

FAG



Single row FAG X-life angular contact ball bearings

A Member of the
Schaeffler Group



Welcome to the Future! Unmatched Engineering Excellence. INA & FAG



Partner Power

X-life – this is the new premium grade from INA and FAG, offering you new opportunities for success. Benefit from the combined expertise of two rolling bearing manufacturers with a worldwide reputation – in every area of application covering automotive, machine building and precision engineering.

INA and FAG have brought together their strengths to give a new dimension in quality:

X-life.
Higher cost-effectiveness.
Higher operational security.

What X-life offers:

X-life offers excellent product quality that far exceeds previous standards.

Furthermore, X-life optimises all the parameters that are decisive for a problem-free production cycle. This includes correct fitting and dismantling, maintenance intervals matched to the specific application and the selection of lubricants matched to operating conditions.

A further convincing advantage of X-life is product characteristics that fulfil your specific requirements and offer additional benefits: for example, particularly low-noise, maintenance-friendly or high load capacity system solutions.

Your X-life advantages at a glance:

- product characteristics far above the norm
- lasting quality assurance and control
- extremely high reliability
- even greater security in planning and systems
- optimum availability
- smooth-running working processes
- reduced energy consumption
- the maximum possible cost-effectiveness
- the maximum possible level of service and support

Welcome to the Future!
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FAG

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Single row FAG angular contact ball bearings

Expanded application · Advantages

Expanded application

High speeds and high axial loads are typical operating conditions in which single row angular contact ball bearings are used. In the case of application in pumps and compressors, there are frequently additional requirements such as high temperature resistance and low maintenance. In order to fulfil these demands reliably and economically, FAG is expanding its range of single row angular contact ball bearings.

The range now includes bearings with a versatile **sheet steel cage**, see section “Cages”, as well as **sealed bearings**.

Due to improvements in bearing kinematics and refined manufacturing processes, the new angular contact ball bearings are now classified as **X-life** products. This means a significantly improved price/performance ratio.

In addition to bearings with the cost-effective polyamide cage and bearings with the high-grade solid brass cage, we now also offer angular contact ball bearings with a versatile sheet steel cage.

Advantages of single row angular contact ball bearings

- **Higher performance bearing arrangements:**
X-life grade for significantly **longer operating life** (see page 2)
- **Lower operating costs:**
Improved bearing kinematics and higher raceway quality give reduced friction, lower bearing temperatures and lower lubricant requirement.
- **Proven in many applications**
e.g. in electrical machinery, pumps and compressors, ventilation plants, textile machinery, printing

machinery, gearboxes, metal-working machinery, machinery for the food processing sector

- **Standardised machine element** (DIN 628-1)
- **Suitability for high axial forces**
- **Suitability for high speeds**
- **Universal designs for versatile fitting in pairs**
- **Bearing designs for special requirements**, e.g.
for increased **operating temperatures**: metal cages (see section “Operating temperature range”),
for increased **running accuracy**, high **speed** and **smooth running**: bearings in tolerance class P5 (see section “Tolerances”),
for high **load carrying capacity** and high **rigidity**: preloaded pairs of universal bearings (see section “Preloading of bearings”)
- **New, sealed bearings**
for **maintenance-free, easy-to-fit, cost-effective bearing arrangements** (available by agreement)



Proven designs of single row angular contact ball bearings with a 40° contact angle; left: with polyamide cage, right: with brass cage



New bearing design with sheet steel cage

Single row FAG angular contact ball bearings

Operating life

Operating life

Long operating life and high reliability are the primary requirements, especially in the most frequent application of single row angular contact ball bearings in pumps and compressors. In this case, high loads occur together with high speeds. The lubrication conditions are often unfavourable and contamination can impair operating life.

X-life angular contact ball bearings are matched to these conditions. They offer high load carrying capacity and are especially suitable for high speeds, since they generate little heat and place only low demands on lubrication. In the sealed designs, the high cleanliness of the rolling contacts is maintained – a precondition for a long bearing life.

Expanded adjusted rating life

Since the basic rating life in accordance with ISO 281 only rarely indicates the actually achievable running time, a method for determining the expanded adjusted rating life was developed in Appendix 1 of ISO 281. This takes account of significant influences on the life, namely

- the separation of surfaces by the lubricant film,
- the influences of agents (additives) in the lubricant,
- cleanliness in the lubrication gap,
- the level of bearing load,
- the type of bearing.

Calculation of the expanded adjusted rating life

The calculation method described in ISO 281 Appendix 1:2003-4 for determining the expanded adjusted rating life was derived from the methods used by several rolling bearing manufacturers.

The expanded adjusted rating life is determined from

$$L_{nm} = a_1 \times a_{DIN} \times L \text{ [} 10^6 \text{ revolutions]}$$

and

$$L_{hnm} = a_1 \times a_{DIN} \times L_h \text{ [h]}$$

where

- a_1 Adjustment factor for requisite reliability
- a_{DIN} Adjustment factor for operating conditions
- L Basic rating life [10⁶ revolutions]
- L_h Basic rating life [h]

If the influences change during the operating period, the L_{hnm} value and the resultant total rating life must be determined for each period during which conditions are constant.

Factor a_1 for requisite reliability

Rolling bearing failures as a result of fatigue are subject to statistical laws; the requisite reliability must therefore be taken into consideration when calculating the fatigue limit life. Normally, calculation is carried out on the basis of 90 % requisite reliability (corresponding to 10 % failure probability). The L_{10} life is the basic rating life.

In order to take account of requisite reliabilities between 90 and 99 %, the factor a_1 is used, see the following table.

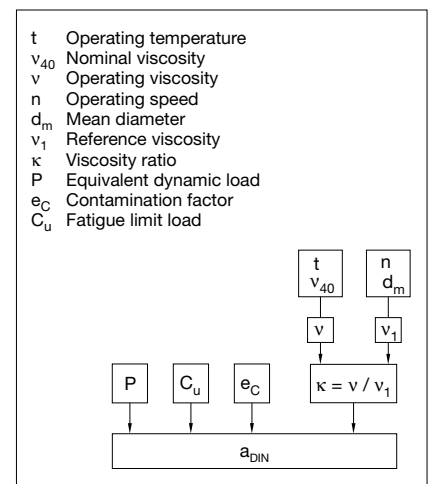
| Factor a_1 | | | | | | |
|-------------------------|----|------|------|------|------|------|
| Requisite reliability % | 90 | 95 | 96 | 97 | 98 | 99 |
| Factor a_1 | 1 | 0.62 | 0.53 | 0.44 | 0.33 | 0.21 |

Life adjustment factor a_{DIN}

The standardised calculation method for determining a_{DIN} takes account of the following influences:

- the bearing load
- the lubrication condition (type and viscosity of the lubricant, additives, speed, bearing size)
- the fatigue limit of the material
- the type of bearing
- the environmental conditions (contamination of the lubricant)

$$a_{DIN} = f(e_c \times C_u / P, \kappa)$$



System for determining a_{DIN}

Single row FAG angular contact ball bearings

Operating life

Viscosity ratio κ

The viscosity ratio κ indicates the quality of lubricant film formation. κ is the ratio between the viscosity v of the lubricant at operating temperature and the reference viscosity v_1 :

$$\kappa = v/v_1$$

The reference viscosity v_1 is determined from the left hand diagram using the mean bearing diameter $d_m = (D + d)/2$ and the operating speed n .

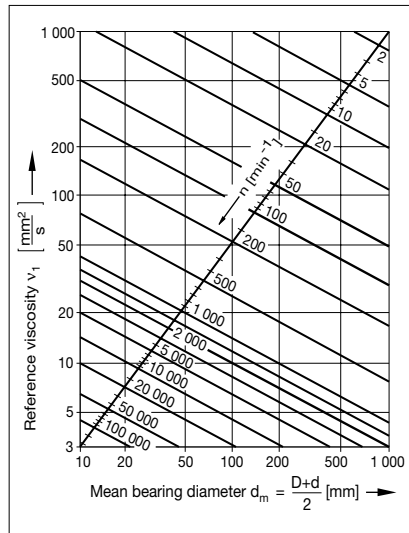
The operating viscosity v of an oil is derived from the V-T diagram using the operating temperature t and the (nominal) viscosity of the oil at +40 °C.

For greases, v is taken as the operating viscosity of the base oil. For recommendations on oil viscosity and oil selection, see Catalogue WL 41 520.

In the case of bearings under high loads with large proportional sliding areas, the temperature in the contact area of the rolling elements can be up to 20 K higher than that of the temperature measured on the stationary ring (excluding the influence of external heat sources).

Contamination factor e_c

If the lubricant is contaminated with particles, permanent indentations may be caused in the raceways by overrolling of these particles. Local increases in stress occur at these indentations which reduce the life of the rolling bearing. This is taken into consideration by the contamination factor e_c . Guide values for e_c : see the following table. The reduction in the life as a result of solid particles in the lubrication

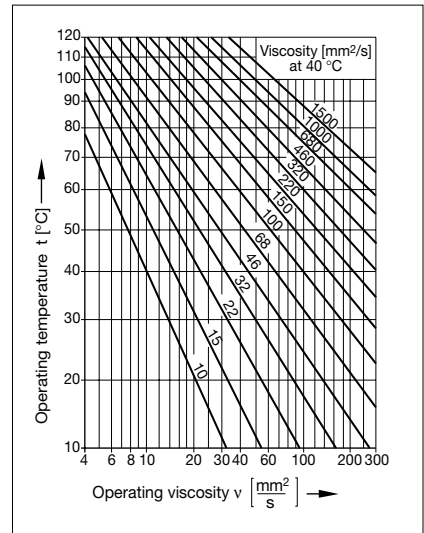


Reference viscosity v_1

gap is dependent on

- the type, size, quantity and hardness of the particles
- the lubricant film thickness (viscosity ratio κ)
- the bearing size

The stated values are valid for contamination by solid particles.



V-T diagram for mineral oils

Other types of contamination, for example by water or other liquids, cannot be taken into consideration in this way.

If severe contamination is present ($e_c \rightarrow 0$), failure due to wear must be expected; the operating life of the bearing is then far less than the calculated rating life.

Contamination factor e_c

| Degree of contamination | Factor e_c | |
|---|------------------------|---------------------------|
| | $d_m < 100 \text{ mm}$ | $d_m \geq 100 \text{ mm}$ |
| Extreme cleanliness Particle size within lubricant film thickness Laboratory conditions | 1 | 1 |
| High cleanliness Very fine filter in oil feed Sealed, greased bearings | 0.8 to 0.6 | 0.9 to 0.8 |
| Normal cleanliness Fine filter in oil feed Greased bearings with sealing shields | 0.6 to 0.5 | 0.8 to 0.6 |
| Slight contamination Slight contamination in oil feed | 0.5 to 0.3 | 0.6 to 0.4 |
| Typical contamination Bearing contaminated with abraded material from other machine elements | 0.3 to 0.1 | 0.4 to 0.2 |
| Heavy contamination Heavily contaminated bearing environment Inadequate sealing of bearing arrangement | 0.1 to 0 | 0.1 to 0 |
| Very heavy contamination | 0 | 0 |

d_m Mean bearing diameter; $d_m = (D + d)/2$

Single row FAG angular contact ball bearings

Operating life

Fatigue limit load C_u

In accordance with ISO 281/A2, the life adjustment factor a_{xyz} is stated as a function of the ratio between the fatigue limit of the raceway material σ_u and the fatigue-relevant stress σ .

The fatigue-relevant stress in the raceway is dependent principally on the internal load distribution in the bearing and the stress curve in the rolling contact under the heaviest load. Under ideal contact conditions, the fatigue limit of conventional rolling bearing steels is reached at a Hertzian pressure of approx. 2200 N/mm².

In order to aid practical calculation, the fatigue limit load C_u has been introduced. The calculation of C_u in ISO 281 Appendix 1 is based on a contact pressure of 1500 N/mm². On the same basis as the basic static load rating C_0 in accordance with ISO 76, C_u is defined as the load under which the fatigue limit of the bearing material is reached at the contact under the heaviest load. A good approximation of the ratio σ_u/σ can therefore be determined as a function of C_u/P .

When determining C_u , the following must be taken into consideration:

- the type, size and internal geometry of the bearing
- the profiling of the rolling elements and raceways
- the quality of manufacture
- the fatigue limit of the material

Due to the higher profile accuracy of the raceways and the better surface quality of the X-life angular contact ball bearings, C_u can be increased by more than 30 %. This leads to an increase of up to 50 % in the life, as shown in the diagram for a_{DIN} .

