# 12.1 SINGLE ROW BALL BEARINGS

Due to the versatility of applications, single row ball bearings are among the most frequently used types of rolling bearings. They are made as non-separable without a filling slot. Simple design predetermines them for a wide range of operating conditions. They are provided with deep grooves in rings, diameters of which are just a little bigger than those of balls. Due to big ball diameters and high attachment, single row ball bearings feature relatively high dynamic load capacity in both radial and axial directions. Therefore they suit well combined load in both directions. In order to capture axial forces in high revolutions they conveniently substitute axial ball bearings.

ZKL offer single row ball bearings in many designs and sizes. The chart part of the catalogue states the standard assortment of bearings with parameters divided as follows:

- Uncovered bearings in standard version
- Bearings with shields and seals
- Bearings with snap ring groove
- Separable E and BO type bearings.

## Main dimensions

With the exception of E and BO type separable single row ball bearings, main dimensions comply with the standard ISO 15. Dimensions of grooves for snap rings comply with the ISO 464 standard.

## Uncovered bearings in standard version

The ZKL single row ball bearings in standard version are uncovered and without seals. For manufacturing reasons, also bearings with grooves for shields or seals may get among the standard version of these bearings. Use of these bearings does not require any special provisions.

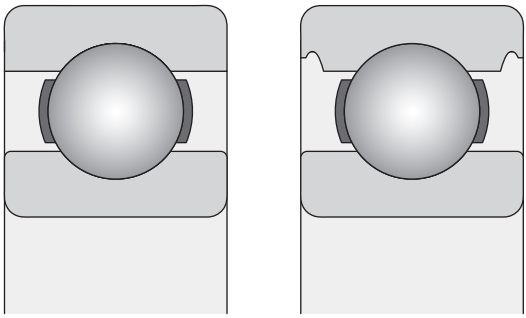


*Fig. 12.1.1*

## Bearings with shields and seals

Part of the ball bearing assortment is produced as non-separable bearings with cover sheets, or with contact seal on one or both sides. Chart No.12.1 shows detail information about the suitability of individual seal types for different conditions. See chapter 7.5 for additional information.

Depending on the design series and size, bearings are supplied filled with standard grease. The standard grease used is not stated in the bearing identification. Grease fills about 25 to 35 % of the free bearing space. Supply of bearings with other than grease has to be agreed with ZKL.

*Tab. 12.1.1*

| instructions for selection of sealing | | | |
|---|---|---|---|
| **Requirement** | **Shields** | **Contact seal** | |
| | **Z** | **RS** | **RSR** |
| Low friction | +++ | o | o |
| High revolutions | +++ | o | o |
| Retention of plastic lubricant | o | +++ | ++ |
| Against dust penetration | o | +++ | +++ |
| Against water penetration | | | |
| Static | - | +++ | ++ |
| dynamic | - | + | + |
| high pressure | - | +++ | o |

Symbols: +++ excellent | ++ very good | + good | o sufficient | unsuitable

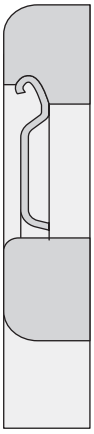
## Bearings with shields

Single row ball bearings with cover sheets have an additional identification Z, 2Z, ZR or 2ZR (see fig. 12.1.2). Covered bearings are mostly used to be seated with rotary inner ring. Rotation of outer ring represents a risk of leak of grease in higher revolutions. Cover sheets are made of steel plate. They are seated firmly in outer ring. In Z or 2Z version, cover sheet is embedded in the inner ring recess; ZR or 2ZR variants have cover sheet overlapping a bit above the edge of the inner ring.

## Bearings with contact seals

Bearings with contact seal (see fig. 12.1.3) are designated by RS, 2RS, RSR or 2RSR identification, depending on the design series and size of the bearing. Seals are pressed in the outer ring recess, and ensure reliable sealing in given position, without outer ring deformation. In extreme conditions, e.g. at high temperatures or revolutions, grease on inner ring might leak. In locations where such lubricant leak is undesirable, different design solution has to be chosen. In these cases we recommend that you contact the ZKL technical and consultancy services.

Bearings versions with additional identification RS or 2RS are provided with a seal the tip of which leans on the recess on the inner ring front. The RSR or 2RSR versions have seals the tip of which leans on the cylindrical surface of the inner ring flange.



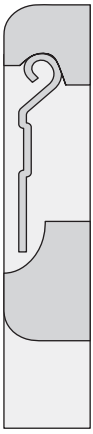
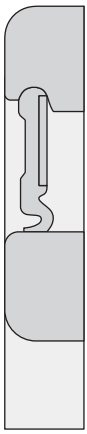


*Fig. 12.1.2*



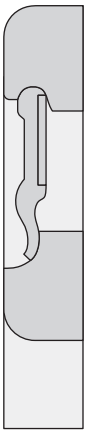


*Fig. 12.1.3*

## Bearings with snap ring groove

Single row ball bearings with a groove for snap ring on outer ring serve simple protection against axial displacement in the location element. Thos design has additional designation N. If bearing is supplied with added snap ring, it is identified with NR. Bearings with snap ring groove can be delivered also in combination with mounted covers.

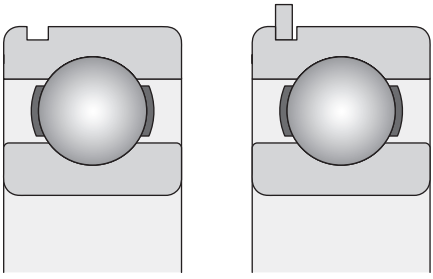


*Fig. 12.1.4*

## Separable bearings

Outer ring of separable single row ball bearings of E and BO type is designed so as to allow separable mounting of inner ring with cage and rolling elements. Bearings are made up to the bore diameter of d = 20 mm, and are suitable for lower load and fast running applications.

## Accuracy

Single row ball bearings are made in normal accuracy level P0 whilst this symbol is not presented. The accuracy of dimensions and run comply with the standard ISO 492. Exception is only separable single row ball bearings of E and B0 type where the outer diameter has limit deviation of +0.01/0.00 mm. Limit tolerance values are stated in charts 7.2 and 7.3. Limit tolerance values for bearings of higher accuracies are stated in charts 7.4 to 7.8. Limit tolerance values of installation fillet are stated in chart 7.1. These values comply with the standard ISO 582.

## Radial clearance

As standard, single row ball bearings are supplied with normal radial clearance. Majority of bearings are also supplied with bigger radial clearance C3. Some bearings can be also offered with a substantially bigger clearance C4 or C5, or with smaller clearance C2. Sizes of radial clearances comply with the standard ISO 5753. The values are stated in chart 7.17a. The stated values apply to non-mounted bearings at zero measuring load. Indicative dependence of radial and axial clearance is stated in Fig. 7.4. See chapter 7.2.3 for additional information.

## Vibration level

Commonly made single row ball bearings have normal vibration level checked by the manufacturer. Bearings with P5 and higher accuracy level have reduced vibration level C6. Special cases of location require bearings with specially reduced vibration level C06 and C66.

## Tapered bore

For some less demanding locations, some sizes of single row ball bearings of 62 and 63 type with tapered bore and taper ratio 1:12 can be produced. Fixing the bearings onto cylindrical pin is performed using a adapter sleeve or directly on the tapered pin.

## Cages

The standard version of single row ball bearings features a cage of steel plate, riveted or pressed, which is guided on balls. Bigger bearing sizes have massive brass cage. Special locations require polyamide cages.

## Bearings for locations with high service temperatures

For locations working at service temperature of up to 400 °C we supply single row ball bearings with adequately big radial clearance as per technical conditions agreed between the manufacturer and the customer, and with stabilisation for operation at high temperatures S0 to S5. Stabilisation however reduced the hardness of bearing components and thus also the value of the basic dynamic load capacity, as stated in Tab. 5.9.

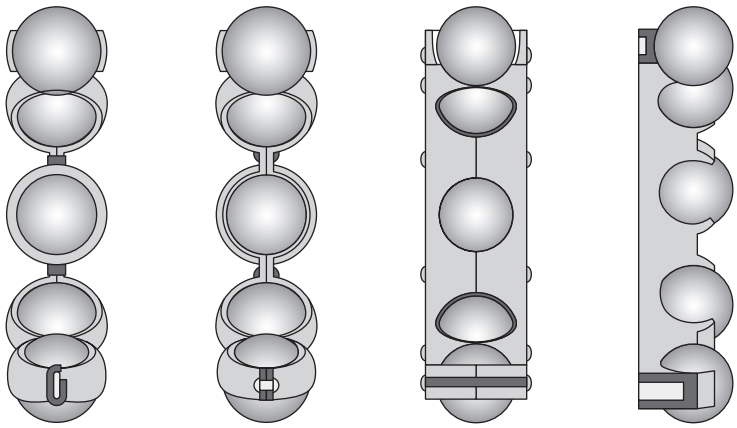


*Fig. 12.1.5*

## Misalignment

Only small mutual tipability of bearing rings is admissible for single row ball bearings, therefore the concentricity deviation of location points can be only very small. The size of it depends on radial clearance in the bearing, its dimensions and load. Misalignment induces additional load of bearing which shortens its service life. Any tilting of bearing rings will also increase the noise level of the bearing.

*Tab. 12.1.2*

| Bearing type | Load | |
|---|---|---|
| | low ($F_r < 0{,}15C_{or}$) | high ($F_r \geq 0{,}15C_{or}$) |
| 618, 619, 160, 60 | 2´ to 6´ | 5´ to 10´ |
| 62, 63, 64 | 5´ to 10´ | 8´ to 16´ |

## Minimum load

Bearings with spot or line contact must be exposed to certain minimum load in order to ensure their proper operation. This applies also to ball bearings working at high revolutions where high acceleration occurs, or in sudden changes of acting load. Insufficient load may cause damage to rolling surfaces and balls due to slip and friction which cause acting of inertial force on the cage and balls. In location with ball bearings axial prestress can be achieved through mutual adjustment of the inner and outer ring against each other, or by means of springs.

The recommended size of minimum load of bearing depending on the dynamic load capacity of it is defined by the below relation:

$$P/C_r > 0.01$$

## Axial load capacity

If only axial load acts on ball bearings, it should not exceed 0.5 $C_{or}$. Smaller bearings (with bore diameter up to 12 mm) and bearings of light series (diameter of series 8, 9, 0 and 1) should be exposed to axial load of over 0.25 $C_{or}$. Excessive axial load may cause substantial shortening of the service life of the bearing.

