KOYO

# Deep groove ball bearings

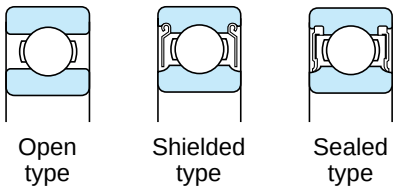
Deep groove ball bearings are available in a variety of sizes, and are the most popular of all rolling bearings. This type of bearing supports radial load and a certain degree of axial load in both directions simultaneously.

■ Shielded / sealed type
- Simplifies sealing structure of applications.
- Greasing is not necessary because bearings are pre-lubricated.
- Table 1 on the next page lists major shielded and sealed bearing types and compares their performance.

■ With locating snap ring
- Bearings with a locating snap ring can be fit to the housing easily, as the locating snap ring facilitates axial positioning.

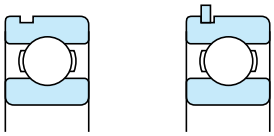
■ Extra-small ball bearings and miniature ball bearings
- The open type is widely used. Also available are the shielded / sealed type and the flanged type; the latter is easily positioned in the axial direction.

**Single-row deep groove ball bearings**



Open type | Shielded type | Sealed type

Bore diameter **10 – 200 mm**



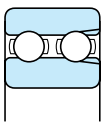
With snap ring groove | With locating snap ring

Bore diameter **10 – 130 mm**

**Extra-small ball bearings and miniature ball bearings**

Bore diameter **3 – 9 mm**

**Double-row deep groove ball bearings**

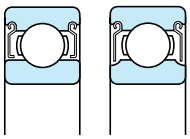
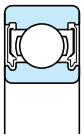
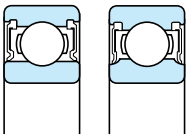
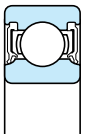
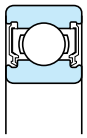


(with filling slot)

Bore diameter **15 – 75 mm**

# Deep groove ball bearings

**Table 1 Comparison of shielded and sealed bearing performance**

| Type / Characteristics | Shielded | Sealed | | | |
|---|---|---|---|---|---|
| | Non-contact type | Non-contact type | Contact type | | Extremely light contact type |
| | ZZ | 2RU | 2RS | 2RK | 2RD |
| |  (a) [1] (b) |  (c) |  (d) [2] (e) |  (f) |  (g) |
| Friction torque | Small | Small | Large | Large | Small |
| High speed performance | Good | Good | Limited because of contact | | Good |
| Grease sealing property | Good | Better than ZZ type | Better than 2RU type for low-speed applications | Excellent | Excellent |
| Dirt resistance | Good | Better than ZZ type | Better than 2RU type | Excellent | Excellent |
| Water resistance | Economical | Better than ZZ type but inferior to 2RS, 2RK and 2RD types | Good | Excellent | Better than ZZ and 2RU types |
| Operating temperature [3] | –30 to 110˚C | | –30 to 100˚C | | –30 to 110˚C |

Notes)
1) Illustration (a) of the ZZ type shows the relatively small size bearing.
2) Illustration (d) of the 2RS type shows the relatively small size bearing.
3) The operating temperature range listed is for the standard type. It can be widened by using a different type of grease or sealing material. Consult Koyo for details.

## Handling instructions

1) The shielded / sealed type deep groove ball bearing and the deep groove ball bearing with a locating snap ring are designed for use with the inner ring rotating.
Consult koyo on use with the outer ring rotating.
2) When the axial load is large, make the shaft shoulder and housing shoulder larger than usual. (Referring to the specification table, make the mounting dimension $d_a$ larger and make $D_a$ smaller.)

| | |
|---|---|
| Boundary dimensions | The dimensions of standard series are as specified in JIS B 1512.<br>For extra-small and miniature ball bearings, special series (ML) are specified together with those described above. |
| Tolerances | As specified in JIS B 1514. |
| Radial internal clearance | ■ Deep groove ball bearings (except extra-small ball bearings and miniature ball bearings) ..... as specified in JIS B 1520 (refer to Table 2-1 on p. A11.)<br>■ Extra-small ball bearings and miniature ball bearings ..... (refer to Table 2-2 on p. A11.)<br>■ Deep groove ball bearings for motors ..... (refer to Table 2-6 on p. A14.) |
| Standard cages | • Pressed steel cage (supplementary code : //)<br>• Copper alloy machined cage (supplementary code : FY)<br><br>Remark :<br>For certain applications, stainless steel sheet pressed cages (YS) and polyamide molded cages (MG) may also be used. |
| Allowable misalignment | 0.002 3 – 0.003 4 rad (8' – 12') |
| Equivalent radial load (Single / double-row) | Dynamic equivalent radial load<br>$P_r = XF_r + YF_a$<br>[refer to the table on the right for values $X$ and $Y$.]<br><br>Static equivalent radial load<br>$P_{0r} = 0.6F_r + 0.5F_a$<br>[when the value of $P_{0r} < F_r$, $P_{0r} = F_r$] |

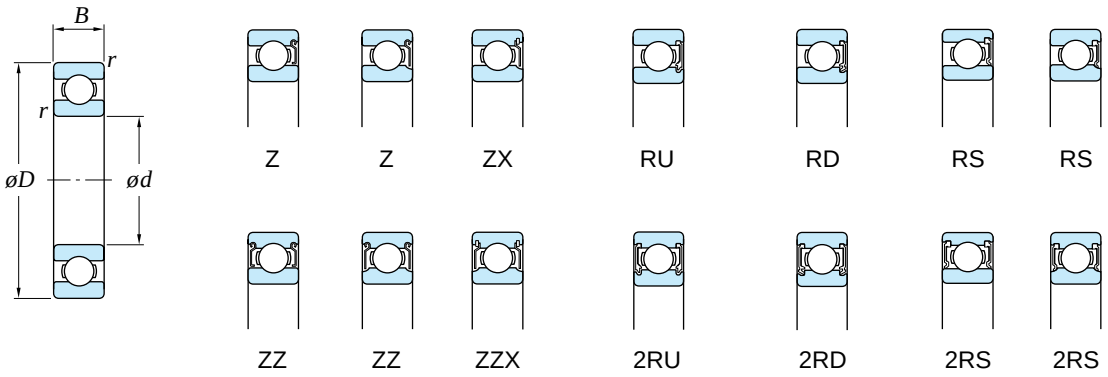
**Application of standard cages**

| Bearing series | Pressed cage | Machined cage |
|---|---|---|
| 68 | 683 – 689 | – |
| 69 | 693 – 699 | – |
| 60 | 603 – 609 | – |
| 62 | 623 – 629 | – |
| 63 | 633 – 639 | – |
| 68 | 6800 – 6838 | 6840 – 68/600 |
| 69 | 6900 – 6918 | 6920 – 6980 |
| 160 | 16001 – 16028 | 16030 – 16072 |
| 60 | 6000 – 6034 | 6036 – 6084 |
| 62 | 6200 – 6230 | 6232 – 6248 |
| 63 | 6300 – 6328 | 6330 – 6340 |
| 64 | 6403 – 6418 | – |
| 42 | 4200 – 4215 | – |
| 43 | 4302 – 4315 | – |

| $\frac{F_a}{C_{0r}}$ | $e$ | $\frac{F_a}{F_r} \le e$ | | $\frac{F_a}{F_r} > e$ | |
|---|---|---|---|---|---|
| | | $X$ | $Y$ | $X$ | $Y$ |
| 0.014 | 0.19 | | | | 2.30 |
| 0.028 | 0.22 | | | | 1.99 |
| 0.056 | 0.26 | | | | 1.71 |
| 0.084 | 0.28 | | | | 1.55 |
| 0.11 | 0.30 | 1 | 0 | 0.56 | 1.45 |
| 0.17 | 0.34 | | | | 1.31 |
| 0.28 | 0.38 | | | | 1.15 |
| 0.42 | 0.42 | | | | 1.04 |
| 0.56 | 0.44 | | | | 1.00 |

