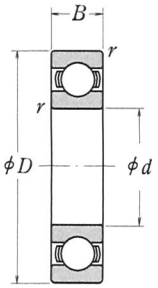
# ■SINGLE-ROW DEEP GROOVE BALL BEARINGS

## Bore Diameter 50 – 60 mm

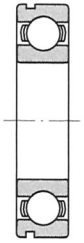



Open Type

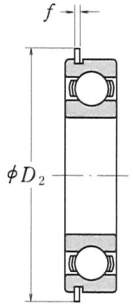
Shielded Type
ZZ

Non-Contact
Sealed Type
VV

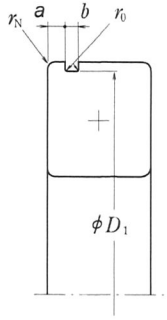
Contact
Sealed Type
DD · DDU

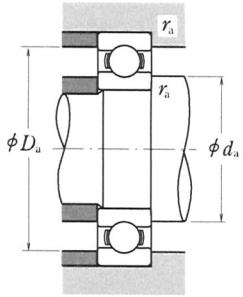


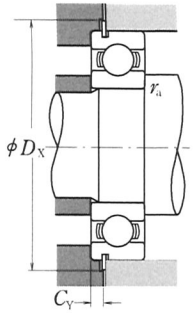
With Snap
Ring Groove
N




With
Snap Ring
NR




**Dynamic Equivalent Load**

$P = XF_r + YF_a$

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

**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 Numbers | | | | With Snap Ring Groove | With Snap Ring | Snap Ring Groove Dimensions (1) (mm) | | | | | Snap Ring (1) Dimensions (mm) | | Abutment and Fillet Dimensions (mm) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 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. |
| **50** | 65 | 7 | 0.3 | 6 400 | 6 200 | 17.2 | 9 500 | 5 300 | 11 000 | **6810** | **ZZ** | **VV** | **DDU** | **N** | **NR** | 1.30 | 0.95 | 63.7 | 0.25 | 0.3 | 67.8 | 0.85 | 52 | 52.5 | 63 | 0.3 | 68.5 | 1.8 |
| | 72 | 12 | 0.6 | 14 500 | 11 700 | 16.1 | 9 000 | 5 300 | 11 000 | **6910** | **ZZ** | **VV** | **DDU** | **N** | **NR** | 1.70 | 0.95 | 70.7 | 0.25 | 0.5 | 74.8 | 0.85 | 54 | 55 | 68 | 0.6 | 76 | 2.3 |
| | 80 | 10 | 0.6 | 15 400 | 12 400 | 16.1 | 8 500 | — | 10 000 | **16010** | — | — | — | — | — | — | — | — | — | — | — | — | 54 | — | 76 | 0.6 | — | — |
| | 80 | 16 | 1 | 22 900 | 16 600 | 15.6 | 9 500 | 4 800 | 11 000 | * **6010** | **ZZ** | **VV** | **DDU** | — | — | — | — | — | — | — | — | — | 55 | 58.5 | 75 | 1 | — | — |
| | 80 | 16 | 1 | 21 800 | 16 600 | 15.6 | 8 500 | 4 800 | 10 000 | **6010** | **ZZ** | **VV** | **DDU** | **N** | **NR** | 2.49 | 1.9 | 76.81 | 0.6 | 0.5 | 86.6 | 1.7 | 55 | 58.5 | 75 | 1 | 88 | 3.8 |
| | 90 | 20 | 1.1 | 37 000 | 23 200 | 14.4 | 8 000 | 4 800 | 10 000 | * **6210** | **ZZ** | **VV** | **DDU** | — | — | — | — | — | — | — | — | — | 56.5 | 60 | 83.5 | 1 | — | — |
| | 90 | 20 | 1.1 | 35 000 | 23 200 | 14.4 | 7 100 | 4 800 | 8 500 | **6210** | **ZZ** | **VV** | **DDU** | **N** | **NR** | 3.28 | 2.7 | 86.79 | 0.6 | 0.5 | 96.5 | 2.46 | 56.5 | 60 | 83.5 | 1 | 98 | 5.4 |
| | 110 | 27 | 2 | 65 000 | 38 500 | 13.2 | 7 100 | 4 300 | 8 500 | * **6310** | **ZZ** | **VV** | **DDU** | — | — | — | — | — | — | — | — | — | 59 | 68 | 101 | 2 | — | — |
| | 110 | 27 | 2 | 62 000 | 38 500 | 13.2 | 6 000 | 4 300 | 7 500 | **6310** | **ZZ** | **VV** | **DDU** | **N** | **NR** | 3.28 | 2.7 | 106.81 | 0.6 | 0.5 | 116.6 | 2.46 | 59 | 68 | 101 | 2 | 118 | 5.4 |
| **55** | 72 | 9 | 0.3 | 8 800 | 8 500 | 17.0 | 8 500 | 4 800 | 10 000 | **6811** | **ZZ** | **VV** | **DDU** | **N** | **NR** | 1.70 | 0.95 | 70.7 | 0.25 | 0.3 | 74.8 | 0.85 | 57 | 59 | 70 | 0.3 | 76 | 2.3 |
| | 80 | 13 | 1 | 16 000 | 13 300 | 16.2 | 8 000 | 4 500 | 9 500 | **6911** | **ZZ** | **VV** | **DDU** | **N** | **NR** | 2.10 | 1.3 | 77.9 | 0.4 | 0.5 | 84.4 | 1.12 | 60 | 61.5 | 75 | 1 | 86 | 2.9 |
| | 90 | 11 | 0.6 | 19 400 | 16 300 | 16.2 | 7 500 | — | 9 000 | **16011** | — | — | — | — | — | — | — | — | — | — | — | — | 59 | — | 86 | 0.6 | — | — |
| | 90 | 18 | 1.1 | 29 700 | 21 200 | 15.3 | 8 500 | 4 500 | 10 000 | * **6011** | **ZZ** | **VV** | **DDU** | — | — | — | — | — | — | — | — | — | 61.5 | 64 | 83.5 | 1 | — | — |