## Equivalent radial load

**Single row ball bearings:**

$$P_r = F_r \qquad \text{for } F_a/F_r \leq e$$

$$P_r = X\,F_r + Y\,F_a \qquad \text{for } F_a/F_r > e$$

where:

$P_r$ . . . . . is equivalent radial load (kN)

$C_r$ . . . . . dynamic load rating of bearing (kN)

$C_{or}$ . . . . . static load rating of bearing (kN)

$F_r$ . . . . . radial load

$F_a$ . . . . . axial load

Values of coefficients e and Y in dependency to the $F_a/C_o$ relation is determined by chart 12.3. Determination of values also depends in the size of radial clearance. Bigger radial clearance allows transferring of bigger axial load. Intermediate values are defined by interpolation.

*Tab. 12.1.3*

| Radial clearance | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $F_a/C_{or}$ | normal | | | | | $C_3$ | | | | | $C_4$ | | | | |
| | | $F_a/F_r \leq e$ | | $F_a/F_r > e$ | | | $F_a/F_r \leq e$ | | $F_a/F_r > e$ | | | $F_a/F_r \leq e$ | | $F_a/F_r > e$ | |
| | e | X | Y | X | Y | e | X | Y | X | Y | e | X | Y | X | Y |
| 0,025 | 0,22 | 1 | 0 | 0,56 | 2 | 0,31 | 1 | 0 | 0,46 | 1,75 | 0,4 | 1 | 0 | 0,44 | 1,42 |
| 0,04 | 0,24 | 1 | 0 | 0,56 | 1,8 | 0,33 | 1 | 0 | 0,46 | 1,62 | 0,42 | 1 | 0 | 0,44 | 1,36 |
| 0,07 | 0,27 | 1 | 0 | 0,56 | 1,6 | 0,36 | 1 | 0 | 0,46 | 1,46 | 0,44 | 1 | 0 | 0,44 | 1,27 |
| 0,13 | 0,31 | 1 | 0 | 0,56 | 1,4 | 0,41 | 1 | 0 | 0,46 | 1,3 | 0,48 | 1 | 0 | 0,44 | 1,16 |
| 0,25 | 0,37 | 1 | 0 | 0,56 | 1,2 | 0,46 | 1 | 0 | 0,46 | 1,14 | 0,53 | 1 | 0 | 0,44 | 1,05 |
| 0,5 | 0,44 | 1 | 0 | 0,56 | 1 | 0,54 | 1 | 0 | 0,46 | 1 | 0,56 | 1 | 0 | 0,44 | 1 |

Values of coefficients X and Y apply on condition that bearings will be on pin and in body located within the tolerances recommended for low and medium load (Tab. 8.3) and that during the operation no significant decrease of radial clearance occurs due to service temperature (the temperature difference between the inner and outer ring of max 10 °C).

**Separable single row ball bearings:**

$$P_r = F_r \qquad \text{for } F_a/F_r \leq 0.2$$

$$P_r = 0.5\ F_r + 2.5\ F_a \qquad \text{for } F_a/F_r > 0.2$$

## Radial equivalent static load

**Single row ball bearings:**

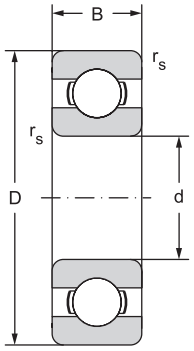
$$P_{or} = 0.6\ F_r + 0.5\ F_a \qquad (P_{or} \geq F_r)$$

$$P_{or} = F_r \qquad (P_{or} < F_r)$$

**Separable single row ball bearings:**

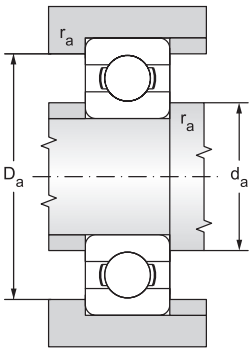
$$P_{or} = 0.9\ F_r + 0.3\ F_a \qquad (P_{or} \geq F_r)$$

$$P_{or} = F_r \qquad (P_{or} < F_r)$$

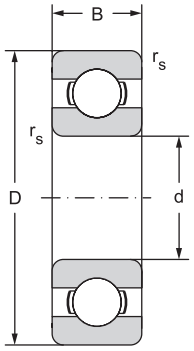



12.1.1

| Main dimensions | | | | Basic load rating | | Fatique load limit |
|---|---|---|---|---|---|---|
| | | | | Dynamic | Static | $P_u$ |
| d | D | B | $r_s$ | $C_r$ | $C_{or}$ | |
| mm | | | | kN | | kN |
| 2 | 6 | 2,3 | 0,1 | 0,279 | 0,09 | 0,004 |
| 3 | 10 | 4 | 0,15 | 0,645 | 0,229 | 0,01 |
| 4 | 9 | 2,5 | 0,2 | 0,54 | 0,18 | 0,007 |
| | 11 | 4 | 0,2 | 0,715 | 0,232 | 0,01 |
| | 12 | 4 | 0,2 | 0,806 | 0,28 | 0,012 |
| | 13 | 5 | 0,2 | 1,168 | 0,412 | 0,019 |
| | 16 | 5 | 0,3 | 1,875 | 0,677 | 0,031 |
| 5 | 11 | 3 | 0,15 | 0,637 | 0,255 | 0,011 |
| | 13 | 4 | 0,2 | 1,079 | 0,432 | 0,02 |
| | 16 | 5 | 0,3 | 1,875 | 0,677 | 0,031 |
| | 19 | 6 | 0,3 | 2,838 | 1,078 | 0,049 |
| 6 | 13 | 3,5 | 0,15 | 0,884 | 0,345 | 0,015 |
| | 15 | 5 | 0,2 | 1,47 | 0,599 | 0,027 |
| | 19 | 6 | 0,3 | 2,838 | 1,078 | 0,049 |
| 7 | 14 | 3,5 | 0,15 | 0,956 | 0,4 | 0,017 |
| | 17 | 5 | 0,3 | 1,48 | 0,56 | 0,024 |
| | 19 | 6 | 0,3 | 2,838 | 1,078 | 0,049 |
| | 22 | 7 | 0,3 | 3,282 | 1,356 | 0,062 |
| 8 | 16 | 4 | 0,2 | 1,55 | 0,722 | 0,033 |
| | 19 | 6 | 0,2 | 1,9 | 0,735 | 0,031 |
| | 22 | 7 | 0,3 | 3,282 | 1,356 | 0,062 |
| | 24 | 8 | 0,3 | 3,9 | 1,66 | 0,071 |
| 9 | 17 | 4 | 0,2 | 1,43 | 0,64 | 0,027 |
| | 20 | 6 | 0,3 | 2,08 | 0,865 | 0,036 |
| | 24 | 7 | 0,3 | 3,668 | 1,64 | 0,075 |
| | 26 | 8 | 0,3 | 4,557 | 1,955 | 0,089 |
| 10 | 19 | 5 | 0,3 | 1,38 | 0,585 | 0,025 |
| | 22 | 6 | 0,3 | 2,08 | 0,85 | 0,036 |
| | 26 | 8 | 0,3 | 4,557 | 1,955 | 0,089 |
| | 28 | 8 | 0,6 | 4,62 | 1,96 | 0,083 |
| | 30 | 9 | 0,6 | 6,047 | 2,51 | 0,114 |
| | 30 | 14 | 0,6 | 6,047 | 2,51 | 0,114 |
| | 35 | 11 | 0,6 | 8,072 | 3,43 | 0,156 |

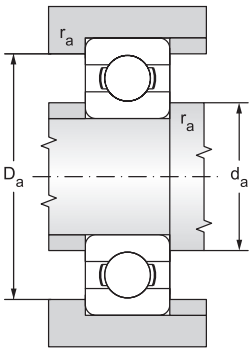



| Limiting speed for lubrication with | | Bearing designation | Abutment and Fillet Dimensions | | | Weight |
|---|---|---|---|---|---|---|
| Grease | Oil | | $d_a$ | $D_a$ | $r_a$ | ~ |
| | | | min | max | max | |
| $min^{-1}$ | | | mm | | | kg |
| 63000 | 79000 | **619/2** | 3,2 | 4,8 | 0,1 | 0,0004 |
| 40000 | 50000 | **623** | 4,2 | 8,5 | 0,1 | 0,0015 |
| 63000 | 75000 | **618/4** | 4,6 | 8,4 | 0,1 | 0,0007 |
| 60000 | 71000 | **619/4** | 4,8 | 10,2 | 0,1 | 0,0017 |
| 53000 | 63000 | **604** | 5,4 | 10,6 | 0,2 | 0,0021 |
| 38000 | 45000 | **624** | 5,6 | 11,2 | 0,2 | 0,0032 |
| 35000 | 42000 | **634** | 6,2 | 13,4 | 0,3 | 0,0050 |
| 53000 | 63000 | **618/5** | 5,8 | 10,2 | 0,1 | 0,0012 |
| 47000 | 56000 | **619/5** | 6,6 | 11,5 | 0,2 | 0,0025 |
| 35000 | 42000 | **625** | 7 | 14 | 0,3 | 0,0047 |
| 35000 | 42000 | **635** | 7,2 | 15,8 | 0,3 | 0,0090 |
| 48000 | 56000 | **618/6** | 6,8 | 12,2 | 0,1 | 0,0020 |
| 42000 | 50000 | **619/6** | 7,8 | 13 | 0,2 | 0,0040 |
| 35000 | 42000 | **626** | 8,2 | 17 | 0,3 | 0,0080 |
| 44000 | 51000 | **618/7** | 7,8 | 13,2 | 0,1 | 0,0022 |
| 41000 | 47000 | **619/7** | 9 | 15 | 0,3 | 0,0049 |
| 35000 | 42000 | **607** | 9 | 17,2 | 0,3 | 0,0090 |
| 35000 | 42000 | **627** | 9,2 | 19 | 0,3 | 0,012 |
| 35000 | 42000 | **618/8TNH** | 9,8 | 14 | 0,2 | 0,0030 |
| 39000 | 46000 | **619/8** | 10 | 17 | 0,3 | 0,0071 |
| 35000 | 42000 | **608** | 10 | 20 | 0,3 | 0,015 |
| 31000 | 36000 | **628** | 10,4 | 21,6 | 0,3 | 0,017 |
| 38000 | 45000 | **618/9** | 10,4 | 15,6 | 0,2 | 0,0034 |
| 37000 | 44000 | **619/9** | 11 | 18 | 0,3 | 0,0076 |
| 35000 | 42000 | **609** | 11 | 22 | 0,3 | 0,018 |
| 35000 | 42000 | **629** | 11 | 24 | 0,3 | 0,020 |
| 36000 | 43000 | **61800** | 12 | 17 | 0,3 | 0,0055 |
| 34000 | 40000 | **61900** | 12 | 20 | 0,3 | 0,0100 |
| 28000 | 33000 | **6000** | 12 | 24 | 0,3 | 0,019 |
| 28000 | 34000 | **16100** | 14,2 | 23,8 | 0,3 | 0,022 |
| 25000 | 30000 | **6200** | 14 | 26 | 0,6 | 0,031 |
| 25000 | 30000 | **62200** | 14 | 26 | 0,6 | 0,040 |
| 22000 | 27000 | **6300** | 14 | 31 | 0,6 | 0,054 |