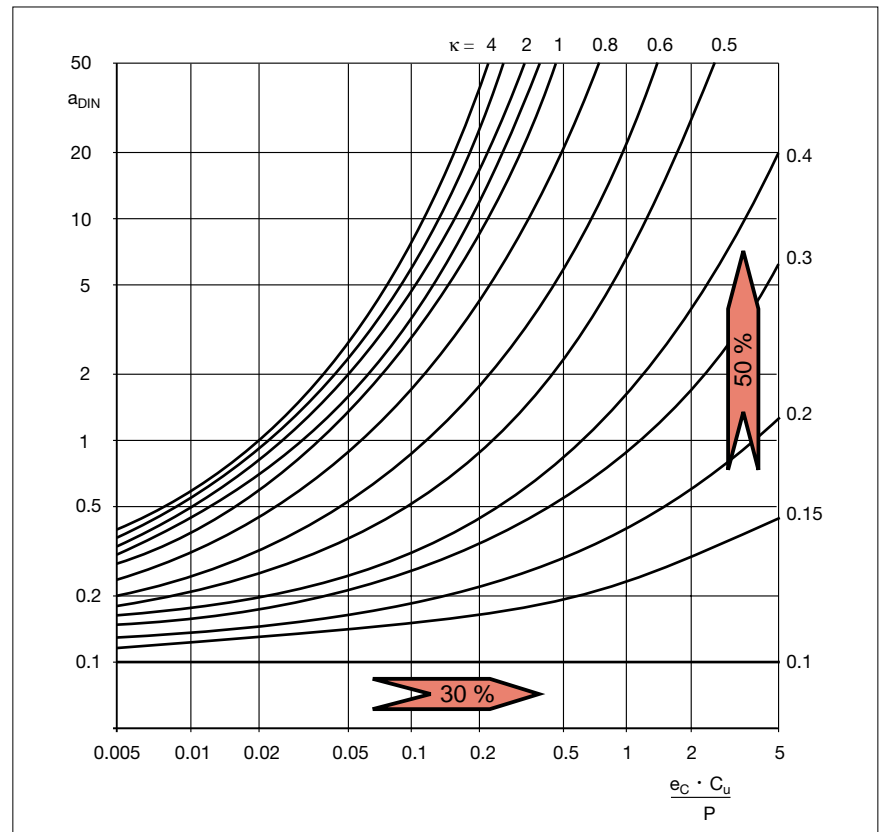
Values for the fatigue limit load are given in the dimension tables for each X-life angular contact ball bearing.

Taking account of EP additives

At a viscosity ratio $\kappa < 1$ and a contamination factor $e_c \geq 0.2$, the value $\kappa = 1$ can be assumed when using lubricants with proven effective EP additives. If heavy contamination is present (contamination factor $e_c < 0.2$), the

effectiveness of the additives must be demonstrated under these contamination conditions. Evidence of the effectiveness of the EP additives can be obtained in the actual application or by means of a rolling bearing test rig FE 8 to DIN 51819-1.

If the EP additives are proven to be effective and the value $\kappa = 1$ is assumed, the life adjustment factor must be restricted to $a_{DIN} \leq 3$. If the calculated value $a_{DIN}(\kappa)$ for the actual κ is larger than 3, this value can be assumed.



Life adjustment factor a_{DIN} for X-life angular contact ball bearings
If $\kappa > 4$, assume $\kappa = 4$. Not to be used for $\kappa < 0.1$

Single row FAG angular contact ball bearings

Load carrying capacity · Minimum load · Basic load ratings for matched bearings · Equivalent dynamic and static load · Axial force for single bearing

Load carrying capacity

In single row angular contact ball bearings, the raceways are arranged such that the forces are transmitted from one raceway to another at a certain contact angle. Due to their large contact angle of 40°, bearings of series 70B, 72B and 73B are suitable for high axial forces. The bearings can only transmit radial forces if they are subjected to axial load at the same time. Normally, a bearing is adjusted against a second angular contact ball bearing in a mirror image arrangement.

Minimum load

If insufficient loading is present, slippage can occur in the bearing. The overriding critical factor is slippage collapse.

The lubricant film at the contact points is broken and the rolling surfaces come into contact at a high relative speed. The functional surfaces may be damaged by smearing or micropitting. We recommend that angular contact ball bearings should be subjected to at least 1 % of their basic dynamic load rating C.

Basic dynamic load rating C for matched bearings

Group of i angular contact ball bearings of identical size and design:

$$C = i^{0.7} \times C_{\text{Single bearing}} \text{ [kN]}$$

Basic static load rating C₀ for two matched bearings

$$C_0 = 2 \times C_{0 \text{ Single bearing}} \text{ [kN]}$$

Equivalent dynamic load

Single bearing:

$$P = F_r \quad \text{for } F_a/F_r \leq 1.14$$

$$P = 0.35 F_r + 0.57 F_a \quad \text{for } F_a/F_r > 1.14$$

Bearing pair in O or X arrangement:

$$P = F_r + 0.55 F_a \quad \text{for } F_a/F_r \leq 1.14$$

$$P = 0.57 F_r + 0.93 F_a \quad \text{for } F_a/F_r > 1.14$$

Equivalent static load

Single bearing:

$$P_0 = F_r \quad \text{for } F_a/F_r \leq 1.9$$

$$P_0 = 0.5 F_r + 0.26 F_a \quad \text{for } F_a/F_r > 1.9$$

Bearing pair in O or X arrangement:

$$P_0 = F_r + 0.52 F_a$$

Determining the axial force for the single bearing

Due to the inclined raceways, a radial load generates axial reaction forces in angular contact ball bearings that must be taken into consideration when determining the equivalent load. The axial force is calculated using the formulae in the following table. The bearing supporting the external axial force K_a – independent of the axial reaction forces – is designated as bearing “A” while the other bearing is designated as bearing “B”. For bearings of series 70B, 72B and 73B, the value $Y = 0.57$ is used in the formulae.

If no formulae are given, the axial force F_a is not taken into consideration in calculation.

| | A | B | |
|--|---|---|--|
| | | | |
| Load conditions | | | Axial force F_a to be used in calculation of the equivalent dynamic load |
| | | | Bearing A Bearing B |
| $\frac{F_{rA}}{Y_A} \leq \frac{F_{rB}}{Y_B}$ | | | $F_a = K_a + 0.5 \times \frac{F_{rB}}{Y_B}$ – |
| $\frac{F_{rA}}{Y_A} > \frac{F_{rB}}{Y_B}$ | | | $F_a = K_a + 0.5 \times \frac{F_{rB}}{Y_B}$ – |
| $K_a > 0.5 \times \left(\frac{F_{rA}}{Y_A} - \frac{F_{rB}}{Y_B} \right)$ | | | |
| $\frac{F_{rA}}{Y_A} > \frac{F_{rB}}{Y_B}$ | | | $F_a = 0.5 \times \frac{F_{rA}}{Y_A} - K_a$ |
| $K_a \leq 0.5 \times \left(\frac{F_{rA}}{Y_A} - \frac{F_{rB}}{Y_B} \right)$ | | | |

Single row FAG angular contact ball bearings

Cages

Cages

Angular contact ball bearings up to 130 mm bore diameter have as standard a solid window cage made from glass fibre-reinforced polyamide 66 (suffix TVP). This economical cage is also used for sealed angular contact ball bearings.

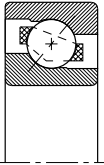
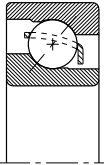
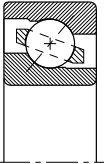
As standard, bearings with a bore code of 24 or higher have a high-quality solid window cage made from brass (suffix MP).

The range is supplemented by a universally applicable window cage made from sheet steel (JP).

Advantages of the sheet steel cage:

- Insensitive to synthetic lubricant
- Continuous temperature up to 200 °C (for $D \leq 240$ mm, in conjunction with heat treatment to S1)
- Longer grease operating life

Features and availability of cages for single row FAG angular contact ball bearings

| Designation | Design | Suffix | Speed parameter | Features | Availability | | |
|------------------|---|--------|-----------------|--|---|-----------------------|-----------------------|
| | | | | | 70B | 72B | 73B |
| | | | | | Bore code | | |
| Polyamide cage | Solid window cage, rolling element guided | TVP | < 550 000 | Low mass, more favourable price, low noise | 04 to 08 | 00 to 20, 22 to 26 | 01 to 20, 22 to 26 |
| | | | | |  | | |
| Sheet steel cage | Window cage, rolling element guided | JP | < 550 000 | Insensitive to synthetic oils, large space for lubricant, low mass, universal cage | 00 to 20, 22 | 01 to 20 22 | |
| | | | | |  | | |
| Brass cage | Solid window cage, rolling element guided | MP | < 900 000 | Good speed suitability, high strength | 00 to 30 | 01 to 26 | |
| | | | | |  | | |

Single row FAG angular contact ball bearings

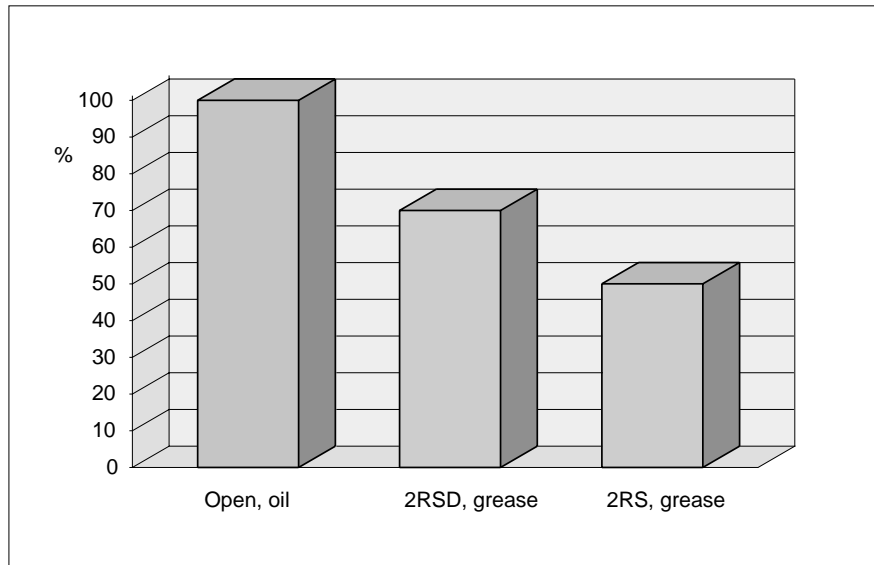
Suitability for high speeds · Operating temperature range

Suitability for high speeds

The limiting speeds takes into consideration the mechanical limits such as the strength of the bearing parts, the churning friction of the grease or the permissible sliding speed of contact seals. Grease-filled, sealed angular contact ball bearings have a lower speed suitability than comparable open bearings.

Speed suitability of bearing pairs

The permissible operating speed for bearing pairs of universal designs UA and UO in X, O and tandem arrangements is about 20 % below the permissible value for the single bearing. This is in order to prevent internal distortion of bearing pairs as a result of the unfavourable thermal balance.



Limiting speeds for various designs of angular contact ball bearings

Operating temperature range

Angular contact ball bearings are heat treated such that they can be used up to an operating temperature of +150 °C. Bearings over 240 mm outside diameter are dimensionally stable up to +200 °C. In the case of bearings with plastic cages and sealed bearings, attention must be paid to the operating temperature limit of the cage or seal material respectively.

Operating temperature range for angular contact ball bearings

| | | |
|--|--|---|
| <p>Open angular contact ball bearings with sheet steel cage or brass cage</p> | <p>Open angular contact ball bearings with polyamide cage</p> | <p>Sealed angular contact ball bearings with polyamide cage and seal (RSD or RS) + standard grease</p> |
|--|--|---|

Permissible continuous temperatures

| | Open angular contact ball bearings with sheet steel cage or brass cage | Open angular contact ball bearings with polyamide cage | Sealed angular contact ball bearings with polyamide cage and seal (RSD or RS) + standard grease |
|--------------------------|--|--|---|
| Lower limit range | Dependent on lubricant | -40 °C | -30 °C (-40 °C for short periods) |
| Upper limit range | +150 °C (D ≤ 240 mm) +200 °C (D > 240 mm) | +120 °C dependent on lubricant | +80 °C (+120 °C dependent on lubricant) |

Single row FAG angular contact ball bearings

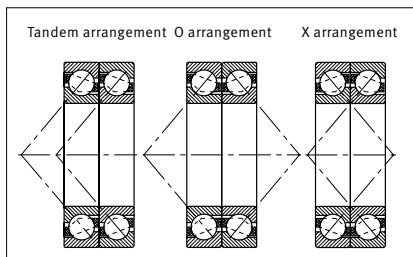
Tolerances · Universal design · Preloading · Matched bearing sets ·
Tolerances of universal design and matched bearings · Angular adjustment facility

Tolerances

FAG angular contact ball bearings are generally manufactured to normal tolerance PN. By agreement, we also supply bearings with increased accuracy to tolerance class P5.

