1. DEEP GROOVE BALL BEARINGS

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Single-Row Deep Groove Ball Bearings

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DESIGN, TYPES, AND FEATURES

SINGLE-ROW DEEP GROOVE BALL BEARINGS

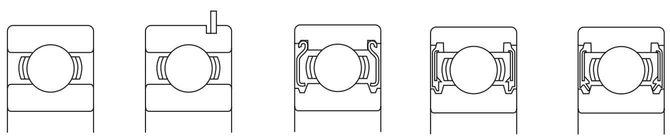
Single-row deep groove ball bearings are classified into the types shown below.

The proper amount of good quality grease is packed in shielded and sealed ball bearings. A comparison of the features of each type is shown in Table 1.

Table 1 Features of Sealed Ball Bearings

Type	Shielded (ZZ Type)	Rubber Non-Contact Seal (VV Type)	Rubber Contact Seal (DDU Type)
Torque	Low	Low	Higher than ZZ and VV types due to contact seal
Speed capability	Good	Good	Limited by contact seals
Grease-sealing effectiveness	Good	Better than ZZ type	Slightly better than VV type
Dust resistance	Good	Better than ZZ type (usable in moderately dusty environments)	Best (usable even in very dusty environments)
Water resistance	Not suitable	Not suitable	Good (usable even if fluid is splashed on bearing)
Operating temperature ([1])	–10 to +110 °C	–10 to +110 °C	–10 to +100 °C

Note ([1]) The above temperature range applies to standard bearings. By using cold- or heat-resistant grease or changing the type of rubber, the operating temperature range can be extended. Please contact NSK for such applications.



Open **With Snap Ring** **Shielded (ZZ Type)** **Rubber Non-Contact Sealed (VV Type)** **Rubber Contact Sealed (DDU Type)**

Pressed cages are usually used for deep groove ball bearings. For large bearings, machined brass cages are used (refer to Table 2).

Machined cages are also used for high-speed applications.

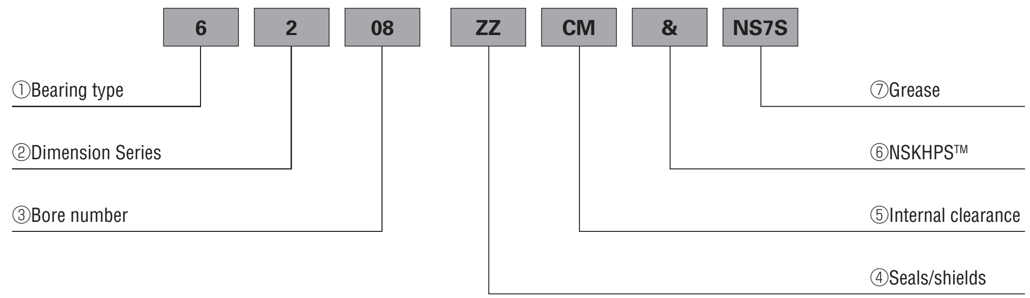
Table 2 Standard Cages for Deep Groove Ball Bearings

Series	Pressed Steel Cages	Machined Brass Cages
68	6800 – 6838	6840 – 68/800
69	6900 – 6936	6938 – 69/800
160	16001 – 16026	16028 – 16064
60	6000 – 6040	6044 – 60/670
62	6200 – 6240	6244 – 6272
63	6300 – 6332	6334 – 6356

☐ Formulation of Bearing Designations

Single-row deep groove ball bearings

Example:



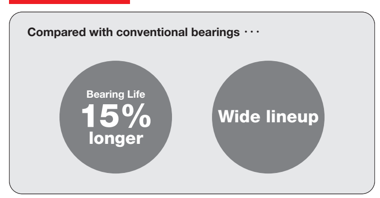
①Bearing type	6 : Single-row deep groove ball bearings
②Dimension Series	2 : 02 Series, 3 : 03 Series, 9 : 19 Series, 0 : 10 Series
③Bore number	Less than 03, Bearing bore 00 : 10mm, 01 : 12mm, 02 : 15mm, 03 : 17mm Over 04, Bearing bore bore number X 5 (mm)
④Seals/shields	ZZ : Shield on both sides, DDU: Rubber contact seal on both sides, VV: Rubber non-contact seal on both sides, Z: Shield on one side, DU: Rubber contact seal on one side V:Rubber non-contact seal on one side
⑤Internal clearance	Omitted : CN clearance*1, C3 : Clearance greater than CN, C4 : Clearance greater than C3, CM : For electric motors*1
⑥NSKHPS™ designation	& : NSKHPS™ Bearings
⑦Grease designation*2	NS7 : NS HI-LUBE

*1 CM clearance may be used instead of CN clearance (the reverse is not possible).

*2 The grease designation is required when seals/shields are used on both sides.

NSKHPS™ Deep Groove Ball Bearings

Features Compared with conventional bearings:



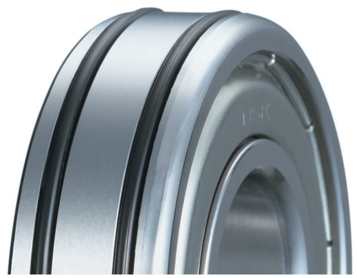
- Improved reliability
  Bearing life is 15% longer than conventional bearings thanks to optimization of the bearing's internal design and improvement of processing technology. As a result, NSKHPS™ bearings contribute to reducing maintenance costs and facilitate the downscaling of related equipment.
- New product lineup
  The standard dimensions are identical to standard size bearings. NSK has expanded the lineup of NSKHPS™ bearings by focusing on a wide range of sizes offering a high degree of versatility for various general-purpose applications.

Creep-Free Bearings™

Creep-Free bearings, which come with two O-rings mounted in the outer ring, help to prevent creep by restricting the amount of clearance between the outer ring and housing.

No special machining is required; therefore bearings can be used with the same housing as standard bearings.

In creep limit load tests, the more housing clearance is reduced, the greater the improvements in creep prevention due to the tension of the O-ring mounted in the outer ring.



Features

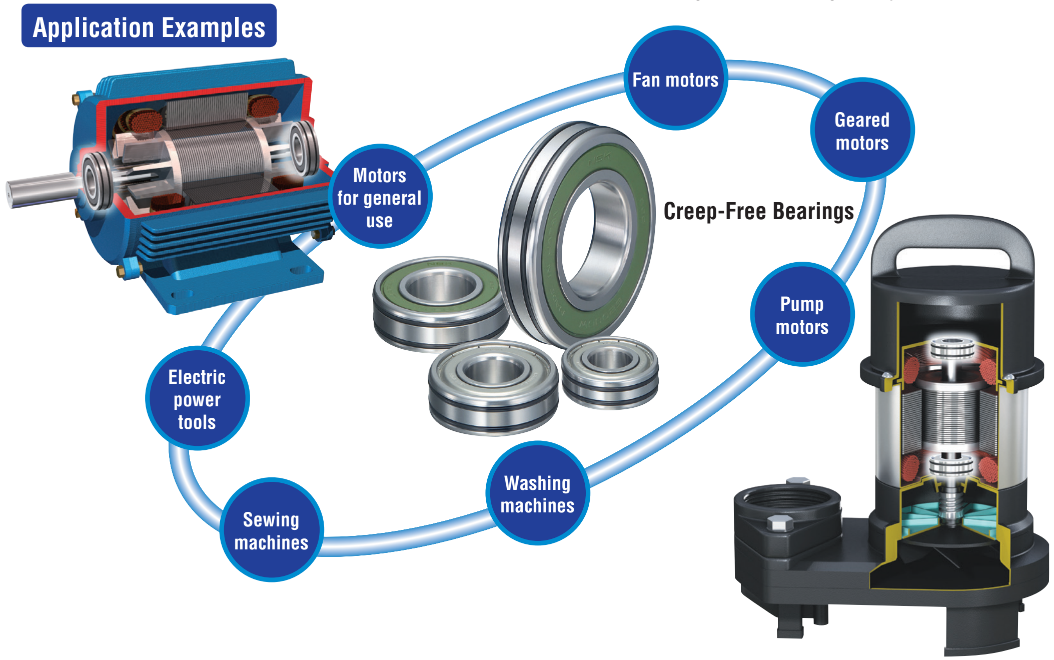
■Prevents creep
O-rings help prevent creep.

■Easy to assemble
Assembly is easy since bearings can be fitted with a loose tolerance.

■Reusable housing
Very little abrasion occurs on the bore surface of the housing, making reuse possible.

■No special machining of the housing required
Bearings can be easily replaced since boundary dimensions are identical to standard bearings.
No reworking of the housing is required.

Application Examples



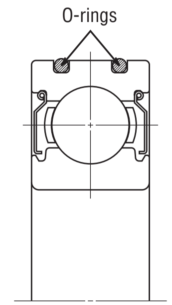


Fig. 1 Structure of Creep-Free Bearings

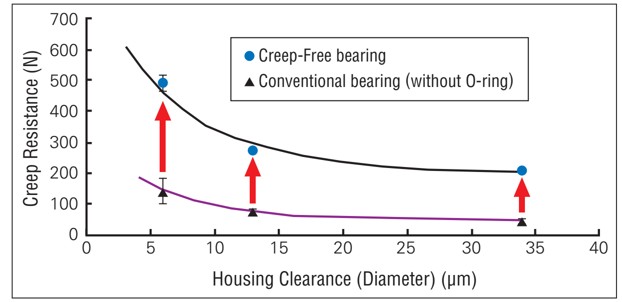


Fig. 2 Creep Limit Load Test (Example Bearing 6204)

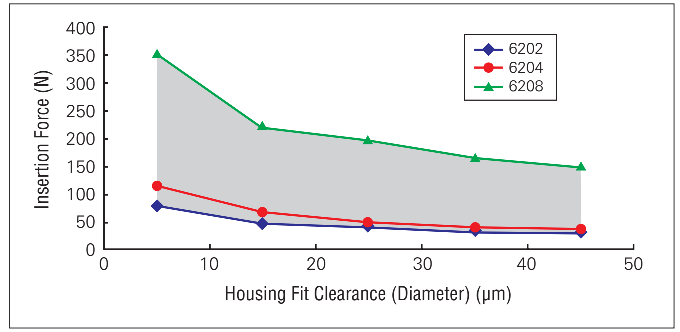


Fig. 3 Fit and Insertion Force

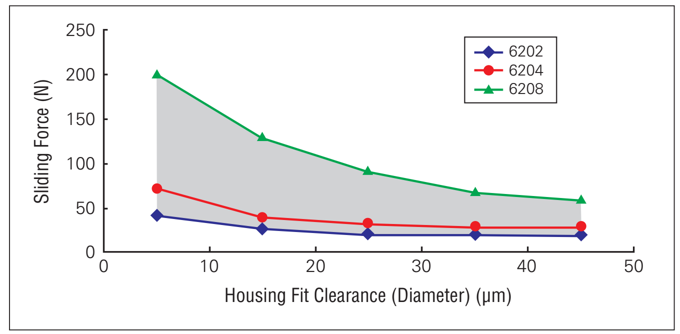


Fig. 4 Fit and Sliding Force

Note on Mounting Creep-Free Bearings

- When oil or grease is applied to the outer diameter of the bearing, use a mineral oil or a synthetic hydrocarbon oil (NSK's EA2, etc.).
- Nitrile rubber is used as the standard specification O-ring material (operating temperature range: −30 to 120 °C). Please contact NSK for use under special environments such as high temperatures.

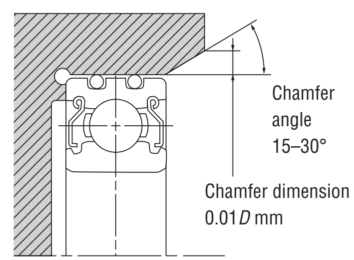
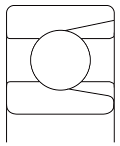


Fig. 5 Housing Shape and Dimension

Note that "free" in the product name "Creep-Free" bearings should not be understood as meaning that creep is nonexistent.



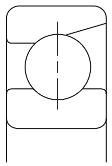
MAXIMUM BALL BEARINGS

Maximum ball bearings contain a larger number of balls than normal deep groove ball bearings because of filling slots in the inner and outer rings. Because of their filling slots, they are not suitable for applications with high axial loads.

BL2 and BL3 types of bearings have boundary dimensions equal to those of Series 62 and 63 deep groove ball bearings respectively. Besides the open type, ZZ type shielded bearings are also available.

When using these bearings, it is important for the filling slot in the outer ring to be outside of the loaded zone as much as possible.

The cages are made of pressed steel.



MAGNETO BEARINGS

The groove in the inner ring is slightly shallower than that of deep groove ball bearings and one side of the outer ring is relieved. Consequently, the outer ring is separable, which is convenient for mounting.

Pressed cages are standard, but for high-speed applications, machined synthetic resin cages are used.

PRECAUTIONS FOR USE OF DEEP GROOVE BALL BEARINGS

If the bearing load is too small during operation, slippage may occur between the balls and raceways, which may result in smearing. The higher the weight of the balls and cage, the more likely this will occur, especially for large bearings. If very small bearing loads are expected, please contact NSK for selection of an appropriate bearing.

TOLERANCES AND RUNNING ACCURACY

SINGLE-ROW DEEP GROOVE BALL BEARINGS .... Table 7.2 (Pages A128 to A131)

NSKHPS DEEP GROOVE BALL BEARINGS
Tolerance for Dimensions : ISO Normal
Running Accuracy : ISO Normal

MAXIMUM BALL BEARINGS .... Table 7.2 (Pages A128 to A131)

MAGNETO BEARINGS .... Table 7.5 (Pages A138 and A139)

RECOMMENDED FITS

SINGLE-ROW DEEP GROOVE BALL BEARINGS .... Table 8.3 (Page A164)
Table 8.5 (Page A165)

MAXIMUM BALL BEARINGS .... Table 8.3 (Page A164)
Table 8.5 (Page A165)

MAGNETO BEARINGS .... Table 8.3 (Page A164)
Table 8.5 (Page A165)

INTERNAL CLEARANCES

SINGLE-ROW DEEP GROOVE BALL BEARINGS .... Table 8.10 (Page A169)

NSKHPS DEEP GROOVE BALL BEARINGS
INTERNAL CLEARANCE SYMBOL : CN, C3, C4, CM

MAXIMUM BALL BEARINGS .... Table 8.10 (Page A169)

MAGNETO BEARINGS .... Table 8.12 (Page A169)

LIMITING SPEEDS (GREASE/OIL)

The limiting speeds for grease and oil lubrication listed in the bearing tables should be adjusted depending on bearing load. Furthermore, higher speeds are attainable by changing the lubrication method, cage design, etc. Refer to Page A098 for detailed information.

TECHNICAL DATA

Radial and Axial Internal Clearances and Contact Angles for Single-Row Deep Groove Ball Bearings

(1) *Radial and Axial Internal Clearances*

The internal clearance in single-row bearings is specified as the radial internal clearance. The bearing internal clearance is the amount of relative displacement possible between the bearing rings when one ring is fixed and the other ring does not bear a load. The amount of movement along the bearing radius is called the radial clearance, and the amount along the axis is called the axial clearance.

The geometric relation between radial and axial clearance is shown in Fig. 1.

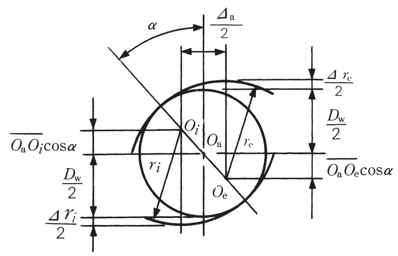


Fig. 1 Relationship Between Δ_r and Δ_a

Symbols used in Fig. 1

- O_a: Ball center
- O_e: Center of groove curvature, outer ring
- O_i: Center of groove curvature, inner ring
- D_w: Ball diameter (mm)
- r_e: Radius of outer ring groove (mm)
- r_i: Radius of inner ring groove (mm)
- α: Contact angle (°)
- Δ_r: Radial clearance (mm)
- Δ_a: Axial clearance (mm)

It is apparent from Fig. 1 that $\Delta_r = \Delta r_e + \Delta r_i$.

