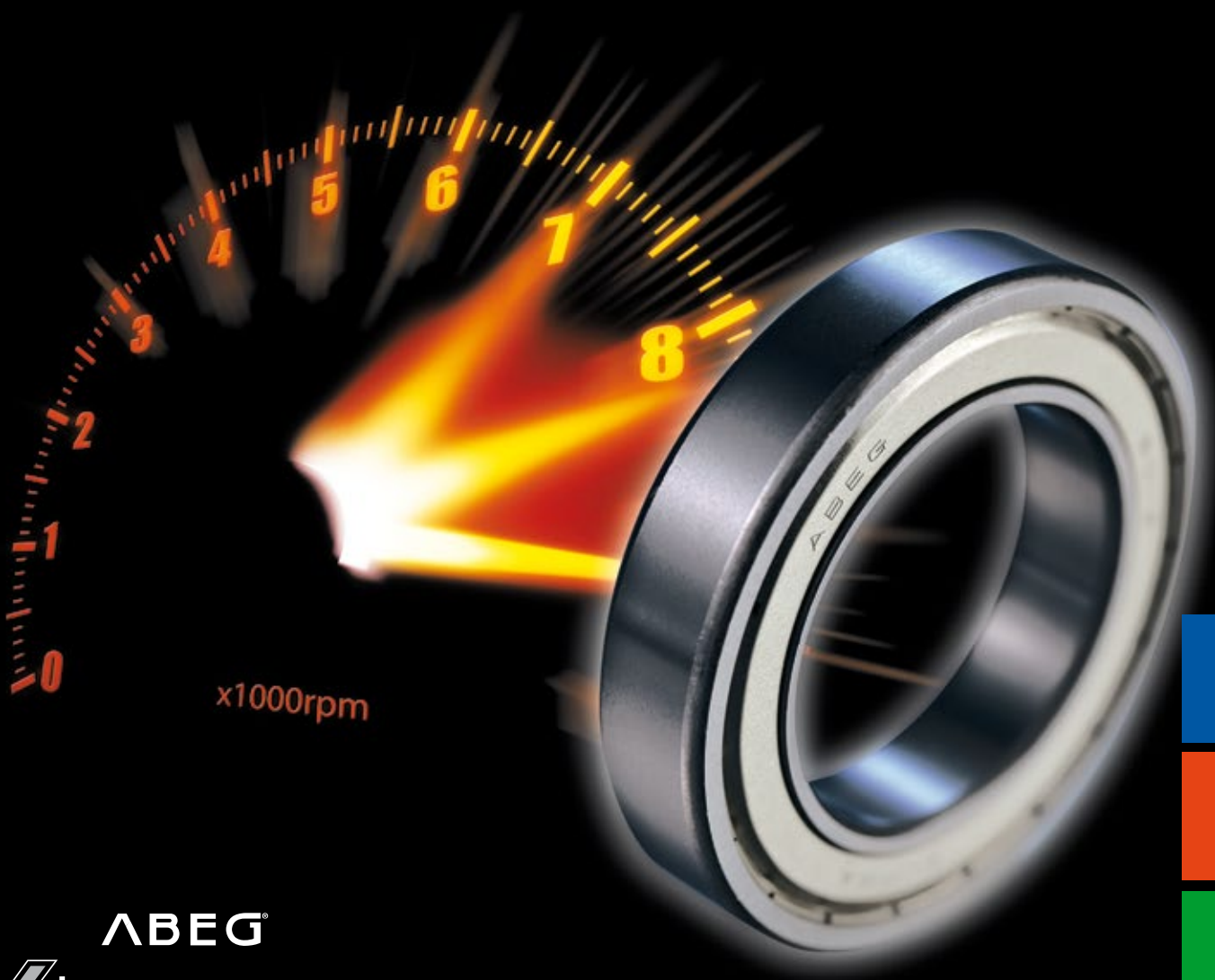
# ACCELERATED

X
speed




ABEG®
eXtreme
series

findling.com/extreme

# ABEG® Xspeed –
## MARATHON RUNNING AT TOP SPEED

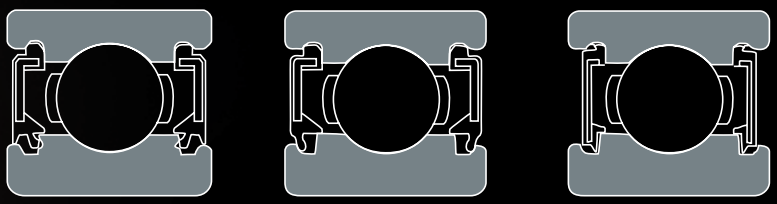
Long service life, high rpm, guaranteed safety, low friction sealing technology, favourable price and short delivery times – these specifications have been bundled in the ABEG® Xspeed series of bearings for high speed applications. These stringent criteria were satisfied by modifying the proven bearing technology with seals for applications in high rpm ranges, and using special greases to minimise friction. The bearings satisfying Xspeed specifications succeed in boosting the actual service lives by around 50 % compared to reference values for conventional premium bearings.

## The Lubricant Makes the Difference

Improved running properties at high speeds go hand-in-hand with higher specifications for surface quality and the profiling of raceways. Xspeed bearings are therefore made to satisfy tolerance class P6 with higher precision and concentricity accuracy. The bearing clearance is adjusted to the high speeds by constraining the tolerance. A special highly pure, low viscosity and low noise grease with outstanding start-up properties ensures optimal operating conditions at high rpm (cf. Figure 1).

## Optimal Protection

The self-heating of the bearing plays an important role in high speed applications. It changes the properties and performance of the lubricant and can be reduced by using the proper seals. Tests on the performance test station have also revealed that Xspeed type bearings have much lower vibration acceleration during the noise tests than the premium reference class. They also reach much lower operating temperatures under the same performance parameters.