Universal design

Single row angular contact ball bearings of universal design are suitable for mounting in pairs in an X, O or tandem arrangement. These bearings can be fitted in any arrangement required. Sealed single row angular contact ball bearings of universal design are suitable for fitting in an X or O arrangement. For tandem arrangements, please consult FAG. The following distinction is to be made in X or O arrangements:
 UA Slight axial internal clearance
 UO Clearance-free
 UL Slight preload
 Values for axial internal clearance and preload: see table on page 9.



Preloading of bearings

Through lateral sizing of the single bearings, the axial clearance or preload of the bearing pair can be adjusted to the required value.

Advantages of preloaded bearings:

- Higher bearing rigidity
- Lower running noise
- More precise guidance
- Reliable minimum load

Matched bearing sets

FAG supplies matched bearing sets in accordance with specification N10 by agreement. When ordering, the number of bearing sets must be stated, not the number of single bearings.

Tolerances of the universal design and matched bearings

Angular contact ball bearings of universal design UO or UA are supplied to normal tolerance PN (no suffix for tolerance) and by agreement with increased accuracy to tolerance class P5. For angular contact ball bearings of universal design, the tolerances for normal radial bearings apply.

Exceptions: Bore tolerances for bearings to tolerance classes PN and P5 uniformly to P5 (no special suffix). The ring width tolerance for universal bearings and matched bearings is given in the following table.

Angular adjustment facility

The angular adjustment facility of single row angular contact ball bearings is dependent on several factors (e.g. load, speed, direction of tilting, cage type, bearing size, bearing arrangement, accuracy of bearing seats etc.) and influences the bearing performance (e.g. rigidity, load carrying capacity etc.) in various ways so it is not possible to make a generally valid statement. A guide value for the possible skewing of single bearings can be taken as approx. 2 angular minutes.

Ring width tolerance for universal bearings and matched bearings

| Nominal dimension for bearing bore | over incl. | Dimensions in mm | | | | |
|--|------------|------------------|------|------|------|------|
| | | 50 | 80 | 120 | 180 | 315 |
| Width deviation Δ_{B_s} [μm] | | | | | | |
| Tolerance class | PN | 0 | 0 | 0 | 0 | 0 |
| | | -250 | -380 | -380 | -500 | -500 |
| Tolerance class | P5 | 0 | 0 | 0 | 0 | 0 |
| | | -250 | -250 | -380 | -380 | -500 |

Single row FAG angular contact ball bearings

Axial internal clearance and preloading of bearing pairs

Axial internal clearance and preload for angular contact ball bearings of universal design fitted in X and O arrangements

| Bore code | Axial internal clearance or preload of bearing pair | | | | | Preload force (UL) | | |
|-------------------|---|-----|-----|-----|-----------------|-------------------------|------|------|
| | Nominal dimension [μm] | | | | | F _v [N] max. | | |
| | UA | UO | UL | 72B | 73B | UL | 72B | 73B |
| | 70B, 72B, 73B | 70B | 70B | 72B | 73B | 70B | 72B | 73B |
| Tolerance classes | | | | | Tolerance class | | | |
| PN, P6, P5 | P5 | P5 | P5 | P5 | P5 | P5 | P5 | |
| 00 | 22 | 0 | | -3 | | | 38 | |
| 01 | 24 | 0 | | -4 | -5 | | 53 | 82 |
| 02 | 24 | 0 | | -4 | -5 | | 62 | 99 |
| 03 | 24 | 0 | | -4 | -6 | | 77 | 123 |
| 04 | 28 | 0 | -4 | -5 | -6 | 103 | 103 | 146 |
| 05 | 34 | 0 | -4 | -4 | -6 | 115 | 112 | 200 |
| 06 | 34 | 0 | -5 | -5 | -7 | 141 | 157 | 250 |
| 07 | 40 | 0 | -5 | -6 | -7 | 172 | 208 | 300 |
| 08 | 40 | 0 | -5 | -6 | -8 | 200 | 246 | 385 |
| 09 | 44 | 0 | | -6 | -9 | | 277 | 462 |
| 10 | 44 | 0 | | -6 | -10 | | 288 | 535 |
| 11 | 46 | 0 | | -7 | -10 | | 358 | 600 |
| 12 | 46 | 0 | | -7 | -10 | | 431 | 692 |
| 13 | 46 | 0 | | -8 | -11 | | 492 | 785 |
| 14 | 50 | 0 | | -8 | -11 | | 535 | 877 |
| 15 | 50 | 0 | | -8 | -12 | | 523 | 977 |
| 16 | 50 | 0 | | -8 | -12 | | 615 | 1077 |
| 17 | 54 | 0 | | -8 | -13 | | 692 | 1154 |
| 18 | 54 | 0 | | -9 | -13 | | 815 | 1231 |
| 19 | 54 | 0 | | -10 | -14 | | 892 | 1331 |
| 20 | 54 | 0 | | -11 | -14 | | 992 | 1485 |
| 21 | 58 | 0 | | -11 | -14 | | 1100 | 1538 |
| 22 | 58 | 0 | | -12 | -15 | | 1177 | 1723 |
| 24 | 58 | 0 | | -12 | -16 | | 1277 | 1923 |
| 26 | 60 | 0 | | -12 | -17 | | 1431 | 2115 |
| 28 | 60 | 0 | | -12 | | | 1508 | |
| 30 | 60 | 0 | | -13 | | | 1723 | |

Tolerances for axial internal clearance and preload for angular contact ball bearings of universal design fitted in pairs in X and O arrangements [μm]

| Bore code | Series 70B, 72B | | Series 73B | | |
|-----------|-------------------|--------|------------|--------|-----|
| | Tolerance classes | PN, P6 | P5 | PN, P6 | P5 |
| 00 to 09 | | +8 | +6 | +8 | +6 |
| 10 and 11 | | +8 | +6 | +12 | +10 |
| 12 to 34 | | +12 | +10 | +12 | +10 |

Single row FAG angular contact ball bearings

Sealed bearings

Sealed angular contact ball bearings

FAG angular contact ball bearings lubricated for life are fitted with seals. Matching the lubrication and sealing to each other gives the best conditions for a long operating life.

Further advantages:

- Grease filling with tested FAG grease in the right quantity
- No risk of contamination during operation and fitting
- No impermissible mixing of grease e.g. during relubrication
- Costs for external sealing, relubrication devices and grease stockholding are eliminated

FAG angular contact ball bearings are available with seals on one or both sides. In the case of bearings sealed on one side, it is indicated in the designation whether the seal is on the outside in an O or X arrangement.

Lubrication

During manufacture, sealed FAG angular contact ball bearings are filled with a quality grease tested in accordance with FAG specifications, see TI WL 43-1191, page 16. The standard grease is suitable for continuous temperature up to +80 °C and considerably exceeds the requirements of DIN 51825.

The bearings are protected against wear and premature fatigue as well as against corrosion. The grease has a noise-damping effect.

The permissible continuous temperature can be increased to +120° C by the use of a special grease.

Design of sealing washers

The sealing washers are of different designs on the two sides of the bearing.

Since the grease in the angular contact ball bearing migrates

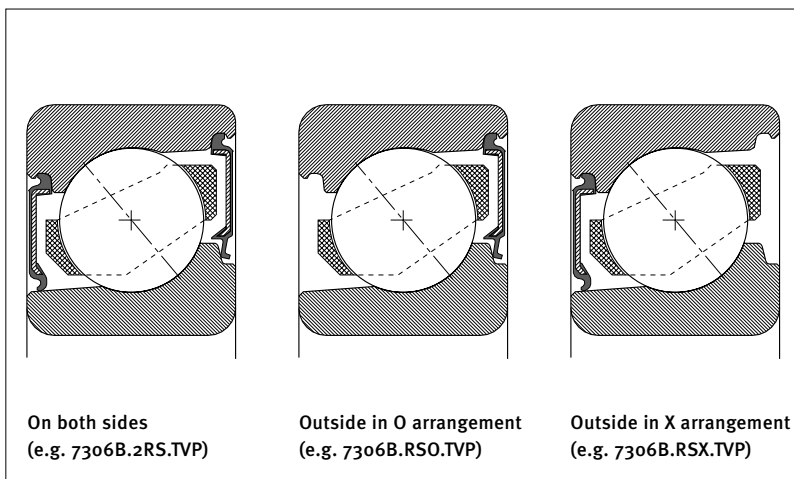
particularly strongly to the inner ring rib having the largest diameter, a more costly design is used there. The seal in the stepped slot gives significantly better grease retention capacity.

A normal sealing washer is fitted on the side with the small inner ring rib.

Contact sealing washers (RS)

Single row FAG angular contact ball bearings with RS seals are suitable for sealing against dust, contamination, damp atmospheres and slight pressure differences (< 0.5 bar).

In the case of the RS design, the speed is limited by the permissible sliding speed of the seal lips.



Contact sealing washers

Single row FAG angular contact ball bearings

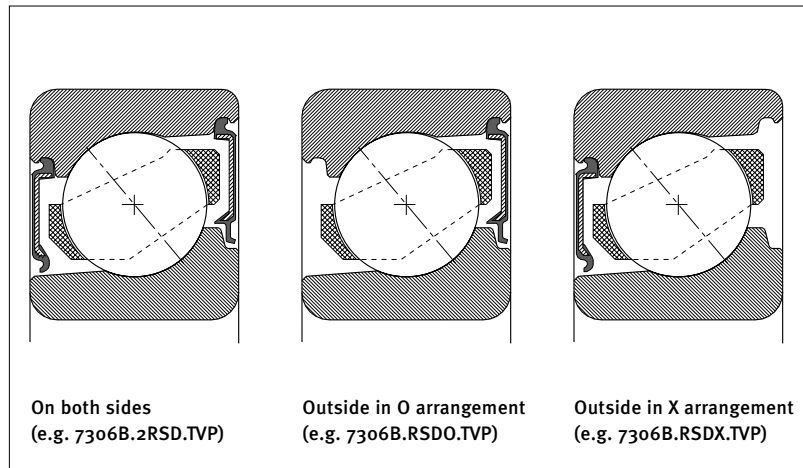
Sealed bearings

Non-contact sealing washers

After running in, bearings with RSD seals and a minimal seal gap (supplied by agreement) have a low friction value equal to that of open bearings.

Sealing shields

FAG angular contact ball bearings with non-contact sealing shields are available by agreement.



Non-contact sealing washers

Features and availability of seals for single row FAG angular contact ball bearings

| Designation | Design | Suffix | Speed parameter $n \times d_m$ [min ⁻¹ × mm] | Features | Availability | | |
|-----------------------------------|------------------------------------|--------|---|--|------------------|----------|--------------|
| | | | | | 70B Bore code | 72B | 73B |
| Sealing washer contact | Both sides | 2RS | < 300 000 | Sealing against dust, contamination, damp atmosphere | 04 to 08 | 00 to 08 | 02 to 06, 08 |
| | One side, outside in O arrangement | RSO | | | | | |
| | One side, outside in X arrangement | RSX | | | | | |
| Sealing washer non-contact | Both sides | 2RSD | < 550 000 | Low friction, also suitable with rotating outer ring | | | 05, 06, 08 |
| | One side, outside in O arrangement | RSDO | | | | | |
| | one side, outside in X arrangement | RSDX | | | | | |

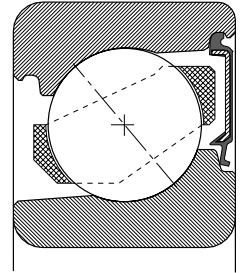
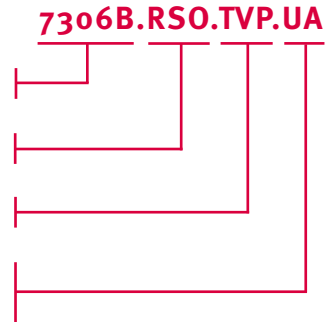
Single row FAG angular contact ball bearings

Ordering designation · Suffixes

Ordering designation for FAG angular contact ball bearings

Ordering example:

| | |
|----------------------------|--|
| Bearing designation | Normal design |
| Seal | Sealing washer (RSO, contact) |
| Cage | Polyamide cage (TVP) |
| Universal design | Axial internal clearance 34 µm (see page 9) |