Various equations for clearance, contact angle, etc. can be derived from geometric relationships:

$$\Delta_r = 2\,(1-\cos\alpha)\,(r_e+r_i-D_w) \quad \cdots\cdots (1)$$

$$\Delta_a = 2\sin\alpha\,(r_e+r_i-D_w) \quad \cdots\cdots (2)$$

$$\frac{\Delta_a}{\Delta_r} = \cot\frac{\alpha}{2} \quad \cdots\cdots (3)$$

$$\Delta_a \doteqdot 2\,(r_e+r_i-D_w)^{1/2}\,\Delta_r^{1/2} \quad \cdots\cdots (4)$$

$$\alpha = \cos^{-1}\left(\frac{r_e+r_i-D_w-\frac{\Delta_r}{2}}{r_e+r_i-D_w}\right) \quad \cdots\cdots (5)$$

$$= \sin^{-1}\left(\frac{\Delta_a/2}{r_e+r_i-D_w}\right) \quad \cdots\cdots (6)$$

Because $(r_e+r_i-D_w)$ is a constant, fixed relationships between Δ_r, Δ_a, and α exist for all the various bearing types.

As previously mentioned, the clearances for deep groove ball bearings are given as radial clearances, but there are specific applications where an axial clearance is desirable as well. The relationship between deep groove ball bearing radial clearance Δ_r and axial clearance Δ_a is given in Equation (4). To simplify,

$$\Delta_a \doteqdot K\,\Delta_r^{1/2} \quad \cdots\cdots (7)$$

where K : Constant depending on bearing design
$K = 2\,(r_e+r_i-D_w)^{1/2}$

Fig. 2 shows one example. The various values for K are presented by bearing size in Table 1 below.

Example

Assume bearing 6312 has a radial clearance of 0.017 mm. From Table 1, K=2.09. Therefore, the axial clearance Δ_a is:
$\Delta = 2.09 \times \sqrt{0.017} = 2.09 \times 0.13 = 0.27$ (mm)

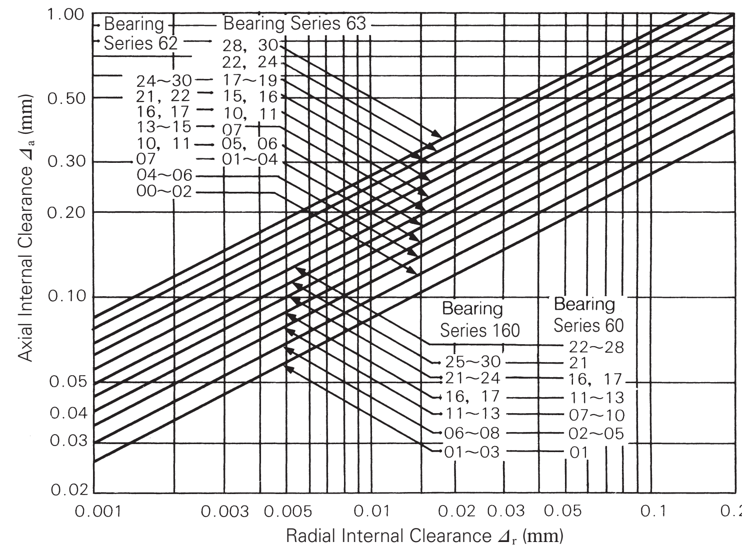


Fig. 2 Radial Clearance Δ_r and Axial Clearance Δ_a of Deep Groove Ball Bearings

Table 1 Constant Values of K for Radial and Axial Clearance Conversion

Bearing Bore No.	K			
	Series 160	Series 60	Series 62	Series 63
00	—	—	0.93	1.14
01	0.80	0.80	0.93	1.06
02	0.80	0.93	0.93	1.06
03	0.80	0.93	0.99	1.11
04	0.90	0.96	1.06	1.07
05	0.90	0.96	1.06	1.20
06	0.96	1.01	1.07	1.19
07	0.96	1.06	1.25	1.37
08	0.96	1.06	1.29	1.45
09	1.01	1.11	1.29	1.57
10	1.01	1.11	1.33	1.64
11	1.06	1.20	1.40	1.70
12	1.06	1.20	1.50	2.09
13	1.06	1.20	1.54	1.82
14	1.16	1.29	1.57	1.88
15	1.16	1.29	1.57	1.95
16	1.20	1.37	1.64	2.01
17	1.20	1.37	1.70	2.06
18	1.29	1.44	1.76	2.11
19	1.29	1.44	1.82	2.16
20	1.29	1.44	1.88	2.25
21	1.37	1.54	1.95	2.32
22	1.40	1.64	2.01	2.40
24	1.40	1.64	2.06	2.40
26	1.54	1.70	2.11	2.49
28	1.54	1.70	2.11	2.59
30	1.57	1.76	2.11	2.59

(2) *Relation Between Radial Clearance and Contact Angle*

Single-row deep groove ball bearings are sometimes used as thrust bearings. In such applications, the contact angle should be as large as possible.

The contact angle for ball bearings is determined by the geometric relationship between the radial clearance and radii of the inner and outer grooves. Using Equations (1) to (6), Fig. 3 shows the particular relationship between the radial clearance and contact angle of bearings in Series 62 and 63 bearings. The initial contact angle, α_0, refers to the initial contact angle when axial load is zero. Application of any load to the bearing will change this contact angle.

If the initial contact angle α_0 exceeds 20°, check whether or not the contact area of the ball and raceway touch the edge of the raceway shoulder (refer to Section 8.1.2).

For applications where an axial load alone is applied, the radial clearance for deep groove ball bearings is normally greater than the normal clearance in order to ensure that the contact angle is relatively large. The initial contact angles for C3 and C4 clearances are given for selected bearing sizes in Table 2 below.

Table 2 Initial Contact Angle α_0, With C3 and C4 Clearances

Bearing Designation	α_0 with C3	α_0 with C4
6205	12.5° to 18°	16.5° to 22°
6210	11.5° to 16.5°	13.5° to 19.5°
6215	11.5° to 16°	15.5° to 19.5°
6220	10.5° to 14.5°	14° to 17.5°
6305	11° to 16°	14.5° to 19.5°
6310	9.5° to 13.5°	12° to 16°
6315	9.5° to 13.5°	12.5° to 15.5°
6320	9° to 12.5°	12° to 15°

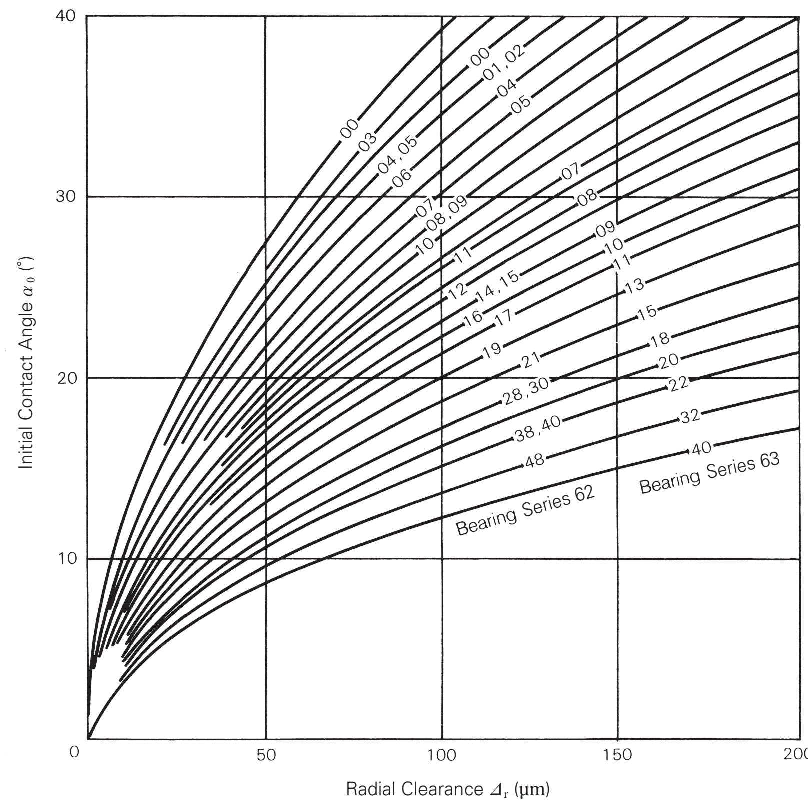


Fig. 3 Radial Clearance and Contact Angle

Features and Operating Temperature Range of Ball Bearing Seal Material

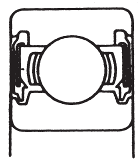
Sealed ball bearings are shown in Figs. 1 and 2. There are two seal types: non-contact seals and contact seals. Nitrile rubber is used for general-purpose applications, while polyacrylic, silicon, and fluoric rubbers are used based on operating temperature requirements. All rubbers have their own unique characteristics and must be selected while considering the application environment and operating conditions.

Table 1 shows principal features of each rubber material and the operating temperature range of the bearing seal. The operating temperature range of Table 1 is a guideline for continuous operation. Thermal aging of rubber is related to temperature and time. Rubber may be used in a much wider range of operating temperatures depending on the operating time and frequency.

Heat generation due to friction on the lip can be ignored in non-contact seals. Thermal factors, which cause aging of the rubber, refer to physical changes due to atmospheric and bearing temperatures. Accordingly, increased hardness or loss of elasticity due to thermal aging exerts only a negligible effect on seal performance. A rubber non-contact seal can thus be used in a greater range of operating temperatures than contact seals.

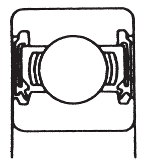
However, there are some disadvantages. Problems with friction-generated wear at the seal lip, thermal plastic deformation, and hardening may occur, causing the contact pressure between the lip and slide surface to decrease and result in a clearance. This clearance is low and does not degrade sealing performance (it does not cause dust entry or grease leakage). In most cases, this minor plastic deformation or increased hardness presents no practical problems.

However, in external environments with large amounts of dust and water, the bearing seal is used as an auxiliary seal and a main seal should be provided separately. As mentioned, the operating temperature range of rubber material is only a guideline for selection. Since heat resistant rubber is expensive, strive to understand temperature conditions so that an economical selection can be made. Pay attention not only to heat resistance, but also to the distinctive features of each rubber.



Rubber non-contact seal (VV)

Fig. 1



Rubber contact seal (DDU)

Fig. 2

Table 1 Features and Operating Temperature Range of Rubber Materials

Material		Nitrile Rubber	Polyacrylic Rubber	Silicon Rubber	Fluorine Rubber
Key features		○Most popular seal material ○Superior mechanical properties and resistance to oil and wear ○Readily ages under direct sunlight ○Less expensive than other rubbers	○Superior heat and oil resistances ○Large compression causes permanent deformation ○Inferior cold resistance ○One of the less expensive high-temperature materials ○Swells in contact with ester oil based grease	○High heat and cold resistances ○Inferior mechanical properties besides resistance to permanent deformation by compression. Note the tear strength ○Swells in contact with low-anilinepoint mineral oil, silicone grease, and silicone oil	○High heat resistance ○Superior oil and chemical resistances ○Cold resistance similar to nitrile rubber ○Deteriorates in contact with urea grease
Operating Temperature Range (1) (°C)	Non-Contact Seal	−50 to +130	−30 to +170	−100 to +250	−50 to +220
	Contact Seal	−30 to +110	−15 to +150	−70 to +200	−30 to +200

Note (1) This operating temperature refers to the temperature of rubber seal materials.

Free Space and Grease Filling Amount for Deep Groove Ball Bearings

Grease lubrication can simplify the bearing's peripheral construction. Thanks to enhanced grease quality, grease lubrication is now employed in place of oil lubrication in many fields. Be sure to select a grease appropriate for operating conditions. Take care with the filling amount, since too much or too little grease greatly affects the temperature rise and torque. The amount of grease needed depends on such factors as housing construction, free space, grease brand, and environment.

As a general guideline, the bearing is first filled with an appropriate amount of grease. Apply grease onto the cage guide surface, then, fill the free space, whic excludes the spindle and bearing inside the housing, with the following amount of grease:

When bearing speed is 50% or less of the specified limiting speed, fill 1/2 to 2/3 of the free space.
When bearing speed is 50% or more of the specified limiting speed, fill 1/3 to 1/2 of the free space.

In general, low speeds require more grease while high speeds require less grease. Depending on the particular application, the filling amount may have to be reduced further to reduce the torque and prevent heat generation. When bearing speed is extremely low on the other hand, grease may be packed almost full to prevent dust and water entry. Accordingly, one must know the extent of the housing's free space for the specific bearing to determine the correct filling amount. The volume of free space is shown in Table 1 for an open deep groove ball bearing for reference.

Note that the free space of the open type deep groove ball bearing is the volume obtained by subtracting the volume of the balls and cage from the space formed between inner and outer rings.

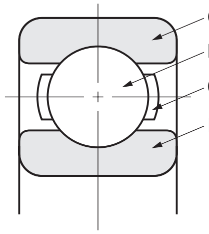


Table 1 Free Space of Open Deep Groove Ball Bearings

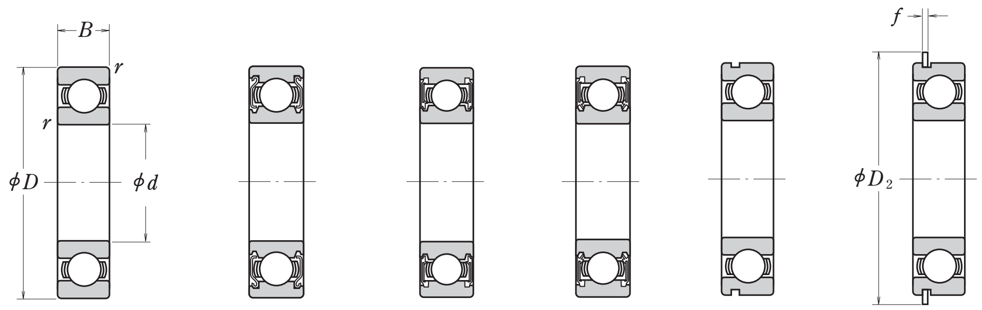
Units : cm³

Bearing Bore No.	Bearing Free Space			Bearing Bore No.	Bearing Free Space		
	Bearing Series				Bearing Series		
	60	62	63		60	62	63
00	1.2	1.5	2.9	14	34	61	148
01	1.2	2.1	3.5	15	35	67	180
02	1.6	2.7	4.8	16	47	84	213
03	2.0	3.7	6.4	17	48	104	253
04	4.0	6.0	7.9	18	63	127	297
05	4.6	7.7	12	19	66	155	345
06	6.5	11	19	20	68	184	425
07	9.2	15	25	21	88	216	475
08	11	20	35	22	114	224	555
09	14	23	49	24	122	310	675
10	15	28	64	26	172	355	830
11	22	34	79	28	180	415	1 030
12	23	45	98	30	220	485	1 140
13	24	54	122	32	285	545	1 410

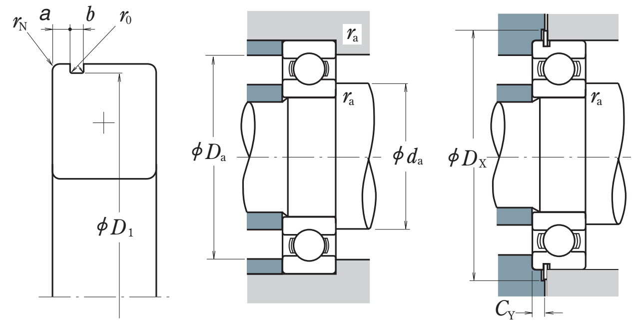
Remark The table above shows the free space of bearings using pressed-steel cages. The free space of a bearing using a high-tension machined-brass cage is about 50 to 60% of the value in this table.

