 0.242 | 14 | AW 14 |
| 15 | M 75×2 | 98 | 90 | 91 | 76 | 8 | 3.5 | 13 | 0.5 | 0.287 | 15 | 15 |
| 16 | M 80×2 | 105 | 95 | 98 | 81 | 8 | 3.5 | 15 | 0.6 | 0.397 | 16 | 16 |
| AN 17 | M 85×2 | 110 | 102 | 103 | 86 | 8 | 3.5 | 16 | 0.6 | 0.451 | 17 | AW 17 |
| 18 | M 90×2 | 120 | 108 | 112 | 91 | 10 | 4 | 16 | 0.6 | 0.556 | 18 | 18 |
| 19 | M 95×2 | 125 | 113 | 117 | 96 | 10 | 4 | 17 | 0.6 | 0.658 | 19 | 19 |
| AN 20 | M100×2 | 130 | 120 | 122 | 101 | 10 | 4 | 18 | 0.6 | 0.698 | 20 | AW 20 |
| 21 | M105×2 | 140 | 126 | 130 | 106 | 12 | 5 | 18 | 0.7 | 0.845 | 21 | 21 |
| 22 | M110×2 | 145 | 133 | 135 | 111 | 12 | 5 | 19 | 0.7 | 0.965 | 22 | 22 |
| AN 23 | M115×2 | 150 | 137 | 140 | 116 | 12 | 5 | 19 | 0.7 | 1.01 | — | AW 23 |
| 24 | M120×2 | 155 | 138 | 145 | 121 | 12 | 5 | 20 | 0.7 | 1.08 | 24 | 24 |
| 25 | M125×2 | 160 | 148 | 150 | 126 | 12 | 5 | 21 | 0.7 | 1.19 | — | 25 |

[Notes] 1) Basic profile and dimension of screw thread are in accordance with JIS B 0205.

2) Applicable to adapter sleeve series A31, A2, A3 and A23.

3) Applicable to lockwashers with flat inner tongue.

[Remark] Locknut series AN is used for adapter assembly series H2, H3, H23 and H31, while locknut series ANL is used for adapter assembly series H30.

AN 26 ~ 40

ANL24 ~ 40

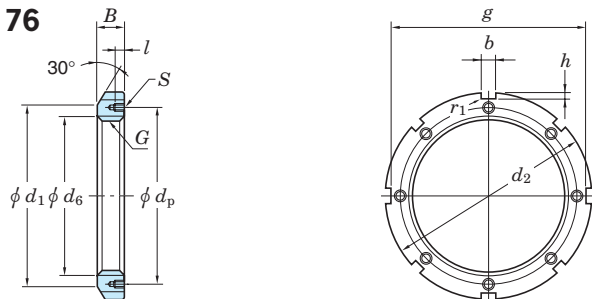
| Locknut No. | Thread size ¹⁾ G | Standard dimensions (mm) | | | | | | | | (Refer.) Mass (kg) | Applicable ²⁾ adapter sleeve (bore No.) | Applicable ³⁾ lockwasher No. |
|--------------|--------------------------------|--------------------------|----------------|-----|----------------|----|---|----|---------------------|--------------------|--|---|
| | | d ₂ | d ₁ | g | d ₆ | b | h | B | r ₁ max. | | | |
| AN 26 | M130×2 | 165 | 149 | 155 | 131 | 12 | 5 | 21 | 0.7 | 1.25 | 26 | AW 26 |
| AN 27 | M135×2 | 175 | 160 | 163 | 136 | 14 | 6 | 22 | 0.7 | 1.55 | — | AW 27 |
| 28 | M140×2 | 180 | 160 | 168 | 141 | 14 | 6 | 22 | 0.7 | 1.56 | 28 | 28 |
| AN 29 | M145×2 | 190 | 172 | 178 | 146 | 14 | 6 | 24 | 0.7 | 1.80 | — | AW 29 |
| 30 | M150×2 | 195 | 171 | 183 | 151 | 14 | 6 | 24 | 0.7 | 2.03 | 30 | 30 |
| 31 | M155×3 | 200 | 182 | 186 | 156.5 | 16 | 7 | 25 | 0.7 | 2.30 | — | — |
| AN 32 | M160×3 | 210 | 182 | 196 | 161.5 | 16 | 7 | 25 | 0.7 | 2.59 | 32 | AW 32 |
| 33 | M165×3 | 210 | 193 | 196 | 166.5 | 16 | 7 | 26 | 0.7 | 2.70 | — | — |
| 34 | M170×3 | 220 | 193 | 206 | 171.5 | 16 | 7 | 26 | 0.7 | 2.80 | 34 | 34 |
| AN 36 | M180×3 | 230 | 203 | 214 | 181.5 | 18 | 8 | 27 | 0.7 | 3.07 | 36 | AW 36 |
| 38 | M190×3 | 240 | 214 | 224 | 191.5 | 18 | 8 | 28 | 0.7 | 3.39 | 38 | 38 |
| 40 | M200×3 | 250 | 226 | 234 | 201.5 | 18 | 8 | 29 | 0.7 | 3.69 | 40 | 40 |
| ANL24 | M120×2 | 145 | 133 | 135 | 121 | 12 | 5 | 20 | 0.7 | 0.78 | 24 | AWL24 |
| 26 | M130×2 | 155 | 143 | 145 | 131 | 12 | 5 | 21 | 0.7 | 0.88 | 26 | 26 |
| 28 | M140×2 | 165 | 151 | 153 | 141 | 14 | 6 | 22 | 0.7 | 0.99 | 28 | 28 |
| ANL30 | M150×2 | 180 | 164 | 168 | 151 | 14 | 6 | 24 | 0.7 | 1.33 | 30 | AWL30 |
| 32 | M160×3 | 190 | 174 | 176 | 161.5 | 16 | 7 | 25 | 0.7 | 1.56 | 32 | 32 |
| 34 | M170×3 | 200 | 184 | 186 | 171.5 | 16 | 7 | 26 | 0.7 | 1.72 | 34 | 34 |
| ANL36 | M180×3 | 210 | 192 | 194 | 181.5 | 18 | 8 | 27 | 0.7 | 1.95 | 36 | AWL36 |
| 38 | M190×3 | 220 | 202 | 204 | 191.5 | 18 | 8 | 28 | 0.7 | 2.08 | 38 | 38 |
| 40 | M200×3 | 240 | 218 | 224 | 201.5 | 18 | 8 | 29 | 0.7 | 2.98 | 40 | 40 |