Suffixes

B Angular contact ball bearing with 40° contact angle

Sealing

- 2RS** Sealing washers on both sides
- RSO** Sealing washer (outside in O arrangement)
- RSX** Sealing washer (outside in X arrangement)
- 2RSD** Non-contact sealing washers on both sides
- RSDO** Non-contact sealing washer (outside in O arrangement)
- RSDX** Non-contact sealing washer (outside in X arrangement)
- 2Z** Sealing shields on both sides
- ZO** Sealing shield (outside in O arrangement)
- ZX** Sealing shield (outside in X arrangement)

Cage

- JP** Sheet steel window cage, rolling element guided
- MP** Brass solid window cage, rolling element guided
- TVP** Solid window cage made from glass fibre reinforced polyamide, rolling element guided

Tolerance

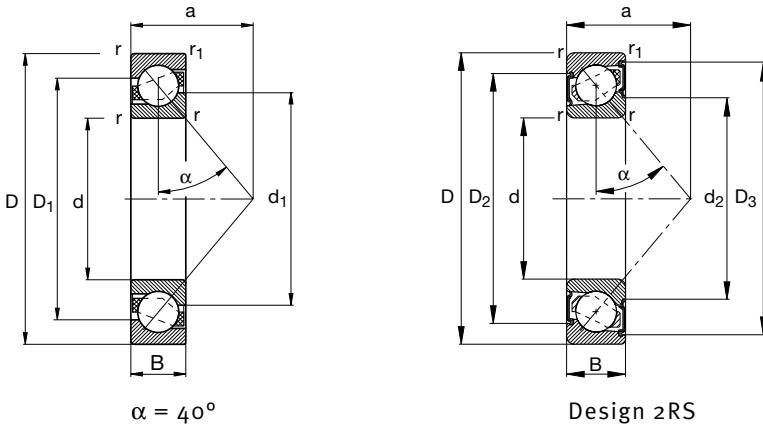
- P5** Tolerance class P5
- P6** Tolerance class P6

Universal design

- UA** Universal design for fitting in pairs, bearing pair has slight axial internal clearance in O and X arrangements
- UL** Universal design for fitting in pairs, bearing pair has slight preload in O and X arrangements
- UO** Universal design for fitting in pairs, bearing pair is clearance-free in O and X arrangements

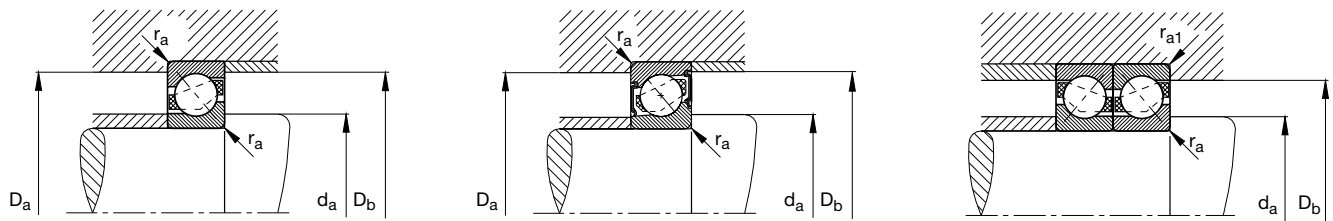
Single row FAG angular contact ball bearings

X-life



Single row FAG angular contact ball bearings, d = 10–17 mm

| Shaft | Dimensions | | | | | | | | | | | Mass ≈ kg | Basic load ratings | |
|-----------|------------|----|----|-----|----------------|----|----------------|----------------|----------------|----------------|----------------|-----------------|-----------------------|-----------------------|
| | d | D | B | r | r ₁ | a | D ₁ | D ₂ | D ₃ | d ₁ | d ₂ | | dynam. C _r | stat. C _{0r} |
| | mm | | | | | | | | | | | | N | |
| 10 | 10 | 30 | 9 | 0.6 | 0.3 | 13 | 22.1 | | | | 18 | 0.032 | 5000 | 2500 |
| | 10 | 30 | 9 | 0.6 | 0.3 | 13 | 22.1 | | | | 18 | 0.033 | 5000 | 2500 |
| | 10 | 30 | 9 | 0.6 | 0.3 | 13 | 22.1 | | | | 18 | 0.036 | 5000 | 2500 |
| | 10 | 30 | 9 | 0.6 | 0.3 | 13 | 22 | 23.3 | 25.6 | 18.3 | 15.5 | 0.032 | 5000 | 2500 |
| 12 | 12 | 32 | 10 | 0.6 | 0.3 | 14 | 24.6 | | | | 19.5 | 0.035 | 6950 | 3400 |
| | 12 | 32 | 10 | 0.6 | 0.3 | 14 | 24.6 | | | | 19.5 | 0.038 | 6950 | 3400 |
| | 12 | 32 | 10 | 0.6 | 0.3 | 14 | 24.6 | | | | 19.5 | 0.039 | 6950 | 3400 |
| | 12 | 32 | 10 | 0.6 | 0.3 | 14 | 24.6 | 25.9 | 28.8 | 19.8 | 17 | 0.037 | 6950 | 3400 |
| | 12 | 37 | 12 | 1 | 0.6 | 16 | 27.2 | | | | 22.1 | 0.06 | 10600 | 5000 |
| | 12 | 37 | 12 | 1 | 0.6 | 16 | 27.2 | | | | 22.1 | 0.066 | 10600 | 5000 |
| | 12 | 37 | 12 | 1 | 0.6 | 16 | 27.2 | | | | 22.1 | 0.066 | 10600 | 5000 |
| 15 | 15 | 35 | 11 | 0.6 | 0.3 | 16 | 27.6 | | | | 22.5 | 0.044 | 8000 | 4300 |
| | 15 | 35 | 11 | 0.6 | 0.3 | 16 | 27.6 | | | | 22.5 | 0.047 | 8000 | 4300 |
| | 15 | 35 | 11 | 0.6 | 0.3 | 16 | 27.6 | | | | 22.5 | 0.051 | 7500 | 3900 |
| | 15 | 35 | 11 | 0.6 | 0.3 | 16 | 27.6 | 29.2 | 32.1 | 22.8 | 19.7 | 0.044 | 8000 | 4300 |
| | 15 | 42 | 13 | 1 | 0.6 | 18 | 31.8 | | | | 25.5 | 0.082 | 12900 | 6550 |
| | 15 | 42 | 13 | 1 | 0.6 | 18 | 31.8 | | | | 25.5 | 0.088 | 12900 | 6550 |
| | 15 | 42 | 13 | 1 | 0.6 | 18 | 31.8 | | | | 25.5 | 0.089 | 12000 | 5850 |
| | 15 | 42 | 13 | 1 | 0.6 | 18 | 31.7 | 33.3 | 38.1 | 26 | 22.9 | 0.082 | 12900 | 6550 |
| 17 | 17 | 40 | 12 | 0.6 | 0.6 | 18 | 31.2 | | | | 26.2 | 0.065 | 10000 | 5500 |
| | 17 | 40 | 12 | 0.6 | 0.6 | 18 | 31.2 | | | | 26.2 | 0.069 | 10000 | 5500 |
| | 17 | 40 | 12 | 0.6 | 0.6 | 18 | 31.2 | | | | 26.2 | 0.071 | 9300 | 5000 |
| | 17 | 40 | 12 | 0.6 | 0.6 | 18 | 31.5 | 33.1 | 36.3 | 26 | 22.9 | 0.065 | 10000 | 5500 |
| | 17 | 47 | 14 | 1 | 0.6 | 20 | 35.8 | | | | 28.5 | 0.109 | 16000 | 8300 |
| | 17 | 47 | 14 | 1 | 0.6 | 20 | 35.8 | | | | 28.5 | 0.117 | 16000 | 8300 |
| | 17 | 47 | 14 | 1 | 0.6 | 20 | 35.8 | | | | 28.5 | 0.119 | 15000 | 7350 |
| | 17 | 47 | 14 | 1 | 0.6 | 20 | 35.5 | 37.2 | 42.6 | 29.2 | 26.1 | 0.109 | 16000 | 8300 |

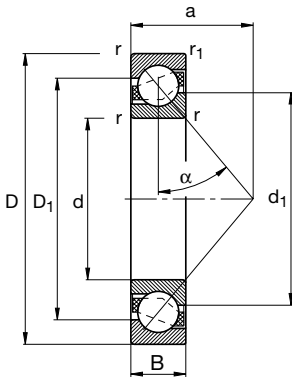


| Fatigue limit load C_{ur} | Limiting speed | Reference speed | Designation | Mounting dimensions | | | | |
|--------------------------------|-------------------|-----------------|----------------------|---------------------|--------------|--------------|--------------|--------------|
| | | | | Bearing | d_a min | D_a max | D_b max | r_a max |
| N | min^{-1} | | FAG | mm | | | | |
| 177 | 32000 | 26000 | 7200B.TVP | 14.2 | 25.8 | 27.6 | 0.6 | 0.3 |
| 177 | 32000 | 26000 | 7200B.JP | 14.2 | 25.8 | 27.6 | 0.6 | 0.3 |
| 177 | 50000 | 26000 | 7200B.MP | 14.2 | 25.8 | 27.6 | 0.6 | 0.3 |
| 177 | 15000 | | 7200B.2RS.TVP | 14.2 | 25.8 | 27.6 | 0.6 | 0.3 |
| 242 | 28000 | 26000 | 7201B.TVP | 16.2 | 27.8 | 29.6 | 0.6 | 0.3 |
| 242 | 28000 | 26000 | 7201B.JP | 16.2 | 27.8 | 29.6 | 0.6 | 0.3 |
| 242 | 45000 | 26000 | 7201B.MP | 16.2 | 27.8 | 29.6 | 0.6 | 0.3 |
| 242 | 14000 | | 7201B.2RS.TVP | 16.2 | 27.8 | 29.6 | 0.6 | 0.3 |
| 360 | 24000 | 19000 | 7301B.TVP | 17.6 | 31.4 | 32.8 | 1 | 0.6 |
| 360 | 24000 | 19000 | 7301B.JP | 17.6 | 31.4 | 32.8 | 1 | 0.6 |
| 360 | 38000 | 19000 | 7301B.MP | 17.6 | 31.4 | 32.8 | 1 | 0.6 |
| 305 | 24000 | 22000 | 7202B.TVP | 19.2 | 30.8 | 32.6 | 0.6 | 0.3 |
| 305 | 24000 | 22000 | 7202B.JP | 19.2 | 30.8 | 32.6 | 0.6 | 0.3 |
| 275 | 38000 | 22000 | 7202B.MP | 19.2 | 30.8 | 32.6 | 0.6 | 0.3 |
| 305 | 24000 | | 7202B.2RS.TVP | 19.2 | 30.8 | 32.6 | 0.6 | 0.3 |
| 485 | 20000 | 17000 | 7302B.TVP | 20.6 | 36.4 | 37.8 | 1 | 0.6 |
| 485 | 20000 | 17000 | 7302B.JP | 20.6 | 36.4 | 37.8 | 1 | 0.6 |
| 435 | 32000 | 17000 | 7302B.MP | 20.6 | 36.4 | 37.8 | 1 | 0.6 |
| 485 | 11000 | | 7302B.2RS.TVP | 20.6 | 36.4 | 37.8 | 1 | 0.6 |
| 390 | 20000 | 20000 | 7203B.TVP | 21.2 | 35.8 | 35.8 | 0.6 | 0.6 |
| 390 | 20000 | 20000 | 7203B.JP | 21.2 | 35.8 | 35.8 | 0.6 | 0.6 |
| 350 | 32000 | 20000 | 7203B.MP | 21.2 | 35.8 | 35.8 | 0.6 | 0.6 |
| 390 | 11000 | | 7203B.2RS.TVP | 21.2 | 35.8 | 35.8 | 0.6 | 0.6 |
| 610 | 18000 | 15000 | 7303B.TVP | 22.6 | 41.4 | 42.8 | 1 | 0.6 |
| 610 | 18000 | 15000 | 7303B.JP | 22.6 | 41.4 | 42.8 | 1 | 0.6 |
| 550 | 28000 | 15000 | 7303B.MP | 22.6 | 41.4 | 42.8 | 1 | 0.6 |
| 610 | 13000 | | 7303B.2RS.TVP | 22.6 | 41.4 | 42.8 | 1 | 0.6 |

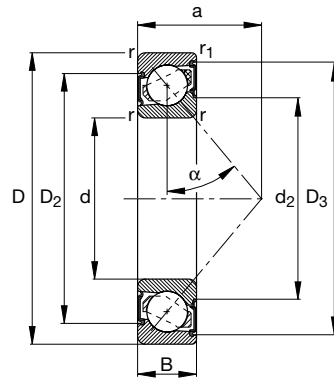
Other designs are also available; please contact us.