SINGLE-ROW DEEP GROOVE BALL BEARINGS

Bore Diameter 10 – 17 mm



Open | Shielded ZZ | Non-Contact Sealed VV | Contact Sealed DD · DDU | With Snap Ring Groove N | With Snap Ring NR



Dynamic Equivalent Load

$P = XF_r + YF_a$

$\frac{f_0 F_a}{C_{0r}}$	e	$\frac{F_a}{F_r} \leq e$		$\frac{F_a}{F_r} > e$	
		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

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

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

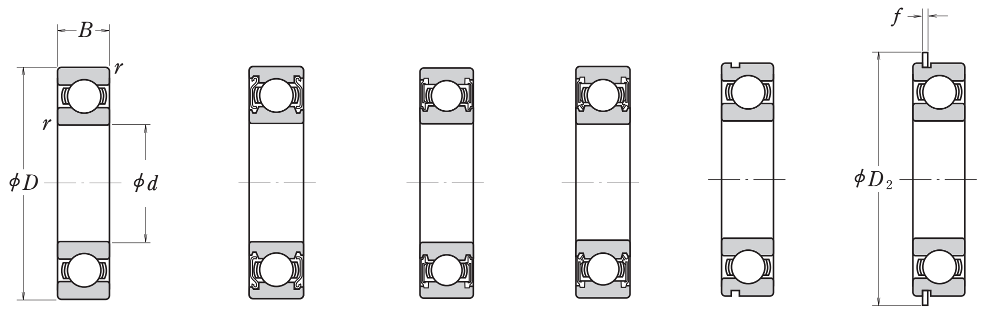
Boundary Dimensions (mm)				Basic Load Ratings (N)		Factor	Limiting Speeds (min⁻¹) Grease		Oil	Bearing Designations						Snap Ring Groove Dimensions (1) (mm)					Snap Ring (1) Dimensions (mm)		Abutment and Fillet Dimensions (mm)						Mass (kg)
d	D	B	r min.	C_r	C_{0r}	f_0	Open Z · ZZ V · VV	DU DDU	Open Z	Open	Shielded	Sealed	Sealed	With Snap Ring Groove	With Snap Ring	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.
10	19	5	0.3	1 720	840	14.8	34 000	24 000	40 000	6800	ZZ	VV	DD	—	—	—	—	—	—	—	—	—	12	12	17	0.3	—	—	0.005
	22	6	0.3	2 700	1 270	14.0	32 000	22 000	38 000	6900	ZZ	VV	DD	N(3)	NR(3)	1.05	0.8	20.8	0.2	0.2	24.8	0.7	12	12.5	20	0.3	25.5	1.5	0.009
	26	8	0.3	4 550	1 970	12.4	30 000	22 000	36 000	6000	ZZ	VV	DDU	N(4)	NR(4)	1.35	0.87	24.5	0.2	0.3	28.7	0.84	12	13	24	0.3	29.4	1.9	0.018
	30	9	0.6	5 350	2 390	13.2	28 000	18 000	34 000	* 6200	ZZ	VV	DDU	—	—	—	—	—	—	—	—	—	14	16	26	0.6	—	—	0.032
	30	9	0.6	5 100	2 390	13.2	24 000	18 000	30 000	6200	ZZ	VV	DDU	N	NR	2.06	1.35	28.17	0.4	0.5	34.7	1.12	14	16	26	0.6	35.5	2.9	0.032
	35	11	0.6	8 500	3 450	11.2	26 000	17 000	30 000	* 6300	ZZ	VV	DDU	—	—	—	—	—	—	—	—	—	14	16.5	31	0.6	—	—	0.052
	35	11	0.6	8 100	3 450	11.2	22 000	17 000	26 000	6300	ZZ	VV	DDU	N	NR	2.06	1.35	33.17	0.4	0.5	39.7	1.12	14	16.5	31	0.6	40.5	2.9	0.052
12	21	5	0.3	1 920	1 040	15.3	32 000	20 000	38 000	6801	ZZ	VV	DD	—	—	—	—	—	—	—	—	—	14	14	19	0.3	—	—	0.006
	24	6	0.3	2 890	1 460	14.5	30 000	20 000	36 000	6901	ZZ	VV	DD	N(3)	NR(3)	1.05	0.8	22.8	0.2	0.2	26.8	0.7	14	14.5	22	0.3	27.5	1.5	0.010
	28	7	0.3	5 100	2 370	13.0	28 000	—	32 000	16001	—	—	—	—	—	—	—	—	—	—	—	—	14	—	26	0.3	—	—	0.019
	28	8	0.3	5 350	2 370	13.0	32 000	18 000	38 000	* 6001	ZZ	VV	DDU	—	—	—	—	—	—	—	—	—	14	15.5	26	0.3	—	—	0.022
	28	8	0.3	5 100	2 370	13.0	28 000	18 000	32 000	6001	ZZ	VV	DDU	N(4)	NR(4)	1.35	0.87	26.5	0.2	0.3	30.7	0.84	14	15.5	26	0.3	31.4	1.9	0.022
	32	10	0.6	7 150	3 050	12.3	26 000	17 000	32 000	* 6201	ZZ	VV	DDU	—	—	—	—	—	—	—	—	—	16	17	28	0.6	—	—	0.037
	32	10	0.6	6 800	3 050	12.3	22 000	17 000	28 000	6201	ZZ	VV	DDU	N	NR	2.06	1.35	30.15	0.4	0.5	36.7	1.12	16	17	28	0.6	37.5	2.9	0.037
	37	12	1	10 200	4 200	11.1	24 000	16 000	28 000	* 6301	ZZ	VV	DDU	—	—	—	—	—	—	—	—	—	17	18	32	1	—	—	0.060
	37	12	1	9 700	4 200	11.1	20 000	16 000	24 000	6301	ZZ	VV	DDU	N	NR	2.06	1.35	34.77	0.4	0.5	41.3	1.12	17	18	32	1	42	2.9	0.060
15	24	5	0.3	2 070	1 260	15.8	28 000	17 000	34 000	6802	ZZ	VV	DD	—	—	—	—	—	—	—	—	—	17	17	22	0.3	—	—	0.007
	28	7	0.3	4 350	2 260	14.3	26 000	17 000	30 000	6902	ZZ	VV	DD	N(3)	NR(3)	1.30	0.95	26.7	0.25	0.3	30.8	0.85	17	17	26	0.3	31.5	1.8	0.015
	32	8	0.3	5 600	2 830	13.9	24 000	—	28 000	16002	—	—	—	—	—	—	—	—	—	—	—	—	17	—	30	0.3	—	—	0.027
	32	9	0.3	5 850	2 830	13.9	26 000	15 000	32 000	* 6002	ZZ	VV	DDU	—	—	—	—	—	—	—	—	—	17	19	30	0.3	—	—	0.031
	32	9	0.3	5 600	2 830	13.9	24 000	15 000	28 000	6002	ZZ	VV	DDU	N	NR	2.06	1.35	30.15	0.4	0.3	36.7	1.12	17	19	30	0.3	37.5	2.9	0.031
	35	11	0.6	8 000	3 750	13.2	22 000	14 000	28 000	* 6202	ZZ	VV	DDU	—	—	—	—	—	—	—	—	—	19	20.5	31	0.6	—	—	0.045
	35	11	0.6	7 650	3 750	13.2	20 000	14 000	24 000	6202	ZZ	VV	DDU	N	NR	2.06	1.35	33.17	0.4	0.5	39.7	1.12	19	20.5	31	0.6	40.5	2.9	0.045
	42	13	1	12 000	5 450	12.3	19 000	13 000	24 000	* 6302	ZZ	VV	DDU	—	—	—	—	—	—	—	—	—	20	22.5	37	1	—	—	0.083
	42	13	1	11 400	5 450	12.3	17 000	13 000	20 000	6302	ZZ	VV	DDU	N	NR	2.06	1.35	39.75	0.4	0.5	46.3	1.12	20	22.5	37	1	47	2.9	0.083
17	26	5	0.3	2 630	1 570	15.7	26 000	15 000	30 000	6803	ZZ	VV	DD	—	—	—	—	—	—	—	—	—	19	19	24	0.3	—	—	0.007
	30	7	0.3	4 600	2 550	14.7	24 000	15 000	28 000	6903	ZZ	VV	DDU	N(3)	NR(3)	1.30	0.95	28.7	0.25	0.3	32.8	0.85	19	19.5	28	0.3	33.5	1.8	0.017
	35	8	0.3	6 000	3 250	14.4	22 000	—	26 000	16003	—	—	—	—	—	—	—	—	—	—	—	—	19	—	33	0.3	—	—	0.033
	35	10	0.3	6 300	3 250	14.4	24 000	13 000	28 000	* 6003	ZZ	VV	DDU	—	—	—	—	—	—	—	—	—	19	21.5	33	0.3	—	—	0.041
	35	10	0.3	6 000	3 250	14.4	22 000	13 000	26 000	6003	ZZ	VV	DDU	N	NR	2.06	1.35	33.17	0.4	0.3	39.7	1.12	19	21.5	33	0.3	40.5	2.9	0.041
	40	12	0.6	10 100	4 800	13.2	20 000	12 000	24 000	* 6203	ZZ	VV	DDU	—	—	—	—	—	—	—	—	—	21	23.5	36	0.6	—	—	0.067
	40	12	0.6	9 550	4 800	13.2	17 000	12 000	20 000	6203	ZZ	VV	DDU	N	NR	2.06	1.35	38.1	0.4	0.5	44.6	1.12	21	23.5	36	0.6	45.5	2.9	0.067
	47	14	1	14 300	6 650	12.4	17 000	11 000	20 000	* 6303	ZZ	VV	DDU	—	—	—	—	—	—	—	—	—	22	25.5	42	1	—	—	0.113
	47	14	1	13 600	6 650	12.4	15 000	11 000	18 000	6303	ZZ	VV	DDU	N	NR	2.46	1.35	44.6	0.4	0.5	52.7	1.12	22	25.5	42	1	53.5	3.3	0.113

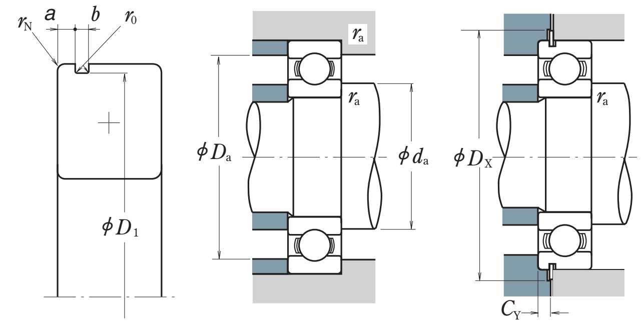
Notes
(1) For tolerances of snap ring grooves and snap ring dimensions, refer to Pages A116 to A119.
(2) When heavy axial loads are applied, d_a and D_a can be adjusted up to the shoulder diameter of the races. Please consult NSK for details.
(3) Ring types N and NR are applicable only to open bearings. Please consult NSK about the snap ring groove dimensions of sealed or shielded bearings.
(4) Snap ring groove dimensions and snap ring dimensions do not conform to ISO15.

Remarks
1. Diameter Series 7 (extra-thin wall) bearings are also available; please contact NSK for details.
2. When using bearings with rotating outer rings, contact NSK if they are sealed, shielded, or have snap rings.
3. Bearings denoted by an asterisk (*) are NSKHPS™ deep groove ball bearings.

SINGLE-ROW DEEP GROOVE BALL BEARINGS

Bore Diameter 20 – 30 mm





Dynamic Equivalent Load

$P = XF_r + YF_a$

$\frac{f_0 F_a}{C_{0r}}$	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						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		With Snap Ring Groove	With Snap Ring	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.
20	32	7	0.3	4 000	2 470	15.5	22 000	13 000	26 000	**6804**	**ZZ**	**VV**	**DD**	**N**	**NR**	1.30	0.95	30.7	0.25	0.3	34.8	0.85	22	22	30	0.3	35.5	1.8	0.017
	37	9	0.3	6 400	3 700	14.7	19 000	12 000	22 000	**6904**	**ZZ**	**VV**	**DDU**	**N**	**NR**	1.70	0.95	35.7	0.25	0.3	39.8	0.85	22	24	35	0.3	40.5	2.3	0.037
	42	8	0.3	7 900	4 450	14.5	18 000	—	20 000	**16004**	—	—	—	—	—	—	—	—	—	—	—	—	22	—	40	0.3	—	—	0.048
	42	12	0.6	9 850	5 000	13.8	20 000	11 000	24 000	* **6004**	**ZZ**	**VV**	**DDU**	—	—	—	—	—	—	—	—	—	24	25.5	38	0.6	—	—	0.068
	42	12	0.6	9 400	5 000	13.8	18 000	11 000	20 000	**6004**	**ZZ**	**VV**	**DDU**	**N**	**NR**	2.06	1.35	39.75	0.4	0.5	46.3	1.12	24	25.5	38	0.6	47	2.9	0.068
	47	14	1	13 400	6 600	13.1	17 000	11 000	20 000	* **6204**	**ZZ**	**VV**	**DDU**	—	—	—	—	—	—	—	—	—	25	26.5	42	1	—	—	0.107
	47	14	1	12 800	6 600	13.1	15 000	11 000	18 000	**6204**	**ZZ**	**VV**	**DDU**	**N**	**NR**	2.46	1.35	44.6	0.4	0.5	52.7	1.12	25	26.5	42	1	53.5	3.3	0.107
	52	15	1.1	16 700	7 900	12.4	16 000	10 000	19 000	* **6304**	**ZZ**	**VV**	**DDU**	—	—	—	—	—	—	—	—	—	26.5	28	45.5	1	—	—	0.145
	52	15	1.1	15 900	7 900	12.4	14 000	10 000	17 000	**6304**	**ZZ**	**VV**	**DDU**	**N**	**NR**	2.46	1.35	49.73	0.4	0.5	57.9	1.12	26.5	28	45.5	1	58.5	3.3	0.145
22	44	12	0.6	9 400	5 050	14.0	17 000	11 000	20 000	**60/22**	**ZZ**	**VV**	**DDU**	**N**	**NR**	2.06	1.35	41.75	0.4	0.5	48.3	1.12	26	26.5	40	0.6	49	2.9	0.074
	50	14	1	12 900	6 800	13.5	14 000	9 500	16 000	**62/22**	**ZZ**	**VV**	**DDU**	**N**	**NR**	2.46	1.35	47.6	0.4	0.5	55.7	1.12	27	29.5	45	1	56.5	3.3	0.119
	56	16	1.1	18 400	9 250	12.4	13 000	9 500	16 000	**63/22**	**ZZ**	**VV**	**DDU**	**N**	**NR**	2.46	1.35	53.6	0.4	0.5	61.7	1.12	28.5	30.5	49.5	1	62.5	3.3	0.179
25	37	7	0.3	4 500	3 150	16.1	18 000	10 000	22 000	**6805**	**ZZ**	**VV**	**DD**	**N**	**NR**	1.30	0.95	35.7	0.25	0.3	39.8	0.85	27	27	35	0.3	40.5	1.8	0.021
	42	9	0.3	7 050	4 550	15.4	16 000	10 000	19 000	**6905**	**ZZ**	**VV**	**DDU**	**N**(3)	**NR**(3)	1.70	0.95	40.7	0.25	0.3	44.8	0.85	27	28.5	40	0.3	45.5	2.3	0.042
	47	8	0.3	8 850	5 600	15.1	15 000	—	18 000	**16005**	—	—	—	—	—	—	—	—	—	—	—	—	27	—	45	0.3	—	—	0.059
	47	12	0.6	10 600	5 850	14.5	18 000	9 500	22 000	* **6005**	**ZZ**	**VV**	**DDU**	—	—	—	—	—	—	—	—	—	29	30	43	0.6	—	—	0.079
	47	12	0.6	10 100	5 850	14.5	15 000	9 500	18 000	**6005**	**ZZ**	**VV**	**DDU**	**N**	**NR**	2.06	1.35	44.6	0.4	0.5	52.7	1.12	29	30	43	0.6	53.5	2.9	0.079
	52	15	1	14 700	7 850	13.9	15 000	9 000	18 000	* **6205**	**ZZ**	**VV**	**DDU**	—	—	—	—	—	—	—	—	—	30	32	47	1	—	—	0.129
	52	15	1	14 000	7 850	13.9	13 000	9 000	15 000	**6205**	**ZZ**	**VV**	**DDU**	**N**	**NR**	2.46	1.35	49.73	0.4	0.5	57.9	1.12	30	32	47	1	58.5	3.3	0.129
	62	17	1.1	21 600	11 200	13.2	13 000	8 000	16 000	* **6305**	**ZZ**	**VV**	**DDU**	—	—	—	—	—	—	—	—	—	31.5	36	55.5	1	—	—	0.235
	62	17	1.1	20 600	11 200	13.2	11 000	8 000	13 000	**6305**	**ZZ**	**VV**	**DDU**	**N**	**NR**	3.28	1.9	59.61	0.6	0.5	67.7	1.7	31.5	36	55.5	1	68.5	4.6	0.235
28	52	12	0.6	12 500	7 400	14.5	14 000	8 500	16 000	**60/28**	**ZZ**	**VV**	**DDU**	**N**	**NR**	2.06	1.35	49.73	0.4	0.5	57.9	1.12	32	34	48	0.6	58.5	2.9	0.096
	58	16	1	16 600	9 500	13.9	12 000	8 000	14 000	**62/28**	**ZZ**	**VV**	**DDU**	**N**	**NR**	2.46	1.35	55.6	0.4	0.5	63.7	1.12	33	35.5	53	1	64.5	3.3	0.175
	68	18	1.1	26 700	14 000	12.4	10 000	7 500	13 000	**63/28**	**ZZ**	**VV**	**DDU**	**N**	**NR**	3.28	1.9	64.82	0.6	0.5	74.6	1.7	34.5	38	61.5	1	76	4.6	0.287
30	42	7	0.3	4 700	3 650	16.4	15 000	9 000	18 000	**6806**	**ZZ**	**VV**	**DD**	**N**	**NR**	1.30	0.95	40.7	0.25	0.3	44.8	0.85	32	32	40	0.3	45.5	1.8	0.024
	47	9	0.3	7 250	5 000	15.8	14 000	8 500	17 000	**6906**	**ZZ**	**VV**	**DDU**	**N**	**NR**	1.70	0.95	45.7	0.25	0.3	49.8	0.85	32	34	45	0.3	50.5	2.3	0.052
	55	9	0.3	11 200	7 350	15.2	13 000	—	15 000	**16006**	—	—	—	—	—	—	—	—	—	—	—	—	32	—	53	0.3	—	—	0.087
	55	13	1	13 900	8 300	14.7	15 000	8 000	18 000	* **6006**	**ZZ**	**VV**	**DDU**	—	—	—	—	—	—	—	—	—	35	36.5	50	1	—	—	0.116
	55	13	1	13 200	8 300	14.7	13 000	8 000	15 000	**6006**	**ZZ**	**VV**	**DDU**	**N**	**NR**	2.08	1.35	52.6	0.4	0.5	60.7	1.12	35	36.5	50	1	61.5	2.9	0.116
	62	16	1	20 400	11 300	13.8	12 000	7 500	15 000	* **6206**	**ZZ**	**VV**	**DDU**	—	—	—	—	—	—	—	—	—	35	38.5	57	1	—	—	0.199
	62	16	1	19 500	11 300	13.8	11 000	7 500	13 000	**6206**	**ZZ**	**VV**	**DDU**	**N**	**NR**	3.28	1.9	59.61	0.6	0.5	67.7	1.7	35	38.5	57	1	68.5	4.6	0.199
	72	19	1.1	28 000	15 000	13.3	11 000	6 700	13 000	* **6306**	**ZZ**	**VV**	**DDU**	—	—	—	—	—	—	—	—	—	36.5	42.5	65.5	1	—	—	0.345
	72	19	1.1	26 700	15 000	13.3	9 500	6 700	12 000	**6306**	**ZZ**	**VV**	**DDU**	**N**	**NR**	3.28	1.9	68.81	0.6	0.5	78.6	1.7	36.5	42.5	65.5	1	80	4.6	0.345