Locknuts
for adapter sleeves and shafts

ANL 80 ~ 100

AN 44 ~ 100

ANL 44 ~ 76



| Locknut No. | Thread ¹⁾ size | Standard dimensions (mm) | | | | | | | | Tapped hole ²⁾ (mm) | | | (Refer.) Mass (kg) | Applicable adapter sleeve ³⁾ (bore No.) | Applicable lock plate No. |
|--------------------|---------------------------|--------------------------|----------------|-----|----------------|----|----|----|---------------------|--------------------------------|---------------|----------------|--------------------|--|---------------------------|
| | | d ₂ | d ₁ | g | d ₆ | b | h | B | r _{1 max.} | l | S Thread size | d _p | | | |
| AN 44 48 52 | Tr220×4 | 280 | 250 | 260 | 222 | 20 | 10 | 32 | 0.8 | 15 | M 8×1.25 | 238 | 5.16 | 44 | AL 44 |
| | Tr240×4 | 300 | 270 | 280 | 242 | 20 | 10 | 34 | 0.8 | 15 | M 8×1.25 | 258 | 5.91 | 48 | 44 |
| | Tr260×4 | 330 | 300 | 306 | 262 | 24 | 12 | 36 | 0.8 | 18 | M10×1.5 | 281 | 7.99 | 52 | 52 |
| AN 56 60 64 | Tr280×4 | 350 | 320 | 326 | 282 | 24 | 12 | 38 | 0.8 | 18 | M10×1.5 | 301 | 8.99 | 56 | AL 52 |
| | Tr300×4 | 380 | 340 | 356 | 302 | 24 | 12 | 40 | 0.8 | 18 | M10×1.5 | 326 | 11.7 | 60 | 60 |
| | Tr320×5 | 400 | 360 | 376 | 322.5 | 24 | 12 | 42 | 0.8 | 18 | M10×1.5 | 345 | 13.0 | 64 | 64 |
| AN 68 72 76 | Tr340×5 | 440 | 400 | 410 | 342.5 | 28 | 15 | 55 | 1 | 21 | M12×1.75 | 372 | 23.0 | 68 | AL 68 |
| | Tr360×5 | 460 | 420 | 430 | 362.5 | 28 | 15 | 58 | 1 | 21 | M12×1.75 | 392 | 25.0 | 72 | 68 |
| | Tr380×5 | 490 | 450 | 454 | 382.5 | 32 | 18 | 60 | 1 | 21 | M12×1.75 | 414 | 30.8 | 76 | 76 |
| AN 80 84 88 | Tr400×5 | 520 | 470 | 484 | 402.5 | 32 | 18 | 62 | 1 | 27 | M16×2 | 439 | 36.7 | 80 | AL 80 |
| | Tr420×5 | 540 | 490 | 504 | 422.5 | 32 | 18 | 70 | 1 | 27 | M16×2 | 459 | 43.3 | 84 | 80 |
| | Tr440×5 | 560 | 510 | 520 | 442.5 | 36 | 20 | 70 | 1 | 27 | M16×2 | 477 | 45.1 | 88 | 88 |
| AN 92 96 100 | Tr460×5 | 580 | 540 | 540 | 462.5 | 36 | 20 | 75 | 1 | 27 | M16×2 | 497 | 50.2 | 92 | AL 88 |
| | Tr480×5 | 620 | 560 | 580 | 482.5 | 36 | 20 | 75 | 1 | 27 | M16×2 | 527 | 62.0 | 96 | 96 |
| | Tr500×5 | 630 | 580 | 584 | 502.5 | 40 | 23 | 80 | 1 | 27 | M16×2 | 539 | 63.1 | /500 | 100 |