Single row FAG angular contact ball bearings

X-life



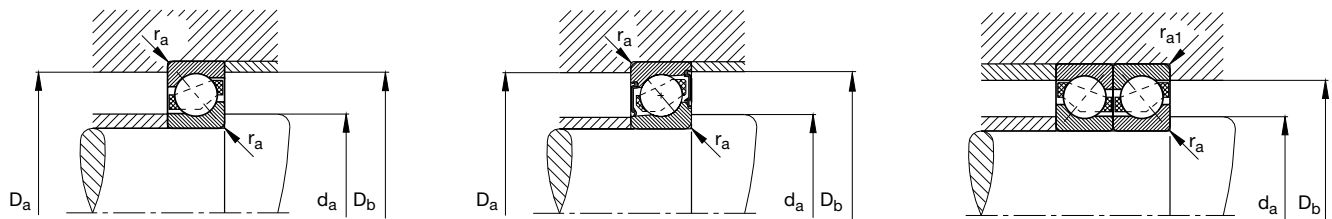
$\alpha = 40^\circ$



Design 2RS

Single row FAG angular contact ball bearings, d = 20–30 mm

| Shaft | Dimensions | | | | | | | | | | | Mass ≈ kg | Basic load ratings | |
|-----------|------------|----|----|----------|-----------------------|--------|---------------------|---------------------|---------------------|---------------------|---------------------|-----------------|------------------------|--------------------------|
| | d | D | B | r min | r ₁ min | a ≈ | D ₁ ≈ | D ₂ ≈ | D ₃ ≈ | d ₁ ≈ | d ₂ ≈ | | dyn. C _r | stat. C _{or} |
| | mm | | | | | | | | | | | | N | |
| 20 | 20 | 42 | 12 | 0.6 | 0.3 | 11.6 | 34.7 | | | | 29.1 | 0.06 | 13400 | 7500 |
| | 20 | 42 | 12 | 0.6 | 0.3 | 11.6 | 35.4 | 37.1 | 40.9 | 28.9 | 25.9 | 0.061 | 13400 | 7500 |
| | 20 | 47 | 14 | 1 | 0.6 | 21 | 36.6 | | | 30.4 | | 0.104 | 13400 | 7650 |
| | 20 | 47 | 14 | 1 | 0.6 | 21 | 36.6 | | | 30.4 | | 0.111 | 13400 | 7650 |
| | 20 | 47 | 14 | 1 | 0.6 | 21 | 36.6 | | | 30.4 | | 0.118 | 13400 | 7650 |
| | 20 | 47 | 14 | 1 | 0.6 | 21 | 37 | 39.1 | 43 | 30.5 | 26.8 | 0.108 | 13400 | 7650 |
| | 20 | 52 | 15 | 1.1 | 0.6 | 23 | 39.9 | | | 32.4 | | 0.143 | 19000 | 10400 |
| | 20 | 52 | 15 | 1.1 | 0.6 | 23 | 39.9 | | | 32.4 | | 0.152 | 19000 | 10400 |
| | 20 | 52 | 15 | 1.1 | 0.6 | 23 | 39.9 | | | 32.4 | | 0.156 | 17600 | 9500 |
| | 20 | 52 | 15 | 1.1 | 0.6 | 23 | 39.7 | 41.4 | 47.1 | 33 | 30 | 0.143 | 19000 | 10400 |
| 25 | 25 | 47 | 12 | 0.6 | 0.3 | 21 | 39.7 | | | 34.1 | | 0.071 | 15000 | 9300 |
| | 25 | 47 | 12 | 0.6 | 0.3 | 21 | 39.8 | 41.5 | 45.9 | 33.9 | 30.9 | 0.071 | 15000 | 9300 |
| | 25 | 52 | 15 | 1 | 0.6 | 24 | 41.6 | | | 35.4 | | 0.127 | 14600 | 9300 |
| | 25 | 52 | 15 | 1 | 0.6 | 24 | 41.6 | | | 35.4 | | 0.135 | 14600 | 9300 |
| | 25 | 52 | 15 | 1 | 0.6 | 24 | 41.6 | | | 35.4 | | 0.138 | 14000 | 8650 |
| | 25 | 52 | 15 | 1 | 0.6 | 24 | 42 | 44.1 | 48 | 35.5 | 31.8 | 0.127 | 14600 | 9300 |
| | 25 | 62 | 17 | 1.1 | 0.6 | 27 | 48.1 | | | 39.3 | | 0.223 | 26000 | 15000 |
| | 25 | 62 | 17 | 1.1 | 0.6 | 27 | 48.1 | | | 39.3 | | 0.242 | 26000 | 15000 |
| | 25 | 62 | 17 | 1.1 | 0.6 | 27 | 48.1 | | | 39.3 | | 0.242 | 24500 | 13700 |
| | 25 | 62 | 17 | 1.1 | 0.6 | 27 | 48.1 | 50.4 | 57.1 | 39.5 | 36.2 | 0.231 | 26000 | 15000 |
| 30 | 30 | 55 | 13 | 1 | 0.6 | 24.3 | 46.9 | | | 40.7 | | 0.109 | 18300 | 12500 |
| | 30 | 55 | 13 | 1 | 0.6 | 24.3 | 47.1 | 48.8 | 53.6 | 41.3 | 38.2 | 0.109 | 18300 | 12500 |
| | 30 | 62 | 16 | 1 | 0.6 | 27 | 49.8 | | | 42.8 | | 0.196 | 20400 | 13400 |
| | 30 | 62 | 16 | 1 | 0.6 | 27 | 49.8 | | | 42.8 | | 0.202 | 20400 | 13400 |
| | 30 | 62 | 16 | 1 | 0.6 | 27 | 49.8 | | | 42.8 | | 0.213 | 19600 | 12500 |
| | 30 | 62 | 16 | 1 | 0.6 | 27 | 49.8 | 51.9 | 57 | 43.1 | 39.5 | 0.203 | 20400 | 13400 |
| | 30 | 72 | 19 | 1.1 | 0.6 | 31 | 56 | | | 46.5 | | 0.341 | 32500 | 20000 |
| | 30 | 72 | 19 | 1.1 | 0.6 | 31 | 56 | | | 46.5 | | 0.362 | 32500 | 20000 |
| | 30 | 72 | 19 | 1.1 | 0.6 | 31 | 56 | | | 46.5 | | 0.37 | 30500 | 18300 |
| | 30 | 72 | 19 | 1.1 | 0.6 | 31 | 56 | 58.6 | 65.9 | 46.8 | 42.7 | 0.341 | 32500 | 20000 |

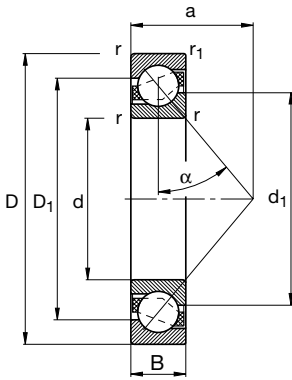


| Fatigue limit load C_{ur} | Limiting speed | Reference speed | Designation | Mounting dimensions | | | | |
|--------------------------------|-------------------|-----------------|----------------------|---------------------|--------------|--------------|--------------|--------------|
| | | | | Bearing | d_a min | D_a max | D_b max | r_a max |
| N | min^{-1} | | FAG | mm | | | | |
| 475 | 18000 | | 7004B.TVP | 23.2 | 38.8 | 40 | 0.6 | 0.3 |
| 475 | 9500 | | 7004B.2RS.TVP | 23.2 | 38.8 | 40 | 0.6 | 0.3 |
| 530 | 18000 | 18000 | 7204B.TVP | 25.6 | 41.4 | 42.8 | 1 | 0.6 |
| 530 | 18000 | 18000 | 7204B.JP | 25.6 | 41.4 | 42.8 | 1 | 0.6 |
| 530 | 28000 | 18000 | 7204B.MP | 25.6 | 41.4 | 42.8 | 1 | 0.6 |
| 530 | 9000 | | 7204B.2RS.TVP | 25.6 | 41.4 | 42.8 | 1 | 0.6 |
| 750 | 17000 | 13000 | 7304B.TVP | 27 | 45 | 47.8 | 1 | 0.6 |
| 750 | 17000 | 13000 | 7304B.JP | 27 | 45 | 47.8 | 1 | 0.6 |
| 680 | 28000 | 14000 | 7304B.MP | 27 | 45 | 47.8 | 1 | 0.6 |
| 750 | 8500 | | 7304B.2RS.TVP | 27 | 45 | 47.8 | 1 | 0.6 |
| 590 | 16000 | | 7005B.TVP | 28.2 | 43.8 | 45 | 0.6 | 0.3 |
| 590 | 8000 | | 7005B.2RS.TVP | 28.2 | 43.8 | 45 | 0.6 | 0.3 |
| 610 | 16000 | 16000 | 7205B.TVP | 30.6 | 46.4 | 47.8 | 1 | 0.6 |
| 610 | 16000 | 16000 | 7205B.JP | 30.6 | 46.4 | 47.8 | 1 | 0.6 |
| 570 | 26000 | 16000 | 7205B.MP | 30.6 | 46.4 | 47.8 | 1 | 0.6 |
| 610 | 8000 | | 7205B.2RS.TVP | 30.6 | 46.4 | 47.8 | 1 | 0.6 |
| 1070 | 14000 | 11000 | 7305B.TVP | 32 | 55 | 57.8 | 1 | 0.6 |
| 1070 | 14000 | 11000 | 7305B.JP | 32 | 55 | 57.8 | 1 | 0.6 |
| 960 | 22000 | 12000 | 7305B.MP | 32 | 55 | 57.8 | 1 | 0.6 |
| 1070 | 7000 | | 7305B.2RS.TVP | 32 | 55 | 57.8 | 1 | 0.6 |
| 780 | 14000 | | 7006B.TVP | 34.6 | 50.4 | 51.8 | 1 | 0.6 |
| 780 | 6700 | | 7006B.2RS.TVP | 34.6 | 50.4 | 51.8 | 1 | 0.6 |
| 960 | 13000 | 13000 | 7206B.TVP | 35.6 | 56.4 | 57.8 | 1 | 0.6 |
| 960 | 13000 | 13000 | 7206B.JP | 35.6 | 56.4 | 57.8 | 1 | 0.6 |
| 890 | 20000 | 14000 | 7206B.MP | 35.6 | 56.4 | 57.8 | 1 | 0.6 |
| 960 | 6300 | | 7206B.2RS.TVP | 35.6 | 56.4 | 57.8 | 1 | 0.6 |
| 1500 | 11000 | 10000 | 7306B.TVP | 37 | 65 | 67.8 | 1 | 0.6 |
| 1500 | 11000 | 10000 | 7306B.JP | 37 | 65 | 67.8 | 1 | 0.6 |
| 1360 | 18000 | 10000 | 7306B.MP | 37 | 65 | 67.8 | 1 | 0.6 |
| 1500 | 6000 | | 7306B.2RS.TVP | 37 | 65 | 67.8 | 1 | 0.6 |

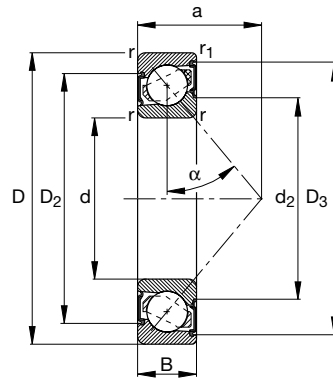
Other designs are also available; please contact us.