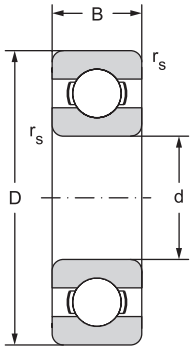



12.1.1

| Main dimensions | | | | Basic load rating | | Fatique load limit |
|---|---|---|---|---|---|---|
| | | | | Dynamic | Static | $P_u$ |
| d | D | B | $r_s$ | $C_r$ | $C_{or}$ | |
| mm | | | | kN | | kN |
| 12 | 21 | 5 | 0,3 | 1,43 | 0,67 | 0,028 |
| | 24 | 6 | 0,3 | 2,25 | 0,98 | 0,043 |
| | 28 | 7 | 0,3 | 5,094 | 2,36 | 0,107 |
| | 28 | 8 | 0,3 | 5,094 | 2,36 | 0,107 |
| | 30 | 8 | 0,3 | 5,07 | 2,36 | 0,1 |
| | 32 | 10 | 0,6 | 6,905 | 3,1 | 0,141 |
| | 32 | 14 | 0,6 | 6,905 | 3,1 | 0,141 |
| | 37 | 12 | 1 | 9,759 | 4,235 | 0,193 |
| | | | | | | |
| 15 | 24 | 5 | 0,3 | 1,56 | 0,8 | 0,034 |
| | 28 | 7 | 0,3 | 4,36 | 2,24 | 0,095 |
| | 32 | 8 | 0,3 | 5,594 | 2,86 | 0,13 |
| | 32 | 9 | 0,3 | 5,594 | 2,865 | 0,13 |
| | 35 | 11 | 0,6 | 7,718 | 3,745 | 0,17 |
| | 35 | 14 | 0,6 | 7,718 | 3,745 | 0,17 |
| | 42 | 13 | 1 | 11,31 | 5,33 | 0,242 |
| | | | | | | |
| 17 | 26 | 5 | 0,3 | 1,68 | 0,93 | 0,039 |
| | 30 | 7 | 0,3 | 4,62 | 2,55 | 0,108 |
| | 35 | 8 | 0,3 | 5,999 | 3,265 | 0,148 |
| | 35 | 10 | 0,3 | 6,001 | 3,267 | 0,149 |
| | 40 | 12 | 0,6 | 9,534 | 4,734 | 0,215 |
| | 40 | 16 | 0,6 | 9,534 | 4,734 | 0,215 |
| | 47 | 14 | 1 | 13,565 | 6,56 | 0,298 |
| | 62 | 17 | 1,1 | 22,9 | 10,8 | 0,455 |
| | | | | | | |
| 20 | 32 | 7 | 0,3 | 4,03 | 2,32 | 0,104 |
| | 37 | 9 | 0,3 | 6,37 | 3,65 | 0,156 |
| | 42 | 8 | 0,3 | 9,371 | 4,972 | 0,226 |
| | 42 | 12 | 0,6 | 9,371 | 4,972 | 0,226 |
| | 47 | 14 | 1 | 12,774 | 6,553 | 0,298 |
| | 47 | 18 | 1 | 12,774 | 6,553 | 0,298 |
| | 47 | 20,6 | 1 | 12,774 | 6,553 | 0,298 |
| | 52 | 15 | 1,1 | 15,866 | 7,811 | 0,355 |
| | 72 | 19 | 0,6 | 30,7 | 15 | 0,64 |
| | 52 | 21 | 1,1 | 15,866 | 7,811 | 0,355 |

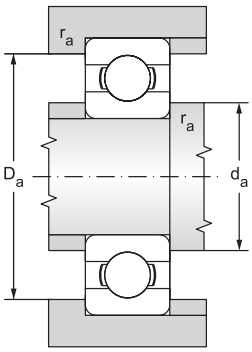



| Limiting speed for lubrication with | | Bearing designation | Abutment and Fillet Dimensions | | | Weight |
|---|---|---|---|---|---|---|
| Grease | Oil | | $d_a$ | $D_a$ | $r_a$ | ~ |
| | | | min | max | max | |
| $min^{-1}$ | | | mm | | | kg |
| 32000 | 38000 | **61801** | 14 | 19 | 0,3 | 0,0063 |
| 30000 | 36000 | **61901** | 14 | 22 | 0,3 | 0,011 |
| 25000 | 30000 | **16001** | 14 | 26 | 0,3 | 0,020 |
| 25000 | 30000 | **6001** | 14 | 26 | 0,3 | 0,022 |
| 26000 | 32000 | **16101** | 14,4 | 27,6 | 0,3 | 0,023 |
| 22000 | 27000 | **6201** | 16 | 28 | 0,6 | 0,037 |
| 22000 | 27000 | **62201** | 16 | 28 | 0,6 | 0,045 |
| 20000 | 24000 | **6301** | 17 | 32 | 1 | 0,061 |
| | | | | | | |
| 28000 | 34000 | **61802** | 17 | 22 | 0,3 | 0,0074 |
| 24000 | 30000 | **61902** | 17 | 26 | 0,3 | 0,016 |
| 21000 | 25000 | **16002** | 17 | 30 | 0,3 | 0,027 |
| 21000 | 25000 | **6002** | 17 | 30 | 0,3 | 0,030 |
| 20000 | 24000 | **6202** | 19 | 31 | 0,6 | 0,046 |
| 20000 | 24000 | **62202** | 19 | 31 | 0,6 | 0,054 |
| 18000 | 21000 | **6302** | 20 | 36 | 1 | 0,085 |
| | | | | | | |
| 24000 | 30000 | **61803** | 19 | 24 | 0,3 | 0,0082 |
| 22000 | 28000 | **61903** | 19 | 28 | 0,3 | 0,018 |
| 20000 | 24000 | **16003** | 19 | 33 | 0,3 | 0,032 |
| 20000 | 24000 | **6003** | 19 | 33 | 0,3 | 0,040 |
| 18000 | 21000 | **6203** | 21 | 36 | 0,6 | 0,073 |
| 18000 | 21000 | **62203** | 21 | 36 | 0,6 | 0,083 |
| 16000 | 19000 | **6303** | 23 | 41 | 1 | 0,12 |
| 12000 | 15000 | **6403** | 23,5 | 55,5 | 1 | 0,27 |
| | | | | | | |
| 19000 | 24000 | **61804** | 22 | 30 | 0,3 | 0,018 |
| 18000 | 22000 | **61904** | 22 | 35 | 0,3 | 0,038 |
| 17000 | 20000 | **16004D** | 22 | 40 | 0,3 | 0,050 |
| 17000 | 20000 | **6004** | 24 | 38 | 0,6 | 0,070 |
| 15000 | 18000 | **6204** | 25 | 42 | 1 | 0,11 |
| 15000 | 18000 | **62204** | 25 | 42 | 1 | 0,13 |
| 15000 | 18000 | **63204** | 25 | 42 | 1 | 0,15 |
| 14000 | 17000 | **6304** | 26 | 45 | 1 | 0,15 |
| 10000 | 13000 | **6404** | 29 | 63 | 1 | 0,40 |
| 14000 | 17000 | **62304** | 26 | 45 | 1 | 0,20 |

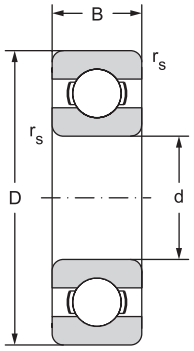



12.1.1

| Main dimensions | | | | Basic load rating | | Fatique load limit |
|---|---|---|---|---|---|---|
| | | | | Dynamic | Static | $P_u$ |
| d | D | B | $r_s$ | $C_r$ | $C_{or}$ | |
| mm | | | | kN | | kN |
| 25 | 37 | 7 | 0,3 | 4,36 | 2,6 | 0,125 |
| | 42 | 9 | 0,3 | 7,02 | 4,3 | 0,193 |
| | 47 | 8 | 0,3 | 6,95 | 4,55 | 0,207 |
| | 47 | 8 | 0,3 | 10,07 | 5,806 | 0,264 |
| | 47 | 12 | 0,6 | 10,07 | 5,806 | 0,264 |
| | 52 | 15 | 1 | 14,029 | 7,94 | 0,361 |
| | 52 | 18 | 1 | 14,029 | 7,94 | 0,361 |
| | 62 | 17 | 1,1 | 21,123 | 10,806 | 0,491 |
| | 62 | 24 | 1,1 | 21,123 | 10,806 | 0,491 |
| | 80 | 21 | 1,5 | 36 | 19,2 | 0,873 |
| 30 | 42 | 7 | 0,3 | 4,49 | 2,9 | 0,146 |
| | 47 | 9 | 0,3 | 7,28 | 4,55 | 0,212 |
| | 55 | 9 | 0,3 | 11,2 | 7,36 | 0,335 |
| | 55 | 13 | 1 | 13,243 | 8,25 | 0,375 |
| | 62 | 16 | 1 | 19,443 | 11,186 | 0,508 |
| | 62 | 20 | 1 | 19,443 | 11,186 | 0,508 |
| | 72 | 19 | 1,1 | 29,701 | 15,678 | 0,713 |
| | 90 | 23 | 1,5 | 43 | 23,7 | 1,077 |
| 35 | 47 | 7 | 0,3 | 4,75 | 3,2 | 0,17 |
| | 55 | 10 | 0,6 | 9,56 | 6,8 | 0,29 |
| | 62 | 9 | 0,3 | 9,96 | 7,362 | 0,335 |
| | 62 | 14 | 1 | 15,956 | 10,328 | 0,469 |
| | 72 | 17 | 1,1 | 25,663 | 15,227 | 0,692 |
| | 80 | 21 | 1,5 | 33,367 | 19,23 | 0,874 |
| | 100 | 25 | 1,5 | 55,2 | 31 | 1,409 |
| 40 | 52 | 7 | 0,3 | 4,94 | 3,45 | 0,19 |
| | 62 | 12 | 0,6 | 13,8 | 10 | 0,43 |
| | 68 | 9 | 0,3 | 12,667 | 9,617 | 0,437 |
| | 68 | 15 | 1 | 16,824 | 11,493 | 0,522 |
| | 80 | 18 | 1,1 | 32,633 | 19,887 | 0,904 |
| | 80 | 18 | 1,1 | 35,8 | 20,8 | 0,88 |
| | 90 | 23 | 1,5 | 40,76 | 24,17 | 1,099 |
| | 110 | 27 | 2 | 63,1 | 36,2 | 1,645 |