| Locknut No. | Thread ¹⁾ size | Standard dimensions (mm) | | | | | | | | Tapped hole ²⁾ (mm) | | | (Refer.) Mass (kg) | Applicable adapter sleeve ³⁾ (bore No.) | Applicable lock plate No. |
|--------------------|---------------------------|--------------------------|----------------|-----|----------------|----|----|----|---------------------|--------------------------------|---------------|----------------|--------------------|--|---------------------------|
| | | d ₂ | d ₁ | g | d ₆ | b | h | B | r _{1 max.} | l | S Thread size | d _p | | | |
| ANL80 84 88 | Tr400×5 | 470 | 442 | 442 | 402.5 | 28 | 14 | 52 | 1 | 18 | M10×1.5 | 418 | 16.9 | 80 | ALL76 |
| | Tr420×5 | 490 | 462 | 462 | 422.5 | 32 | 14 | 52 | 1 | 18 | M10×1.5 | 438 | 17.4 | 84 | 84 |
| | Tr440×5 | 520 | 490 | 490 | 442.5 | 32 | 15 | 60 | 1 | 21 | M12×1.75 | 462 | 26.2 | 88 | 88 |
| ANL92 96 100 | Tr460×5 | 540 | 510 | 510 | 462.5 | 32 | 15 | 60 | 1 | 21 | M12×1.75 | 482 | 26.9 | 92 | ALL88 |
| | Tr480×5 | 560 | 530 | 530 | 482.5 | 36 | 15 | 60 | 1 | 21 | M12×1.75 | 502 | 28.3 | 96 | 96 |
| | Tr500×5 | 580 | 550 | 550 | 502.5 | 36 | 15 | 68 | 1 | 21 | M12×1.75 | 522 | 33.6 | /500 | 96 |

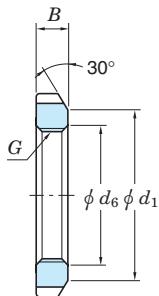
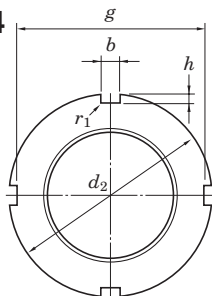
| | | | | | | | | | | | | | | | |
|-------------------|---------|-----|-----|-----|-------|----|----|----|-----|----|----------|-----|------|----|-------|
| ANL44 48 52 | Tr220×4 | 260 | 242 | 242 | 222 | 20 | 9 | 30 | 0.8 | 12 | M 6×1 | 229 | 3.09 | 44 | ALL44 |
| | Tr240×4 | 290 | 270 | 270 | 242 | 20 | 10 | 34 | 0.8 | 15 | M 8×1.25 | 253 | 5.16 | 48 | 48 |
| | Tr260×4 | 310 | 290 | 290 | 262 | 20 | 10 | 34 | 0.8 | 15 | M 8×1.25 | 273 | 5.67 | 52 | 48 |
| ANL56 60 64 | Tr280×4 | 330 | 310 | 310 | 282 | 24 | 10 | 38 | 0.8 | 15 | M 8×1.25 | 293 | 6.78 | 56 | ALL56 |
| | Tr300×4 | 360 | 336 | 336 | 302 | 24 | 12 | 42 | 0.8 | 15 | M 8×1.25 | 316 | 9.62 | 60 | 60 |
| | Tr320×5 | 380 | 356 | 356 | 322.5 | 24 | 12 | 42 | 0.8 | 15 | M 8×1.25 | 335 | 9.94 | 64 | 64 |
| ANL68 72 76 | Tr340×5 | 400 | 376 | 376 | 342.5 | 24 | 12 | 45 | 1 | 15 | M 8×1.25 | 355 | 11.7 | 68 | ALL64 |
| | Tr360×5 | 420 | 394 | 394 | 362.5 | 28 | 13 | 45 | 1 | 15 | M 8×1.25 | 374 | 12.0 | 72 | 72 |
| | Tr380×5 | 450 | 422 | 422 | 382.5 | 28 | 14 | 48 | 1 | 18 | M10×1.5 | 398 | 14.9 | 76 | 76 |