2RS DD | 2RS RW | 2RS LLB

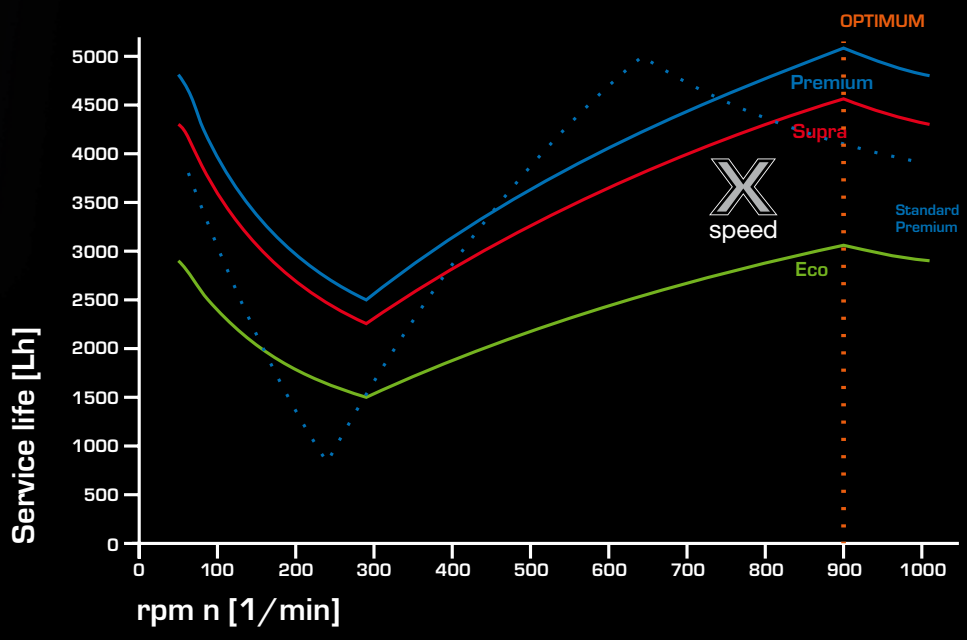



Figure 1

## Inner Ring P6 (higher precision, standard for Xspeed)

| Ø mm | | Deviation $\Delta_{dmp}$ dimensions | | Variations $V_{dp}$ for diameter series pursuant to DIN 616 | | | Variations $V_{dmp}$ | Concentricity $K_{ia}$ | Deviation $\Delta_{BS}$ dimensions | | Variations $V_{BS}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 68, 69 | 60 | 62, 63 | | | | | |
| Above | To | Upper | Lower | Max. | | | Max. | Max. | Upper | Lower | Max. |
| 2,5 | 10 | 0 | –7 | 9 | 7 | 5 | 5 | 6 | 0 | – 120 | 15 |
| 10 | 18 | 0 | –7 | 9 | 7 | 5 | 5 | 7 | 0 | – 120 | 20 |
| 18 | 30 | 0 | –8 | 10 | 8 | 6 | 6 | 8 | 0 | – 120 | 20 |
| 30 | 50 | 0 | –10 | 13 | 10 | 8 | 8 | 10 | 0 | – 120 | 20 |
| 50 | 80 | 0 | –12 | 15 | 15 | 9 | 9 | 10 | 0 | – 120 | 25 |

Table 1

## Inner Ring P0 (normal precision for comparison)

| Ø mm | | Deviation $\Delta_{dmp}$ dimensions | | Variations $V_{dp}$ for diameter series pursuant to DIN 616 | | | Variations $V_{dmp}$ | Concentricity $K_{ia}$ | Deviation $\Delta_{BS}$ dimensions | | Variations $V_{BS}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 68, 69 | 60 | 62, 63 | | | | | |
| Above | To | Upper | Lower | Max. | | | Max. | Max. | Upper | Lower | Max. |
| 2,5 | 10 | 0 | –8 | 10 | 8 | 6 | 6 | 10 | 0 | –120 | 15 |
| 10 | 18 | 0 | –8 | 10 | 8 | 6 | 6 | 10 | 0 | –120 | 20 |
| 18 | 30 | 0 | –10 | 13 | 10 | 8 | 8 | 13 | 0 | –120 | 20 |
| 30 | 50 | 0 | –10 | 15 | 12 | 9 | 9 | 10 | 0 | –120 | 20 |
| 50 | 80 | 0 | –15 | 19 | 19 | 11 | 11 | 20 | 0 | – 120 | 25 |

Table 2

## Outer Ring P6 (higher precision, standard for Xspeed)

| Ø mm | | Deviation $\Delta_{dmp}$ dimensions | | Variations $V_{dp}$ open bearing / Variations $V_{dp}$ sealed bearing | | | | Variations $V_{dmp}$ | Concentricity $K_{ia}$ | Deviation $\Delta_{BS}$ dimensions | Variations $V_{BS}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Diameter series pursuant to DIN 616 | | | | | | | |
| | | | | 68, 69 | 60 | 62, 63 | 62, 63 | | | | |
| Above | To | Upper | Lower | Max. | | | | Max. | Max. | | |
| 6 | 18 | 0 | –7 | 9 | 7 | 5 | 9 | 5 | 8 | tolerances identical to inner ring | |
| 18 | 30 | 0 | –8 | 10 | 8 | 6 | 10 | 6 | 9 | | |
| 30 | 50 | 0 | –9 | 11 | 9 | 7 | 13 | 7 | 10 | | |
| 50 | 80 | 0 | –11 | 14 | 11 | 8 | 16 | 8 | 13 | | |
| 80 | 120 | 0 | –13 | 16 | 16 | 10 | 20 | 10 | 18 | | |
| 120 | 150 | 0 | –15 | 19 | 19 | 11 | 25 | 11 | 20 | | |
| 150 | 180 | 0 | –18 | 23 | 23 | 14 | 30 | 14 | 23 | | |