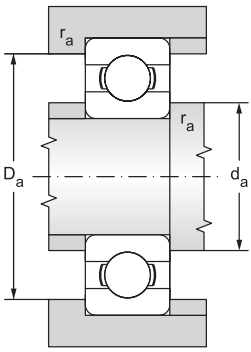



| Limiting speed for lubrication with | | Bearing designation | Abutment and Fillet Dimensions | | | Weight |
|---|---|---|---|---|---|---|
| Grease | Oil | | $d_a$ | $D_a$ | $r_a$ | ~ |
| | | | min | max | max | |
| $min^{-1}$ | | | mm | | | kg |
| 17000 | 20000 | **61805** | 27 | 35 | 0,3 | 0,022 |
| 16000 | 19000 | **61905** | 27 | 40 | 0,3 | 0,045 |
| 14000 | 17000 | **16005** | 27 | 43 | 0,3 | 0,053 |
| 14000 | 17000 | **16005D** | 27 | 43 | 0,3 | 0,053 |
| 14000 | 17000 | **6005** | 28 | 43 | 0,6 | 0,082 |
| 12000 | 15000 | **6205** | 30 | 47 | 1 | 0,13 |
| 12600 | 15000 | **62205** | 30 | 47 | 1 | 0,15 |
| 11000 | 13000 | **6305** | 31 | 55 | 1 | 0,23 |
| 11000 | 13000 | **62305** | 31 | 55 | 1 | 0,32 |
| 9400 | 11000 | **6405** | 34 | 70 | 1,5 | 0,53 |
| | | | | | | |
| 15000 | 18000 | **61806** | 32 | 40 | 0,3 | 0,027 |
| 14000 | 17000 | **61906** | 32 | 45 | 0,3 | 0,051 |
| 12000 | 14000 | **16006** | 32 | 53 | 0,3 | 0,087 |
| 12000 | 14000 | **6006** | 34 | 50 | 1 | 0,12 |
| 11000 | 13000 | **6206** | 35 | 57 | 1 | 0,20 |
| 11000 | 13000 | **62206** | 35 | 57 | 1 | 0,24 |
| 10000 | 12000 | **6306** | 36 | 65 | 1 | 0,33 |
| 8400 | 10000 | **6406** | 39 | 80 | 1,5 | 0,73 |
| | | | | | | |
| 13000 | 16000 | **61807** | 37 | 45 | 0,3 | 0,030 |
| 11000 | 14000 | **61907** | 38,2 | 51,8 | 0,6 | 0,080 |
| 10600 | 12600 | **16007** | 37 | 60 | 0,3 | 0,11 |
| 10600 | 12600 | **6007** | 39,5 | 57 | 1 | 0,15 |
| 9400 | 11000 | **6207** | 42 | 65 | 1 | 0,28 |
| 8400 | 10000 | **6307** | 42 | 71 | 1,5 | 0,45 |
| 7500 | 8900 | **6407** | 44 | 90 | 1,5 | 0,95 |
| | | | | | | |
| 11000 | 14000 | **61808** | 42 | 50 | 0,3 | 0,034 |
| 10000 | 13000 | **61908** | 43,2 | 58,8 | 0,6 | 0,12 |
| 9400 | 11000 | **16008** | 42 | 62 | 0,3 | 0,13 |
| 9400 | 11000 | **6008** | 44 | 63 | 1 | 0,19 |
| 8400 | 10000 | **6208** | 47 | 73 | 1 | 0,35 |
| 8500 | 10000 | **6208** | 47 | 73 | 1 | 0,34 |
| 7900 | 9400 | **6308** | 47 | 81 | 1,5 | 0,63 |
| 6700 | 7900 | **6408** | 50 | 97 | 2 | 1,12 |

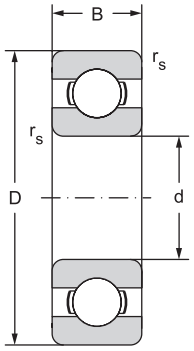



12.1.1

| Main dimensions | | | | Basic load rating | | Fatique load limit |
|---|---|---|---|---|---|---|
| | | | | Dynamic | Static | $P_u$ |
| d | D | B | $r_s$ | $C_r$ | $C_{or}$ | |
| mm | | | | kN | | kN |
| 45 | 58 | 7 | 0,3 | 6,63 | 6,1 | 0,26 |
| | 68 | 12 | 0,6 | 14 | 10,8 | 0,47 |
| | 75 | 10 | 0,6 | 15,659 | 12,172 | 0,553 |
| | 75 | 16 | 1 | 21,1 | 15,3 | 0,695 |
| | 85 | 19 | 1,1 | 32,678 | 20,325 | 0,924 |
| | 100 | 25 | 1,5 | 52,804 | 31,715 | 1,442 |
| | 120 | 29 | 2 | 76,5 | 44,7 | 2,032 |
| 50 | 65 | 7 | 0,3 | 6,76 | 6,8 | 0,285 |
| | 72 | 12 | 0,6 | 14,6 | 11,8 | 0,5 |
| | 80 | 10 | 0,6 | 16,092 | 13,147 | 0,598 |
| | 80 | 16 | 1 | 21,72 | 16,65 | 0,757 |
| | 90 | 20 | 1,1 | 35,066 | 23,226 | 1,056 |
| | 110 | 27 | 2 | 61,754 | 37,754 | 1,716 |
| | 130 | 31 | 2,1 | 87,4 | 52,1 | 2,368 |
| 55 | 72 | 9 | 0,3 | 9,04 | 8,8 | 0,38 |
| | 80 | 13 | 1 | 16,5 | 14 | 0,6 |
| | 90 | 11 | 0,6 | 20,3 | 14 | 0,7 |
| | 90 | 18 | 1,1 | 28,216 | 21,318 | 0,969 |
| | 100 | 21 | 1,5 | 43,35 | 29,397 | 1,336 |
| | 120 | 29 | 2 | 71 | 44,7 | 2,032 |
| | 140 | 33 | 2,1 | 100 | 61,9 | 2,814 |
| 60 | 78 | 10 | 0,3 | 11,9 | 11,4 | 0,49 |
| | 85 | 13 | 1 | 16,5 | 14,3 | 0,6 |
| | 95 | 11 | 0,6 | 20,8 | 15 | 0,74 |
| | 95 | 18 | 1,1 | 29,343 | 23,256 | 1,057 |
| | 110 | 22 | 1,5 | 52,846 | 35,786 | 1,627 |
| | 130 | 31 | 2,1 | 81,5 | 52,1 | 2,368 |
| | 150 | 35 | 2,1 | 110 | 69,4 | 3,079 |
| 65 | 85 | 10 | 0,6 | 12,4 | 12,7 | 0,54 |
| | 90 | 13 | 1 | 17,4 | 16 | 0,68 |
| | 100 | 11 | 0,6 | 21,2 | 19,6 | 0,891 |
| | 100 | 18 | 1,1 | 30,5 | 25,1 | 1,141 |
| | 120 | 23 | 1,5 | 57,21 | 40,011 | 1,819 |
| | 140 | 33 | 2,1 | 92,6 | 59,6 | 2,676 |
| | 160 | 37 | 2,1 | 117,95 | 78,329 | 3,357 |

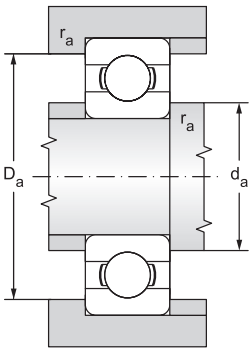



| Limiting speed for lubrication with | | Bearing designation | Abutment and Fillet Dimensions | | | Weight |
|---|---|---|---|---|---|---|
| Grease | Oil | | $d_a$ | $D_a$ | $r_a$ | ~ |
| | | | min | max | max | |
| $min^{-1}$ | | | mm | | | kg |
| 9500 | 12000 | **61809** | 47 | 56 | 0,3 | 0,040 |
| 9000 | 11000 | **61909** | 48,2 | 64,8 | 0,6 | 0,14 |
| 8400 | 10000 | **16009** | 49 | 71 | 1 | 0,17 |
| 8400 | 10000 | **6009** | 49 | 70 | 1 | 0,24 |
| 7900 | 9400 | **6209** | 52 | 78 | 1 | 0,40 |
| 7100 | 8400 | **6309** | 52 | 91 | 1,5 | 0,83 |
| 6000 | 7100 | **6409** | 55 | 107 | 2 | 1,54 |
| 9000 | 11000 | **61810** | 52 | 63 | 0,3 | 0,052 |
| 8500 | 10000 | **61910** | 53,2 | 68,8 | 0,6 | 0,14 |
| 7900 | 9400 | **16010** | 54 | 76 | 0,6 | 0,19 |
| 7900 | 9400 | **6010** | 54 | 75 | 1 | 0,26 |
| 7100 | 8400 | **6210** | 57 | 83 | 1 | 0,46 |
| 6300 | 7500 | **6310** | 60 | 100 | 2 | 1,06 |
| 5600 | 6700 | **6410** | 63 | 116 | 2 | 1,89 |
| 8500 | 10000 | **61811** | 57 | 70 | 0,3 | 0,083 |
| 8000 | 9500 | **61911** | 59,6 | 75,4 | 1 | 0,19 |
| 7500 | 9000 | **16011** | 58,2 | 86,8 | 0,6 | 0,26 |
| 7100 | 8400 | **6011** | 60 | 84 | 1 | 0,38 |
| 6700 | 7900 | **6211** | 62 | 91 | 1,5 | 0,60 |
| 5600 | 6700 | **6311** | 65 | 110 | 2 | 1,38 |
| 5300 | 6300 | **6411** | 68 | 126 | 2 | 2,29 |
| 7500 | 9000 | **61812** | 62 | 76 | 0,3 | 0,11 |
| 7500 | 9000 | **61912** | 64,6 | 80,4 | 1 | 0,20 |
| 6700 | 8000 | **16012** | 63,2 | 91,8 | 0,6 | 0,28 |
| 6700 | 7900 | **6012** | 65 | 88 | 1 | 0,41 |
| 6000 | 7100 | **6212** | 67 | 101 | 1,5 | 0,77 |
| 5300 | 6300 | **6312** | 72 | 118 | 2 | 1,72 |
| 4700 | 5600 | **6412** | 73 | 136 | 2 | 2,76 |
| 7000 | 8500 | **61813** | 68,2 | 81,8 | 0,6 | 0,13 |
| 6700 | 8000 | **61913** | 69,6 | 85,4 | 1 | 0,22 |
| 6300 | 7500 | **16013** | 69 | 96 | 0,6 | 0,30 |
| 6300 | 7500 | **6013** | 70 | 93 | 1 | 0,44 |
| 5300 | 6300 | **6213** | 72 | 111 | 1,5 | 1,00 |
| 5000 | 6000 | **6313** | 76 | 128 | 2 | 2,10 |
| 4500 | 5300 | **6413** | 78 | 146 | 2 | 3,28 |