[Notes] 1) Basic profile and dimension of screw thread are in accordance with JIS B 0216.
2) Basic profile and dimension of bore with internal thread are in accordance with JIS B 0205.
3) Applicable to adapter sleeve series A31, A32, A23 and A30.

Locknuts
for withdrawal sleeves

HN 42 ~ 110

HNL 41 ~ 64



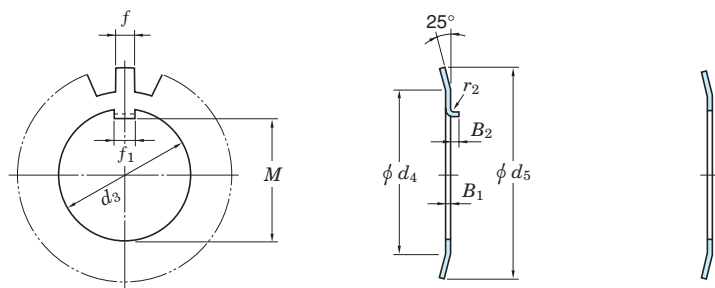
HNL 69 ~ 108

| Locknut No. | Thread ¹⁾ size | Standard dimensions (mm) | | | | | | | | (Refer.) Mass (kg) | Withdrawal sleeve No. | | | |
|-------------|---------------------------|--------------------------|-----------------------|-----------------------|----------|-----------------------|----------|----------|----------|--------------------|----------------------------|--------|---------|--------|
| | | <i>G</i> | <i>d</i> ₂ | <i>d</i> ₁ | <i>g</i> | <i>d</i> ₆ | <i>b</i> | <i>h</i> | <i>B</i> | | <i>r</i> _{1 max.} | | | |
| HN 42 | Tr210×4 | 270 | 238 | 250 | 212 | 20 | 10 | 30 | 0.8 | 4.75 | AH3138 | AH2238 | AH3238 | AH2338 |
| | 44 | Tr220×4 | 280 | 250 | 260 | 222 | 20 | 10 | 32 | 5.35 | 3140 | 2240 | 3240 | 2340 |
| | 48 | Tr240×4 | 300 | 270 | 280 | 242 | 20 | 10 | 34 | 6.20 | 3144 | 2244 | — | 2344 |
| HN 52 | Tr260×4 | 330 | 300 | 306 | 262 | 24 | 12 | 36 | 0.8 | 8.55 | AH3148 | AH2248 | — | AH2348 |
| | 58 | Tr290×4 | 370 | 330 | 346 | 292 | 24 | 12 | 40 | 11.8 | 3152 | 2252 | — | 2352 |
| | 62 | Tr310×5 | 390 | 350 | 366 | 312.5 | 24 | 12 | 42 | 13.4 | 3156 | 2256 | — | 2356 |
| HN 66 | Tr330×5 | 420 | 380 | 390 | 332.5 | 28 | 15 | 52 | 1 | 20.4 | AH3160 | AH2260 | AH3260 | — |
| | 70 | Tr350×5 | 450 | 410 | 420 | 352.5 | 28 | 15 | 55 | 25.2 | 3164 | 2264 | 3264 | — |
| | 74 | Tr370×5 | 470 | 430 | 440 | 372.5 | 28 | 15 | 58 | 28.2 | 3168 | — | 3268 | — |
| HN 80 | Tr400×5 | 520 | 470 | 484 | 402.5 | 32 | 18 | 62 | 1 | 40.0 | AH3172 | — | AH3272 | — |
| | 84 | Tr420×5 | 540 | 490 | 504 | 422.5 | 32 | 18 | 70 | 46.9 | 3176 | — | 3276 | — |
| | 88 | Tr440×5 | 560 | 510 | 520 | 442.5 | 36 | 20 | 70 | 48.5 | 3180 | — | 3280 | — |
| HN 92 | Tr460×5 | 580 | 540 | 540 | 462.5 | 36 | 20 | 75 | 1 | 55.0 | AH3184 | — | AH3284 | — |
| | 96 | Tr480×5 | 620 | 560 | 580 | 482.5 | 36 | 20 | 75 | 67.0 | X3188 | — | X3288 | — |
| | 102 | Tr510×6 | 650 | 590 | 604 | 513 | 40 | 23 | 80 | 75.0 | X3192 | — | X3292 | — |
| HN 106 | Tr530×6 | 670 | 610 | 624 | 533 | 40 | 23 | 80 | 1 | 78.0 | AHX3196 | — | AHX3296 | — |
| | 110 | Tr550×6 | 700 | 640 | 654 | 553 | 40 | 23 | 80 | 92.5 | X31/500 | — | X32/500 | — |
| HNL 41 | Tr205×4 | 250 | 232 | 234 | 207 | 18 | 8 | 30 | 0.8 | 3.43 | AH3038 | AH238 | — | — |
| | 43 | Tr215×4 | 260 | 242 | 242 | 217 | 20 | 9 | 30 | 3.72 | 3040 | 240 | — | — |
| | 47 | Tr235×4 | 280 | 262 | 262 | 237 | 20 | 9 | 34 | 4.60 | 3044 | 244 | — | — |
| HNL 52 | Tr260×4 | 310 | 290 | 290 | 262 | 20 | 10 | 34 | 0.8 | 5.80 | AH3048 | AH248 | — | — |
| | 56 | Tr280×4 | 330 | 310 | 310 | 282 | 24 | 10 | 38 | 6.72 | 3052 | 252 | — | — |
| | 60 | Tr300×4 | 360 | 336 | 336 | 302 | 24 | 12 | 42 | 9.60 | 3056 | 256 | — | — |
| HNL 64 | Tr320×5 | 380 | 356 | 356 | 322.5 | 24 | 12 | 42 | 1 | 10.3 | AH3060 | — | — | — |