Table 3

## Outer Ring P0 (normal precision for comparison)

| Ø mm | | Deviation $\Delta_{dmp}$ dimensions | | Variations $V_{dp}$ open bearing / Variations $V_{dp}$ sealed bearing | | | | Variations $V_{dmp}$ | Concentricity $K_{ia}$ | Deviation $\Delta_{BS}$ dimensions | Variations $V_{BS}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Diameter series pursuant to DIN 616 | | | | | | | |
| | | | | 68, 69 | 60 | 62, 63 | 62, 63 | | | | |
| Above | To | Upper | Lower | Max. | | | | Max. | Max. | | |
| 6 | 18 | 0 | –8 | 10 | 8 | 6 | 10 | 6 | 15 | tolerances identical to inner ring | |
| 18 | 30 | 0 | –9 | 12 | 9 | 7 | 12 | 7 | 15 | | |
| 30 | 50 | 0 | –11 | 14 | 11 | 8 | 16 | 8 | 20 | | |
| 50 | 80 | 0 | –13 | 16 | 13 | 10 | 20 | 10 | 25 | | |
| 80 | 120 | 0 | –15 | 19 | 19 | 11 | 26 | 11 | 35 | | |
| 120 | 150 | 0 | –18 | 23 | 23 | 14 | 30 | 14 | 40 | | |
| 150 | 180 | 0 | –25 | 31 | 31 | 19 | 38 | 19 | 45 | | |

Table 4

## Bearing Clearance Comparison

| Bore mm | | Radial bearing clearance | | | | | |
|---|---|---|---|---|---|---|---|
| | | C0 | | CM* | | C3 | |
| Above | To | Min. | Max. | Min. | Max. | Min. | Max. |
| 10 | 18 | 3 | 18 | 4 | 11 | 11 | 25 |
| 18 | 24 | 5 | 20 | 5 | 12 | 13 | 28 |
| 24 | 30 | 5 | 20 | 5 | 12 | 13 | 28 |
| 30 | 40 | 6 | 20 | 9 | 17 | 15 | 33 |
| 40 | 50 | 6 | 32 | 9 | 17 | 18 | 36 |
| 50 | 65 | 8 | 28 | 12 | 22 | 23 | 43 |
| 65 | 80 | 10 | 30 | 12 | 22 | 25 | 51 |

* Xspeed standard

Table 5

| Radial bearing clearance (bore < 10 mm) | | | | | |
|---|---|---|---|---|---|
| MC2 | | MC3 | | MC5 | |
| Min. | Max. | Min. | Max. | Min. | Max. |
| 3 | 8 | 5 | 10 | 13 | 20 |

Table 6

# Load Rating and Loads

In addition to practical service life tests on the bearing performance test station, the increase in performance can also be demonstrated by the extended service life calculation pursuant to DIN ISO 281. The nominal service life calculation is unsuitable because it always calculates false and excessively high service life values under extreme conditions. Because of the high rpm, there is also an inevitable rise in the operating temperature of the bearing, which in turn reduces the overall service life. To compensate for this effect, Xspeed models exclusively use special low-friction seals which, when combined with low viscous grease, tremendously boost the service life because of a reduction in self heating. Design engineers can work this out with the following calculation principles. If the rpm is above the normal rpm limit, please contact our Applications Engineering department.

## Static Load Rating $C_{stat}$

The static load rating $C_{stat}$ is a purely radial bearing loading (or purely axial in case of axial bearings), which causes a permanent deformation of 0.01% of the bearing diameter at the mostly stressed point of contact between balls and raceway, while bearings are static.

## Dynamic Load Rating $C_{dyn}$

The dynamic load rating $C_{dyn}$ states the bearing load arising from a nominal service life of one million revolutions pursuant to the ISO definition. It is determined by the fatigue behaviour of the bearing material. The service life of a bearing is defined as the time it takes for fatigue symptoms to appear. It depends on load, operating conditions and the statistical occurrence of damage. If local stress on parts of material impacted by balls continually exceeds acceptable stress, damage will occur, which leads to failure.

## Dynamic Equivalent Load P

The dynamic equivalent load P is calculated from the radial load $F_r$ and the axial load $F_a$ of the bearing according to the following expression:

$$P = X * F_r + Y * F_a$$

X and Y are determined pursuant to DIN ISO 281 Supplementary Sheet 2

## Service Life Calculation

**Nominal service life $L_{10}$**

$$L_{10} = (C_{dyn}/P)^p \text{ (in } 10^6 \text{ revolutions)}$$

p = bearing exponent (in case of deep groove ball bearings: p = 3)

**Nominal service life $L_h$**

$$L_{10h} = (16.666/n) * (C_{dyn}/P)^p \text{ (in hours h)}$$

n = number of revolutions (RPM)

Use our ABEG® Quickfinder *professional* software solution for carrying out software-supported calculations. This takes variable RPM into consideration, fluctuating loads and temperatures, as well as more than 350 different types of grease and oil. Please contact our distribution staff.

# Calculations for the eXtreme Series

**Extended service life calculations:**

Under ideal operating conditions, calculating the nominal service life is adequate for dimensioning a conventional bearing. However, to take real conditions into consideration with the aim of producing better results, it is necessary to use the extended service life calculation method pursuant to DIN ISO 281 Supplementary Sheet 1. This modifies the nominal service life of a bearing by using additional coefficients.

$$L_{nmh} = a_1 \times a_{ISO} \times L_{10h}$$

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

**$L_{nmh}$** = Extended modified service life in hours
**$a_1$** = Factor for failure probability (cf. Table 1)
**$a_{ISO}$** = Factor for operating conditions (cf. calculation)
**$L_{10h}$** = Nominal service life in hours