# Single-row deep groove ball bearings

## *d* 10 – 20 mm




| Boundary dimensions (mm) | | | | Basic load ratings (kN) | | Limiting speeds (min⁻¹) Grease lub. | | | Oil lub. | Bearing No. | | | | | (Refer.) Mass |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *d* | *D* | *B* | *r* min. | $C_r$ | $C_{0r}$ | Open, Z, ZZ, RU, 2RU | (RD, 2RD) | (RS, 2RS) | Open, Z | Open | Shielded ZZ | Sealed 2RU | 2RD | 2RS | Open type (kg) |
| **10** | 19 | 5 | 0.3 | 1.70 | 0.84 | 37 000 | – | – | 43 000 | **6800** | **ZZ** | **–** | **–** | **–** | 0.005 |
| | 22 | 6 | 0.3 | 2.70 | 1.25 | 34 000 | – | – | 41 000 | **6900** | **ZZ** | **–** | **–** | **–** | 0.010 |
| | 26 | 8 | 0.3 | 4.55 | 1.95 | 31 000 | – | 19 000 | 36 000 | **6000** | **ZZ** | **2RU** | **–** | **2RS** | 0.019 |
| | 30 | 9 | 0.6 | 5.10 | 2.40 | 24 000 | – | 16 000 | 29 000 | **6200** | **ZZ** | **2RU** | **–** | **2RS** | 0.032 |
| | 35 | 11 | 0.6 | 8.10 | 3.45 | 22 000 | – | 16 000 | 27 000 | **6300** | **ZZ** | **2RU** | **–** | **2RS** | 0.053 |
| **12** | 21 | 5 | 0.3 | 1.90 | 1.05 | 33 000 | – | – | 39 000 | **6801** | **ZZ** | **2RU** | **–** | **–** | 0.006 |
| | 24 | 6 | 0.3 | 2.90 | 1.45 | 31 000 | – | – | 36 000 | **6901** | **ZZ** | **2RU** | **–** | **–** | 0.011 |
| | 28 | 7 | 0.3 | 5.10 | 2.40 | 27 000 | – | – | 32 000 | **16001** | **–** | **–** | **–** | **–** | 0.024 |
| | 28 | 8 | 0.3 | 5.10 | 2.40 | 27 000 | – | 17 000 | 32 000 | **6001** | **ZZ** | **2RU** | **–** | **2RS** | 0.022 |
| | 32 | 10 | 0.6 | 6.80 | 3.05 | 22 000 | 20 000 | 15 000 | 27 000 | **6201** | **ZZ** | **2RU** | **2RD** | **2RS** | 0.037 |
| | 37 | 12 | 1 | 9.70 | 4.20 | 20 000 | 18 000 | 15 000 | 25 000 | **6301** | **ZZ** | **2RU** | **2RD** | **2RS** | 0.060 |
| **15** | 24 | 5 | 0.3 | 2.10 | 1.25 | 28 000 | – | – | 33 000 | **6802** | **ZZ** | **2RU** | **–** | **–** | 0.007 |
| | 28 | 7 | 0.3 | 4.30 | 2.25 | 26 000 | – | – | 30 000 | **6902** | **ZZ** | **2RU** | **–** | **–** | 0.017 |
| | 32 | 8 | 0.3 | 5.60 | 2.85 | 23 000 | – | – | 28 000 | **16002** | **–** | **–** | **–** | **–** | 0.025 |
| | 32 | 9 | 0.3 | 5.60 | 2.85 | 23 000 | – | 14 000 | 27 000 | **6002** | **ZZ** | **2RU** | **–** | **2RS** | 0.030 |
| | 35 | 11 | 0.6 | 7.65 | 3.75 | 20 000 | 18 000 | 13 000 | 24 000 | **6202** | **ZZ** | **2RU** | **2RD** | **2RS** | 0.045 |
| | 42 | 13 | 1 | 11.4 | 5.45 | 17 000 | 15 000 | 12 000 | 20 000 | **6302** | **ZZ** | **2RU** | **2RD** | **2RS** | 0.082 |
| **17** | 26 | 5 | 0.3 | 2.60 | 1.55 | 26 000 | – | – | 30 000 | **6803** | **ZZ** | **2RU** | **–** | **–** | 0.008 |
| | 30 | 7 | 0.3 | 4.60 | 2.55 | 23 000 | – | – | 28 000 | **6903** | **ZZ** | **2RU** | **–** | **–** | 0.018 |
| | 35 | 8 | 0.3 | 6.00 | 3.25 | 21 000 | – | – | 25 000 | **16003** | **–** | **–** | **–** | **–** | 0.032 |
| | 35 | 10 | 0.3 | 6.00 | 3.25 | 21 000 | – | 12 000 | 25 000 | **6003** | **ZZ** | **2RU** | **–** | **2RS** | 0.039 |
| | 40 | 12 | 0.6 | 9.55 | 4.80 | 17 000 | 15 000 | 12 000 | 21 000 | **6203** | **ZZ** | **2RU** | **2RD** | **2RS** | 0.065 |
| | 47 | 14 | 1 | 13.6 | 6.65 | 15 000 | 14 000 | 10 000 | 18 000 | **6303** | **ZZ** | **2RU** | **2RD** | **2RS** | 0.115 |
| | 62 | 17 | 1.1 | 20.7 | 9.85 | 13 000 | – | – | 15 000 | **6403** | **–** | **–** | **–** | **–** | 0.270 |
| **20** | 32 | 7 | 0.3 | 4.00 | 2.45 | 21 000 | – | – | 25 000 | **6804** | **ZZ** | **2RU** | **–** | **–** | 0.018 |
| | 37 | 9 | 0.3 | 6.35 | 3.70 | 19 000 | – | – | 23 000 | **6904** | **ZZ** | **2RU** | **–** | **–** | 0.036 |
| | 42 | 8 | 0.3 | 7.95 | 4.50 | 17 000 | – | – | 21 000 | **16004** | **–** | **–** | **–** | **–** | 0.050 |
| | 42 | 12 | 0.6 | 9.40 | 5.05 | 17 000 | – | 10 000 | 21 000 | **6004** | **ZZ** | **2RU** | **–** | **2RS** | 0.069 |
| | 47 | 14 | 1 | 12.8 | 6.65 | 15 000 | 14 000 | 9 700 | 17 000 | **6204** | **ZZ** | **2RU** | **2RD** | **2RS** | 0.106 |
| | 52 | 15 | 1.1 | 15.9 | 7.85 | 14 000 | 13 000 | 9 500 | 17 000 | **6304** | **ZZ** | **2RU** | **2RD** | **2RS** | 0.144 |
| | 72 | 19 | 1.1 | 31.0 | 15.2 | 11 000 | – | – | 13 000 | **6404** | **–** | **–** | **–** | **–** | 0.400 |

Remark) Standard cage types used for the above bearings are described earlier in this section.