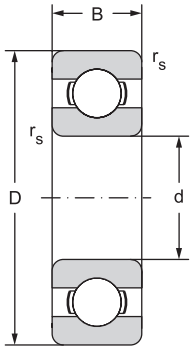



12.1.1

| Main dimensions | | | | Basic load rating | | Fatique load limit |
|---|---|---|---|---|---|---|
| | | | | Dynamic | Static | $P_u$ |
| d | D | B | $r_s$ | $C_r$ | $C_{or}$ | |
| mm | | | | kN | | kN |
| 70 | 90 | 10 | 0,6 | 12,4 | 13,2 | 0,56 |
| | 100 | 16 | 1 | 23,8 | 21,2 | 0,9 |
| | 110 | 13 | 0,6 | 27,6 | 25,1 | 1,141 |
| | 110 | 20 | 1,1 | 37,96 | 30,959 | 1,407 |
| | 125 | 24 | 1,5 | 62 | 43,8 | 1,991 |
| | 150 | 35 | 2,1 | 104 | 63,1 | 2,735 |
| | 180 | 42 | 3 | 144 | 104 | 4,228 |
| | | | | | | |
| 75 | 95 | 10 | 0,6 | 12,7 | 14,3 | 0,61 |
| | 105 | 16 | 1 | 24,2 | 19,3 | 0,965 |
| | 110 | 12 | 0,6 | 28,6 | 27 | 1,14 |
| | 115 | 13 | 0,6 | 28,7 | 26,6 | 1,209 |
| | 115 | 20 | 1,1 | 39,747 | 33,17 | 1,508 |
| | 130 | 25 | 1,5 | 66,179 | 49,311 | 2,214 |
| | 160 | 37 | 2,1 | 114 | 76,4 | 3,204 |
| | 190 | 45 | 3 | 152,525 | 112,922 | 4,459 |
| | | | | | | |
| 80 | 100 | 10 | 0,6 | 13 | 15 | 0,64 |
| | 110 | 16 | 1 | 25,1 | 20,4 | 1,02 |
| | 125 | 14 | 0,6 | 32,9 | 31,6 | 1,419 |
| | 125 | 22 | 1,1 | 47,5 | 39,8 | 1,787 |
| | 140 | 26 | 2 | 72,2 | 53,1 | 2,301 |
| | 170 | 37 | 2,1 | 122,85 | 86,226 | 3,506 |
| | 200 | 48 | 3 | 163,587 | 124,984 | 4,801 |
| | | | | | | |
| 85 | 110 | 13 | 1 | 19,5 | 20,8 | 0,88 |
| | 120 | 18 | 1,1 | 31,9 | 30 | 1,25 |
| | 130 | 14 | 0,6 | 34,1 | 32,9 | 1,442 |
| | 130 | 22 | 1,1 | 49,794 | 42,609 | 1,868 |
| | 150 | 28 | 2 | 83,299 | 63,675 | 2,67 |
| | 180 | 41 | 3 | 132,507 | 96,069 | 3,794 |
| | 210 | 52 | 4 | 174 | 136 | 5,09 |
| | | | | | | |
| 90 | 115 | 13 | 1 | 19,5 | 22 | 0,915 |
| | 125 | 18 | 1,1 | 33,2 | 31,5 | 1,23 |
| | 140 | 16 | 1 | 43,6 | 39 | 1,56 |
| | 140 | 24 | 1,5 | 58,4 | 49,2 | 2,085 |
| | 160 | 30 | 2 | 96,2 | 70,8 | 2,878 |
| | 190 | 43 | 3 | 144 | 108 | 4,149 |
| | 225 | 54 | 4 | 192 | 158 | 5,723 |

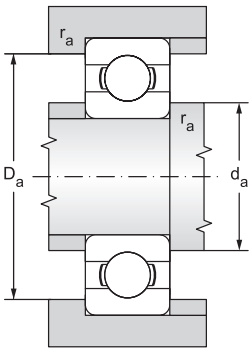



| Limiting speed for lubrication with | | Bearing designation | Abutment and Fillet Dimensions | | | Weight |
|---|---|---|---|---|---|---|
| Grease | Oil | | $d_a$ | $D_a$ | $r_a$ | ~ |
| | | | min | max | max | |
| $min^{-1}$ | | | mm | | | kg |
| 6700 | 8000 | **61814** | 73,2 | 86,8 | 0,6 | 0,14 |
| 6300 | 7500 | **61914** | 74,6 | 95,4 | 1 | 0,35 |
| 5600 | 6700 | **16014** | 74 | 106 | 0,6 | 0,43 |
| 5600 | 6700 | **6014** | 75 | 103 | 1 | 0,60 |
| 5300 | 6300 | **6214** | 77 | 116 | 1,5 | 1,07 |
| 4700 | 5600 | **6314** | 81 | 138 | 2 | 2,54 |
| 4000 | 4700 | **6414** | 85 | 164 | 2,5 | 4,85 |
| | | | | | | |
| 6300 | 7500 | **61815** | 78,2 | 91,8 | 0,6 | 0,15 |
| 6000 | 7000 | **61915** | 79,6 | 100 | 1 | 0,37 |
| 5500 | 7800 | **16115** | 77 | 108 | 0,3 | 0,38 |
| 5300 | 6300 | **16015** | 79 | 111 | 0,6 | 0,46 |
| 5300 | 6300 | **6015** | 80 | 108 | 1 | 0,64 |
| 5000 | 6000 | **6215** | 82 | 122 | 1,5 | 1,18 |
| 4200 | 5000 | **6315** | 86 | 148 | 2 | 3,06 |
| 3800 | 4500 | **6415** | 90 | 174 | 2,5 | 5,74 |
| | | | | | | |
| 6000 | 7000 | **61816** | 83,2 | 96,8 | 0,6 | 0,15 |
| 5600 | 6700 | **61916** | 84,6 | 105 | 1 | 0,40 |
| 5000 | 6000 | **16016** | 84 | 121 | 0,6 | 0,60 |
| 5000 | 6000 | **6016** | 85 | 118 | 1 | 0,85 |
| 4700 | 5600 | **6216** | 90 | 130 | 2 | 1,40 |
| 4000 | 4700 | **6316** | 91 | 158 | 2 | 3,63 |
| 3500 | 4200 | **6416** | 95 | 184 | 2,5 | 6,72 |
| | | | | | | |
| 5300 | 6300 | **61817** | 89,6 | 105 | 1 | 0,27 |
| 5300 | 6300 | **61917** | 91 | 114 | 1 | 0,55 |
| 4700 | 5600 | **16017** | 89 | 126 | 0,6 | 0,63 |
| 4700 | 5600 | **6017** | 90 | 123 | 1 | 0,89 |
| 4200 | 5000 | **6217** | 95 | 140 | 2 | 1,80 |
| 3800 | 4500 | **6317** | 98 | 166 | 2,5 | 4,20 |
| 3300 | 4000 | **6417** | 105 | 190 | 3 | 7,88 |
| | | | | | | |
| 5300 | 6300 | **61818** | 94,6 | 110 | 1 | 0,28 |
| 5000 | 6000 | **61918** | 96 | 119 | 1 | 0,59 |
| 4800 | 5600 | **16018** | 94,6 | 135 | 1 | 0,85 |
| 4500 | 5300 | **6018** | 96 | 132 | 1,5 | 1,17 |
| 4000 | 4700 | **6218** | 100 | 150 | 2 | 2,16 |
| 3500 | 4200 | **6318** | 103 | 176 | 2,5 | 4,95 |
| 3200 | 3800 | **6418** | 110 | 205 | 3 | 11,4 |