[Note] 1) Basic profile and dimension of screw thread are in accordance with JIS B 0216.
[Remark] Number of slots on nut may sometimes exceed that shown in the figure.

| Locknut No. | Thread ¹⁾ size | Standard dimensions (mm) | | | | | | | | (Refer.) Mass (kg) | Withdrawal sleeve No. | | | |
|-------------|---------------------------|--------------------------|-----------------------|-----------------------|----------|-----------------------|----------|----------|----------|--------------------|----------------------------|---|---|---|
| | | <i>G</i> | <i>d</i> ₂ | <i>d</i> ₁ | <i>g</i> | <i>d</i> ₆ | <i>b</i> | <i>h</i> | <i>B</i> | | <i>r</i> _{1 max.} | | | |
| HNL 69 | Tr345×5 | 410 | 384 | 384 | 347.5 | 28 | 13 | 45 | 1 | 11.5 | 3064 | — | — | — |
| | 73 | Tr365×5 | 430 | 404 | 404 | 367.5 | 28 | 13 | 48 | 14.2 | 3068 | — | — | — |
| HNL 77 | Tr385×5 | 450 | 422 | 422 | 387.5 | 28 | 14 | 48 | 1 | 15.0 | AH3072 | — | — | — |
| | 82 | Tr410×5 | 480 | 452 | 452 | 412.5 | 32 | 14 | 52 | 19.0 | 3076 | — | — | — |
| | 86 | Tr430×5 | 500 | 472 | 472 | 432.5 | 32 | 14 | 52 | 19.8 | 3080 | — | — | — |
| HNL 90 | Tr450×5 | 520 | 490 | 490 | 452.5 | 32 | 15 | 60 | 1 | 23.8 | AH3084 | — | — | — |
| | 94 | Tr470×5 | 540 | 510 | 510 | 472.5 | 32 | 15 | 60 | 25.0 | X3088 | — | — | — |
| | 98 | Tr490×5 | 580 | 550 | 550 | 492.5 | 36 | 15 | 60 | 34.0 | X3092 | — | — | — |
| HNL104 | Tr520×6 | 600 | 570 | 570 | 523 | 36 | 15 | 68 | 1 | 37.0 | AHX3096 | — | — | — |
| | 108 | Tr540×6 | 630 | 590 | 590 | 543 | 40 | 20 | 68 | 43.5 | X30/500 | — | — | — |