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

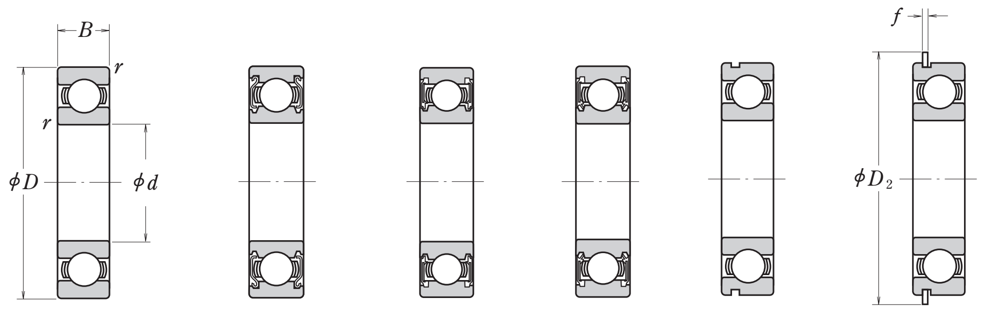
(2) When heavy axial loads are applied, d_a and D_a can be adjusted up to the shoulder diameter of the races. Please consult NSK for details.

(3) Ring types N and NR are applicable only to open bearings. Please consult NSK about the snap ring groove dimensions of sealed or shielded bearings.

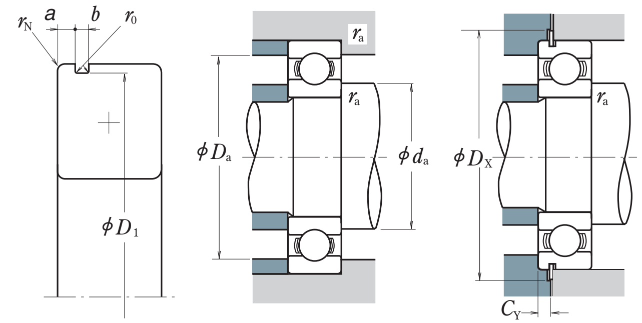
Remarks
1. Diameter Series 7 (extra-thin wall) bearings are also available; please contact NSK for details.
2. When using bearings with rotating outer rings, contact NSK if they are sealed, shielded, or have snap rings.
3. Bearings denoted by an asterisk (*) are NSKHPS™ deep groove ball bearings.

SINGLE-ROW DEEP GROOVE BALL BEARINGS

Bore Diameter 32 – 45 mm



Open	Shielded ZZ	Non-Contact Sealed VV	Contact Sealed DD · DDU	With Snap Ring Groove N	With Snap Ring NR



Dynamic Equivalent Load

$P = XF_r + YF_a$

$\frac{f_0 F_a}{C_{0r}}$	e	$\frac{F_a}{F_r} \leq e$ X	$\frac{F_a}{F_r} \leq e$ Y	$\frac{F_a}{F_r} > e$ X	$\frac{F_a}{F_r} > e$ 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

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

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

Boundary Dimensions (mm) d	D	B	r min.	Basic Load Ratings (N) C_r	C_{0r}	Factor f_0	Limiting Speeds (min⁻¹) Grease Open Z · ZZ V · VV	Grease DU DDU	Oil Open Z	Bearing Designations Open	Shielded	Sealed	Sealed	With Snap Ring Groove	With Snap Ring	Snap Ring Groove Dimensions (1) (mm) a max.	b min.	D_1 max.	r_0 max.	r_N min.	Snap Ring (1) Dimensions (mm) D_2 max.	f max.	Abutment and Fillet Dimensions (mm) d_a(2) min.	d_a(2) max.	D_a(2) max.	r_a max.	D_x min.	C_Y max.	Mass (kg) approx.
32	58	13	1	15 100	9 150	14.5	12 000	7 500	14 000	**60/32**	**ZZ**	**VV**	**DDU**	**N**	**NR**	2.08	1.35	55.6	0.4	0.5	63.7	1.12	37	38.5	53	1	64.5	2.9	0.122
	65	17	1	20 700	11 600	13.6	10 000	7 100	12 000	**62/32**	**ZZ**	**VV**	**DDU**	**N**	**NR**	3.28	1.9	62.6	0.6	0.5	70.7	1.7	37	40	60	1	71.5	4.6	0.225
	75	20	1.1	29 900	17 000	13.2	9 000	6 300	11 000	**63/32**	**ZZ**	**VV**	**DDU**	**N**	**NR**	3.28	1.9	71.83	0.6	0.5	81.6	1.7	38.5	44.5	68.5	1	83	4.6	0.389
35	47	7	0.3	4 900	4 100	16.7	14 000	7 500	16 000	**6807**	**ZZ**	**VV**	**DD**	**N**	**NR**	1.30	0.95	45.7	0.25	0.3	49.8	0.85	37	37	45	0.3	50.5	1.8	0.027
	55	10	0.6	10 600	7 250	15.5	12 000	7 500	15 000	**6907**	**ZZ**	**VV**	**DDU**	**N**	**NR**	1.70	0.95	53.7	0.25	0.5	57.8	0.85	39	39	51	0.6	58.5	2.3	0.075
	62	9	0.3	11 700	8 200	15.6	11 000	—	13 000	**16007**	—	—	—	—	—	—	—	—	—	—	—	—	37	—	60	0.3	—	—	0.107
	62	14	1	16 800	10 300	14.8	13 000	6 700	15 000	* **6007**	**ZZ**	**VV**	**DDU**	—	—	—	—	—	—	—	—	—	40	41.5	57	1	—	—	0.151
	62	14	1	16 000	10 300	14.8	11 000	6 700	13 000	**6007**	**ZZ**	**VV**	**DDU**	**N**	**NR**	2.08	1.9	59.61	0.6	0.5	67.7	1.7	40	41.5	57	1	68.5	3.4	0.151
	72	17	1.1	27 000	15 300	13.8	11 000	6 300	13 000	* **6207**	**ZZ**	**VV**	**DDU**	—	—	—	—	—	—	—	—	—	41.5	44.5	65.5	1	—	—	0.284
	72	17	1.1	25 700	15 300	13.8	9 500	6 300	11 000	**6207**	**ZZ**	**VV**	**DDU**	**N**	**NR**	3.28	1.9	68.81	0.6	0.5	78.6	1.7	41.5	44.5	65.5	1	80	4.6	0.284
	80	21	1.5	35 000	19 200	13.2	10 000	6 000	12 000	* **6307**	**ZZ**	**VV**	**DDU**	—	—	—	—	—	—	—	—	—	43	47	72	1.5	—	—	0.464
	80	21	1.5	33 500	19 200	13.2	8 500	6 000	10 000	**6307**	**ZZ**	**VV**	**DDU**	**N**	**NR**	3.28	1.9	76.81	0.6	0.5	86.6	1.7	43	47	72	1.5	88	4.6	0.464
40	52	7	0.3	6 350	5 550	17.0	12 000	6 700	14 000	**6808**	**ZZ**	**VV**	**DD**	**N**	**NR**	1.30	0.95	50.7	0.25	0.3	54.8	0.85	42	42	50	0.3	55.5	1.8	0.031
	62	12	0.6	13 700	10 000	15.7	11 000	6 300	13 000	**6908**	**ZZ**	**VV**	**DDU**	**N**	**NR**	1.70	0.95	60.7	0.25	0.5	64.8	0.85	44	46	58	0.6	65.5	2.3	0.112
	68	9	0.3	12 600	9 650	16.0	10 000	—	12 000	**16008**	—	—	—	—	—	—	—	—	—	—	—	—	42	—	66	0.3	—	—	0.13
	68	15	1	17 600	11 500	15.3	12 000	6 000	14 000	* **6008**	**ZZ**	**VV**	**DDU**	—	—	—	—	—	—	—	—	—	45	47.5	63	1	—	—	0.19
	68	15	1	16 800	11 500	15.3	10 000	6 000	12 000	**6008**	**ZZ**	**VV**	**DDU**	**N**	**NR**	2.49	1.9	64.82	0.6	0.5	74.6	1.7	45	47.5	63	1	76	3.8	0.19
	80	18	1.1	30 500	17 900	14.0	9 500	5 600	12 000	* **6208**	**ZZ**	**VV**	**DDU**	—	—	—	—	—	—	—	—	—	46.5	50.5	73.5	1	—	—	0.366
	80	18	1.1	29 100	17 900	14.0	8 500	5 600	10 000	**6208**	**ZZ**	**VV**	**DDU**	**N**	**NR**	3.28	1.9	76.81	0.6	0.5	86.6	1.7	46.5	50.5	73.5	1	88	4.6	0.366
	90	23	1.5	43 000	24 000	13.2	9 000	5 300	11 000	* **6308**	**ZZ**	**VV**	**DDU**	—	—	—	—	—	—	—	—	—	48	53	82	1.5	—	—	0.636
	90	23	1.5	40 500	24 000	13.2	7 500	5 300	9 000	**6308**	**ZZ**	**VV**	**DDU**	**N**	**NR**	3.28	2.7	86.79	0.6	0.5	96.5	2.46	48	53	82	1.5	98	5.4	0.636
45	58	7	0.3	6 600	6 150	17.2	11 000	6 000	13 000	**6809**	**ZZ**	**VV**	**DD**	**N**	**NR**	1.30	0.95	56.7	0.25	0.3	60.8	0.85	47	47.5	56	0.3	61.5	1.8	0.038
	68	12	0.6	14 100	10 900	15.9	9 500	5 600	12 000	**6909**	**ZZ**	**VV**	**DDU**	**N**	**NR**	1.70	0.95	66.7	0.25	0.3(3)	70.8	0.85	49	50	64	0.6	72	2.3	0.126
	75	10	0.6	14 900	11 400	15.9	9 000	—	11 000	**16009**	—	—	—	—	—	—	—	—	—	—	—	—	49	—	71	0.6	—	—	0.167
	75	16	1	22 000	15 200	15.3	10 000	5 300	12 000	* **6009**	**ZZ**	**VV**	**DDU**	—	—	—	—	—	—	—	—	—	50	53.5	70	1	—	—	0.241
	75	16	1	20 900	15 200	15.3	9 000	5 300	11 000	**6009**	**ZZ**	**VV**	**DDU**	**N**	**NR**	2.49	1.9	71.83	0.6	0.5	81.6	1.7	50	53.5	70	1	83	3.8	0.241
	85	19	1.1	33 000	20 400	14.4	9 000	5 300	11 000	* **6209**	**ZZ**	**VV**	**DDU**	—	—	—	—	—	—	—	—	—	51.5	55.5	78.5	1	—	—	0.42
	85	19	1.1	31 500	20 400	14.4	7 500	5 300	9 000	**6209**	**ZZ**	**VV**	**DDU**	**N**	**NR**	3.28	1.9	81.81	0.6	0.5	91.6	1.7	51.5	55.5	78.5	1	93	4.6	0.42
	100	25	1.5	55 500	32 000	13.1	7 500	4 800	9 500	* **6309**	**ZZ**	**VV**	**DDU**	—	—	—	—	—	—	—	—	—	53	61.5	92	1.5	—	—	0.829
	100	25	1.5	53 000	32 000	13.1	6 700	4 800	8 000	**6309**	**ZZ**	**VV**	**DDU**	**N**	**NR**	3.28	2.7	96.8	0.6	0.5	106.5	2.46	53	61.5	92	1.5	108	5.4	0.829

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

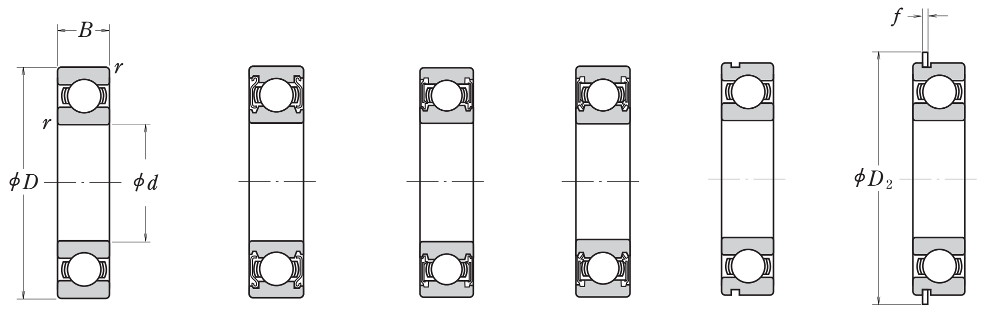
(2) When heavy axial loads are applied, d_a and D_a can be adjusted up to the shoulder diameter of the races. Please consult NSK for details.

(3) Does not conform to ISO15.

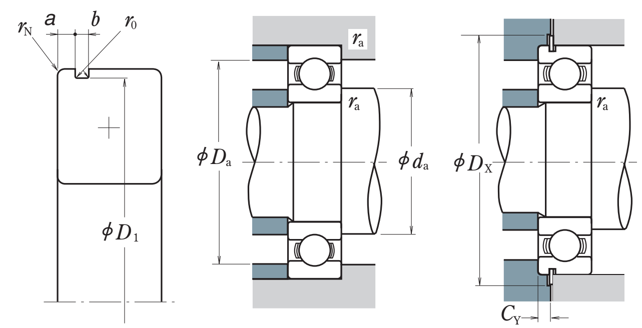
Remarks
1. Diameter Series 7 (extra-thin wall) bearings are also available; please contact NSK for details.
2. When using bearings with rotating outer rings, contact NSK if they are sealed, shielded, or have snap rings.
3. Bearings denoted by an asterisk (*) are NSKHPS™ deep groove ball bearings.