Single row FAG angular contact ball bearings

X-life



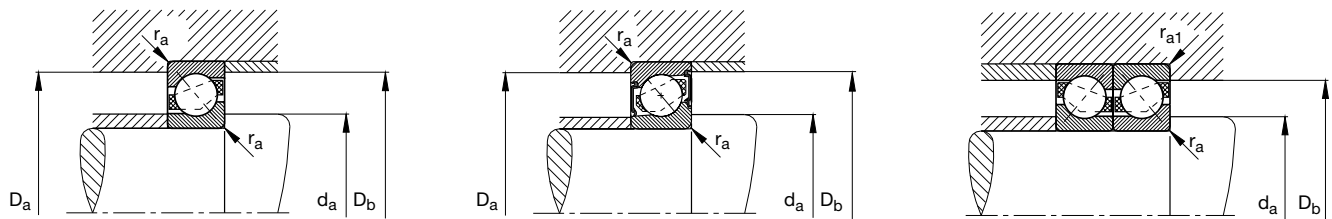
$\alpha = 40^\circ$



Design 2RS

Single row FAG angular contact ball bearings, d = 35–45 mm

| Shaft | Dimensions | | | | | | | | | | | Mass ≈ kg | Basic load ratings | |
|-----------|------------|-----|-----|-----|----------------|------|----------------|----------------|----------------|----------------|----------------|-----------------|-----------------------|-----------------------|
| | d | D | B | r | r ₁ | a | D ₁ | D ₂ | D ₃ | d ₁ | d ₂ | | dynam. C _r | stat. C _{or} |
| | mm | | | | | | | | | | | | N | |
| 35 | 35 | 62 | 14 | 1 | 0.6 | 27.3 | 53.2 | | | | 46.5 | 0.14 | 22400 | 16000 |
| | 35 | 62 | 14 | 1 | 0.6 | 27.3 | 53.3 | 55 | 60.4 | 47 | 44 | 0.14 | 22400 | 16000 |
| | 35 | 72 | 17 | 1.1 | 0.6 | 31 | 57.9 | | | 49.5 | | 0.282 | 27000 | 18300 |
| | 35 | 72 | 17 | 1.1 | 0.6 | 31 | 57.9 | | | 49.5 | | 0.30 | 27000 | 18300 |
| | 35 | 72 | 17 | 1.1 | 0.6 | 31 | 57.9 | | | 49.5 | | 0.308 | 27000 | 18300 |
| | 35 | 72 | 17 | 1.1 | 0.6 | 31 | 57.6 | 60.2 | 66.5 | 50.2 | 45.8 | 0.282 | 27000 | 18300 |
| | 35 | 80 | 21 | 1.5 | 1 | 35 | 63.1 | | | 52.7 | | 0.447 | 39000 | 25000 |
| | 35 | 80 | 21 | 1.5 | 1 | 35 | 63.1 | | | 52.7 | | 0.475 | 39000 | 25000 |
| 35 | 80 | 21 | 1.5 | 1 | 35 | 63.1 | | | 52.7 | | 0.48 | 39000 | 25000 | |
| 40 | 40 | 68 | 15 | 1 | 0.6 | 30.2 | 58.6 | | | 51.3 | | 0.17 | 26000 | 18600 |
| | 40 | 68 | 15 | 1 | 0.6 | 30.2 | 58.8 | 60.5 | 66.3 | 51.9 | 48.8 | 0.17 | 26000 | 18600 |
| | 40 | 80 | 18 | 1.1 | 0.6 | 34 | 64.7 | | | 55.7 | | 0.367 | 32000 | 23200 |
| | 40 | 80 | 18 | 1.1 | 0.6 | 34 | 64.7 | | | 55.7 | | 0.387 | 32000 | 23200 |
| | 40 | 80 | 18 | 1.1 | 0.6 | 34 | 64.7 | | | 55.7 | | 0.401 | 32000 | 23200 |
| | 40 | 80 | 18 | 1.1 | 0.6 | 34 | 64.4 | 67 | 73.8 | 56.4 | 52 | 0.367 | 32000 | 23200 |
| | 40 | 90 | 23 | 1.5 | 1 | 39 | 71.7 | | | 59.2 | | 0.61 | 50000 | 32500 |
| | 40 | 90 | 23 | 1.5 | 1 | 39 | 71.7 | | | 59.2 | | 0.646 | 50000 | 32500 |
| | 40 | 90 | 23 | 1.5 | 1 | 39 | 71.7 | | | 59.2 | | 0.666 | 50000 | 32500 |
| 40 | 90 | 23 | 1.5 | 1 | 39 | 71.3 | 73.9 | 83.3 | 60 | 55.6 | 0.61 | 50000 | 32500 | |
| 45 | 45 | 85 | 19 | 1.1 | 0.6 | 37 | 70 | | | 60.5 | | 0.405 | 36000 | 26500 |
| | 45 | 85 | 19 | 1.1 | 0.6 | 37 | 70 | | | 60.5 | | 0.428 | 36000 | 26500 |
| | 45 | 85 | 19 | 1.1 | 0.6 | 37 | 70 | | | 60.5 | | 0.445 | 36000 | 26500 |
| | 45 | 100 | 25 | 1.5 | 1 | 43 | 79.8 | | | 66.7 | | 0.813 | 60000 | 40000 |
| | 45 | 100 | 25 | 1.5 | 1 | 43 | 79.8 | | | 66.7 | | 0.878 | 60000 | 40000 |
| | 45 | 100 | 25 | 1.5 | 1 | 43 | 79.8 | | | 66.7 | | 0.890 | 60000 | 40000 |

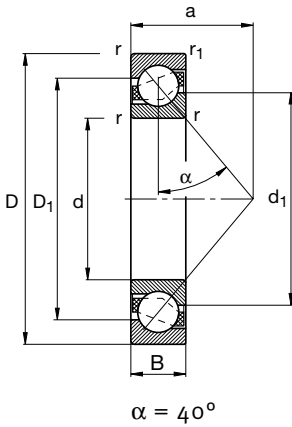


| Fatigue limit load C_{ur} | Limiting speed | Reference speed | Designation | Mounting dimensions | | | | |
|--------------------------------|-------------------|-----------------|----------------------|---------------------|--------------|--------------|--------------|--------------|
| | | | | Bearing | d_a min | D_a max | D_b max | r_a max |
| N | min^{-1} | | FAG | mm | | | | |
| 1010 | 12000 | | 7007B.TVP | 39.6 | 57.4 | 58.8 | 1 | 0.6 |
| 1010 | 6000 | | 7007B.2RS.TVP | 39.6 | 57.4 | 58.8 | 1 | 0.6 |
| 1300 | 11000 | 12000 | 7207B.TVP | 42 | 65 | 67.8 | 1 | 0.6 |
| 1300 | 11000 | 12000 | 7207B.JP | 42 | 65 | 67.8 | 1 | 0.6 |
| 1300 | 18000 | 12000 | 7207B.MP | 42 | 65 | 67.8 | 1 | 0.6 |
| 1300 | 5600 | | 7207B.2RS.TVP | 42 | 65 | 67.8 | 1 | 0.6 |
| 1880 | 9500 | 9000 | 7307B.TVP | 44 | 71 | 74.4 | 1.5 | 1 |
| 1880 | 9500 | 9000 | 7307B.JP | 44 | 71 | 74.4 | 1.5 | 1 |
| 1880 | 15000 | 9500 | 7307B.MP | 44 | 71 | 75 | 1.5 | 1 |
| 1190 | 10000 | | 7008B.TVP | 44.6 | 63.4 | 64.8 | 1 | 0.6 |
| 1190 | 5300 | | 7008B.2RS.TVP | 44.6 | 63.4 | 64.8 | 1 | 0.6 |
| 1610 | 9500 | 10000 | 7208B.TVP | 47 | 73 | 75.8 | 1 | 0.6 |
| 1610 | 9500 | 10000 | 7208B.JP | 47 | 73 | 75.8 | 1 | 0.6 |
| 1610 | 15000 | 10000 | 7208B.MP | 47 | 73 | 75.8 | 1 | 0.6 |
| 1610 | 5000 | | 7208B.2RS.TVP | 47 | 73 | 75.8 | 1 | 0.6 |
| 2340 | 8500 | 8500 | 7308B.TVP | 49 | 81 | 84.4 | 1.5 | 1 |
| 2340 | 8500 | 8500 | 7308B.JP | 49 | 81 | 84.4 | 1.5 | 1 |
| 2340 | 14000 | 8500 | 7308B.MP | 49 | 81 | 84.4 | 1.5 | 1 |
| 2340 | 4500 | | 7308B.2RS.TVP | 49 | 81 | 84.4 | 1.5 | 1 |
| 1840 | 8500 | 9500 | 7209B.TVP | 52 | 78 | 80.8 | 1 | 0.6 |
| 1840 | 8500 | 9500 | 7209B.JP | 52 | 78 | 80.8 | 1 | 0.6 |
| 1840 | 14000 | 10000 | 7209B.MP | 52 | 78 | 80.8 | 1 | 0.6 |
| 2950 | 7500 | 7500 | 7309B.TVP | 54 | 91 | 94.4 | 1.5 | 1 |
| 2950 | 7500 | 7500 | 7309B.JP | 54 | 91 | 95 | 1.5 | 1 |
| 2950 | 12000 | 8000 | 7309B.MP | 54 | 91 | 94.4 | 1.5 | 1 |

Other designs are also available; please contact us.

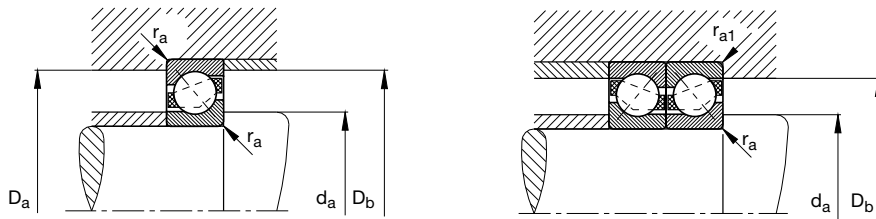
Single row FAG angular contact ball bearings

X-life



Single row FAG angular contact ball bearings, d = 50–65 mm

| Shaft | Dimensions | | | | | | | Mass ≈ kg | Basic load ratings | | |
|-----------|------------|-----|----|----------|-----------------------|--------|---------------------|-----------------|---------------------|-----------------------------|--------------------------|
| | d | D | B | r min | r ₁ min | a ≈ | D ₁ ≈ | | d ₁ ≈ | dyn. C _r N | stat. C _{or} |
| | mm | | | | | | | | | | |
| 50 | 50 | 90 | 20 | 1.1 | 0.6 | 39 | 74.8 | 66.2 | 0.458 | 37500 | 28500 |
| | 50 | 90 | 20 | 1.1 | 0.6 | 39 | 74.8 | 66.2 | 0.493 | 37500 | 28500 |
| | 50 | 90 | 20 | 1.1 | 0.6 | 39 | 74.8 | 66.2 | 0.503 | 37500 | 28500 |
| | 50 | 110 | 27 | 2 | 1 | 47 | 87.6 | 73.1 | 1.05 | 69500 | 47500 |
| | 50 | 110 | 27 | 2 | 1 | 47 | 87.6 | 73.1 | 1.13 | 69500 | 47500 |
| | 50 | 110 | 27 | 2 | 1 | 47 | 87.6 | 73.1 | 1.17 | 69500 | 47500 |
| 55 | 55 | 100 | 21 | 1.5 | 1 | 43 | 83 | 72.6 | 0.604 | 46500 | 36000 |
| | 55 | 100 | 21 | 1.5 | 1 | 43 | 83 | 72.6 | 0.645 | 46500 | 36000 |
| | 55 | 100 | 21 | 1.5 | 1 | 43 | 83 | 72.6 | 0.662 | 46500 | 36000 |
| | 55 | 120 | 29 | 2 | 1 | 51 | 95.3 | 80.3 | 1.38 | 78000 | 56000 |
| | 55 | 120 | 29 | 2 | 1 | 51 | 95.3 | 80.3 | 1.46 | 78000 | 56000 |
| | 55 | 120 | 29 | 2 | 1 | 51 | 95.3 | 80.3 | 1.51 | 78000 | 56000 |
| 60 | 60 | 110 | 22 | 1.5 | 1 | 47 | 91.1 | 79.5 | 0.78 | 56000 | 44000 |
| | 60 | 110 | 22 | 1.5 | 1 | 47 | 91.1 | 79.5 | 0.847 | 56000 | 44000 |
| | 60 | 110 | 22 | 1.5 | 1 | 47 | 91.1 | 79.5 | 0.857 | 56000 | 44000 |
| | 60 | 130 | 31 | 2.1 | 1.1 | 55 | 103.4 | 87.3 | 1.72 | 90000 | 65500 |
| | 60 | 130 | 31 | 2.1 | 1.1 | 55 | 103.4 | 87.3 | 1.74 | 90000 | 65500 |
| | 60 | 130 | 31 | 2.1 | 1.1 | 55 | 103.4 | 87.3 | 1.86 | 90000 | 65500 |
| 65 | 65 | 120 | 23 | 1.5 | 1 | 50.5 | 98.9 | 86 | 1 | 64000 | 53000 |
| | 65 | 120 | 23 | 1.5 | 1 | 50.5 | 98.9 | 86 | 1.08 | 64000 | 53000 |
| | 65 | 120 | 23 | 1.5 | 1 | 50.5 | 98.9 | 86 | 1.09 | 61000 | 49000 |
| | 65 | 140 | 33 | 2.1 | 1.1 | 60 | 112 | 95 | 2.12 | 102000 | 75000 |
| | 65 | 140 | 33 | 2.1 | 1.1 | 60 | 112 | 95 | 2.22 | 102000 | 75000 |
| | 65 | 140 | 33 | 2.1 | 1.1 | 60 | 112 | 95 | 2.32 | 102000 | 75000 |