AW 00 ~ 24(X)



With bent inner tongue

With flat inner tongue

AW 25 ~ 40(X)

AWL24 ~ 40(X)

| Lockwasher No. | Standard dimensions (mm) | | | | | | | | | | No. of tooth | (Refer.) Mass (kg/100pcs.) | Applicable adapter sleeve (bore No.) | Applicable locknut No. |
|----------------|--------------------------|------------------------|-------|-----|-------|-------|-----|-------|-------|-------|--------------|----------------------------|--------------------------------------|------------------------|
| | With bent inner tongue | With flat inner tongue | d_3 | M | f_1 | B_1 | f | d_4 | d_5 | r_2 | | | | |
| AW 00 | AW 00X | 10 | 8.5 | 3 | 1 | 3 | 13 | 21 | 0.5 | 2 | 9 | 0.131 | — | AN 00 |
| 01 | 01X | 12 | 10.5 | 3 | 1 | 3 | 17 | 25 | 0.5 | 2 | 9 | 0.192 | — | 01 |
| 02 | 02X | 15 | 13.5 | 4 | 1 | 4 | 21 | 28 | 1 | 2.5 | 13 | 0.253 | — | 02 |
| AW 03 | AW 03X | 17 | 15.5 | 4 | 1 | 4 | 24 | 32 | 1 | 2.5 | 13 | 0.313 | — | AN 03 |
| 04 | 04X | 20 | 18.5 | 4 | 1 | 4 | 26 | 36 | 1 | 2.5 | 13 | 0.350 | 04 | 04 |
| 05 | 05X | 25 | 23 | 5 | 1.2 | 5 | 32 | 42 | 1 | 2.5 | 13 | 0.640 | 05 | 05 |
| AW 06 | AW 06X | 30 | 27.5 | 5 | 1.2 | 5 | 38 | 49 | 1 | 2.5 | 13 | 0.780 | 06 | AN 06 |
| 07 | 07X | 35 | 32.5 | 6 | 1.2 | 5 | 44 | 57 | 1 | 2.5 | 15 | 1.04 | 07 | 07 |
| 08 | 08X | 40 | 37.5 | 6 | 1.2 | 6 | 50 | 62 | 1 | 2.5 | 15 | 1.23 | 08 | 08 |
| AW 09 | AW 09X | 45 | 42.5 | 6 | 1.2 | 6 | 56 | 69 | 1 | 2.5 | 17 | 1.52 | 09 | AN 09 |
| 10 | 10X | 50 | 47.5 | 6 | 1.2 | 6 | 61 | 74 | 1 | 2.5 | 17 | 1.60 | 10 | 10 |
| 11 | 11X | 55 | 52.5 | 8 | 1.2 | 7 | 67 | 81 | 1 | 4 | 17 | 1.96 | 11 | 11 |
| AW 12 | AW 12X | 60 | 57.5 | 8 | 1.5 | 7 | 73 | 86 | 1.2 | 4 | 17 | 2.53 | 12 | AN 12 |
| 13 | 13X | 65 | 62.5 | 8 | 1.5 | 7 | 79 | 92 | 1.2 | 4 | 19 | 2.90 | 13 | 13 |
| 14 | 14X | 70 | 66.5 | 8 | 1.5 | 8 | 85 | 98 | 1.2 | 4 | 19 | 3.34 | 14 | 14 |
| AW 15 | AW 15X | 75 | 71.5 | 8 | 1.5 | 8 | 90 | 104 | 1.2 | 4 | 19 | 3.56 | 15 | AN 15 |
| 16 | 16X | 80 | 76.5 | 10 | 1.8 | 8 | 95 | 112 | 1.2 | 4 | 19 | 4.64 | 16 | 16 |
| 17 | 17X | 85 | 81.5 | 10 | 1.8 | 8 | 102 | 119 | 1.2 | 4 | 19 | 5.24 | 17 | 17 |
| AW 18 | AW 18X | 90 | 86.5 | 10 | 1.8 | 10 | 108 | 126 | 1.2 | 4 | 19 | 6.23 | 18 | AN 18 |
| 19 | 19X | 95 | 91.5 | 10 | 1.8 | 10 | 113 | 133 | 1.2 | 4 | 19 | 6.70 | 19 | 19 |
| 20 | 20X | 100 | 96.5 | 12 | 1.8 | 10 | 120 | 142 | 1.2 | 6 | 19 | 7.65 | 20 | 20 |
| AW 21 | AW 21X | 105 | 100.5 | 12 | 1.8 | 12 | 126 | 145 | 1.2 | 6 | 19 | 8.26 | 21 | AN 21 |
| 22 | 22X | 110 | 105.5 | 12 | 1.8 | 12 | 133 | 154 | 1.2 | 6 | 19 | 9.40 | 22 | 22 |
| 23 | 23X | 115 | 110.5 | 12 | 2 | 12 | 137 | 159 | 1.5 | 6 | 19 | 10.8 | — | 23 |
| AW 24 | AW 24X | 120 | 115 | 14 | 2 | 12 | 138 | 164 | 1.5 | 6 | 19 | 10.5 | 24 | AN 24 |