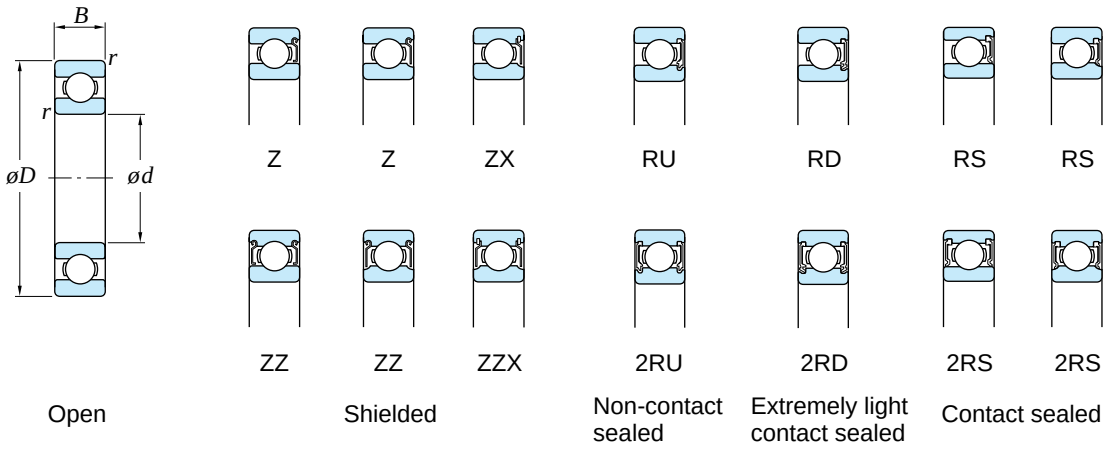
## *d* 22 – 45 mm

| Boundary dimensions (mm) | | | | Basic load ratings (kN) | | Limiting speeds (min⁻¹) | | | | Bearing No. | | | | | (Refer.) Mass |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Grease lub. | | | Oil lub. | | | | | | |
| *d* | *D* | *B* | *r* min. | $C_r$ | $C_{0r}$ | Open Z, ZZ RU, 2RU | (RD, 2RD) | (RS, 2RS) | Open Z | Open | Shielded ZZ | Sealed 2RU | 2RD | 2RS | Open type (kg) |
| **22** | 44 | 12 | 0.6 | 9.40 | 5.15 | 17 000 | – | 9 900 | 20 000 | **60/22** | **–** | **–** | **–** | **2RS** | 0.073 |
| | 50 | 14 | 1 | 12.8 | 6.65 | 15 000 | – | 9 700 | 17 000 | **62/22** | **–** | **–** | **–** | **2RS** | 0.118 |
| | 56 | 16 | 1.1 | 18.5 | 9.40 | 13 000 | – | 8 600 | 15 000 | **63/22** | **–** | **–** | **–** | **2RS** | 0.201 |
| **25** | 37 | 7 | 0.3 | 4.30 | 2.95 | 18 000 | – | – | 21 000 | **6805** | **ZZ** | **2RU** | **–** | **–** | 0.022 |
| | 42 | 9 | 0.3 | 7.00 | 4.55 | 16 000 | – | – | 19 000 | **6905** | **ZZ** | **2RU** | **–** | **–** | 0.041 |
| | 47 | 8 | 0.3 | 8.85 | 5.60 | 15 000 | – | – | 18 000 | **16005** | **–** | **–** | **–** | **–** | 0.060 |
| | 47 | 12 | 0.6 | 10.1 | 5.85 | 15 000 | – | 9 000 | 18 000 | **6005** | **ZZ** | **2RU** | **–** | **2RS** | 0.080 |
| | 52 | 15 | 1 | 14.0 | 7.85 | 13 000 | 12 000 | 8 400 | 15 000 | **6205** | **ZZ** | **2RU** | **2RD** | **2RS** | 0.128 |
| | 62 | 17 | 1.1 | 20.6 | 11.3 | 11 000 | 9 900 | 7 500 | 13 000 | **6305** | **ZZ** | **2RU** | **2RD** | **2RS** | 0.232 |
| | 80 | 21 | 1.5 | 36.1 | 19.4 | 9 100 | – | – | 11 000 | **6405** | **–** | **–** | **–** | **–** | 0.530 |
| **28** | 52 | 12 | 0.6 | 12.4 | 7.40 | 14 000 | – | – | 16 000 | **60/28** | **ZZ** | **–** | **–** | **–** | 0.097 |
| | 58 | 16 | 1 | 17.9 | 9.75 | 12 000 | – | 7 600 | 14 000 | **62/28** | **ZZ** | **–** | **–** | **2RS** | 0.173 |
| | 68 | 18 | 1.1 | 23.5 | 13.1 | 10 000 | – | 6 900 | 12 000 | **63/28** | **ZZ** | **–** | **–** | **2RS** | 0.328 |
| **30** | 42 | 7 | 0.3 | 4.55 | 3.40 | 15 000 | – | – | 18 000 | **6806** | **ZZ** | **2RU** | **–** | **–** | 0.026 |
| | 47 | 9 | 0.3 | 7.25 | 5.00 | 14 000 | – | – | 17 000 | **6906** | **ZZ** | **2RU** | **–** | **–** | 0.045 |
| | 55 | 9 | 0.3 | 11.2 | 7.35 | 13 000 | – | – | 15 000 | **16006** | **–** | **–** | **–** | **–** | 0.085 |
| | 55 | 13 | 1 | 13.2 | 8.25 | 13 000 | – | 7 500 | 15 000 | **6006** | **ZZ** | **2RU** | **–** | **2RS** | 0.116 |
| | 62 | 16 | 1 | 19.5 | 11.3 | 11 000 | 9 900 | 7 000 | 13 000 | **6206** | **ZZ** | **2RU** | **2RD** | **2RS** | 0.199 |
| | 72 | 19 | 1.1 | 26.7 | 15.0 | 9 600 | 8 600 | 6 400 | 12 000 | **6306** | **ZZ** | **2RU** | **2RD** | **2RS** | 0.346 |
| | 90 | 23 | 1.5 | 43.4 | 23.9 | 8 100 | – | – | 9 700 | **6406** | **–** | **–** | **–** | **–** | 0.735 |
| **32** | 58 | 13 | 1 | 15.0 | 9.15 | 12 000 | – | 7 200 | 14 000 | **60/32** | **ZZ** | **–** | **–** | **2RS** | 0.127 |
| | 65 | 17 | 1 | 23.5 | 13.1 | 10 000 | – | 6 900 | 12 000 | **62/32** | **ZZ** | **–** | **–** | **2RS** | 0.228 |
| | 75 | 20 | 1.1 | 30.1 | 16.2 | 9 300 | – | 6 400 | 11 000 | **63/32** | **ZZ** | **–** | **–** | **2RS** | 0.437 |
| **35** | 47 | 7 | 0.3 | 4.75 | 3.85 | 13 000 | – | – | 16 000 | **6807** | **ZZ** | **2RU** | **–** | **–** | 0.030 |
| | 55 | 10 | 0.6 | 10.9 | 7.75 | 12 000 | – | – | 14 000 | **6907** | **ZZ** | **2RU** | **–** | **–** | 0.073 |
| | 62 | 9 | 0.3 | 12.2 | 8.85 | 11 000 | – | – | 13 000 | **16007** | **–** | **–** | **–** | **–** | 0.110 |
| | 62 | 14 | 1 | 15.9 | 10.3 | 11 000 | – | 6 500 | 13 000 | **6007** | **ZZ** | **2RU** | **–** | **2RS** | 0.155 |
| | 72 | 17 | 1.1 | 25.7 | 15.4 | 9 200 | 8 300 | 6 000 | 11 000 | **6207** | **ZZ** | **2RU** | **2RD** | **2RS** | 0.288 |
| | 80 | 21 | 1.5 | 33.4 | 19.3 | 8 500 | 7 700 | 5 700 | 10 000 | **6307** | **ZZ** | **2RU** | **2RD** | **2RS** | 0.457 |
| | 100 | 25 | 1.5 | 55.0 | 31.0 | 7 200 | – | – | 8 600 | **6407** | **–** | **–** | **–** | **–** | 0.952 |
| **40** | 52 | 7 | 0.3 | 4.95 | 4.20 | 12 000 | – | – | 14 000 | **6808** | **ZZ** | **2RU** | **–** | **–** | 0.033 |
| | 62 | 12 | 0.6 | 13.7 | 9.95 | 11 000 | – | – | 13 000 | **6908** | **ZZ** | **2RU** | **–** | **–** | 0.112 |
| | 68 | 9 | 0.3 | 12.6 | 9.65 | 9 800 | – | – | 12 000 | **16008** | **–** | **–** | **–** | **–** | 0.125 |
| | 68 | 15 | 1 | 16.7 | 11.5 | 10 000 | – | 5 800 | 12 000 | **6008** | **ZZ** | **2RU** | **–** | **2RS** | 0.192 |
| | 80 | 18 | 1.1 | 29.1 | 17.8 | 8 300 | 7 500 | 5 400 | 10 000 | **6208** | **ZZ** | **2RU** | **2RD** | **2RS** | 0.366 |
| | 90 | 23 | 1.5 | 40.7 | 24.0 | 7 700 | 6 900 | 5 100 | 9 200 | **6308** | **ZZ** | **2RU** | **2RD** | **2RS** | 0.633 |
| | 110 | 27 | 2 | 63.7 | 36.6 | 6 600 | – | – | 7 900 | **6408** | **–** | **–** | **–** | **–** | 1.23 |
| **45** | 58 | 7 | 0.3 | 6.20 | 5.40 | 11 000 | – | – | 13 000 | **6809** | **ZZ** | **2RU** | **–** | **–** | 0.040 |
| | 68 | 12 | 0.6 | 14.1 | 10.9 | 9 700 | – | – | 11 000 | **6909** | **ZZ** | **2RU** | **–** | **–** | 0.132 |
| | 75 | 10 | 0.6 | 15.5 | 12.3 | 8 900 | – | – | 10 000 | **16009** | **–** | **–** | **–** | **–** | 0.170 |
| | 75 | 16 | 1 | 21.0 | 15.1 | 9 200 | – | 5 300 | 11 000 | **6009** | **ZZ** | **2RU** | **–** | **2RS** | 0.245 |
| | 85 | 19 | 1.1 | 32.7 | 20.3 | 7 700 | 6 900 | 5 100 | 9 200 | **6209** | **ZZ** | **2RU** | **2RD** | **2RS** | 0.407 |
| | 100 | 25 | 1.5 | 48.9 | 29.5 | 6 800 | 6 100 | 4 500 | 8 100 | **6309** | **ZZ** | **2RU** | **2RD** | **2RS** | 0.833 |
| | 120 | 29 | 2 | 77.2 | 45.1 | 6 000 | – | – | 7 200 | **6409** | **–** | **–** | **–** | **–** | 1.53 |

Remark) Standard cage types used for the above bearings are described earlier in this section.

# Single-row deep groove ball bearings

## *d* 50 – (70) mm




| Boundary dimensions (mm) | | | | Basic load ratings (kN) | | Limiting speeds (min⁻¹) Grease lub. | | | Oil lub. | Bearing No. | | | | | (Refer.) Mass |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *d* | *D* | *B* | *r* min. | $C_r$ | $C_{0r}$ | Open, Z, ZZ, RU, 2RU | (RD, 2RD) | (RS, 2RS) | Open, Z | Open | Shielded ZZ | Sealed 2RU | 2RD | 2RS | Open type (kg) |
| **50** | 65 | 7 | 0.3 | 6.60 | 6.10 | 9 600 | – | – | 11 000 | **6810** | **ZZ** | **2RU** | **–** | **–** | 0.052 |
| | 72 | 12 | 0.6 | 14.5 | 11.7 | 9 000 | – | – | 11 000 | **6910** | **ZZ** | **2RU** | **–** | **–** | 0.133 |
| | 80 | 10 | 0.6 | 16.0 | 13.3 | 8 200 | – | – | 9 700 | **16010** | **–** | **–** | **–** | **–** | 0.180 |
| | 80 | 16 | 1 | 21.8 | 16.6 | 8 400 | – | 4 800 | 9 900 | **6010** | **ZZ** | **2RU** | **–** | **2RS** | 0.261 |
| | 90 | 20 | 1.1 | 35.1 | 23.3 | 7 100 | 6 400 | 4 600 | 8 500 | **6210** | **ZZ** | **2RU** | **2RD** | **2RS** | 0.463 |
| | 110 | 27 | 2 | 62.0 | 38.3 | 6 100 | 5 500 | 4 100 | 7 300 | **6310** | **ZZ** | **2RU** | **2RD** | **2RS** | 1.07 |
| | 130 | 31 | 2.1 | 83.0 | 49.5 | 5 500 | – | – | 6 600 | **6410** | **–** | **–** | **–** | **–** | 1.88 |
| **55** | 72 | 9 | 0.3 | 8.80 | 8.10 | 8 700 | – | – | 10 000 | **6811** | **ZZ** | **2RU** | **–** | **–** | 0.083 |
| | 80 | 13 | 1 | 16.6 | 14.1 | 8 100 | – | – | 9 600 | **6911** | **ZZ** | **2RU** | **–** | **–** | 0.185 |
| | 90 | 11 | 0.6 | 19.3 | 16.3 | 7 400 | – | – | 8 800 | **16011** | **–** | **–** | **–** | **–** | 0.260 |
| | 90 | 18 | 1.1 | 28.3 | 21.2 | 7 600 | – | 4 300 | 8 900 | **6011** | **ZZ** | **2RU** | **–** | **2RS** | 0.385 |
| | 100 | 21 | 1.5 | 43.4 | 29.4 | 6 300 | – | 4 100 | 7 600 | **6211** | **ZZ** | **2RU** | **–** | **2RS** | 0.607 |
| | 120 | 29 | 2 | 71.6 | 45.0 | 5 600 | – | 3 700 | 6 700 | **6311** | **ZZ** | **2RU** | **–** | **2RS** | 1.37 |
| | 140 | 33 | 2.1 | 100 | 62.3 | 5 000 | – | – | 6 000 | **6411** | **–** | **–** | **–** | **–** | 2.29 |
| **60** | 78 | 10 | 0.3 | 11.5 | 10.6 | 8 000 | – | – | 9 400 | **6812** | **ZZ** | **2RU** | **–** | **–** | 0.104 |
| | 85 | 13 | 1 | 20.2 | 17.3 | 7 500 | – | – | 8 900 | **6912** | **ZZ** | **2RU** | **–** | **–** | 0.192 |
| | 95 | 11 | 0.6 | 19.8 | 17.6 | 6 900 | – | – | 8 100 | **16012** | **–** | **–** | **–** | **–** | 0.280 |
| | 95 | 18 | 1.1 | 29.4 | 23.2 | 7 100 | – | 4 000 | 8 400 | **6012** | **ZZ** | **2RU** | **–** | **2RS** | 0.415 |
| | 110 | 22 | 1.5 | 52.4 | 36.2 | 5 700 | – | 3 700 | 6 900 | **6212** | **ZZ** | **2RU** | **–** | **2RS** | 0.783 |
| | 130 | 31 | 2.1 | 81.9 | 52.2 | 5 200 | – | 3 500 | 6 200 | **6312** | **ZZ** | **2RU** | **–** | **2RS** | 1.70 |
| | 150 | 35 | 2.1 | 110 | 70.8 | 4 600 | – | – | 5 500 | **6412** | **–** | **–** | **–** | **–** | 2.77 |
| **65** | 85 | 10 | 0.6 | 11.9 | 11.5 | 7 300 | – | – | 8 600 | **6813** | **ZZ** | **2RU** | **–** | **–** | 0.126 |
| | 90 | 13 | 1 | 17.4 | 16.1 | 7 100 | – | – | 8 400 | **6913** | **ZZ** | **2RU** | **–** | **–** | 0.211 |
| | 100 | 11 | 0.6 | 17.1 | 16.0 | 6 600 | – | – | 7 800 | **16013** | **–** | **–** | **–** | **–** | 0.300 |
| | 100 | 18 | 1.1 | 30.5 | 25.2 | 6 600 | – | 3 700 | 7 800 | **6013** | **ZZ** | **2RU** | **–** | **2RS** | 0.435 |
| | 120 | 23 | 1.5 | 57.2 | 40.1 | 5 400 | – | 3 500 | 6 400 | **6213** | **ZZ** | **2RU** | **–** | **2RS** | 0.990 |
| | 140 | 33 | 2.1 | 92.7 | 59.9 | 4 800 | – | 3 200 | 5 800 | **6313** | **ZZ** | **2RU** | **–** | **2RS** | 2.08 |
| | 160 | 37 | 2.1 | 118 | 79.2 | 4 300 | – | – | 5 200 | **6413** | **–** | **–** | **–** | **–** | 3.30 |
| **70** | 90 | 10 | 0.6 | 12.1 | 11.9 | 6 800 | – | – | 8 100 | **6814** | **ZZ** | **2RU** | **–** | **–** | 0.134 |
| | 100 | 16 | 1 | 23.7 | 21.2 | 6 400 | – | – | 7 600 | **6914** | **ZZ** | **2RU** | **–** | **–** | 0.342 |
| | 110 | 13 | 0.6 | 30.1 | 25.6 | 6 100 | – | – | 7 200 | **16014** | **–** | **–** | **–** | **–** | 0.433 |
| | 110 | 20 | 1.1 | 38.1 | 30.9 | 6 100 | – | 3 500 | 7 200 | **6014** | **ZZ** | **2RU** | **–** | **2RS** | 0.602 |

Remark) Standard cage types used for the above bearings are described earlier in this section.

