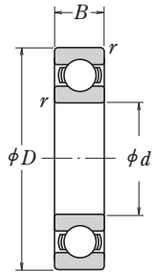
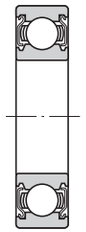
# ■SINGLE-ROW DEEP GROOVE BALL BEARINGS

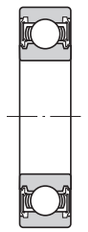
**Bore Diameter 110 – 150 mm**



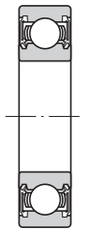

Open



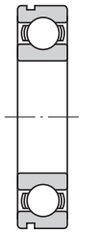
Shielded
ZZ · ZZS



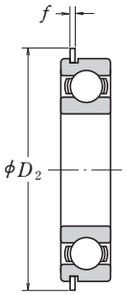
Non-Contact
Sealed
VV



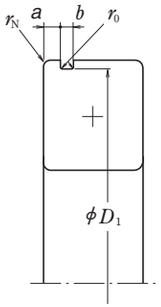
Contact
Sealed
DD · DDU

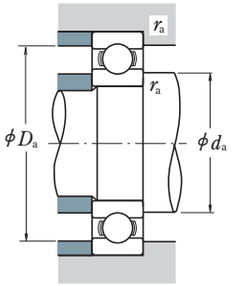


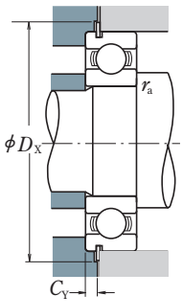
With Snap
Ring Groove
N




With
Snap Ring
NR




**Dynamic Equivalent Load**

$P = XF_r + YF_a$

| $\frac{f_0F_a}{C_{0r}}$ | $e$ | $\frac{F_a}{F_r} \leqq e$ | | $\frac{F_a}{F_r} > e$ | |
|---|---|---|---|---|---|
| | | $X$ | $Y$ | $X$ | $Y$ |
| 0.172 | 0.19 | 1 | 0 | 0.56 | 2.30 |
| 0.345 | 0.22 | 1 | 0 | 0.56 | 1.99 |
| 0.689 | 0.26 | 1 | 0 | 0.56 | 1.71 |
| 1.03 | 0.28 | 1 | 0 | 0.56 | 1.55 |
| 1.38 | 0.30 | 1 | 0 | 0.56 | 1.45 |
| 2.07 | 0.34 | 1 | 0 | 0.56 | 1.31 |
| 3.45 | 0.38 | 1 | 0 | 0.56 | 1.15 |
| 5.17 | 0.42 | 1 | 0 | 0.56 | 1.04 |
| 6.89 | 0.44 | 1 | 0 | 0.56 | 1.00 |