SINGLE-ROW DEEP GROOVE BALL BEARINGS

Bore Diameter 50 – 60 mm



Open | Shielded ZZ | 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	$\frac{F_a}{F_r} \le e$ X	$\frac{F_a}{F_r} \le e$ Y	$\frac{F_a}{F_r} > e$ X	$\frac{F_a}{F_r} > e$ 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

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

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

Boundary Dimensions (mm) d	D	B	r min.	Basic Load Ratings (N) C_r	C_{0r}	Factor f_0	Limiting Speeds (min⁻¹) Grease Open Z · ZZ V · VV	Grease DU DDU	Oil Open Z	Bearing Designations Open	Shielded	Sealed	Sealed	With Snap Ring Groove	With Snap Ring	Snap Ring Groove Dimensions (1) (mm) a max.	b min.	D_1 max.	r_0 max.	r_N min.	Snap Ring (1) Dimensions (mm) D_2 max.	f max.	Abutment and Fillet Dimensions (mm) d_a(2) min.	d_a(2) max.	D_a(2) max.	r_a max.	D_x min.	C_Y max.	Mass (kg) approx.
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	0.050
	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	0.135
	80	10	0.6	15 400	12 400	16.1	8 500	—	10 000	16010	—	—	—	—	—	—	—	—	—	—	—	—	54	—	76	0.6	—	—	0.175
	80	16	1	22 900	16 600	15.6	9 500	4 800	11 000	* 6010	ZZ	VV	DDU	—	—	—	—	—	—	—	—	—	55	58.5	75	1	—	—	0.261
	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	0.261
	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	—	—	0.459
	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	0.459
	110	27	2	65 000	38 500	13.2	7 100	4 300	8 500	* 6310	ZZ	VV	DDU	—	—	—	—	—	—	—	—	—	59	68	101	2	—	—	1.06
	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	1.06
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	0.081
	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	0.189
	90	11	0.6	19 400	16 300	16.2	7 500	—	9 000	16011	—	—	—	—	—	—	—	—	—	—	—	—	59	—	86	0.6	—	—	0.257
	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	—	—	0.381
	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	0.381
	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	—	—	0.619
	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	0.619
	120	29	2	75 000	44 500	13.1	6 700	4 000	8 000	* 6311	ZZ	VV	DDU	—	—	—	—	—	—	—	—	—	64	72.5	111	2	—	—	1.37
	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	1.37
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	0.103
	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	0.192
	95	11	0.6	20 000	17 500	16.3	7 100	—	8 500	16012	—	—	—	—	—	—	—	—	—	—	—	—	64	—	91	0.6	—	—	0.281
	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	—	—	0.412
	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	0.412
	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	—	—	0.783
	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	0.783
	130	31	2.1	86 000	52 000	13.1	6 000	3 600	7 100	* 6312	ZZ	VV	DDU	—	—	—	—	—	—	—	—	—	71	79	119	2	—	—	1.72
	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	1.72

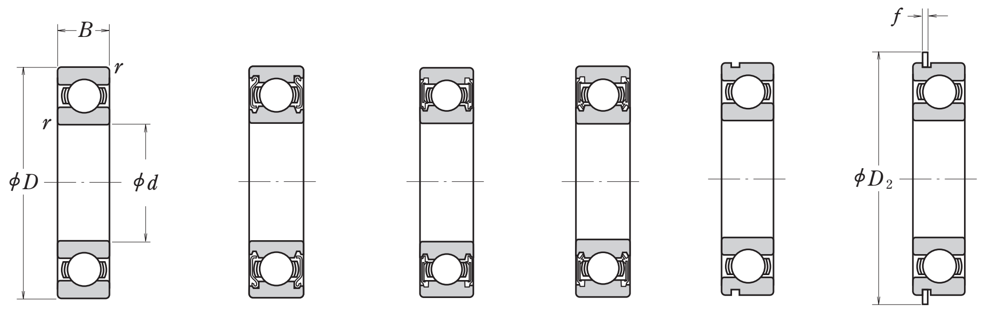
Notes (1) For tolerances of snap ring grooves and snap ring dimensions, refer to Pages A116 to A119.

(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.

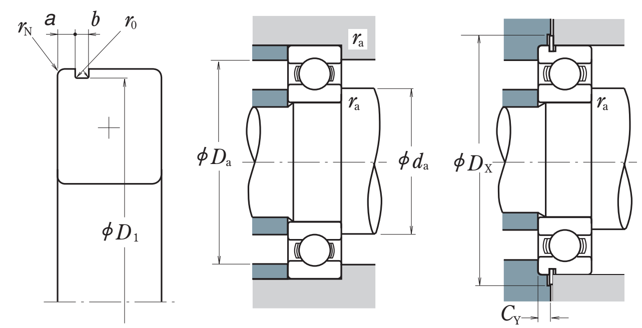
Remarks
1. Diameter Series 7 (extra-thin wall) bearings are also available; please contact NSK for details.
2. When using bearings with rotating outer rings, contact NSK if they are sealed, shielded, or have snap rings.
3. Please consult NSK about the snap ring groove dimensions of Dimension Series 18 and 19 sealed and shielded bearings when the diameter is 50 mm or more.
4. Bearings denoted by an asterisk (*) are NSKHPS™ deep groove ball bearings.

SINGLE-ROW DEEP GROOVE BALL BEARINGS

Bore Diameter 65 – 75 mm



Open | Shielded ZZ | Non-Contact Sealed VV | Contact Sealed DD · DDU | With Snap Ring Groove N | With Snap Ring NR



Dynamic Equivalent Load

$P = XF_r + YF_a$

$\frac{f_0 F_a}{C_{0r}}$	e	$\frac{F_a}{F_r} \le e$		$\frac{F_a}{F_r} > e$	
		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

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

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

Boundary Dimensions (mm)				Basic Load Ratings (N)		Factor	Limiting Speeds (min⁻¹)			Bearing Designations						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		With Snap Ring Groove	With Snap Ring	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.
65	85	10	0.6	11 900	12 100	17.0	7 500	4 000	8 500	**6813**	**ZZ**	**VV**	**DD**	**N**	**NR**	1.70	1.3	82.9	0.4	0.5	89.4	1.12	69	69	81	0.6	91	2.5	0.128
	90	13	1	17 400	16 100	16.6	7 100	4 000	8 500	**6913**	**ZZ**	**VV**	**DDU**	**N**	**NR**	2.10	1.3	87.9	0.4	0.5	94.4	1.12	70	71.5	85	1	96	2.9	0.218
	100	11	0.6	20 500	18 700	16.5	6 700	—	8 000	**16013**	—	—	—	—	—	—	—	—	—	—	—	—	69	—	96	0.6	—	—	0.30
	100	18	1.1	32 000	25 200	15.8	7 500	4 000	9 000	∗ **6013**	**ZZ**	**VV**	**DDU**	—	—	—	—	—	—	—	—	—	71.5	73	93.5	1	—	—	0.439
	100	18	1.1	30 500	25 200	15.8	6 700	4 000	8 000	**6013**	**ZZ**	**VV**	**DDU**	**N**	**NR**	2.87	2.7	96.8	0.6	0.5	106.5	2.46	71.5	73	93.5	1	108	5	0.439
	120	23	1.5	60 000	40 000	14.4	6 300	3 600	7 500	∗ **6213**	**ZZ**	**VV**	**DDU**	—	—	—	—	—	—	—	—	—	73	80	112	1.5	—	—	1.0
	120	23	1.5	57 500	40 000	14.4	5 300	3 600	6 300	**6213**	**ZZ**	**VV**	**DDU**	**N**	**NR**	4.06	3.1	115.21	0.6	0.5	129.7	2.82	73	80	112	1.5	131.5	6.5	1.0
	140	33	2.1	97 500	60 000	13.2	5 600	3 400	6 700	∗ **6313**	**ZZ**	**VV**	**DDU**	—	—	—	—	—	—	—	—	—	76	85.5	129	2	—	—	2.11
	140	33	2.1	92 500	60 000	13.2	4 800	3 400	6 000	**6313**	**ZZ**	**VV**	**DDU**	**N**	**NR**	4.90	3.1	135.23	0.6	0.5	149.7	2.82	76	85.5	129	2	152	7.3	2.11
70	90	10	0.6	12 100	12 700	17.2	6 700	3 800	8 000	**6814**	**ZZ**	**VV**	**DD**	**N**	**NR**	1.70	1.3	87.9	0.4	0.5	94.4	1.12	74	74.5	86	0.6	96	2.5	0.134
	100	16	1	23 700	21 200	16.3	6 300	3 600	7 500	**6914**	**ZZ**	**VV**	**DDU**	**N**	**NR**	2.50	1.3	97.9	0.4	0.5	104.4	1.12	75	77.5	95	1	106	3.3	0.349
	110	13	0.6	26 800	23 600	16.3	6 000	—	7 100	**16014**	—	—	—	—	—	—	—	—	—	—	—	—	74	—	106	0.6	—	—	0.441
	110	20	1.1	40 000	31 000	15.6	7 100	3 600	8 500	∗ **6014**	**ZZ**	**VV**	**DDU**	—	—	—	—	—	—	—	—	—	76.5	80.5	103.5	1	—	—	0.608
	110	20	1.1	38 000	31 000	15.6	6 000	3 600	7 100	**6014**	**ZZ**	**VV**	**DDU**	**N**	**NR**	2.87	2.7	106.81	0.6	0.5	116.6	2.46	76.5	80.5	103.5	1	118	5	0.608
	125	24	1.5	65 500	44 000	14.5	6 000	3 400	7 100	∗ **6214**	**ZZ**	**VV**	**DDU**	—	—	—	—	—	—	—	—	—	78	84	117	1.5	—	—	1.09
	125	24	1.5	62 000	44 000	14.5	5 000	3 400	6 300	**6214**	**ZZ**	**VV**	**DDU**	**N**	**NR**	4.06	3.1	120.22	0.6	0.5	134.7	2.82	78	84	117	1.5	136.5	6.5	1.09
	150	35	2.1	109 000	68 000	13.2	5 300	3 200	6 300	∗ **6314**	**ZZ**	**VV**	**DDU**	—	—	—	—	—	—	—	—	—	81	92	139	2	—	—	2.57
	150	35	2.1	104 000	68 000	13.2	4 500	3 200	5 300	**6314**	**ZZ**	**VV**	**DDU**	**N**	**NR**	4.90	3.1	145.24	0.6	0.5	159.7	2.82	81	92	139	2	162	7.3	2.57
75	95	10	0.6	12 500	13 900	17.3	6 300	3 600	7 500	**6815**	**ZZ**	**VV**	**DDU**	**N**	**NR**	1.70	1.3	92.9	0.4	0.5	99.4	1.12	79	79.5	91	0.6	101	2.5	0.149
	105	16	1	24 400	22 600	16.5	6 000	3 400	7 100	**6915**	**ZZ**	**VV**	**DDU**	**N**	**NR**	2.50	1.3	102.6	0.4	0.5	110.7	1.12	80	82	100	1	112	3.3	0.364
	115	13	0.6	27 600	25 300	16.4	5 600	—	6 700	**16015**	—	—	—	—	—	—	—	—	—	—	—	—	79	—	111	0.6	—	—	0.463
	115	20	1.1	41 500	33 500	15.8	6 700	3 400	8 000	∗ **6015**	**ZZ**	**VV**	**DDU**	—	—	—	—	—	—	—	—	—	81.5	85.5	108.5	1	—	—	0.649
	115	20	1.1	39 500	33 500	15.8	5 600	3 400	6 700	**6015**	**ZZ**	**VV**	**DDU**	**N**	**NR**	2.87	2.7	111.81	0.6	0.5	121.6	2.46	81.5	85.5	108.5	1	123	5	0.649
	130	25	1.5	69 500	49 500	14.7	5 600	3 200	6 700	∗ **6215**	**ZZ**	**VV**	**DDU**	—	—	—	—	—	—	—	—	—	83	90	122	1.5	—	—	1.19
	130	25	1.5	66 000	49 500	14.7	4 800	3 200	5 600	**6215**	**ZZ**	**VV**	**DDU**	**N**	**NR**	4.06	3.1	125.22	0.6	0.5	139.7	2.82	83	90	122	1.5	141.5	6.5	1.19
	160	37	2.1	119 000	77 000	13.2	4 800	2 800	6 000	∗ **6315**	**ZZ**	**VV**	**DDU**	—	—	—	—	—	—	—	—	—	86	98.5	149	2	—	—	3.08
	160	37	2.1	113 000	77 000	13.2	4 300	2 800	5 000	**6315**	**ZZ**	**VV**	**DDU**	**N**	**NR**	4.90	3.1	155.22	0.6	0.5	169.7	2.82	86	98.5	149	2	172	7.3	3.08

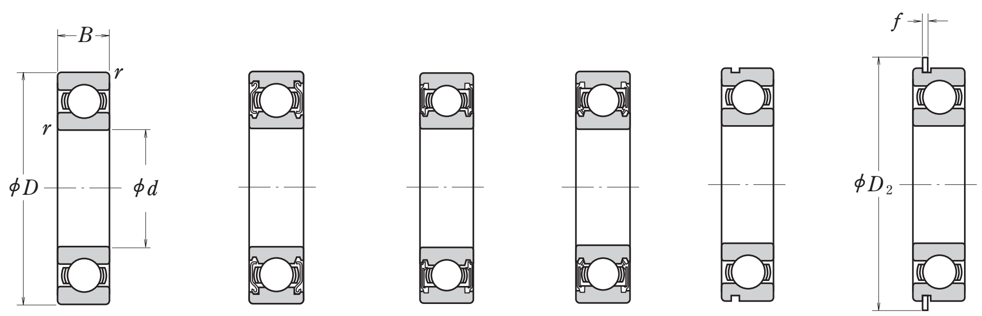
Notes ([1]) For tolerances of snap ring grooves and snap ring dimensions, refer to Pages A116 to A119.

([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.

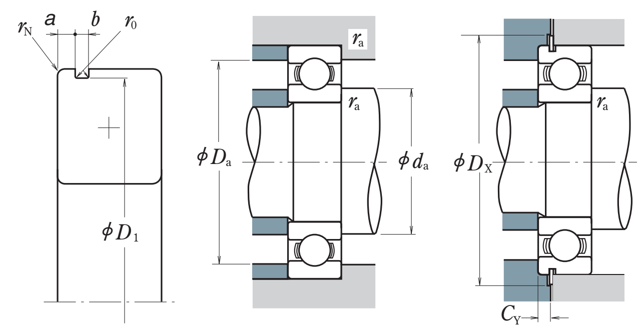
Remarks
1. Diameter Series 7 (extra-thin wall) bearings are also available; please contact NSK for details.
2. When using bearings with rotating outer rings, contact NSK if they are sealed, shielded, or have snap rings.
3. Please consult NSK about the snap ring groove dimensions of Dimension Series 18 and 19 sealed and shielded bearings when the diameter is 50 mm or more.
4. Bearings denoted by an asterisk (∗) are NSKHPS™ deep groove ball bearings.