| | 90 | 18 | 1.1 | 28 300 | 21 200 | 15.3 | 7 500 | 4 500 | 9 000 | **6011** | **ZZ** | **VV** | **DDU** | **N** | **NR** | 2.87 | 2.7 | 86.79 | 0.6 | 0.5 | 96.5 | 2.46 | 61.5 | 64 | 83.5 | 1 | 98 | 5 |
| | 100 | 21 | 1.5 | 45 500 | 29 300 | 14.3 | 7 500 | 4 300 | 9 000 | * **6211** | **ZZ** | **VV** | **DDU** | — | — | — | — | — | — | — | — | — | 63 | 66.5 | 92 | 1.5 | — | — |
| | 100 | 21 | 1.5 | 43 500 | 29 300 | 14.3 | 6 300 | 4 300 | 7 500 | **6211** | **ZZ** | **VV** | **DDU** | **N** | **NR** | 3.28 | 2.7 | 96.8 | 0.6 | 0.5 | 106.5 | 2.46 | 63 | 66.5 | 92 | 1.5 | 108 | 5.4 |
| | 120 | 29 | 2 | 75 000 | 44 500 | 13.1 | 6 700 | 4 000 | 8 000 | * **6311** | **ZZ** | **VV** | **DDU** | — | — | — | — | — | — | — | — | — | 64 | 72.5 | 111 | 2 | — | — |
| | 120 | 29 | 2 | 71 500 | 44 500 | 13.1 | 5 600 | 4 000 | 6 700 | **6311** | **ZZ** | **VV** | **DDU** | **N** | **NR** | 4.06 | 3.1 | 115.21 | 0.6 | 0.5 | 129.7 | 2.82 | 64 | 72.5 | 111 | 2 | 131.5 | 6.5 |
| **60** | 78 | 10 | 0.3 | 11 500 | 10 900 | 16.9 | 8 000 | 4 500 | 9 500 | **6812** | **ZZ** | **VV** | **DD** | **N** | **NR** | 1.70 | 1.3 | 76.2 | 0.4 | 0.3 | 82.7 | 1.12 | 62 | 64 | 76 | 0.3 | 84 | 2.5 |
| | 85 | 13 | 1 | 19 400 | 16 300 | 16.2 | 7 500 | 4 300 | 9 000 | **6912** | **ZZ** | **VV** | **DDU** | **N** | **NR** | 2.10 | 1.3 | 82.9 | 0.4 | 0.5 | 89.4 | 1.12 | 65 | 66 | 80 | 1 | 91 | 2.9 |
| | 95 | 11 | 0.6 | 20 000 | 17 500 | 16.3 | 7 100 | — | 8 500 | **16012** | — | — | — | — | — | — | — | — | — | — | — | — | 64 | — | 91 | 0.6 | — | — |
| | 95 | 18 | 1.1 | 31 000 | 23 200 | 15.6 | 8 000 | 4 000 | 9 500 | * **6012** | **ZZ** | **VV** | **DDU** | — | — | — | — | — | — | — | — | — | 66.5 | 69 | 88.5 | 1 | — | — |
| | 95 | 18 | 1.1 | 29 500 | 23 200 | 15.6 | 7 100 | 4 000 | 8 500 | **6012** | **ZZ** | **VV** | **DDU** | **N** | **NR** | 2.87 | 2.7 | 91.82 | 0.6 | 0.5 | 101.6 | 2.46 | 66.5 | 69 | 88.5 | 1 | 103 | 5 |
| | 110 | 22 | 1.5 | 55 000 | 36 000 | 14.3 | 6 700 | 3 800 | 8 000 | * **6212** | **ZZ** | **VV** | **DDU** | — | — | — | — | — | — | — | — | — | 68 | 74.5 | 102 | 1.5 | — | — |
| | 110 | 22 | 1.5 | 52 500 | 36 000 | 14.3 | 5 600 | 3 800 | 7 100 | **6212** | **ZZ** | **VV** | **DDU** | **N** | **NR** | 3.28 | 2.7 | 106.81 | 0.6 | 0.5 | 116.6 | 2.46 | 68 | 74.5 | 102 | 1.5 | 118 | 5.4 |
| | 130 | 31 | 2.1 | 86 000 | 52 000 | 13.1 | 6 000 | 3 600 | 7 100 | * **6312** | **ZZ** | **VV** | **DDU** | — | — | — | — | — | — | — | — | — | 71 | 79 | 119 | 2 | — | — |
| | 130 | 31 | 2.1 | 82 000 | 52 000 | 13.1 | 5 300 | 3 600 | 6 300 | **6312** | **ZZ** | **VV** | **DDU** | **N** | **NR** | 4.06 | 3.1 | 125.22 | 0.6 | 0.5 | 139.7 | 2.82 | 71 | 79 | 119 | 2 | 141.5 | 6.5 |

**Notes** (1) For tolerances for the snap ring grooves and snap ring dimensions, refer to Pages A116 to A119.
(2) When heavy axial loads are applied, increase $d_a$ and decrease $D_a$ from the above values.

**Remarks**
1. Diameter Series 7 (extra thin section bearings) are also available, please contact NSK.
2. When using bearings with rotating outer rings, contact NSK if they are sealed, shielded, or have snap ring
3. Please consult NSK about the snap ring groove dimensions of sealed and shielded bearings when the dian