**Static Equivalent Load**

$\frac{F_a}{F_r} > 0.8,\ P_0 = 0.6F_r + 0.5F_a$

$\frac{F_a}{F_r} \leqq 0.8,\ P_0 = F_r$

| Boundary Dimensions (mm) | | | | Basic Load Ratings (N) | | Factor | Limiting Speeds (min⁻¹) | | | Bearing Designations | | | | With Snap Ring Groove | With Snap Ring | Snap Ring Groove Dimensions (1) (mm) | | | | | Snap Ring (1) Dimensions (mm) | | Abutment and Fillet Dimensions (mm) | | | | | | Mass (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Grease | | Oil | | | | | | | | | | | | | | | | | | | | |
| $d$ | $D$ | $B$ | $r$ min. | $C_r$ | $C_{0r}$ | $f_0$ | Open Z · ZZ V · VV | DU DDU | Open Z | Open | Shielded | Sealed | | | | $a$ max. | $b$ min. | $D_1$ max. | $r_0$ max. | $r_N$ min. | $D_2$ max. | $f$ max. | $d_a$(2) min. | $d_a$(2) max. | $D_a$(2) max. | $r_a$ max. | $D_x$ min. | $C_Y$ max. | approx. |
| **110** | 140 | 16 | 1 | 31 000 | 32 500 | 17.1 | 4 300 | 2 400 | 5 300 | **6822** | **ZZ** | **VV** | **DDU** | **N** | **NR** | 2.50 | 1.9 | 137.6 | 0.6 | 0.5 | 145.7 | 1.7 | 115 | 117 | 135 | 1 | 147 | 3.9 | 0.497 |
| | 150 | 20 | 1.1 | 48 000 | 44 500 | 16.6 | 4 300 | 2 400 | 5 000 | **6922** | **ZZ** | **VV** | **DDU** | **N** | **NR** | 3.30 | 1.9 | 147.6 | 0.6 | 0.5 | 155.7 | 1.7 | 116.5 | 121 | 143.5 | 1 | 157 | 4.7 | 0.893 |
| | 170 | 19 | 1 | 63 000 | 56 500 | 16.3 | 3 800 | — | 4 500 | **16022** | — | — | — | — | — | — | — | — | — | — | — | — | 115 | — | 165 | 1 | — | — | 1.51 |
| | 170 | 28 | 2 | 93 000 | 73 000 | 15.5 | 4 500 | 2 200 | 5 300 | **6022** | **ZZ** | **VV** | **DDU** | **N** | **NR** | 3.71 | 3.5 | 163.65 | 0.6 | 0.5 | 182.9 | 3.1 | 119 | 124.5 | 161 | 2 | 185 | 6.4 | 1.94 |
| | 200 | 38 | 2.1 | 159 000 | 117 000 | 14.3 | 2 800 | 2 200 | 3 400 | **6222** | **ZZ** | **VV** | **DDU** | **N** | **NR** | 5.69 | 3.5 | 193.65 | 0.6 | 0.5 | 212.9 | 3.1 | 121 | 134 | 189 | 2 | 215 | 8.4 | 4.45 |
| | 240 | 50 | 3 | 226 000 | 179 000 | 13.2 | 2 400 | — | 3 000 | **6322** | **ZZ** | — | — | — | — | — | — | — | — | — | — | — | 123 | 147 | 227 | 2.5 | — | — | 9.51 |
| **120** | 150 | 16 | 1 | 32 000 | 35 500 | 17.3 | 4 000 | 2 200 | 4 800 | **6824** | **ZZ** | **VV** | **DD** | **N** | **NR** | 2.50 | 1.9 | 147.6 | 0.6 | 0.5 | 155.7 | 1.7 | 125 | 127 | 145 | 1 | 157 | 3.9 | 0.537 |
| | 165 | 22 | 1.1 | 58 500 | 54 000 | 16.5 | 3 800 | — | 4 500 | **6924** | **ZZ** | — | — | **N** | **NR** | 3.70 | 1.9 | 161.8 | 0.6 | 0.5 | 171.5 | 1.7 | 126.5 | 132 | 158.5 | 1 | 173 | 5.1 | 1.21 |
| | 180 | 19 | 1 | 62 500 | 57 500 | 16.5 | 3 600 | — | 4 300 | **16024** | — | — | — | — | — | — | — | — | — | — | — | — | 125 | — | 175 | 1 | — | — | 1.6 |
| | 180 | 28 | 2 | 97 000 | 80 000 | 15.7 | 4 000 | 2 200 | 4 800 | **6024** | **ZZ** | **VV** | **DDU** | **N** | **NR** | 3.71 | 3.5 | 173.66 | 0.6 | 0.5 | 192.9 | 3.1 | 129 | 134.5 | 171 | 2 | 195 | 6.4 | 2.08 |
| | 215 | 40 | 2.1 | 171 000 | 131 000 | 14.4 | 2 600 | 2 000 | 3 200 | **6224** | **ZZ** | **VV** | **DDU** | — | — | — | — | — | — | — | — | — | 131 | 146 | 204 | 2 | — | — | 5.29 |
| | 260 | 55 | 3 | 227 000 | 185 000 | 13.5 | 2 200 | 1 800 | 2 800 | **6324** | **ZZS** | — | **DDU** | — | — | — | — | — | — | — | — | — | 133 | 161 | 247 | 2.5 | — | — | 12.5 |
| **130** | 165 | 18 | 1.1 | 40 500 | 44 000 | 17.1 | 3 600 | 2 000 | 4 300 | **6826** | **ZZS** | **VV** | **DD** | **N** | **NR** | 3.30 | 1.9 | 161.8 | 0.6 | 0.5 | 171.5 | 1.7 | 136.5 | 138 | 158.5 | 1 | 173 | 4.7 | 0.758 |
| | 180 | 24 | 1.5 | 71 500 | 67 500 | 16.5 | 3 400 | — | 4 000 | **6926** | **ZZ** | — | — | **N** | **NR** | 3.70 | 1.9 | 176.8 | 0.6 | 0.5 | 186.5 | 1.7 | 138 | 144 | 172 | 1.5 | 188 | 5.1 | 1.57 |
