NACHI



# Deep-groove Ball Bearings

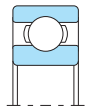
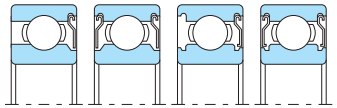
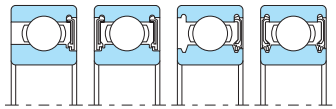
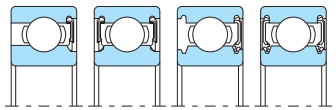
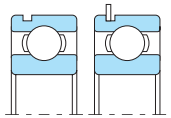


Because of their versatility, Single-row, Deep-groove Ball Bearings are the most popular of all the ball bearing types. NACHI Deep-groove Ball Bearings are available in a wide range of series defined by the JIS (ISO) standard dimension plan and are also made to meet specialized dimension and configuration requirements. NACHI Deep-groove Ball Bearings are manufactured in both standard precision grade (ISO Grade 0 -ABEC Grade 1) as well as in high-precision grades.

Table 1 shows common, standard configurations of Single-row Deep-groove Ball Bearings.

Table 2 next page shows a comparison of general characteristics of seal and shield designs for Single-row, Deep-groove Ball bearings.

**Table 1. Standard Configuration of Single-row, Deep-groove Ball Bearings**

| Configuration | | Design | Cross section |
|---|---|---|---|
| Open (no seals, shields) | | Consists of inner and outer rings, balls, and cage. |  Open |
| (1)Sealed or shielded Bearings | Shield | One or two steel shields provide labyrinth clearance |  Z ZZ ZE ZZE |
| | Non-contact Rubber Seal(2) | One or two non-contact rubber seals provide labyrinth clearance |  NK 2NK NKE 2NKE |
| | Contact Rubber Seal(2) | One or two contact rubber seals in contact with inner ring |  NSL 2NSL NSE 2NSE |
| Snap-ring Groove in Outer Ring | N : with snap-ring groove in outer ring.<br>NR: with groove and snap ring in outer ring.<br>(Use of snap ring allows easy mounting and simplified housing design.)<br>Sealed or shielded bearings are also available, contact NACHI for more information. | |  N NR |

Notes: (1) One seal or shield type bearings may have a seal groove on the other side.
Seals or shields for two seal or two shield bearings have the same marks as one seal or one shield bearings.
(2) NKE seals are blue and NSE seals are brown

**Table 2. Comparison of Seal and Shield Characteristics**

| Characteristics | Shield (Z, ZE) | Non-contact Rubber Seal (NK, NKE) | Contact Rubber Seal (NSL, NSE) |
|---|---|---|---|
| Friction torque | Low | Low | Higher than NK, NKE, Z and ZE |
| High speed | Excellent | Excellent | Good (There is some limitation) |
| Grease sealing | Good | Better than Z, ZE | Exellent at low speed<br>①The grease may leak from the bearing at high speeds and high temperature.<br>②The grease may leak in case of outer ring rotation. |
| Dust proof | Good | Better than Z, ZE | Excellent<br>(Can be used in severe dust environments) |
| Water proof | unsuitable | unsuitable | Excellent |
| Recommended operation temperature range for standard filled grease | –25～120°C | –25～120°C | –25～120°C |





## ● Load rating

The values for basic dynamic load rating (Cr) and basic static load rating (Cor) given in the dimension table are for inner rings, outer rings and ball bearings of bearing steel with normal heat treatment.

## ● Attention

(1) Deep-groove Ball Bearings can sustain radial, axial or composite loads. However when excessive axial load is applied, please consult with NACHI.

(2) Because sealed or shielded bearings are designed for inner ring rotating applications, the filled grease may leak when they are used with a high speed outer ring rotating condition. In such a case, please contact NACHI.

(3) When bearings with contact rubber seals are used in a severe operating condition such as high speed or high temperature, the filled grease may leak. In such a case, a design change or another kind of grease is required.

(4) When a bearing is mounted on a shaft (into a housing), force should only be applied to the side face of the inner (outer) ring.

(5) The sealed or shielded bearings should not be washed or heated before mounting.

(6) It should be noted that mounting errors such as misalignment of the bearing rings cause an appreciable increase in noise level.

(7) The bearings must always be subjected to a minimum load to prevent sliding movements occurring between the balls and the raceways.