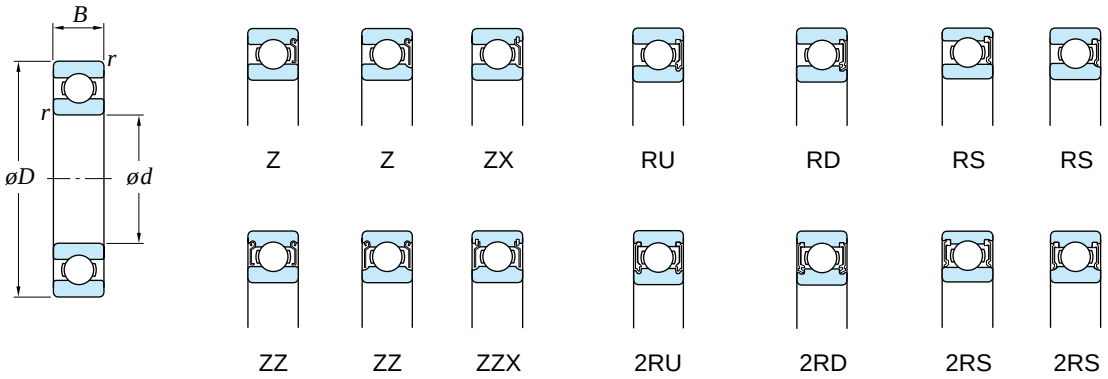
## *d* (70) – 105 mm

| Boundary dimensions (mm) | | | | Basic load ratings (kN) | | Limiting speeds (min⁻¹) Grease lub. | | | Oil lub. | Bearing No. | | | | | (Refer.) Mass |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *d* | *D* | *B* | *r* min. | $C_r$ | $C_{0r}$ | Open Z, ZZ RU, 2RU | (RD, 2RD) | (RS, 2RS) | Open Z | Open | Shielded ZZ | Sealed 2RU | 2RD | 2RS | Open type (kg) |
| **70** | 125 | 24 | 1.5 | 62.2 | 44.1 | 5 100 | – | 3 300 | 6 100 | **6214** | **ZZ** | **2RU** | **–** | **2RS** | 1.07 |
| | 150 | 35 | 2.1 | 104 | 68.2 | 4 500 | – | 3 000 | 5 400 | **6314** | **ZZ** | **2RU** | **–** | **2RS** | 2.52 |
| | 180 | 42 | 3 | 144 | 104 | 3 900 | – | – | 4 600 | **6414** | **–** | **–** | **–** | **–** | 4.83 |
| **75** | 95 | 10 | 0.6 | 12.5 | 12.9 | 6 400 | – | – | 7 600 | **6815** | **ZZ** | **2RU** | **–** | **–** | 0.142 |
| | 105 | 16 | 1 | 24.4 | 22.6 | 6 100 | – | – | 7 200 | **6915** | **ZZ** | **2RU** | **–** | **–** | 0.363 |
| | 115 | 13 | 0.6 | 27.5 | 25.3 | 5 700 | – | – | 6 700 | **16015** | **–** | **–** | **–** | **–** | 0.457 |
| | 115 | 20 | 1.1 | 39.6 | 33.5 | 5 700 | – | 3 300 | 6 800 | **6015** | **ZZ** | **2RU** | **–** | **2RS** | 0.638 |
| | 130 | 25 | 1.5 | 67.4 | 48.3 | 4 800 | – | 3 100 | 5 800 | **6215** | **ZZ** | **2RU** | **–** | **2RS** | 1.18 |
| | 160 | 37 | 2.1 | 113 | 77.2 | 4 200 | – | 2 800 | 5 000 | **6315** | **ZZ** | **2RU** | **–** | **2RS** | 3.02 |
| | 190 | 45 | 3 | 154 | 115 | 3 600 | – | – | 4 400 | **6415** | **–** | **–** | **–** | **–** | 5.87 |
| **80** | 100 | 10 | 0.6 | 12.7 | 13.3 | 6 100 | – | – | 7 200 | **6816** | **ZZ** | **2RU** | **–** | **–** | 0.150 |
| | 110 | 16 | 1 | 25.0 | 24.0 | 5 700 | – | – | 6 800 | **6916** | **ZZ** | **2RU** | **–** | **–** | 0.382 |
| | 125 | 14 | 0.6 | 31.7 | 29.7 | 5 200 | – | – | 6 100 | **16016** | **–** | **–** | **–** | **–** | 0.597 |
| | 125 | 22 | 1.1 | 47.6 | 39.8 | 5 300 | – | 3 100 | 6 300 | **6016** | **ZZ** | **–** | **–** | **2RS** | 0.850 |
| | 140 | 26 | 2 | 72.7 | 53.0 | 4 500 | – | 2 900 | 5 400 | **6216** | **ZZ** | **–** | **–** | **2RS** | 1.40 |
| | 170 | 39 | 2.1 | 123 | 86.7 | 3 900 | – | 2 700 | 4 700 | **6316** | **ZZ** | **–** | **–** | **2RS** | 3.59 |
| | 200 | 48 | 3 | 164 | 125 | 3 400 | – | – | 4 100 | **6416** | **–** | **–** | **–** | **–** | 6.84 |
| **85** | 110 | 13 | 1 | 18.7 | 19.0 | 5 600 | – | – | 6 600 | **6817** | **ZZ** | **2RU** | **–** | **–** | 0.266 |
| | 120 | 18 | 1.1 | 31.9 | 29.6 | 5 300 | – | – | 6 300 | **6917** | **ZZ** | **2RU** | **–** | **–** | 0.535 |
| | 130 | 14 | 0.6 | 32.6 | 31.7 | 4 900 | – | – | 5 800 | **16017** | **–** | **–** | **–** | **–** | 0.626 |
| | 130 | 22 | 1.1 | 49.5 | 43.1 | 5 000 | – | 2 900 | 5 900 | **6017** | **ZZ** | **–** | **–** | **2RS** | 0.890 |
| | 150 | 28 | 2 | 84.0 | 61.9 | 4 200 | – | 2 700 | 5 000 | **6217** | **ZZ** | **–** | **–** | **2RS** | 1.79 |
| | 180 | 41 | 3 | 133 | 96.8 | 3 700 | – | 2 500 | 4 400 | **6317** | **ZZX** | **–** | **–** | **2RS** | 4.23 |
| | 210 | 52 | 4 | 173 | 136 | 3 300 | – | – | 3 900 | **6417** | **–** | **–** | **–** | **–** | 8.07 |
| **90** | 115 | 13 | 1 | 19.0 | 19.7 | 5 300 | – | – | 6 300 | **6818** | **ZZ** | **2RU** | **–** | **–** | 0.279 |
| | 125 | 18 | 1.1 | 32.8 | 31.6 | 5 100 | – | – | 6 000 | **6918** | **ZZ** | **2RU** | **–** | **–** | 0.565 |
| | 140 | 16 | 1 | 39.9 | 37.0 | 4 700 | – | – | 5 600 | **16018** | **–** | **–** | **–** | **–** | 0.848 |
| | 140 | 24 | 1.5 | 58.2 | 49.7 | 4 700 | – | 2 700 | 5 600 | **6018** | **ZZ** | **–** | **–** | **2RS** | 1.16 |
| | 160 | 30 | 2 | 96.1 | 71.5 | 3 900 | – | 2 600 | 4 700 | **6218** | **ZZ** | **–** | **–** | **2RS** | 2.15 |
| | 190 | 43 | 3 | 143 | 107 | 3 500 | – | 2 400 | 4 200 | **6318** | **ZZX** | **–** | **–** | **2RS** | 4.91 |
| | 225 | 54 | 4 | 184 | 149 | 3 100 | – | – | 3 700 | **6418** | **–** | **–** | **–** | **–** | 9.78 |
| **95** | 130 | 18 | 1.1 | 33.7 | 33.5 | 4 800 | – | – | 5 700 | **6919** | **ZZ** | **2RU** | **–** | **–** | 0.705 |
| | 145 | 16 | 1 | 41.2 | 39.6 | 4 500 | – | – | 5 300 | **16019** | **–** | **–** | **–** | **–** | 0.885 |
| | 145 | 24 | 1.5 | 60.4 | 53.9 | 4 400 | – | 2 500 | 5 200 | **6019** | **ZZX** | **2RU** | **–** | **2RS** | 1.21 |
| | 170 | 32 | 2.1 | 109 | 81.9 | 3 700 | – | 2 400 | 4 400 | **6219** | **ZZX** | **–** | **–** | **2RS** | 2.62 |
| | 200 | 45 | 3 | 153 | 119 | 3 300 | – | 2 200 | 4 000 | **6319** | **ZZX** | **–** | **–** | **2RS** | 5.67 |
| **100** | 125 | 13 | 1 | 19.6 | 21.2 | 4 800 | – | – | 5 700 | **6820** | **ZZ** | **2RU** | **–** | **–** | 0.309 |
| | 140 | 20 | 1.1 | 45.0 | 41.9 | 4 500 | – | – | 5 300 | **6920** | **ZZ** | **2RU** | **–** | **–** | 0.960 |
| | 150 | 16 | 1 | 42.4 | 42.1 | 4 300 | – | – | 5 100 | **16020** | **–** | **–** | **–** | **–** | 0.910 |
| | 150 | 24 | 1.5 | 60.2 | 54.2 | 4 300 | – | 2 500 | 5 100 | **6020** | **ZZ** | **–** | **–** | **2RS** | 1.25 |
| | 180 | 34 | 2.1 | 122 | 93.1 | 3 500 | – | 2 300 | 4 200 | **6220** | **ZZX** | **–** | **–** | **2RS** | 3.14 |
| | 215 | 47 | 3 | 173 | 141 | 3 000 | – | 2 100 | 3 600 | **6320** | **ZZX** | **–** | **–** | **2RS** | 7.00 |
| **105** | 145 | 20 | 1.1 | 46.5 | 44.8 | 4 300 | – | – | 5 100 | **6921** | **ZZ** | **–** | **–** | **–** | 1.00 |
| | 160 | 18 | 1 | 41.9 | 42.2 | 4 100 | – | – | 4 800 | **16021** | **–** | **–** | **–** | **–** | 1.20 |
| | 160 | 26 | 2 | 72.3 | 65.8 | 4 000 | – | 2 300 | 4 700 | **6021** | **ZZX** | **–** | **–** | **2RS** | 1.59 |
| | 190 | 36 | 2.1 | 133 | 105 | 3 300 | – | 2 200 | 3 900 | **6221** | **ZZX** | **–** | **–** | **2RS** | 3.70 |
| | 225 | 49 | 3 | 184 | 153 | 2 900 | – | 2 000 | 3 500 | **6321** | **ZZX** | **–** | **–** | **2RS** | 8.05 |