SINGLE-ROW DEEP GROOVE BALL BEARINGS

Bore Diameter 80 – 90 mm



Open | Shielded ZZ | Non-Contact Sealed VV | Contact Sealed DD · DDU | With Snap Ring Groove N | With Snap Ring NR



Dynamic Equivalent Load

$P = XF_r + YF_a$

$\frac{f_0 F_a}{C_{0r}}$	e	$\frac{F_a}{F_r} \leqq e$ X	$\frac{F_a}{F_r} \leqq e$ Y	$\frac{F_a}{F_r} > e$ X	$\frac{F_a}{F_r} > e$ 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) d	D	B	r min.	Basic Load Ratings (N) C_r	C_{0r}	Factor f_0	Limiting Speeds (min^{-1}) Grease Open Z · ZZ V · VV	Grease DU DDU	Oil Open Z	Bearing Designations Open	Shielded	Sealed	Sealed	With Snap Ring Groove	With Snap Ring	Snap Ring Groove Dimensions (1) (mm) a max.	b min.	D_1 max.	r_0 max.	r_N min.	Snap Ring (1) Dimensions (mm) D_2 max.	f max.	Abutment and Fillet Dimensions (mm) d_a(2) min.	d_a(2) max.	D_a(2) max.	r_a max.	D_x min.	C_Y max.	Mass (kg) approx.
80	100	10	0.6	12 700	14 500	17.4	6 000	3 400	7 100	**6816**	**ZZ**	**VV**	**DDU**	**N**	**NR**	1.7	1.3	97.9	0.4	0.5	104.4	1.12	84	84.5	96	0.6	106	2.5	0.151
	110	16	1	25 000	24 000	16.6	5 600	3 200	6 700	**6916**	**ZZ**	**VV**	**DDU**	**N**	**NR**	2.5	1.3	107.6	0.4	0.5	115.7	1.12	85	87.5	105	1	117	3.3	0.391
	125	14	0.6	32 000	29 600	16.4	5 300	—	6 300	**16016**	—	—	—	—	—	—	—	—	—	—	—	—	84	—	121	0.6	—	—	0.621
	125	22	1.1	50 000	40 000	15.6	6 300	3 200	7 100	* **6016**	**ZZ**	**VV**	**DDU**	—	—	—	—	—	—	—	—	—	86.5	91	118.5	1	—	—	0.872
	125	22	1.1	47 500	40 000	15.6	5 300	3 200	6 300	**6016**	**ZZ**	**VV**	**DDU**	**N**	**NR**	2.87	3.1	120.22	0.6	0.5	134.7	2.82	86.5	91	118.5	1	136.5	5.3	0.872
	140	26	2	76 500	53 000	14.6	5 300	3 000	6 300	* **6216**	**ZZ**	**VV**	**DDU**	—	—	—	—	—	—	—	—	—	89	95.5	131	2	—	—	1.42
	140	26	2	72 500	53 000	14.6	4 500	3 000	5 300	**6216**	**ZZ**	**VV**	**DDU**	**N**	**NR**	4.90	3.1	135.23	0.6	0.5	149.7	2.82	89	95.5	131	2	152	7.3	1.42
	170	39	2.1	129 000	86 500	13.3	4 500	2 800	5 600	* **6316**	**ZZ**	**VV**	**DDU**	—	—	—	—	—	—	—	—	—	91	104.5	159	2	—	—	3.67
	170	39	2.1	123 000	86 500	13.3	4 000	2 800	4 800	**6316**	**ZZ**	**VV**	**DDU**	**N**	**NR**	5.69	3.5	163.65	0.6	0.5	182.9	3.1	91	104.5	159	2	185	8.4	3.67
85	110	13	1	18 700	20 000	17.1	5 600	3 200	6 700	**6817**	**ZZ**	**VV**	**DDU**	**N**	**NR**	2.10	1.3	107.6	0.4	0.5	115.7	1.12	90	90.5	105	1	117	2.9	0.263
	120	18	1.1	32 000	29 600	16.4	5 300	3 000	6 300	**6917**	**ZZ**	**VV**	**DDU**	**N**	**NR**	3.30	1.3	117.6	0.4	0.5	125.7	1.12	91.5	94.5	113.5	1	127	4.1	0.55
	130	14	0.6	33 000	31 500	16.5	5 000	—	6 000	**16017**	—	—	—	—	—	—	—	—	—	—	—	—	89	—	126	0.6	—	—	0.652
	130	22	1.1	52 000	43 000	15.8	6 000	3 000	7 100	* **6017**	**ZZ**	**VV**	**DDU**	—	—	—	—	—	—	—	—	—	91.5	96	123.5	1	—	—	0.918
	130	22	1.1	49 500	43 000	15.8	5 000	3 000	6 000	**6017**	**ZZ**	**VV**	**DDU**	**N**	**NR**	2.87	3.1	125.22	0.6	0.5	139.7	2.82	91.5	96	123.5	1	141.5	5.3	0.918
	150	28	2	88 000	62 000	14.5	4 800	2 800	6 000	* **6217**	**ZZ**	**VV**	**DDU**	—	—	—	—	—	—	—	—	—	94	102	141	2	—	—	1.76
	150	28	2	84 000	62 000	14.5	4 300	2 800	5 000	**6217**	**ZZ**	**VV**	**DDU**	**N**	**NR**	4.90	3.1	145.24	0.6	0.5	159.7	2.82	94	102	141	2	162	7.3	1.76
	180	41	3	139 000	97 000	13.3	4 300	2 600	5 000	* **6317**	**ZZ**	**VV**	**DDU**	—	—	—	—	—	—	—	—	—	98	110.5	167	2.5	—	—	4.28
	180	41	3	133 000	97 000	13.3	3 800	2 600	4 500	**6317**	**ZZ**	**VV**	**DDU**	**N**	**NR**	5.69	3.5	173.66	0.6	0.5	192.9	3.1	98	110.5	167	2.5	195	8.4	4.28
90	115	13	1	19 000	21 000	17.2	5 300	3 000	6 300	**6818**	**ZZ**	**VV**	**DDU**	**N**	**NR**	2.10	1.3	112.6	0.4	0.5	120.7	1.12	95	95.5	110	1	122	2.9	0.276
	125	18	1.1	33 000	31 500	16.5	5 000	2 800	6 000	**6918**	**ZZ**	**VV**	**DDU**	**N**	**NR**	3.30	1.3	122.6	0.4	0.5	130.7	1.12	96.5	98.5	118.5	1	132	4.1	0.585
	140	16	1	41 500	39 500	16.3	4 800	—	5 600	**16018**	—	—	—	—	—	—	—	—	—	—	—	—	95	—	135	1	—	—	0.873
	140	24	1.5	61 000	50 000	15.6	5 600	2 800	6 300	* **6018**	**ZZ**	**VV**	**DDU**	—	—	—	—	—	—	—	—	—	98	103	132	1.5	—	—	1.19
	140	24	1.5	58 000	50 000	15.6	4 800	2 800	5 600	**6018**	**ZZ**	**VV**	**DDU**	**N**	**NR**	3.71	3.1	135.23	0.6	0.5	149.7	2.82	98	103	132	1.5	152	6.1	1.19
	160	30	2	101 000	71 500	14.5	4 500	2 600	5 600	* **6218**	**ZZ**	**VV**	**DDU**	—	—	—	—	—	—	—	—	—	99	107.5	151	2	—	—	2.18
	160	30	2	96 000	71 500	14.5	4 000	2 600	4 800	**6218**	**ZZ**	**VV**	**DDU**	**N**	**NR**	4.90	3.1	155.22	0.6	0.5	169.7	2.82	99	107.5	151	2	172	7.3	2.18
	190	43	3	150 000	107 000	13.3	4 000	2 400	4 800	* **6318**	**ZZ**	**VV**	**DDU**	—	—	—	—	—	—	—	—	—	103	117	177	2.5	—	—	4.98
	190	43	3	143 000	107 000	13.3	3 600	2 400	4 300	**6318**	**ZZ**	**VV**	**DDU**	**N**	**NR**	5.69	3.5	183.64	0.6	0.5	202.9	3.1	103	117	177	2.5	205	8.4	4.98

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

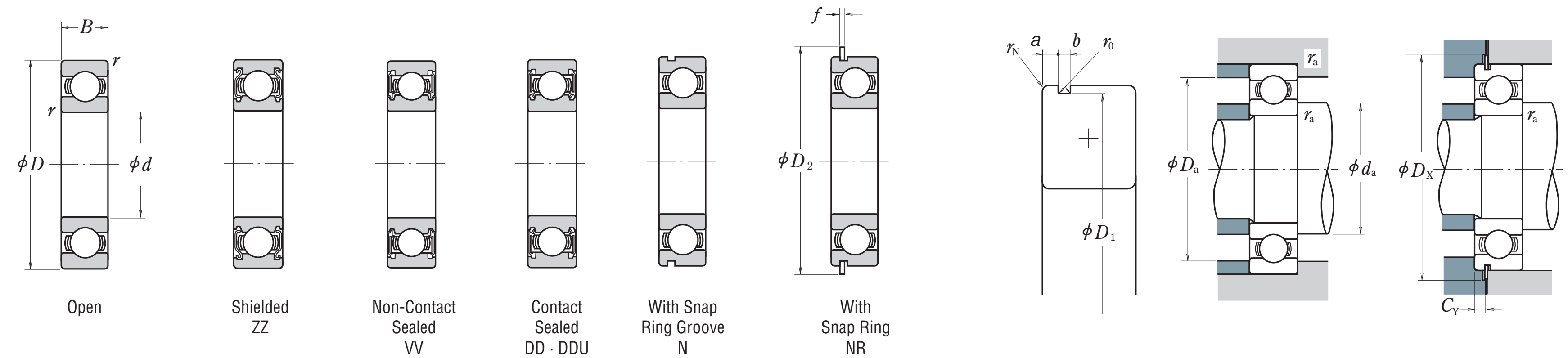
(2) When heavy axial loads are applied, d_a and D_a can be adjusted up to the shoulder diameter of the races. Please consult NSK for details.

Remarks

1. Diameter Series 7 (extra-thin wall) bearings are also available; please contact NSK for details.
2. When using bearings with rotating outer rings, contact NSK if they are sealed, shielded, or have snap rings.
3. 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.
4. Bearings denoted by an asterisk (*) are NSKHPS™ deep groove ball bearings.

SINGLE-ROW DEEP GROOVE BALL BEARINGS

Bore Diameter 95 – 105 mm



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) d	D	B	r min.	Basic Load Ratings (N) C_r	C_{0r}	Factor f_0	Limiting Speeds (min⁻¹) Grease Open Z · ZZ V · VV	Grease DU DDU	Oil Open Z	Bearing Designations Open	Shielded	Sealed	Sealed	With Snap Ring Groove	With Snap Ring
95	120	13	1	19 300	22 000	17.2	5 000	2 800	6 000	**6819**	**ZZ**	**VV**	**DD**	**N**	**NR**
	130	18	1.1	33 500	33 500	16.6	4 800	2 800	5 600	**6919**	**ZZ**	**VV**	**DDU**	**N**	**NR**
	145	16	1	43 000	42 000	16.4	4 500	—	5 300	**16019**	—	—	—	—	—
	145	24	1.5	63 500	54 000	15.8	5 300	2 600	6 000	∗ **6019**	**ZZ**	**VV**	**DDU**	—	—
	145	24	1.5	60 500	54 000	15.8	4 500	2 600	5 300	**6019**	**ZZ**	**VV**	**DDU**	**N**	**NR**
	170	32	2.1	114 000	82 000	14.4	4 300	2 600	5 000	∗ **6219**	**ZZ**	**VV**	**DDU**	—	—
	170	32	2.1	109 000	82 000	14.4	3 800	2 600	4 500	**6219**	**ZZ**	**VV**	**DDU**	**N**	**NR**
	200	45	3	160 000	119 000	13.3	3 400	2 400	4 300	∗ **6319**	**ZZ**	**VV**	**DDU**	—	—
	200	45	3	153 000	119 000	13.3	3 000	2 400	3 600	**6319**	**ZZ**	**VV**	**DDU**	**N**	**NR**
100	125	13	1	19 600	23 000	17.3	4 800	2 800	5 600	**6820**	**ZZ**	**VV**	**DD**	**N**	**NR**
	140	20	1.1	43 000	42 000	16.4	4 500	2 600	5 300	**6920**	**ZZ**	**VV**	**DDU**	**N**	**NR**
	150	16	1	42 500	42 000	16.5	4 300	—	5 300	**16020**	—	—	—	—	—
	150	24	1.5	63 000	54 000	15.9	5 000	2 600	6 000	∗ **6020**	**ZZ**	**VV**	**DDU**	—	—
	150	24	1.5	60 000	54 000	15.9	4 300	2 600	5 300	**6020**	**ZZ**	**VV**	**DDU**	**N**	**NR**
	180	34	2.1	128 000	93 000	14.4	4 000	2 400	4 800	∗ **6220**	**ZZ**	**VV**	**DDU**	—	—
	180	34	2.1	122 000	93 000	14.4	3 600	2 400	4 300	**6220**	**ZZ**	**VV**	**DDU**	**N**	**NR**
	215	47	3	173 000	141 000	13.2	2 800	2 200	3 400	**6320**	**ZZ**	**VV**	**DDU**	—	—
105	130	13	1	19 800	23 900	17.4	4 800	2 600	5 600	**6821**	**ZZ**	**VV**	**DDU**	**N**	**NR**
	145	20	1.1	42 500	42 000	16.5	4 300	—	5 300	**6921**	**ZZ**	**VV**	—	**N**	**NR**
	160	18	1	52 000	50 500	16.3	4 000	—	4 800	**16021**	—	—	—	—	—
	160	26	2	76 000	66 000	15.8	4 500	2 400	5 600	∗ **6021**	**ZZ**	**VV**	**DDU**	—	—
	160	26	2	72 500	66 000	15.8	4 000	2 400	4 800	**6021**	**ZZ**	**VV**	**DDU**	**N**	**NR**
	190	36	2.1	140 000	105 000	14.4	3 800	2 200	4 500	∗ **6221**	**ZZ**	**VV**	**DDU**	—	—
	190	36	2.1	133 000	105 000	14.4	3 400	2 200	4 000	**6221**	**ZZ**	**VV**	**DDU**	**N**	**NR**
	225	49	3	184 000	154 000	13.2	2 600	2 000	3 200	**6321**	**ZZ**	—	**DDU**	—	—

Bearing (Open)	Snap Ring Groove Dimensions (1) (mm) a max.	b min.	D_1 max.	r_0 max.	r_N min.	Snap Ring (1) Dimensions (mm) D_2 max.	f max.	Abutment and Fillet Dimensions (mm) d_a(2) min.	d_a(2) max.	D_a(2) max.	r_a max.	D_x min.	C_Y max.	Mass (kg) approx.
6819	2.10	1.3	117.6	0.4	0.5	125.7	1.12	100	101.5	115	1	127	2.9	0.297
6919	3.30	1.3	127.6	0.4	0.5	135.7	1.12	101.5	103.5	123.5	1	137	4.1	0.601
16019	—	—	—	—	—	—	—	100	—	140	1	—	—	0.904
∗ 6019	—	—	—	—	—	—	—	103	108.5	137	1.5	—	—	1.23
6019	3.71	3.1	140.23	0.6	0.5	154.7	2.82	103	108.5	137	1.5	157	6.1	1.23
∗ 6219	—	—	—	—	—	—	—	106	114	159	2	—	—	2.64
6219	5.69	3.5	163.65	0.6	0.5	182.9	3.1	106	114	159	2	185	8.4	2.64
∗ 6319	—	—	—	—	—	—	—	108	123.5	187	2.5	—	—	5.76
6319	5.69	3.5	193.65	0.6	0.5	212.9	3.1	108	123.5	187	2.5	215	8.4	5.76
6820	2.10	1.3	122.6	0.4	0.5	130.7	1.12	105	105.5	120	1	132	2.9	0.31
6920	3.30	1.9	137.6	0.6	0.5	145.7	1.7	106.5	111	133.5	1	147	4.7	0.828
16020	—	—	—	—	—	—	—	105	—	145	1	—	—	0.945
∗ 6020	—	—	—	—	—	—	—	108	112.5	142	1.5	—	—	1.29
6020	3.71	3.1	145.24	0.6	0.5	159.7	2.82	108	112.5	142	1.5	162	6.1	1.29
∗ 6220	—	—	—	—	—	—	—	111	121.5	169	2	—	—	3.17
6220	5.69	3.5	173.66	0.6	0.5	192.9	3.1	111	121.5	169	2	195	8.4	3.17
6320	—	—	—	—	—	—	—	113	133	202	2.5	—	—	7.04
6821	2.10	1.3	127.6	0.4	0.5	135.7	1.12	110	110.5	125	1	137	2.9	0.324
6921	3.30	1.9	142.6	0.6	0.5	150.7	1.7	111.5	116	138.5	1	152	4.7	0.856
16021	—	—	—	—	—	—	—	110	—	155	1	—	—	1.24
∗ 6021	—	—	—	—	—	—	—	114	120	151	2	—	—	1.58
6021	3.71	3.1	155.22	0.6	0.5	169.7	2.82	114	120	151	2	172	6.1	1.58
∗ 6221	—	—	—	—	—	—	—	116	127.5	179	2	—	—	3.79
6221	5.69	3.5	183.64	0.6	0.5	202.9	3.1	116	127.5	179	2	205	8.4	3.79
6321	—	—	—	—	—	—	—	118	138	212	2.5	—	—	8.09

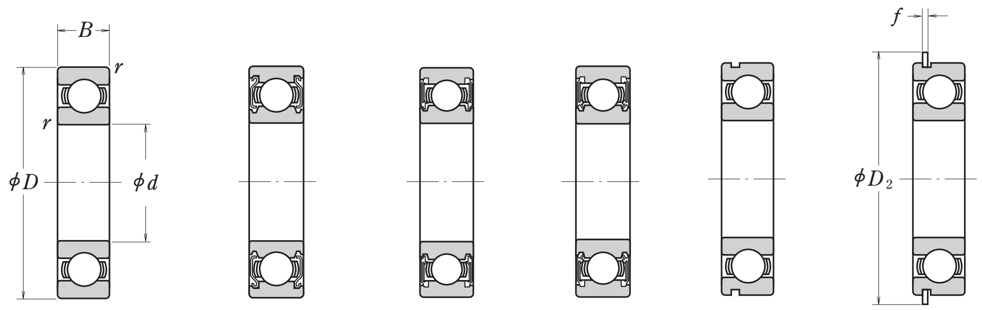
Notes (1) For tolerances of snap ring grooves and snap ring dimensions, refer to Pages A116 to A119.

(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.