**$e_c$** = Contamination coefficient (cf. Table 2)
**$C_u$** = Fatigue load limit (cf. bearing type table)
**$\kappa$** = Viscosity ratio (cf. diagrams 1, 2 and 3)

| Failure probability in % | 10 | 5 | 4 | 3 | 2 | 1 |
|---|---|---|---|---|---|---|
| Failure runtime | $L_{10}$ | $L_5$ | $L_4$ | $L_3$ | $L_2$ | $L_1$ |
| Factor $a_1$ | 1,00 | 0,62 | 0,53 | 0,44 | 0,33 | 0,21 |

Table 7

| Degree of contamination | | Coefficient $e_c$ | |
|---|---|---|---|
| | | $d_m \leq 100$ mm | $d_m \geq 100$ mm |
| Very clean | Sealed and greased bearings, circulating oil lubrication with ultrafine filtering of returning oil. | 0,8 – 0,6 | 0,9 – 0,8 |
| Normal cleanliness | Greased bearings with cover discs, oil bath or oil splash lubrication from the oil sump. | 0,6 – 0,5 | 0,8 – 0,6 |
| Typical contamination | Bearing contaminated with abrasion particles from other machine parts. | 0,3 – 0,1 | 0,4 – 0,2 |

$d_m$: average bearing diameter

Table 8

## Operating Viscosity ν

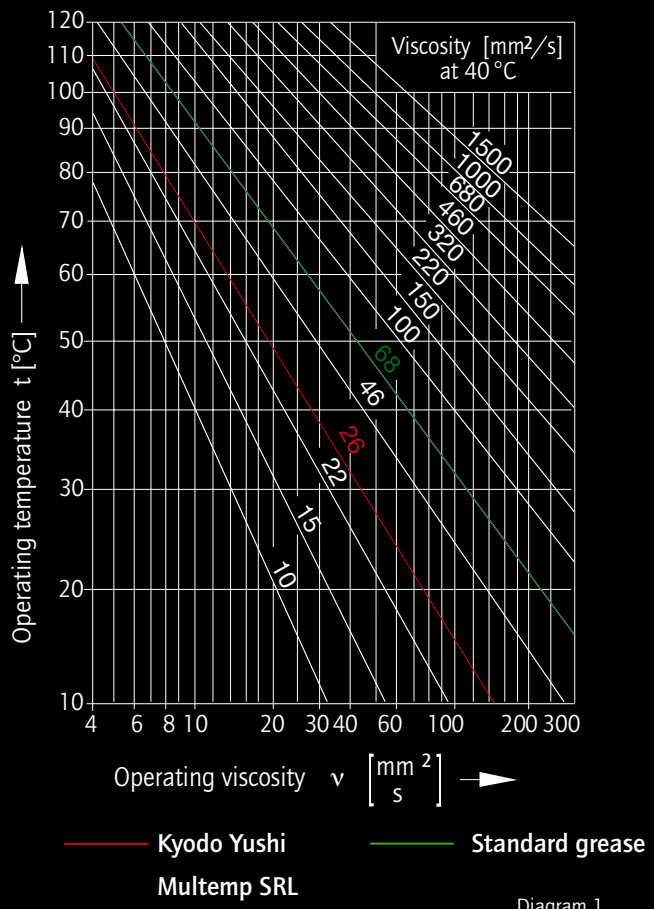



Diagram 1

## Reference Viscosity $\nu_1$

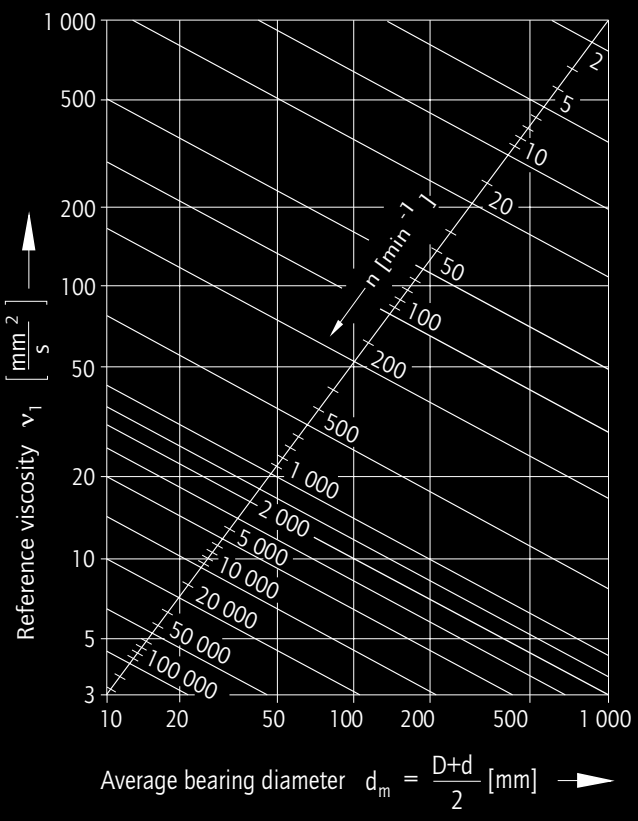



Diagram 2

| Grease type | Thickener | Base oil | Viscosity [40 °C in mm/s ] | Price |
|---|---|---|---|---|
| Multemp SRL* | Lithium complex soap | Ester oil | 26 | + |
| Klüberquiet BQ 42-32 | Lithium soap | Ester oil | 25 | 0 |
| Klüberquiet BQ 72-72 | Polyurea | Ester oil | 70 | 0 |
| Klüberspeed BF 72-22 | Polyurea | Ester oil, PAO | 22 | 0 |
| Klüberspeed BF 42-12 | Lithium complex soap | Ester oil, PAO | 24 | 0 |