Remark) Standard cage types used for the above bearings are described earlier in this section.

# Single-row deep groove ball bearings

## *d* 110 – (160) mm




| Boundary dimensions (mm) | | | | Basic load ratings (kN) | | Limiting speeds (min⁻¹) Grease lub. | | | Oil lub. | Bearing No. | | | | | (Refer.) Mass |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *d* | *D* | *B* | *r* min. | $C_r$ | $C_{0r}$ | Open, Z, ZZ, RU, 2RU | (RD, 2RD) | (RS, 2RS) | Open, Z | Open | Shielded ZZ | Sealed 2RU | 2RD | 2RS | Open type (kg) |
| **110** | 140 | 16 | 1 | 28.1 | 30.7 | 4 300 | – | – | 5 100 | **6822** | **ZZ** | **–** | **–** | **–** | 0.606 |
| | 150 | 20 | 1.1 | 47.9 | 47.8 | 4 100 | – | – | 4 900 | **6922** | **ZZ** | **–** | **–** | **–** | 1.04 |
| | 170 | 19 | 1 | 57.5 | 56.7 | 3 800 | – | – | 4 500 | **16022** | **–** | **–** | **–** | **–** | 1.46 |
| | 170 | 28 | 2 | 82.0 | 73.0 | 3 800 | – | 2 200 | 4 500 | **6022** | **ZZX** | **–** | **–** | **2RS** | 1.96 |
| | 200 | 38 | 2.1 | 144 | 117 | 3 100 | – | 2 000 | 3 700 | **6222** | **ZZX** | **–** | **–** | **2RS** | 4.36 |
| | 240 | 50 | 3 | 205 | 180 | 2 700 | – | 1 900 | 3 200 | **6322** | **ZZX** | **–** | **–** | **2RS** | 9.54 |
| **120** | 150 | 16 | 1 | 29.0 | 33.0 | 4 000 | – | – | 4 700 | **6824** | **ZZ** | **–** | **–** | **–** | 0.655 |
| | 165 | 22 | 1.1 | 57.2 | 56.9 | 3 800 | – | – | 4 400 | **6924** | **ZZ** | **–** | **–** | **–** | 1.41 |
| | 180 | 19 | 1 | 63.2 | 63.3 | 3 600 | – | – | 4 200 | **16024** | **–** | **–** | **–** | **–** | 1.80 |
| | 180 | 28 | 2 | 85.0 | 79.3 | 3 600 | – | 2 100 | 4 200 | **6024** | **ZZX** | **–** | **–** | **2RS** | 2.07 |
| | 215 | 40 | 2.1 | 155 | 131 | 2 900 | – | 1 900 | 3 400 | **6224** | **ZZX** | **–** | **–** | **2RS** | 5.15 |
| | 260 | 55 | 3 | 207 | 185 | 2 500 | – | – | 3 000 | **6324** | **ZZX** | **–** | **–** | **–** | 12.5 |
| **130** | 165 | 18 | 1.1 | 36.9 | 41.2 | 3 600 | – | – | 4 300 | **6826** | **–** | **–** | **–** | **–** | 0.939 |
| | 180 | 24 | 1.5 | 69.6 | 70.0 | 3 400 | – | – | 4 100 | **6926** | **–** | **–** | **–** | **–** | 1.86 |
| | 200 | 22 | 1.1 | 71.3 | 74.8 | 3 000 | – | – | 3 600 | **16026** | **–** | **–** | **–** | **–** | 2.69 |
| | 200 | 33 | 2 | 106 | 101 | 3 200 | – | 1 900 | 3 800 | **6026** | **ZZX** | **–** | **–** | **2RS** | 3.16 |
| | 230 | 40 | 3 | 167 | 146 | 2 700 | – | 1 800 | 3 200 | **6226** | **ZZX** | **–** | **–** | **2RS** | 5.82 |
| | 280 | 58 | 4 | 229 | 214 | 2 300 | – | – | 2 700 | **6326** | **ZZX** | **–** | **–** | **–** | 15.1 |
| **140** | 175 | 18 | 1.1 | 38.2 | 44.4 | 3 400 | – | – | 4 000 | **6828** | **–** | **–** | **–** | **–** | 1.00 |
| | 190 | 24 | 1.5 | 71.3 | 74.8 | 3 200 | – | – | 3 800 | **6928** | **–** | **–** | **–** | **–** | 1.98 |
| | 210 | 22 | 1.1 | 65.8 | 71.1 | 2 900 | – | – | 3 400 | **16028** | **–** | **–** | **–** | **–** | 2.86 |
| | 210 | 33 | 2 | 110 | 109 | 3 000 | – | 1 800 | 3 600 | **6028** | **ZZX** | **–** | **–** | **2RS** | 3.55 |
| | 250 | 42 | 3 | 166 | 150 | 2 400 | – | 1 600 | 2 900 | **6228** | **ZZX** | **–** | **–** | **2RS** | 7.45 |
| | 300 | 62 | 4 | 253 | 246 | 2 100 | – | – | 2 500 | **6328** | **ZZX** | **–** | **–** | **–** | 19.4 |
| **150** | 190 | 20 | 1.1 | 47.8 | 54.9 | 3 100 | – | – | 3 700 | **6830** | **–** | **–** | **–** | **–** | 1.40 |
| | 210 | 28 | 2 | 93.4 | 94.3 | 2 900 | – | – | 3 400 | **6930** | **–** | **–** | **–** | **–** | 3.05 |
| | 225 | 24 | 1.1 | 91.2 | 99.3 | 2 700 | – | – | 3 100 | **16030** | **–** | **–** | **–** | **–** | 3.58 |
| | 225 | 35 | 2.1 | 125 | 126 | 2 800 | – | 1 600 | 3 300 | **6030** | **ZZX** | **–** | **–** | **2RS** | 4.22 |
| | 270 | 45 | 3 | 176 | 168 | 2 200 | – | – | 2 700 | **6230** | **ZZX** | **–** | **–** | **–** | 9.41 |
| | 320 | 65 | 4 | 275 | 284 | 1 900 | – | – | 2 300 | **6330** | **–** | **–** | **–** | **–** | 26.2 |
| **160** | 200 | 20 | 1.1 | 48.4 | 56.9 | 2 900 | – | – | 3 400 | **6832** | **–** | **–** | **–** | **–** | 1.45 |
| | 220 | 28 | 2 | 96.1 | 101 | 2 700 | – | – | 3 200 | **6932** | **–** | **–** | **–** | **–** | 3.20 |
| | 240 | 25 | 1.5 | 98.8 | 108 | 2 600 | – | – | 3 100 | **16032** | **–** | **–** | **–** | **–** | 4.25 |

Remark) Standard cage types used for the above bearings are described earlier in this section.