| | 200 | 22 | 1.1 | 83 500 | 77 500 | 16.4 | 3 000 | — | 3 600 | **16026** | — | — | — | — | — | — | — | — | — | — | — | — | 136.5 | — | 193.5 | 1 | — | — | 2.4 |
| | 200 | 33 | 2 | 117 000 | 101 000 | 15.8 | 3 000 | 1 900 | 3 600 | **6026** | **ZZ** | — | **DDU** | **N** | **NR** | 5.69 | 3.5 | 193.65 | 0.6 | 0.5 | 212.9 | 3.1 | 139 | 148.5 | 191 | 2 | 215 | 8.4 | 3.26 |
| | 230 | 40 | 3 | 184 000 | 146 000 | 14.5 | 2 400 | — | 3 000 | **6226** | **ZZ** | — | — | — | — | — | — | — | — | — | — | — | 143 | 157 | 217 | 2.5 | — | — | 5.96 |
| | 280 | 58 | 4 | 252 000 | 214 000 | 13.6 | 2 200 | — | 2 600 | **6326** | **ZZS** | — | — | — | — | — | — | — | — | — | — | — | 146 | 175 | 264 | 3 | — | — | 15.2 |
| **140** | 175 | 18 | 1.1 | 42 000 | 48 000 | 17.3 | 3 400 | 1 900 | 4 000 | **6828** | **ZZ** | **VV** | **DDU** | **N** | **NR** | 3.30 | 1.9 | 171.8 | 0.6 | 0.5 | 181.5 | 1.7 | 146.5 | 148.5 | 168.5 | 1 | 183 | 4.7 | 0.832 |
| | 190 | 24 | 1.5 | 73 500 | 72 000 | 16.6 | 3 200 | — | 3 800 | **6928** | **ZZS** | **VV** | — | **N** | **NR** | 3.70 | 1.9 | 186.8 | 0.6 | 0.5 | 196.5 | 1.7 | 148 | 153.5 | 182 | 1.5 | 198 | 5.1 | 1.67 |
| | 210 | 22 | 1.1 | 85 500 | 82 500 | 16.5 | 2 800 | — | 3 400 | **16028** | — | — | — | — | — | — | — | — | — | — | — | — | 146.5 | — | 203.5 | 1 | — | — | 2.84 |
| | 210 | 33 | 2 | 121 000 | 109 000 | 16.0 | 2 800 | 1 800 | 3 400 | **6028** | **ZZ** | — | **DDU** | — | — | — | — | — | — | — | — | — | 149 | 158.5 | 201 | 2 | — | — | 3.48 |
| | 250 | 42 | 3 | 183 000 | 150 000 | 14.9 | 2 200 | 1 700 | 2 800 | **6228** | **ZZS** | — | **DDU** | — | — | — | — | — | — | — | — | — | 153 | 171.5 | 237 | 2.5 | — | — | 7.68 |
| | 300 | 62 | 4 | 278 000 | 246 000 | 13.6 | 2 000 | — | 2 400 | **6328** | **ZZS** | — | — | — | — | — | — | — | — | — | — | — | 156 | 187 | 284 | 3 | — | — | 18.5 |
| **150** | 190 | 20 | 1.1 | 52 500 | 58 500 | 17.1 | 3 200 | 1 800 | 3 800 | **6830** | **ZZ** | **VV** | **DDU** | **N** | **NR** | 3.30 | 1.9 | 186.8 | 0.6 | 0.5 | 196.5 | 1.7 | 156.5 | 160 | 183.5 | 1 | 198 | 4.7 | 1.15 |
| | 210 | 28 | 2 | 93 500 | 90 500 | 16.5 | 2 600 | 1 700 | 3 200 | **6930** | **ZZS** | — | **DDU** | — | — | — | — | — | — | — | — | — | 159 | 166 | 201 | 2 | — | — | 3.01 |
| | 225 | 24 | 1.1 | 92 500 | 91 000 | 16.6 | 2 600 | — | 3 000 | **16030** | — | — | — | — | — | — | — | — | — | — | — | — | 156.5 | — | 218.5 | 1 | — | — | 3.62 |
| | 225 | 35 | 2.1 | 138 000 | 126 000 | 15.9 | 2 600 | 1 700 | 3 000 | **6030** | **ZZ** | **VV** | **DDU** | — | — | — | — | — | — | — | — | — | 161 | 170 | 214 | 2 | — | — | 4.24 |
| | 270 | 45 | 3 | 194 000 | 168 000 | 15.1 | 2 000 | — | 2 600 | **6230** | **ZZS** | — | — | — | — | — | — | — | — | — | — | — | 163 | 186 | 257 | 2.5 | — | — | 10 |
| | 320 | 65 | 4 | 300 000 | 284 000 | 13.9 | 1 800 | — | 2 200 | **6330** | **ZZS** | — | — | — | — | — | — | — | — | — | — | — | 166 | 203 | 304 | 3 | — | — | 22.7 |

**Notes** (1) For tolerances of snap ring grooves and snap ring dimensions, refer to Pages A116 to A119.

(2) When heavy axial loads are applied, $d_a$ and $D_a$ can be adjusted up to the shoulder diameter of the races. Please consult NSK for details.

**Remarks**

1. When using bearings with rotating outer rings, contact NSK if they are sealed, shielded, or have snap rings.
2. Please consult NSK about the snap ring groove dimensions of Dimension Series 18 and 19 sealed and shielded bearings when the diameter is 50 mm or more.