*Standard

– less suitable

## Service Life Coefficient $a_{iso}$

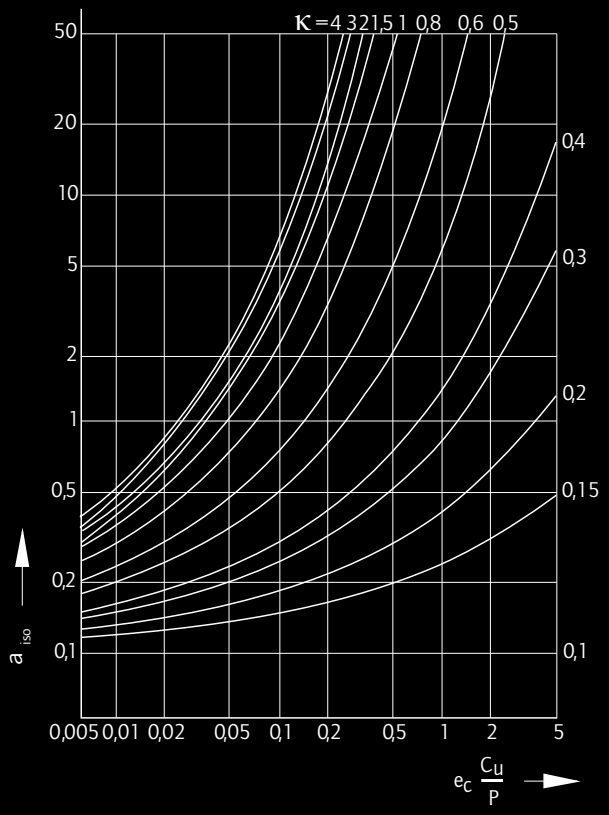



Diagram 3

## Viscosity Ratio κ

The viscosity ratio κ indicates to what extent adequate lubrication is provided by the selected oil. When κ > 1, complete lubrication is achieved at the operating temperature, and the oil is suitable for the application and for a product of the Xspeed series. If κ < 1, the lubricant must be precisely selected for the specific application conditions. In this case, contact our Applications Engineering department.

$$\text{Viscosity ratio } \kappa = \frac{\nu}{\nu_1}$$

| Temperature range [°C] | Water resistance | Corrosion protection | Pressure resistance | Noise behaviour | RPM |
|---|---|---|---|---|---|
| -40 °C to 150 °C | + | ++ | - | + | ++ |
| -50 °C to 150 °C | ++ | + | 0 | +++ | ++ |
| -45 °C to 180 °C | +++ | ++ | + | ++ | ++ |
| -50 °C to 120 °C | +++ | ++ | + | ++ | +++ |
| -50 °C to 120 °C | + | ++ | - | 0 | +++ |

Table 9

0 suitable + very suitable ++ highly suitable +++ excellently suitable

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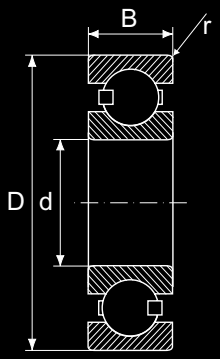
# ABEG® Deep Groove Ball Bearings
# 60/62/63/68/69