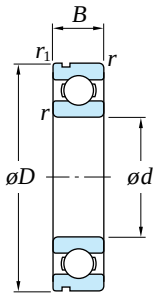
## *d* (160) – 200 mm

| Boundary dimensions (mm) | | | | Basic load ratings (kN) | | Limiting speeds (min⁻¹) Grease lub. | | | Oil lub. | Bearing No. | | | | | (Refer.) Mass |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *d* | *D* | *B* | *r* min. | $C_r$ | $C_{0r}$ | Open Z, ZZ RU, 2RU | (RD, 2RD) | (RS, 2RS) | Open Z | Open | Shielded ZZ | Sealed 2RU | 2RD | 2RS | Open type (kg) |
| **160** | 240 | 38 | 2.1 | 136 | 135 | 2 600 | – | 1 500 | 3 000 | **6032** | **ZZX** | **–** | **–** | **2RS** | 5.22 |
| | 290 | 48 | 3 | 185 | 186 | 2 100 | – | – | 2 500 | **6232** | **ZZX** | **–** | **–** | **–** | 14.3 |
| | 340 | 68 | 4 | 278 | 286 | 1 800 | – | – | 2 200 | **6332** | **–** | **–** | **–** | **–** | 29.0 |
| **170** | 215 | 22 | 1.1 | 59.8 | 70.5 | 2 700 | – | – | 3 200 | **6834** | **–** | **–** | **–** | **–** | 1.90 |
| | 230 | 28 | 2 | 98.8 | 108 | 2 600 | – | – | 3 100 | **6934** | **–** | **–** | **–** | **–** | 3.35 |
| | 260 | 28 | 1.5 | 114 | 127 | 2 300 | – | – | 2 700 | **16034** | **–** | **–** | **–** | **–** | 5.75 |
| | 260 | 42 | 2.1 | 161 | 161 | 2 400 | – | – | 2 800 | **6034** | **ZZX** | **–** | **–** | **–** | 6.80 |
| | 310 | 52 | 4 | 212 | 223 | 1 900 | – | – | 2 300 | **6234** | **ZZX** | **–** | **–** | **–** | 17.5 |
| | 360 | 72 | 4 | 326 | 355 | 1 700 | – | – | 2 000 | **6334** | **–** | **–** | **–** | **–** | 38.6 |
| **180** | 225 | 22 | 1.1 | 60.7 | 73.1 | 2 600 | – | – | 3 000 | **6836** | **–** | **–** | **–** | **–** | 2.00 |
| | 250 | 33 | 2 | 123 | 129 | 2 400 | – | – | 2 800 | **6936** | **–** | **–** | **–** | **–** | 4.90 |
| | 280 | 31 | 2 | 135 | 148 | 2 100 | – | – | 2 500 | **16036** | **–** | **–** | **–** | **–** | 7.55 |
| | 280 | 46 | 2.1 | 182 | 194 | 2 200 | – | – | 2 600 | **6036** | **ZZX** | **–** | **–** | **–** | 10.3 |
| | 320 | 52 | 4 | 227 | 241 | 1 800 | – | – | 2 200 | **6236** | **ZZX** | **–** | **–** | **–** | 18.3 |
| | 380 | 75 | 4 | 354 | 407 | 1 600 | – | – | 1 900 | **6336** | **–** | **–** | **–** | **–** | 44.7 |
| **190** | 240 | 24 | 1.5 | 73.1 | 88.1 | 2 400 | – | – | 2 800 | **6838** | **–** | **–** | **–** | **–** | 2.60 |
| | 260 | 33 | 2 | 126 | 138 | 2 300 | – | – | 2 700 | **6938** | **–** | **–** | **–** | **–** | 5.20 |
| | 290 | 31 | 2 | 139 | 158 | 2 000 | – | – | 2 400 | **16038** | **–** | **–** | **–** | **–** | 7.85 |
| | 290 | 46 | 2.1 | 188 | 201 | 2 100 | – | – | 2 500 | **6038** | **ZZX** | **–** | **–** | **–** | 10.8 |
| | 340 | 55 | 4 | 255 | 281 | 1 700 | – | – | 2 000 | **6238** | **–** | **–** | **–** | **–** | 23.0 |
| | 400 | 78 | 5 | 355 | 415 | 1 500 | – | – | 1 800 | **6338** | **–** | **–** | **–** | **–** | 51.5 |
| **200** | 250 | 24 | 1.5 | 78.0 | 93.6 | 2 300 | – | – | 2 700 | **6840** | **–** | **–** | **–** | **–** | 2.70 |
| | 280 | 38 | 2.1 | 157 | 168 | 2 100 | – | – | 2 500 | **6940** | **–** | **–** | **–** | **–** | 7.30 |
| | 310 | 34 | 2 | 161 | 180 | 1 900 | – | – | 2 300 | **16040** | **–** | **–** | **–** | **–** | 10.1 |
| | 310 | 51 | 2.1 | 217 | 243 | 1 900 | – | – | 2 300 | **6040** | **ZZX** | **–** | **–** | **–** | 14.0 |
| | 360 | 58 | 4 | 269 | 311 | 1 600 | – | – | 1 900 | **6240** | **ZZX** | **–** | **–** | **–** | 28.2 |
| | 420 | 80 | 5 | 411 | 506 | 1 300 | – | – | 1 600 | **6340** | **–** | **–** | **–** | **–** | 58.0 |

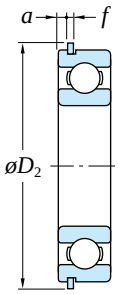
Remark) Standard cage types used for the above bearings are described earlier in this section.

# Single-row deep groove ball bearings
## snap ring groove type
## locating snap ring type

### *d* 10 – 35 mm




N
With snap ring groove




NR
With locating snap ring

With locating snap ring and one shield

| Boundary dimensions (mm) | | | | | Basic load ratings (kN) | | Limiting speeds (min⁻¹) | | Bearing No. | | Dimensions of locating snap ring (mm) | | | (Refer.) Mass |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *d* | *D* | *B* | *r* min. | $r_1$ min. | $C_r$ | $C_{0r}$ | Grease lub. | Oil lub. | With snap ring groove | With locating snap ring | $D_2$ max. | *a* max. | *f* ±0.05 | (kg) |
| **10** | 30 | 9 | 0.6 | 0.3 | 5.10 | 2.40 | 24 000 | 29 000 | **6200N** | **6200NR** | 34.7 | 2.06 | 1.07 | 0.032 |
| | 35 | 11 | 0.6 | 0.5 | 8.10 | 3.45 | 22 000 | 27 000 | **6300N** | **6300NR** | 39.7 | 2.06 | 1.07 | 0.053 |
| **12** | 32 | 10 | 0.6 | 0.3 | 6.80 | 3.05 | 22 000 | 27 000 | **6201N** | **6201NR** | 36.7 | 2.06 | 1.07 | 0.037 |
| | 37 | 12 | 1 | 0.5 | 9.70 | 4.20 | 20 000 | 25 000 | **6301N** | **6301NR** | 41.3 | 2.06 | 1.07 | 0.060 |
| **15** | 35 | 11 | 0.6 | 0.5 | 7.65 | 3.75 | 20 000 | 24 000 | **6202N** | **6202NR** | 39.7 | 2.06 | 1.07 | 0.045 |
| | 42 | 13 | 1 | 0.5 | 11.4 | 5.45 | 17 000 | 20 000 | **6302N** | **6302NR** | 46.3 | 2.06 | 1.07 | 0.082 |
| **17** | 40 | 12 | 0.6 | 0.5 | 9.55 | 4.80 | 17 000 | 21 000 | **6203N** | **6203NR** | 44.6 | 2.06 | 1.07 | 0.065 |
| | 47 | 14 | 1 | 0.5 | 13.6 | 6.65 | 15 000 | 18 000 | **6303N** | **6303NR** | 52.7 | 2.46 | 1.07 | 0.115 |
| **20** | 42 | 12 | 0.6 | 0.5 | 9.40 | 5.05 | 17 000 | 21 000 | **6004N** | **6004NR** | 46.3 | 2.06 | 1.07 | 0.069 |
| | 47 | 14 | 1 | 0.5 | 12.8 | 6.65 | 15 000 | 17 000 | **6204N** | **6204NR** | 52.7 | 2.46 | 1.07 | 0.106 |
| | 52 | 15 | 1.1 | 0.5 | 15.9 | 7.85 | 14 000 | 17 000 | **6304N** | **6304NR** | 57.9 | 2.46 | 1.07 | 0.144 |
| **22** | 44 | 12 | 0.6 | 0.5 | 9.40 | 5.15 | 17 000 | 20 000 | **60/22N** | **60/22NR** | 48.3 | 2.06 | 1.07 | 0.073 |
| | 50 | 14 | 1 | 0.5 | 12.8 | 6.65 | 15 000 | 17 000 | **62/22N** | **62/22NR** | 55.7 | 2.46 | 1.07 | 0.118 |
| | 56 | 16 | 1.1 | 0.5 | 18.5 | 9.40 | 13 000 | 15 000 | **63/22N** | **63/22NR** | 61.7 | 2.46 | 1.07 | 0.201 |
| **25** | 47 | 12 | 0.6 | 0.5 | 10.1 | 5.85 | 15 000 | 18 000 | **6005N** | **6005NR** | 52.7 | 2.06 | 1.07 | 0.080 |
| | 52 | 15 | 1 | 0.5 | 14.0 | 7.85 | 13 000 | 15 000 | **6205N** | **6205NR** | 57.9 | 2.46 | 1.07 | 0.128 |
| | 62 | 17 | 1.1 | 0.5 | 20.6 | 11.3 | 11 000 | 13 000 | **6305N** | **6305NR** | 67.7 | 3.28 | 1.65 | 0.232 |
| **28** | 52 | 12 | 0.6 | 0.5 | 12.4 | 7.40 | 14 000 | 16 000 | **60/28N** | **60/28NR** | 57.9 | 2.06 | 1.07 | 0.097 |
| | 58 | 16 | 1 | 0.5 | 17.9 | 9.75 | 12 000 | 14 000 | **62/28N** | **62/28NR** | 63.7 | 2.46 | 1.07 | 0.173 |
| | 68 | 18 | 1.1 | 0.5 | 23.5 | 13.1 | 10 000 | 12 000 | **63/28N** | **63/28NR** | 74.6 | 3.28 | 1.65 | 0.328 |
| **30** | 55 | 13 | 1 | 0.5 | 13.2 | 8.25 | 13 000 | 15 000 | **6006N** | **6006NR** | 60.7 | 2.08 | 1.07 | 0.116 |
| | 62 | 16 | 1 | 0.5 | 19.5 | 11.3 | 11 000 | 13 000 | **6206N** | **6206NR** | 67.7 | 3.28 | 1.65 | 0.199 |
| | 72 | 19 | 1.1 | 0.5 | 26.7 | 15.0 | 9 600 | 12 000 | **6306N** | **6306NR** | 78.6 | 3.28 | 1.65 | 0.346 |
| **32** | 58 | 13 | 1 | 0.5 | 15.0 | 9.15 | 12 000 | 14 000 | **60/32N** | **60/32NR** | 63.7 | 2.08 | 1.07 | 0.127 |
| | 65 | 17 | 1 | 0.5 | 23.5 | 13.1 | 10 000 | 12 000 | **62/32N** | **62/32NR** | 70.7 | 3.28 | 1.65 | 0.228 |
| | 75 | 20 | 1.1 | 0.5 | 30.1 | 16.2 | 9 300 | 11 000 | **63/32N** | **63/32NR** | 81.6 | 3.28 | 1.65 | 0.437 |
| **35** | 62 | 14 | 1 | 0.5 | 15.9 | 10.3 | 11 000 | 13 000 | **6007N** | **6007NR** | 67.7 | 2.08 | 1.65 | 0.155 |
| | 72 | 17 | 1.1 | 0.5 | 25.7 | 15.4 | 9 200 | 11 000 | **6207N** | **6207NR** | 78.6 | 3.28 | 1.65 | 0.288 |
| | 80 | 21 | 1.5 | 0.5 | 33.4 | 19.3 | 8 500 | 10 000 | **6307N** | **6307NR** | 86.6 | 3.28 | 1.65 | 0.457 |

Remark) Standard cage types used for the above bearings are described earlier in this section.