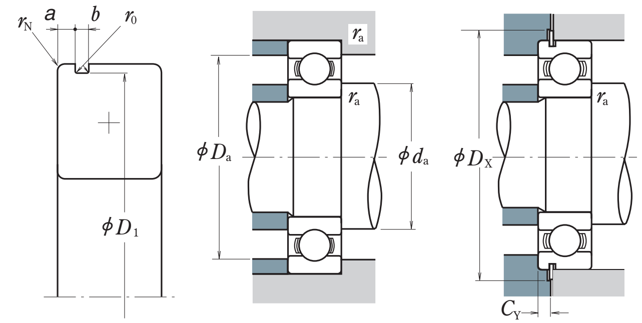
Remarks
1. Diameter Series 7 (extra-thin wall) bearings are also available; please contact NSK for details.
2. When using bearings with rotating outer rings, contact NSK if they are sealed, shielded, or have snap rings.
3. Please consult NSK about the snap ring groove dimensions of Dimension Series 18 and 19 sealed and shielded bearings when the diameter is 50 mm or more.
4. Bearings denoted by an asterisk (∗) are NSKHPS™ deep groove ball bearings.

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	$\frac{F_a}{F_r} \leq e$ X	$\frac{F_a}{F_r} \leq e$ Y	$\frac{F_a}{F_r} > e$ X	$\frac{F_a}{F_r} > e$ 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

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

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

Boundary Dimensions (mm) d	D	B	r min.	Basic Load Ratings (N) C_r	C_{0r}	Factor f_0	Limiting Speeds (min⁻¹) Grease Open Z · ZZ V · VV	Grease DU DDU	Oil Open Z	Bearing Designations Open	Shielded	Sealed	Sealed	With Snap Ring Groove	With Snap Ring	Snap Ring Groove Dimensions ([1]) (mm) a max.	b min.	D_1 max.	r_0 max.	r_N min.	Snap Ring ([1]) Dimensions (mm) D_2 max.	f max.	Abutment and Fillet Dimensions (mm) d_a([2]) min.	d_a([2]) max.	D_a([2]) max.	r_a max.	D_x min.	C_Y max.	Mass (kg) approx.
110	140	16	1	28 100	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	43 500	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	57 500	56 500	16.3	3 800	—	4 500	**16022**	—	—	—	—	—	—	—	—	—	—	—	—	115	—	165	1	—	—	1.51
	170	28	2	89 000	73 000	15.5	4 500	2 200	5 300	* **6022**	**ZZ**	**VV**	**DDU**	—	—	—	—	—	—	—	—	—	119	124.5	161	2	—	—	1.94
	170	28	2	85 000	73 000	15.5	3 800	2 200	4 500	**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	144 000	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	205 000	179 000	13.2	2 400	—	3 000	**6322**	**ZZ**	—	—	—	—	—	—	—	—	—	—	—	123	147	227	2.5	—	—	9.51
120	150	16	1	28 900	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	53 000	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	56 500	57 500	16.5	3 600	—	4 300	**16024**	—	—	—	—	—	—	—	—	—	—	—	—	125	—	175	1	—	—	1.6
	180	28	2	92 500	80 000	15.7	4 000	2 200	4 800	* **6024**	**ZZ**	**VV**	**DDU**	—	—	—	—	—	—	—	—	—	129	134.5	171	2	—	—	2.08
	180	28	2	88 000	80 000	15.7	3 600	2 200	4 300	**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	155 000	131 000	14.4	2 600	2 000	3 200	**6224**	**ZZ**	**VV**	**DDU**	—	—	—	—	—	—	—	—	—	131	146	204	2	—	—	5.29
	260	55	3	207 000	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	37 000	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	65 000	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	75 500	77 500	16.4	3 000	—	3 600	**16026**	—	—	—	—	—	—	—	—	—	—	—	—	136.5	—	193.5	1	—	—	2.4
	200	33	2	106 000	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	167 000	146 000	14.5	2 400	—	3 000	**6226**	**ZZ**	—	—	—	—	—	—	—	—	—	—	—	143	157	217	2.5	—	—	5.96
	280	58	4	229 000	214 000	13.6	2 200	—	2 600	**6326**	**ZZS**	—	—	—	—	—	—	—	—	—	—	—	146	175	264	3	—	—	15.2
140	175	18	1.1	38 500	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	66 500	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	77 500	82 500	16.5	2 800	—	3 400	**16028**	—	—	—	—	—	—	—	—	—	—	—	—	146.5	—	203.5	1	—	—	2.84
	210	33	2	110 000	109 000	16.0	2 800	1 800	3 400	**6028**	**ZZ**	—	**DDU**	—	—	—	—	—	—	—	—	—	149	158.5	201	2	—	—	3.48
	250	42	3	166 000	150 000	14.9	2 200	1 700	2 800	**6228**	**ZZS**	—	**DDU**	—	—	—	—	—	—	—	—	—	153	171.5	237	2.5	—	—	7.68
	300	62	4	253 000	246 000	13.6	2 000	—	2 400	**6328**	**ZZS**	—	—	—	—	—	—	—	—	—	—	—	156	187	284	3	—	—	18.5
150	190	20	1.1	47 500	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	85 000	90 500	16.5	2 600	1 700	3 200	**6930**	**ZZS**	—	**DDU**	—	—	—	—	—	—	—	—	—	159	166	201	2	—	—	3.01
	225	24	1.1	84 000	91 000	16.6	2 600	—	3 000	**16030**	—	—	—	—	—	—	—	—	—	—	—	—	156.5	—	218.5	1	—	—	3.62
	225	35	2.1	126 000	126 000	15.9	2 600	1 700	3 000	**6030**	**ZZ**	**VV**	**DDU**	—	—	—	—	—	—	—	—	—	161	170	214	2	—	—	4.24
	270	45	3	176 000	168 000	15.1	2 000	—	2 600	**6230**	**ZZS**	—	—	—	—	—	—	—	—	—	—	—	163	186	257	2.5	—	—	10
	320	65	4	274 000	284 000	13.9	1 800	—	2 200	**6330**	**ZZS**	—	—	—	—	—	—	—	—	—	—	—	166	203	304	3	—	—	22.7

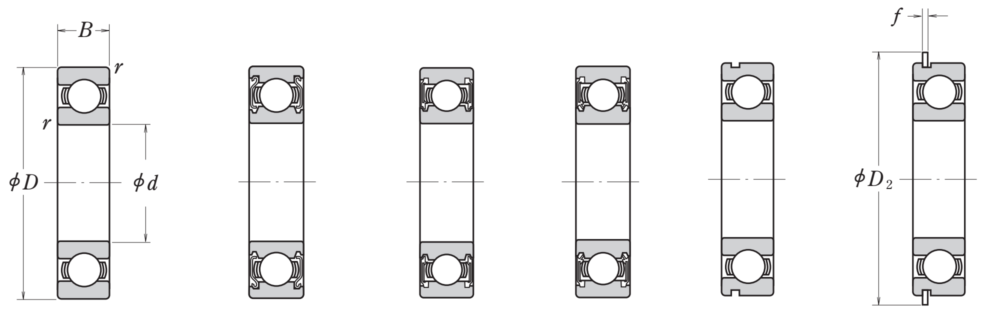
Notes ([1]) For tolerances of snap ring grooves and snap ring dimensions, refer to Pages A116 to A119.

([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.

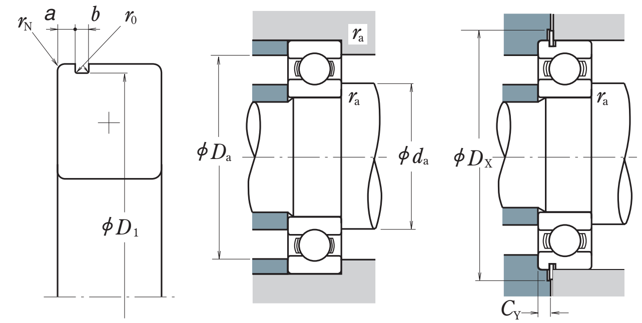
Remarks
1. When using bearings with rotating outer rings, contact NSK if they are sealed, shielded, or have snap rings.
2. Please consult NSK about the snap ring groove dimensions of Dimension Series 18 and 19 sealed and shielded bearings when the diameter is 50 mm or more.
3. Bearings denoted by an asterisk (*) are NSKHPS™ deep groove ball bearings.

SINGLE-ROW DEEP GROOVE BALL BEARINGS

Bore Diameter 160 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	$\frac{F_a}{F_r} \leq e$		$\frac{F_a}{F_r} > e$	
		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

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

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

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.
160	200	20	1.1	48 500	61 000	17.2	2 600	1 700	3 200	**6832**	**ZZS**	**VV**	**DDU**	**N**	**NR**	3.30	1.9	196.8	0.6	0.5	206.5	1.7	166.5	170.5	193.5	1	208	4.7	1.23
	220	28	2	87 000	96 000	16.6	2 600	1 600	3 000	**6932**	**ZZS**	—	**DDU**	—	—	—	—	—	—	—	—	—	169	176	211	2	—	—	2.71
	240	25	1.5	99 000	108 000	16.5	2 400	—	2 800	**16032**	—	—	—	—	—	—	—	—	—	—	—	—	168	—	232	1.5	—	—	4.2
	240	38	2.1	137 000	135 000	15.9	2 400	1 600	2 800	**6032**	**ZZ**	—	**DDU**	—	—	—	—	—	—	—	—	—	171	181.5	229	2	—	—	5.15
	290	48	3	185 000	186 000	15.4	1 900	—	2 400	**6232**	**ZZS**	—	—	—	—	—	—	—	—	—	—	—	173	202	277	2.5	—	—	12.8
	340	68	4	278 000	287 000	13.9	1 700	—	2 000	**6332**	**ZZS**	—	—	—	—	—	—	—	—	—	—	—	176	215.5	324	3	—	—	26.2

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

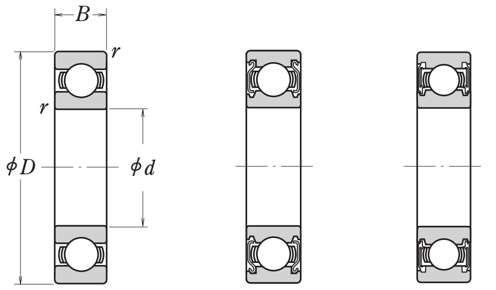
([2]) When heavy axial loads are applied, d_a and D_a can be adjusted up to the shoulder diameter of the races. Please consult NSK for details.

Remarks

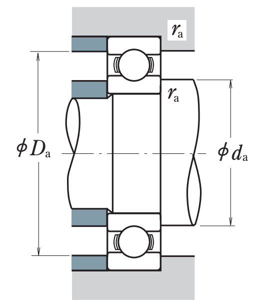
1. When using bearings with rotating outer rings, contact NSK if they are sealed, shielded, or have snap rings.
2. Please consult NSK about the snap ring groove dimensions of Dimension Series 18 and 19 sealed and shielded bearings when the diameter is 50 mm or more.

SINGLE-ROW DEEP GROOVE BALL BEARINGS

Bore Diameter 170 – 240 mm



Open　　Shielded ZZS　　Non-Contact Sealed VV



Dynamic Equivalent Load

$P = XF_r + YF_a$

$\frac{f_0 F_a}{C_{0r}}$	e	$\frac{F_a}{F_r} \leqq e$ X	$\frac{F_a}{F_r} \leqq e$ Y	$\frac{F_a}{F_r} > e$ X	$\frac{F_a}{F_r} > e$ 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

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

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

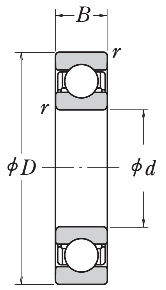
Boundary Dimensions (mm) d	D	B	r min.	Basic Load Ratings (N) C_r	C_{0r}	Factor f_0	Limiting Speeds (min^{-1}) Grease Open Z · ZZ V · VV	Grease DU DDU	Oil Open Z	Bearing Designations Open	Shielded	Sealed	Sealed	Abutment and Fillet Dimensions (mm) d_a(1) min.	d_a(1) max.	D_a(1) max.	r_a max.	Mass (kg) approx.
170	215	22	1.1	60 000	75 000	17.1	2 600	1 600	3 000	**6834**	**ZZS**	**VV**	**DDU**	176.5	182	208.5	1	1.86
	230	28	2	86 000	97 000	16.7	2 400	—	2 800	**6934**	**ZZS**	—	—	179	186	221	2	3.34
	260	28	1.5	114 000	126 000	16.5	2 200	—	2 600	**16034**	—	—	—	178	—	252	1.5	5.71
	260	42	2.1	161 000	161 000	15.8	2 200	—	2 600	**6034**	**ZZS**	**VV**	—	181	194.5	249	2	6.89
	310	52	4	212 000	224 000	15.3	1 800	—	2 200	**6234**	**ZZS**	—	—	186	215	294	3	15.8
	360	72	4	325 000	355 000	13.6	1 600	—	2 000	**6334**	—	—	—	186	—	344	3	36.6
180	225	22	1.1	60 500	78 500	17.2	2 400	—	2 800	**6836**	—	**VV**	—	186.5	192	218.5	1	1.98
	250	33	2	119 000	128 000	16.4	2 200	—	2 600	**6936**	**ZZS**	—	—	189	198.5	241	2	4.16
	280	31	2	145 000	157 000	16.3	2 000	—	2 400	**16036**	—	—	—	189	—	271	2	7.5
	280	46	2.1	180 000	185 000	15.6	2 000	—	2 400	**6036**	**ZZS**	**VV**	—	191	208	269	2	8.88
	320	52	4	227 000	241 000	15.1	1 700	—	2 000	**6236**	**ZZS**	—	—	196	223	304	3	15.9
	380	75	4	355 000	405 000	13.9	1 500	—	1 800	**6336**	—	—	—	196	—	364	3	43.1
190	240	24	1.5	73 000	93 500	17.1	2 200	—	2 600	**6838**	—	**VV**	—	198	202.5	232	1.5	2.53
	260	33	2	113 000	127 000	16.6	2 200	—	2 600	**6938**	—	—	—	199	—	251	2	5.18
	290	31	2	149 000	168 000	16.4	2 000	—	2 400	**16038**	—	—	—	199	—	281	2	7.78
	290	46	2.1	188 000	201 000	15.8	2 000	—	2 400	**6038**	**ZZS**	—	—	201	218	279	2	9.39
	340	55	4	255 000	282 000	15.0	1 600	—	2 000	**6238**	**ZZS**	—	—	206	236	324	3	22.3
	400	78	5	355 000	415 000	14.1	1 400	—	1 700	**6338**	—	—	—	210	—	380	4	49.7
200	250	24	1.5	74 000	98 000	17.2	2 200	—	2 600	**6840**	—	—	—	208	—	242	1.5	2.67
	280	38	2.1	143 000	158 000	16.4	2 000	—	2 400	**6940**	**ZZS**	—	—	211	222	269	2	7.28
	310	34	2	161 000	180 000	16.4	1 900	—	2 200	**16040**	—	—	—	209	—	301	2	10
	310	51	2.1	207 000	226 000	15.6	1 900	—	2 200	**6040**	**ZZS**	—	—	211	231.5	299	2	12
	360	58	4	269 000	310 000	15.2	1 500	—	1 800	**6240**	**ZZS**	—	—	216	252	344	3	26.7
	420	80	5	380 000	445 000	13.8	1 300	—	1 600	**6340**	—	—	—	220	—	400	4	55.3
220	270	24	1.5	76 500	107 000	17.4	1 900	—	2 400	**6844**	**ZZS**	—	—	228	233.5	262	1.5	2.9
	300	38	2.1	146 000	169 000	16.6	1 800	—	2 200	**6944**	**ZZS**	—	—	231	242	289	2	7.88
	340	37	2.1	180 000	217 000	16.5	1 600	—	2 000	**16044**	—	—	—	231	—	329	2	13.1
	340	56	3	235 000	271 000	15.6	1 700	—	2 000	**6044**	**ZZS**	—	—	233	254.5	327	2.5	18.6
	400	65	4	310 000	375 000	15.1	1 300	—	1 600	**6244**	—	—	—	236	—	384	3	37.4
	460	88	5	410 000	520 000	14.3	1 200	—	1 500	**6344**	—	—	—	240	—	440	4	73.9
240	300	28	2	98 500	137 000	17.3	1 700	—	2 000	**6848**	—	—	—	249	—	291	2	4.48
	320	38	2.1	154 000	190 000	16.8	1 700	—	2 000	**6948**	**ZZS**	—	—	251	262	309	2	8.49
	360	37	2.1	196 000	243 000	16.5	1 500	—	1 900	**16048**	—	—	—	251	—	349	2	13.9
	360	56	3	244 000	296 000	15.9	1 500	—	1 900	**6048**	—	—	—	253	—	347	2.5	19.9
	440	72	4	340 000	430 000	15.2	1 200	—	1 500	**6248**	—	—	—	256	—	424	3	50.5
	500	95	5	470 000	625 000	14.2	1 100	—	1 300	**6348**	—	—	—	260	—	480	4	94.4

Note (1) 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.