**Xspeed series miniature**




| Designation | Model | | | Bore diameter | Outside diameter | Width | | Chamfer | Limit Speed | | Mass | | Load rating | | Limit load |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | O[1] | ZZ | 2RS | d (mm) | D (mm) | B (mm) open | B (mm) covered | r (mm) | $nG_{grease}$ ($min^{-1}$) | $nG_{oil}$ ($min^{-1}$) | m (g) open | m (g) covered | $C_{stat}$ (N) | $C_{dyn}$ (N) | $C_u$ (N) |
| 603 | X | X | X | 3 | 9 | 3,0 | 5,0 | 0,15 | 56.000 | 67.000 | 0,84 | 1,13 | 189 | 571 | * |
| 623 | X | X | X | 3 | 10 | 4,0 | 4,0 | 0,15 | 50.000 | 60.000 | 1,45 | 1,65 | 219 | 631 | * |
| 683 | X | X | X | 3 | 7 | 2,0 | 3,0 | 0,10 | 63.000 | 75.000 | 0,32 | 0,45 | 112 | 311 | * |
| 693 | X | X | X | 3 | 8 | 3,0 | 4,0 | 0,15 | 60.000 | 67.000 | 0,60 | 0,80 | 180 | 558 | 7 |
| 604 | X | X | X | 4 | 12 | 4,0 | 4,0 | 0,20 | 48.000 | 56.000 | 2,19 | 2,34 | 350 | 957 | 15 |
| 624 | X | X | X | 4 | 13 | 5,0 | 5,0 | 0,20 | 40.000 | 48.000 | 3,10 | 3,20 | 488 | 1.301 | 20 |
| 634 | X | X | X | 4 | 16 | 5,0 | 5,0 | 0,30 | 36.000 | 43.000 | 5,24 | 5,44 | 523 | 1.340 | * |
| 684 | X | X | X | 4 | 9 | 2,5 | 4,0 | 0,10 | 53.000 | 63.000 | 0,65 | 1,00 | 227 | 641 | * |
| 694 | X | X | X | 4 | 11 | 4,0 | 4,0 | 0,15 | 48.000 | 56.000 | 1,69 | 1,75 | 350 | 957 | 11 |
| 605 | X | X | X | 5 | 14 | 5,0 | 5,0 | 0,20 | 40.000 | 50.000 | 3,46 | 3,75 | 507 | 1.329 | 21 |
| 625 | X | X | X | 5 | 16 | 5,0 | 5,0 | 0,30 | 36.000 | 43.000 | 4,95 | 5,10 | 675 | 1.729 | 28 |
| 635 | X | X | X | 5 | 19 | 6,0 | 6,0 | 0,30 | 32.000 | 40.000 | 8,50 | 8,89 | 896 | 2.336 | 37 |
| 685 | X | X | X | 5 | 11 | 3,0 | 5,0 | 0,15 | 45.000 | 53.000 | 1,16 | 1,93 | 282 | 716 | 11 |
| 695 | X | X | X | 5 | 13 | 4,0 | 5,0 | 0,20 | 43.000 | 50.000 | 2,39 | 2,61 | 432 | 1077 | 18 |
| 606 | X | X | X | 6 | 17 | 6,0 | 6,0 | 0,30 | 38.000 | 45.000 | 5,94 | 6,89 | 846 | 2.263 | 36 |
| 626 | X | X | X | 6 | 19 | 6,0 | 6,0 | 0,30 | 32.000 | 40.000 | 8,12 | 8,65 | 896 | 2.336 | 37 |
| 686 | X | X | X | 6 | 13 | 3,5 | 5,0 | 0,15 | 40.000 | 50.000 | 1,87 | 2,68 | 442 | 1082 | 18 |
| 696 | X | X | X | 6 | 15 | 5,0 | 5,0 | 0,20 | 40.000 | 45.000 | 3,85 | 4,65 | 523 | 1.340 | 22 |
| 607 | X | X | X | 7 | 19 | 6,0 | 6,0 | 0,30 | 36.000 | 43.000 | 7,80 | 8,24 | 896 | 2.336 | 38 |
| 627 | X | X | X | 7 | 22 | 7,0 | 7,0 | 0,30 | 30.000 | 36.000 | 12,70 | 13,10 | 1.379 | 3.287 | 58 |
| 687 | X | X | X | 7 | 14 | 3,5 | 5,0 | 0,15 | 40.000 | 50.000 | 2,03 | 2,95 | 513 | 1.173 | 21 |
| 697 | X | X | X | 7 | 17 | 5,0 | 5,0 | 0,30 | 36.000 | 43.000 | 5,26 | 5,41 | 719 | 1.605 | 29 |
| 608 | X | X | X | 8 | 22 | 7,0 | 7,0 | 0,30 | 34.000 | 40.000 | 11,80 | 12,90 | 1.379 | 3.293 | 58 |
| 628 | X | X | X | 8 | 24 | 8,0 | 8,0 | 0,30 | 28.000 | 34.000 | 17,10 | 18,50 | 1.423 | 3.333 | 66 |
| 688 | X | X | X | 8 | 16 | 4,0 | 5,0 | 0,20 | 36.000 | 43.000 | 3,11 | 4,05 | 592 | 1.252 | 24 |
| 698 | X | X | X | 8 | 19 | 6,0 | 6,0 | 0,30 | 36.000 | 43.000 | 7,12 | 7,57 | 917 | 2.237 | 36 |
| 609 | X | X | X | 9 | 24 | 7,0 | 7,0 | 0,30 | 32.000 | 38.000 | 14,70 | 16,00 | 1.444 | 3.356 | 60 |
| 629 | X | X | X | 9 | 26 | 8,0 | 8,0 | 0,60 | 28.000 | 34.000 | 19,00 | 21,80 | 1.983 | 4.563 | 82 |
| 689 | X | X | X | 9 | 17 | 4,0 | 5,0 | 0,20 | 36.000 | 43.000 | 3,41 | 4,38 | 688 | 1.327 | 34 |
| 699 | X | X | X | 9 | 20 | 6,0 | 6,0 | 0,30 | 34.000 | 40.000 | 8,38 | 8,54 | 1.081 | 2.467 | 45 |

ABEG eXtreme series

# ABEG® Deep Groove Ball Bearings
# 60/62/63/68/69

Xspeed series

| Desig-nation | Model | | | Bore diameter | Outside diameter | Width | Chamfer | Limit Speed | | Mass | Load rating | | Limit load |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | O[1)] | ZZ | 2RS | d (mm) | D (mm) | B (mm) | r (mm) | $nG_{graese}$ ($min^{-1}$) | $nG_{oil}$ ($min^{-1}$) | m (kg) | $C_{stat}$ (N) | $C_{dyn}$ (N) | $C_u$ (N) |
| 6000 | X | X | X | 10 | 26 | 8 | 0,30 | 30.000 | 36.000 | 0,019 | 1.960 | 4.750 | 82 |
| 6200 | X | X | X | 10 | 30 | 9 | 0,60 | 25.000 | 30.000 | 0,030 | 2.390 | 5.400 | 100 |
| 6300 | X | X | X | 10 | 35 | 11 | 0,60 | 23.000 | 27.000 | 0,054 | 3.500 | 8.520 | 146 |
| 6800 | X | X | X | 10 | 19 | 5 | 0,30 | 33.000 | 40.000 | 0,005 | 925 | 1.830 | 38 |
| 6900 | X | X | X | 10 | 22 | 6 | 0,30 | 32.000 | 38.000 | 0,009 | 1.270 | 2.700 | 53 |
| 6001 | X | X | X | 12 | 28 | 8 | 0,30 | 29.000 | 33.000 | 0,021 | 2.360 | 5.400 | 100 |
| 6201 | X | X | X | 12 | 32 | 10 | 0,60 | 23.000 | 28.000 | 0,036 | 3.100 | 7.280 | 127 |
| 6301 | X | X | X | 12 | 37 | 12 | 1,00 | 21.000 | 25.000 | 0,060 | 4.200 | 10.100 | 176 |
| 6801 | X | X | X | 12 | 21 | 5 | 0,30 | 32.000 | 38.000 | 0,006 | 1.040 | 1.920 | 43 |
| 6901 | X | X | X | 12 | 24 | 6 | 0,30 | 31.000 | 36.000 | 0,011 | 1.460 | 2.890 | 61 |
| 6002 | X | X | X | 15 | 32 | 9 | 0,30 | 25.000 | 29.000 | 0,030 | 2.850 | 5.850 | 119 |
| 6202 | X | X | X | 15 | 35 | 11 | 0,60 | 20.000 | 25.000 | 0,046 | 3.750 | 8.060 | 150 |
| 6302 | X | X | X | 15 | 42 | 13 | 1,00 | 19.000 | 22.000 | 0,082 | 5.450 | 11.900 | 228 |
| 6802 | X | X | X | 15 | 24 | 5 | 0,30 | 28.000 | 32.000 | 0,007 | 1.260 | 2.080 | 52 |
| 6902 | X | X | X | 15 | 28 | 7 | 0,30 | 27.000 | 31.000 | 0,016 | 2.240 | 4.360 | 86 |
| 6003 | X | X | X | 17 | 35 | 10 | 0,30 | 23.000 | 26.000 | 0,039 | 3.350 | 6.800 | 140 |
| 6203 | X | X | X | 17 | 40 | 12 | 0,60 | 18.000 | 22.000 | 0,065 | 4.750 | 9.950 | 192 |
| 6303 | X | X | X | 17 | 47 | 14 | 1,00 | 16.000 | 19.000 | 0,113 | 6.550 | 14.300 | 274 |
| 6803 | X | X | X | 17 | 26 | 5 | 0,30 | 25.000 | 30.000 | 0,008 | 1.720 | 2.810 | 72 |
| 6903 | X | X | X | 17 | 30 | 7 | 0,30 | 25.000 | 29.000 | 0,018 | 2.580 | 4.650 | 108 |