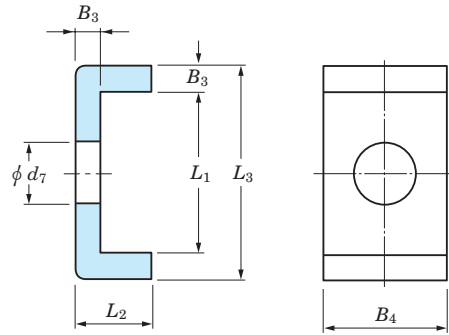
| Lockwasher No. | Standard dimensions (mm) | | | | | | | | | | No. of tooth | (Refer.) Mass (kg/100pcs.) | Applicable adapter sleeve (bore No.) | Applicable locknut No. |
|----------------|--------------------------|------------------------|-------|-----|-------|-------|-----|-------|-------|-------|--------------|----------------------------|--------------------------------------|------------------------|
| | With bent inner tongue | With flat inner tongue | d_3 | M | f_1 | B_1 | f | d_4 | d_5 | r_2 | | | | |
| AW 25 | AW 25X | 125 | 120 | 14 | 2 | 12 | 148 | 170 | 1.5 | 6 | 19 | 11.8 | — | 25 |
| 26 | 26X | 130 | 125 | 14 | 2 | 12 | 149 | 175 | 1.5 | 6 | 19 | 11.3 | 26 | 26 |
| AW 27 | AW 27X | 135 | 130 | 14 | 2 | 14 | 160 | 185 | 1.5 | 6 | 19 | 14.4 | — | AN 27 |
| 28 | 28X | 140 | 135 | 16 | 2 | 14 | 160 | 192 | 1.5 | 8 | 19 | 14.2 | 28 | 28 |
| 29 | 29X | 145 | 140 | 16 | 2 | 14 | 172 | 202 | 1.5 | 8 | 19 | 16.8 | — | 29 |
| AW 30 | AW 30X | 150 | 145 | 16 | 2 | 14 | 171 | 205 | 1.5 | 8 | 19 | 15.5 | 30 | AN 30 |
| 31 | 31X | 155 | 147.5 | 16 | 2.5 | 16 | 182 | 212 | 1.5 | 8 | 19 | 20.9 | — | 31 |
| 32 | 32X | 160 | 154 | 18 | 2.5 | 16 | 182 | 217 | 1.5 | 8 | 19 | 22.2 | 32 | 32 |
| AW 33 | AW 33X | 165 | 157.5 | 18 | 2.5 | 16 | 193 | 222 | 1.5 | 8 | 19 | 24.1 | — | AN 33 |
| 34 | 34X | 170 | 164 | 18 | 2.5 | 16 | 193 | 232 | 1.5 | 8 | 19 | 24.7 | 34 | 34 |
| 36 | 36X | 180 | 174 | 20 | 2.5 | 18 | 203 | 242 | 1.5 | 8 | 19 | 26.8 | 36 | 36 |
| AW 38 | AW 38X | 190 | 184 | 20 | 2.5 | 18 | 214 | 252 | 1.5 | 8 | 19 | 27.8 | 38 | AN 38 |
| 40 | 40X | 200 | 194 | 20 | 2.5 | 18 | 226 | 262 | 1.5 | 8 | 19 | 29.3 | 40 | 40 |
| AWL24 | AWL24X | 120 | 115 | 14 | 2 | 12 | 133 | 155 | 1.5 | 6 | 19 | 7.70 | 24 | ANL24 |
| 26 | 26X | 130 | 125 | 14 | 2 | 12 | 143 | 165 | 1.5 | 6 | 19 | 8.70 | 26 | 26 |
| 28 | 28X | 140 | 135 | 16 | 2 | 14 | 151 | 175 | 1.5 | 8 | 19 | 10.9 | 28 | 28 |
| AWL30 | AWL30X | 150 | 145 | 16 | 2 | 14 | 164 | 190 | 1.5 | 8 | 19 | 11.3 | 30 | ANL30 |
| 32 | 32X | 160 | 154 | 18 | 2.5 | 16 | 174 | 200 | 1.5 | 8 | 19 | 16.2 | 32 | 32 |
| 34 | 34X | 170 | 164 | 18 | 2.5 | 16 | 184 | 210 | 1.5 | 8 | 19 | 19.0 | 34 | 34 |
| AWL36 | AWL36X | 180 | 174 | 20 | 2.5 | 18 | 192 | 220 | 1.5 | 8 | 19 | 18.0 | 36 | ANL36 |
| 38 | 38X | 190 | 184 | 20 | 2.5 | 18 | 202 | 230 | 1.5 | 8 | 19 | 20.5 | 38 | 38 |
| 40 | 40X | 200 | 194 | 20 | 2.5 | 18 | 218 | 250 | 1.5 | 8 | 19 | 21.4 | 40 | 40 |