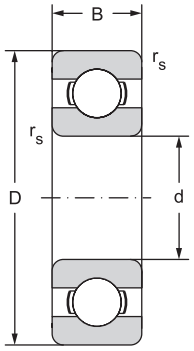



12.1.1

| Main dimensions | | | | Basic load rating | | Fatique load limit |
|---|---|---|---|---|---|---|
| | | | | Dynamic | Static | $P_u$ |
| d | D | B | $r_s$ | $C_r$ | $C_{or}$ | |
| mm | | | | kN | | kN |
| 95 | 120 | 13 | 1 | 19,9 | 22,8 | 0,93 |
| | 130 | 18 | 1,1 | 33,8 | 33,5 | 1,43 |
| | 145 | 16 | 1 | 42,3 | 41,5 | 1,722 |
| | 145 | 24 | 1,5 | 60,7 | 54,1 | 2,245 |
| | 170 | 32 | 2,1 | 108 | 81 | 3,199 |
| | 200 | 45 | 3 | 152,444 | 117,366 | 4,393 |
| 100 | 125 | 13 | 1 | 19,9 | 24 | 0,95 |
| | 140 | 20 | 1,1 | 42,3 | 41 | 1,63 |
| | 150 | 16 | 1 | 44 | 43,8 | 1,781 |
| | 150 | 24 | 1,5 | 60,096 | 54,244 | 2,205 |
| | 180 | 34 | 2,1 | 123 | 92,6 | 3,557 |
| | 215 | 47 | 3 | 174 | 141 | 5,107 |
| 105 | 130 | 13 | 1 | 20,8 | 19,6 | 1 |
| | 145 | 20 | 1,1 | 44,2 | 44 | 1,7 |
| | 160 | 18 | 1 | 54 | 51 | 1,86 |
| | 160 | 26 | 2 | 72,2 | 65,6 | 2,59 |
| | 190 | 36 | 2,1 | 132,927 | 104,833 | 3,924 |
| | 225 | 49 | 3 | 185 | 153 | 5,414 |
| 110 | 140 | 16 | 1 | 28,1 | 26 | 1,25 |
| | 150 | 20 | 1,1 | 43,6 | 45 | 1,66 |
| | 170 | 19 | 1 | 57,6 | 56,2 | 2,159 |
| | 170 | 28 | 2 | 82,5 | 72,2 | 2,774 |
| | 200 | 38 | 2,1 | 144 | 117 | 4,272 |
| | 240 | 50 | 3 | 203 | 180 | 6,185 |
| 120 | 150 | 16 | 1 | 29,1 | 28 | 1,29 |
| | 165 | 22 | 1,1 | 55,3 | 57 | 2,04 |
| | 180 | 19 | 1 | 61 | 63,1 | 2,342 |
| | 180 | 28 | 2 | 85 | 79,4 | 2,947 |
| | 215 | 40 | 2,1 | 144 | 117 | 4,109 |
| | 260 | 55 | 3 | 208 | 186 | 5,7 |
| 130 | 165 | 18 | 1,1 | 37,7 | 43 | 1,6 |
| | 180 | 24 | 1,5 | 65,503 | 67,193 | 2,453 |
| | 200 | 22 | 1,1 | 83,2 | 81,5 | 2,7 |
| | 200 | 33 | 2 | 106,986 | 99,667 | 3,527 |
| | 230 | 40 | 3 | 153 | 133 | 4,506 |
| | 280 | 58 | 4 | 229 | 216 | 6,3 |

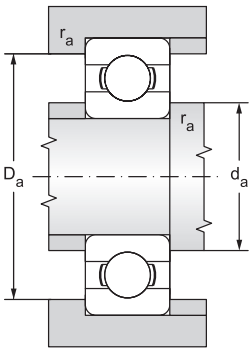



| Limiting speed for lubrication with | | Bearing designation | Abutment and Fillet Dimensions | | | Weight |
|---|---|---|---|---|---|---|
| Grease | Oil | | $d_a$ | $D_a$ | $r_a$ | ~ |
| | | | min | max | max | |
| $min^{-1}$ | | | mm | | | kg |
| 5000 | 6000 | **61819** | 99,6 | 115 | 1 | 0,30 |
| 4800 | 5600 | **61919** | 101 | 124 | 1 | 0,61 |
| 4200 | 5000 | **16019** | 100 | 140 | 1 | 0,89 |
| 4200 | 5000 | **6019** | 102 | 137 | 1,5 | 1,22 |
| 3800 | 4500 | **6219** | 107 | 158 | 2 | 2,60 |
| 3300 | 4000 | **6319** | 109 | 186 | 2,5 | 5,72 |
| | | | | | | |
| 4800 | 5600 | **61820** | 105 | 120 | 1 | 0,31 |
| 4500 | 5300 | **61920** | 106 | 134 | 1 | 0,83 |
| 4200 | 5000 | **16020** | 105 | 145 | 1 | 0,91 |
| 4200 | 5000 | **6020** | 106 | 142 | 1,5 | 1,27 |
| 3500 | 4200 | **6220** | 112 | 169 | 2 | 3,13 |
| 3200 | 3800 | **6320** | 113 | 201 | 2,5 | 7,07 |
| | | | | | | |
| 4500 | 5300 | **61821** | 110 | 125 | 1 | 0,32 |
| 4300 | 5000 | **61921** | 111 | 139 | 1 | 0,87 |
| 4000 | 4800 | **16021** | 110 | 155 | 1 | 1,20 |
| 4000 | 4700 | **6021** | 113 | 151 | 2 | 1,59 |
| 3300 | 4000 | **6221** | 117 | 178 | 2 | 3,74 |
| 3000 | 3500 | **6321** | 119 | 211 | 2,5 | 8,00 |
| | | | | | | |
| 4300 | 5000 | **61822** | 115 | 135 | 1 | 0,60 |
| 4000 | 4800 | **61922** | 116 | 144 | 1 | 0,90 |
| 3800 | 4500 | **16022** | 115 | 165 | 1 | 1,46 |
| 3800 | 4500 | **6022** | 118 | 161 | 2 | 1,95 |
| 3200 | 3800 | **6222** | 122 | 188 | 2 | 4,37 |
| 2600 | 3200 | **6322** | 123 | 227 | 2,5 | 9,58 |
| | | | | | | |
| 3800 | 4500 | **61824** | 125 | 145 | 1 | 0,65 |
| 3600 | 4300 | **61924** | 126 | 159 | 1 | 1,20 |
| 3300 | 4000 | **16024** | 125 | 175 | 1 | 1,80 |
| 3300 | 4000 | **6024** | 128 | 171 | 2 | 2,10 |
| 3000 | 3500 | **6224** | 132 | 203 | 2 | 5,15 |
| 2400 | 3000 | **6324** | 134 | 246 | 2,5 | 12,5 |
| | | | | | | |
| 3600 | 4300 | **61826** | 136 | 159 | 1 | 0,93 |
| 3200 | 3800 | **61926** | 137 | 172 | 1 | 1,86 |
| 3200 | 3800 | **16026** | 136 | 192 | 1 | 2,35 |
| 3200 | 3800 | **6026** | 138 | 191 | 2 | 3,26 |
| 2800 | 3300 | **6226** | 144 | 216 | 2,5 | 6,20 |
| 2200 | 2800 | **6326M** | 147 | 263 | 3 | 17,5 |
| | | | | | | |
| | | | | | | |

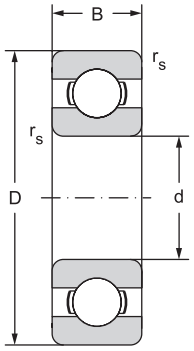



12.1.1

| Main dimensions | | | | Basic load rating | | Fatique load limit |
|---|---|---|---|---|---|---|
| | | | | Dynamic | Static | $P_u$ |
| d | D | B | $r_s$ | $C_r$ | $C_{or}$ | |
| mm | | | | kN | | kN |
| 140 | 175 | 18 | 1,1 | 39 | 46,5 | 1,66 |
| | 190 | 24 | 1,5 | 66,3 | 72 | 2,36 |
| | 210 | 22 | 1,1 | 80,6 | 86,5 | 2,8 |
| | 210 | 33 | 2 | 110 | 108 | 3,711 |
| | 250 | 42 | 3 | 166 | 150 | 4,883 |
| | 300 | 62 | 4 | 251 | 245 | 7,1 |
| 150 | 190 | 20 | 1,1 | 48,8 | 61 | 1,96 |
| | 210 | 28 | 2 | 88,4 | 93 | 2,9 |
| | 225 | 24 | 1,1 | 92,2 | 98 | 3,05 |
| | 225 | 35 | 2,1 | 126 | 126 | 4,183 |
| | 270 | 45 | 3 | 190 | 181 | 5,677 |
| | 320 | 65 | 4 | 276 | 285 | 7,8 |
| 160 | 200 | 20 | 1,1 | 49,4 | 64 | 2 |
| | 220 | 28 | 2 | 92,3 | 98 | 3,05 |
| | 240 | 25 | 1,5 | 99,5 | 108 | 3,25 |
| | 240 | 38 | 2,1 | 143 | 143 | 4,3 |
| | 290 | 48 | 3 | 186 | 186 | 5,3 |
| | 340 | 68 | 4 | 276 | 285 | 7,65 |
| 170 | 215 | 22 | 1,1 | 61,8 | 78 | 2,4 |
| | 230 | 28 | 2 | 93,6 | 106 | 3,15 |
| | 260 | 28 | 1,5 | 119 | 129 | 3,75 |
| | 260 | 42 | 2,1 | 168 | 171 | 5,301 |
| | 310 | 52 | 4 | 212 | 224 | 6,1 |
| | 360 | 72 | 4 | 312 | 340 | 8,8 |
| 180 | 225 | 22 | 1,1 | 62,4 | 81,5 | 2,45 |
| | 250 | 33 | 2 | 119 | 134 | 3,9 |
| | 280 | 31 | 2 | 138 | 146 | 4,15 |
| | 280 | 46 | 2,1 | 190 | 200 | 5,6 |
| | 320 | 52 | 4 | 229 | 240 | 6,4 |
| | 380 | 75 | 4 | 351 | 405 | 10,4 |
| 190 | 240 | 24 | 1,5 | 76,1 | 98 | 2,8 |
| | 260 | 33 | 2 | 117 | 134 | 3,8 |
| | 290 | 31 | 2 | 148 | 166 | 4,55 |
| | 290 | 46 | 2,1 | 195 | 216 | 5,85 |
| | 340 | 55 | 4 | 255 | 280 | 7,35 |
| | 400 | 78 | 5 | 371 | 430 | 10,8 |