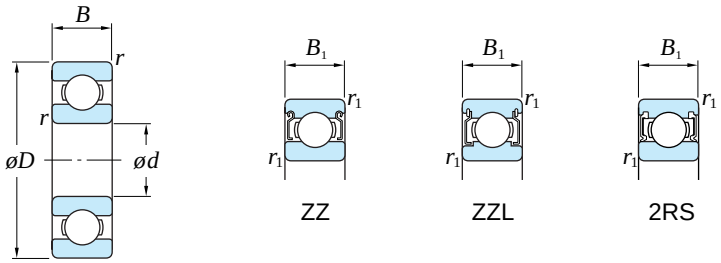
## *d* 40 – 130 mm

| Boundary dimensions (mm) | | | | | Basic load ratings (kN) | | Limiting speeds (min⁻¹) | | Bearing No. | | Dimensions of locating snap ring (mm) | | | (Refer.) Mass |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *d* | *D* | *B* | *r* min. | $r_1$ min. | $C_r$ | $C_{0r}$ | Grease lub. | Oil lub. | With snap ring groove | With locating snap ring | $D_2$ max. | *a* max. | *f* ±0.05 | (kg) |
| **40** | 68 | 15 | 1 | 0.5 | 16.7 | 11.5 | 10 000 | 12 000 | **6008N** | **6008NR** | 74.6 | 2.49 | 1.65 | 0.192 |
| | 80 | 18 | 1.1 | 0.5 | 29.1 | 17.8 | 8 300 | 10 000 | **6208N** | **6208NR** | 86.6 | 3.28 | 1.65 | 0.366 |
| | 90 | 23 | 1.5 | 0.5 | 40.7 | 24.0 | 7 700 | 9 200 | **6308N** | **6308NR** | 96.5 | 3.28 | 2.41 | 0.633 |
| **45** | 75 | 16 | 1 | 0.5 | 21.0 | 15.1 | 9 200 | 11 000 | **6009N** | **6009NR** | 81.6 | 2.49 | 1.65 | 0.245 |
| | 85 | 19 | 1.1 | 0.5 | 32.7 | 20.3 | 7 700 | 9 200 | **6209N** | **6209NR** | 91.6 | 3.28 | 1.65 | 0.407 |
| | 100 | 25 | 1.5 | 0.5 | 48.9 | 29.5 | 6 800 | 8 100 | **6309N** | **6309NR** | 106.5 | 3.28 | 2.41 | 0.833 |
| **50** | 80 | 16 | 1 | 0.5 | 21.8 | 16.6 | 8 400 | 9 900 | **6010N** | **6010NR** | 86.6 | 2.49 | 1.65 | 0.261 |
| | 90 | 20 | 1.1 | 0.5 | 35.1 | 23.3 | 7 100 | 8 500 | **6210N** | **6210NR** | 96.5 | 3.28 | 2.41 | 0.463 |
| | 110 | 27 | 2 | 0.5 | 62.0 | 38.3 | 6 100 | 7 300 | **6310N** | **6310NR** | 116.6 | 3.28 | 2.41 | 1.07 |
| **55** | 90 | 18 | 1.1 | 0.5 | 28.3 | 21.2 | 7 600 | 8 900 | **6011N** | **6011NR** | 96.5 | 2.87 | 2.41 | 0.385 |
| | 100 | 21 | 1.5 | 0.5 | 43.4 | 29.4 | 6 300 | 7 600 | **6211N** | **6211NR** | 106.5 | 3.28 | 2.41 | 0.607 |
| | 120 | 29 | 2 | 0.5 | 71.6 | 45.0 | 5 600 | 6 700 | **6311N** | **6311NR** | 129.7 | 4.06 | 2.77 | 1.37 |
| **60** | 95 | 18 | 1.1 | 0.5 | 29.4 | 23.2 | 7 100 | 8 400 | **6012N** | **6012NR** | 101.6 | 2.87 | 2.41 | 0.415 |
| | 110 | 22 | 1.5 | 0.5 | 52.4 | 36.2 | 5 700 | 6 900 | **6212N** | **6212NR** | 116.6 | 3.28 | 2.41 | 0.783 |
| | 130 | 31 | 2.1 | 0.5 | 81.9 | 52.2 | 5 200 | 6 200 | **6312N** | **6312NR** | 139.7 | 4.06 | 2.77 | 1.70 |
| **65** | 100 | 18 | 1.1 | 0.5 | 30.5 | 25.2 | 6 600 | 7 800 | **6013N** | **6013NR** | 106.5 | 2.87 | 2.41 | 0.435 |
| | 120 | 23 | 1.5 | 0.5 | 57.2 | 40.1 | 5 400 | 6 400 | **6213N** | **6213NR** | 129.7 | 4.06 | 2.77 | 0.990 |
| | 140 | 33 | 2.1 | 0.5 | 92.7 | 59.9 | 4 800 | 5 800 | **6313N** | **6313NR** | 149.7 | 4.9 | 2.77 | 2.08 |
| **70** | 110 | 20 | 1.1 | 0.5 | 38.1 | 30.9 | 6 100 | 7 200 | **6014N** | **6014NR** | 116.6 | 2.87 | 2.41 | 0.602 |
| | 125 | 24 | 1.5 | 0.5 | 62.2 | 44.1 | 5 100 | 6 100 | **6214N** | **6214NR** | 134.7 | 4.06 | 2.77 | 1.07 |
| | 150 | 35 | 2.1 | 0.5 | 104 | 68.2 | 4 500 | 5 400 | **6314N** | **6314NR** | 159.7 | 4.9 | 2.77 | 2.52 |
| **75** | 115 | 20 | 1.1 | 0.5 | 39.6 | 33.5 | 5 700 | 6 800 | **6015N** | **6015NR** | 121.6 | 2.87 | 2.41 | 0.638 |
| | 130 | 25 | 1.5 | 0.5 | 67.4 | 48.3 | 4 800 | 5 800 | **6215N** | **6215NR** | 139.7 | 4.06 | 2.77 | 1.18 |
| | 160 | 37 | 2.1 | 0.5 | 113 | 77.2 | 4 200 | 5 000 | **6315N** | **6315NR** | 169.7 | 4.9 | 2.77 | 3.02 |
| **80** | 125 | 22 | 1.1 | 0.5 | 47.6 | 39.8 | 5 300 | 6 300 | **6016N** | **6016NR** | 134.7 | 2.87 | 2.77 | 0.850 |
| | 140 | 26 | 2 | 0.5 | 72.7 | 53.0 | 4 500 | 5 400 | **6216N** | **6216NR** | 149.7 | 4.9 | 2.77 | 1.40 |
| | 170 | 39 | 2.1 | 0.5 | 123 | 86.7 | 3 900 | 4 700 | **6316N** | **6316NR** | 182.9 | 5.69 | 3.05 | 3.59 |
| **85** | 130 | 22 | 1.1 | 0.5 | 49.5 | 43.1 | 5 000 | 5 900 | **6017N** | **6017NR** | 139.7 | 2.87 | 2.77 | 0.890 |
| | 150 | 28 | 2 | 0.5 | 84.0 | 61.9 | 4 200 | 5 000 | **6217N** | **6217NR** | 159.7 | 4.9 | 2.77 | 1.79 |
| | 180 | 41 | 3 | 0.5 | 133 | 96.8 | 3 700 | 4 400 | **6317N** | **6317NR** | 192.9 | 5.69 | 3.05 | 4.23 |
| **90** | 140 | 24 | 1.5 | 0.5 | 58.2 | 49.7 | 4 700 | 5 600 | **6018N** | **6018NR** | 149.7 | 3.71 | 2.77 | 1.16 |
| | 160 | 30 | 2 | 0.5 | 96.1 | 71.5 | 3 900 | 4 700 | **6218N** | **6218NR** | 169.7 | 4.9 | 2.77 | 2.15 |
| | 190 | 43 | 3 | 0.5 | 143 | 107 | 3 500 | 4 200 | **6318N** | **6318NR** | 202.9 | 5.69 | 3.05 | 4.91 |
| **95** | 145 | 24 | 1.5 | 0.5 | 60.4 | 53.9 | 4 400 | 5 200 | **6019N** | **6019NR** | 154.7 | 3.71 | 2.77 | 1.21 |
| | 170 | 32 | 2.1 | 0.5 | 109 | 81.9 | 3 700 | 4 400 | **6219N** | **6219NR** | 182.9 | 5.69 | 3.05 | 2.62 |
| | 200 | 45 | 3 | 0.5 | 153 | 119 | 3 300 | 4 000 | **6319N** | **6319NR** | 212.9 | 5.69 | 3.05 | 5.67 |
| **100** | 150 | 24 | 1.5 | 0.5 | 60.2 | 54.2 | 4 300 | 5 100 | **6020N** | **6020NR** | 159.7 | 3.71 | 2.77 | 1.25 |
| | 180 | 34 | 2.1 | 0.5 | 122 | 93.1 | 3 500 | 4 200 | **6220N** | **6220NR** | 192.9 | 5.69 | 3.05 | 3.14 |
| **105** | 160 | 26 | 2 | 0.5 | 72.3 | 65.8 | 4 000 | 4 700 | **6021N** | **6021NR** | 169.7 | 3.71 | 2.77 | 1.59 |
| | 190 | 36 | 2.1 | 0.5 | 133 | 105 | 3 300 | 3 900 | **6221N** | **6221NR** | 202.9 | 5.69 | 3.05 | 3.70 |
| **110** | 170 | 28 | 2 | 0.5 | 82.0 | 73.0 | 3 800 | 4 500 | **6022N** | **6022NR** | 182.9 | 3.71 | 3.05 | 1.96 |
| | 200 | 38 | 2.1 | 0.5 | 144 | 117 | 3 100 | 3 700 | **6222N** | **6222NR** | 212.9 | 5.69 | 3.05 | 4.36 |
| **120** | 180 | 28 | 2 | 0.5 | 85.0 | 79.3 | 3 600 | 4 200 | **6024N** | **6024NR** | 192.9 | 3.71 | 3.05 | 2.07 |
| **130** | 200 | 33 | 2 | 0.5 | 106 | 101 | 3 200 | 3 800 | **6026N** | **6026NR** | 212.9 | 5.69 | 3.05 | 3.16 |

Remark) Standard cage types used for the above bearings are described earlier in this section.