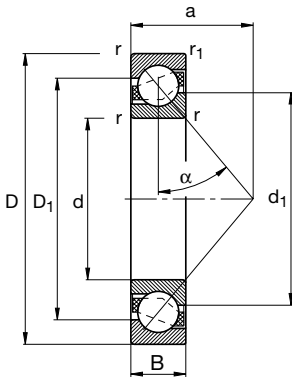


| Fatigue limit load C_{ur} | Limiting speed | Reference speed | Designation | Mounting dimensions | | | | |
|--------------------------------|-------------------|-----------------|------------------|---------------------|--------------------|--------------|--------------|--------------|
| | | | | Bearing | d_a min mm | D_a max | D_b max | r_a max |
| N | min^{-1} | N | FAG | | | | | |
| 1950 | 8000 | 9000 | 7210B.TVP | 57 | 83 | 85.8 | 1 | 0.6 |
| 1950 | 8000 | 9000 | 7210B.JP | 57 | 83 | 85.8 | 1 | 0.6 |
| 1950 | 13000 | 9000 | 7210B.MP | 57 | 83 | 85.8 | 1 | 0.6 |
| 3400 | 7000 | 7000 | 7310B.TVP | 61 | 99 | 104.4 | 2 | 1 |
| 3400 | 7000 | 7000 | 7310B.JP | 61 | 99 | 104.4 | 2 | 1 |
| 3400 | 11000 | 7000 | 7310B.MP | 61 | 99 | 104.4 | 2 | 1 |
| 2600 | 7000 | 8500 | 7211B.TVP | 64 | 91 | 94.4 | 1.5 | 1 |
| 2600 | 7000 | 8500 | 7211B.JP | 64 | 91 | 94.4 | 1.5 | 1 |
| 2600 | 11000 | 8500 | 7211B.MP | 64 | 91 | 94.4 | 1.5 | 1 |
| 4150 | 6300 | 6700 | 7311B.TVP | 66 | 109 | 114.4 | 2 | 1 |
| 4150 | 6300 | 6700 | 7311B.JP | 66 | 109 | 114.4 | 2 | 1 |
| 4150 | 10000 | 6700 | 7311B.MP | 66 | 109 | 114.4 | 2 | 1 |
| 3250 | 6300 | 7500 | 7212B.TVP | 69 | 101 | 104.4 | 1.5 | 1 |
| 3250 | 6300 | 7500 | 7212B.JP | 69 | 101 | 104.4 | 1.5 | 1 |
| 3250 | 10000 | 7500 | 7212B.MP | 69 | 101 | 104.4 | 1.5 | 1 |
| 4700 | 5600 | 6300 | 7312B.TVP | 72 | 118 | 123 | 2.1 | 1 |
| 4700 | 5600 | 6300 | 7312B.JP | 72 | 118 | 123 | 2.1 | 1 |
| 4700 | 9000 | 6300 | 7312B.MP | 72 | 118 | 123 | 2.1 | 1 |
| 3750 | 6000 | 7000 | 7213B.TVP | 74 | 111 | 114.4 | 1.5 | 1 |
| 3750 | 6000 | 7000 | 7213B.JP | 74 | 111 | 114.4 | 1.5 | 1 |
| 3550 | 9500 | 7000 | 7213B.MP | 74 | 111 | 114.4 | 1.5 | 1 |
| 5500 | 5300 | 6000 | 7313B.TVP | 77 | 128 | 133 | 2.1 | 1 |
| 5500 | 5300 | 6000 | 7313B.JP | 77 | 128 | 133 | 2.1 | 1 |
| 5500 | 8500 | 6000 | 7313B.MP | 77 | 128 | 133 | 2.1 | 1 |

Other designs are also available; please contact us.

Single row FAG angular contact ball bearings

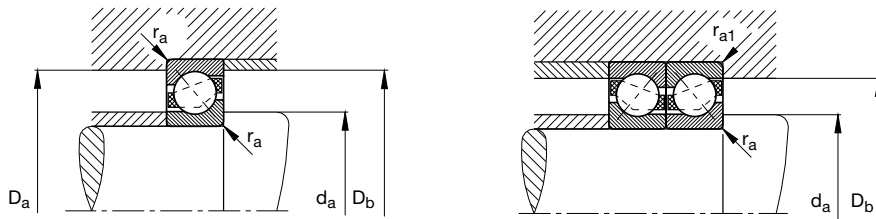
X-life



$$\alpha = 40^\circ$$

Single row FAG angular contact ball bearings, d = 70–85 mm

| Shaft | Dimensions | | | | | | | | Mass ≈ kg | Basic load ratings | |
|-----------|------------|-----|----|----------|-----------------------|--------|---------------------|---------------------|-----------------|-----------------------------|--------------------------|
| | d | D | B | r min | r ₁ min | a ≈ | D ₁ ≈ | d ₁ ≈ | | dyn. C _r N | stat. C _{0r} |
| 70 | 70 | 125 | 24 | 1.5 | 1 | 53 | 104.7 | 91 | 1.08 | 69500 | 58500 |
| | 70 | 125 | 24 | 1.5 | 1 | 53 | 104.7 | 91 | 1.17 | 69500 | 58500 |
| | 70 | 125 | 24 | 1.5 | 1 | 53 | 104.7 | 91 | 1.18 | 65500 | 54000 |
| | 70 | 150 | 35 | 2.1 | 1.1 | 64 | 120.1 | 101.9 | 2.58 | 114000 | 86500 |
| | 70 | 150 | 35 | 2.1 | 1.1 | 64 | 120.1 | 101.9 | 2.76 | 114000 | 86500 |
| | 70 | 150 | 35 | 2.1 | 1.1 | 64 | 120.1 | 101.9 | 2.82 | 114000 | 86500 |
| 75 | 75 | 130 | 25 | 1.5 | 1 | 56 | 109.2 | 96.5 | 1.16 | 68000 | 58500 |
| | 75 | 130 | 25 | 1.5 | 1 | 56 | 109.2 | 96.5 | 1.25 | 68000 | 58500 |
| | 75 | 130 | 25 | 1.5 | 1 | 56 | 109.2 | 96.5 | 1.29 | 68000 | 58500 |
| | 75 | 160 | 37 | 2.1 | 1.1 | 68 | 128.5 | 108.8 | 3.1 | 127000 | 100000 |
| | 75 | 160 | 37 | 2.1 | 1.1 | 68 | 128.5 | 108.8 | 3.29 | 127000 | 100000 |
| | 75 | 160 | 37 | 2.1 | 1.1 | 68 | 128.5 | 108.8 | 3.39 | 127000 | 100000 |
| 80 | 80 | 140 | 26 | 2 | 1 | 59 | 117.8 | 102.9 | 1.42 | 80000 | 69500 |
| | 80 | 140 | 26 | 2 | 1 | 59 | 117.8 | 102.9 | 1.53 | 80000 | 69500 |
| | 80 | 140 | 26 | 2 | 1 | 59 | 117.8 | 102.9 | 1.58 | 80000 | 69500 |
| | 80 | 170 | 39 | 2.1 | 1.1 | 72 | 136.7 | 115.7 | 3.66 | 140000 | 114000 |
| | 80 | 170 | 39 | 2.1 | 1.1 | 72 | 136.7 | 115.7 | 3.86 | 140000 | 114000 |
| | 80 | 170 | 39 | 2.1 | 1.1 | 72 | 136.7 | 115.7 | 4.02 | 140000 | 114000 |
| 85 | 85 | 150 | 28 | 2 | 1 | 63 | 125 | 110.6 | 1.82 | 90000 | 80000 |
| | 85 | 150 | 28 | 2 | 1 | 63 | 125 | 110.6 | 1.94 | 90000 | 80000 |
| | 85 | 150 | 28 | 2 | 1 | 63 | 125 | 110.6 | 1.98 | 86500 | 75000 |
| | 85 | 180 | 41 | 3 | 1.1 | 76 | 144 | 122 | 4.27 | 150000 | 127000 |
| | 85 | 180 | 41 | 3 | 1.1 | 76 | 144 | 122 | 4.4 | 150000 | 127000 |
| | 85 | 180 | 41 | 3 | 1.1 | 76 | 144 | 122 | 4.7 | 150000 | 127000 |

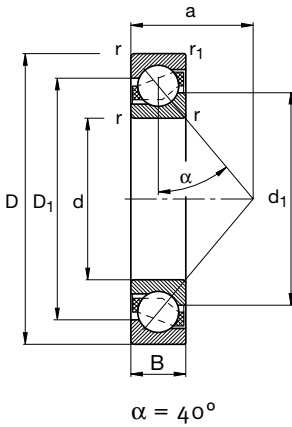


| Fatigue limit load C_{ur} | Limiting speed | Reference speed | Designation | Mounting dimensions | | | | |
|--------------------------------|-------------------|-----------------|------------------|---------------------|--------------------|--------------|--------------|--------------|
| | | | | Bearing | d_a min mm | D_a max | D_b max | r_a max |
| N | min^{-1} | | FAG | | | | | |
| 4250 | 5600 | 6700 | 7214B.TVP | 79 | 116 | 119.4 | 1.5 | 1 |
| 4250 | 5600 | 6700 | 7214B.JP | 79 | 116 | 119.4 | 1.5 | 1 |
| 4000 | 9000 | 6700 | 7214B.MP | 79 | 116 | 119.4 | 1.5 | 1 |
| 6100 | 5000 | 5600 | 7314B.TVP | 82 | 138 | 143 | 2.1 | 1 |
| 6100 | 5000 | 5600 | 7314B.JP | 82 | 138 | 143 | 2.1 | 1 |
| 6100 | 8000 | 5600 | 7314B.MP | 82 | 138 | 143 | 2.1 | 1 |
| 4200 | 5300 | 6700 | 7215B.TVP | 84 | 121 | 124.4 | 1.5 | 1 |
| 4200 | 5300 | 6700 | 7215B.JP | 84 | 121 | 124.4 | 1.5 | 1 |
| 4200 | 8500 | 6700 | 7215B.MP | 84 | 121 | 124.4 | 1.5 | 1 |
| 6700 | 4500 | 5300 | 7315B.TVP | 87 | 148 | 153 | 2.1 | 1 |
| 6700 | 4500 | 5300 | 7315B.JP | 87 | 148 | 153 | 2.1 | 1 |
| 6700 | 7000 | 5300 | 7315B.MP | 87 | 148 | 153 | 2.1 | 1 |
| 4700 | 5000 | 6000 | 7216B.TVP | 91 | 129 | 134.4 | 2 | 1 |
| 4700 | 5000 | 6000 | 7216B.JP | 91 | 129 | 134.4 | 2 | 1 |
| 4700 | 8000 | 6000 | 7216B.MP | 91 | 129 | 134.4 | 2 | 1 |
| 7600 | 4300 | 4800 | 7316B.TVP | 92 | 158 | 163 | 2.1 | 1 |
| 7600 | 4300 | 4800 | 7316B.JP | 92 | 158 | 163 | 2.1 | 1 |
| 7600 | 7000 | 4800 | 7316B.MP | 92 | 158 | 163 | 2.1 | 1 |
| 5400 | 4500 | 6000 | 7217B.TVP | 96 | 139 | 144.4 | 2 | 1 |
| 5400 | 4500 | 6000 | 7217B.JP | 96 | 139 | 144.4 | 2 | 1 |
| 5100 | 7000 | 6000 | 7217B.MP | 96 | 139 | 144.4 | 2 | 1 |
| 8200 | 4000 | 4500 | 7317B.TVP | 99 | 166 | 173 | 2.5 | 1 |
| 8200 | 4000 | 4500 | 7317B.JP | 99 | 166 | 173 | 2.5 | 1 |
| 8200 | 6300 | 4500 | 7317B.MP | 99 | 166 | 173 | 2.5 | 1 |

Other designs are also available; please contact us.