Remark When using bearings with rotating outer rings, contact NSK if they are sealed or shielded.

SINGLE-ROW DEEP GROOVE BALL BEARINGS

Bore Diameter 260 – 360 mm



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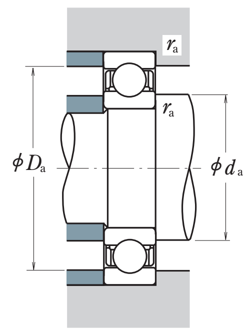


Boundary Dimensions (mm)				Basic Load Ratings (N)		Factor	Limiting Speeds (min^{-1})		Bearing Designations	Abutment and Fillet Dimensions (mm)			Mass (kg)
d	D	B	r min.	C_r	C_{0r}	f_0	Grease	Oil	Open	d_a([1]) min.	D_a([1]) max.	r_a max.	approx.
260	320	28	2	101 000	148 000	17.4	1 600	1 900	**6852**	269	311	2	4.84
	360	46	2.1	204 000	255 000	16.5	1 500	1 800	**6952**	271	349	2	14
	400	44	3	237 000	310 000	16.4	1 400	1 700	**16052**	273	387	2.5	21.1
	400	65	4	291 000	375 000	15.8	1 400	1 700	**6052**	276	384	3	29.4
	480	80	5	400 000	540 000	15.1	1 100	1 300	**6252**	280	460	4	67
	540	102	6	505 000	710 000	14.6	1 000	1 200	**6352**	286	514	5	118
280	350	33	2	133 000	191 000	17.3	1 500	1 700	**6856**	289	341	2	7.2
	380	46	2.1	209 000	272 000	16.6	1 400	1 700	**6956**	291	369	2	15.1
	420	44	3	243 000	330 000	16.5	1 300	1 600	**16056**	293	407	2.5	22.7
	420	65	4	300 000	410 000	16.0	1 300	1 600	**6056**	296	404	3	31.2
	500	80	5	400 000	550 000	15.2	1 000	1 300	**6256**	300	480	4	70.4
	580	108	6	570 000	840 000	14.5	900	1 100	**6356**	306	554	5	144
300	380	38	2.1	166 000	233 000	17.1	1 300	1 600	**6860**	311	369	2	10.3
	420	56	3	269 000	370 000	16.4	1 300	1 500	**6960**	313	407	2.5	23.9
	460	50	4	285 000	405 000	16.4	1 200	1 400	**16060**	316	444	3	31.5
	460	74	4	355 000	500 000	15.8	1 200	1 400	**6060**	316	444	3	44.2
	540	85	5	465 000	670 000	15.1	950	1 200	**6260**	320	520	4	87.8
320	400	38	2.1	168 000	244 000	17.2	1 300	1 500	**6864**	331	389	2	10.8
	440	56	3	266 000	375 000	16.5	1 200	1 400	**6964**	333	427	2.5	25.3
	480	50	4	293 000	430 000	16.5	1 100	1 300	**16064**	336	464	3	33.2
	480	74	4	390 000	570 000	15.7	1 100	1 300	**6064**	336	464	3	46.5
	580	92	5	530 000	805 000	15.0	850	1 100	**6264**	340	560	4	111
340	420	38	2.1	175 000	265 000	17.3	1 200	1 400	**6868**	351	409	2	11.5
	460	56	3	273 000	400 000	16.6	1 100	1 300	**6968**	353	447	2.5	26.6
	520	82	5	440 000	660 000	15.6	1 000	1 200	**6068**	360	500	4	62.3
	620	92	6	530 000	820 000	15.3	800	1 000	**6268**	366	594	5	129
360	440	38	2.1	192 000	290 000	17.3	1 100	1 300	**6872**	371	429	2	11.8
	480	56	3	280 000	425 000	16.7	1 100	1 300	**6972**	373	467	2.5	27.9
	540	82	5	460 000	720 000	15.7	950	1 200	**6072**	380	520	4	65.3
	650	95	6	555 000	905 000	15.4	750	950	**6272**	386	624	5	145

Note ([1]) 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.

Dynamic Equivalent Load

$P = XF_r + YF_a$

$\frac{f_0 F_a}{C_{0r}}$	e	$\frac{F_a}{F_r} \leq e$		$\frac{F_a}{F_r} > e$	
		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

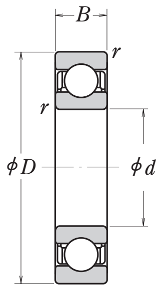
Static Equivalent Load

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

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

SINGLE-ROW DEEP GROOVE BALL BEARINGS

Bore Diameter 380 – 600 mm



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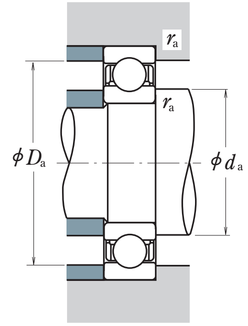


Dynamic Equivalent Load

$P = XF_r + YF_a$

$\frac{f_0 F_a}{C_{0r}}$	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

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

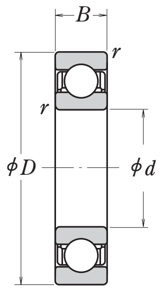
$\frac{F_a}{F_r} \leqq 0.8,\ P_0 = F_r$

Boundary Dimensions (mm)				Basic Load Ratings (N)		Factor	Limiting Speeds (min⁻¹)		Bearing Designations	Abutment and Fillet Dimensions (mm)			Mass (kg)
d	D	B	r min.	C_r	C_{0r}	f_0	Grease	Oil	Open	d_a(1) min.	D_a(1) max.	r_a max.	approx.
380	480	46	2.1	238 000	375 000	17.1	1 000	1 200	**6876**	391	469	2	19.5
	520	65	4	325 000	510 000	16.6	950	1 200	**6976**	396	504	3	40
	560	82	5	455 000	725 000	15.9	900	1 100	**6076**	400	540	4	68
400	500	46	2.1	241 000	390 000	17.2	950	1 200	**6880**	411	489	2	20.5
	540	65	4	335 000	540 000	16.7	900	1 100	**6980**	416	524	3	42
	600	90	5	510 000	825 000	15.7	850	1 000	**6080**	420	580	4	88.4
420	520	46	2.1	245 000	410 000	17.3	900	1 100	**6884**	431	509	2	21.4
	560	65	4	340 000	570 000	16.8	900	1 100	**6984**	436	544	3	43.6
	620	90	5	530 000	895 000	15.8	800	1 000	**6084**	440	600	4	92.2
440	540	46	2.1	248 000	425 000	17.4	900	1 100	**6888**	451	529	2	22.3
	600	74	4	395 000	680 000	16.6	800	1 000	**6988**	456	584	3	60.2
	650	94	6	550 000	965 000	16.0	750	900	**6088**	466	624	5	106
460	580	56	3	310 000	550 000	17.1	800	1 000	**6892**	473	567	2.5	34.3
	620	74	4	405 000	720 000	16.7	800	950	**6992**	476	604	3	62.6
	680	100	6	605 000	1 080 000	15.8	710	850	**6092**	486	654	5	123
480	600	56	3	315 000	575 000	17.2	800	950	**6896**	493	587	2.5	35.4
	650	78	5	450 000	815 000	16.6	750	900	**6996**	500	630	4	73.5
	700	100	6	605 000	1 090 000	15.9	710	850	**6096**	506	674	5	127
500	620	56	3	320 000	600 000	17.3	750	900	**68/500**	513	607	2.5	37.2
	670	78	5	460 000	865 000	16.7	710	850	**69/500**	520	650	4	82
	720	100	6	630 000	1 170 000	16.0	670	800	**60/500**	526	694	5	131
530	650	56	3	325 000	625 000	17.4	710	850	**68/530**	543	637	2.5	39.8
	710	82	5	455 000	870 000	16.8	670	800	**69/530**	550	690	4	89.8
	780	112	6	680 000	1 300 000	16.0	600	750	**60/530**	556	754	5	184
560	680	56	3	330 000	650 000	17.4	670	800	**68/560**	573	667	2.5	41.5
	750	85	5	525 000	1 040 000	16.7	600	750	**69/560**	580	730	4	105
	820	115	6	735 000	1 500 000	16.2	560	670	**60/560**	586	793.5	5	203
600	730	60	3	355 000	735 000	17.5	600	710	**68/600**	613	717	2.5	50.9
	800	90	5	550 000	1 160 000	16.9	560	670	**69/600**	620	780	4	120
	870	118	6	790 000	1 640 000	16.1	530	630	**60/600**	626	844	5	236

Note (1) 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.

SINGLE-ROW DEEP GROOVE BALL BEARINGS

Bore Diameter 630 – 800 mm



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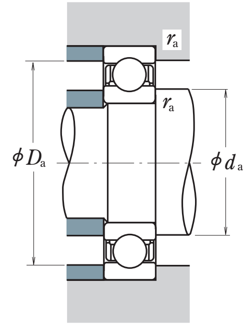


Dynamic Equivalent Load

$P = XF_r + YF_a$

$\frac{f_0 F_a}{C_{0r}}$	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

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

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

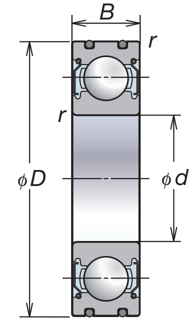
Boundary Dimensions (mm)				Basic Load Ratings (N)		Factor	Limiting Speeds (min⁻¹)		Bearing Designations	Abutment and Fillet Dimensions (mm)			Mass (kg)
d	D	B	r min.	C_r	C_{0r}	f_0	Grease	Oil	Open	d_a(1) min.	D_a(1) max.	r_a max.	approx.
630	780	69	4	420 000	890 000	17.3	560	670	**68/630**	646	764	3	71.3
	850	100	6	625 000	1 350 000	16.7	530	630	**69/630**	656	824	5	163
	920	128	7.5	750 000	1 620 000	16.4	480	600	**60/630**	662	888	6	285
670	820	69	4	435 000	965 000	17.4	500	630	**68/670**	686	804	3	75.4
	900	103	6	675 000	1 460 000	16.7	480	560	**69/670**	696	874	5	181
	980	136	7.5	765 000	1 730 000	16.6	450	530	**60/670**	702	948	6	351
710	870	74	4	480 000	1 100 000	17.4	480	560	**68/710**	726	854	3	92.6
	950	106	6	715 000	1 640 000	16.8	450	530	**69/710**	736	924	5	208
750	920	78	5	525 000	1 260 000	17.4	430	530	**68/750**	770	900	4	110
	1 000	112	6	785 000	1 840 000	16.7	400	500	**69/750**	776	974	5	245
800	980	82	5	530 000	1 310 000	17.5	400	480	**68/800**	820	960	4	132
	1 060	115	6	825 000	2 050 000	16.8	380	450	**69/800**	826	1 034	5	275

Note (1) 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.

■CREEP-FREE BEARINGS™

Bore Diameter 10 – 100 mm

Boundary Dimensions (mm)			Basic Load Ratings (N)		Recommended Fits ([1])	Bearing Designations			
d	*D*	*B*	C_r	C_{0r}		Basic Designation (Open)	Shields	Contact Seal ([2])	Non-Contact Seal
10	26	8	4 550	1 970		**6000**	**ZZ**	**DDU**	**VV**
	30	9	5 100	2 390		**6200**	**ZZ**	**DDU**	**VV**
	35	11	8 100	3 450		**6300**	**ZZ**	**DDU**	**VV**
12	28	8	5 100	2 370		**6001**	**ZZ**	**DDU**	**VV**
	32	10	6 800	3 050		**6201**	**ZZ**	**DDU**	**VV**
	37	12	9 700	4 200		**6301**	**ZZ**	**DDU**	**VV**
15	32	9	5 600	2 830		**6002**	**ZZ**	**DDU**	**VV**
	35	11	7 650	3 750		**6202**	**ZZ**	**DDU**	**VV**
	42	13	11 400	5 450		**6302**	**ZZ**	**DDU**	**VV**
17	35	10	6 000	3 250		**6003**	**ZZ**	**DDU**	**VV**
	40	12	9 550	4 800		**6203**	**ZZ**	**DDU**	**VV**
	47	14	13 600	6 650		**6303**	**ZZ**	**DDU**	**VV**
20	42	12	9 400	5 000		**6004**	**ZZ**	**DDU**	**VV**
	47	14	12 800	6 600		**6204**	**ZZ**	**DDU**	**VV**
	52	15	15 900	7 900		**6304**	**ZZ**	**DDU**	**VV**
25	47	12	10 100	5 850		**6005**	**ZZ**	**DDU**	**VV**
	52	15	14 000	7 850		**6205**	**ZZ**	**DDU**	**VV**
	62	17	20 600	11 200		**6305**	**ZZ**	**DDU**	**VV**
30	55	13	13 200	8 300		**6006**	**ZZ**	**DDU**	**VV**
	62	16	19 500	11 300		**6206**	**ZZ**	**DDU**	**VV**
	72	19	26 700	15 000		**6306**	**ZZ**	**DDU**	**VV**
35	62	14	16 000	10 300		**6007**	**ZZ**	**DDU**	**VV**
	72	17	25 700	15 300		**6207**	**ZZ**	**DDU**	**VV**
	80	21	33 500	19 200		**6307**	**ZZ**	**DDU**	**VV**
40	68	15	16 800	11 500	H7 or G6	**6008**	**ZZ**	**DDU**	**VV**
	80	18	29 100	17 900		**6208**	**ZZ**	**DDU**	**VV**
	90	23	40 500	24 000		**6308**	**ZZ**	**DDU**	**VV**
45	75	16	20 900	15 200		**6009**	**ZZ**	**DDU**	**VV**
	85	19	31 500	20 400		**6209**	**ZZ**	**DDU**	**VV**
	100	25	53 000	32 000		**6309**	**ZZ**	**DDU**	**VV**
50	80	16	21 800	16 600		**6010**	**ZZ**	**DDU**	**VV**
	90	20	35 000	23 200		**6210**	**ZZ**	**DDU**	**VV**
	110	27	62 000	38 500		**6310**	**ZZ**	**DDU**	**VV**
55	90	18	28 300	21 200		**6011**	**ZZ**	**DDU**	**VV**
	100	21	43 500	29 300		**6211**	**ZZ**	**DDU**	**VV**
	120	29	71 500	44 500		**6311**	**ZZ**	**DDU**	**VV**
60	95	18	29 500	23 200		**6012**	**ZZ**	**DDU**	**VV**
	110	22	52 500	36 000		**6212**	**ZZ**	**DDU**	**VV**
	130	31	82 000	52 000		**6312**	**ZZ**	**DDU**	**VV**
65	100	18	30 500	25 200		**6013**	**ZZ**	**DDU**	**VV**
	120	23	57 500	40 000		**6213**	**ZZ**	**DDU**	**VV**
	140	33	92 500	60 000		**6313**	**ZZ**	**DDU**	**VV**
70	110	20	38 000	31 000		**6014**	**ZZ**	**DDU**	**VV**
	125	24	62 000	44 000		**6214**	**ZZ**	**DDU**	**VV**
	150	35	104 000	68 000		**6314**	**ZZ**	**DDU**	**VV**
75	115	20	39 500	33 500		**6015**	**ZZ**	**DDU**	**VV**
	130	25	66 000	49 500		**6215**	**ZZ**	**DDU**	**VV**
80	125	22	47 500	40 000		**6016**	**ZZ**	**DDU**	**VV**
	140	26	72 500	53 000		**6216**	**ZZ**	**DDU**	**VV**
85	130	22	49 500	43 000		**6017**	**ZZ**	**DDU**	**VV**
	150	28	84 000	62 000		**6217**	**ZZ**	**DDU**	**VV**
90	140	24	58 000	50 000		**6018**	**ZZ**	**DDU**	**VV**
95	145	24	60 500	54 000		**6019**	**ZZ**	**DDU**	**VV**
100	150	24	60 000	54 000		**6020**	**ZZ**	**DDU**	**VV**



Notes ([1]) Although recommended fits are H7 or G6, G6 is recommended when used under conditions that prioritize insertion under light preload.

([2]) Low-contact seals are available for sealed bearings; contact NSK for details.