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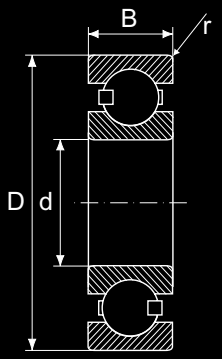
# ABEG® Deep Groove Ball Bearings
# 60/62/63/68/69

Xspeed series




| Desig-nation | Model | | | Bore diameter | Outside diameter | Width | Chamfer | Limit Speed | | Mass | Load rating | | Limit load |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | O[1)] | ZZ | 2RS | d (mm) | D (mm) | B (mm) | r (mm) | $nG_{grease}$ ($min^{-1}$) | $nG_{oil}$ ($min^{-1}$) | m (kg) | $C_{stat}$ (N) | $C_{dyn}$ (N) | $C_u$ (N) |
| 6004 | X | X | X | 20 | 42 | 12 | 0,60 | 18.000 | 21.000 | 0,069 | 5.050 | 9.950 | 211 |
| 6204 | X | X | X | 20 | 47 | 14 | 1,00 | 16.000 | 18.000 | 0,107 | 6.650 | 13.500 | 278 |
| 6304 | X | X | X | 20 | 52 | 15 | 1,10 | 14.000 | 17.500 | 0,142 | 7.900 | 16.800 | 331 |
| 6804 | X | X | X | 20 | 32 | 7 | 0,30 | 23.000 | 28.000 | 0,015 | 2.470 | 4.030 | 103 |
| 6904 | X | X | X | 20 | 37 | 9 | 0,30 | 20.000 | 24.000 | 0,036 | 3.700 | 6.400 | 155 |
| 6005 | X | X | X | 25 | 47 | 12 | 0,60 | 16.000 | 19.000 | 0,080 | 6.550 | 11.900 | 245 |
| 6205 | X | X | X | 25 | 52 | 15 | 1,00 | 13.000 | 16.000 | 0,125 | 7.850 | 14.800 | 328 |
| 6305 | X | X | X | 25 | 62 | 17 | 1,10 | 12.000 | 14.000 | 0,226 | 11.600 | 23.400 | 456 |
| 6805 | X | X | X | 25 | 37 | 7 | 0,30 | 18.000 | 23.000 | 0,020 | 2.950 | 4.360 | 123 |
| 6905 | X | X | X | 25 | 42 | 9 | 0,30 | 17.000 | 21.000 | 0,042 | 4.550 | 7.050 | 190 |
| 6006 | X | X | X | 30 | 55 | 13 | 1,00 | 13.000 | 15.000 | 0,114 | 8.300 | 13.800 | 347 |
| 6206 | X | X | X | 30 | 62 | 16 | 1,00 | 12.000 | 14.000 | 0,200 | 11.300 | 20.300 | 473 |
| 6306 | X | X | X | 30 | 72 | 19 | 1,10 | 10.000 | 12.000 | 0,350 | 16.000 | 29.600 | 628 |
| 6806 | X | X | X | 30 | 42 | 7 | 0,30 | 16.000 | 19.000 | 0,025 | 3.650 | 4.700 | 152 |
| 6906 | X | X | X | 30 | 47 | 9 | 0,30 | 16.000 | 19.000 | 0,048 | 5.000 | 7.280 | 209 |
| 6007 | X | X | X | 35 | 62 | 14 | 1,00 | 12.000 | 14.000 | 0,150 | 10.300 | 16.800 | 431 |
| 6207 | X | X | X | 35 | 72 | 17 | 1,10 | 10.000 | 12.000 | 0,290 | 15.300 | 27.000 | 641 |
| 6307 | X | X | X | 35 | 80 | 21 | 1,50 | 8.800 | 10.000 | 0,460 | 19.100 | 35.100 | 800 |
| 6807 | X | X | X | 35 | 47 | 7 | 0,30 | 13.000 | 17.000 | 0,029 | 4.050 | 4.900 | 169 |
| 6907 | X | X | X | 35 | 55 | 10 | 0,30 | 13.000 | 17.000 | 0,074 | 7.450 | 11.200 | 312 |
| 6008 | X | X | X | 40 | 68 | 15 | 1,00 | 10.000 | 12.000 | 0,190 | 11.600 | 17.800 | 481 |
| 6208 | X | X | X | 40 | 80 | 18 | 1,10 | 8.800 | 10.000 | 0,370 | 19.000 | 32.500 | 754 |
| 6308 | X | X | X | 40 | 90 | 23 | 1,50 | 7.800 | 9.200 | 0,650 | 24.000 | 42.300 | 1.005 |
| 6808 | X | X | X | 40 | 52 | 7 | 0,30 | 12.000 | 15.000 | 0,033 | 4.400 | 5.100 | 184 |
| 6908 | X | X | X | 40 | 62 | 12 | 0,30 | 11.000 | 13.000 | 0,110 | 10.200 | 14.600 | 427 |
| 6009 | X | X | X | 45 | 75 | 16 | 1,00 | 9.200 | 11.000 | 0,240 | 15.100 | 22.100 | 632 |
| 6209 | X | X | X | 45 | 85 | 19 | 1,10 | 7.800 | 9.200 | 0,420 | 21.600 | 35.100 | 854 |
| 6309 | X | X | X | 45 | 100 | 25 | 1,50 | 7.000 | 8.200 | 0,840 | 32.000 | 55.300 | 1.340 |