- (Remark) 1) AW00~AW40, AW00X~AW40X are applicable to adapter assembly series H31, H2, H3 and H23.
2) AWL24~AWL40, AWL24X~AWL40X are applied to adapter assembly series H30.
3) For adapter sleeves with narrow slits, lockwashers with flat inner tongue should be used. Either type of lockwasher can be used for adapter sleeves with wide slits.

Lock plates

AL 44 ~ 100

ALL44 ~ 96



| Lock plate No. | Standard dimensions (mm) | | | | | | (Refer.) Mass (kg/100pcs.) | Applicable locknut No. |
|----------------|--------------------------|-------|-------|-------|-------|-------|----------------------------|------------------------|
| | B_3 | B_4 | L_2 | d_7 | L_1 | L_3 | | |
| AL 44 | 4 | 20 | 12 | 9 | 22.5 | 30.5 | 2.60 | AN 44,48 |
| 52 | 4 | 24 | 12 | 12 | 25.5 | 33.5 | 3.39 | 52,56 |
| 60 | 4 | 24 | 12 | 12 | 30.5 | 38.5 | 3.79 | 60 |
| AL 64 | 5 | 24 | 15 | 12 | 31 | 41 | 5.35 | AN 64 |
| 68 | 5 | 28 | 15 | 14 | 38 | 48 | 6.65 | 68,72 |
| 76 | 5 | 32 | 15 | 14 | 40 | 50 | 7.96 | 76 |
| AL 80 | 5 | 32 | 15 | 18 | 45 | 55 | 8.20 | AN 80,84 |
| 88 | 5 | 36 | 15 | 18 | 43 | 53 | 9.00 | 88,92 |
| 96 | 5 | 36 | 15 | 18 | 53 | 63 | 10.4 | 96 |
| 100 | 5 | 40 | 15 | 18 | 45 | 55 | 10.5 | 100 |
| ALL44 | 4 | 20 | 12 | 7 | 13.5 | 21.5 | 2.12 | ANL44 |
| 48 | 4 | 20 | 12 | 9 | 17.5 | 25.5 | 2.29 | 48,52 |
| 56 | 4 | 24 | 12 | 9 | 17.5 | 25.5 | 2.92 | 56 |
| ALL60 | 4 | 24 | 12 | 9 | 20.5 | 28.5 | 3.16 | ANL60 |
| 64 | 5 | 24 | 15 | 9 | 21 | 31 | 4.56 | 64,68 |
| 72 | 5 | 28 | 15 | 9 | 20 | 30 | 5.03 | 72 |
| ALL76 | 5 | 28 | 15 | 12 | 24 | 34 | 5.28 | ANL76,80 |
| 84 | 5 | 32 | 15 | 12 | 24 | 34 | 6.11 | 84 |
| 88 | 5 | 32 | 15 | 14 | 28 | 38 | 6.45 | 88,92 |
| 96 | 5 | 36 | 15 | 14 | 28 | 38 | 7.29 | 96,100 |

[Remark] Lock plate series AL are applicable to adapter assembly series H31, H32 and H23, while lock plate series ALL are applicable to H30.