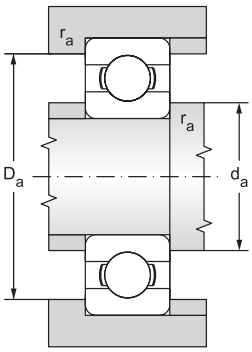



| Limiting speed for lubrication with | | Bearing designation | Abutment and Fillet Dimensions | | | Weight |
|---|---|---|---|---|---|---|
| Grease | Oil | | $d_a$ | $D_a$ | $r_a$ | ~ |
| | | | min | max | max | |
| $min^{-1}$ | | | mm | | | kg |
| 3400 | 4000 | **61828** | 146 | 169 | 1 | 0,99 |
| 3200 | 3800 | **61928MA** | 147 | 183 | 1,5 | 1,70 |
| 3000 | 3600 | **16028** | 146 | 204 | 1 | 2,50 |
| 3000 | 3500 | **6028** | 148 | 200 | 2 | 3,39 |
| 2500 | 3000 | **6228** | 154 | 236 | 2,5 | 7,56 |
| 2000 | 2600 | **6328M** | 157 | 283 | 3 | 22,0 |
| | | | | | | |
| 3000 | 3600 | **61830** | 156 | 184 | 1 | 1,40 |
| 2800 | 3400 | **61930MA** | 159 | 201 | 2 | 3,05 |
| 2600 | 3200 | **16030** | 156 | 219 | 1 | 3,15 |
| 2700 | 3200 | **6030** | 159 | 213 | 2 | 4,16 |
| 2200 | 2700 | **6230** | 164 | 256 | 2,5 | 9,85 |
| 1900 | 2400 | **6330M** | 167 | 303 | 3 | 26,0 |
| | | | | | | |
| 2800 | 3400 | **61832** | 166 | 194 | 1 | 1,45 |
| 2600 | 3200 | **61932MA** | 169 | 211 | 2 | 3,25 |
| 2400 | 3000 | **16032** | 167 | 233 | 1,5 | 3,70 |
| 2400 | 3000 | **6032** | 169 | 231 | 2 | 5,90 |
| 1900 | 2400 | **6232** | 174 | 276 | 2,5 | 14,5 |
| 1800 | 2200 | **6332M** | 177 | 323 | 3 | 29,0 |
| | | | | | | |
| 2600 | 3200 | **61834** | 176 | 209 | 1 | 1,90 |
| 2400 | 3000 | **61934MA** | 179 | 221 | 2 | 3,40 |
| 2200 | 2800 | **16034** | 177 | 253 | 1,5 | 5,00 |
| 2200 | 2700 | **6034** | 179 | 248 | 2 | 6,91 |
| 1900 | 2400 | **6234M** | 187 | 293 | 3 | 17,5 |
| 1700 | 2000 | **6334M** | 187 | 343 | 3 | 34,5 |
| | | | | | | |
| 2400 | 3000 | **61836** | 186 | 219 | 1 | 2,00 |
| 2200 | 2800 | **61936MA** | 189 | 241 | 2 | 5,05 |
| 2000 | 2600 | **16036** | 189 | 271 | 2 | 6,60 |
| 2000 | 2600 | **6036M** | 190 | 270 | 2 | 10,5 |
| 1800 | 2200 | **6236M** | 197 | 303 | 3 | 18,5 |
| 1700 | 2000 | **6336M** | 197 | 363 | 3 | 42,5 |
| | | | | | | |
| 2200 | 2800 | **61838** | 197 | 233 | 1,5 | 2,60 |
| 2200 | 2800 | **61938MA** | 199 | 251 | 2 | 5,25 |
| 2000 | 2600 | **16038** | 199 | 281 | 2 | 7,90 |
| 2000 | 2600 | **6038M** | 200 | 280 | 2 | 11,0 |
| 1700 | 2000 | **6238M** | 207 | 323 | 3 | 23,0 |
| 1600 | 1900 | **6338M** | 210 | 380 | 4 | 49,0 |

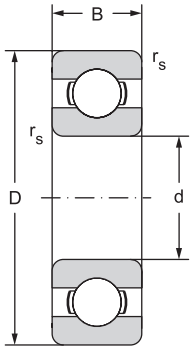



12.1.1

| Main dimensions | | | | Basic load rating | | Fatique load limit |
|---|---|---|---|---|---|---|
| | | | | Dynamic | Static | $P_u$ |
| d | D | B | $r_s$ | $C_r$ | $C_{or}$ | |
| mm | | | | kN | | kN |
| 200 | 250 | 24 | 1,5 | 76,1 | 102 | 2,9 |
| | 280 | 38 | 2,1 | 148 | 166 | 4,55 |
| | 310 | 34 | 2 | 168 | 190 | 5,1 |
| | 310 | 51 | 2,1 | 216 | 245 | 6,4 |
| | 360 | 58 | 4 | 270 | 310 | 7,8 |
| 220 | 270 | 24 | 1,5 | 78 | 110 | 3 |
| | 300 | 38 | 2,1 | 151 | 180 | 4,75 |
| | 340 | 37 | 2,12 | 174 | 204 | 5,2 |
| | 340 | 56 | 3 | 247 | 290 | 7,35 |
| | 400 | 65 | 4 | 296 | 365 | 8,8 |
| | 460 | 88 | 5 | 410 | 520 | 12 |
| 240 | 300 | 28 | 2 | 108 | 150 | 3,8 |
| | 320 | 38 | 2,1 | 159 | 200 | 5,1 |
| | 360 | 37 | 2,1 | 178 | 220 | 5,3 |
| | 360 | 56 | 3 | 255 | 315 | 7,8 |
| | 440 | 72 | 4 | 358 | 465 | 10,8 |
| | 500 | 95 | 5 | 442 | 585 | 12,9 |
| 260 | 320 | 28 | 2 | 111 | 163 | 4 |
| | 360 | 46 | 2,1 | 212 | 270 | 6,55 |
| | 400 | 44 | 3 | 238 | 310 | 7,2 |
| | 400 | 65 | 4 | 291 | 375 | 8,8 |
| | 480 | 80 | 5 | 390 | 530 | 11,8 |
| 280 | 350 | 33 | 2 | 138 | 200 | 4,75 |
| | 380 | 46 | 2,1 | 216 | 285 | 6,7 |
| | 420 | 44 | 3 | 242 | 335 | 7,5 |
| | 420 | 65 | 4 | 302 | 405 | 9,3 |
| | 500 | 80 | 5 | 423 | 600 | 12,9 |
| 300 | 380 | 38 | 2,1 | 172 | 245 | 5,6 |
| | 420 | 56 | 3 | 270 | 375 | 8,3 |
| | 460 | 50 | 4 | 286 | 405 | 8,8 |
| | 460 | 74 | 4 | 358 | 500 | 10,8 |
| | 540 | 85 | 5 | 462 | 670 | 13,7 |
| 320 | 400 | 38 | 2,1 | 172 | 255 | 5,7 |
| | 440 | 56 | 3 | 276 | 400 | 8,65 |
| | 480 | 50 | 4 | 281 | 405 | 8,65 |
| | 480 | 74 | 4 | 371 | 540 | 11,4 |

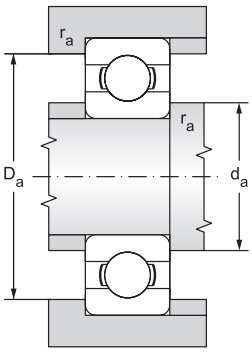



| Limiting speed for lubrication with | | Bearing designation | Abutment and Fillet Dimensions | | | Weight |
|---|---|---|---|---|---|---|
| Grease | Oil | | $d_a$ | $D_a$ | $r_a$ | ~ |
| | | | min | max | max | |
| $min^{-1}$ | | | mm | | | kg |
| 2200 | 2800 | **61840** | 207 | 243 | 1,5 | 2,70 |
| 2000 | 2600 | **61940MA** | 210 | 270 | 2 | 7,40 |
| 1900 | 2400 | **16040** | 209 | 301 | 2 | 8,85 |
| 1900 | 2400 | **6040M** | 210 | 300 | 2 | 14,0 |
| 1700 | 2000 | **6240M** | 217 | 343 | 3 | 28,0 |
| | | | | | | |
| 1900 | 2400 | **61844** | 227 | 263 | 1,5 | 3,00 |
| 1900 | 2400 | **61944MA** | 230 | 290 | 2 | 8,00 |
| 1800 | 2200 | **16044** | 230 | 330 | 2 | 11,5 |
| 1800 | 2200 | **6044M** | 233 | 327 | 2,5 | 18,5 |
| 1500 | 1800 | **6244M** | 237 | 383 | 3 | 37,0 |
| 1300 | 1600 | **6344M** | 240 | 440 | 4 | 72,5 |
| | | | | | | |
| 1800 | 2200 | **61848** | 249 | 291 | 2 | 4,50 |
| 1800 | 2200 | **61948MA** | 250 | 310 | 2 | 8,60 |
| 1700 | 2000 | **16048MA** | 250 | 350 | 2 | 14,5 |
| 1700 | 2000 | **6048M** | 253 | 347 | 2,5 | 19,5 |
| 1300 | 1600 | **6248M** | 257 | 423 | 3 | 51,0 |
| 1300 | 1600 | **6348M** | 260 | 480 | 4 | 92,5 |
| | | | | | | |
| 1700 | 2000 | **61852** | 269 | 311 | 2 | 4,80 |
| 1600 | 1900 | **61952MA** | 270 | 350 | 2 | 14,5 |
| 1500 | 1800 | **16052MA** | 273 | 387 | 2,5 | 21,5 |
| 1500 | 1800 | **6052M** | 277 | 383 | 3 | 29,5 |
| 1100 | 1400 | **6252M** | 280 | 460 | 4 | 65,5 |
| | | | | | | |
| 1600 | 1900 | **61856** | 289 | 341 | 2 | 7,40 |
| 1500 | 1800 | **61956MA** | 291 | 369 | 2 | 15,0 |
| 1400 | 1700 | **16056MA** | 293 | 407 | 2,5 | 23,0 |
| 1400 | 1700 | **6056M** | 296 | 404 | 3 | 31,0 |
| 1100 | 1400 | **6256M** | 300 | 480 | 4 | 71,0 |
| | | | | | | |
| 1400 | 1700 | **61860MA** | 309 | 371 | 2 | 10,5 |
| 1300 | 1600 | **61960MA** | 313 | 407 | 2,5 | 24,5 |
| 1200 | 1500 | **16060MA** | 315 | 445 | 3 | 32,0 |
| 1200 | 1500 | **6060M** | 315 | 445 | 3 | 44,0 |
| 1200 | 1500 | **6260M** | 320 | 520 | 4 | 88,5 |
| | | | | | | |
| 1300 | 1600 | **61864MA** | 332 | 388 | 2 | 11,0 |
| 1200 | 1500 | **61964MA** | 333 | 427 | 2,5 | 25,5 |
| 1100 | 1400 | **16064MA** | 335 | 465 | 3 | 34,0 |
| 1100 | 1400 | **6064M** | 335 | 465 | 3 | 46,0 |