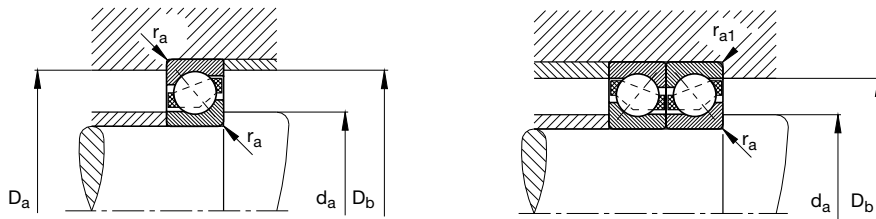
Single row FAG angular contact ball bearings

X-life



Single row FAG angular contact ball bearings, d = 90–105 mm

| Shaft | Dimensions | | | | | | | | Mass ≈ kg | Basic load ratings | |
|------------|------------|-----|----|----------|-----------------------|--------|---------------------|---------------------|-----------------|------------------------|--------------------------|
| | d | D | B | r min | r ₁ min | a ≈ | D ₁ ≈ | d ₁ ≈ | | dyn. C _r | stat. C _{or} |
| | mm | | | | | | | | | N | |
| 90 | 90 | 160 | 30 | 2 | 1 | 67 | 133.4 | 117.5 | 2.21 | 106000 | 93000 |
| | 90 | 160 | 30 | 2 | 1 | 67 | 133.4 | 117.5 | 2.38 | 106000 | 93000 |
| | 90 | 160 | 30 | 2 | 1 | 67 | 133.4 | 117.5 | 2.42 | 106000 | 93000 |
| | 90 | 190 | 43 | 3 | 1.1 | 80 | 153 | 129.7 | 5 | 160000 | 140000 |
| | 90 | 190 | 43 | 3 | 1.1 | 80 | 153 | 129.7 | 5.14 | 160000 | 140000 |
| | 90 | 190 | 43 | 3 | 1.1 | 80 | 153 | 129.7 | 5.52 | 160000 | 140000 |
| 95 | 95 | 170 | 32 | 2.1 | 1.1 | 72 | 142 | 124.9 | 2.64 | 116000 | 100000 |
| | 95 | 170 | 32 | 2.1 | 1.1 | 72 | 142 | 124.9 | 2.64 | 116000 | 100000 |
| | 95 | 170 | 32 | 2.1 | 1.1 | 72 | 142 | 124.9 | 2.94 | 116000 | 100000 |
| | 95 | 200 | 45 | 3 | 1.1 | 84 | 160.1 | 136.7 | 5.78 | 173000 | 153000 |
| | 95 | 200 | 45 | 3 | 1.1 | 84 | 160.1 | 136.7 | 5.93 | 173000 | 153000 |
| | 95 | 200 | 45 | 3 | 1.1 | 84 | 160.1 | 136.7 | 6.38 | 173000 | 153000 |
| 100 | 100 | 180 | 34 | 2.1 | 1.1 | 76 | 149.6 | 131.9 | 3.17 | 129000 | 114000 |
| | 100 | 180 | 34 | 2.1 | 1.1 | 76 | 149.6 | 131.9 | 3.45 | 137000 | 122000 |
| | 100 | 180 | 34 | 2.1 | 1.1 | 76 | 149.6 | 131.9 | 3.52 | 129000 | 114000 |
| | 100 | 215 | 47 | 3 | 1.1 | 90 | 172.3 | 145.8 | 7.16 | 193000 | 180000 |
| | 100 | 215 | 47 | 3 | 1.1 | 90 | 172.3 | 145.8 | 7.38 | 193000 | 180000 |
| | 100 | 215 | 47 | 3 | 1.1 | 90 | 172.3 | 145.8 | 7.9 | 193000 | 180000 |
| 105 | 105 | 190 | 36 | 2.1 | 1.1 | 80 | 157.7 | 138.2 | 4.18 | 143000 | 129000 |
| | 105 | 225 | 49 | 3 | 1.1 | 94 | 179.6 | 153.5 | 9 | 200000 | 193000 |

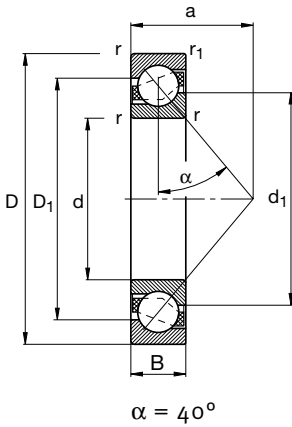


| Fatigue limit load C_{ur} | Limiting speed | Reference speed | Designation | Mounting dimensions | | | | |
|--------------------------------|-------------------|-----------------|------------------|---------------------|--------------------|--------------|--------------|--------------|
| | | | | Bearing | d_a min mm | D_a max | D_b max | r_a max |
| N | min^{-1} | N | FAG | | | | | |
| 6000 | 4300 | 5600 | 7218B.TVP | 101 | 149 | 154.4 | 2 | 1 |
| 6000 | 4300 | 5600 | 7218B.JP | 101 | 149 | 154.4 | 2 | 1 |
| 6000 | 7000 | 5600 | 7218B.MP | 101 | 149 | 154.4 | 2 | 1 |
| 8900 | 3800 | 4300 | 7318B.TVP | 104 | 176 | 183 | 2.5 | 1 |
| 8900 | 3800 | 4300 | 7318B.JP | 104 | 176 | 183 | 2.5 | 1 |
| 8900 | 6000 | 4300 | 7318B.MP | 104 | 176 | 183 | 2.5 | 1 |
| 6300 | 4000 | 5300 | 7219B.TVP | 107 | 158 | 163 | 2.1 | 1 |
| 6300 | 4000 | 5300 | 7219B.JP | 107 | 158 | 163 | 2.1 | 1 |
| 6300 | 6300 | 5300 | 7219B.MP | 107 | 158 | 163 | 2.1 | 1 |
| 9400 | 3800 | 4000 | 7319B.TVP | 109 | 186 | 193 | 2.5 | 1 |
| 9400 | 3800 | 4000 | 7319B.JP | 109 | 186 | 193 | 2.5 | 1 |
| 9400 | 6000 | 4000 | 7319B.MP | 109 | 186 | 193 | 2.5 | 1 |
| 7200 | 3800 | 5000 | 7220B.TVP | 112 | 168 | 173 | 2.1 | 1 |
| 7600 | 3800 | 5000 | 7220B.JP | 112 | 168 | 173 | 2.1 | 1 |
| 7200 | 6000 | 5000 | 7220B.MP | 112 | 168 | 173 | 2.1 | 1 |
| 10700 | 3600 | 3600 | 7320B.TVP | 114 | 201 | 208 | 2.5 | 1 |
| 10700 | 3600 | 3600 | 7320B.JP | 114 | 201 | 208 | 2.5 | 1 |
| 10700 | 5600 | 3600 | 7320B.MP | 114 | 201 | 208 | 2.5 | 1 |
| 8000 | 6000 | 4800 | 7221B.MP | 117 | 178 | 183 | 2.1 | 1 |
| 11300 | 5300 | 3400 | 7321B.MP | 119 | 211 | 218 | 2.5 | 1 |

Other designs are also available; please contact us.

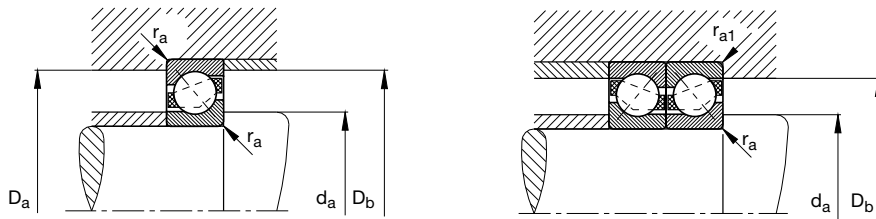
Single row FAG angular contact ball bearings

X-life



Single row FAG angular contact ball bearings, d = 110–150 mm

| Shaft | Dimensions | | | | | | | | Mass ≈ kg | Basic load ratings | |
|------------|------------|-----|----|----------|-----------------------|--------|---------------------|---------------------|-----------------|-----------------------------|-------------------------------|
| | d | D | B | r min | r ₁ min | a ≈ | D ₁ ≈ | d ₁ ≈ | | dyn. C _r N | stat. C _{0r} N |
| | mm | | | | | | | | | | |
| 110 | 110 | 200 | 38 | 2.1 | 1.1 | 84 | 165.7 | 144.9 | 4.44 | 153000 | 143000 |
| | 110 | 200 | 38 | 2.1 | 1.1 | 84 | 165.7 | 144.9 | 4.7 | 153000 | 143000 |
| | 110 | 200 | 38 | 2.1 | 1.1 | 84 | 165.7 | 144.9 | 4.92 | 153000 | 143000 |
| | 110 | 240 | 50 | 3 | 1.1 | 98 | 191.5 | 161.9 | 9.74 | 224000 | 224000 |
| | 110 | 240 | 50 | 3 | 1.1 | 98 | 191.5 | 161.9 | 9.97 | 224000 | 224000 |
| | 110 | 240 | 50 | 3 | 1.1 | 98 | 191.5 | 161.9 | 10.7 | 224000 | 224000 |
| 120 | 120 | 215 | 40 | 2.1 | 1.1 | 90 | 179.5 | 157.2 | 5.31 | 166000 | 160000 |
| | 120 | 215 | 40 | 2.1 | 1.1 | 90 | 179.5 | 157.2 | 5.9 | 166000 | 160000 |
| | 120 | 260 | 55 | 3 | 1.1 | 107 | 207.7 | 175.9 | 12.5 | 250000 | 260000 |
| | 120 | 260 | 55 | 3 | 1.1 | 107 | 207.7 | 175.9 | 13.7 | 250000 | 260000 |
| 130 | 130 | 230 | 40 | 3 | 1.1 | 96 | 191.8 | 169.2 | 6.12 | 186000 | 190000 |
| | 130 | 230 | 40 | 3 | 1.1 | 96 | 191.8 | 169.2 | 6.73 | 186000 | 190000 |
| | 130 | 280 | 58 | 4 | 1.5 | 115 | 222.5 | 188.5 | 15.1 | 275000 | 300000 |
| | 130 | 280 | 58 | 4 | 1.5 | 115 | 222.5 | 188.5 | 16.7 | 275000 | 300000 |
| 140 | 140 | 250 | 42 | 3 | 1.1 | 103 | 207.5 | 183.5 | 8.55 | 196000 | 212000 |
| 150 | 150 | 270 | 45 | 3 | 1.1 | 111 | 223.5 | 197.5 | 10.9 | 224000 | 255000 |



| Fatigue limit load C_{ur} | Limiting speed | Reference speed | Designation | Mounting dimensions | | | | | |
|--------------------------------|-------------------|-----------------|------------------|---------------------|--------------------|--------------|--------------|--------------|-----------------|
| | | | | Bearing | d_a min mm | D_a max | D_b max | r_a max | r_{a1} max |
| N | min^{-1} | | FAG | | | | | | |
| 8400 | 3600 | 4500 | 7222B.TVP | | 122 | 188 | 193 | 2.1 | 1 |
| 8400 | 3600 | 4500 | 7222B.JP | | 122 | 188 | 193 | 2.1 | 1 |
| 8400 | 5600 | 4500 | 7222B.MP | | 122 | 188 | 193 | 2.1 | 1 |
| 12600 | 3400 | 3200 | 7322B.TVP | | 124 | 226 | 233 | 2.5 | 1 |
| 12600 | 3400 | 3200 | 7322B.JP | | 124 | 226 | 233 | 2.5 | 1 |
| 12600 | 3400 | 3200 | 7322B.MP | | 124 | 226 | 233 | 2.5 | 1 |
| 9400 | 3400 | 4300 | 7224B.TVP | | 132 | 203 | 208 | 2.1 | 1 |
| 9400 | 5300 | 4300 | 7224B.MP | | 132 | 203 | 208 | 2.1 | 1 |
| 14100 | 3200 | 3000 | 7324B.TVP | | 134 | 246 | 253 | 2.5 | 1 |
| 14100 | 5000 | 3000 | 7324B.MP | | 134 | 246 | 253 | 2.5 | 1 |
| 10400 | 3200 | 3800 | 7226B.TVP | | 144 | 216 | 223 | 2.5 | 1 |
| 10400 | 5000 | 3800 | 7226B.MP | | 144 | 216 | 223 | 2.5 | 1 |
| 15600 | 3000 | 2600 | 7326B.TVP | | 147 | 263 | 271 | 3 | 1.5 |
| 15600 | 4800 | 2600 | 7326B.MP | | 147 | 263 | 271 | 3 | 1.5 |
| 11300 | 4800 | 3400 | 7228B.MP | | 154 | 236 | 243 | 2.5 | 1 |
| 13000 | 4500 | 3000 | 7230B.MP | | 164 | 256 | 263 | 2.5 | 1 |

Other designs are also available; please contact us.

Notes

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WL 43 166/2 EA