ABEG eXtreme series

| Desig-nation | Model | | | Bore diameter | Outside diameter | Width | Chamfer | Limit Speed | | Mass | Load rating | | Limit load |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | O[1)] | ZZ | 2RS | d (mm) | D (mm) | B (mm) | r (mm) | $nG_{grease}$ ($min^{-1}$) | $nG_{oil}$ ($min^{-1}$) | m (kg) | $C_{stat}$ (N) | $C_{dyn}$ (N) | $C_u$ (N) |
| 6010 | X | X | X | 50 | 80 | 16 | 1,00 | 8.400 | 9.800 | 0,260 | 16.600 | 22.900 | 695 |
| 6210 | X | X | X | 50 | 90 | 20 | 1,10 | 7.100 | 8.300 | 0,470 | 23.200 | 37.100 | 971 |
| 6310 | X | X | X | 50 | 110 | 27 | 2,00 | 6.400 | 7.500 | 1,090 | 38.500 | 65.000 | 1612 |
| 6011 | X | X | X | 55 | 90 | 18 | 1,10 | 7.700 | 9.000 | 0,370 | 21.200 | 29.600 | 888 |
| 6211 | X | X | X | 55 | 100 | 21 | 1,50 | 6.400 | 7.600 | 0,610 | 29.200 | 46.200 | 1.223 |
| 6311 | X | X | X | 55 | 120 | 29 | 2,00 | 5.800 | 6.800 | 1,350 | 45.000 | 74.100 | 1885 |
| 6012 | X | X | X | 60 | 95 | 18 | 1,10 | 7.100 | 8.300 | 0,390 | 23.200 | 30.700 | 971 |
| 6212 | X | X | X | 60 | 110 | 22 | 1,50 | 6.000 | 7.300 | 0,800 | 36.000 | 55.300 | 1.508 |
| 6312 | X | X | X | 60 | 130 | 31 | 2,10 | 5.400 | 6.300 | 1,700 | 52.000 | 85.200 | 2.178 |
| 6013 | X | X | X | 65 | 100 | 18 | 1,10 | 6.700 | 8.000 | 0,440 | 25.000 | 31.900 | 1.047 |
| 6213 | X | X | X | 65 | 120 | 23 | 1,50 | 5.500 | 7.000 | 0,990 | 40.500 | 58.500 | 1.696 |
| 6313 | X | X | X | 65 | 140 | 33 | 2,10 | 5.000 | 6.000 | 2,100 | 60.000 | 97.500 | 2.513 |
| 6014 | X | X | X | 70 | 110 | 20 | 1,10 | 6.300 | 7.100 | 0,600 | 31.000 | 39.700 | 1.298 |
| 6214 | X | X | X | 70 | 125 | 24 | 1,50 | 5.100 | 6.100 | 1,100 | 45.000 | 63.700 | 1.885 |
| 6314 | X | X | X | 70 | 150 | 35 | 2,10 | 4.500 | 5.300 | 2,500 | 68.000 | 111.000 | 2.848 |
| 6015 | X | X | X | 75 | 115 | 20 | 1,10 | 5.800 | 7.000 | 0,640 | 33.500 | 41.600 | 1.403 |
| 6215 | X | X | X | 75 | 130 | 25 | 1,50 | 4.800 | 5.600 | 1,200 | 49.000 | 68.900 | 2.052 |
| 6315 | X | X | X | 75 | 160 | 37 | 2,10 | 4.300 | 5.000 | 3,000 | 76.500 | 119.000 | 3.204 |
| 6016 | X | X | X | 80 | 125 | 22 | 1,10 | 5.500 | 6.500 | 0,850 | 40.000 | 49.400 | 1.675 |
| 6216 | X | X | X | 80 | 140 | 26 | 2,00 | 4.500 | 5.300 | 1,400 | 55.000 | 72.800 | 2.220 |
| 6316 | X | X | X | 80 | 170 | 39 | 2,10 | 4.000 | 4.800 | 3,600 | 86.500 | 130.000 | 3.623 |

[1)] O = This model is open and therefore ungreased (only preserved)

**Please inquire directly about bearings with a bore diameter of 55 mm and above because these are not held in stock**

ABEG®
Advanced Bearing Expert Group

ABEG eXtreme series

# HIGH PERFORMANCE AS STANDARD

## Extreme Situations Demand Extreme Measures: ABEG® eXtreme.

With the ABEG® eXtreme series, the market now has especially long-lasting high performance bearings for very specific operating conditions. This was achieved by optimising tried-and-tested ABEG® bearing technology and equipping the series with a special combination of greasing and sealing elements.

To create alternatives to costly standard premium products or customised solutions with long delivery times, the development process also specifically focused on achieving the best possible acquisition and delivery conditions. The ABEG® eXtreme product line therefore provides ideal solutions which had never been available in the past: bearings that are not only efficient with long service lives, but also economical and available at short notice.

## Other Products of the ABEG® eXtreme Series:

X force — higher service lives with high loads and low RPM

X temp — higher service lives under extreme heat or cold conditions

X clean — special models for clean room applications and wash-down applications

# Whenever the Going Gets Very Tough: The ABEG® eXtreme Series.



www.findling.com/extreme/downloads/

Technical modifications and errors excepted 11/2012

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