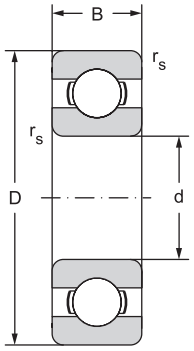



12.1.1

| Main dimensions | | | | Basic load rating | | Fatique load limit |
|---|---|---|---|---|---|---|
| | | | | Dynamic | Static | $P_u$ |
| d | D | B | $r_s$ | $C_r$ | $C_{or}$ | |
| mm | | | | kN | | kN |
| 340 | 420 | 38 | 2,1 | 178 | 275 | 6 |
| | 460 | 56 | 3 | 281 | 425 | 9 |
| | 520 | 57 | 4 | 345 | 520 | 10,6 |
| | 520 | 82 | 5 | 423 | 640 | 13,2 |
| 360 | 440 | 38 | 2,1 | 182 | 285 | 6,1 |
| | 480 | 56 | 3 | 291 | 450 | 9,15 |
| | 540 | 57 | 4 | 351 | 550 | 11 |
| | 540 | 82 | 5 | 462 | 735 | 15 |
| 380 | 480 | 46 | 2,1 | 242 | 390 | 8 |
| | 520 | 65 | 4 | 338 | 540 | 10,8 |
| | 560 | 57 | 4 | 377 | 620 | 12,2 |
| | 560 | 82 | 5 | 462 | 750 | 14,6 |
| 400 | 500 | 46 | 2,1 | 247 | 405 | 8,15 |
| | 540 | 65 | 4 | 345 | 570 | 11,2 |
| | 600 | 90 | 5 | 520 | 865 | 16,3 |
| 420 | 520 | 46 | 2,1 | 251 | 425 | 8,3 |
| | 560 | 65 | 4 | 351 | 600 | 11,4 |
| | 620 | 90 | 5 | 507 | 880 | 16,3 |
| 440 | 540 | 46 | 2,1 | 255 | 440 | 8,5 |
| | 600 | 74 | 4 | 410 | 720 | 13,2 |
| | 650 | 94 | 6 | 553 | 965 | 17,6 |
| 460 | 580 | 56 | 3 | 319 | 570 | 10,6 |
| | 620 | 74 | 4 | 423 | 750 | 13,7 |
| | 680 | 100 | 6 | 582 | 1060 | 19 |
| 480 | 600 | 56 | 3 | 325 | 600 | 10,8 |
| | 650 | 78 | 5 | 449 | 815 | 14,6 |
| | 700 | 100 | 6 | 618 | 1140 | 20 |
| 500 | 620 | 56 | 3 | 332 | 620 | 11,2 |
| | 670 | 78 | 5 | 462 | 865 | 15 |
| | 720 | 100 | 6 | 605 | 1140 | 19,6 |

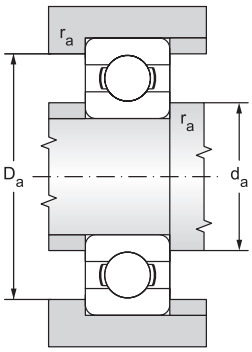



| Limiting speed for lubrication with | | Bearing designation | Abutment and Fillet Dimensions | | | Weight |
|---|---|---|---|---|---|---|
| Grease | Oil | | $d_a$ | $D_a$ | $r_a$ | ~ |
| | | | min | max | max | |
| $min^{-1}$ | | | mm | | | kg |
| 1200 | 1500 | **61868MA** | 352 | 408 | 2 | 11,5 |
| 1100 | 1400 | **61968MA** | 353 | 447 | 2,5 | 26,5 |
| 1000 | 1300 | **16068MA** | 355 | 505 | 3 | 45,0 |
| 1000 | 1300 | **6068M** | 360 | 500 | 4 | 62,0 |
| | | | | | | |
| 1100 | 1400 | **61872MA** | 372 | 428 | 2 | 12,0 |
| 1100 | 1400 | **61972MA** | 373 | 467 | 2,5 | 28,0 |
| 1000 | 1300 | **16072MA** | 375 | 525 | 3 | 49,0 |
| 1000 | 1300 | **6072MA** | 378 | 522 | 4 | 64,5 |
| | | | | | | |
| 1000 | 1300 | **61876MA** | 392 | 468 | 2 | 20,0 |
| 1000 | 1300 | **61976MA** | 395 | 505 | 3 | 40,0 |
| 950 | 1200 | **16076MA** | 395 | 545 | 3 | 51,0 |
| 950 | 1200 | **6076M** | 398 | 542 | 4 | 67,5 |
| | | | | | | |
| 1000 | 1300 | **61880MA**** | 412 | 488 | 2 | 20,5 |
| 950 | 1200 | **61980MA**** | 415 | 525 | 3 | 41,5 |
| 900 | 1100 | **6080M**** | 418 | 582 | 4 | 87,5 |
| | | | | | | |
| 950 | 1200 | **61884MA**** | 432 | 508 | 2 | 21,5 |
| 900 | 1100 | **61984MA**** | 435 | 545 | 3 | 43,0 |
| 900 | 1100 | **6084M**** | 438 | 602 | 4 | 91,5 |
| | | | | | | |
| 900 | 1100 | **61888MA**** | 452 | 528 | 2 | 22,5 |
| 900 | 1100 | **61988MA**** | 455 | 585 | 3 | 60,5 |
| 850 | 1000 | **6088M**** | 463 | 627 | 5 | 105 |
| | | | | | | |
| 900 | 1100 | **61892MA**** | 473 | 567 | 2,5 | 35,0 |
| 850 | 1000 | **61992MA**** | 476 | 604 | 3 | 62,5 |
| 800 | 950 | **6092MB**** | 483 | 657 | 5 | 120 |
| | | | | | | |
| 850 | 1000 | **61896MA**** | 493 | 587 | 2,5 | 36,5 |
| 800 | 950 | **61996MA**** | 498 | 632 | 4 | 74,0 |
| 750 | 900 | **6096MB**** | 503 | 677 | 5 | 125 |
| | | | | | | |
| 800 | 950 | **618/500MA**** | 513 | 607 | 2,5 | 40,5 |
| 750 | 900 | **619/500MA**** | 518 | 652 | 4 | 77,0 |
| 750 | 900 | **60/500MA**** | 523 | 697 | 5 | 135 |




12.1.1

| Main dimensions | | | | Basic load rating | | Fatique load limit |
|---|---|---|---|---|---|---|
| | | | | Dynamic | Static | $P_u$ |
| d | D | B | $r_s$ | $C_r$ | $C_{or}$ | |
| mm | | | | kN | | kN |
| 530 | 650 | 56 | 3 | 332 | 655 | 11,2 |
| | 710 | 82 | 5 | 488 | 930 | 15,6 |
| | 780 | 112 | 6 | 650 | 1270 | 20,8 |
| 560 | 680 | 56 | 3 | 345 | 695 | 11,8 |
| | 750 | 85 | 5 | 494 | 980 | 16,3 |
| | 820 | 115 | 6 | 663 | 1470 | 22 |
| 600 | 730 | 60 | 3 | 364 | 765 | 12,5 |
| | 800 | 90 | 5 | 585 | 1220 | 19,6 |
| 630 | 780 | 69 | 4 | 442 | 965 | 15,3 |
| | 850 | 100 | 6 | 624 | 1340 | 21,2 |
| | 920 | 128 | 7,5 | 819 | 1760 | 27 |
| 670 | 820 | 69 | 4 | 442 | 1000 | 15,6 |
| | 900 | 103 | 6 | 676 | 1500 | 22,4 |
| | 980 | 136 | 7,5 | 904 | 2040 | 30 |
| 710 | 870 | 74 | 4 | 475 | 1100 | 16,6 |
| | 950 | 106 | 6 | 663 | 1500 | 22 |
| | 1030 | 140 | 7,5 | 956 | 2200 | 31,5 |
| 750 | 920 | 78 | 5 | 527 | 1250 | 18,3 |
| | 1000 | 112 | 6 | 761 | 1800 | 25,5 |
| 800 | 980 | 82 | 5 | 559 | 1370 | 19,3 |
| | 1060 | 115 | 6 | 832 | 2040 | 28,5 |
| | 1150 | 155 | 7,5 | 1010 | 2550 | 34,5 |
| 850 | 1030 | 82 | 5 | 559 | 1430 | 19,6 |
| 900 | 1090 | 85 | 5 | 619 | 1530 | 22,047 |
| 1000 | 1220 | 100 | 6 | 637 | 1800 | 22,8 |
| 1060 | 1280 | 100 | 6 | 728 | 2120 | 26,5 |




| Limiting speed for lubrication with | | Bearing designation | Abutment and Fillet Dimensions | | | Weight |
|---|---|---|---|---|---|---|
| Grease | Oil | | $d_a$ | $D_a$ | $r_a$ | ~ |
| | | | min | max | max | |
| $min^{-1}$ | | | mm | | | kg |
| 750 | 900 | **618/530MA**** | 543 | 637 | 2,5 | 39,5 |
| 700 | 850 | **619/530MA**** | 548 | 692 | 4 | 90,5 |
| 670 | 800 | **60/530MA**** | 553 | 757 | 5 | 185 |
| 700 | 850 | **618/560MA**** | 573 | 667 | 2,5 | 42,0 |
| 670 | 800 | **619/560MA**** | 578 | 732 | 4 | 105 |
| 630 | 750 | **60/560MA**** | 583 | 797 | 5 | 210 |
| 670 | 800 | **618/600MA**** | 613 | 717 | 2,5 | 52,0 |
| 630 | 750 | **619/600MA**** | 618 | 782 | 4 | 125 |
| 630 | 750 | **618/630MA**** | 645 | 765 | 3 | 73,0 |
| 600 | 700 | **619/630MA**** | 653 | 827 | 5 | 160 |
| 560 | 670 | **60/630MB**** | 658 | 892 | 6 | 285 |
| 560 | 670 | **618/670MA**** | 685 | 805 | 3 | 83,5 |
| 530 | 630 | **619/670MA**** | 693 | 877 | 5 | 185 |
| 500 | 600 | **60/670MA**** | 698 | 952 | 6 | 345 |
| 530 | 630 | **618/710MA**** | 725 | 855 | 3 | 93,5 |
| 500 | 600 | **619/710MA**** | 733 | 927 | 5 | 220 |
| 480 | 560 | **60/710MA**** | 738 | 1002 | 6 | 375 |
| 500 | 600 | **618/750MA**** | 768 | 902 | 4 | 110 |
| 480 | 560 | **619/750MA**** | 773 | 977 | 5 | 255 |
| 450 | 530 | **618/800MA**** | 818 | 962 | 4 | 130 |
| 420 | 500 | **619/800MA**** | 823 | 1037 | 5 | 275 |
| 400 | 500 | **60/800MA**** | 828 | 1122 | 6 | 535 |
| 430 | 500 | **618/850MA**** | 868 | 1012 | 4 | 140 |
| 380 | 450 | **618/900MA**** | 920 | 1070 | 4 | 165 |
| 340 | 400 | **618/1000MA**** | 1023 | 1197 | 5 | 245 |
| 300 | 360 | **618/1060MA**** | 1083 | 1257 | 5 | 260 |