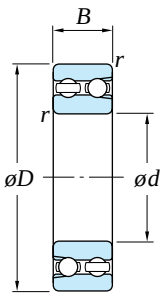
# Extra-small ball bearings, miniature ball bearings

## *d* 3 – 9 mm




Open | Shielded | Contact sealed

| Boundary dimensions (mm) | | | | | | Basic load ratings (kN) | | Limiting speeds (min⁻¹) Grease lub. | | Oil lub. | Bearing No. | | | (Refer.) Mass |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *d* | *D* | *B* | $B_1$ | *r* min. | $r_1$ min. | $C_r$ | $C_{0r}$ | Open ZZ, ZZL | (2RS) | Open Z, ZL | Open | Shielded ZZ, ZZL | Sealed 2RS | (g) |
| **3** | 8 | 3 | 4 | 0.15 | 0.15 | 0.55 | 0.17 | 64 000 | – | 76 000 | **693** | **W693 ZZ** | – | 0.6 |
| | 10 | 4 | 4 | 0.15 | 0.15 | 0.64 | 0.23 | 52 000 | 44 000 | 63 000 | **623** | **623 ZZ** | **623 2RS** | 1.6 |
| **4** | 11 | 4 | 4 | 0.15 | 0.15 | 0.96 | 0.35 | 54 000 | 44 000 | 65 000 | **694** | **694 ZZ** | **694 2RS** | 1.8 |
| | 12 | 4 | 4 | 0.2 | 0.2 | 0.97 | 0.36 | 53 000 | – | 63 000 | **604** | **604 ZZ** | – | 2.1 |
| | 13 | 5 | 5 | 0.2 | 0.2 | 1.30 | 0.49 | 44 000 | 39 000 | 54 000 | **624** | **624 ZZ** | **624 2RS** | 2.9 |
| | 16 | 5 | 5 | 0.3 | 0.3 | 1.75 | 0.67 | 40 000 | – | 49 000 | **634** | **634 ZZ** | – | 5.3 |
| **5** | 8 | 2 | 2.5 | 0.08 | 0.05 | 0.26 | 0.12 | 59 000 | – | 70 000 | **ML5008** | **WML5008 ZZ** | – | 0.3 |
| | 9 | 2.5 | 3 | 0.1 | 0.08 | 0.47 | 0.19 | 56 000 | – | 67 000 | **ML5009** | **WML5009 ZZ** | – | 0.5 |
| | 10 | 3 | 4 | 0.1 | 0.1 | 0.50 | 0.21 | 55 000 | – | 65 000 | **ML5010** | **WML5010 ZZ** | – | 0.9 |
| | 11 | 3 | 5 | 0.15 | 0.15 | 0.97 | 0.36 | 53 000 | – | 63 000 | **685** | **W685 ZZ** | – | 1.0 |
| | 13 | 4 | 4 | 0.2 | 0.2 | 1.10 | 0.43 | 50 000 | 42 000 | 60 000 | **695** | **695 ZZ** | **695 2RS** | 2.2 |
| | 16 | 5 | 5 | 0.3 | 0.3 | 1.75 | 0.67 | 40 000 | 33 000 | 49 000 | **625** | **625 ZZ** | **625 2RS** | 5.0 |
| | 19 | 6 | 6 | 0.3 | 0.3 | 2.60 | 1.05 | 35 000 | 27 000 | 43 000 | **635** | **635 ZZ** | **635 2RS** | 8.5 |
| **6** | 13 | 3.5 | 5 | 0.15 | 0.15 | 1.10 | 0.44 | 48 000 | 36 000 | 57 000 | **686** | **W686 ZZ** | **W686 2RS** | 1.8 |
| | 15 | 5 | 5 | 0.2 | 0.2 | 1.75 | 0.67 | 45 000 | 32 000 | 54 000 | **696** | **696 ZZ** | **696 2RS** | 3.9 |
| | 17 | 6 | 6 | 0.3 | 0.3 | 1.95 | 0.74 | 43 000 | – | 51 000 | **606** | **606 ZZ** | – | 5.8 |
| | 19 | 6 | 6 | 0.3 | 0.3 | 2.60 | 1.05 | 35 000 | 27 000 | 43 000 | **626** | **626 ZZ** | **626 2RS** | 8.1 |
| **7** | 14 | 3.5 | 5 | 0.15 | 0.15 | 1.15 | 0.51 | 45 000 | – | 54 000 | **687** | **W687 ZZ** | – | 2.0 |
| | 19 | 6 | 6 | 0.3 | 0.3 | 2.60 | 1.05 | 40 000 | 27 000 | 47 000 | **607** | **607 ZZ** | **607 2RS** | 7.6 |
| | 22 | 7 | 7 | 0.3 | 0.3 | 3.30 | 1.35 | 31 000 | 23 000 | 37 000 | **627** | **627 ZZ** | **627 2RS** | 13 |
| **8** | 16 | 4 | 5 | 0.2 | 0.2 | 1.60 | 0.71 | 42 000 | 28 000 | 50 000 | **688** | **W688 ZZ** | **W688 2RS** | 3.2 |
| | 19 | 6 | 6 | 0.3 | 0.3 | 2.25 | 0.91 | 39 000 | 27 000 | 46 000 | **698** | **698 ZZ** | **698 2RS** | 7.2 |
| | 22 | 7 | 7 | 0.3 | 0.3 | 3.30 | 1.35 | 34 000 | 23 000 | 41 000 | **608** | **608 ZZ** | **608 2RS** | 12 |
| | 24 | 8 | 8 | 0.3 | 0.3 | 3.35 | 1.40 | 28 000 | 22 000 | 35 000 | **628** | **628 ZZ** | **628 2RS** | 18 |
| | 28 | 9 | 9 | 0.3 | 0.3 | 4.55 | 1.95 | 26 000 | – | 32 000 | **638** | **638 ZZ** | – | 29 |
| **9** | 17 | 4 | 5 | 0.2 | 0.2 | 1.35 | 0.66 | 39 000 | – | 46 000 | **689** | **W689 ZZ** | – | 3.5 |
| | 20 | 6 | 6 | 0.3 | 0.3 | 2.45 | 1.05 | 35 000 | 25 000 | 42 000 | **699** | **699 ZZ** | **699 2RS** | 7.5 |
| | 24 | 7 | 7 | 0.3 | 0.3 | 3.35 | 1.40 | 33 000 | 22 000 | 40 000 | **609** | **609 ZZ** | **609 2RS** | 15 |
| | 26 | 8 | 8 | 0.6 | 0.6 | 4.55 | 1.95 | 27 000 | 19 000 | 33 000 | **629** | **629 ZZ** | **629 2RS** | 20 |




| Boundary dimensions (mm) | | | | Basic load ratings (kN) | | Limiting speeds (min⁻¹) | | Bearing No. | (Refer.) Mass |
|---|---|---|---|---|---|---|---|---|---|
| *d* | *D* | *B* | *r* min. | $C_r$ | $C_{0r}$ | Grease lub. | Oil lub. | | (kg) |
| **15** | 35 | 14 | 0.6 | 9.75 | 9.00 | 12 000 | 16 000 | **4202** | 0.071 |
| **17** | 40 | 16 | 0.6 | 11.7 | 10.4 | 11 000 | 14 000 | **4203** | 0.106 |
| **20** | 47 | 18 | 1 | 16.4 | 16.0 | 9 000 | 12 000 | **4204** | 0.165 |
| | 52 | 21 | 1.1 | 19.5 | 17.0 | 8 300 | 11 000 | **4304** | 0.227 |
| **25** | 52 | 18 | 1 | 16.3 | 16.9 | 7 500 | 9 900 | **4205** | 0.189 |
| | 62 | 24 | 1.1 | 26.3 | 25.7 | 6 700 | 9 000 | **4305** | 0.365 |
| **30** | 62 | 20 | 1 | 22.0 | 24.7 | 6 400 | 8 500 | **4206** | 0.298 |
| | 72 | 27 | 1.1 | 35.5 | 35.9 | 5 700 | 7 600 | **4306** | 0.542 |
| **35** | 72 | 23 | 1.1 | 26.4 | 30.7 | 5 600 | 7 400 | **4207** | 0.460 |
| | 80 | 31 | 1.5 | 40.6 | 41.8 | 5 200 | 7 000 | **4307** | 0.752 |
| **40** | 80 | 23 | 1.1 | 33.7 | 42.4 | 4 700 | 6 300 | **4208** | 0.558 |
| | 90 | 33 | 1.5 | 46.0 | 48.8 | 4 600 | 6 100 | **4308** | 1.01 |
| **45** | 85 | 23 | 1.1 | 31.9 | 43.9 | 4 600 | 6 100 | **4209** | 0.605 |
| | 100 | 36 | 1.5 | 57.6 | 62.4 | 4 100 | 5 500 | **4309** | 1.35 |
| **50** | 90 | 23 | 1.1 | 31.4 | 44.6 | 4 200 | 5 600 | **4210** | 0.651 |
| | 110 | 40 | 2 | 70.4 | 77.7 | 3 700 | 5 000 | **4310** | 1.80 |
| **55** | 100 | 25 | 1.5 | 37.2 | 54.1 | 3 800 | 5 000 | **4211** | 0.882 |
| | 120 | 43 | 2 | 84.2 | 94.4 | 3 400 | 4 600 | **4311** | 2.29 |
| **60** | 110 | 28 | 1.5 | 47.9 | 67.6 | 3 500 | 4 700 | **4212** | 1.20 |
| | 130 | 46 | 2.1 | 99.2 | 113 | 3 100 | 4 200 | **4312** | 2.87 |
| **65** | 120 | 31 | 1.5 | 54.7 | 78.5 | 3 200 | 4 300 | **4213** | 1.59 |
| | 140 | 48 | 2.1 | 107 | 124 | 2 900 | 3 900 | **4313** | 3.46 |
| **70** | 125 | 31 | 1.5 | 62.1 | 89.8 | 3 100 | 4 100 | **4214** | 1.68 |
| | 150 | 51 | 2.1 | 115 | 136 | 2 700 | 3 600 | **4314** | 4.21 |
| **75** | 130 | 31 | 1.5 | 61.6 | 90.7 | 2 900 | 3 900 | **4215** | 1.77 |
| | 160 | 55 | 2.1 | 132 | 158 | 2 500 | 3 400 | **4315** | 5.15 |